

Understanding financials for startup

Prof. Laura Toschi

Financial Plan

- How will your business be funded **over time**?
- What **cost/revenue streams** have you built into your forecast?
- How does **financing** correspond with your **milestones**?
- What are the **risks** and how will you mitigate them?
- How will you **exit**?



Financial Plan

- How will your business be funded **over time**?
- What **cost/revenue streams** have you built into your forecast?
- How does **financing** correspond with your **milestones**?
- What are the **risks** and how will you mitigate them?
- How will you **exit**?

Discuss:

- Financial model and projections:
 - Understanding the basics of financials (P&L, cash flows and balance sheet)
- The financial viability of the business:
 - The economics of the business model
- Sources and uses of funds:
 - Planning your funding strategy (Internal vs. External)

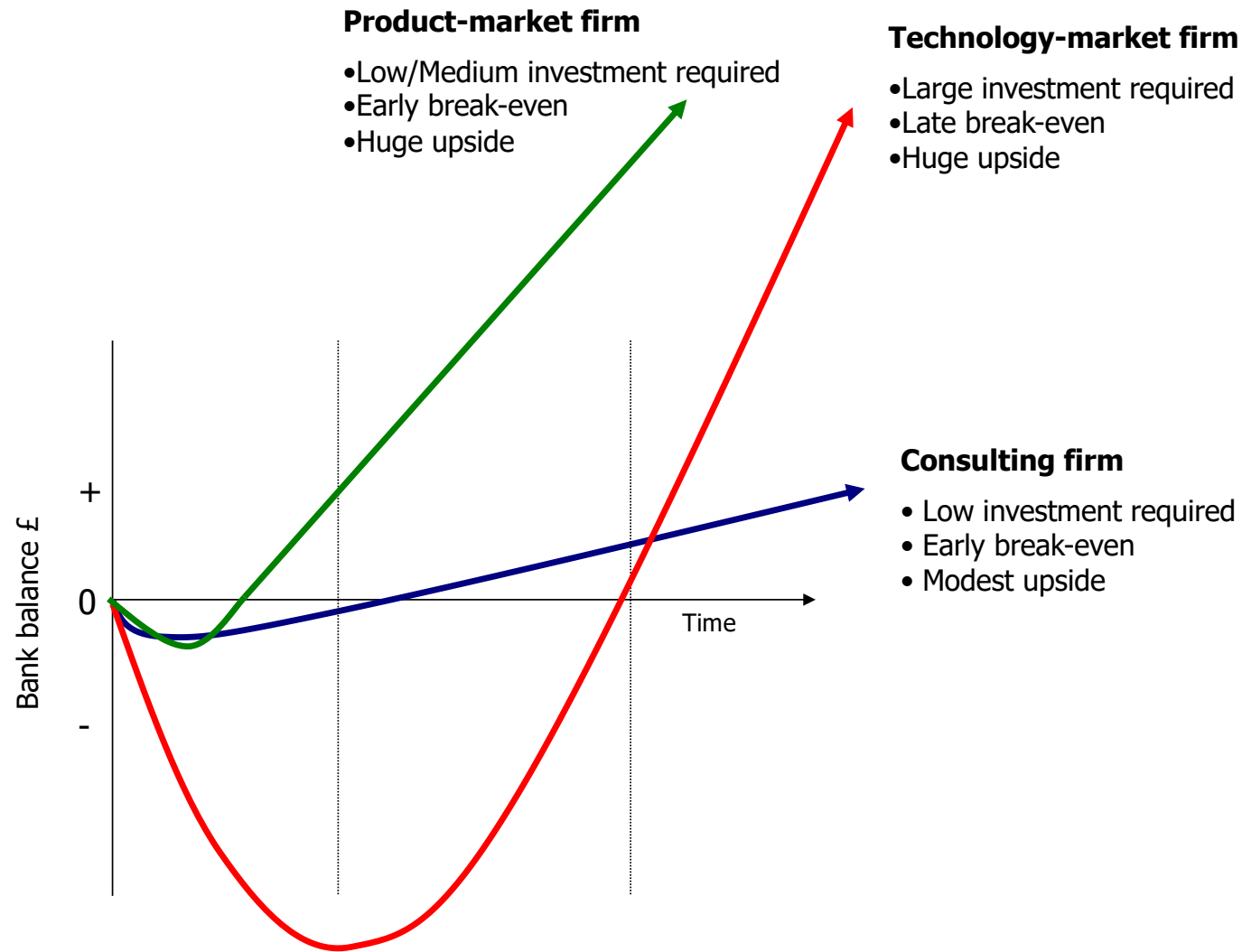


INTRO

Financial modeling set-up: Key Questions

1. What is the **type** of business you are starting?



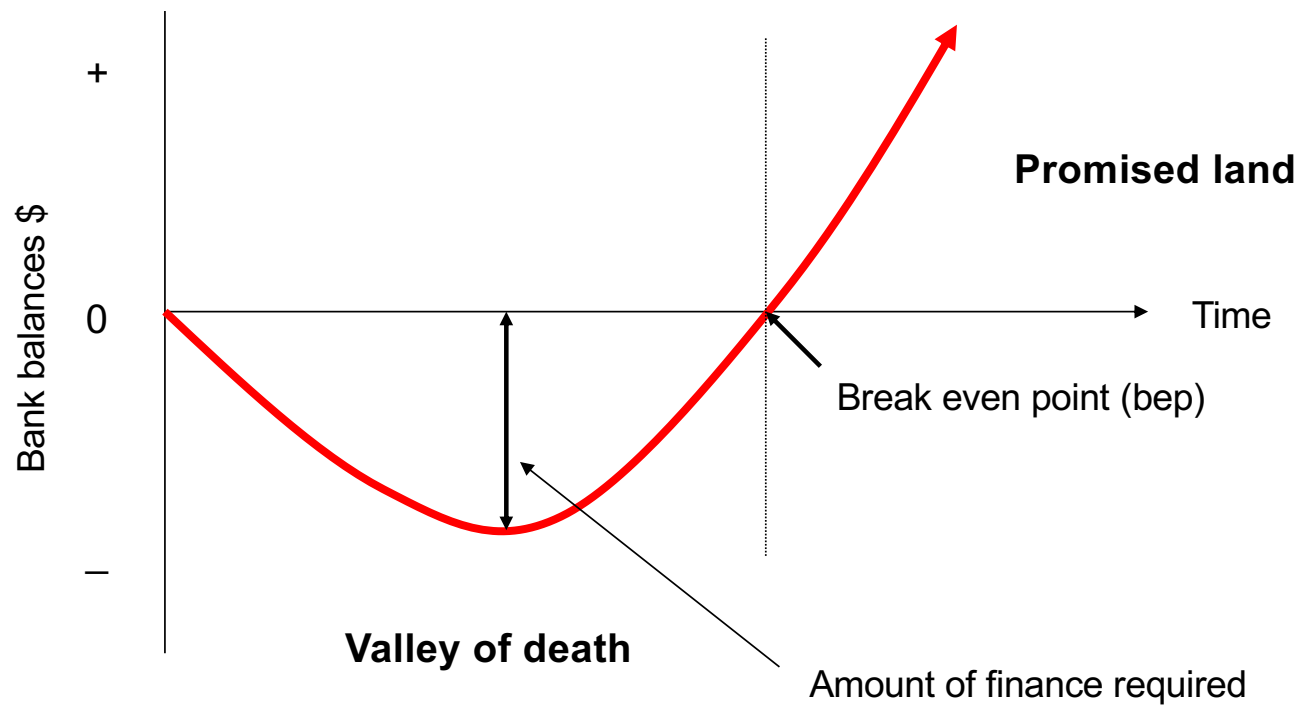


Financial modeling set-up: Key Questions

1. What is the type of business you are starting?
2. What is the rate at which your business will consume cash (the **Burn Rate**) and (when) will you run out of cash?



Burn rate and running out of cash



FINANCIAL MODELING FOR START-UPS

What is financial modeling?

A financial model or plan is:

- A projection of your venture's financial position and development over time
- Based on a set of assumptions
- Resulting in a set of **financial statements** measuring:
 - Income & expenditure (Profit & Loss)
 - Cash flow
 - Balance sheet
- Plus **Sensitivity analyses** to model changes in assumptions



Why make a financial plan?



