European Venture-backed IPOs: An Empirical Analysis

Wolfgang Bessler and Martin Seim*

Executive Summary

The objective of this study is to analyze the performance of venture capital-backed initial public offerings (IPOs) in Europe for the period from 1996 to 2010. This analysis covers two complete stock market cycles and two IPO waves and provides information on the magnitude of the underpricing as well as on the long-run return and performance behavior. Additional insights are gained by exploring the relevance of certain market and firm characteristics. For this, IPO firms are grouped according to certain attributes. First, we provide an in depth analysis of IPOs listed on the main market segments and for larger IPOs. Then stock returns and performance are analyzed separately for the 1996 to 2003 and 2003 to 2010 sub-periods in order to explore whether there exist significant differences in return behavior over time. Finally, the sample of venture capital-backed IPOs is compared to a larger control group of non venture capital-backed IPOs to highlight the contribution of venture capital to a company’s success and performance.

The empirical findings provide significant evidence that venture capital-backed IPOs generate positive returns for a specific time period subsequent to the IPO. In fact, early stage investors such as venture capitalists that are already invested in the company prior to the IPO, profit first from high initial or first day returns (underpricing) and second from high positive returns during the first year after going public. The same holds for an investor who got shares allocated at the time of the IPO. Interestingly, investments in IPOs generate positive returns for investors for nearly three years after going public. An investor who bought shares in the secondary market just following the IPO could also profit from share price increases during the first year of trading. Such an investment even generates positive returns for up to two years before returns become negative.

Further analyses of specific sub-groups reveal that IPOs listed on main markets provide positive returns and positive abnormal returns (performance) for up to two years after going public. The returns for larger IPOs with market values above EUR 100 million at the time of the IPO and above EUR 100 million in book values at the end of the first year are also positive for the first three year period after going public. In addition, the group of venture capital-backed IPOs significantly outperforms the non venture capital-backed IPO group for companies listed on the main market segment and for larger IPOs. We further document differences between the two stock market cycles and IPO waves in that for the first period the underpricing and the first year returns are higher than for the second period. In the long run, there are no substantial performance differences between these two periods, suggesting that the higher underpricing and the higher first year returns were caused by an extremely positive market environment and overly optimistic growth expectations. Overall, this study provides empirical evidence that venture capital-backed initial public offerings in Europe generate positive returns and a positive performance for the 1996 to 2010 period.

* Prof. Dr. Wolfgang Bessler, Center for Finance and Banking, Justus-Liebig-University Giessen, Licher Strasse 74, 35394 Giessen, Germany, Mail: Wolfgang.Bessler@wirtschaft.uni-giessen.de
European Venture-backed IPOs: An Empirical Analysis

Wolfgang Bessler and Martin Seim

1. INTRODUCTION

It is a well known economic fact that venture capital significantly contributes to the success of start-up firms and to long-term economic growth. A recent study by Haltiwanger, Jarmin and Miranda (2010) provides empirical evidence that the increase in employment and the creation of new jobs is strongly related to the growth rate of start-up firms and not to small firms per se. Thus, providing sufficient capital resources as well as advising and monitoring services is of critical importance for the success of start-up firms. Although the current financial crisis had severe negative effects on financial markets and real activity throughout all economic sectors during the last 3 years, it appears that subsequent to the financial crisis both, financial markets and real economic activity are returning to more sustainable conditions. In fact, based on the number of firms being interested in going public, the equity markets might exhibit a significant recovery in the near future (Börsen-Zeitung, Nov. 19, 2010). A high percentage of these potential initial public offerings (IPOs) are backed by venture capital companies, i.e., firms in which venture capitalists have invested earlier on, demonstrating the positive impact of venture capital on firm value in good and bad economic times. At the same time, taking companies public offers venture capital firms an attractive opportunity to exit from their portfolio companies, and to invest the proceeds in new and promising start-up ventures. Therefore, it is an interesting and timely research question to investigate the performance and the performance characteristics of venture-backed initial public offerings in Europe for the period from 1996 to 2010. This period includes the last two stock market cycles and IPO waves including the “new economy” period. To provide some evidence on the contribution of venture capital firms to the success of start-up companies, we analyze and compare the return and performance characteristics of venture capital-backed IPOs to a group of non venture capital-backed IPOs.

The remainder of this paper proceeds as follows. In the next section the literature on venture capital and initial public offerings is briefly reviewed while in section 3 we describe the data and statistical methodology employed in the empirical analysis. In section 4, the results of the empirical study are presented. This includes an analysis of underpricing and
long-run performance. The performance analysis in section 5 further differentiates between certain characteristics such as size of the IPO firm and the stock exchange segments on which the IPO is listed. Another important issue that is analyzed is whether there are significant differences between the two stock market cycles and IPO waves. In section 6, we extend our analysis by comparing the long-run performance of venture-backed IPOs to a larger sample of non venture-backed IPOs. Again, we differentiate between IPO size and junior and main market segments. This allows us to analyze the contribution of venture capitalists to create value for their portfolio companies. The paper concludes with a summary of the empirical findings.

2. VENTURE CAPITAL

In this section we provide a brief literature review on the role and importance of venture capital and an overview of the literature on the return and performance characteristics of venture capital and initial public offerings.

2.1 Importance of Venture Capital

Vast empirical evidence during the last three decades suggests that venture capital firms contribute significantly to the success of start-up companies and to economic growth in general. This is usually attributed to the VCs’ superior abilities of screening, monitoring, and consulting of their portfolio companies. However, when venture capital firms wanted to exit from their ventures, it was believed for long that the most promising and profitable exit route was to take the portfolio company public, i.e. selling the firm’s shares in the public equity markets through an initial public offering. However, the opportunity to sell the equity stake at a relatively high valuation does not only depend on the intrinsic value of the portfolio firm. It is also closely related to the size, liquidity, and quality of the equity market in the respective country and to the recent stock market performance (Bessler, Holler and Seim, 2010). In addition, there are significant return and performance differences between various market environments such as hot and cold market periods (Bessler and Kurth, 2007).

