TECHNOLOGY DEVELOPMENT

NOTE: The purpose of these slides is to introduce and educate you about financing methods and mechanisms that you may not have heard about.
Please conduct your own diligence as you look into these. I am of course available to work with you if any of these are of interest
- Rana K Gupta, Director, Faculty Entrepreneurship

Many types of financing assisting SO many paths to market

Rana K Gupta

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Types of Financing
(that you may or may not have heard of)

- **Non-Recurring Engineering**
- Licensing
- Angel & FFF
- SBIR and STTR
- Revolving Line of Credit
- Leasing
- Factoring
- Bootstrapping

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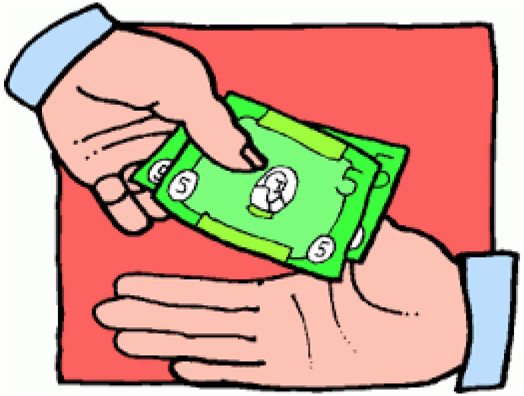
Non-Recurring Engineering (NRE)

NRE is when your customer pays you to research, design, develop, and test a product and then buys it from you!



Sources: [1] https://en.wikipedia.org/wiki/Non-recurring_engineering
[2] https://insightsolutionsglobal.com/what-is-nre-non-recurring-engineering-cost/

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NRE Example

You're building something: widget, machine, software, etc. to address a **NEED** you've identified in the market but…

…you need financing to build it

Sources: [1] https://en.wikipedia.org/wiki/Non-recurring_engineering
[2] https://insightsolutionsglobal.com/what-is-nre-non-recurring-engineering-cost/

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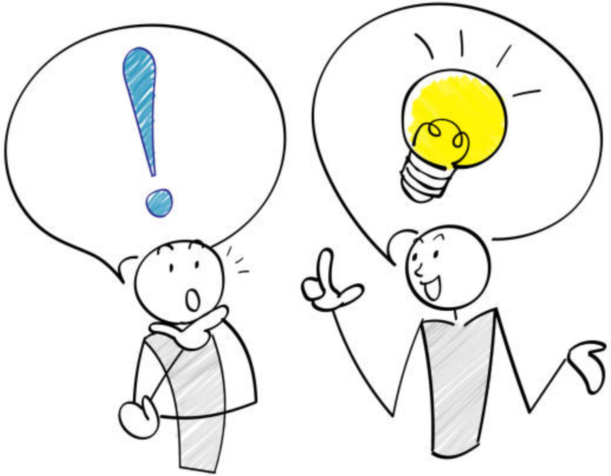
NRE Example

You approach your customer and tell them what **NEED** of theirs your product will address

(Can be improvement on existing product or wholly new)



Sources: [1] https://en.wikipedia.org/wiki/Non-recurring_engineering
[2] https://insightsolutionsglobal.com/what-is-nre-non-recurring-engineering-cost/

NRE Example

They jump up and down because you've done your homework (interviewed customers, competitors, users, etc.) to identify their **NEED**

Sources: [1] https://en.wikipedia.org/wiki/Non-recurring_engineering
[2] https://insightsolutionsglobal.com/what-is-nre-non-recurring-engineering-cost/

NRE Example

You propose terms of funding and total payment upon completion of product

(Customer can pay upfront or incrementally)

Sources: [1] https://en.wikipedia.org/wiki/Non-recurring_engineering
[2] https://insightsolutionsglobal.com/what-is-nre-non-recurring-engineering-cost/

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Pros and Cons of NRE

Pros

- Although non-recurring, good way to build relationship with a potential customer/business opportunity
- Allows you to work within your industry and get paid for it
- Good for short-term income

Cons

- Not meant to be long-term form of financing
- Customer may have constantly shifting expectations, some of which may be beyond scope of your original intended product
- Difficult to waive
- Customer has rights to product they are purchasing from you

Sources: [1] https://arc.pragmaticinstitute.com/resources/articles/non-recurring-engineering
[2] http://blog.optimumdesign.com/5-thing-you-need-to-know-about-nre

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Licensing

Let’s say you have created something (a new product, methodology, software) and have copyrighted/patented it.

