# BINF6399 – Principles of Team Science

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**RAW Lab**

**Lecture 13 - Tuesday April 20th, 2021**

# Learning Objectives

- Investments - SBIR/STTR

- SAFE

- Equity

- Convertible note

- Review

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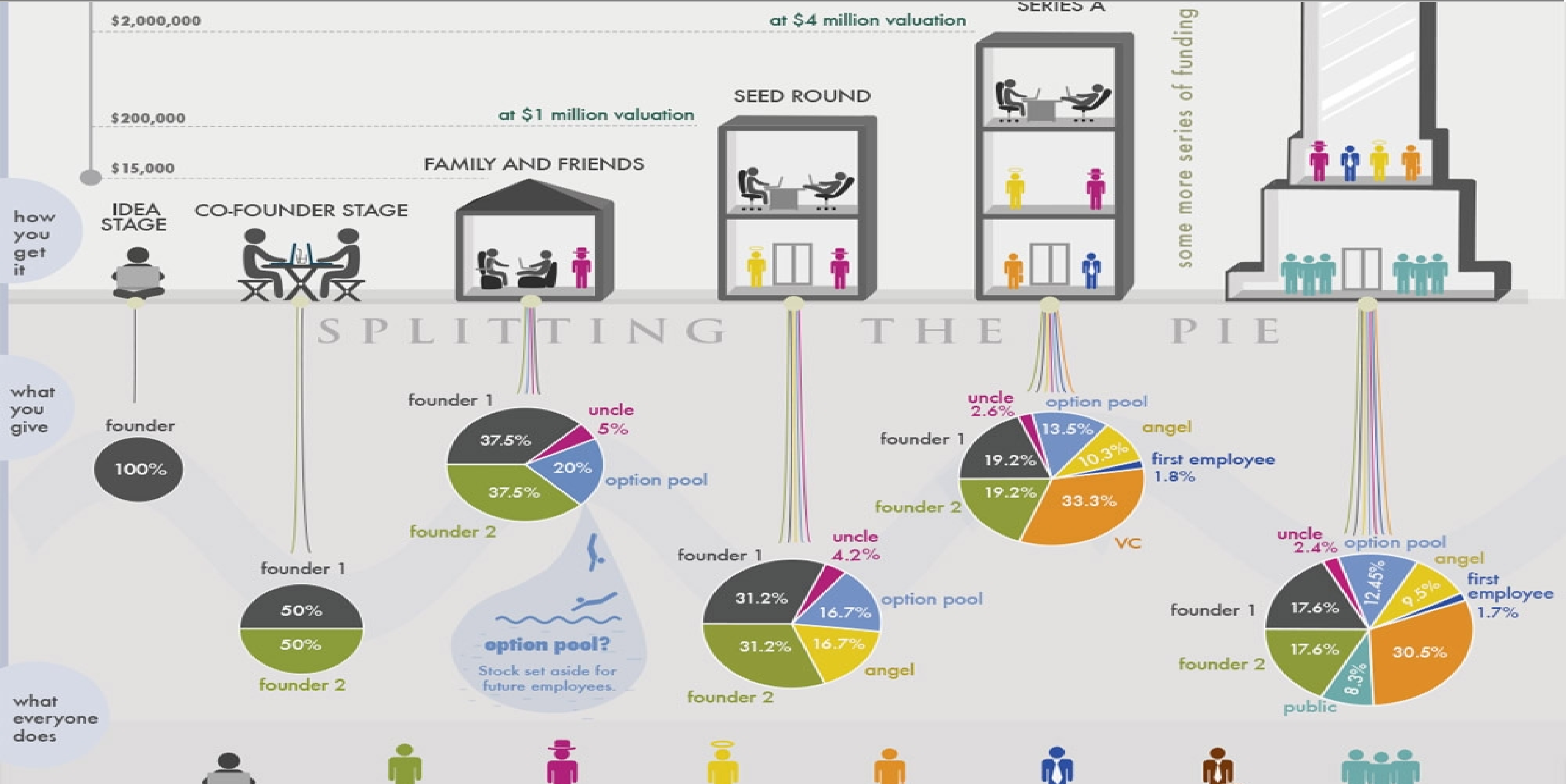
# Funding timeline



# SBIR/STTR review

| Party | SBIR | STTR |
|---|---|---|
| PI | Employed by small business at time of award | Either small business or non-profit academic institution |
| Nature of partnership w research institution | Research institution – can do up to 33% for Phase 1, up to 50% for Phase 2. Don't have to work w research institution. | Research institution – at least 30% of Phase 1; small business 40%; balance either or 3rd party |
| | Ex, Owens/Gentry, Greene, MacMillan-Crowe | James et al |
| | More agencies (11) | 5 agencies |

