

MGT 816 · The Private Firm CFO

# Session 2 — Cap Table Lab

Formation → Seed → Series A, built live



mudhead

Wed Sep 9, 2026 · Prof. John Barrios · Yale SOM

# Today: one cap table, formation through Series A

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1. Anatomy & formation

15'

**2. Lab Part 1 — Seed round**

25'

**3. Lab Part 2 — Series A + option pool**

30'

4. Carta: equity admin as a service

5'

5. Takeaways + PS1

5'

**PS1 assigned today —  
due Wed 9/23, 1:00  
pm**

*Laptops out — download the workbook (Canvas → Week 2) now.*

# What a cap table is ★

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- The company's ownership ledger — who owns what, in shares
- Records common stock, preferred stock, and options
- Founders, employees, and investors all appear on it
- Ownership % = holder's shares ÷ **fully-diluted** shares
- The CFO owns and maintains it every round

# Pied Piper: five founders, 2,000,000 shares

Richard quits Hooli, founds Pied Piper

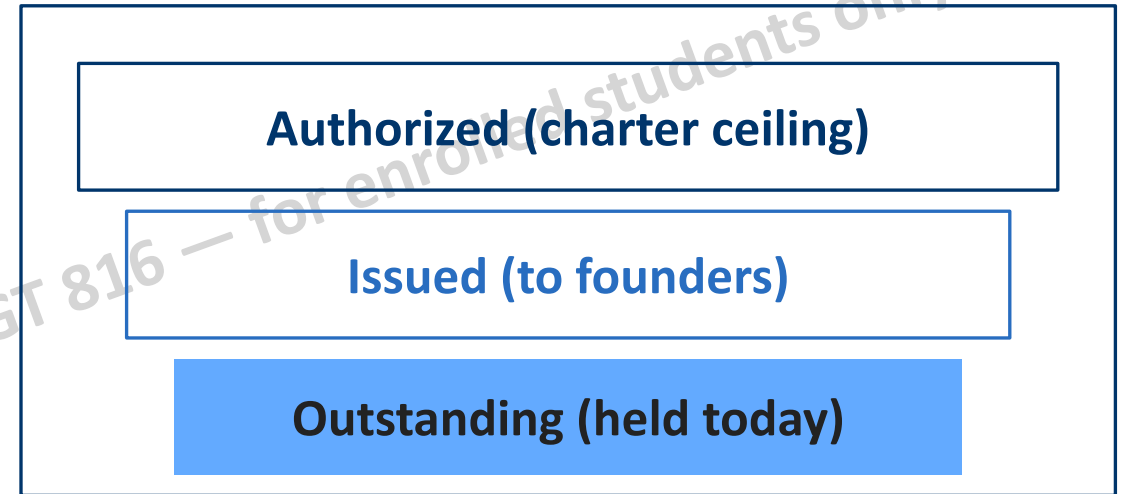
Brings in four co-founders — equal split

2,000,000 common shares: 400,000 each (20%)

Founder stock often carries vesting / transfer restrictions.



*How to split is a real fight — Case 1 (Feedburner), S04.*



*All 2,000,000 authorized are issued & outstanding — for now.*

# The formation cap table — and the \$500 on the books ★

| Holder   | Common    | %       |
|----------|-----------|---------|
| Richard  | 400,000   | 20.00%  |
| Monica   | 400,000   | 20.00%  |
| Jared    | 400,000   | 20.00%  |
| Gilfoyle | 400,000   | 20.00%  |
| Dinesh   | 400,000   | 20.00%  |
| Total    | 2,000,000 | 100.00% |