At least in the past decades, the high quality and efficiency of stock markets in the U.S. appear to have been an important factor, supporting the success and growth of the venture capital industry (Black and Gilson, 1998). This historically strong economic interaction between venture capital and IPO markets may have been negatively affected in
recent years as we are currently observing that trade sales have become the preferred exit route for venture capital firms in the U.S. and in Europe. In the U.S., some refer to this situation as the “IPO crisis” (Weild and Kim 2009, 2010). This crisis may be the result of excessive new regulation as well as changes in investment banking and analyst behavior following some severe conflict of interest and problems in these markets during the last decade. In addition, recent developments in security markets’ trading systems and trading approaches such as “algorithmic trading” may have played a pivotal role as well. Interestingly, Asian markets such as China and Australia are currently observing an increasingly active IPO market. Overall, there is sufficient evidence on the important role of venture capital in contributing to economic growth and success.

2.2 Venture Capital and Initial Public Offerings

The opening of new stock market segments for entrepreneurial and technology driven start-up firms in most European countries between 1996 and 2000 was intended to offer attractive exit opportunities for venture capitalists and other early-stage investors, thereby, supporting the growth of European venture capital markets (Da Rin, Nicodano and Sembenelli, 2006). Liquid capital markets are another important factor for creating successful opportunities for venture capital firms to exit from their portfolio companies. Other factors such as the quality of a country’s legal system can also be important because a strong legal environment ensures profitable exit opportunities (Cumming, Fleming and Schwienbacher, 2006). Moreover, being public offers young R&D intensive firms new financial opportunities, such as issuing additional equity (SEO), acquiring other companies (M&A), or positioning to becoming a takeover target themselves. In addition, market prices continuously provide potential investors and acquirers with information on the current price of the venture. It also seems possible that venture capitalists stay invested for some time period after the IPO or agree to a lock-up period, if the share prices in the primary (underpricing) and secondary markets offer attractive returns. Moreover, there is substantial empirical evidence that venture capitalists significantly contribute to the development of entrepreneurial firms over their life cycle by offering strategic and operational support even after going public (Barry, Muscarella, Peavy and Verstuypens, 1990). Consequently, venture capital firms may mitigate adverse selection problems between IPO firms and prospective investors. This should be reflected in a superior operating and financial performance of venture-backed compared to non venture-backed IPOs.
2.3 Performance of VC-backed IPOs

When analyzing the return and performance characteristics of initial public offerings, researchers usually concentrate on the magnitude of the underpricing and the long-run performance. In general, “underpricing” is measured as the difference between the offer price and the stock price in the secondary market at the end of the first day of trading. Performance is usually measured by calculating “Buy-and-Hold-Returns” (BHR) and “Buy-and-Hold Abnormal Returns” (BHAR). The empirical findings are discussed in the next section.

2.3.1 Underpricing

When venture capital-backed firms go public, the involvement of venture capital firms in early stage financing should be a better signal or provide a superior certification of the quality of an IPO. This may then result in a smaller underpricing and a superior long-run performance of venture-backed IPOs compared to non venture-backed IPOs. This hypothesis is supported in earlier studies for the U.S. by Megginson and Weiss (1991) and Brav and Gompers (1997). For venture-backed IPOs in the U.S., Megginson and Weiss (1991), on average, find a lower underpricing for non venture-backed IPOs. However, Barry, Muscarella, Peavy and Verstuypens (1990) observe a lower underpricing only for experienced venture capitalists. In contrast, Francis and Hasan (2001) do not find a lower underpricing and Lee and Wahal (2004) even document higher initial returns for venture-backed IPOs due to the "grandstanding" argument provided by Gompers (1996). This "grandstanding" hypothesis predicts that venture capitalists may exit their portfolio firms in favorable market conditions. This allows them to build up reputation, accelerate fund raising and generate high returns for their investors. The empirical findings of Hsu (2009) supports the grandstanding hypothesis in that venture capitalists generally shorten incubation periods, i.e. the time periods for which venture capitalists stay invested in the entrepreneurial venture prior to an IPO. More interestingly, this research emphasizes that within the group of venture-backed start-up firms, a longer incubation period leads to more patents, a higher probability of survival, and above average operating and financial performance subsequent to the IPO. For Europe there exists little empirical evidence on these issues so far.

2.3.2 Long-Run Performance

A superior long-run performance of venture-backed IPOs is reported by Brav and Gompers (1997). In addition, Lerner (1994) finds a special ability of VCs to time their exit. This latter result is confirmed by Gompers and Lerner (1998) who observe that venture-
backed IPOs significantly outperform before the exit and significantly underperform after the exit of the venture capitalist. These empirical results may suggest that venture capitalists have some exceptional insights and abilities with respect to firm valuation and exit behavior. It could also reflect the special abilities of venture capitalists to monitor and support the companies with their special experience and expertise while invested. This advantage may be lost when the venture capitalist exits and is replaced with other investor types. In contrast, some critics suggest that such a performance may be the result of private information or specific measures influencing the price, indicating that certain conflicts of interest may arise when venture capital firms are involved. However, there also exist other conflicts of interest, for example, that the earnings forecasts and stock recommendations of the analyst of the underwriter are positively biased (Bessler and Stanzel, 2009). For Germany, Bessler and Kurth (2007) report an outperformance of IPOs only for the period up to the end of the lock-up period. In addition, there are other factors besides venture capital that may contribute to the success of a venture such as technology and patents (Bessler and Bittelmeyer, 2008). Nevertheless, it has been suggested that the differences between Europe and the U.S. might be due to superior information of U.S. venture capitalists regarding the quality of the IPO and their higher reputation that result from their greater experience. Therefore, it seems quite interesting and necessary to explore the contribution of venture capital firms in Europe to the success of their portfolio companies by analyzing the performance of venture capital-backed IPOs over an extended time period.

