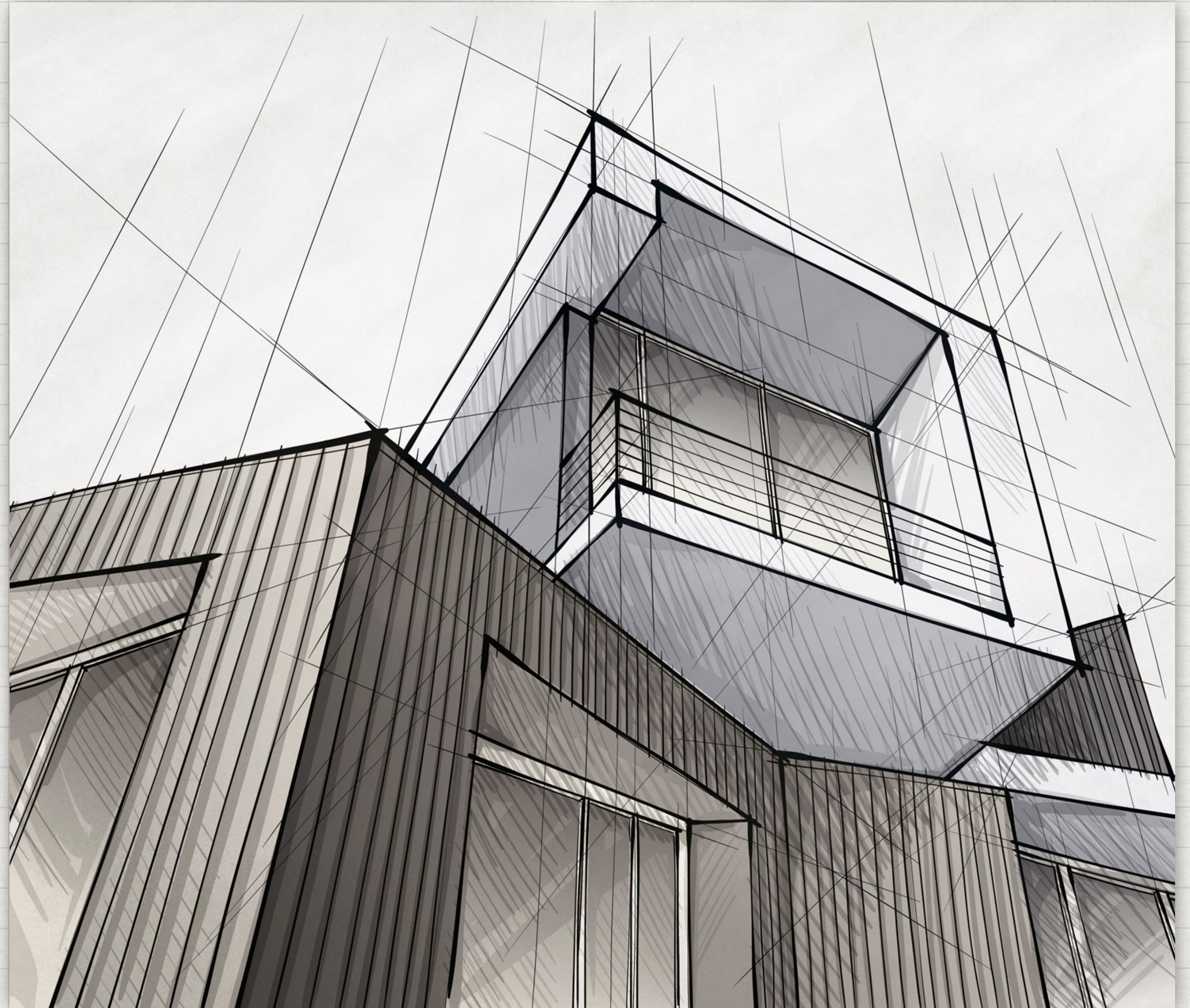


CS 007: SESSION 3

PERSONAL FINANCE FOR ENGINEERS



NOBEL PRIZE IN ECONOMICS FOR 2017

- Richard Thaler (@R_Thaler)
- Professor @ University of Chicago, "Nudge"
- Key insights:
 - Mental Accounting
 - Endowment Effect
- Nice write-ups on NYT & Vox:
 - <https://www.nytimes.com/2017/10/09/business/nobel-economics-richard-thaler.html>
 - <https://www.vox.com/policy-and-politics/2017/10/9/16447752/richard-thaler-nobel-explained-economics>