$$\text{\$500} = \text{\$0} + \text{\$500}$$

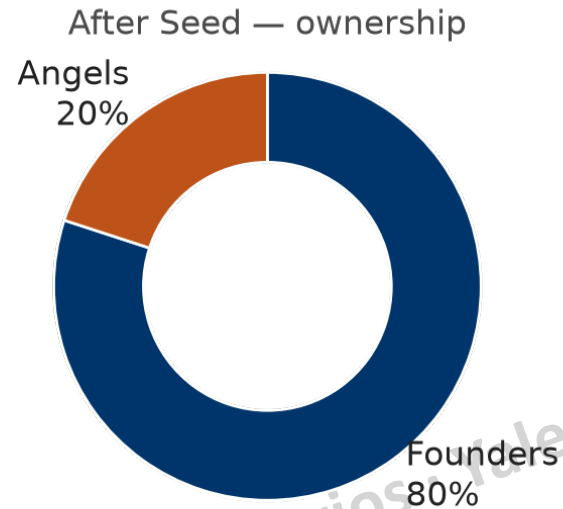
Assets = Liabilities + Equity

The entry: **Dr Cash \$500 / Cr Common Stock \$500**

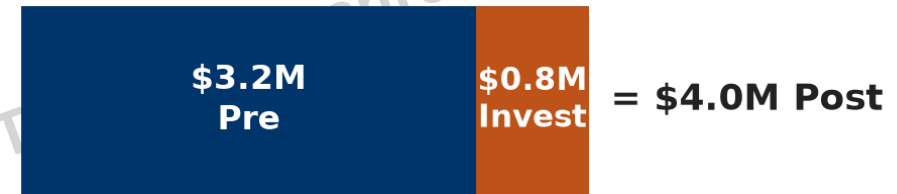
**The books record dollars in — never share counts or valuations.**

$\text{\$500} \div 2,000,000 = \text{\$0.00025/share}$  — nominal.

# Round mechanics: pre-money + investment = post-money ★



The money



$$\text{Pre-money} + \text{Investment} = \text{Post-money}$$
$$\mathbf{\$3.2M + \$0.8M = \$4.0M}$$

$$\text{Post-money} \times \% = \text{Investment}$$
$$\mathbf{\$4.0M \times 20\% = \$800K}$$

Pre-money valuation

Investment amount

Option pool

# Solving for new shares: the fully-diluted algebra ★

- $X$  = % to new investors
- $Y$  = new shares issued
- $Z$  = fully-diluted total after the round
- $S_0$  = existing shares = 2,000,000

1.  $X = \text{Investment} \div \text{Post} = \$800\text{K} \div \$4.0\text{M} = 20\%$

2.  $Y = X \cdot Z$  and  $Y + S_0 = Z$

3.  $20\% \cdot Z + 2,000,000 = Z \rightarrow 80\% \cdot Z = 2,000,000$

4.  **$Z = 2,500,000$**

5.  $Y = 20\% \times 2,500,000 = 500,000$

6.  $\text{PPS} = \$800,000 \div 500,000 = \$1.60$

*The number that matters is fully-diluted shares after the round.*

**Shortcut:  $Z = S_0 \div (1 - \text{dilution}) = 2,500,000$**

# Lab Part 1 — the Seed round

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Angels invest **\$1,000,000** at **\$4,000,000 pre-money**. In the workbook, complete the Seed block: (a) post-money; (b) % to investors; (c) new preferred shares; (d) price per share; (e) each founder's post-round %. Then write the journal entry.

Timebox: **11 min • pairs**

Deliverable: filled shaded cells + JE on the handout line

**Hint:  $Z = S_0 \div (1 - x)$**   
 **$S_0 = 2,000,000$**

# Poll: what hits the books?

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**Pied Piper closes the seed. What does the accountant record?**

