ABSTRACT

This paper conveys the value of venture debt to startup companies and their venture capital investors. Venture debt is shown to be a smart financing option that complements venture capital and provides significant value to both common and preferred shareholders in a startup company. The paper utilizes mathematical models based on industry benchmarks for the cash burn J-curve and milestone-based valuation to illustrate the financing needs of a startup company and the impact of equity dilution. The value of venture debt is further explained in three primary examples that demonstrate the ideal situations and timing for debt financing. The paper concludes with two examples that quantify the value of venture debt by calculating the percentage of ownership saved for both entrepreneurs and investors by combining venture debt with venture capital.

INTRODUCTION TO VENTURE DEBT

Venture debt, also known as venture lending or venture leasing, is a type of debt financing provided to venture capital-backed companies. Unlike traditional bank lending, venture debt is available to startup companies without positive cash flow or significant assets to use as collateral.\(^1\) There are three primary types of venture debt:

1. **Growth capital** is typically structured as a term loan and can be used to replace or augment an equity round, finance M&A activity, or provide additional working capital.

2. **Accounts receivable** financing allows revenue-generating startup companies to borrow against their accounts receivable items (typically 80-85%).

3. **Equipment financing** is typically structured as a lease and is used for the purchase of equipment such as network infrastructure, manufacturing, R&D, etc.

Venture debt is a subset of the venture capital industry and is utilized worldwide.\(^2\) It is generally accepted that for every four to seven venture equity dollars invested in a company, one dollar is (or could be) financed in venture debt.\(^3, 4\) Therefore, a startup company should be able to access roughly 14%-25% of their invested capital in venture debt.

This paper will explore some of the most common uses for venture debt and illustrate the value provided to startup companies and their venture capital investors following the introduction of two important concepts: the cash burn J-curve and milestone-based valuation. All mathematical models and assumptions are included in the appendix.
CASH BURN J-CURVE

One of the most persistent challenges for a startup company is to sufficiently capitalize the business from the inception of the company until profitability. Many recent studies have identified lack of capitalization as one of the primary reasons businesses fail. Understanding the typical cash flow and financing needs of a startup company is foundational when exploring the benefits of venture debt.

The J-curve is commonly used to illustrate the tendency of a startup company to produce negative net income initially, and then deliver positive results as the company matures. The typical startup company will take at least six to eight years before becoming profitable.

Figure 1 shows the net income per quarter for a startup company. While actual financials will vary by company, the concept of increasing losses preceding increasing profits is common to most business models. The negative net income area above the “J” represents the total cash needed to achieve profitability. In this example, the company will need a total of $58 million of capital over 6 years. Most entrepreneurs find it takes more capital over a longer period of time than expected to become cash flow positive.

Note the capital requirements and timelines in this model are representative of a company that develops and manufactures a product. While actual results will vary by company and industry, the lessons learned from the following sections will hold true for any venture-backed startup.

MILESTONE-BASED VALUATION

Many entrepreneurs turn to venture capital for financing as well as mentorship, strategic guidance, and other support. However, venture capital, as with all equity investment, results in equity dilution for entrepreneurs and existing investors. Equity dilution refers to the reduction in ownership for a share of stock caused by the issuance of new shares. Minimizing equity dilution is one of the most compelling benefits of venture debt. The milestone-based valuation model is helpful in illustrating the relationship between capital raised and company valuation—the two most important factors in determining equity dilution.

Figure 2 below displays the company valuation over time for a typical startup company. Progressively, the business is rewarded for achieving major milestones by an increase in company valuation. Thus, the optimal time to raise funds is immediately following one of these valuation drivers, resulting in less equity dilution for the same amount of capital raised.
The milestone-based valuation model provides a framework that will be helpful in illustrating the value of venture debt in multiple scenarios.

**PRIMARY USES OF VENTURE DEBT**

While there is no one-size-fits-all approach to venture debt and each transaction will vary on a case-by-case basis, there are three common use cases for venture debt that demonstrate its benefit. Venture debt can extend the cash runway of a startup company to:

1. achieve the next milestone/valuation driver.
2. become “cash flow positive.”
3. provide insurance for potential mishaps or delays.