CS 007

GETTING PAID

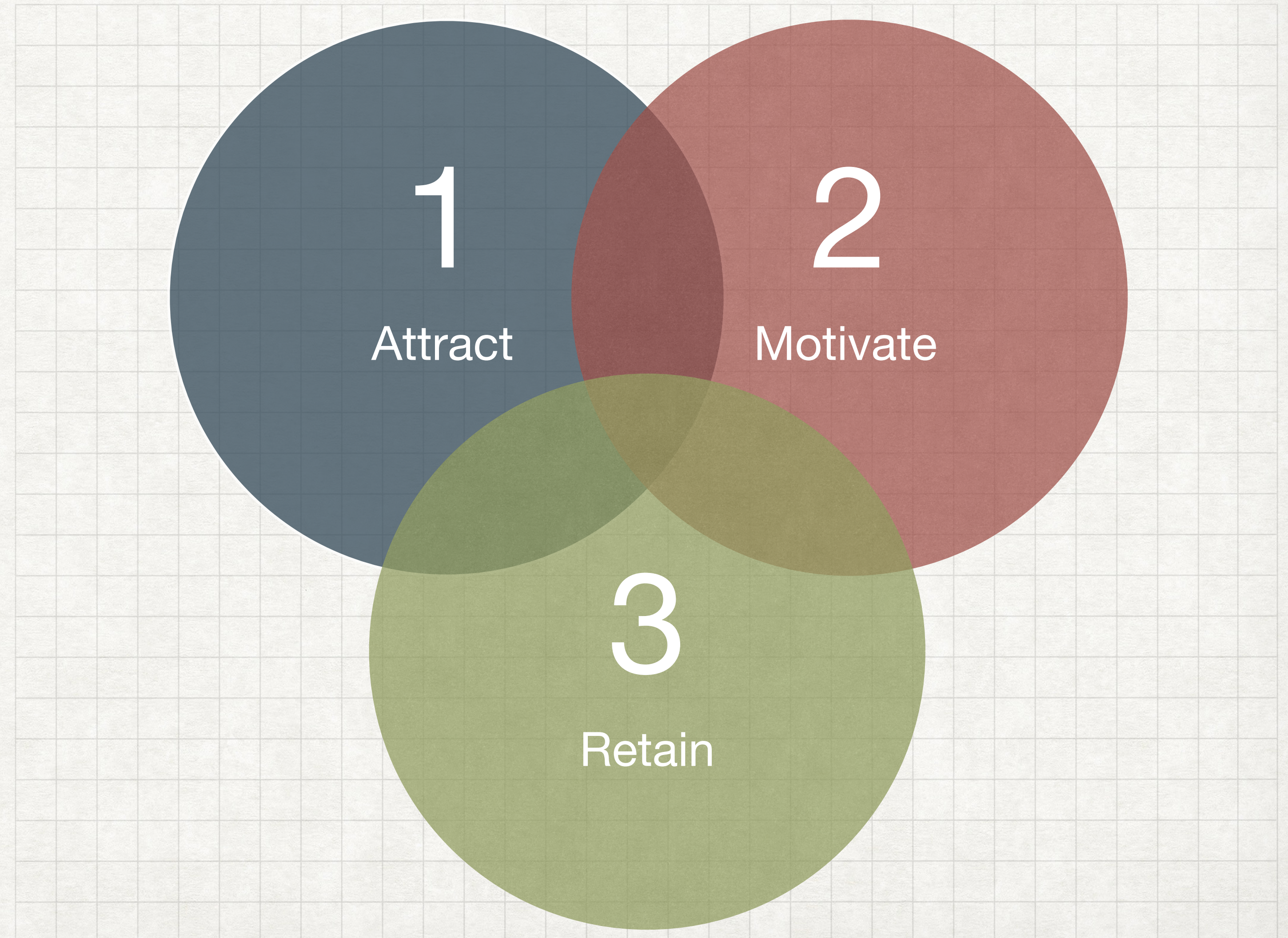


COMPENSATION

Understanding how people are paid

COMPENSATION

- **Attract talent to your company**, by rewarding capability with competitive market-based pay.
- **Motivate employees** by rewarding performance aligned with company strategy & objectives.
- **Retain employees** by fairly matching their contribution to the company
- Compensation is only one part of culture, but it is a critical part.



COMPONENTS

- Base Pay
- Relocation / Signing Bonus
- Annual Bonus
- Equity Compensation
- Financial Benefits
- Perks



COMPONENTS: BASE PAY

- Key factors: Level, Function, Geography
- Market data easily accessible by companies, increasingly available to individuals.
- Adjustments are most commonly made due to annual inflation, internal audit, market competitiveness, promotion.



COMPONENTS: BONUS

- **Signing Bonus / Relocation:** Money paid up-front, at first pay period, to help with move / relocation or to improve offer without affecting base salary.
Be careful: usually has a clawback.
- **Annual / Quarterly Performance Bonus:** Typically a company wide program, fixed potential % based on level, based on both individual & company results.
- **Spot Bonus:** Less common, but managers occasionally are empowered to give one-off bonus to teams / individuals to reward results.



COMPONENTS: EQUITY

- Designed to align employee compensation with shareholder results.
- Particularly attractive to companies that are cash sensitive.