You know this product has value and you want to explore an avenue to exploit the value of that asset. However, you want the cash sooner rather than later, which may involve forgoing the process of producing, marketing, and distributing your product

You can **license** your product to another company who will use their existing networks and manufacturing capabilities to sell your product with you receiving some cash for it.

In short, you are exploiting your own asset for a faster stream of revenue

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Licensing

The length of a license as well as the frequency with which you receive cash are based on your negotiated contract

<u>3 main ways to get paid royalties:</u> Licensee (company) pays Licensor (YOU)

- An upfront payment at time of licensing
- Milestone payments of agreed upon amounts at agreed upon events
  - For example: pay after first prototype, after first million in sales, etc
- Consistent payments of periodic percentage of negotiated revenue

Almost all contracts specify a **minimum guarantee**, a certain amount of money that must be paid regardless of the outcome of licensing

Sources: [1] https://www.inc.com/encyclopedia/licensing-agreements.html
[2] https://blog.freelancersunion.org/2014/05/15/dont-get-stiffed-how-ask-milestone-payments
[3]https://www.allbusiness.com/the-minimum-guarantee-a-fundemental-feature-of-product-licensing-2-8518280-1.htmls

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Why License?

In short, two reasons:

1) **Cash**. You will be paid the minimum guarantee and potentially more based on the outcomes of your product. While your product is licensed, you can continue work on unrelated projects and ideas that will accelerate your business while passively receiving revenue and publicity

1) **Outreach**. When you license to another company, you receive the benefits of their existing connections and reach. Regardless of the fundamental value of your product, you as an individual may not be able to show others its value. By licensing your product to an established group, you essentially get your foot in the door

Why License?

Pros

- You don't need to jump through all the hoops to actually SELL your product, the licensee will take care of that
- Allows you to work on new projects while your licensed products are making you money
- You retain ownership of your intellectual property
- Make connections with other industries based on the marketing and relations of the licensee

Cons

- Your product's success relies on the capabilities of your licensee. If they fail to sell, you fail to profit
- Potentially damage your personal or brand image based on the actions of the licensee
- Theft: even a licensing contract will not protect you unless you have the resources to pursue your licensee legally

Sources: [1] https://www.nibusinessinfo.co.uk/content/advantages-and-disadvantages-licensing-patents

Types of Financing
(that you may or may not have heard of)

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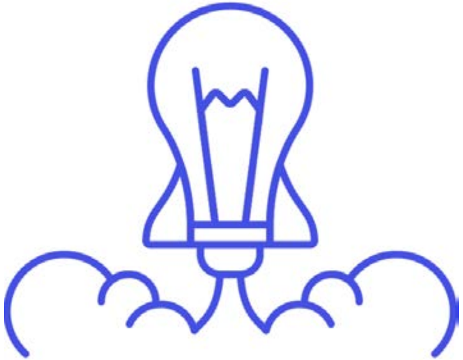
- Non-Recurring Engineering
- Licensing
- **Angel & FFF (Friends, Family, and Fools)**
- SBIR and STTR
- Revolving Line of Credit
- Leasing
- Factoring
- Bootstrapping

Family, Friends, and Fools (FFF)

- Family, friends, and whoever else is willing to invest early without detailed proof of concept or prototype
- 35-40% of startups receive funding from FFF
- Typically $10K - $150K (average is close to $10K)
- Usually one of the first (if not the first) round of funding received by a startup
- Receive Common Stock/Equity or convertible notes



Sources: [1] https://www.dlapiperaccelerate.com/knowledge/2018/friends-and-family-round-vs-angel-round.htm
[2]l https://cytlaw.medium.com/friends-family-vs-angels-preseed-financing-efcd29678a35