**Use Case #1:** Extend Runway to Next Milestone

Venture debt can extend the cash runway of a startup company to the next valuation driver. This is perhaps the most widespread use of venture debt.\(^8\)\(^9\) Let’s assume a startup company was planning to raise a large Series B financing after developing their product. Instead, the company could raise a smaller Series B and then leverage venture debt to fund the company until it receives its first revenue from customers, ensuring Series C is raised at a higher valuation. Management and employees would benefit from less dilution due to the smaller equity raise. Existing investors would also benefit from less equity dilution, or less cash required to maintain their ownership position.

**Use Case #2:** Extend Runway to Cash Flow Positive

Venture debt can extend the runway of a company to be “cash flow positive”. Let’s assume a startup company was planning to raise their final round of Series C equity financing once they receive their first revenue from customers. Instead, the company could leverage venture debt following their Series B and completely eliminate their last round of equity financing. This is a great use of debt as it reduces equity dilution for both employees and current investors, and propels the company forward during a critical period of growth. Alternatively, if it were not feasible to completely eliminate their Series C financing, the company could leverage venture debt to extend their runway long enough to push series C out to an even higher valuation, reduce the size of round, or both.
Use Case #3: Provide Insurance for Potential Delays

Finally, venture debt can serve as a cushion for what can go wrong. For example, let’s assume the same startup company in example 2 that was planning to raise their Series C financing after producing revenue did not obtain any venture debt. Unfortunately, their customers, who verbally committed to purchase this year slip out to next year and the company doesn’t have enough cash to last until then. The company still needs to raise a Series C, but now it will not be at the higher valuation they were expecting. In fact, because they missed their plan, it will likely be a penalizing down round. Venture debt could have helped bridge this gap until the company is back on track.

VALUE OF VENTURE DEBT

The final section of this paper expands on these general use cases and quantifies the value of venture debt by calculating the percentage of ownership saved for entrepreneurs and investors.

The following examples are based on a complex model developed by Trinity Capital Investment. The model demonstrates how small changes in the timing and structure of a startup company’s capitalization plan can significantly impact ownership percentages for both common and preferred shareholders (representing founders, employees and investors).

Let’s consider a startup company that is planning the same net income ramp as depicted in Figure 1. Figures 6 and 7 show the company’s revenue and net income plans, respectively.
All mathematical models are driven from the net income J-curve depicted in Figure 7. In the following examples, it is assumed the company produces revenue at the first point of a positive delta in net income, which occurs in the fourth year of operation.

Figure 7 shows the company plans to burn roughly $200,000 per quarter for the first year and then steadily increase expenses until revenue is achieved in year 4, at which time quarterly losses decrease until the company becomes profitable in year 6. The company ramps revenue to over $50 million per quarter in year 7, where revenue is assumed to be 10X net income, or conversely, the company produces net income equal to 10% of its revenue stream. (10% is a typical number for most profitable companies.) Refer to Appendix B for more details on model assumptions.

**Example 1: Capitalization with Equity Only**

In this example, the company plans to capitalize the business with equity only, without any venture debt. Figure 8 shows the company plans to raise $15 million in Series A to develop their product, $27 million in Series B to develop their marketing and sales channels, and $20 million of growth capital in Series C once they sign their first set of customers.

To minimize dilution, the company plans to raise each round of equity immediately following each major milestone achievement. Table 1 shows the ownership percentages at the end of each equity financing for common shareholders and Series A investors. Common shareholders would likely include founders, employees, and friends and family that provided seed funding.

If the company raises each round as planned, at the end of their Series C financing the founders and employees would own 37% of the company and the Series A investors would own 25%.

**Example 2: Capitalization with Equity and Venture Debt**

If the same company would plan a smaller venture debt round after each equity financing, they could raise less equity overall while still providing the business with more capital and a longer runway during each raise. But more importantly, they would benefit from less equity dilution.
In the previous example, the company raised a total of $62 million without any venture debt. In this example, the company raises a total of $77 million with both equity and debt financing. Example 2 requires more capital because debt service payments are factored into the company’s expenses. Additionally, the company is utilizing venture debt to provide a longer runway as an insurance policy.