*Phase 1 STTR can morph into a Phase II SBIR*

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# SBIR/STTR review II

| | SBIR | STTR |
|---|---|---|
| **Govt. Participation** | 11 Federal Agencies | 5 Federal Agencies |
| **Partnering Requirement** | **Permits** partnering | **Requires** a non-profit research institution partner such as a University of FFRDC |
| **Principal Investigator (PI)** | Primary employment (>50%) **must** be with the small business | PI may be employed **by either** the research institution partner or small business |
| **Work Requirement** | May outsource up to 33% (Phase I)<br>50% (Phase II) | 40% Small Business,<br>30% Research Institution |

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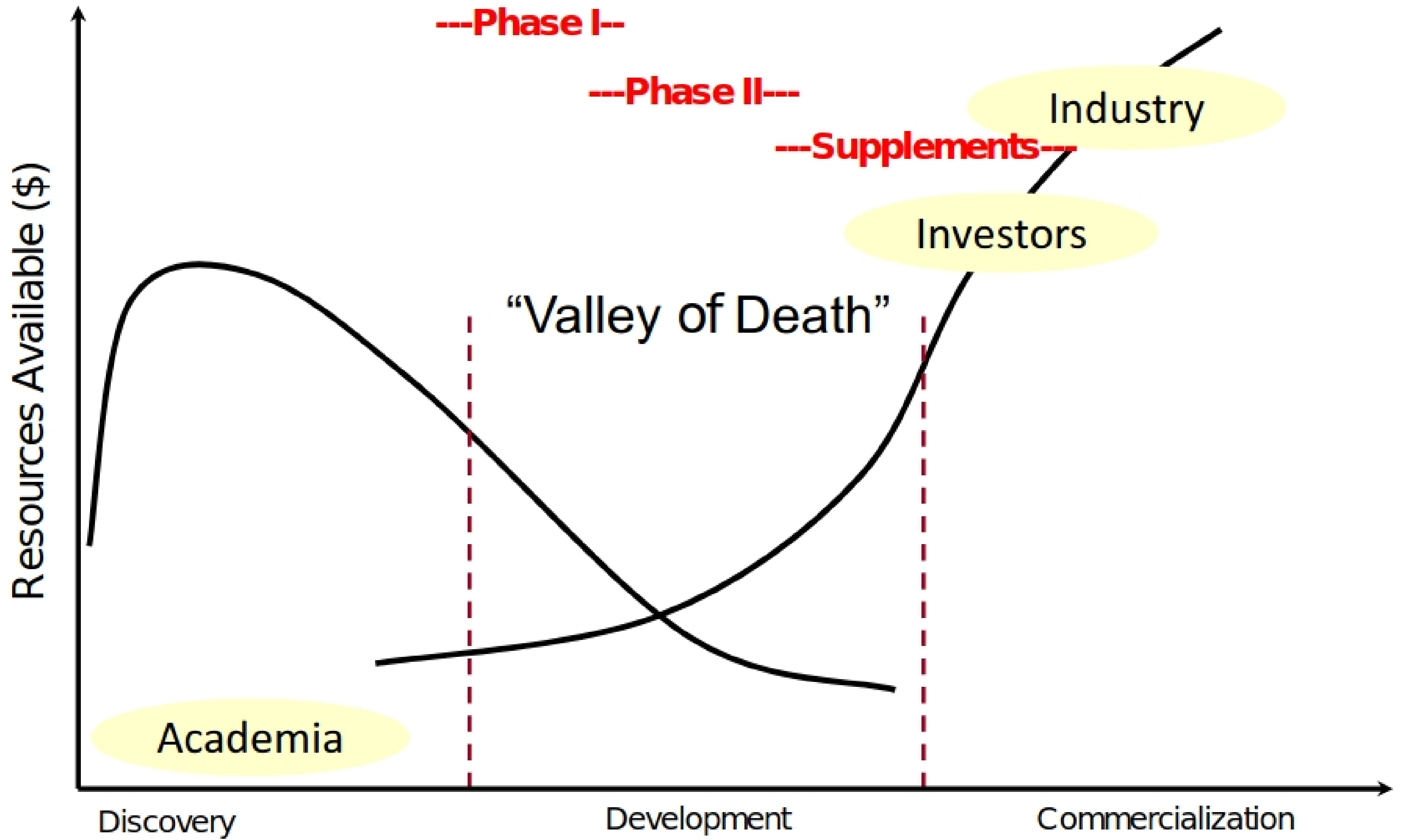
# SBIR/STTR phase I vs II