3. DATA AND METHODOLOGY

3.1 Data

This study concentrates on an initial sample of over 500 European firms that were venture-backed and went public on European stock exchanges during the period from January 1996 to June 2010. This period includes two complete stock market cycles and IPO waves and ends subsequent to the current financial crisis. IPO data is from the Thomson One database and matched with information from the VentureXpert database. We only included those firms from VentureXpert that were backed by a reputable venture capitalist, i.e., a venture capital firm that is member of the European Venture Capital Association (EVCA) or one of the major national venture capital organizations in Europe. We excluded those IPOs with conflicting IPO information in either Thomson One or VentureXpert. Stock returns and
balance sheet data are from Thomson Datastream and all converted into Euro. We follow the usual approach in academic studies and excluded all firms from the banking and insurance sector (i.e., 4-digit SIC code 6000). We also exclude penny stocks (i.e., all IPOs with an offer price of less than 1 EUR), and countries with only a few IPOs during our sample period. This leaves us with a final sample of 384 venture backed IPOs. For these IPOs we are able to calculate the first day returns or initial underpricing. When we calculate long-run returns (BHR) and long-run performance measures (BHAR), stock return data for at least 750 trading days, i.e., about 3 years after the IPO, is required. In these cases, the sample size reduces to 365 venture-backed IPOs. The distribution of the number of IPOs on an annual basis as well as the number of IPOs according to the country in which the firm is listed, are presented in Figures 1 and 2, respectively. In Figure 1 it becomes immediately evident that our analysis includes two stock market cycles and two IPO waves and that the number of IPOs closely follows the stock market performance. Especially at the end of the 1990s and in the years 2006 and 2007, venture capitalists took their portfolio firms public. This was an environment of general positive market sentiment that facilitated listing success in a situation of liquid stock markets.

[Insert Figure 1 about here]

Our analysis begins with the first IPO cycle that spans the time period from 1996 to early 2003, including the extreme stock market volatility during the “new economy” period. In this time period, we first observe an increase in the annual number of IPOs up to nearly 60 in 2000. This number drops to less than 20 venture-backed IPOs in 2001 and even falls below 10 IPOs in 2003. The second cycle shows similar growth dynamics with the number of IPOs strongly increasing since 2004. In 2006, nearly 80 European companies that were backed by a reputable venture capitalist went public on European exchanges. Interestingly, the decrease in IPO activity in relative terms is even more dramatic than during the “new economy” period. As a result of the current financial crisis, only a small number of firms went public in 2008 due to investor concerns and low confidence in financial markets. The figure for 2008 is on a relative basis only about 10% of the number of IPOs in 2006. Figure 2 shows that only a few capital markets in Europe attracted most IPOs and therefore play the dominant role. Taken together, the number of venture-backed IPOs in the UK, Germany and France is about 250 firms or roughly 70% of all venture-backed firms that went public. Apart from Switzerland, the remaining markets attracted less than 20 venture-backed IPOs over the last two IPO waves. Thus, we observe some concentration of venture capital-backed IPO activity.
3.2. Methodology

In our empirical analysis of venture-backed IPOs in Europe, we employ the standard event study methodology and calculate IPO underpricing (UP) as well as long-run returns (buy-and hold-returns or BHR) and long-run performance (buy-and-hold abnormal returns or BHAR).

3.2.1 Underpricing

Underpricing is calculated as the return to an investor who gets shares allocated in the primary market and sells them at the end of the first day of trading in the secondary market. Hence, underpricing for firm \(i\) is calculated as the percentage change from the offer price \(P_{i,LOP}\) to the closing price \(P_{i,LCP}\) on the first trading day (Ritter 1984; Loughran and Ritter 2004):

\[
UP_i = \frac{P_{i,LCP} - P_{i,LOP}}{P_{i,LOP}}.
\]

3.2.2 Buy-and-Hold Abnormal Returns

To analyze the long-run performance of IPO firms, the standard buy-and-hold abnormal returns (BHAR) procedure is applied. We calculate abnormal returns on a daily basis:

\[
\text{BHAR} = \frac{1}{n} \sum_{t=1}^{n} \left[ \prod_{t=1}^{T} (1 + R_{it}) - \prod_{t=1}^{T} (1 + R_{M,t}) \right],
\]

where \((1 + R_{it})\) presents the return of company \(i\) for the time \(t\) and \((1 + R_{M,t})\) is the return on the market index \(M\) for the same day. Thus, the return of an investment in IPO \(i\) is compared to an investment in the market index \(M\) for identical time intervals \((T)\), resulting in the performance measure BHAR as the difference between the returns in these two investment alternatives.

We begin our analysis on the second day of trading and measure abnormal returns until 750 trading days or about 3 years after the IPO. The BHAR performance measure

---

\(^{1}\) We have opening prices on the first day of trading in the primary market available for only about half of our sample firms. Therefore, to retain a comprehensive sample size we calculated underpricing using closing prices at the end of the first trading day.
compares the average performance of a buy-and-hold investment in a portfolio consisting of all IPOs (BHR) to the buy-and-hold investment in an appropriate benchmark portfolio. However, as our analysis consists of IPOs that are listed on different European exchanges, we have to be aware of country-specific risk and return characteristics that have to be taken into account by country-specific benchmarks. Therefore, for calculating the BHAR we use the MSCI indices for each country. As MSCI indices are available only on a monthly basis prior to January 2001, we use data from Datastream to calculate the daily country indices for the period from 1996 to 2000.\(^2\) Because some IPOs delist for various reasons within the first 3 years after going public, we do not have the required return data for 750 trading days. The returns of these IPOs are then set equal to the respective market index so that they do not influence the BHAR measure. Consequently, the weight of each of the remaining IPOs does not change and the sample size remains the same for the whole period of 750 trading days.\(^3\) Furthermore, as some IPO firms, especially those that went public on the “New Markets” in Europe, are characterized by some extreme returns, we winsorized the raw returns as well as the abnormal returns at the upper and lower 1% percentiles of the return distribution.

