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IMPACT OF VALUATION OF COMPANIES ON THE WARSAW STOCK EXCHANGE ON DIVESTMENT THE LEVEL OF VENTURE CAPITAL THROUGH IPOS

Introduction

Venture capital has to exit their investment after a certain period of time. This paper analyses the exit channel initial public offering (IPO). It concentrates on the explanation of timing of the IPO. The venture capitalist maximizes their profit which equals the revenues from selling the cost minus initial investment and other costs. A venture capitalist may decide to take a company public only under the condition that it has reached some economic goals. In other cases it can be sold to strategic investor or liquidated. A longer venture capitalist's participation in a firm (later IPO) may increase its value while also increasing costs for the venture capitalist and dilute rate of return. Due to this active involvement, the venture capitalists knows the type of firm and the kind of project he finances before potential new investor do. This information asymmetry is noticed with an underpricing of IPO. This paper examines the level and number of venture capital backed IPO at Warsaw Stock Exchange in relation to P/E multiple in period of 2000-2012.

1. IPO as preferred exit channel for venture capital funds

The life of venture capital fund is limited. After this period, the capital providers want to harvest the revenues from their investment in venture capital funds and evaluate the venture capitalist. Therefore, the investment period of venture capital is relatievely short, and vary between 5-7 years for periods with

stable conditions and 8-12 years for periods which are characterized by higher volatility at the financial markets. The returns from their investments are the capital gains raised after successful built-up of the business rather than regular dividend returns. Hence, the development of a viable venture capital market essentially depends on existence of a suitable exit routes, which provide opportunities for high returns. Venture capitalist offer a combined provision of combined provision of capital and managerial experience. They monitor strategic and managerial decisions and tend to take an active role in advising the firm and providing it with valuable business contracts.

IPO s are generally considered to be the most profitable exit routs. Several empirical papers confirm the positive role of a active IPO market on venture capital activity[1]. IPO is the most powerful driver of venture capital investing and increase in IPO activity is the main reason for the dramatic growth in venture capital commitments, especially in US market[2].

Table 1

Share of venture capital backed IPO at US market over 2000-2012

Year	IPO VC	Number of IPO	Share in %	Value of VC backed IPO	Value of IPO	Share in %
2000	242	446	54,26%	25,4	108,2	23,48%
2001	37	85	43,53%	3,4	41,3	8,23%
2002	22	81	27,16%	2,4	25,4	9,45%
2003	29	60	48,33%	2,1	15,2	13,82%
2004	94	286	32,87%	11,1	39	28,46%
2005	57	285	20,00%	4,4	31,4	14,01%
2006	57	187	30,48%	5,3	40,4	13,12%
2007	86	172	50,00%	10,32	46,4	22,24%
2008	6	31	19,35%	0,47	24,1	1.92%
2009	8	12	66,67%	1,642	19,2	8,55%
2010	9	52	17,31%	7,6	36,3	20,93%
2011	51	67	76,12%	9,8	26,4	37,12%
2012	49	60	81,67%	21,4	42,6	50,02%

Source: National Venture Capital Association Yearbook 2013.

[1] P. Gompers, A. Kovner, J. Lerner, D. Scharfstein: *Venture Capital Investment Cycle, The Impact of the Public Markets*. „Journal of Financial Economics" 2008, Vol. 87, p. 1-23.

[2] H. Barry, Ch. Muscarella: *The Role of Venture Capital in the Creation of Public Companies, Evidence of Going Public Process*. „Journal of Financial Economics", Vol. 27, Issue 2, p. 447-471.

In practice it could be observed that venture capital firms go public at different times in the firms life and after being financed by venture capital for different time horizon.

2. Lock up periods and its influence on IPO process

Venture capitalist usually exit only partially at the IPO and commit themselves to hold part of their shares for several months after the IPO (lock-up). As an active investors, venture capitalists know the young firms which they finance better than the potential new investors. The timing and extent of the IPO influences the new investor's assessment of the quality of the firm. The younger the firms are, the higher the information asymmetry is between the venture capital and new investor. There is also conflict between entrepreneur and venture capitalist involved which deal with the choice of the optimal exit channel[3]. Venture capital model is to add value to the growth of the company. One of the differences between venture capital funds and the new investor who but the firm at the IPO is that the former offer not only money but also managerial support that enhances the value of the high-quality firm. Since the IPO reduces the venture capitalist's stake in the firm, incentives to be active in the management of the company are diminished after IPO. The potential value added from the non-monetary contribution by the venture capitalist depends on the firm type (high or low quality) and the kind of project. An important issue is that the venture capitalist's option or sometimes obligation is to retain some shares beyond the IPO – lock up period. Fund hold their shares in order to signal to the new investors that the firm is of high quality. There are several papers that took research on that issue. Their main outcomes are:

- firms with more consulting incentives projects will be finance longer by venture capital than firms with less consulting incentives Project; this outcome may help to explain different lengths of financing periods in different industries,
- the high quality of young firms with a short venture capital financing period will be signaled through a lock-up; since lock-up is a typical feature of almost every IPO in the US and most European markets, the fact that it is used will in practice have no signalling function; further more, the length and extent of the lock-up can be considered the signalling device,

[3] B. Black, R.J. Gilson: *Venture Capital and the Structure of Capital Markets: Banks Versus Stock Markets*. „Jorunal of Financial Economics" 1998, Vol. 47, Issue 3, p. 243-277.

– after the expiration of the lock-up period, the information asymmetry between the venture capitalists and the new investors is resolved; so prediction concerning the length of the lock-up period is: the greater uncertainty, the longer the contracted lock-up periods[4].

The extent of the lock up and the share price depend on the characteristics of the firm:
– the higher the extent of the non-monetary contribution by the venture capitalists, the lower the fraction of shares retained and the higher the price per share,
– the higher the investment demand (size) of the firm and the greater profitability, the lower the fraction sold and the higher the price per share.

3. PE ratio at the Warsaw Stock Exchange and its influence on the level of venture capital divestments

PE ratios (defined as ratio between price of an equity share and earning per share) been considered as an important indicator of the state of stock prices, both at an aggregate (index of stock prices) and individual stock level. Current high (Low) PE ratios are seen as precursor to decrease (increase) in future stock prices. Alternatively, the spread between bond yields and earning yields (inverse of PE ratio) is used to predict share price movement, as the level of relative yield would indicate inflow/outflow of funds between bond and equity markets. Most of such attempts are, however, aimed at predicting future prices. Our approach is mainly analytical and focused on divestment of venture capital industry in Poland. Much of the real-world discussion of stock market valuation concentrates on the firm's price-earnings multiple, the ratio of price per share to earnings per share, commonly called the P/E ratio. In fact, one common approach to valuing a firm is to use an earnings multiplier. The value of the stock is obtained by multiplying projected earnings per share by a forecast of the P/E ratio. Although forecasting the P/E multiple is difficult as P/E ratios vary across industries and over time, our discussion of stock valuation provides some insight into the factors that ought to determine a firm's P/E ratio. Observation suggests the P/E ratio might serve as a useful indicator of expectations of growth opportunities. When future growth opportunities dominate the estimate of total value, the firm will command a high price relative to current earnings. Thus a high P/E multiple indicates that a firm enjoys

[4] T. Tykova: *The Decision of Venture Capitalists on Tming and Extent of IPO*. ZEW Discussion Papers, No. 03-12, p. 24.

ample growth opportunities or in our case possibility to obtain high valuation during IPO process. Clearly, the differences in expected growth opportunities are responsible for differences in P/E ratios across firms. The P/E ratio actually is a reflection of the market's optimism concerning a market and a firm's growth prospects. In their use of a P/E ratio, analysts must decide whether they are more or less optimistic than the market. If they are more optimistic, they will recommend buying the stock. When a firm has good investment opportunities, the market will reward it with a higher P/E multiple if it (exploits those opportunities more aggressively by plowing back more earnings into those opportunities. P/E ratios frequently are taken as proxies for the expected growth in dividends or earnings. In fact, a common Wall Street rule of thumb is that the growth rate ought to be roughly equal to the P/E ratio. The importance of growth opportunities is most evident in the valuation of star-up firms which are in venture capital concerns. For example, in the dot come boom of the late 1990s, many companies that had to yet to turn a profit were valued by the market at billions of dollars. The perceived value of these companies was exclusively as growth opportunities. Of course, when company valuation is determined primarily by growth opportunities, those values can be sensitive to re-assessment of such prospects which is an issue for venture capital backed IPOs. When the market became more skeptical of the business prospects of most Internet retailers at the close of 1990s, that is, as it revised the estimates of growth opportunities downward, their stock prices plummeted. No description of P/E analysis is complete without mentioning some of its pitfalls. First, consider that the denominator in the P/E ratio is accounting earnings, which are influenced by somewhat arbitrary accounting rules such as the use of historical cost in depreciation and inventory valuation. In times of high inflation, historic cost depreciation and inventory costs will tend to underrepresent true economic values, because the replacement cost of both goods and capital equipment will rise with the general level of prices. P/E ratios have tended to be lower when inflation has been higher. This reflects the market's assessment that earnings in these periods are of "lower quality", artificially distorted by inflation, and warranting lower L/E ratios.

