



# **Venture Capital Contracts: Part I**

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# What Do Entrepreneurs Care About ?

- Build a successful business
- Raise enough money to fund the venture
- Maintain as much value and control of the company as possible
- Get expertise and contacts to grow the company
- Share some of the risks with investors
- Financial returns from the venture



# What Do Venture Capitalists Care About?

- Maximize financial returns
- Ensure that portfolio firms make sound investment/management decisions
- Participation in later financing rounds if the venture is a success
- Eventually achieve liquidity, i.e. sell the firm in IPO or merger
- Build own reputation



## **Both Care About:**

- The success of the new venture
- The split of financial returns
- The allocation of control rights
- Eventually liquidating some or all of their stake in the company

**Potential conflicts of interest??**

# Logic behind the Contracts

- **Financial returns** are divided to
  - Reward investors for their investments in the firm
  - Provide high-powered incentives to entrepreneurs to maximize value and to stay with the firm
  - Provide VCs with incentives to add value
    - Contrast with incentives in firms
- **Dynamic allocation of control:**
  - Gives more control to entrepreneur if things turn out well
  - Gives more control to VC if things do not turn out well
- **Provide incentives to achieve a liquidity event**

# Do Simple Financial Instruments Meet the Needs of VCs and Entrepreneurs ?

- Common stock
  - Returns?
  - Control?
  - Liquidity?
- Debt
  - Returns?
  - Control?
  - Liquidity?



# Key Terms of VC Contracts

- Preferred Stock
  - Redeemable (or straight) preferred
  - Redeemable preferred packaged with common stock
  - Convertible preferred
  - Participating convertible preferred
- Anti-Dilution Provisions
  - Full Ratchet
  - Weighted Average Anti-Dilution
- Covenants/ Control Terms
- Employee Terms



# **Key Features of all Preferred Stock Used in Venture Capital**

- Liquidation Preference over Common Stock
- Redemption Rights

# Liquidation Preference over Common Stock

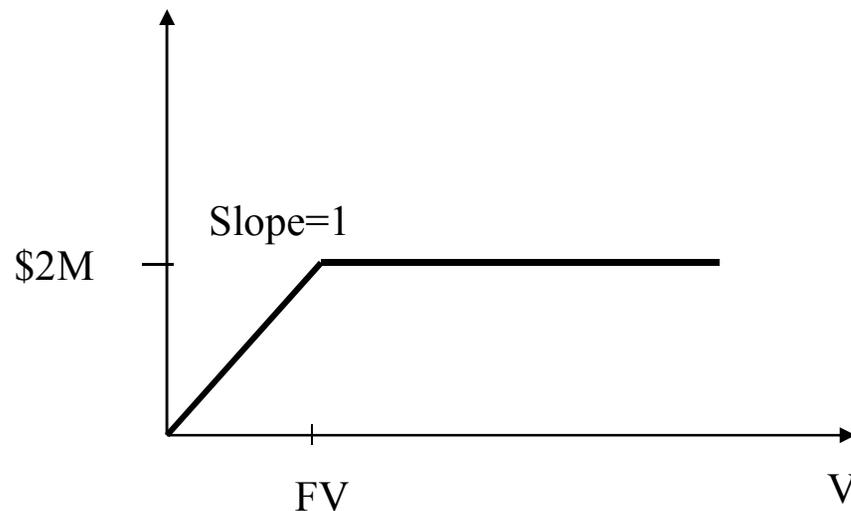
- Prevents the “Take-the-Money-and-Run” Problem
  - Prevents founders from being able to pull out money before they create any real value
- Tax Deferral
  - Redemption of preferred is just return of capital, thus no capital gains tax
- Favorable Pricing of Common Stock
  - IRS will accept low common-stock valuations and thus will not put heavy tax burden on employees/founder with common stock.