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Angel Investor

- Typically invest $100k - $2 million

- Usually takes place after FFF funding but not exclusively

- Requires proof of concept/evidence of work

- Open to investing in multiple rounds

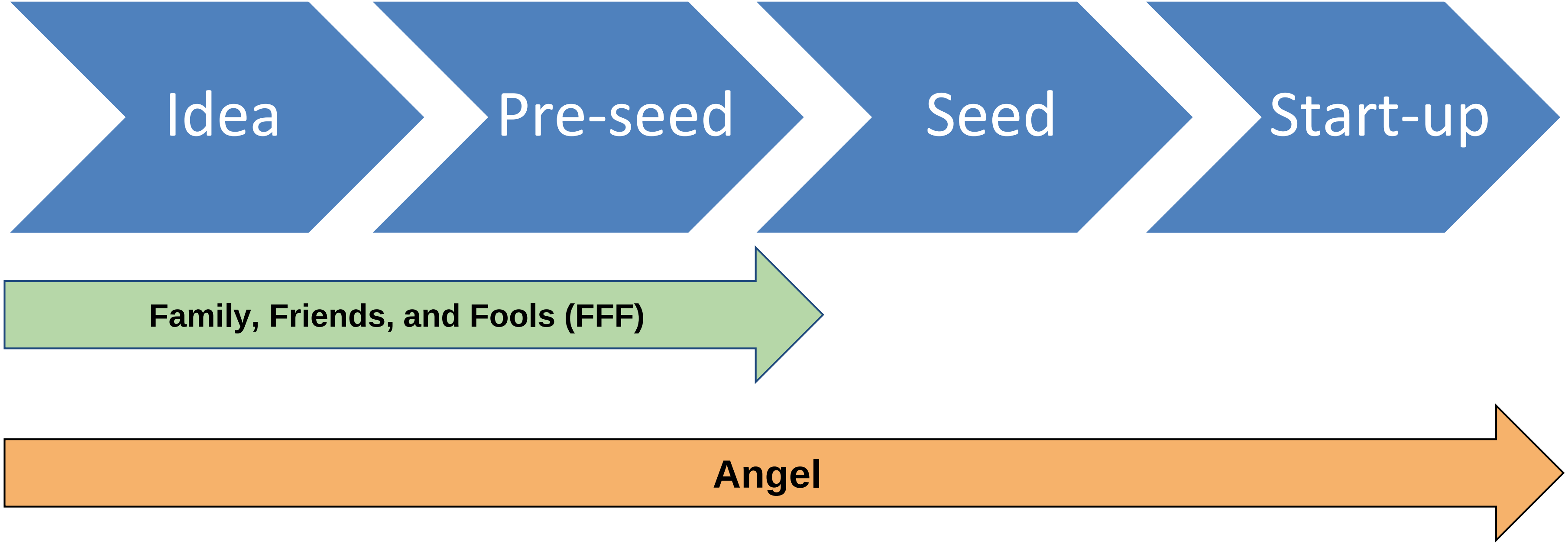
- Require certain rights and privileges on their investment
  - e.g. Director position in company

- Receive Preferred Stock

- “Angels fly together”

Sources: [1] https://www.dlapiperaccelerate.com/knowledge/2018/friends-and-family-round-vs-angel-round.htm
[2] https://cytlaw.medium.com/friends-family-vs-angels-preseed-financing-efcd29678a35

Timing of Investment



Sources: [1] https://www.dlapiperaccelerate.com/knowledge/2018/friends-and-family-round-vs-angel-round.htm
[2]l https://cytlaw.medium.com/friends-family-vs-angels-preseed-financing-efcd29678a35

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Comparing Angel and FFF Financing

	Pros	Cons
FFF	- No lengthy application process - Pay back not always required - Surrender of company control not required -No formal review process or diligence required to obtain (although it helps) - Commitment to project is proven to later stage investors	- Transparency with investors (being asked about business at family events) - Emotional attachment to investments/investors - Risking family/friends assets creates personals pressures - If poorly structured, can prohibit later stage funding
Angel	- Angel may have expertise in the industry - Middle ground between FFF and VC financing - Easier to align goals due to varying investor preferences	- Largely based on connections - Harder to find - Take partial ownership of your business

Sources: [1] https://thebusinessprofessor.com/lesson/funding-from-friends-family-and-fools/
[2] https://www.nibusinessinfo.co.uk/content/advantages-and-disadvantages-business-angel-funding
[3] https://pitchdeckfire.com/resources/the-pros-and-cons-of-the-friends-and-family-round-of-funding/

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What is SBIR?
(Small Business Innovation Research)

- U.S. Government funding program intended to promote tech innovation through small business grants and contracts

- 12 federal agencies allocate 3.2 % of R&D budgets annually to fund small business research and development efforts
  - ~$3.2 billion minimum spend annually

- Applies to for profit U.S owned businesses with under 500 members

SBIR
America's Seed Fund

Sources: [1] https://www.albany.edu/research/assets/The_difference_between_STTR_and_SBIR.pdf
[2] https://www.sbir.gov/sites/default/files/SBA_SBIR_Overview_March2020.pdf

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What is STTR?
(Small Business Technology Transfer)

- Essentially identical to SBIR except it **requires** collaboration between business and U.S. non-profit research institution
  - Research institution will receive minimum of 30% of grant funding
- Focus is more on tech transfer between business and research
- Out of the 11 federal agencies providing funding for SBIR, 5 also provide funding for STTR program
  - These agencies' budgets exceed $1 bil and they reserve 0.45% for STTR
    - ~$450 mil minimum spend annually