| | SBIR | STTR |
|---|---|---|
| Phase I project duration | 6-12 months | 6-12 months |
| Phase I max award amount | $225,000 | $225,000 |
| Phase II project duration | 24 months | 24 months |
| Phase II max award amount | $750,000 | $750,000 |
| Subaward to research institution (RI) | Allowed | Required |
| Small business minimum budget percentage in Phase I / Phase II | 66 / 50 | 40 / 40 |
| Research institution minimum budget percentage in Phase I / Phase II | N/A | 30 / 30 |

# SBIR/STTR NSF - Bridge to private investment

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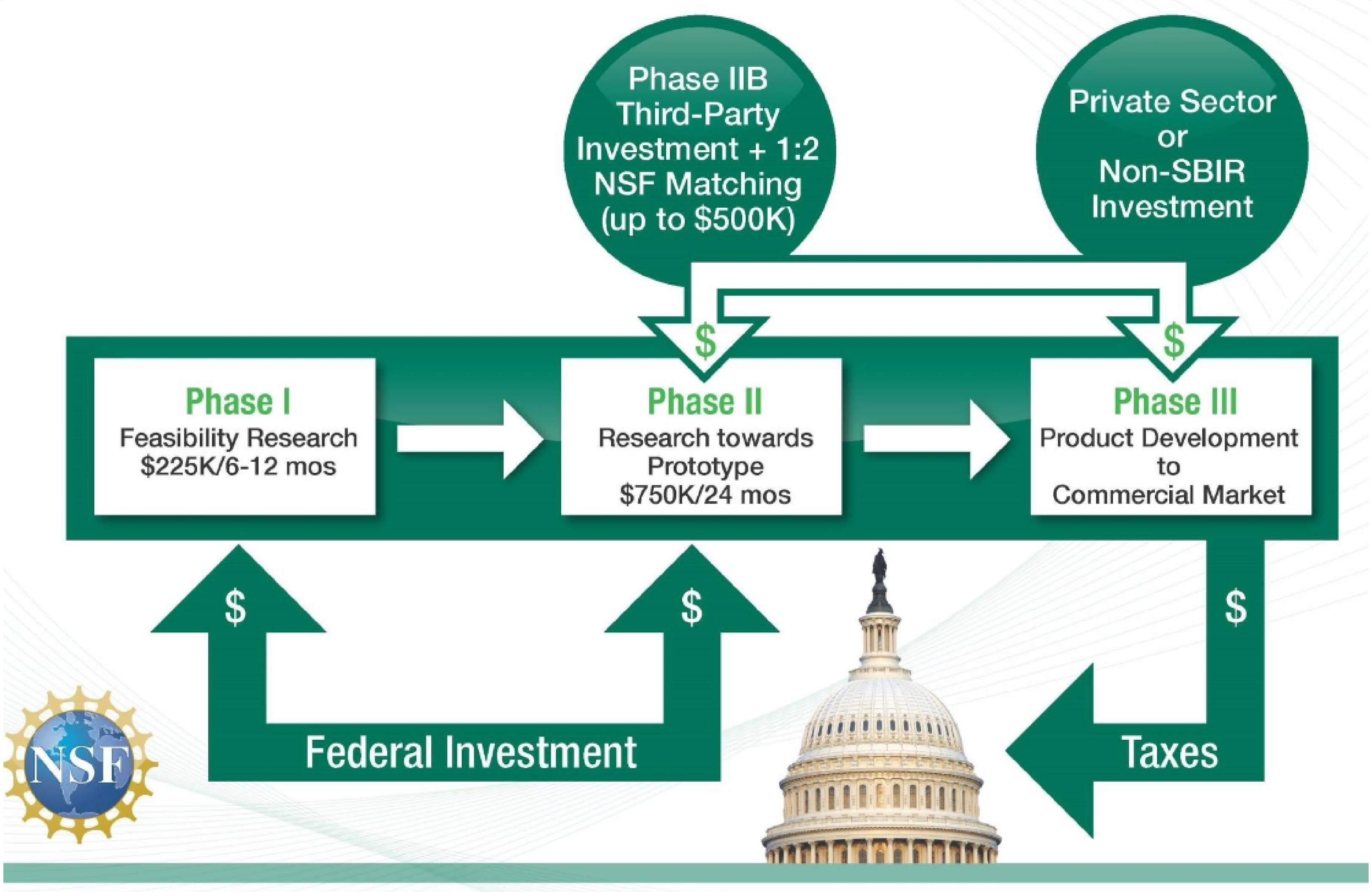
# SBIR/STTR NSF – Innovation model

