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## **Financial Investments and Insurance – Global Trends and the Polish Market**

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## **VENTURE DEBT FINANCIAL INSTRUMENTS AND INVESTMENT RISK OF AN EARLY STAGE FUND**

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**Summary:** As market research and data show, even that venture debt financing in Europe increased in last couple of years, for many venture capitalists this form of start-up investing is unknown. Fundraising difficulties in classic venture capital and the significant risk limiting role that debt financing plays in venture eco-system and financial markets in general suggest growing usage of this form of investment. One should expect venture debt as a percentage of venture capital in Europe to grow from ca. 6% to 10% – the level present in the UK. The paper offers a presentation of venture debt mechanism, debt and convertible instruments used in VC industry in Europe and tries to identify, describe and measure, if possible, risk associated with venture debt investment in comparison with classic venture capital investing. As a theoretical proof of the thesis about existence of venture debt specific financial market niche, required risk of return of venture debt is estimated with a use of implied credit spread.

**Keywords:** venture debt, venture capital, start-up financing, early stage fund risk.

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### **1. Introduction**

The main aim of this paper is to throw some light on the rationales of using still not very common outside of the United States of America and United Kingdom form of start-up financing – venture debt. Firstly the overall mechanism of venture debt is discussed, which is necessary to present the risk and return theoretical characteristics of venture debt. Lastly, the author is going to present average theoretical level of cost of capital delivered by venture debt investment funds. Characteristics of risk and return and implied cost of capital should then lead to a conclusion about the thesis of existence of a specific place on the financial market the venture debt has, which is not only to provide additional financing and anti-dilution mechanism [Ibrahim 2010] – venture debt financial instruments can also fill a funding gap in a certain market niche, meanwhile keeping a satisfactory investment result for venture lenders.

## 2. Venture debt financial instruments

Venture debt investment mechanism is basically based on the mix of debt and equity financial instruments, so the understanding of broadness of venture debt investments for the purpose of this article is closely similar to the view from the market perspective. Because of further discussion, the author would like to define venture debt as a broad form of investing in early stage companies using a mix of debt and equity financial instruments, in which the only difference in comparison to venture capital is the instruments used to provide funding and to redistribute gains and losses from portfolio company to the investor.

Venture debt is available for start-up and growth companies that do not have positive or persistent cash flows and/or significant assets ready to use as collateral. Because of that, banking sector is generally closed for them [Colombo, Grilli 2007]. Venture debt funds take more risks than the banks because they lend earlier and more than banks to such businesses. This means that venture lenders have to charge more for their capital – gains are distributed through debt returns (interest and/or additional fees) and equity upside (dividends, warrants, selling shares, preferred return, and basically any other capital gains that a venture capital firm would achieve).

The mix of instruments can be built out of [Ibrahim 2010; Schmidt 2003]:

### 1. Debt components:

- loans (financing mainly capital expenditures and inventory, interests lower than in debt-only financing, capital repayment postponed),
- bonds with different seniority, often with embedded options (described as an equity components),
- guarantees;

### 2. Equity components:

- shares (in general a minority position, often acquired at face value or below a price for pure equity position – purpose is to provide equity positions for a lender, not to raise capital),
- preferred shares,
- warrants,
- convertible bonds,
- rights to convert a loan into shares,
- rights to buy co-founders shares under certain business conditions,
- call options on a company shares, often embedded in a debt component.

There is no defined combination of the components. It varies depending on many determinants such as investment policy, law environment in investee country, possibilities of managing the risk of a particular deal, preference of a company co-founders, and many more.



### 3. Rationales for using venture debt

The best answer to the question why to use venture debt instead of venture capital is simply because of different risk & return characteristics. It offers different solutions and because of that, in some part of cases suits better than equity-only venture investment. The following part of the article will analyse those characteristics and conclude in what type of start-up investment there would be viable possibility to fund a start-up with venture debt.

#### 3.1. Return characteristics

The main reason why venture debt has unique return characteristics is acquiring gain by the investor twofold – from the debt, and the equity part of the investment. The return profile of the venture debt highly differs depending on the profitability of an investment. In the comparison with equity-only early stage investments, venture debt favours the investor in case of defaulted investment because of possible earlier partial capital repayment and/or collateral if present. On the other hand, in case of a successful investment, venture debt favours a start-up founder – because of a smaller equity position in a company held by the investor. The summary of return profiles of venture debt in comparison with venture capital is presented in Table 1.

