

L7: Raising Capital

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Essentials of Financial Economics 2020
Financial Decision-Making (1st Quarter)

Motivation

- There is a fundamental mismatch between ideas and capital.
 - Entrepreneurial types come up with great ideas.
 - Investors have funds for new projects.
 - These two groups of agents don't necessarily coincide.
- Consequently, companies will need to sometimes raise funds from outside investors.
- This is especially true for new start-ups.

Sources of funds prior to IPO (1)

- **Self-financed:** family, friends, initial owner put up all or most of the capital.
 - Smallest businesses are primarily all equity.
- **Retained earnings** from previous operations.
- **Institutions:**
 - Banks and financial companies: loans a large source of funding for startups.
 - Suppliers: trade credit.

Sources of funds prior to IPO (2)

- **Angel investors:** individuals who put up their own funds.
 - Typically invest in small start-up firms.
 - May or may not be related somehow to the entrepreneur.
 - High risk v.s. high reward due to small number of investments.
- **Venture capital firms:** a firm that manages a pool of funds to invest in young firms.
 - Diversification of investments: usually receive smoother returns than angel investors.
 - Funds usually coupled with extensive monitoring of firm performance.
 - Limited partners pool their funds together for investment.
 - Managers may be limited or general partners.
 - Will “part ways with the company” at a certain point, (e.g. through IPO).

Sources of funds prior to IPO (3)

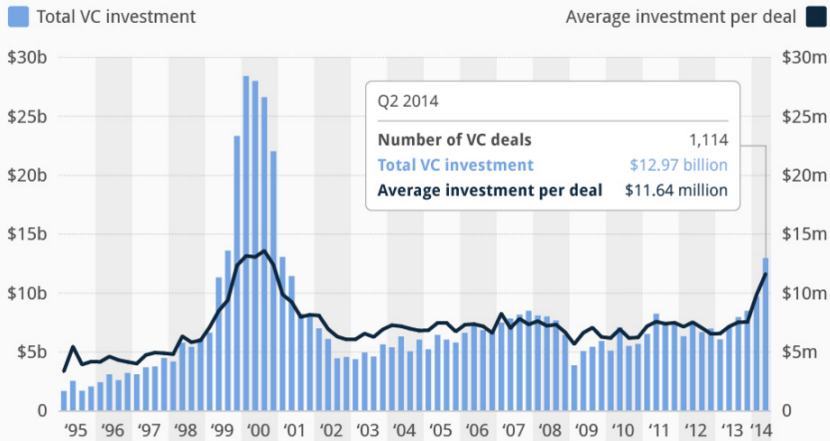


Shark Tank

Sources of funds prior to IPO (4)

Startup Funding Shows Signs of New Tech Bubble

Venture capital activity in the United States since 1995



@StatistaCharts

Sources: Thomson Reuters, PwC MoneyTree

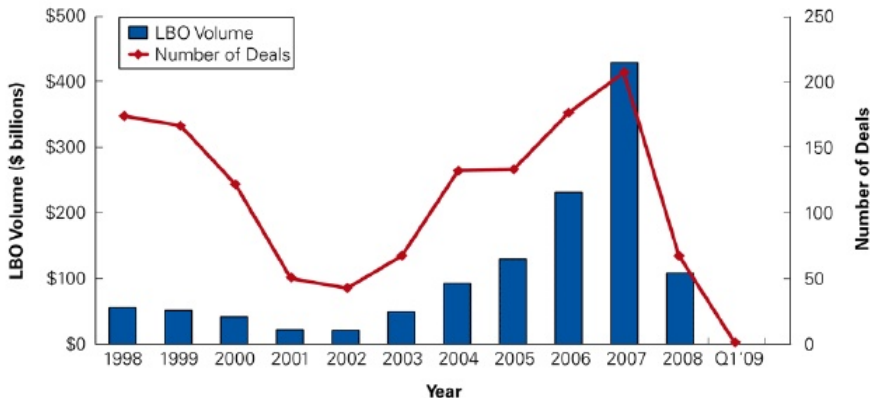
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More sources of funds (1)

- **Private equity firms**: similar to VC firms but invest in existing companies.
- Can purchase an existing **public company** using a **leveraged buyout (LBO)**.
 - Use the **target's** cash flows or assets as collateral.
 - “No skin off the **buyer's** nose”.
- Actions of private equity firms are often demonised.
 - Asset stripping and layoffs as they try to increase value.
 - Image of “corporate raiders” — Wall Street 1987 movie.