# Redemption

- Mandatory redemption right allows VC to “put” the preferred stock back to the company
  - Force liquidity event
  - Prevent “life-style company”
  - Specified in > 90% of VC deals
- Redeemable preferred stock always specifies when it must be redeemed by company
  - Typically the sooner of IPO or 5 to 8 years: company has to pay cash to redeem preferred at original price or “fair market value”
- If company cannot redeem, then penalties can kick in:
  - Reduction in conversion price or increased board seats for VC

# Redeemable Preferred/ Straight Preferred

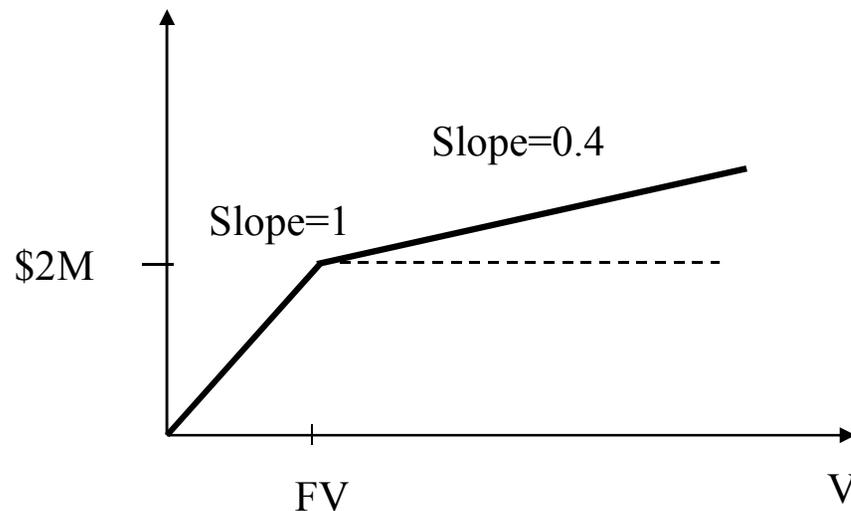
- No convertibility into common stock
- Dividends accrue (i.e. are added to the face value) but aren't typically paid prior to redemption
- Example: Preferred of \$2M



V: Liquidation Value  
FV: Face Value of  
Preferred

# Preferred Packaged with Common Stock

- Downside protection and upside potential
- Example: Preferred of \$2M + common stock for 40% of the company



V: Liquidation Value  
FV: Face Value of  
Preferred



# Convertible Preferred

- Can be converted at the shareholders' option into common stock at a pre-specified conversion price
- Convert if total value at IPO/sale/liquidation is greater than the liquidation preference (with accrued dividends).
- Most contracts include automatic/mandatory conversion at IPO provided the IPO price and proceeds are high enough

# Convertible Terms

- **Conversion option:**

- If initial investment is \$2,000,000 and conversion price is \$5/sh, then can convert into 400,000 shares. If there are initially 600,000 common shares outstanding, then own 40% of the common stock on conversion.

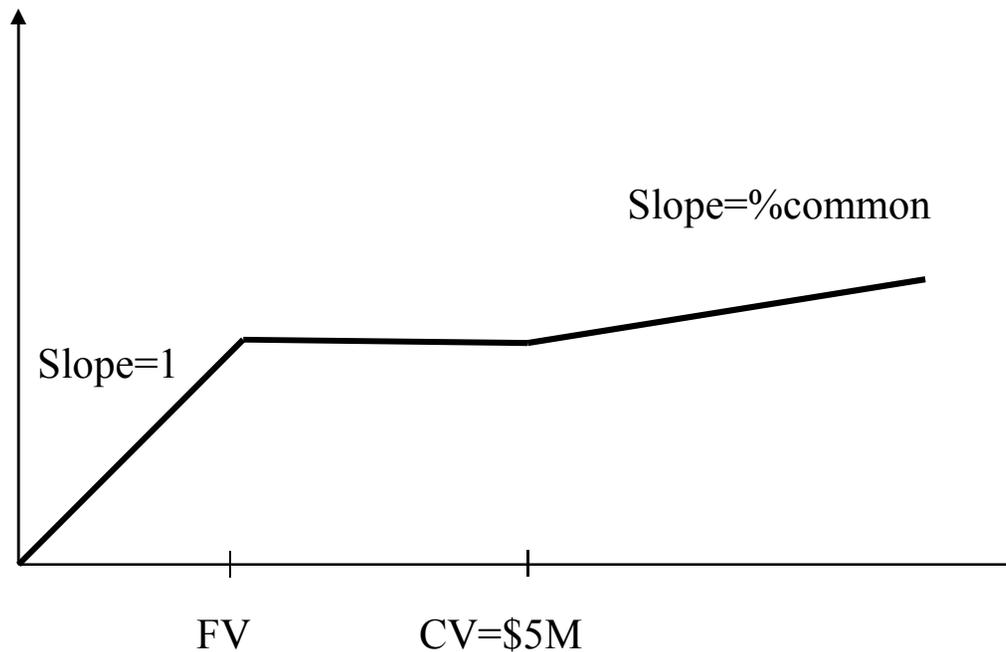
- In this case, will convert if  $.4 * V > \$2M$  or  $V > \$5M$  (ignoring accrued dividends).