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# SBIR/STTR NSF – Topic Areas

- Advanced Manufacturing and Nanotechnology (MN)
- Advanced Materials and Instrumentation (MI)
- Biological Technologies (BT)
- Biomedical Technologies (BM)
- Chemical and Environmental Technologies (CT)
- Educational Technologies and Applications (EA)
- Electronic Hardware, Robotics and Wireless Technologies (EW)
- Information Technologies (IT)
- Internet of Things (I)
- Semiconductors (S) and Photonic (PH) Devices and Materials
- Smart Health (SH)
- Other Topics (OT)

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# SBIR/STTR NSF – Program directors/officers

- **Educational Technologies and Applications**
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- **Internet of Things**
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# Equity investment (angel)

- Often called a “priced round,” angel investors directly purchase capital stock from the company.
- This investment represents a defined percentage or fraction of the company and is based on the current valuation of the company.
- Generally, angel investors will purchase “preferred” shares of stock, which provide greater rights and privileges compared to “common” shares of stock.
- the angel investors may not “call” the debt at an inconvenient time years later. NOT CONSIDERED DEBT
- For example, if an investor bought 10 shares of a company worth $100, and the company had 100 shares outstanding after the financing, the angel investor would essentially own 10% of the company.

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# Equity investment (disadvantages)

- Upon a liquidation or sale of the company, the angel investors would generally receive priority (after the company’s creditors) on their preferred shares before the founder’s shares of common stock.
- They require higher legal fees to negotiate, more documents to draft, and a wider range of terms to negotiate.
- They lock in the company’s valuation at a very early stage in the company’s life cycle.
- For example, Series A financing at a valuation less or about the same as the valuation at the angel investing round, it might trigger damaging legal provisions or signal to outside investors that the company is struggling financially.
- Founders generally prefer equity rounds to avoid many of these disadvantages.

# Convertible note/debt (angel investor)

- Convertible debt essentially allows investors to loan money in exchange for the future right to have the debt convert to shares of the company’s stock
- The percentage and amount of shares that the debt will convert into is determined by the specific terms of the notes.
- Generally, the debt will convert to new shares offered in the company’s next equity financing.
- Convertible note also bears interest at a fixed rate, and the angel investors receive a liquidation priority before all of the company’s stockholders.

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# Convertible note/debt - advantages

- Companies often prefer convertible debt to equity financings because convertible debt can essentially delay the question of the company's valuation until later in the company's lifecycle.
- This provides the company more flexibility with later-stage financings.
- Convertible debt financings also involve fewer negotiation terms and less paperwork
- This drives down both legal costs and deal timelines.

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# Convertible note/debt - disadvantages

- Its debt with interest at a fixed rate
- Investors may call the debt after the maturity date or upon demand at any time (2008, COVID-19)
- First, an early-stage startup will not have the cash on hand to repay investors if the debt is called (bankruptcy or loss of control)
- Companies should carefully evaluate the effect of valuation caps on convertible debt financings
- A small cap will allow investors to receive a much higher percentage of the company upon an equity financing, and dilute common investors

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# *SAFE Financing (angel investor)*

- SAFE stands for Simple Agreement for Future Equity
- Placeholder for equity investment
- CASH investment which converts into equity at a specified even (normally subsequent round of qualified financing
- Do not act like debt (no interest, no maturity date)
- For example, if a SAFE has a valuation cap on the next financing of $1,000,000, but the company actually raises a financing at $10,000,000, the investor will likely receive a massive windfall.

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# SAFE vs. Equity vs. Convertible note/debt

| | SAFE Financing | Equity Financing | Convertible Note Financing |
|---|---|---|---|
| **What is it?** | Cash investment which converts into equity at a specified event (normally subsequent round of qualified financing). | The angel investor **buys equity (ordinary shares)** from the founder at the seed financing round. | A loan which converts into equity at a specified event (normally subsequent round of qualified financing). |
| **Pros** | Easy to understand and use. | No debt to repay.<br><br>Valuation gets set early (which can also be a downside). | Until conversion, it acts as a debt and the **investor usually has the same legal rights as a debtor**. |
| **Cons** | The initial cash investment is NOT a loan or a debt, and **investors are left with no protection** if the company fails. | The angel investor's shares may be diluted at subsequent rounds of financing.<br><br>You give away some control of your business at an early stage. | You have a limited time to either convert the loan into equity or repay it. |