Another confounding factor in the use of P/E ratios is related to the business cycle. The P/E ratio reported in the financial pages of the newspaper, by contrast, is the ratio of price to the most recent past accounting earnings. Current accounting earnings can differ considerably from future economic earnings. Because the ownership of stock conveys the right to future, as well as current

earnings, the ratio of price to most recent earnings can very substantially over the business cycle, as accounting earnings and the trend value of economic earnings diverge by greater and lesser amounts.

The price-earnings ratio is an example of a comparative valuation ratio. Such ratios are used to assess the valuation of one firm versus another based on a fundamental indicator such as earnings. For example, an analyst might compare the P/E ratios of two firms in the same industry to test whether the market is valuing one firm "more aggressively" than the other. This might not be appropriate ratio to compare for young tech firms supported by VC funds so other such comparative ratios are commonly used:

1. Price-to-Book Ratio – this is the ratio of price per share divided by book value per share. As we noted earlier in this chapter, some analysts view book value as a useful measure of the firm value and therefore treat the *P/B* ratio as an indicator of how aggressively the market values the firm.

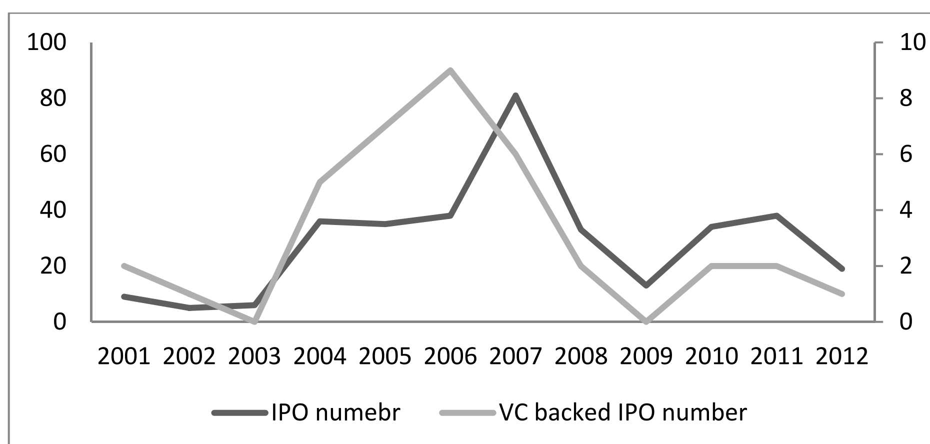
2. Price-to-Cash Flow Ratio – earnings as reported on the income statement can be affected by the company's choice of accounting practices, and thus are commonly viewed as subject to some imprecision and even manipulation. In contrast, cash flow – which tracks cash actually flowing into or out of the firm – is less affected by accounting decisions. As a result, some analysts prefer to use the ratio of price to cash flow per share rather than price to earnings per share (P/E). Some analysts use operating cash flow when calculating this ratio; others prefer "free cash flow", that is, operating cash flow net of new investment.

3. Price-to-Sales Ratio – many start-up firms have no earnings. As a result, the price-earnings ratio for these firms is meaningless. The price-to-sales ratio (the ratio of stock price to the annual sales per share) has recently become a popular valuation *benchmark* for these firms. Of course, P/S ratios can vary markedly across industries, since profit margins vary widely.