- Very common at almost all levels & roles in technology. Other industries tend to skew towards executives.
- Two common forms: stock options & restricted stock.



COMPONENTS: FINANCIAL BENEFITS & PERKS

- Wide variety of benefits that either offer employees tax advantages or shift costs to employer.
- Health Insurance, Retirement, Stock Purchase likely the most significant.
- Increasingly common at large, well-funded tech companies to see fairly expensive perks (food, transit, fitness)
- Benefits tend to be very uneven in value to employees depending on their personal situation & needs.



EQUITY

Understanding how people are paid

WHAT IS EQUITY?

- Fancy name for the value of a share of ownership of the business.
- Company ownership is divided into shares, and those shares entitle owners to various rights.
- There can be different classes of shares. This is very common with private companies.
- In the simplest case, you can determine how much of a company you own with this fraction

$$\frac{(\text{\# of shares you own})}{(\text{\# of shares total})}$$



PUBLIC COMPANIES

- There are ~6.1 million employer businesses in the US.* Fewer than 4,000 are publicly traded.**
- 99.7% fewer than 500 employees.
78.5% fewer than 10 employees!
- Public companies tend to be larger, as measured in employees & revenue.
- Strict regulations for public companies on timeliness and content of financial results published for the public.
- Market price for both stock and stock options extremely transparent.