**Table 1.** Return profiles of venture debt and venture capital

Scenario	Venture capital return (pure equity)	Venture debt return (debt and equity mix)	Relative venture debt performance (investor perspective)
Highly profitable VC investment IRR > 20%	Capital invested High equity gain	Capital invested Moderate equity gain Moderate interest gain	Lower return
Breakeven VC investment IRR = 0%	Capital invested	Capital invested Moderate interest gain	Slightly higher return
Defaulted VC investment IRR = -100%	100% loss	Partial capital repayment depending on recovery rate	Higher return

Source: [The British Private Equity and Venture Capital Association 2010].

Additionally, there is a common practice to include all rights for venture debt investor present in venture capital, which provide the ability to realize an equity return, such as tag along, drag along, preferred return provisions, etc.

Return profiles described above can be exemplified with a sample comparison of comparable equity-only venture and venture debt investments. Let us assume that

an early stage company needs to raise additional 1 million USD. Pre-money valuation is 2 million USD and founder's ownership is 75%. Let us consider two scenarios of raising needed capital:

A – Pure Equity Scenario, when 100% of capital is delivered in the form of equity – in result, the company reaches 3 million USD post-money valuation, founders give up 25% share and venture capital investor gets 33.3% of the company (1 million USD out of 3 million USD of post-money valuation).

B – Venture Debt Scenario, when 0.2 million USD is delivered as equity, 0.8 million USD is delivered in the form of a loan at 5% effective annual interest rate with 54 month capital repayment after 6-month grace period on capital repayment. To provide additional equity gain for the investor, there is an issuance of warrants on 10% of loan value. As a result the company reaches 2.28 million USD post-money valuation (2 million USD of pre-money valuation plus 0.2 million USD of new equity and 80 thousand USD in warrants), venture debt investor gets 12.3% of the company (including warrants), and founders give up only 9.2% of the company.

Let us assume that the company has 500 thousand USD in cash, and has negative cash flow of 100 thousand USD per month (excl. debt payments). In scenario A, a company will run out of cash in 15 months (1.5 million USD in cash including 1 million USD acquired with new equity consumed 100 thousands USD a month). In scenario B, just 1.5 month earlier. The reason for that is interests and capital repayments lowering cash flow of the company by 3.3 thousand USD in first 6 months and 16.6 thousand USD thereafter, leaving the company with ca. 64 thousand USD after 13 months. This is enough for the company to maintain its operations for about a half a month more. So in scenario B initial and raised cash is enough to support about 13.5 months of operations.

Then let us consider four possible outcomes of the investment after 1 year:

1. Bankruptcy of the company.
2. Break-even investment – no valuation change.
3. Increase in value of the company of 2 million USD.
4. Increase in value of the company of 7 million USD.

Then results of the investment for the investors would be as follows:

<b>1. Bankruptcy after 1 year</b>	Cash on cash [mln USD]	IRR
Scenario A – VC gets	0.00	–100.0%
Scenario B – VD gets	0.12 (interest and partial loan repayment)	–93.7%
<b>2. 3 mln valuation after a year (2.24 mln in VD)</b>		
Scenario A – VC gets	1.00 (33.3% × 3 mln)	0.0%
Scenario B – VD gets	1.11 (12.3% × 2.24 mln + loan and interest repayment)	11.8%

### 3. 5 mln valuation after a year (4.24 mln in VD)

Scenario A – VC gets	1.67 (33.3% × 5 mln)	66.7%
Scenario B – VD gets	1.36 (12.3% × 4.24 mln + loan and interest repayment)	37.2%

### 4. 10 mln valuation after a year (9.24 in VD)

Scenario A – VC gets	3.33 (33.3% × 10 mln)	233.3%
Scenario B – VD gets	1.97 (12.3% × 9.24 mln + loan and interest repayment)	100.3%

The main differences between scenarios include:

- Venture Debt scenario is less dilutive to founders.
- Valuations after a year in each case is lower in Venture Debt scenario by 0.72 million USD because outstanding debt and by 0.04 million USD because of interest paid).
- Cash burn in Venture Debt scenario is faster (which pace depends on debt instrument capital repayment intensity).
- Higher return for the investor in Venture Debt scenario at default and break-even outcome – result of the loan interest and partial repayment (0.12 million USD outcome for the VD investor in the bankruptcy scenario).
- Higher return for the investor in Venture Capital scenario at high increase in value outcomes – result of higher equity upside characteristic.
- Assumed recovery rate for the Ventured Debt scenario was zero (which is actually true under Polish Trade Code in two years after making the loan, when it is treated as an equity). For the positive recovery rate the difference between returns would be bigger.