TABLE 2: OWNERSHIP BREAKDOWN – EQUITY AND VENTURE DEBT

<table>
<thead>
<tr>
<th></th>
<th>Common Shareholders</th>
<th>Series A Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founding</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Series A</td>
<td>59.5%</td>
<td>40.5%</td>
</tr>
<tr>
<td>Series B</td>
<td>51.5%</td>
<td>35.1%*</td>
</tr>
<tr>
<td>Series C</td>
<td>47.4%</td>
<td>32.3%*</td>
</tr>
</tbody>
</table>

*Assumes Series A investors do not invest pro rata in future rounds and debt terms include 6 months of interest only payments followed by 36 months of fully amortizing payments at a 12% interest rate. Refer to Appendix B.

By layering in smart debt along the way, the founders and employees would own 47% of the company after Series C and the Series A investors would own 32%. That’s 17% more ownership for employees and investors due to venture debt.

Note this analysis assumes all debt capital was provided by traditional venture debt funds and does not incorporate any lower cost debt from senior lenders such as technology banks, which would further minimize dilution. Though outside the scope of this paper, combining venture capital with both senior and subordinated venture debt will ultimately provide more debt capital at a lower blended cost, resulting in maximum ownership savings for both common and preferred shareholders in a startup company.

IN CLOSING

Venture debt is a smart and critical source of capital for today’s entrepreneurial companies. As a complement to equity financing, venture debt provides growth capital to extend the cash runway of a startup company in order to achieve the next milestone while minimizing equity dilution for both employees and investors.

Venture debt can be structured as a term loan, accounts receivable line of credit or an equipment lease and can be provided by a variety of lenders.

Trinity Capital Investment is a leading provider of venture debt financing. For more information, please visit www.trincapinvestment.com. Trinity Capital Investment has produced a short video, The Value of Venture Debt Explained, to accompany this white paper. The video is available on YouTube at www.youtube.com/c/trinitycapitalinvestment.

REFERENCES


APPENDIX

Appendix A: Model Assumptions for Cash Burn J-Curve (Figures 1 and 2)
The cash burn J-curve depicted in Figures 1 and 2 is based on a model developed by Trinity Capital Investment, and includes the following assumptions:

- Following company formation, cash burn and net income loss are both $200,000 per quarter for one year. This represents a typical period in which the entrepreneurs are self-funded, prior to a Series A financing.
- Series A financing occurs after one year of operation, and expenses grow as the company hires personnel and purchases necessary equipment.
- Following Series A, quarterly net income is represented by the following formula, where q represents the number of quarters from Series A investment:
  \[ NI = 0.05q^2 + (-0.95)q + 0 \]

Appendix B: Model Assumptions for Ownership Percentages (Figures 8 and 9)
It should be noted that all assumptions for revenue and the revenue based valuations are derived from the net income J-curve. Therefore, the only true variable is the J-curve itself.

The final examples depicted in Figures 8-9 and Tables 1-2 are based on the model developed by Trinity Capital Investment and include the following assumptions:

- Following company formation, cash burn and net income loss are both $200,000 per quarter for one year.
- Series A financing occurs in the first year of operation, following technology development. Series B occurs in the third year of operation, following product development. Series C occurs in year five, once the company begins to ramp revenue.
- Following Series A, quarterly net income is represented by the following formula, where q represents the number of quarters from Series A investment:
  \[ NI = 0.05q^2 + (-0.95)q + 0 \]
- Quarterly revenue is calculated by:
  - using the net income value at the end of year 7 (NI_{24}) and assuming the revenue at that point (R_{24}) will be ten times net income (R_{24} = 10\times NI_{24}).
  - using the value of R_{24}, the revenue for each quarter is calculated by the following formulas:
    \[ R_q = \begin{cases} 
      0 & \text{for } (NI_q - NI_{q-1} \leq 0), \\
      \frac{NI_{q} - NI_{q-1}}{NI_{24} - NI_{x-1}} \times R_{24} + R_{q-1} & \text{for } (NI_q - NI_{q-1} > 0) 
    \end{cases} \]

Or, net income had a positive “delta” between quarters, which means NI_{x+1} is the lowest net income per quarter.

- In Figure 9, milestone based valuation prior to Series A, B and C financings are assumed to be $20M, $59M, and $65M respectively. The post-money valuation after each round would include the milestone based valuation and the size of the equity raise.

- Revenue based valuation is assumed to be 3X revenue. Revenue based valuation is used once its value exceeds the previous milestone based valuation.

- Financing terms provided by debt lender include 6 months of interest only payments followed by 36 months of fully amortizing payments at a 12% interest rate.

- It is assumed Series A investors do not invest pro rata in future rounds.