To test for statistical significance, we employ the standard t-test as well as a bootstrapped version of the skewness adjusted t-test in order to correct for the pronounced positive skewness in UP and in BHAR. Following Lyon, Barber and Tsai (1999), we draw 1,000 samples of size \(m = n/4\) to calculate the critical values of the transformed t-statistic:

\[
(3) \quad t_{sa} = \sqrt{m} \left( S + \frac{1}{3} \hat{p} S^2 + \frac{1}{6m} \hat{p} \right),
\]

with

\[
(4) \quad S = \frac{AR_T}{\sigma(AR_T)} \quad \text{and} \quad \hat{p} = \frac{\sum_{i=1}^{m}(AR_{i,T} - \bar{AR}_T)^3}{m\sigma(AR_T)^3}.
\]

In all tables we report the test statistics of the standard t-test (indicated by \(t\)) and the skewness adjusted t-test (indicated by \(t_{sa}\)) and the respective significance levels. Moreover, for the comparison of venture-backed and non venture-backed IPOs in section 6, we apply a two sample t-test to check for any differences of the sample means. Hence, ***, **, and * refer to the 1%, 5%, and 10% significance level, respectively.

\(^2\) We repeated our calculations using the MSCI Europe as the benchmark index and the results remained the same.
\(^3\) We repeated our calculations dropping dead stocks out of the portfolio and calculating BHAR with the remaining IPOs and the results do not change.
4. EMPIRICAL RESULTS

In our empirical analysis we first investigate the magnitude of the underpricing and then focus on long-run returns and long-run performance (abnormal returns). In the next section 5 we further analyze various aspects of the return and the long-run performance characteristics of venture capital-backed IPOs. This includes the impact of size and market segments as well as the effects of stock market cycles and IPOs waves. In addition, we compare the performance of venture capital-backed and non venture capital-backed IPOs in section 6. In this section we concentrate on underpricing, IPO returns, and performance for all venture capital backed IPOs for the period from 1996-2010.

4.1 Underpricing

It is well known that the magnitude of the underpricing depends on various firm specific characteristics, on the reputation of the venture capital firm and the underwriter (Doukas and Gonenc, 2005), but also on the recent stock market performance and on the equity issuing activity. Therefore, researchers usually distinguish between hot and cold market environments and control for other firm and market characteristics. Similar to the co-movement of the stock market index and the number of IPOs as already presented in Figure 1, the magnitude of the underpricing also strongly fluctuates over time. This becomes evident in Figure 3. During the hot issue period of the first IPO cycle (1998 to 2000) in which stock prices increased substantially, the magnitude of the underpricing of venture-backed IPOs also reached the highest levels of about 20% within the entire sample period. However, it appears that a shift in this relationship has occurred more recently in that we find different results for the second stock market cycle and IPO wave (2003-2007). During the second hot issue period or pre-crisis period, the number of venture-backed IPOs and the stock market index increased during the period from about 2003 until 2006/2007, but the magnitude of the underpricing was much lower during that time period. The reasons for this observation are not that apparent yet. However, some plausible explanations exist. It is likely that the venture capitalists fulfilled their certification role and reduced uncertainty about the value of their portfolio firms. Another possible reason is that the market sentiment was not sufficiently high and investors were not optimistic enough to provoke stronger demand for IPO investments and higher levels of underpricing in spite of favorable stock market conditions.

Another explanation is that the so-called “IPO crisis” resulted in more trade-sales instead of IPOs of the most promising companies because of changes in the regulatory market
environment. In addition, it seems possible that the growth expectations for these firms were not sufficiently high to warrant - from the venture capitalists’ perspective - the more risky IPO exit compared to an immediate trade sale. Thus, the exit behavior of venture capital firms may have shifted from going public and selling their equity stake in the primary and secondary market to trade-sales, i.e., selling the portfolio firm to another company. It is also possible that these start-up firms have become takeover targets of established firms earlier on. Possible reasons - from the perspective of the established firm - for acquiring these firms (M&A) are to get access to technology and patents or even to acquire early developments and ideas from these start-up ventures (Bessler, Holler, Seim and Zimmermann, 2011).

[Insert Figure 3 about here]

[Insert Table 1 about here]

In Table 1 we provide additional summary statistics on the magnitude of the underpricing. We also differentiate between specific characteristics in that we distinguish between the market segment in which the company is listed (see part 5.1) and the market value at the offer date or the book value of total assets at the end of the first year after going public (see part 5.2). Underpricing for the full sample is 8.39%. IPOs on main markets and larger IPOs as measured in terms of total assets exhibit an underpricing between 6% and 7%. Somewhat surprising, if IPO size is measured in terms of market values of equity at the offer date, underpricing amounts to 9.32% which is higher than the sample average. All measures are significantly different from zero as indicated by both the standard as well as the skewness adjusted bootstrapped t-test.

Some implications of these empirical findings are that investors - if they were already invested in the start-up company before the IPO or were allocated shares in the primary market at the time of the IPO - are able to earn reasonable rates of returns on the first day of trading. However, it has to be kept in mind that underpricing is an important source of return to early stage investors and can yield an extraordinary performance. In the subsequent analysis we mostly concentrate on the return an investor could have earned when investing on the first day of trading in the secondary market.

4.2 Long-Run Performance

The average long-run buy-and-hold returns (BHR, solid line) and the aggregated corresponding market indices (dashed line) are presented in Figure 4a. In general, the BHR
increases continuously from the time of the IPO up to about one year (250 trading days) after the IPO. After the first year of trading, most investors are allowed to exit from their investment. This is either due to the end of various lock-up periods or the venture capital firms are contractually obliged to exit their investment after this one year period. Subsequently, the returns decline monotonically until the end of the three year holding period, but overall still generate positive returns for the first two years after going public. Benchmark returns also increase on average until 300 trading days after the IPO and decline thereafter, which could suggest a shift from a hot to a cold market period. Thus, overall we find strong evidence that venture capital-backed IPOs generated positive returns for the investor during the first day of trading and positive returns, although marginally declining, for the first two years after going public.

[Insert Figures 4a and 4b about here]

[Insert Table 2 about here]

Although investors are usually interested in their realized returns (BHR), there are always alternative investment opportunities available so that it is important to analyze the long-run performance, i.e. the excess returns relative to a stock market index. We therefore explore the performance of venture capital-backed IPOs for a period of up to three years after going public. The empirical results suggest that venture capital-backed IPOs outperform an appropriate benchmark by nearly 10% for the first year of trading (see Figure 4b). Moreover, for the first year of trading the abnormal returns are significantly different from zero. This is indicated in Panel A of Table 2. Thereafter, the outperformance decreases, but venture-backed IPOs still provide higher returns than the benchmark for the first 18 months following the IPO.