Sources: [1] https://www.sbir.gov/sites/default/files/SBA_SBIR_Overview_March2020.pdf
[2] https://www.albany.edu/research/assets/The_difference_between_STTR_and_SBIR.pdf

Process of SBIR/STTR Financing

Phase 1

Proof of Concept and Feasibility Check

(establish merit and determine expectations)

$50K-250K

over 6 months (SBIR)
or 12 months (STTR)

Phase 2

Research + Development

(based on P1 results and commercial potential)

$500K-1.5M

over two years

Phase 3

Commercializatio n

No funding

(time to make your own money)

Sources: https://sbir.nih.gov/about/three-phase-program

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What are the Differences?

Differences Between SBIR and STTR

	SBIR	STTR
Partnering Requirement	Permits partnering	Requires a non-profit research institution partner
Principal Investigator	Primary employment (>50%) must be with the small business	PI may be employed by either the research institution partner or small business (check solicitation)
Work Requirement	May subcontract up to: 33% (Phase I) 50% (Phase II)	Minimum: 40% Small Business 30% Research Institution Partner
Program Size	3.2% (FY19 - $3.28B)	0.45% (FY19 - $453M)
Majority VC ownership	Allowed by some agencies	Not allowed
Participating Agencies	11 agencies (extramural R&D budget > $100M)	5 agencies (extramural R&D budget > $1B)

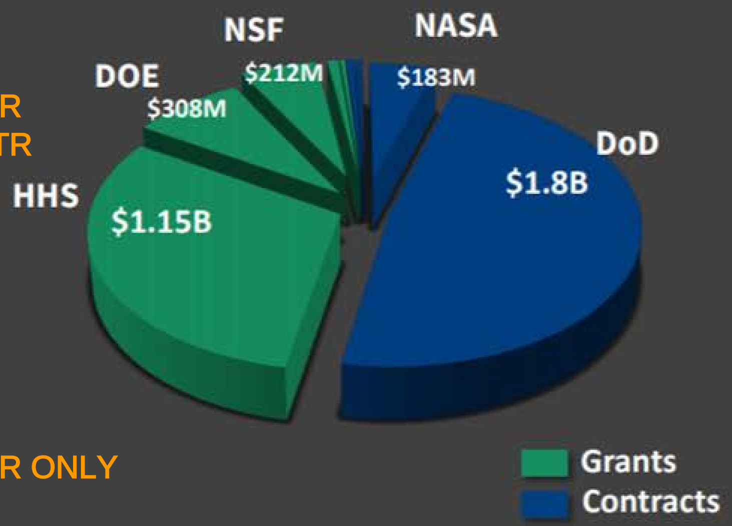
Sources: https://www.sbir.gov/sites/default/files/SBA_SBIR_Overview_March2020.pdf

FY2019 SBIR/STTR Budgets by Agency

Agencies	Budget
Department of Defense (DoD)*	$1.80 B
Department of Health and Human Services (HHS)**, including the National Institutes of Health (NIH)	$1.15 B
Department of Energy (DOE), including Advanced Research Projects Agency – Energy (ARPA-E)	$308 M
National Science Foundation (NSF)	$212 M
National Aeronautics and Space Administration (NASA)	$183 M
U.S. Department of Agriculture (USDA)	$30 M
Department of Homeland Security (DHS)	$17 M
Department of Commerce: National Oceanic and Atmospheric Administration (NOAA)	$9.5 M
Department of Education (ED)	$8.4 M
Department of Transportation (DOT)	$5.2 M
Department of Commerce: National Institute of Standards and Technology (NIST)	$3.9 M
Environmental Protection Agency (EPA)*	$3.6 M