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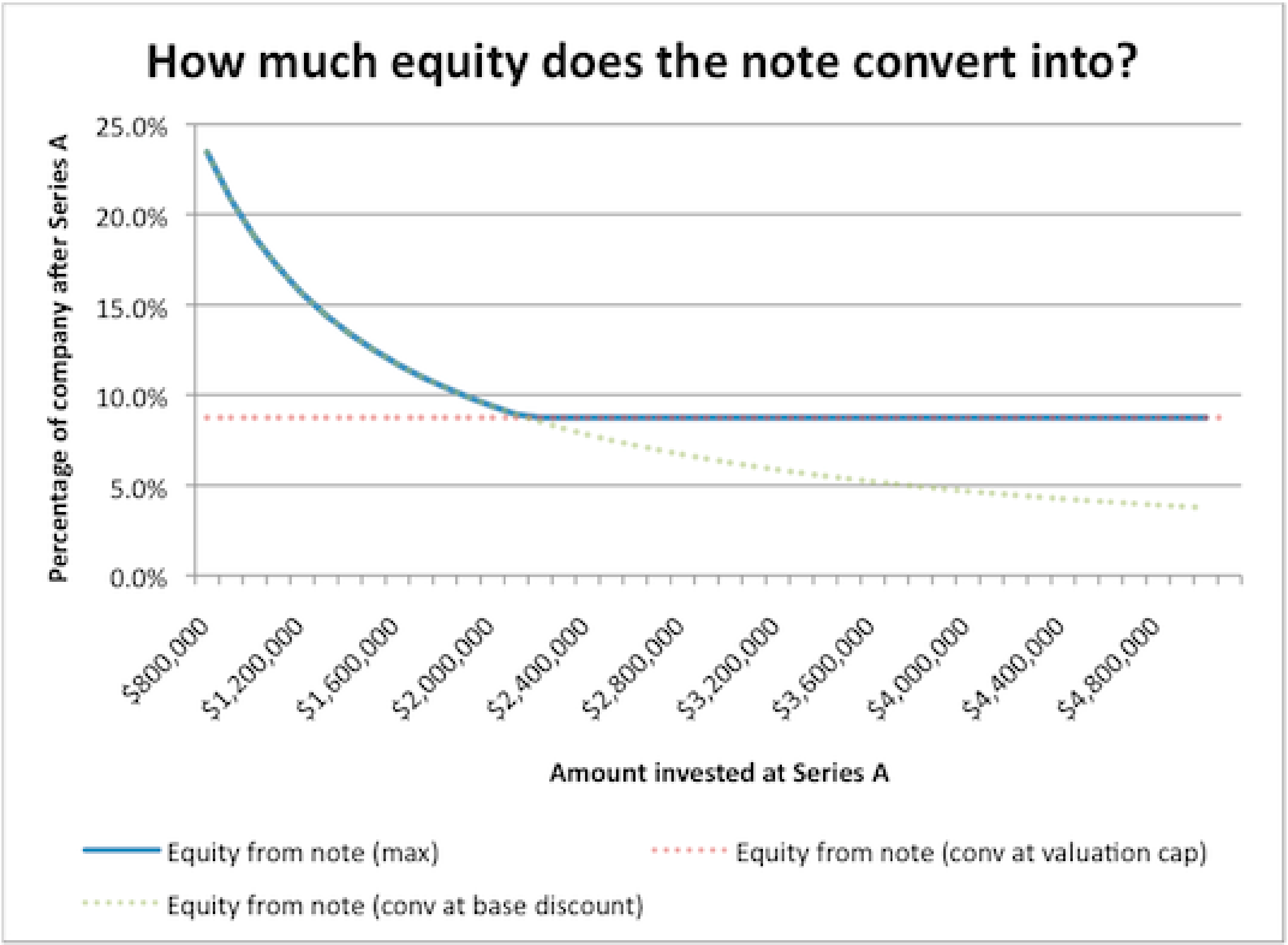
# Valuation cap work




As you can see here, low VC investment means that your seed investor will benefit from the discount. By investing $1.5 million, as in the above example, he gets a 5% stake. But as your valuation grows and VCs put in more money, your seed investor's stake dilutes. A valuation cap puts a floor to the degree of dilution.

You may also notice how a low valuation cap favours the investor. Founders and VCs investing in series A, on the other hand, benefit from a high valuation cap. The lower the valuation cap, the more likely you will hit the "floor", and your seed investor gets a relatively large share of your company at a very low price.

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