One explanation often given in the literature is that venture capitalists are able to time the market and exit from their portfolio companies when valuations are highest. Another explanation is that the venture capital exit provides a negative signal to the market that is either due to overvaluation or due to a reduction in advising and monitoring activities. The argument for the latter case is that the venture capitalist is replaced by another investor that may be less sophisticated and less engaged in the monitoring or governance activities. Consequently, the operating and financial performance of the IPOs deteriorates subsequent to the VC exit. To provide empirical evidence for either argument requires a more detailed analysis that is left for future research.
5. IMPACT OF FIRM SIZE, STOCK MARKET SEGMENT, AND STOCK MARKET CYCLE

For the entire sample period (1996-2010), the venture-backed initial public offerings generate a positive return and a positive performance at least for some time interval after the IPO. Nevertheless, it seems interesting to analyze whether certain firm characteristic have an additional positive or negative effect on raw returns and on abnormal returns (performance). For this, we first investigate whether the market segment on which the IPO is listed may be of importance and have an impact on the magnitude of returns and performance. For this we analyze the IPOs that are listed on main markets in more detail (5.1). In addition, we investigate the impact of firm size in that we analyze the returns and performance of venture-backed IPOs that have a market value of assets of more than 100 million at the time of the IPO or 100 million in book value of assets one year after the IPO (5.2). As already mentioned, our empirical analysis covers two complete stock market cycles and IPO waves. It is therefore of interest whether there exist substantial return and performance differences between these two market periods. Because these periods may also differ with respect to growth expectations and optimism, we include underpricing in our analysis. The initial return or underpricing aspect is important for venture capital firms that already were invested in the company before the IPO and do not sell their stake immediately at the time of the IPO in the primary market.

5.1 Impact of Market Segment on Performance

To assess the relationship between the listing segment and the long-run performance of IPOs, we use data from the NYSE/Euronext, London Stock Exchange (LSE), Nasdaq/OMX, SIX Swiss Exchange and Deutsche Börse (DBAG) to classify an IPO according to whether it went public in the main market segment with potentially stricter listing rules and more severe disclosure requirements or in junior market segments with less regulation and monitoring. As we do not have information for all IPOs whether the respective listing segment is classified as “Main” or “Junior”, our sample size reduces to 340 venture-backed IPOs. In the rest of this section only the results for the main market segment are presented.

[Insert Figures 5a and 5b about here]

For the return analysis (BHR) we find that IPOs that are listed in the main market segment generate a rate of return of about 20% during the first year after going public and
then continue to generate positive returns for investors that got shares allocated at the time of the IPO (see Figure 5a). Towards the end of the two year period, the return is about 10% and declines to around zero percent during the last 6 months of the 3 year period. When alternative investment opportunities - as measured by the stock market index - are included in the analysis the performance of main market venture-backed IPOs reaches about 10% at the end of the first year and then remains positive until the middle of the second year after the IPO as illustrated in Figure 5b. Panel B of Table 2 shows that the abnormal returns are significantly different from zero until 250 trading days or one year after the IPO. Getting closer to the end of the three year investment period, the abnormal returns are marginally negative with about -2%. Thus, venture-backed IPOs that went public on a main market segment in Europe generate attractive returns for nearly all of the first three years after going public. On a relative basis, these IPOs also outperform a stock market index for more than the first two years. Consequently, investing in venture-backed IPOs should result in positive returns and an outperformance for the investor for an extended time period after going public.

In the next section we analyze the impact of the firm size on performance and again expect significant differences. However, we need to be aware of the fact that going public on main markets and higher market and higher book values may be proxies for similar IPO characteristics.

5.2 Impact of Size on Performance

Given the usual valuation and asset pricing models used in finance and investments, there is sufficient empirical evidence that smaller firms perform differently than larger firms (Fama and French, 1993, 2008; Bessler, Holler and Seim 2010). In the case of IPOs, we may expect that larger IPOs are more successful and therefore outperform smaller IPOs. Therefore, we divide our sample in small and large IPOs by using different size proxies. We use either EUR 100 million in Market Value at the time of the IPO or EUR 100 million in Assets at the end of the first year after the IPO. In our more detailed analysis we concentrate only on the larger IPOs. The empirical evidence suggests that size has a positive impact on performance in that larger IPOs – independent of how size is measured – have higher returns and a superior outperformance compared to the full sample for some time period after the IPO.

[Insert Figures 6a and 6b about here]
For the return analysis (BHR) we find that larger IPOs generate a rate of return of up to 20% during the first year after going public. The return at the end of the first year is about 15%, and these IPOs continue to generate positive returns for investors that invested early on. After two years, the returns decline to about 5% and become negative for the last 6 months of the 3 year period. However, when the stock market index is included in the analysis, the performance of larger venture-backed IPOs reaches a maximum of 15% and is nearly 10% at the end of the first year which is significantly different from zero (Panel C of Table 2). Throughout the second year, the performance stays positive and fluctuates around 5% until the middle of the second year after the IPO. Closer to the end of the three year investment period, the abnormal returns are getting nearer to zero which means that the investor would have earned the same rate of return by investing either in the portfolio of IPOs or in the stock market index. Thus, the investor cannot generate an outperformance, but also does not suffer any losses if he stays invested until three years after the IPO.

When size is measured in terms of the book value of assets at the end of the first year after going public, the returns for the investor are even better. At the end of the first year, the returns reach more than 20% and decline marginally, but reach 20% again at the end of the second year. They decline during the last year, but the investor still generates a rate of return of about 10% at the end of the three year period. When abnormal returns or the performance is investigated, the results suggest that the performance increases during the first year up to significant 15% (Panel D of Table 2) and then fluctuates between 10% and 15% for the remainder of the three year period, and finally ends up at 10% at the end of the three year period. Overall, we find an impressive performance for this subgroup of IPOs.