* US Census Bureau 2019 <http://sbecouncil.org/about-us/facts-and-data/>

** <https://www.cnn.com/2023/06/09/investing/premarket-stocks-trading/index.html>

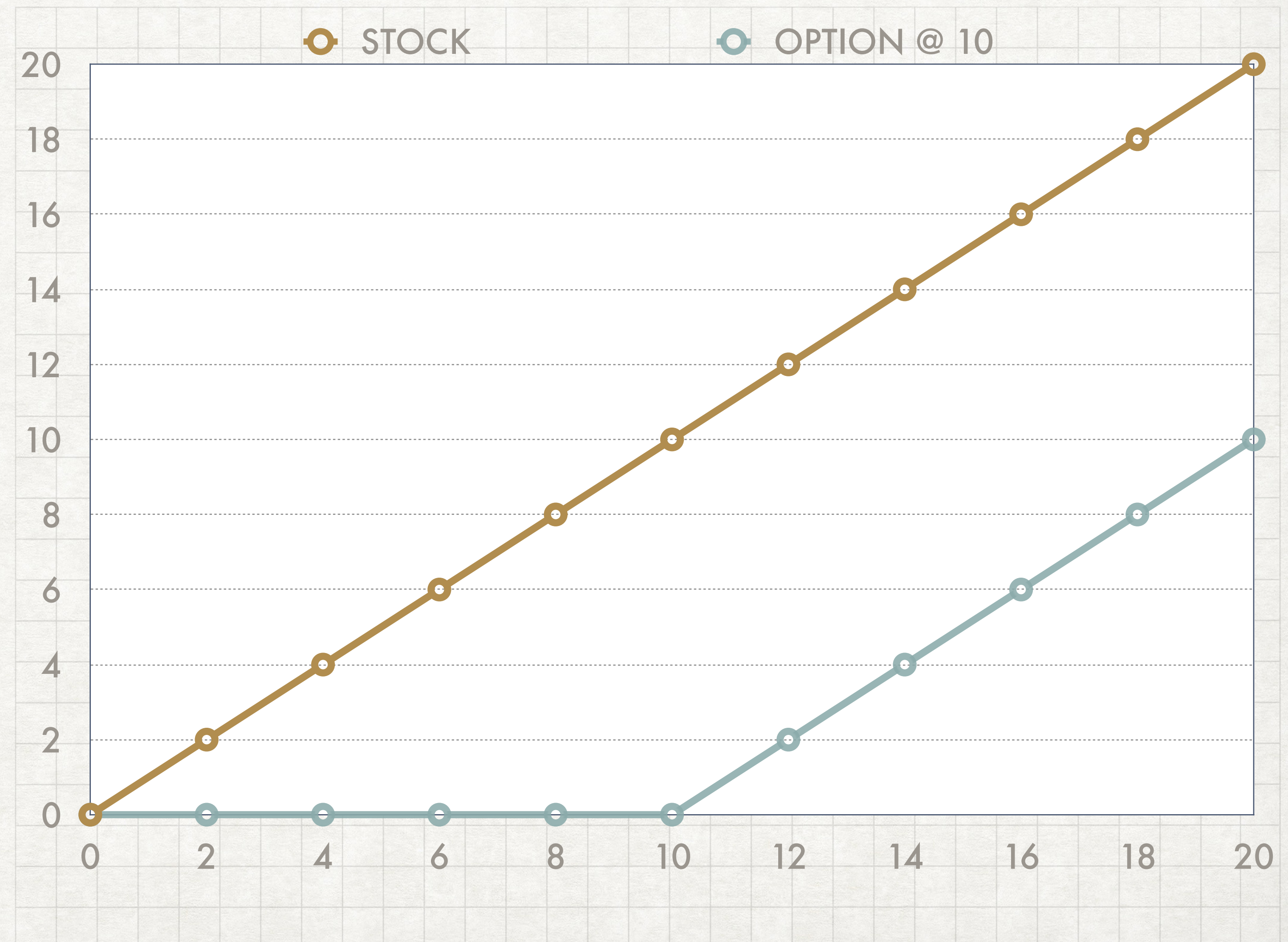
PRIVATE COMPANIES

- Most businesses are private, but for graduating engineers most relevant form are venture-backed startups.
- Private companies have multiple share classes, and are frequently cashflow negative.
- Future financing means **dilution**. Your share of the company will decrease as the company issues more shares.
- You cannot evaluate a company's equity without knowing the **amount raised** and at **what terms & preferences**.
- Companies vary widely in how much they disclose to their employees & candidates.
- For the most part, you cannot sell your stock when a company is private.