More sources of funds (2)



Source: Standard & Poors Leveraged Buyout Review (Volume data not available for the single deal in Q1 '09)

More sources of funds (3)

- **Institutional investors:** pension funds, insurance companies, etc.
 - Want diversification for their members.
- **Corporate investors:** a corporate partner or strategic acquisition of young firms.
 - Made for competitive purposes or to utilise corporate synergies.
 - May or may not be in the same line of business.

Initial public offering (IPO) (1)

- Process of selling stock to the public for the first time.
- Pros of IPO:
 - Large source of funds for the firm.
 - Common way of the VCs from exiting the firm.
- Cons of IPO:
 - Equityholders become more decentralised.
 - Large amount of paperwork is required through SEC filings.
 - Loss of control over the firm!
 - Underwriting costs.

Initial public offering (IPO) (2)

- **Underwriter** is the investment bank that manages the issuance and designs the structure.
- Underwriters make a varying degree of commitments to the firm in terms of the number of shares and price of sale.
 - **Best effort:** underwriter will sell as many securities as they can; not responsible for any unsold securities.
 - **Firm commitment:** underwriter **promises** to sell all securities at the offer price.
 - **Auction:** selling the shares directly to the public.
- Best effort and firm commitment involve selling to institutional investors whereas auction is to the public.

Initial public offering (IPO) (3)

- Underwriter will usually sell shares firstly to institutional investors.
- **Road show:** travelling to different institutions and giving presentations to analysts and fund managers to generate interest in an upcoming IPO.
- **Book building:** the process of capturing and recording investor demand for shares in an upcoming IPO.
- **Over-allotment allocation:** a condition that usually allows the underwriter to issue as many as 15% more shares than originally planned, (also called Greenshoe provision).
- Point behind roadshow and book building is to accurately set the IPO share price.

Initial public offering (IPO) (4)

- **Underwriting spread:** the difference between the amount the underwriter pays the issuing company and the amount they sell the shares for to investors.
- **Underpricing:** generally underwriters will set the issue price so that the average first day return is positive.
 - Average first day return in the U.S. is 18.3%.
 - Underwriters benefit from doing this in the long term.
 - Pre-IPO shareholders lose — less capital raised for their project.

Selling equity: big picture

- Companies will generally undergo several rounds of equity financing.
 - Initial equity from entrepreneur.
 - Angel investors.
 - Venture capitalists.
 - Initial public offering.
 - Seasoned equity offering (SEO).

Seasoned equity offering (SEO)

- New shares issued to raise additional funds.
- Most steps are the same as for an IPO.
- Two types of SEOs:
 - **Cash offer:** shares offered to investors at large.
 - **Rights offer:** only issued to existing shareholders.
 - Offering could also be some hybrid of both.
- Price reaction is usually negative: consistent with adverse selection.

Mechanics of VC financing (1)

- VCs will generally receive **preferred stock** that are convertible.
 - Equivalent to debt financing when firm performance is low.
 - Can switch to equity when firm is performing well.
- The amount of capital the VC will put up depends on a **valuation**.
 - **Pre-money valuation**: valuation of the company prior to the financing is provided.
 - **Post-money valuation**: valuation after the financing is provided and the investment has been made.

Mechanics of VC financing (2)

- **Term sheet** gives the terms under which the VC will provide financing to the company.
- **Conversion price:** is the price per share at which the preferred shares can be converted into common shares.
- Conversion to common equity dictated by the **conversion ratio (CR)**, defined as

$$CR = \frac{\text{Initial price per share for stock}}{\text{Conversion price}}$$

- E.g. a CR of 1 : 1 means that 100 preferred stock will convert to 100 common stock.
- E.g. a CR of 1.25 : 1 means that 100 preferred stock will convert to 125 common stock.