- **Automatic Conversion**

- VC must convert at an IPO provided the IPO price is greater than some multiple of the initial conversion price.

- The median multiple is 3.0; it is higher for early stage deals (4.0); lower for later stage deals (2.7)

# Payoffs from Convertible Preferred

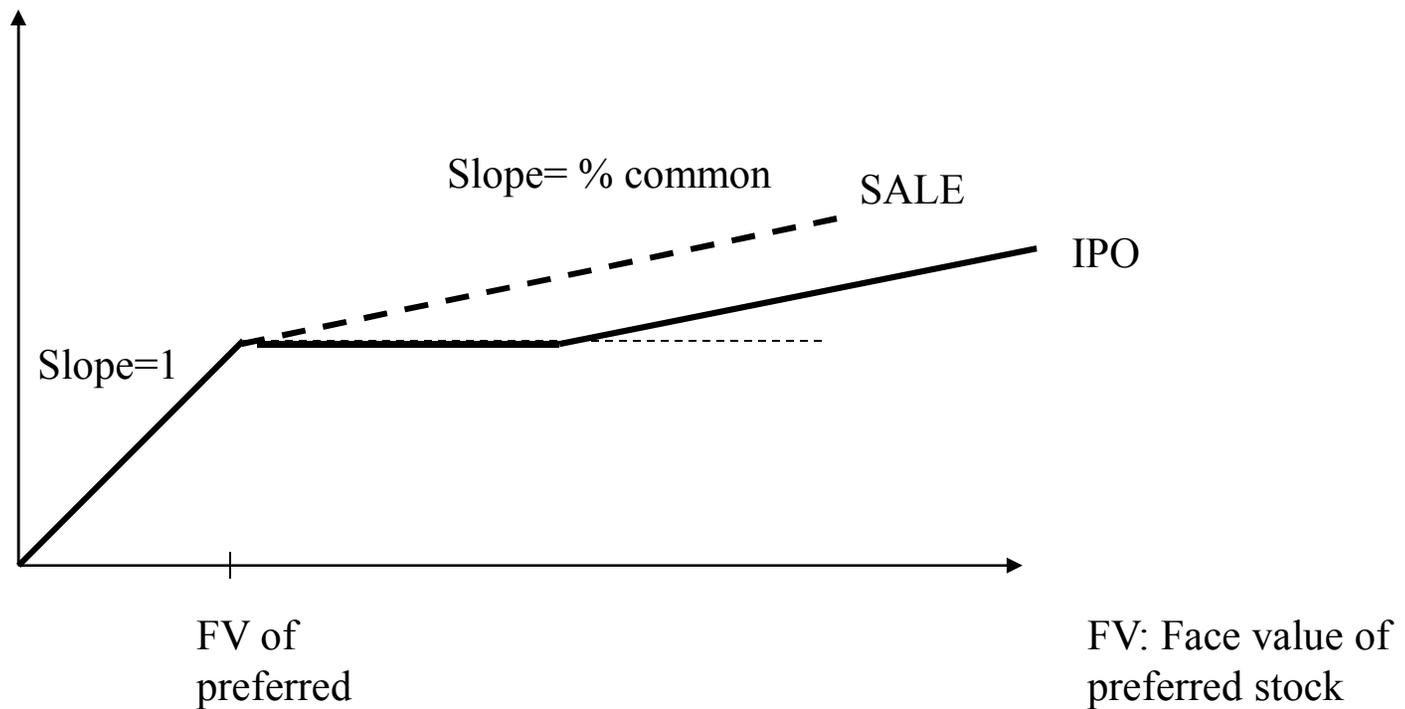


FV: Face value of preferred stock  
CV: Min. enterprise value at conversion

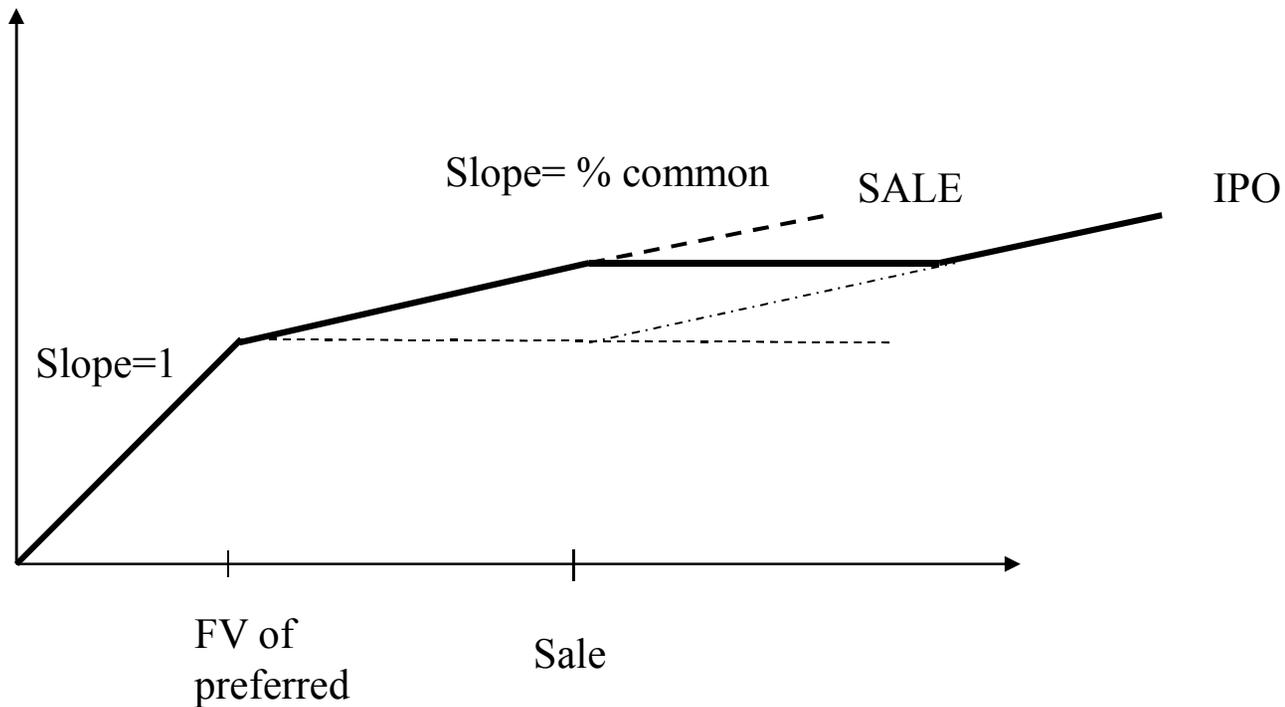
# Participating Convertible Preferred

- Convertible preferred with extra feature that “in the event of liquidation or sale” the holder gets face value plus equity participation.
  - Redeemable preferred + common stock if the company is liquidated (including private sale but not IPO). In our example, would get \$2M *and* 40% of the company.
  - Convertible preferred if company goes public. In our example, would get \$2M *or or* 40% of the company.
  - In this case, convert if  $.4 * V_{\text{IPO}} > \$2\text{M} + .4 * (V_{\text{SALE}} - \$2\text{M})$  (ignoring accrued dividends).