STOCK OPTIONS

- Stock options are a “derivative,” a security based on another security. There are many types, but for compensation they represent “the right to buy”
- Key terms
 - **Grant date.** When you receive the options. Typically after the first board meeting when you start.
 - **Vesting Start Date.** Typically your first day of work.
 - **Vesting Schedule.** Typically 4 years, with a 1 year cliff.
 - **Exercise / Strike Price.** Typically fair market value the day the options are granted.
 - **Expiration Date.** Typically 10 years, although 7 is not uncommon. Expiration triggers early if you leave the company (90 days).
- There are tax consequences if the strike price does not match the current fair value, and when you exercise them. **Pro Tip: 83(b)**
- There are tax consequences when you exercise a stock option based on type (ISO vs. NQSO), but not when you vest them.
- **Intrinsic value** is market price - strike price. **Time value** adds the value of the option itself & the flexibility it provides.



RESTRICTED STOCK

- Restricted stock is a broad term for shares in a company that have restriction on their ownership (example: vesting).
- **Restricted Stock Units (RSUs)** are a promise from a company to issue shares to the employee. **Restricted Stock** are actual shares with a restriction on them.
- There is no strike price. You are granted a number of shares with a vesting schedule.
- You owe income taxes immediately when you vest restricted stock. Most companies withhold taxes by selling the portion of stock necessary at that time.
- Originally a feature at public companies (e.g. Google), became increasingly common at large private companies when strike price becomes prohibitive.
- Once vested, there is no meaningful tax difference between these shares and ones you could buy that same day with cash.

Linkedin Corporation
PO BOX 43004, Providence, RI 02940-3004

UN A SAMPLE
DESCRIPTION (IF ANY)
A00 1
A00 2
A00 3
A00 4

CUISP
Holder ID
Insurance Value
Number of Shares
DTIC

Certificate Numbers	Num/No. Denom.	Total
12345678901234567890	1	1
12345678901234567890	2	2
12345678901234567890	3	3
12345678901234567890	4	4
12345678901234567890	5	5
12345678901234567890	6	6
12345678901234567890	7	7
Total Transaction		28

016570| 003590|127C|RESTRICTED|4|057-423

1234567

CLASS B COMMON STOCK
PAR VALUE \$0.0001

Certificate Number
ZQ 000000

CLASS B COMMON STOCK
THIS CERTIFICATE IS TRANSFERABLE IN
CANTON, MA AND NEW YORK, NY

Shares
*****000000*****
*****000000*****
*****000000*****
*****000000*****
*****000000*****

LINKEDIN CORPORATION
INCORPORATED UNDER THE LAWS OF THE STATE OF DELAWARE

THIS CERTIFIES THAT

MR. SAMPLE & MRS. SAMPLE &
MR. SAMPLE & MRS. SAMPLE

is the owner of

***ZERO HUNDRED THOUSAND
ZERO HUNDRED AND ZERO***

FULLY-PAID AND NON-ASSESSABLE SHARES OF THE COMMON STOCK OF

Linkedin Corporation (hereinafter called the "Company"), transferable on the books of the Company in person or by duly authorized attorney, upon surrender of this Certificate properly endorsed. This Certificate and the shares represented hereby, are issued and shall be held subject to all of the provisions of the certificate of incorporation, as amended, and the By-Laws, as amended, of the Company (copies of which are on file with the Company and with the Transfer Agent), to all of which each holder, by acceptance hereof, assents. This Certificate is not valid unless countersigned and registered by the Transfer Agent and Registrar.

Witness the facsimile seal of the Company and the facsimile signatures of its duly authorized officers.