SBIR +STTR

SBIR ONLY



SBIR: $3.28 Billion
STTR: $453 Million

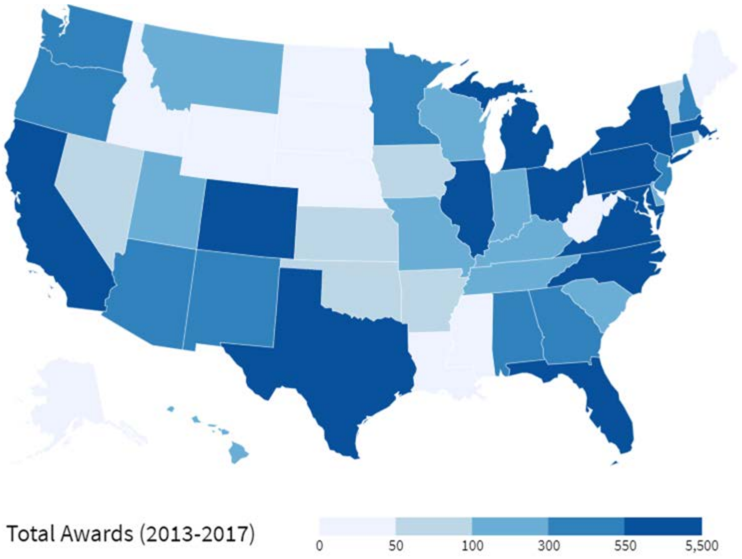
* Budgeted Amount; other Agencies Obligated Amount
** Provides grants and contracts

Sources: https://www.sbir.gov/sites/default/files/SBA_SBIR_Overview_March2020.pdf

Brief Breakdown of SBIR/STTR Funding per State

Top 5 Most Awarded States (2013-2017)

1. California (1074 awards/year)
2. **Massachusetts (562 awards/year)**
3. Virginia (291 awards/year)
4. Maryland (246 awards/year)
5. Colorado (238 awards/year)



Sources: https://ssti.org/blog/useful-stats-sbirsttr-awards-state-2013-2017

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Structure of SBIR/STTR Funding

- **NOT A LOAN -** No payback terms required
  - SBIR is considered a ***grant or contract*** for the promotion of innovation in small U.S. tech firms
  - If contracted, terms are dependent on needs of specific agency

- Most IP rights remain with the awarded firm
  - Depends on if the agency has vested interest in the venture

- A commercialization grant, not an equity investment
  - No shares sold to the government

Sources: [1] https://www.sbir.gov/about
[2] https://www.azcommerce.com/programs/sbirsttr-resource-center/sbir-training/sbirsttr-training/intellectual-property-considerations

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How a Revolving Line of Credit Works

- Business/lendee borrows money up to a certain predetermined **credit limit** (aka principal) (i.e. business approved to borrow up to $10K at a time)
  - Can borrow from bank or alternative capital providers based on specific needs
- Business can spend money within limit indefinitely so long as they either:
  - Pay off full amount borrowed (in this case, pay off the full $10k)
  - Pay a minimum payment each month along with interest on loan and carry over your existing balance, continuing (revolving) your ability to borrow money up to credit limit ($10K)

These are the same principles as your credit card!

[3]

Sources: [1] https://www.experian.com/blogs/ask-experian/what-is-revolving-credit/
[2] https://www.creditcards.com/credit-card-news/glossary/term-revolving-line-of-credit/
[3]https://www.shutterstock.com/es/search/credit+card+charges

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How Revolving Credit Works

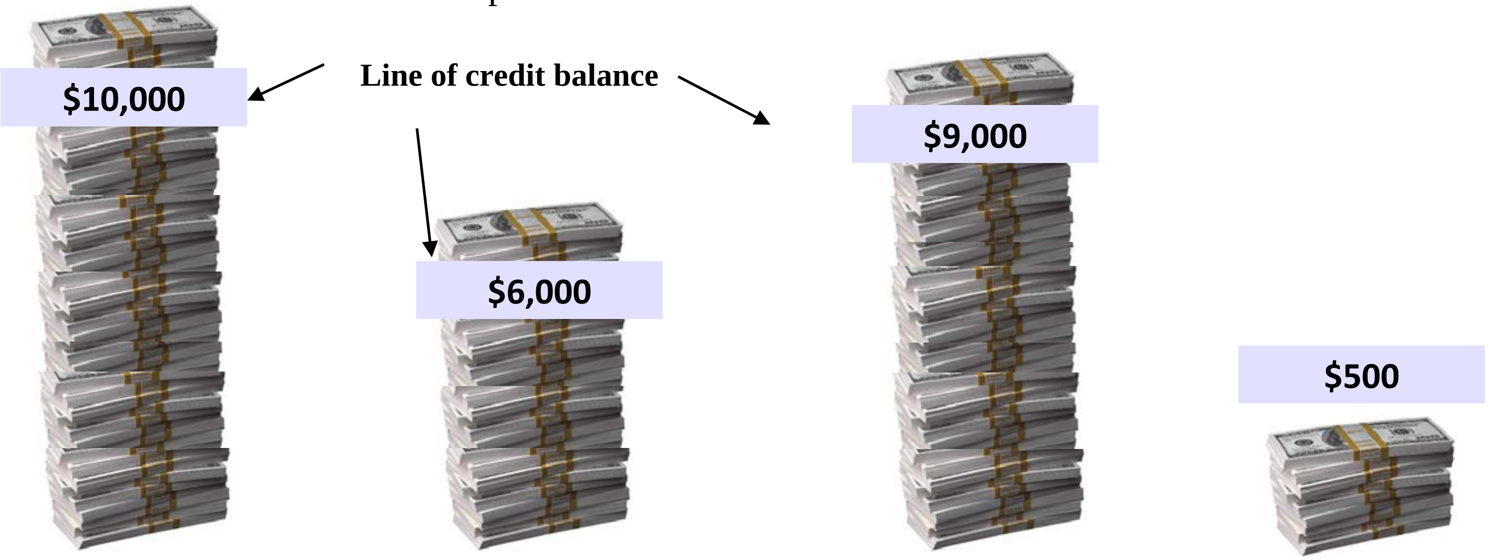
DAY 1
- Bank/credit union authorizes $10,000 Revolving Line of Credit