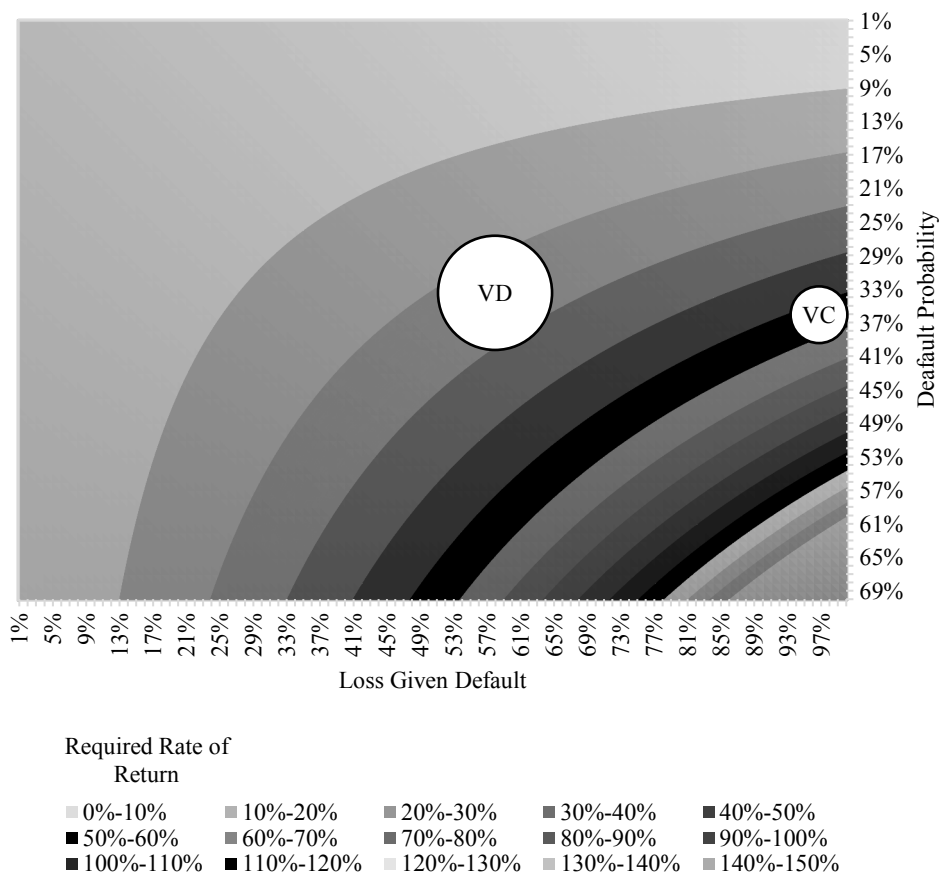
### 3.2. Risk characteristics

It is possible to estimate required rate of return on venture debt investments using credit risk implied default probability. While using recovery rate we can incorporate the debt component into this general model. We can use this simple credit risk method to imply credit spread on a venture debt investment [Jajuga 2009, p. 138–143]:

$$R - R_f = (1 + R_f) \frac{LGD \times DP}{1 - LGD \times DP}$$

This risk premium cannot be realized only with a debt component of a venture debt investment. It is necessary for a venture debt investor to have a feasible ability to realize a return from an equity position which would compensate the higher risk. Assuming, the excess risk can always be fully compensated by the equity component of the investment, venture debt managers can manage the risk by structuring deals,

such way to incorporate a trade-off between default probability of a target company and loss on investment given default, shown in Figure 1.



**Figure 1.** Trade-off of LGD and DP in estimation of required rate of return at zero risk free rate

Source: own study.