The experience of venture capital firms in Poland with respect to exit opportunities has been vastly very positive. Evidence show that, on average, a public listings of shares is a more profitable exit rout for venture capital than a sale to strategic investor – a 3.5 cash-on-cash multiple for public listings versus a 2.5 cash on cash multiple for trade sale[5]. This outcome may suggest that strategic investors are unwilling to overpay for acquired business and this may also explain asymmetry of information about certain type of industry between

[5] D. Klonowski: *Private Euqity in Poland after Two Decades of Development: Evolution, Industry Drivers, and Returns*. „Venture Capital: An International Journal of Entrepreneurial Finance" 2011, Vol. 13, No. 4, p. 295-311.

private investors and venture capitalists. It is known that public markets in Poland have experienced extraordinary returns over the period of last two decades with returns particularly concentrated between 2003 and 2006. Strong increase across all markets indexes reflect a combination of P/E multiple expansion, improved operating results for listed firms and strong demand for new listings from institutional investors such as venture capital funds. Venture capital funds have benefited by conducting quite huge number of IPO of their portfolio companies at quite high valuations. This show some kind of asymmetry of information between venture capitalists and other investors which are willing to pay for the stocks at inflated valuations on the basis of economic cycles or market anomalies. At Polish market venture capital played as they would have more information than other investors. They managed to sell their shares at the high valuation. Cyclical and sharp upward movements in public market in Poland have tended and exaggerate business valuations. Strong public market supports efficient, fast and liquid exit for venture capital industry. Venture capital firms in Poland have achieved 37 IPO over 2001-2012 through listing on WSE and this number represent more than 10% of all firms listed on the exchange. When we analyse the number of VC backed IPO it could be pointed that funds use high valuations to conduct their IPO.



Left scale: non VC backe IPO number, right scale VC backed IPO number

Fig. 1. Number of VC backed IPO vs non VC backed IPO transactions conducted on WSE over 2001-2012

Source: WSE and European Venture Capital Association Yearbooks 2000-2013.

Correlation of IPO numbers between VC and other transaction is quite high and is a little above 65% level. Most of the transactions conducted by VC funds (59%) accounted for the period of 2005-2007 when WSE witnessed highest valuations and lowest P/E ratio which was noted in 2006.

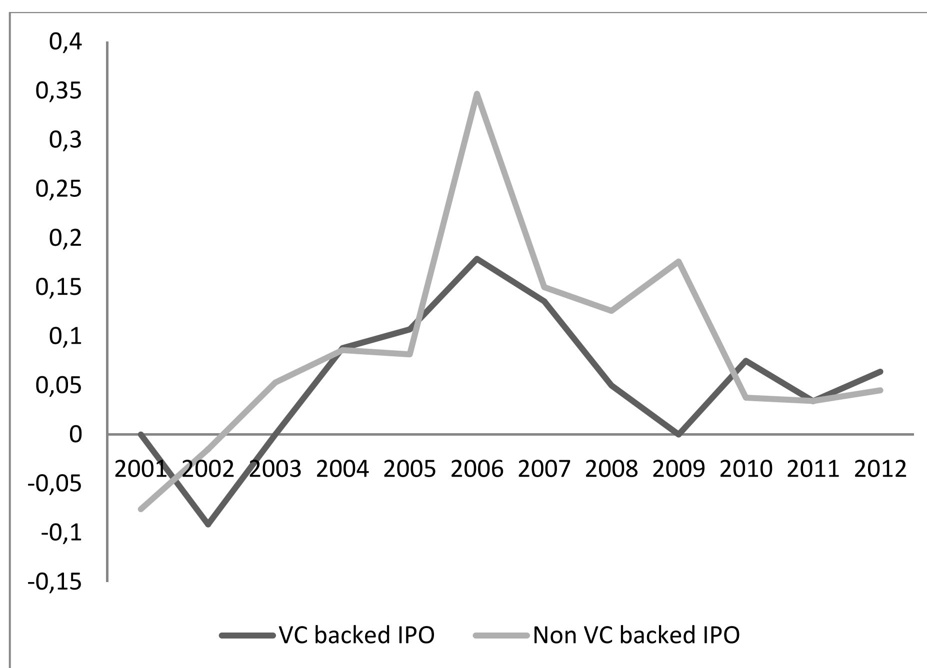
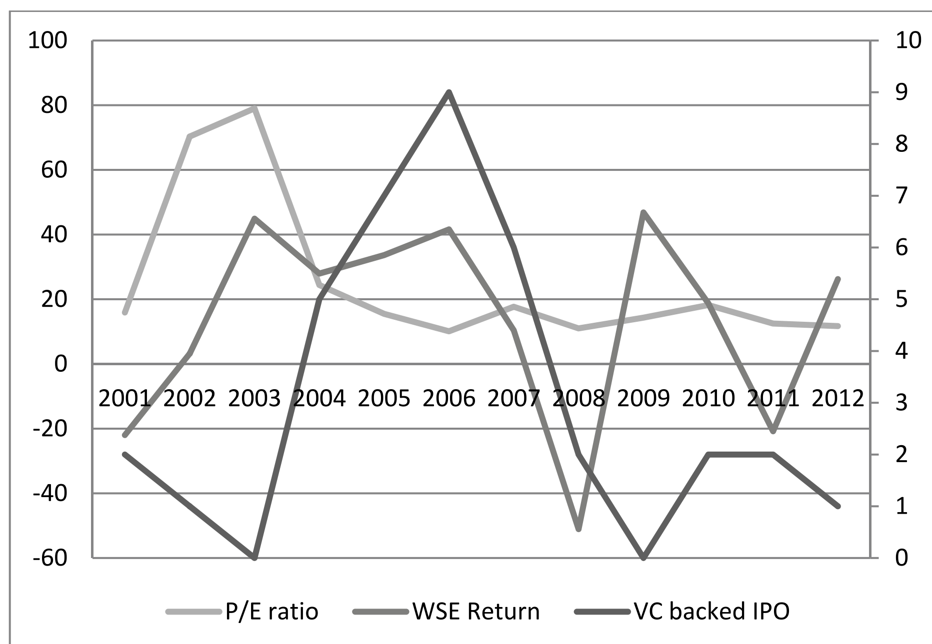