[Signature]
Chief Executive Officer

[Signature]
Secretary

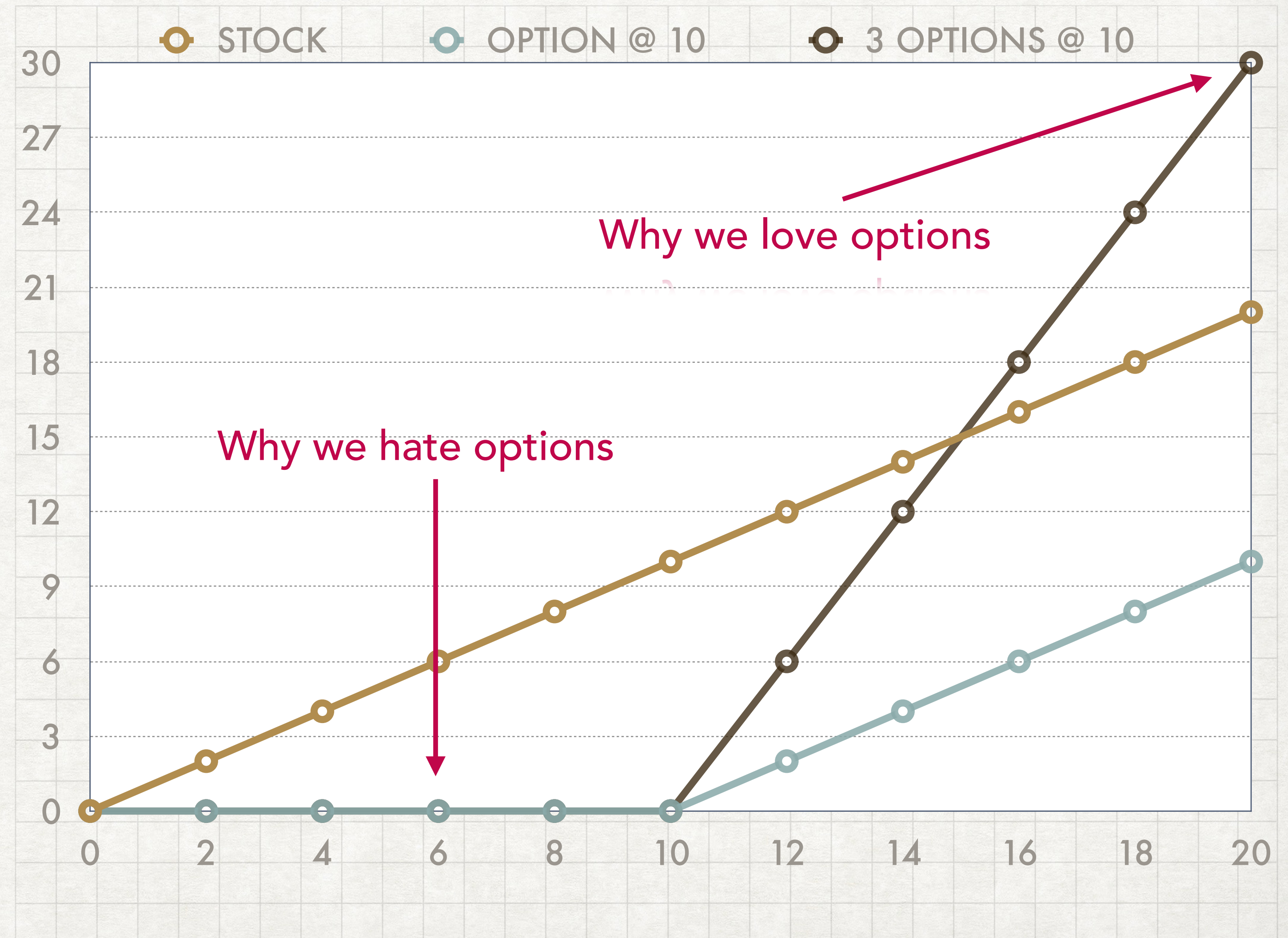
DATED <<Month Day, Year>>
COUNTERSIGNED AND REGISTERED:
COMPUTERSHARE TRUST COMPANY, N.A.
TRANSFER AGENT AND REGISTRAR

By _____
AUTHORIZED SIGNATURE

March 2003
DELAWARE

STOCK OPTIONS VS. RESTRICTED STOCK

- Stock options can be worthless if the value of the stock drops below the exercise price. Restricted stock only becomes worthless if the stock price drops to zero.
- Employees typically receive more shares via stock options than via restricted stock, because the restricted stock lacks a strike price and is worth more than an option. Ratio can be 3:1.
- Both have liquidity concerns.
 - With stock options, not everyone has the cash to exercise their stock & pay related taxes when they leave the company.
 - With restricted stock, you likely will not be able to sell your earned shares until a liquidity event (IPO or acquisition).
- Significant tax benefits with stock options, because you do not owe taxes upon vesting & you can control when you exercise.
- Common stock is valued significantly below preferred stock in private companies, but that difference disappears when a company goes public. AS a result, your strike price is typically at a discount to the preferred stock.
- Restricted stock is much easier to value in present day dollars.