# Payoffs from Participating Preferred



# Payoffs from Participating Preferred (Assume a Maximum Sales Price)





# Evolution of Preferred Stock Over Time

- **1970s:** Security of choice - Redeemable preferred
  - Often in combination with common stock
  - Not many IPOs
- **1980s:** Security of choice - Convertible preferred
  - Active IPO market
  - Large increase of funds flowing into VC industry
- **1990s:** Security of choice - Participating convertible preferred
  - Many later stage investors paid very high prices



# Do these Pay-off Structures Matter?

- No, in the world of Modigliani-Miller!
  - Just alternative ways of slicing up the pay
- Yes, in the real world
  - High-powered incentives for VCs to add value
  - High-powered incentives for entrepreneurs create long-term value

# The Role of Preferred Stock

- Preferred feature aligns incentives of entrepreneur with VC to strive for large payoffs
  - Limits returns to the founder for modest outcomes - incentives to reach high payoffs
- The extent to which the VC wants to encourage the entrepreneur to go for the big payoffs can be controlled by specific choice of security. Redeemable Preferred + Common Stock > Participating Convertible Preferred > Convertible Preferred > Common Stock > Minimum wage

# Relation of Deal Structure and Implied Firm Value: Convertible Preferred

- VCs typically derive the “post-money” (“pre-money”) value of a firm based on the terms of the convertible preferred contract.
  - If, for example, the VC invests \$2M in the above convertible preferred contract (which converts into 40% of the firm’s common stock), then VC will say that the post-money value is  $\$2M / .4 = \$5M$  and the pre-money value is  $\$3M$  ( $\$5M - \$2M$ )
  - Alternatively, if the VC method comes up with a value of \$5M post-money, and the investment is \$2M, then the VC method chooses a % ownership,  $s$ , such that  $s * \$5M = \$2M$ . Here  $s$  is 40%.



# Why this Approach is Problematic

- Ignoring the liquidation value has two implications:
  - Because investors get 100% of the firm in liquidation, if the firm has value in liquidation, they need less equity upon conversion to compensate them for their initial investment.
  - Because investors get 100% of the firm in liquidation, the implied pre- and post-money valuation that is offered to the entrepreneur is overstated!

## Why these Concerns are Important

- The approach ignores the value of the downside protection provided by the preferred feature of the security.
- This affects the implied value that the VC offers:

	Number of	Cost	Value	Avg. %
	Investments			Value/Cost
Write-Offs	172	395	40	10.1%
Below Cost	221	596	225	37.8%
At Cost	70	187	187	100.0%
1-5x	382	1164	3059	262.8%
5-10x	83	242	1713	709.5%
Over 10x	76	206	3703	1797.6%
Total	1004	2790	8927	320.0%

- If firm is liquidated below cost, average recovery is 26.8% of cost; if liquidated at or below cost average recovery is 38.4%.