The research shows a required return of venture capital at the early stage in the range of 36–45% [Manigart et al. 2002]. While LGD in venture capital is basically 100%, at risk free rate of 2%, it implies default probability of 25–30%. This area is roughly indicated in Figure 1 with a circle “VC”. In case of venture debt, an investment manager is able to use a bigger trade-off area than a pure equity venture capitalist. Using Moody’s project finance ultimate recovery rate of 43.4% [Moody’s 2013], venture lender can use broad 15–32% range of default probability while choosing investees. That leads to 12–25% required return for venture debt – the area shown in Figure 1 as “VD”. Of course, for a venture capital firm to realize an

average 36–45% return with high probability of default of a particular investment, a potential gain from it has to be substantially higher [Cochrane 2005], meanwhile venture debt has a lot more elasticity, and even with more rigorous recovery than used in earlier calculations, managers can be more manipulative while structuring deals, to construct it in a way to lower the investment risk.

#### 4. Conclusions

As stated earlier, because of a debt component in venture debt investments, expected risk for the investor should be lower than in pure equity venture capital. It should obviously lead to lower expected return. Described return profiles of early stage investment suggests that it would be true if either successful investment returns a much bigger gain for VC or if in a defaulted one, capital repayment and collateral would not make a big difference in case of a bankruptcy. It is probably partially both reasons. Further research should explore more this field empirically, although it can be concluded that venture debt investment has both lower expected risk and return. Because of that, venture debt firms can operate in a market niche of projects not so innovative as a venture capitalist demands it. Potential gains from such an investments are often too low for a VC company, but because a VD company would use mix of debt and equity instruments, will bear lower risk, and hence would accept the project. This way, such an investing strategy makes it possible to finance projects which other way would not get any financing [Colombo, Grilli 2007].

While discussing venture debt risk characteristics, we stated that venture debt deals can be structured in such way as to lower investment risk. Connecting it with the conclusion about lower expected return (lower equity position), we have shown an unique risk-return composition used by venture debt. Investment managers of venture debt fund uses it to finance companies somehow unattractive both for banking and venture capital sectors. There is no research about it, but market observations suggest that these are mainly not very innovative but high margin, capital intensive business models, such as trade and manufacturing companies in certain market niches. They are often too risky for banking industry and at the same time have too little gain possibilities for pure equity venture capital.

Further research in the field of venture debt is difficult, mainly because it is not well explored by science and private character of the market. Additionally, what makes it harder to explore, venture debt still does not excess 10% of global venture market [The British Private Equity and Venture Capital Association 2010]. There is still a big area to be described, but main topics which the author would like to research firstly is declared required return vs. realized returns of venture debt funds, correlation of it with venture capital results, and measuring risk of both debt and equity components of venture debt investments.

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### **VENTURE DEBT – INSTRUMENTY FINANSOWE I RYZYKO INWESTYCYJNE FUNDUSZY FINANSUJĄCYCH WCZESNĄ FAZĘ ROZWOJU PRZEDSIĘBIORSTW**

**Streszczenie:** Jak wskazują badania ankietowe wśród zarządzających funduszami *venture capital*, pomimo wzrostu wielkości finansowania typu *venture debt* w Europie w ostatnich latach, ta forma finansowania przedsiębiorstw na wczesnym etapie rozwoju jest jeszcze mało znana. Trudności w pozyskiwaniu kapitału na klasyczne inwestycje *venture capital* (finansujące w 100% kapitałem własnym) oraz duże możliwości zarządzania ryzykiem inwestycyjnym, które daje finansowanie instrumentami dłużnymi, powodują, że popularności tej mieszanej formy inwestycji rośnie. Można się spodziewać, że udział finansowania typu *venture debt* w całkowitym rynku *venture capital* będzie rósł w Europie kontynentalnej z ok. 6% obecnie do 10% – poziomu z rynku brytyjskiego. Artykuł przedstawia mechanizm stojący za finansowaniem typu *venture debt* oraz dłużne i zamienne instrumenty finansowe stosowane w sektorze *venture capital*, a dodatkowo autor podejmuje próbę identyfikacji, opisu oraz pomiaru ryzyka związanego z inwestycją typu *venture debt* w porównaniu z klasyczną inwestycją *venture capital*. Dodatkowo, w celu wskazania specyficznej dla *venture debt* niszy na rynku finansowym, zostaje oszacowana wymagana stopa zwrotu dla takich inwestycji przy użyciu implikowanego spreadu kredytowego.

**Słowa kluczowe:** *venture debt*, *venture capital*, finansowanie przedsiębiorstw na wczesnym etapie rozwoju, instrumenty finansowania dłużnego.