When size is measured in terms of the book value of assets at the end of the first year after going public, the returns for the investor are even better. At the end of the first year, the returns reach more than 20% and decline marginally, but reach 20% again at the end of the second year. They decline during the last year, but the investor still generates a rate of return of about 10% at the end of the three year period. When abnormal returns or the performance is investigated, the results suggest that the performance increases during the first year up to significant 15% (Panel D of Table 2) and then fluctuates between 10% and 15% for the remainder of the three year period, and finally ends up at 10% at the end of the three year period. Overall, we find an impressive performance for this subgroup of IPOs.

5.3. Analysis of the Performance of IPOs in different market periods

So far we have analyzed the performance of venture-backed IPOs for the entire period from 1996 to 2010, although there is empirical evidence indicating that there are some differences between the “new economy” period and the period thereafter. Thus, it seems important to investigate the two sub-periods from 1996 to 2003 and from 2003 to 2010 separately in order to better understand the differences between these two periods and explore whether some observations of the so called “IPO crisis” in the US are also observable in Europe. Hence, a more detailed analysis of these two periods may offer additional insights into the performance characteristics of venture backed IPOs.
The first period covers the time interval from 1996 to 2003 and is best characterized as the “new economy” period or the “high technology bubble” period. During this time frame, the number of IPOs as well as the stock market indices increased dramatically (Figure 1), indicating a new economic environment or an overly optimistic outlook on future growth opportunities. This hot issue period came to an abrupt halt in 2001, turning into a cold issue period, which resulted in a substantial decline in share prices and IPO activity during the following two years. During the second period, which began in 2003 and can also be classified as a hot issue period until 2007, stock prices as well as IPO issuing activity increased to an even higher level than during the first period, but then collapsed again with the beginning of the current financial crisis in 2007. During the next 3 years, which is the second cold issue period, stock prices strongly declined and new initial public offerings became a very rare event. Thus, the entire period is best characterized as two hot and two cold issue periods which together form two complete stock market cycles and IPO waves.

[Insert Figures 7a and 7b about here]

The returns for these two periods are presented in Figures 7a and 7b. In Figure 7a the situation of an investor is graphed that bought shares on the first day of trading after the IPO in the secondary market, whereas Figure 7b represents the return of an investor that got shares allocated in the primary market at the offer price or was already invested in the firm prior to the IPO. These are, for example, early stage investors such as venture capital firms. Given the positive and substantial underpricing in the first period and some but lower underpricing in the second period, the returns are higher for this early investor type at least during the first year after the IPO.

An analysis of the returns for the first “new economy” period reveals immediately the highly positive returns of about 20% during the first year and the decline thereafter (Figure 7a). In fact, the returns are positive for nearly all of the first 2 years, but then turn negative later on. If the underpricing is included into the return calculation, returns for an early stage investor increase and reach a relatively high level of 35% after 3 months and then fluctuated between 30% and 35% for the rest of the first year. The intermediate declines and rebounds may be caused by the expiration of various lock-up periods, which may have been different in each country, but also with different stock market return behavior in different countries. Thereafter, returns decline steadily but stay positive for up to the end of the three year period analyzed in this study. Thus, investors such as venture capital firms that got involved with the IPO firm earlier on generated, on average, a positive return for up to three years after the IPO.
Returns for the second period are lower especially during the first year, reaching a maximum of 15% at the end of the first year. Subsequently, they are higher than the returns during the first period and stay positive for up to two years and then turn negative. The returns including the underpricing are obviously higher and reach about 20% at the end of the first year, but they are much smaller than the returns for the first period due to the much lower initial returns. It appears that investors were less optimistic during the second period or had learned their lessons from the first period. In the long run, however, there is no difference between the return to investors in both periods, although the returns for the second period turn negative at the very end. Thus, the major differences between the two periods is that investors were less optimistic during the second period, causing initial and first year returns to be lower than during the first IPO wave. However, in the long-run, the performance for both cases, with and without underpricing, is quite similar suggesting that in the long-run returns for venture-backed IPOs are similar during both periods. Thus, investing in venture capital-backed IPOs could evolve into a profitable investment strategy for investors.

6. COMPARISON OF VENTURE-BACKED AND NON VENTURE-BACKED IPOS

To get a better understanding of the contribution of venture capitalists to the success of their portfolio companies, we compare the long-run performance of the group of venture-backed IPO to a large group of non venture-backed IPOs. The data is from Thomson One and meets the same selection criteria as the sample of venture-backed IPOs (see section 3.1). In particular, we compare the long-run performance (BHAR) of venture-backed IPOs to non venture-backed IPOs for listings on main markets, for IPOs with market values larger than EUR 100 million at time of going public (offer date), and for IPOs that have book values larger than EUR 100 million at the end of the first year after being public. These analyses allow us to get detailed insights on the ability of venture capitalists to contribute to and to certify the value of their portfolio firms, which should ultimately result in a superior performance in the secondary market. We start our analysis with IPOs that are listed on main markets. The results are graphically presented in Figure 8, while summary statistics are provided in Panel A of Table 3.

[Insert Figures 8 and Table 3 about here]
In Figure 8, the blue solid line shows the performance of venture-backed IPOs, while the red dashed line illustrates the performance of non venture-backed IPOs. Clearly, Figure 8 provides evidence of the outperformance of venture-backed IPOs that are listed on main markets relative to the performance of non venture-backed IPOs. In fact, the performance differences between venture-backed and non venture-backed IPOs on main markets are a substantial 7.41% and 7.27% after 500 and 750 trading days, respectively. This first evidence is supported by the following analysis in which we differentiate venture-backed and non venture-backed IPOs by their market value at the offer date. Again, for larger IPOs, i.e. companies with market values above EUR 100 million at the offer date, venture-backed IPOs exhibit a superior performance in comparison to non venture-backed IPOs. This evidence is illustrated in Figure 9 and presented in Panel B of Table 3.