Mechanics of VC financing (3)

- Can be multiple rounds of VC financing injections.
- Each round gets a new **series**, each of which has different terms, (e.g. Series A preferred stock, Series B preferred stock, ...).
- When subsequent issuances take place, **dilution** can take place to the original shareholders.
 - A reduction in their fraction of the company owned.
- **Antidilution provisions** will often be included in the term sheet to prevent this from happening.
- Also takes care of situations whereby the price per share of the original equityholders is reduced.
 - Situation whereby new shares are issued at lower price per share.

Mechanics of VC financing (4): antidilution provision

- Two popular types of antidilution provisions.
 - **Full ratchet:** adjust conversion price such that higher-priced old shareholder gets same deal as new lower-priced shareholders.
 - **Weighted average:** recalibrates the conversion price based on the size and price of dilutive issuance.
- Full ratchet is more attractive to investors; less attractive to the entrepreneur.

Mechanics of VC financing (5): full ratchet

- Consider an example where the previous preferred stock were issued at \$1 per share.
- Now the firm undergoes an additional round of financing with new preferred issuance price of \$0.50 per share.
- Conversion price of old preferred shareholders is now reduced to \$0.5 per share.
 - Implies a conversion ratio of 2:1 now, (up from 1:1 earlier).
- Now one share of preferred stock is convertible into two shares of common stock.
- Two potential sources of considerable ownership dilution from the viewpoint of the entrepreneur:
 - New investors.
 - Original VC.

Mechanics of VC financing (6): weighted average

- More commonly used by VCs nowadays.
- Formula for the new conversion price

$$NCP = OCP \times \frac{OB + \frac{MI}{OCP}}{OB + SI}$$

where

- NCP: new conversion price.
 - OCP: old conversion price.
 - OB: number of shares outstanding before issuance.
 - MI: amount of money invested in current round.
 - SI: number of shares issued in the current round.
- Formula adjusts the conversion price based on the relative amount of the company that is being sold at lower price.

Mechanics of VC financing (7): liquidation preference

- Upon liquidation, the preferred shareholders get paid before the common shareholders.
- Often the amount they are entitled to is some multiple, (e.g. $2\times$ or $3\times$), the amount they put up for the initial investment.
- Only matters if the company is doing poorly.
- If the company is doing well, everybody is common equity, (after conversion).

Example I

- The founder of Company I invested \$800,000 and received 8 million shares of stock.
- The company now needs to raise a second round of capital through a VC.
- This VC will invest \$1 million and wants to own 20% of the company after the investment is completed.
 - (a) How many shares must the VC receive to end up with 20% of the company?
 - (b) What is the implied price per share of this funding round?
 - (c) What will the value of the whole firm be after this investment (the post-money valuation)?

Example 1 solutions

- (a) After the funding round, the founder's 8 million shares will represent 80% ownership of the firm. To solve for the new total number of shares, (S), use

$$\begin{aligned}8,000,000 &= 0.8S \\ \Rightarrow S &= 10,000,000\end{aligned}$$

meaning that 10m shares are on issue after the financing round. That is — to end up with a stake of 20% in the company — the VC must buy 2m shares.

- (b) The implied price per share is then given by $\frac{\$1,000,000}{2,000,000} = \0.5 , which is the amount of the investment by the VCs divided by the number of shares received.
- (c) Post-investment, the total number of shares is 10m. We found in the previous part of the problem that the implied price per share is \$0.5. We then find the total firm value as

Example II

- MacKenzie Corp currently has 10 m shares outstanding at a price of \$40 per share.
- The firm would like to raise money and has announced a rights issue.
- Every existing shareholder will be sent one right per share of stock that she owns. The company plans to require five rights to purchase one share at a price of \$40/share.
 - (a) Assuming the rights issue is successful, how much money will it raise?
 - (b) What will the share price be after the rights issue? (Assume perfect capital markets)
 - (c) Suppose instead that the firm changes the plan so that each right gives the holder the right to purchase one share at \$8 per share. How much money will the new plan raise?
 - (d) What will the share price be after the rights issue?
 - (e) Which plan is better for the firm's shareholders? Which is more likely to raise the full amount of capital?