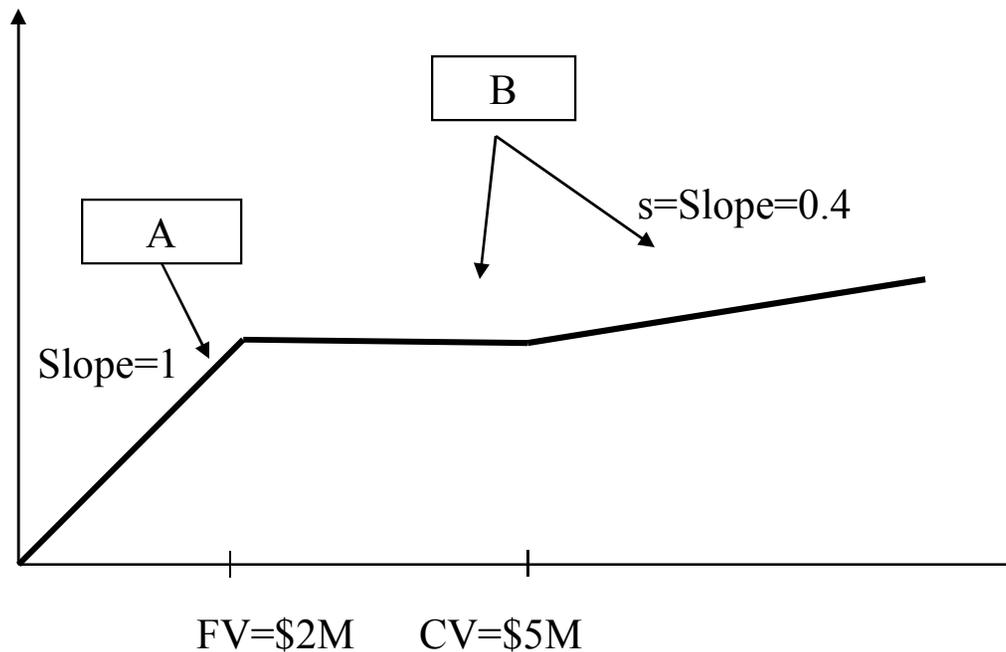
## An Example to Make the Point

- Assume the VC invest \$2M. And value of the firm at IPO is  $V^*$  with probability 0.5 and is liquidity for  $V=\$1M$  with probability 0.5. What is the implied value  $V^*$  the VC is offering based on the deal terms of a convertible preferred contract?
- In order for the VC to earn a market return on her investment:  
$$\$2M = 0.5 * 40% * V^* + 0.5 * 100% * \$1M,$$

→ The implied value  $V^*$  is **\$7.5M**.
- In contrast, to break even under common stock we would need:  
$$\$2M = 0.5 * 40% * V + 0.5 * 40% * \$1M$$

→ The implied value is **\$9M**

# A Systematic Approach to Backing out the Implied Value, $V^*$



FV: Face value of preferred stock  
CV: Min. enterprise value at conversion

# Convertible Preferred as a Series of Options

- Option (A):  $V$  if  $V < FV$ ;  $FV$  if  $V > FV$ . Thus,

$$\begin{aligned}\min(V, FV) &= V - \max(V - FV, 0) \\ &= V - \max(V - 2, 0)\end{aligned}$$

Equivalent to buying the stock and selling a call with a strike price of 2.

- Option (B):  
 $= s * \max(V - CV, 0)$   
 $= 0.4 * \max(V - 5, 0)$

Equivalent to buying 0.4 calls with a strike of 5.

Option (A) + Option (B) =  $V - \max(V - 2, 0) + .4 * \max(V - 5, 0)$ .

Get  $V$  if  $V < 2$ ; 2 if  $2 < V < 5$ ; and  $0.4 * 5$  if  $V > 5$ .

# Backing Out $V^*$ Using Option Pricing

- We know that if the VC is getting a market return:

$$\$2M = \text{Value of Option (A)} + \text{Value of Option (B)}.$$

- If we know the risk-free rate ( $r_f$ ) and the strike prices (FV and CV), and take a guess at the maturity (T) and the volatility of the investment ( $\sigma$ ). The only thing we don't know is  $V^*$ . All we need to do is reverse engineer the Black Scholes formula.
- Thus, suppose  $r_f=5\%$ , FV=2, CV=5, T=3, and  $\sigma=50\%$ . What must  $V^*$  be?

## Backing out $V^*$

$V^*$	Option A	Option B	Option A + Option B
3.5	1.49	0.376	1.87
3.75	1.52	0.436	1.96
3.85	1.52	0.46	1.98
3.9	1.53	0.472	2
4	1.53	0.496	2.03

- Note that Option A is  $V^*$ - an option with a strike price of 2 and Option B is an option with a strike price of 5

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