[Insert Figure 9 about here]

Moreover, the performance differences between these two groups of IPOs become even larger in magnitude and statistically significant, when compared to the outperformance of venture-backed IPOs on main markets. Panel B of Table 3 indicates considerable performance differences as high as 16.00% and 18.30% for 500 and 750 trading days, respectively. Moreover, when size is measured in terms of the book value of total assets at the end of the first year, the results do not change but remain robust. Although we lose a significant number of IPOs for this analysis due to missing accounting data, the outperformance of larger venture-backed IPOs holds in that the performance difference compared to non venture-backed IPOs amounts to significant 21.11% and 17.08% for 500 and 750 trading days after the IPO, respectively. This result is illustrated in Figure 10 and is presented in Panel C of Table 3.

[Insert Figure 10 about here]

Overall, including non venture-backed IPOs as a control group strengthens the empirical evidence that venture-backed IPOs are a profitable investment opportunity for investors. In comparison to the results in section 5 where the stock market index is used as the benchmark, the outperformance of venture-backed IPOs relative to non venture-backed IPOs reveals the significant contribution of venture capital firms to the success of start-up companies. For the groups of large IPOs and those listed on a main market segments in Europe, the results support the theories that venture capitalists possess superior abilities with
respect to screening, monitoring, consulting and value creation. Ultimately, this all leads to a superior long-run performance of their portfolio companies.

7. CONCLUSION AND OUTLOOK

The objective of this study is to analyze the performance of venture capital-backed initial public offerings (IPOs) in Europe for the period from 1996 to 2010. Covering two complete stock market cycles and IPO waves, we analyze first the magnitude of the underpricing and then the long-run return and performance behavior for the entire period. To gain additional insights into the impact of certain market and firm characteristics, we group the IPO firms according to certain attributes. A more detailed analysis is then provided for the main market segments and larger IPOs. In addition, we separate the sample into the two sub-periods from 1996 to 2003 and from 2003 to 2010 in order to explore whether significant performance differences developed over time. Finally, the sample of venture capital-backed IPOs is compared to a larger control group of non venture capital-backed IPOs to highlight the contribution of venture capital to a company’s success and performance.

The empirical findings provide significant evidence that venture capital-backed IPOs generate positive returns for a specific time period subsequent to the IPO. In fact, early stage investors such as venture capitalists that are already invested in the company prior to the IPO, profit first from high initial or first day returns (underpricing) and second from high positive returns during the first year after going public. The same holds for an investor who got shares allocated at the time of the IPO. Interestingly, investments in IPOs generate positive returns for investors for nearly three years after going public. An investor who bought shares in the secondary market just following the IPO could also profit from share price increases during the first year of trading. Such an investment even generates positive returns for up to two years before returns become negative.

Further analyses of specific sub-groups reveal that IPOs listed on main markets provide positive returns and positive abnormal returns (performance) for up to two years after going public. The returns for larger IPOs with market values above EUR 100 million at the time of the IPO and above EUR 100 million in book values at the end of the first year are also positive for the first three year period after going public. In addition, the group of venture capital-backed IPOs significantly outperforms the non venture capital-backed IPO group for companies listed on the main market segment and for larger IPOs. We further document
differences between the two stock market cycles and IPO waves in that for the first period the underpricing and the first year returns are higher than for the second period. In the long run, there are no substantial performance differences between these two periods, suggesting that the higher underpricing and the higher first year returns were caused by an extremely positive market environment and overly optimistic growth expectations. Overall, this study provides empirical evidence that venture capital-backed initial public offerings in Europe generate positive returns and a positive performance for the 1996 to 2010 period.

REFERENCES


Weild, David and Edward Kim (2009), A Wake-up Call for America, Grant Thornton Capital Market Series.

Weild, David and Edward Kim (2010), Market Structure is Causing the IPO Crisis – and more, Grant Thornton Capital Market Series.
TABLES and FIGURES

Figure 1: Number of VC backed IPOs over time and European Stock Market Index

Figure 2: Number of VC backed IPOs by country where IPO is listed
Figure 3: Underpricing of VC backed IPOs according to year when IPO is listed
Figure 4a: Long-Run Performance of VC backed IPOs (BHR, blue solid line) and Market Index (red dashed line) – Whole Sample

Figure 4b: Long-Run Performance of VC backed IPOs (BHAR, yellow solid line): Whole Sample
Figure 5a:  Long-Run Performance of VC backed IPOs (BHR, blue solid line) and Market Index (red dashed line) – Main Market

Figure 5b:  Long-Run Performance of VC backed IPOs (BHAR, yellow solid line) and Market Segment – Main Market
Figure 6a: Long-Run Performance of VC backed IPOs (BHAR, blue solid line) according to IPO Market Value at offer date (MV) and Market Index (red dashed line) – Large IPOs

Figure 6b: Long-Run Performance of VC backed IPOs (BHAR, yellow solid line) according to IPO Market Value at offer date (MV) – Large IPOs
Figure 6c: Long-Run Performance of VC backed IPOs (BHR, blue solid line) according to Book Value of Total Assets after one year and Market Index (red dashed line) Large IPOs

Figure 6d: Long-Run Performance of VC backed IPOs (BHAR, yellow solid line) according to Book Value of Total Assets after one year – Large IPOs
Figure 7a: Long-Run Performance of VC backed IPOs (BHR) for the two IPO waves – Without Underpricing

Figure 7b: Long-Run Performance of VC backed IPOs (BHR) for the two IPO waves - Including Underpricing
Figure 8: Long-Run Performance (BHAR) of VC backed IPOs (blue solid line) and non-venture-backed IPOs (red dashed line) for the Main Market segment.