Example II solutions (1)

- (a) It takes five rights to buy one new share. Given that there are 10m shares originally on issue, it follows that $\frac{10}{5} = 2m$ new shares will be bought. Given that the new issue price is \$40m, the amount raised will be

$$\begin{aligned}\text{Amount raised} &= 2 * 40 \\ &= \$80m.\end{aligned}$$

- (b) Assuming perfect capital markets, we can find the value of the firm after the issue as

$$\begin{aligned}V_{\text{post-issue}} &= (400) + 80 \\ &= \$480m\end{aligned}$$

which comes from the original value of assets, (10m shares times \$40 per share = \$400m), plus the additional funds raised. Then we can say that the share price will be given as $\frac{480}{12} = \$40$, where the numerator is the firm value and denominator is the number of shares on issue afterwards.

Example II solutions (2)

- (c) We'll now sell 10m shares instead of 2m under the previous plan. Therefore the new amount raised is

$$\begin{aligned}\text{Amount raised}' &= 10m * (\$8) \\ &= \$80m.\end{aligned}$$

- (d) After the issue we'll have \$480m of firm value again, (same original value plus same additional funds raised). The new total number of shares will now be 20m, giving a share price of $\frac{480}{20} = \$24$.

Example II solutions (3)

- (e) The shareholders will be indifferent between the two scenarios. Consider the first case — it's a zero NPV exercise — the value of a share will be \$40 in either case. In the second case, the share is worth \$24. The right is worth $24 - 8 = \$16$ and so

the total value from owning a share is $24 + 16 = \$40$, which is the same as in the first setup. Notice however that exercising the right is a good deal for the

shareholders in the second case. In the first case they are completely indifferent and as a result, the firm is more likely to get full participation in the offer.

Example III

- Your firm has 10 million shares outstanding and you are about to issue 5 million new shares in an IPO.
- The IPO price has been set at \$20 per share, and the underwriting spread is 7%. The IPO is a big success with investors, and the share price rises to \$50 the first day of trading.
 - (a) How much did your firm raise from the IPO?
 - (b) What is the market value of the firm after the IPO?
 - (c) Assume that the post IPO value of your firm is its fair market value. Suppose your firm could have issued shares directly to investors at their fair market value, in a perfect market with no underwriting spread and no underpricing. What would the share price have been in this case, if you raise the same amount as in part (a)?
 - (d) Comparing part (b) and (c), what is the total cost to the firm's original investors due to market imperfections from the IPO?

Example III solutions (1)

- (a) The amount raised by the IPO is given by the value of shares less the value of the underwriting fee

$$\begin{aligned}\text{Raised amount} &= 5m * (\$20) * (100\% - 7\%) \\ &= \$93m,\end{aligned}$$

where the terms on the right of the first equality are the number of shares times the price per share of the IPO times what's leftover after the fees are deducted.

- (b) After the IPO and the subsequent rise in the price, the value of the firm is given by

$$\begin{aligned}V_{\text{post-IPO}} &= 15m * (\$50) \\ &= \$750m\end{aligned}$$

where the terms on the right-side of the first equality are the total number of shares after the issue and the price per share respectively.

Example III solutions (2)

- (c) We're told that the firm is at fair market value — in the absence of the new money raised this is given by

$$\begin{aligned}V_{pre-cash} &= 750 - 93 \\ &= \$657m.\end{aligned}$$

The share price at this point is then given by $\frac{657}{10} = \$65.7$, which is the fair market value divided by the original number of shares. Then see that

$$\begin{aligned}\text{New shares issued} &= \frac{93}{65.7} \\ &= 1.4155m\end{aligned}$$

which is the number of shares that would be sold to raise the \$93m in this environment divided by the price at which they are acquired.

Then see that the new value of the firm will be \$750m after the issue and the total shares will be 11.4155m, giving a share price of \$

$$\frac{750}{11.4155} = \$65.7m.$$

Example III solutions (3)

- (d) The original investors lose in the sense that the price per share will be lower in the part (b) scenario than in the part (c) scenario. The difference in share prices is given by $65.7 - 50 = 15.7$. Then we can calculate the total loss due to the market imperfections as

$$\begin{aligned}\text{Loss} &= (65.7 - 50) * (10m) \\ &= \$157m.\end{aligned}$$

Takeaways

- Mismatch between ideas and capital forces firms to raise funds through external investors.
- Financial frictions shape the way firms raise capital or explain why firms cannot raise capital.
 - Fees.
 - Agency problems.
 - Asymmetric information.