DAY 5
- Business spends $4,000
- Begin accruing interest on spent funds

DAY 15
- Business repays $3,000 + interest accrued

DAY 30
- Business spends $8,500

DAY 45
- Business repays bank/credit union in full, completing their agreement



$0

Revolving Line of Credit
Unique Features

- **Immediate** borrowing as need arises, much easier than standard loan
  - Can borrow and repay without credit application for each transaction
- Generally have higher interest rates and lower limits than typical loans
- No set end date: must pay off full credit limit to exit
- **Fluctuating**—Account balance replenishes as loan is repaid.
- **Flexible**—No scheduled payment of principal

Sources: [1] https://www.creditcards.com/credit-card-news/what-is-revolving-credit/
[2] https://www.investopedia.com/terms/r/revolvingcredit.asp
[3] https://www.headwaycapital.com/revolving-credit

Revolving Line of Credit

Financing Uses

Finance day-to-day operations, primarily:

1. **Inventory Financing** (loan used to purchase products that will not be sold immediately)
   - Products purchased are collateral for loan
2. **Payroll**
3. **Unexpected Cash Needs**
   - Time sensitive opportunities or purchases
   - Atypical lack of revenue

4. If hard to obtain traditional business loans

Do not want to use for long-term financing

Sources: [1] https://www.investopedia.com/terms/i/inventory-financing.asp
[2] https://www.fundera.com/business-loans/guides/revolving-credit#prosandcons
[3] https://www.creditkarma.com/personal-loans/i/line-of-credit-vs-loan

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Leasing

A method of financing between an owner (Lessor) of property and a firm (Lessee) employing a contract covering the possession and use of property, plant or equipment (PP&E) at a given rent for a stated length of time.

Sources: [1] https://www.investopedia.com/terms/l/lease.asp
[2] https://www.investopedia.com/ask/answers/06/propertyplantequipment.asp

Purchasing Asset vs. Leasing Asset

Manufacturer	Manufacturer/Lessor	Manufacturer/Lessor
Purchase the Asset (What most of us do today)	**Finance Lease the Asset**	**Operating Lease the Asset**
You own and use asset **HOWEVER** You must pay manufacturer full cost of asset (PP&E)	You use asset **HOWEVER** You do not own asset but must maintain it. Pay lessor periodically/in installments, lease is non-cancellable and typically long term	You use asset **HOWEVER** You do not own asset but lessor will maintain it. Pay lessor periodically, lease is cancellable and typically shorter term

Sources: [1] https://efinancemanagement.com/sources-of-finance/difference-between-operating-and-financial-lease

Lease Structures

	Financing/Capital Lease	Operating Lease
LESSOR (Legal ownership)	▪ Make equipment available for use in return for, at minimum, rental fees. ▪ Expect to recover the entire acquisition costs plus a return on its investment.	▪ Supplies equipment to lessee ▪ Responsible for servicing and maintaining the leased equipment.
LESSEE (User of Asset)	▪ Series of payments, which in total exceed the purchase price of the asset acquired. ▪ Leases are counted as debt, both in terms of interest and depreciation (can claim depreciation for reduced taxable income) ▪ Usually responsible for maintenance, insurance, and applicable taxes. ▪ Lessee obtains ownership rights	▪ Series of payments for a specified period of time and when finalized, returns assets. No fixed future commitment. ▪ Similar to most types of business expenditures.
CONTRACT	▪ Long-term agreement: Lease covers most if not all of the economic life of the asset (>= 75% of life) ▪ Immediate (present) value of lease is >90% of asset's market value ▪ Generally non-cancelable. ▪ At the end of lease period lessee has an option to purchase the asset at a price lower than the fair market value.	▪ Short Term (less than 75% of useful life of asset.) ▪ Can be cancelled after a specified time period. ▪ At the end of lease period lessor can lease the equipment to someone else or sell the equipment second hand.