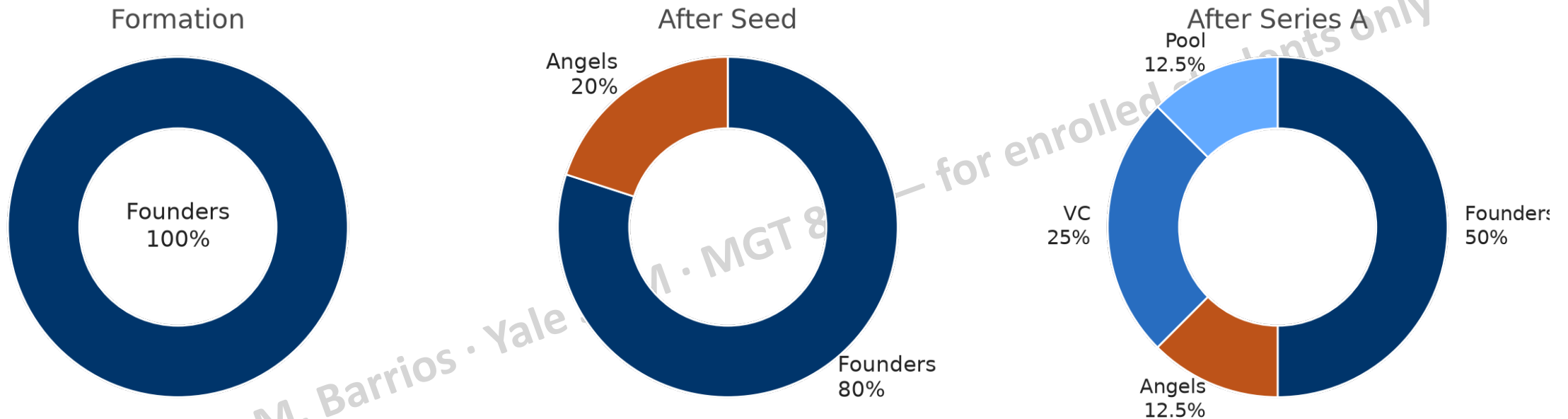
A) Post-money valuation as equity

B) The investment amount as equity

C) The investment as revenue

D) Nothing until exit

# Series A: the VC round — and the option pool



**Founders: 50% total dilution across both rounds.**

Pool  $\approx$  hires needed next 2 yrs — negotiated with the VC.

**\$6M for 25%  $\Rightarrow$  \$24M post-money, Series A.**

# The option-pool shuffle ★

The VC said: “\$18M pre-money, with a 10–15% pool in the pre-money.” Who pays for the pool?

- Pool shares sit in the fully-diluted denominator before the VC's % is cut
- So existing holders absorb 100% of pool dilution
- The VC absorbs none
- Result: the effective pre-money price falls

1. Stated pre = **\$18.0M**
2. Pool cost =  $12.5\% \times \$24.0\text{M post} = \text{\$3.0M}$
3. **Effective pre-money = \$18.0M – \$3.0M = \$15.0M**
4. PPS =  $\$15.0\text{M} \div 2,500,000 = \text{\$6.00}$
5. ...matches  $\$6\text{M} \div 1,000,000 \text{ VC shares} = \text{\$6.00} \checkmark$

*PS1 Part II: what happens to founder % if you negotiate the pool 16% → 12%?*

**Effective pre-money = stated pre – pool% × post.**

# The algebra with a pool ★

- $X$  = % to Series A investor ·  $Y$  = VC shares
- $W$  = new pool shares ·  $Z$  = fully-diluted total after A
- $S_1$  = pre-A shares = 2,500,000

1.  $X = \$6\text{M} \div \$24\text{M} = \mathbf{25\%}$ ; pool% = **12.5%**

2.  $Y + W + S_1 = Z$ ;  $Y = 25\% \cdot Z$ ;  $W = 12.5\% \cdot Z$

3.  $(25\% + 12.5\%) \cdot Z + 2,500,000 = Z \rightarrow 62.5\% \cdot Z = 2,500,000$

4.  **$Z = 4,000,000$**

5.  $Y = 25\% \times 4,000,000 = \mathbf{1,000,000 @ \$6.00}$

6.  $W = 12.5\% \times 4,000,000 = \mathbf{500,000}$  (unallocated)

*Real rounds start with some options already outstanding.*

$$Z = S_1 \div (1 - x_a - \text{pool}\%) = 4,000,000$$

## Lab Part 2 — Series A + the pool

**RAVIGA Capital** leads the Series A: **\$5,500,000** at **\$14,500,000 pre-money**, requiring an unallocated option pool = **10.0%** of post-round fully-diluted shares (carved from the pre-money). Complete the Series A block: (a) post-money; (b) VC %; (c) FD total Z; (d) VC shares & PPS; (e) pool shares; (f) post-round % for founders, angels, VC, pool. Then: journal entries for the round and for pool creation.

Timebox: **13 min · pairs** (same pairs as Part 1)

Hint:  $Z = S_1 \div (1 - x_a - \text{pool}\%)$   
 $S_1 = 2,500,000$

# Poll: journal entry for the option pool?

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**The pool of W shares is created at closing. The entry is...**

A) Dr Comp Expense / Cr APIC — now

B) Dr Cash / Cr Options

C) No entry until options are granted and earned

D) Memo entry for W shares

# The dilution ledger: % down, value up ★

| Founders' position | Formation | Post-Seed | Post-A  |
|--------------------|-----------|-----------|---------|
| Ownership %        | 100%      | 80.0%     | 50.0%   |
| Implied value      | ~\$0      | \$4.0M    | \$10.0M |

