

# How much is your pre-revenue company worth?

RIC Centre Presentation  
Summary  
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## **Introduction**

Investors and entrepreneurs often ask me to shed some light on how to value pre-revenue companies - an issue often raised when entrepreneurs are looking for external investment. Teaching courses on entrepreneurship and innovation, which include raising finance, suggests that I have a level of expertise in this area, which enables me to provide a definitive answer. Unfortunately, the opposite is true. The more I teach this issue and research different valuation techniques, the more I recognize that valuation of pre-revenue companies is more of an art than of science. Essentially, the purpose of identifying a formula to provide a company valuation is simply to provide a base number from which both parties involved in a negotiation can start. This can be inhibiting, as most valuation techniques limit the potential upside of the venture – despite the fact that the entrepreneur is often optimistic. However, it is an approach that has merits, as the investor and entrepreneur have different knowledge and experience of the business and industry and the process of discussing the current status of the venture, the market opportunity and the long-term vision, creates an improved understanding that can enhance the relationship. That said, about 50% of the businesses that receive investment offers, turn them down, as they cannot agree on company valuation.

## **Alternate calculation methods**

The traditional way of calculating company value for pre-revenue companies is to rely on one of two approaches. The first is based on the calculation of equivalent value, whereby forecast profits (or revenues) are estimated in five years time, and current industry multipliers (such as price to earnings (P/E) ratio) are then applied to this forecast to calculate the future value. Armed with a valuation, post-investment, in the future, the current value of the venture can be calculated backwards (see below). This simple approach has a number of benefits, but two fundamental limitations: it's very dependent

on the accuracy of the forecast profit or sales and whether using a standard P/E ratio reflects the fact that a possible acquirer is likely to pay significantly more for the venture. Specifically, this approach assumes that the investor will exit from their investment through an Initial Public Offering (IPO) whereas a strategic acquisition is a much more likely option. In this case, the strategic acquirer will see value in their ability to leverage the acquired company with their existing business, and therefore be willing to pay much more for the business. Accurate forecasting of five-year profitability and the selection of an appropriate P/E ratio can be quite a challenge. In addition, assuming you can use a standard interest rate to discount the future value makes unreasonable assumptions about risks and the associated interest rates.

**Traditional model for calculating valuation of pre-revenue company:**

First, calculate the market value of the company in five years time, based on company's forecast profit in year five and industry equivalent P/E ratio. Discount this value back today's value using Discounted Cash Flow.

**Example:**

- Develop a forecast profit and loss pro-forma for the next 5 years
- Identify the net profit in year 5 (i.e. \$1 million)
- Use current industry P/E ratios or similar company P/E ratios to estimate future value (i.e. 15)
- Multiply forecast profit by P/E ratio (i.e.  $15 * \$1\text{million} = \$15\text{million}$ )
- To get today's value, discount back at interest rate for cost of capital (say 10%).
- This gives a company value of \$8.86 million. Note this would be a "post-money valuation"

A derivative of this method is also used, which calculates the future venture value based on the expectation that the business will be acquired as a strategic acquisition, where the acquirer can increase the value of the business by leveraging its other resources. However, the estimation of a suitable P/E ratio based on the identity of the acquirer makes many assumptions that make such a valuation technique only an approximation.

An alternate valuation method is one that is traditionally preferred in business schools and large companies, and uses the forecast cash flow of the business to calculate in the net present value. It is calculated by taking the forecast cash flow for each year and discounting that value back to today's net present value, based upon assumptions about interest rates (see below). While this is a reasonable way of looking at valuation in an ongoing business and an accurate method for making the decision to invest in a fixed asset, it is less useful when used to measure the value of a pre-revenue company.

### Calculating company value based on net present value of cash flows

Uses discounted cash flows to calculate valuation by bring future cash flows to today's value.