Sources: [1] https://corporatefinanceinstitute.com/resources/knowledge/accounting/capital-lease-vs-operating-lease/
[2] https://efinancemanagement.com/sources-of-finance/difference-between-operating-and-financial-lease
[3] https://www.accountingtools.com/articles/what-are-the-criteria-for-a-capital-lease.html
[4] https://www.accountingtools.com/articles/capital-leases-vs-operating-leases.html

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Factoring (AKA Accounts Receivable Financing)

- Selling of a company's Accounts Receivable, at a discount, to a factor firm
- **Accounts Receivable** = money owed to company or outstanding invoices
  - **Invoices** = list of goods or services provided with sum of costs (i.e. a bill)

- Cash advance worth majority of invoice that is paid within 24 hours of submitting

- Post-advance, factor group chases debt and provides remaining amount owed by debtor minus a small fee for their service
  - Factor's fee could be flat fee up front or variable fee with interest after a defined amount of time (most factor contracts last 30-90 days max)
    - e.g. 2% charge for first 30 days then additional 0.5% for every 15 days debt remains unpaid

Sources: [1] https://www.investopedia.com/terms/a/accountsreceivable.asp
[2] https://www.invoicefactoring.com/factoring-blog/what-is-the-difference-between-a-quickpay-and-factoring

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Factoring

- Majority of contracts last 30-60-90 days, with rare exceptions for specific industries (e.g. government)
  - Factor firms specialize in certain industries, some will deny you before meeting based on how your business lines up

- On top of existing service fee (2-5% of invoice), factor might hold back a small percent of invoice (i.e. 10%) until debtor begins to pay invoice
  - If there are disputes or deductions about invoice, factor may keep a certain portion of this held back value

- Important that you believe that your debtors will be able to pay majority of invoice: factors are **NOT** debt collectors
  - Need to have good relationship with factor if you want to be able to use them again

Sources: [1] https://www.dsafactors.com/about/

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Factoring

- Factoring firm can impose **concentration limits** based on **concentration level**
  - Defines how large of an invoice the firm can pursue from a SINGLE debtor

$$\text{CONCENTRATION LEVEL} = \frac{\text{INVOICE OWED}}{\text{TOTAL COMPANY ASSETS}^{*}} \times 100\%$$

*CASH, MACHINERY, BUILDINGS, INVENTORY, ETC.

- Factors also check the **credit limit** of the debtors you are pursuing.

  If their credit limit is lower than your concentration limit, factor will chose the credit limit as the max amount of invoice pursuable under initial agreement
  - Majority of first time small business factoring will have credit limit

Sources: [1] http://www.whitelake-group.com/blog/factoring-what-is-it-and-the-implications-for-your-business
[2] https://www.pulsecashflow.com/News/Why-Funding-High-Concentration-is-Not-All-it-Seems

How Factoring Works (Example)

Case: Your manufacturing company is awaiting financing from outside investors to continue company growth but you need money **NOW** to keep the company afloat in the short term. You do not want to owe debt (i.e. from a bank loan) and decide to approach a factor to pursue your accounts receivable (in this case, $10k) from a trustworthy customer (debtor) of your company in order to obtain cash quickly. You then….

Source: Written with assistance from United Capital Funding (St. Petersburg, FL)

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How Factoring Works (Example)

Secure a contract with a factoring firm. The terms of the contract are:

- Cash advance worth 80% of your accounts receivable/invoice ($8000)
- Factor flat service fee of 3% of invoice
- Contract lasts 60 days.
- No credit limit or cash advance held back

Current Balance

$0

Source: Written with assistance from United Capital Funding (St. Petersburg, FL)

How Factoring Works (Example)

2.

Current Balance

$8000

About 24 hours after you sign contract and invoice is verified, the factor firm provides you with $8000 (with slight wire fee)

Source: Written with assistance from United Capital Funding (St. Petersburg, FL)

How Factoring Works (Example)

3.

Current Balance

$8000

Over the next 60 days, the factor firm pursues the accounts receivable from your customer/debtor and attempts to obtain this invoice.