**Dilution is the price of growth — judge the value of your smaller slice.**

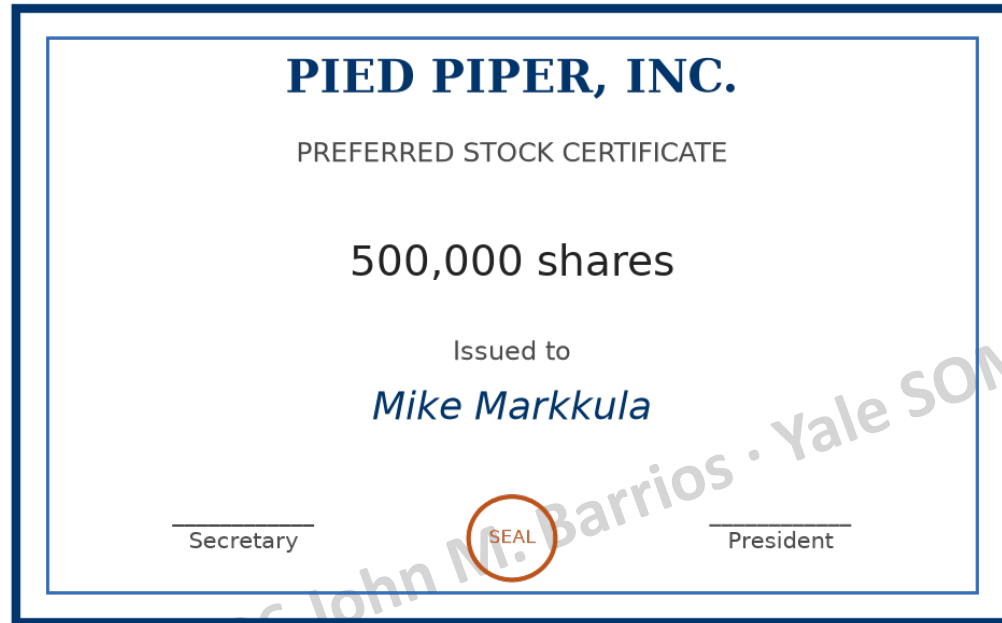
## Three CFO levers:

- pre-money
- round size
- pool size

*Implied value prices common at the preferred PPS — an upper bound. Why? 409A + liquidation preferences (S05 / S11).*

# From paper certificates to platforms

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Illustrative redraw — not a reproduction.

**Why do stock certificates matter?**

**What breaks when you run them on paper?**

*Mike Markkula was Apple's original angel investor.*

# Carta: equity administration as a service

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- Issue founder equity to start the company
- Manage the cap table through every round
- Send e-certificates to equity holders
- Employee portal: vesting, documents, option exercise
- Compliance + **409A valuations** — 409A returns in S05



# Carta dashboards: the cap table you'll actually run

Fully-Diluted Cap Table

| Stakeholder       | Shares    | FD %   |
|-------------------|-----------|--------|
| Founders (5)      | 2,000,000 | 50.0%  |
| Angel investors   | 500,000   | 12.5%  |
| RAVIGA (Series A) | 1,100,000 | 27.5%  |
| Option pool       | 400,000   | 10.0%  |
| Total             | 4,000,000 | 100.0% |

Schedule of Equity Awards

| Grantee     | Granted | Vested | %   |
|-------------|---------|--------|-----|
| Employee 01 | 60,000  | 18,750 | 31% |
| Employee 02 | 40,000  | 10,000 | 25% |
| Employee 03 | 24,000  | 3,000  | 13% |
| Employee 04 | 16,000  | 0      | 0%  |
| Unallocated | 260,000 | —      | —   |

Cap Table view

Schedule of Equity Awards

Redrawn from real Carta dashboards. The same math you just did by hand, with version history, permissions, and an audit trail.

# Takeaways + PS1 ★

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1. The cap table is the company's ownership ledger — and a legal record (S03).
2.  $\text{Post} = \text{Pre} + \text{Investment}$ ;  $\text{ownership} = \text{shares} \div \text{fully-diluted shares}$ . ★
3.  $Z = S \div (1 - \text{new\%} - \text{pool\%})$ ;  $\text{PPS} = \text{investment} \div \text{new shares}$ . ★
4. Pool carved from pre-money dilutes existing holders only — effective pre-money falls. ★
5. Books record cash; pool creation = no entry; valuations never post. ★

**PS1 (Houzz): same build, new company, pool negotiation — due Wed 9/23, 1:00 pm · Monday: Legal & People Infrastructure (S03).**