Fig. 2. Level of underpricing of VC backed vs. non VC backed IPO transactions over 2001-2012 conducted on WSE

Source: Calculation based on data form WSE.

The Polish market VC backed IPOs were less underpriced than other IPOs. This results support theories that claim that VC funds reduce information assymetry between IPO investors and pre-IPO owners of the company or certification role of the VC funds. The reduction of the information assymetry or the certification "effect" must be substantial bearing in mind that in general the level of underpricing is higher during the bull market and this is also the time when PE/VC funds carried most of the IPOs.



Left scale: P/E ratio and WSE Returns, right scale VC backed IPO number

Fig. 3. PE ratio, WSE returns vs VC backed IPOs number on WSE over 2001-2012

Source: Calculation based on WSE data.

Analysing the level of P/E we could observed that in 2006 WSE witnessed lowest P/E ratio level and highest number of VC backed IPO and one of the highest returns of WIG. In other years we observe negative correlation between P/E level and number of VC backed IPO. This show that the P/E level is also used by venture capitalist in taking the decisions about exit through IPO. Empirical results indicate that exit levels by the most experienced venture capital firms are most responsive to public market signals. Exit levels are very sensitive to public market ratios. Venture capitalists perform better in "hot market" which could be observed on the level of underpricing of IPOs transactions. These findings suggests that an important component in volatility in venture capital investment activity is driven by volatility of fundamentals. Cycles in venture capital are driven by overreaction to public markets signals or change in the industry fundamentals.

Conclusions

We can observe that venture capital in Poland conduct their exit transaction via IPO with great response to the public markets and its ratio like P/E. Venture capital firms increase their activity during market booms and they report lower underprcing than non VC backed IPO during that periods. Shift in public markets provide information to venture capital funds and its influence their investment decisions. Venture capital industry is based on well functioning exit markets, especially IPO where it makes high returns. The IPO showed to be the best means of exit for VCs in Poland since it enables them to make profit from enthusiasm of the investors towards this companies in particular "hot periods". This exit allows VCs to benefit from the new investment opportunities by developing the funds collected at the time of IPOs. All main market multiplies influence the decision on IPO process. Understanding whether the patterns above continue to hold during that most dramatic of cycles is an important question for future research to examine.

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Warsaw Stock Exchange Data.

WPŁYW POZIOMU WYCENY SPÓŁEK KAPITAŁOWYCH NA GPW W WARSZAWIE NA POZIOM DEZINWESTYCJI FUNDUSZY *VENTURE CAPITAL* ZA POMOCĄ TRANSAKCJI IPO

Streszczenie

Dezinwestycja jest ostatnim etapem procesu inwestycyjnego funduszy *venture capital*. Moment w jakim jest dokonywana zależy od wielu czynników w tym od sentymentu rynku oraz poziomu wycen spółek publicznych. Celem artykułu jest analiza wpływu poziomu stóp zwrotu oraz wskaźników rynku kapitałowego, w tym głównie wskaźnika P/E na poziom i liczbę dezinwestycji dokonywanych przez fundusze *private equity* oraz *venture capital* na rynku polskim w latach 1998-2012.