EVALUATING OFFERS

Looking at real world offers from 2025

FOUR OFFERS: TITANTECH PUBLIC

- Size: 10,000+ people
- Market capitalization of over \$100B
- Title: Software Engineer
- Offer Terms:
 - Base compensation: \$150K - \$160K
 - Relocation / Signing Bonus: \$10K - \$25K
 - Annual Bonus: 10-15%
 - Equity: RSUs with a current value of \$120K to \$160K, vesting over 4 years
 - Perks / Benefits: Too many to count, 401(k) match of 100%



FOUR OFFERS: UNICORNTech PRIVATE

- **Size:** 1000+ people
- **Market capitalization** of over \$5B
- **Title:** Software Engineer
- **Offer Terms:**
 - Base compensation: \$130K - \$140K
 - Relocation / Signing Bonus: \$5K - \$20K
 - Equity: Either \$100K - \$160K RSU, vesting over 4 years
 - Perks / Benefits: Free food, lots of perks, no 401(k) matching.



FOUR OFFERS: NEXTBIGTHING

- **Size:** 30 people
- **Market capitalization:** raised \$15M Series A at \$60M valuation
- **Title:** Software Engineer
- **Offer Terms**
 - Base compensation: \$120K - \$140K
 - Relocation / Signing Bonus: \$0K - \$10K
 - Annual Bonus: None
 - Equity: Stock options worth 0.05% - 0.25% of the company, vesting over 4 years
 - Perks / Benefits: Basic. Health insurance, 401(k), Parking / Transit Pass.