Figure 9: Long-Run Performance (BHAR) of VC backed IPOs (blue solid line) and non-venture-backed IPOs (red dashed line) for IPOs with a high Market Value at offer date (MV) – Large IPOs.
Figure 10: Long-Run Performance (BHAR) of VC backed IPOs (blue solid line) and non-venture-backed IPOs (red dashed line) for IPOs with a high Book Value of Total Assets after one year – Large IPOs
Table 1: Summary Statistics and Tests of Underpricing of VC backed IPOs

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>Median</th>
<th>Std. Dev.</th>
<th>Skew.</th>
<th>tsa</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Underpricing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole Sample</td>
<td>384</td>
<td>8.39%</td>
<td>0.74%</td>
<td>23.91%</td>
<td>5.02</td>
<td>12.28***</td>
<td>6.88***</td>
</tr>
<tr>
<td>Main Market</td>
<td>214</td>
<td>6.32%</td>
<td>0.71%</td>
<td>16.77%</td>
<td>3.91</td>
<td>8.03***</td>
<td>5.51***</td>
</tr>
<tr>
<td>Large – Market Value</td>
<td>235</td>
<td>9.32%</td>
<td>13.40%</td>
<td>26.66%</td>
<td>4.71</td>
<td>9.77***</td>
<td>5.36***</td>
</tr>
<tr>
<td>Large – Total Assets</td>
<td>131</td>
<td>6.54%</td>
<td>0.95%</td>
<td>19.53%</td>
<td>5.41</td>
<td>6.69***</td>
<td>3.83***</td>
</tr>
</tbody>
</table>

Table 2: Summary Statistics and Tests of Long-Run Performance (BHAR) of VC backed IPOs

<table>
<thead>
<tr>
<th>Trading Days</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Skew.</th>
<th>tsa</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Buy-and-Hold Abnormal Returns (BHAR)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel A: Whole Sample (n=365)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>7.53%</td>
<td>63.45%</td>
<td>3.18</td>
<td>2.42**</td>
<td>2.27**</td>
</tr>
<tr>
<td>250</td>
<td>8.44%</td>
<td>91.32%</td>
<td>3.46</td>
<td>1.87*</td>
<td>1.77*</td>
</tr>
<tr>
<td>500</td>
<td>-5.20%</td>
<td>102.13%</td>
<td>3.45</td>
<td>-0.78</td>
<td>-0.97</td>
</tr>
<tr>
<td>750</td>
<td>-6.34%</td>
<td>100.50%</td>
<td>2.87</td>
<td>-1.01</td>
<td>-1.20</td>
</tr>
<tr>
<td>Panel B: Main Market (n=200)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>6.25%</td>
<td>51.82%</td>
<td>3.59</td>
<td>1.91*</td>
<td>1.71*</td>
</tr>
<tr>
<td>250</td>
<td>9.08%</td>
<td>77.57%</td>
<td>3.64</td>
<td>1.82*</td>
<td>1.66*</td>
</tr>
<tr>
<td>500</td>
<td>2.40%</td>
<td>97.43%</td>
<td>3.14</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>750</td>
<td>-2.55%</td>
<td>100.69%</td>
<td>2.74</td>
<td>-0.27</td>
<td>-0.36</td>
</tr>
<tr>
<td>Panel C: Large - Market Value (n=222)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>11.69%</td>
<td>69.66%</td>
<td>3.01</td>
<td>2.73***</td>
<td>2.50**</td>
</tr>
<tr>
<td>250</td>
<td>9.62%</td>
<td>76.83%</td>
<td>2.48</td>
<td>1.97**</td>
<td>1.87*</td>
</tr>
<tr>
<td>500</td>
<td>4.17%</td>
<td>109.27%</td>
<td>3.42</td>
<td>0.59</td>
<td>0.57</td>
</tr>
<tr>
<td>750</td>
<td>-0.09%</td>
<td>107.69%</td>
<td>3.02</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Panel D: Large - Total Assets (n=127)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>6.60%</td>
<td>56.49%</td>
<td>3.89</td>
<td>1.36</td>
<td>1.31</td>
</tr>
<tr>
<td>250</td>
<td>15.22%</td>
<td>71.54%</td>
<td>1.92</td>
<td>2.50**</td>
<td>2.40**</td>
</tr>
<tr>
<td>500</td>
<td>15.86%</td>
<td>113.76%</td>
<td>3.55</td>
<td>1.66*</td>
<td>1.57</td>
</tr>
<tr>
<td>750</td>
<td>10.76%</td>
<td>100.42%</td>
<td>2.83</td>
<td>1.20</td>
<td>1.21</td>
</tr>
</tbody>
</table>
Table 3: Summary Statistics and Tests of Long-Run Performance (BHAR) of VC backed IPOs vs. non VC backed IPOs

<table>
<thead>
<tr>
<th>Panel A: Main Market</th>
<th>Buy-and-Hold Abnormal Returns (BHAR)</th>
<th>Mean VC backed (n=200)</th>
<th>Mean non-VC (n=723)</th>
<th>Difference in Mean</th>
<th>t-value</th>
<th>Mean Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trading Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>6.25%</td>
<td>5.12%</td>
<td>1.13%</td>
<td>0.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>9.08%</td>
<td>2.55%</td>
<td>6.53%</td>
<td>1.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>2.40%</td>
<td>-5.01%</td>
<td>7.41%</td>
<td>0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>750</td>
<td>-2.55%</td>
<td>-9.82%</td>
<td>7.27%</td>
<td>0.89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Large - Market Value</th>
<th>Buy-and-Hold Abnormal Returns (BHAR)</th>
<th>Mean VC backed (n=222)</th>
<th>Mean non-VC (n=756)</th>
<th>Difference in Mean</th>
<th>t-value</th>
<th>Mean Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trading Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>11.69%</td>
<td>9.09%</td>
<td>2.60%</td>
<td>0.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>9.62%</td>
<td>4.54%</td>
<td>5.08%</td>
<td>0.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>4.17%</td>
<td>-11.83%</td>
<td>16.00%</td>
<td>1.95*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>750</td>
<td>-0.09%</td>
<td>-18.39%</td>
<td>18.30%</td>
<td>2.32**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel C: Large - Total Assets</th>
<th>Buy-and-Hold Abnormal Returns (BHAR)</th>
<th>Mean VC backed (n=127)</th>
<th>Mean non-VC (n=435)</th>
<th>Difference in Mean</th>
<th>t-value</th>
<th>Mean Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trading Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>6.60%</td>
<td>8.75%</td>
<td>-2.15%</td>
<td>-0.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>15.22%</td>
<td>7.59%</td>
<td>7.63%</td>
<td>1.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>15.86%</td>
<td>-5.25%</td>
<td>21.11%</td>
<td>1.93*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>750</td>
<td>10.76%</td>
<td>-6.32%</td>
<td>17.08%</td>
<td>1.71*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>