Source: Written with assistance from United Capital Funding (St. Petersburg, FL)

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How Factoring Works (Example)

4.1

Before the contract ends (within 60 days), the factor obtains you accounts receivable in full. The factor takes their 3% service fee from the total invoice ($300) and you receive the remainder ($1700) Your contract is now complete and you have received a total of **$9700.**

Current Balance

$9700

Source: Written with assistance from United Capital Funding (St. Petersburg, FL)

OR…

How Factoring Works (Example)

4.2 **The factor is unable to obtain the full invoice within 60 days.** The factor is only able to receive $9000 of the the $10,000 invoice requested from your debtor. Based on contract agreement, your company must now pay the missing $1000 to the factor (as well as their service fee). The contract is complete and you have received a net total of **$6700**.

Current Balance

$6700

Source: Written with assistance from United Capital Funding (St. Petersburg, FL) as well as Factor Finders

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Appropriateness of Factoring

DO USE

- Someone owes you money
- Liquidity problems
- Payroll for employees to keep company running
- Not able to attain traditional financing

DON'T USE

- Accounts receivable not easily collected and/or easily valued
- If your company's profit margins are too narrow
- If the debtor being pursued is not trustworthy

Sources: [1]https://www.business2community.com/finance/use-factoring-avoided-01750399
[2]https://marketbusinessnews.com/financial-glossary/factoring/

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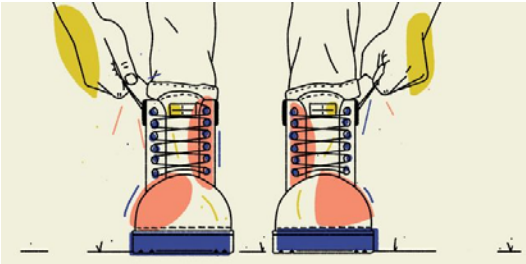
What is Bootstrapping?
“Pull yourself up by your bootstraps!”



Bootstrapping is less of a financing technique than it is a state of mind of how to create value from nothing.

An entrepreneur (such as yourself) starts a company with little to no outside capital, choosing instead to rely solely on their existing savings, connections, and hard work to get things rolling

Bootstrapping is an exercise in being aware of your environment and knowing how to take advantage of friendly coincidences

Sources: [1] https://www.investopedia.com/terms/b/bootstrap.asp

Why Bootstrap?

Necessity

- Many entrepreneurs use bootstrapping to finance their startups simply because they have no other choice.
  - Limited starting capital, collateral, or credit, lack of cash flow to service a debt

You’re in control

- You have full ownership over your business and can dictate exactly what steps will be taken (this can be a pro and a con)
- Performance metrics can be yours alone (you are your own boss)
- Your original business objectives remain intact as long as you allow it

Sense of accomplishment

- You did it yourself, you get all the glory (if things work out)

Sources: [1]https://www.forbes.com/sites/alejandrocremades/2019/01/13/the-pros-and-cons-of-bootstrapping-startups/?sh=386b6fd5273d

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And Finally…..

Venture Capital (VC)

- Private equity investment (funding in return for stock ownership) for fast growing and risky ventures where no other capital market exists
  - Offer millions in funding to startups
  - VCs lend their experience and connections to their companies

- Usually come in form of firms who invest capital given to them by larger institutions (pension funds, endowments, etc.)
  - Look for growth and return on investment/ownership. Fund often requires 20-35% annual rate of return on investment
  - Most funds have 10 year life cycle

- VC investment typically last until the company they invested in goes public, is acquired by another company, or is shut down[4]

Sources: [1] https://www.investopedia.com/terms/v/venturecapital.asp
[2] http://www.angelblog.net/Venture_Capital_Funds_How_the_Math_Works.html
[3] https://pitchbook.com/news/articles/the-venture-capital-lifecycle
[4] https://www.industryventures.com/the-venture-capital-risk-and-return-matrix/

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Caveats of Venture Capital

- More than 2/3rds of VC-backed startups fail
  - When you fail, all the company's assets are used to pay off holders of stock in your company (i.e. VC firms)
  - Their equity is your debt for their investment

- VC funding is very scarce and hard to obtain
  - Process of courting a VC is very time consuming and may distract from the success of your business

- The VC's objective is financial - they owe their investors a return on their investment. The usefulness of your idea is secondary to their objective

Sources: [1] https://www.cbinsights.com/research/report/what-is-venture-capital/#what_is
[2] https://vc-list.com/startup-liquidation-who-gets-paid/
[3]https://fitsmallbusiness.com/venture-capital-advantages-and-disadvantages/

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