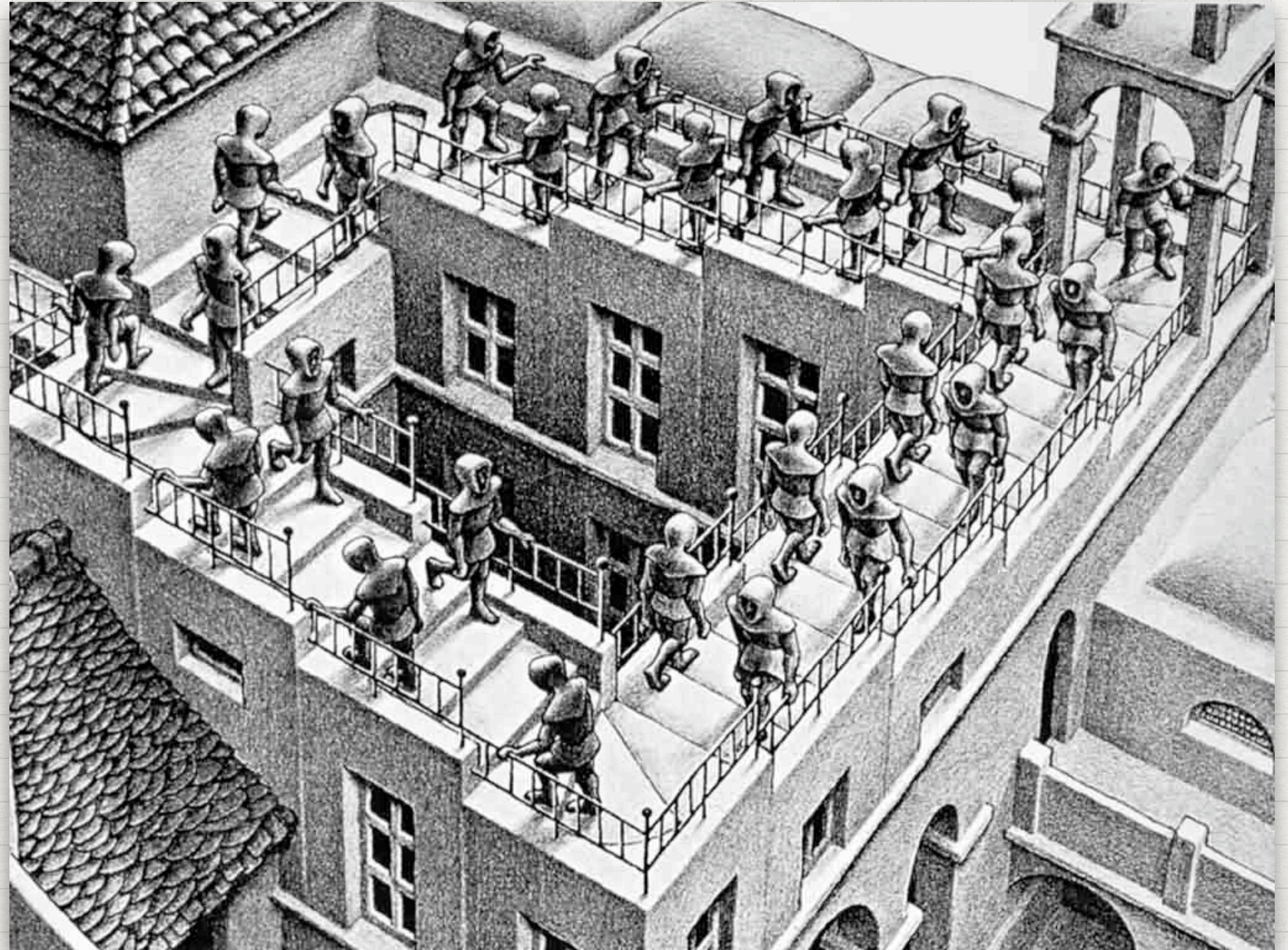
FOUR OFFERS: TOOBIGTOFAIL JUMBOBANK

- Size: 100,000+ people
- Market capitalization: Over \$200B
- Title: Analyst
- Offer Terms
 - Base compensation: \$110K - \$120K
 - Relocation / Signing Bonus: \$10K - \$25K
 - Annual Bonus: \$35K - \$100K
 - Equity: None
 - Perks / Benefits: Generous financial benefits, not a lot of perks, quite a bit of travel & airline miles.
 - Considerations: 80-100 hr weeks, travel, unpredictable timing (deals)
- With promotion, can reach \$300K - \$500K total compensation in 3-5 years.



IT'S NEVER JUST ABOUT MONEY

- For equity, what is the potential for upside in the value of the company? Downside?
- Company success disproportionately affects job offers from future companies, but success in technology can be fleeting.
- Title vs. Compensation vs. Quality
- Talent & network matters significantly
- Building skills / experiences / achievements with lasting value
- Career trajectories vary. Success rates. Luck. Potential future roles.
- The market is fairly efficient, but it does not compensate for all types of risk.



LAST WORD: NEGOTIATION

- The market is fairly efficient, but companies vary significantly in their approach.
- Some reward negotiation. Others explicitly work against it. Lack of negotiation is one of the contributing causes to pay disparity. Polite but firm is often the right approach.
- High quality companies do a lot of work on fair compensation, but startups can vary widely. Know the market data.
- Some terms are more flexible than others. Base comp is often more difficult to move than signing bonus or equity. If you are going to a private company, it's almost always a bet on equity anyway.
- Don't be afraid to approach the topic of fair compensation with your manager. Understand the difference in roles between a recruiter & a manager.
- Be emotionally honest with yourself on what is a deal breaker. Lines in the sand can be hard to erase.



CS 007

QUESTIONS



WEEK 4: SPEND LESS THAN YOU MAKE

- Income vs. Spending
- Time frames
- Budgets
- Savings Rates
- Personal Income Statement