#### Example

- Calculate today's value of future cash flow (using an interest rate of 10%  
\$100 now is the same as \$110 in one year ( $\$100 * (1 + 0.1)$ ) or the reverse  
\$110 in one year is same as \$100 now  $\$110 / (1+0.1) = \$100$ )
- For 2 years we use  $(1+0.1)*(1+0.1) = 1.21$ , etc

Year	Cash flow	Alt cash flow
1	-\$250	-\$250
2	-\$140	-\$140
3	\$20	\$20
4	\$200	\$150
5	\$450	\$300
NPV @ 20%	-\$17	-\$101

This technique suffers from three fundamental problems when used to value a pre-revenue company. First, as can be seen in the second column (above) the final NPV is very dependent on the cash-flow forecast in the final years of the period chosen. Estimates of cash-flow in the distant future are likely to be inaccurate, and small changes

to them can have a significant impact on the calculated value. Second, it is very dependent on assumptions about the interest rates used, and small changes in the interest rate can dramatically change the valuation. Third, this technique traditionally uses a standard interest rate for each year, despite the fact that interest rates are meant to reflect uncertainty, and that uncertainty about cash flows at some time in the future are greater than estimates about uncertainty next year. This suggests that the use of the same interest rate for each year might not be appropriate.

### Alternative approaches

Given this problem with using traditional calculation methods, especially as most companies fail to meet profit or revenue targets, valuations based primarily on future forecasts are inherently flawed. We therefore identify two alternate approaches. In reality, an early stage investor more interested in establishing if there is a market potential and that venture and managerial risks mitigated. Dave Berkus, a “SuperAngel”, developed a format that recognizes critical factors that can be more easily in an early stage venture, and importantly identifies how the achievement of specific milestones can be used to justify incremental investment.

<b>If exists</b>	<b>Risk mitigated</b>	<b>Max added value</b>
Sound idea	Value	\$500k
Prototype	Technology	\$500k
Quality management team	Execution	\$500k
Strategic relationships	Market	\$500k
Product rollout/ Sales	Adoption/ Commercialization	\$500k

The Berkus valuation method

The Berkus method ([www.berkus.com](http://www.berkus.com)), calculates an estimated value based on the achievement of certain milestones. This is a useful and practical technique, especially for Angel investors, partly because it highlights the importance of certain factors (such as availability of a prototype, or the signing of a strategic alliance) that fundamentally change the value of the business. Also, this process tends to provide a framework for investment, which encourages the entrepreneur to focus on the achievement of specific milestones in the venture before more investment is received.

Finally, probably the most common method used is the VC shortcut method. This is based on calculating potential exit values, forecasts of an annual required rate of return (usually around 35 % per annum) and a backwards calculation to the current, post-money valuation (see calculation below). The post-money valuation is the value after the investor has made an investment, the difference between the pre-money valuation, is usually the amount of the investment – although this tends to underestimate the increase in the value of the business, which arises because of the investor's participation in the business.

### **The VC short cut method**

Assumes a future value, and works backwards at the investor's required rate of return to calculate current value.

Example:

- Assume company has a forecast value of \$5 million in year 5, based on either a multiple of revenue or profit
- Assume that the investor requires an annual return of 30%.
- Discounting the \$5 million back for five years (at 30%) would give a post money valuation of \$1.35 million  $\$5m / 1.3 \times 1.3 \times 1.3 \times 1.3 \times 1.3$
- \$1.35 is the post money valuation
- If the investor invested \$350,000, then the pre-money value would be ( $\$1.35 \text{ million} - \$350,000 =$ ) \$1 million
- The investor would want ( $\$0.35 / \$1.35$  or) 26 % of the company

## Conclusions

At the end of the day, the valuation of a business is a function of a negotiation between an investor and entrepreneur that reflects the ability of the entrepreneur to share his or her vision with the investor. Importantly, most pre-revenue valuation negotiations should focus on identifying the amount of money needed by the company and how the entrepreneur and investor wish to divide control of the company. As a result, the convertibility of debentures issued and the inclusion of specific contract clauses in the shareholder agreement, become more important than the actual calculation of the company value, which underlie the shared vision of the entrepreneur and investor.

### Five Tips for entrepreneurs

- Frame discussions by identifying how much money you will need
- Identify potential acquirers and acquisition practices
- Create competition between investors
- Recognize value to company of having experienced investors
- Decide if you want a smaller slice of a bigger pie

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Andrew Maxwell's experience includes the founding of two environmental technology companies, the creation of a wireless, medical device and web company and a technology incubator that helped create 30 technology businesses. He is currently with the Canadian Innovation Centre and pursuing a Ph.D. in the area of new venture creation at the University of Waterloo. He teaches at UTM and Waterloo in the area of technology entrepreneurship.



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