A VC firm's perspective

"I look at financials because they are a credibility test for the entrepreneur ... A good entrepreneur understands both the technical and business opportunities and how to flesh out the numbers behind it"

- Russel Siegelman, Kleiner Perkins Caufield & Byers

"I look at financials to see if they make sense. I actually look at them more for mistakes. If someone thinks they will have 40% after-tax margin after 5 years, they clearly do not understand the cost of running a business"

- Sonja Hoel, Managing Director, Menlo Ventures

"The financial model discussion is more often a good insight into how smart a team is."

- Fred Wang, Trinity Ventures



UNDERSTANDING THE BASICS OF FINANCIALS

Definitions

Assets = Liabilities + Owners' equity

Asset: Valuable resources owned by the company

- Cash, Equipment, IP

Liability: An obligation that a firm has to another party

- Debt is a liability
- Debt ranks above equity

Equity: What belongs to the shareholders (owners)

- The residual value after all liabilities have been paid



Assets

Current Assets

Cash	\$125,100
Short-term investments	\$12,000
Inventory	\$32,205
Supplies	\$10,000
Receivable	\$23,000
Prepaid expenses	\$12,000
Total current assets	\$214,305

Non-current Assets

Investments	\$100,000
Equipment	\$60,000
Intangible assets	\$25,000
PPE	\$14,000
Goodwill	\$11,000
Total non-current assets	\$210,000

Non-current Assets	\$16,000
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Total assets	\$424,305
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Liabilities

Current Liabilities

Account payable	\$30,000
Short-term loan	\$15,000
Payable income taxes	\$9,000
Total current liabilities	\$54,000

Long-term Liabilities

Mortgages	\$22,500
Bonds payable	\$15,000
Deferred taxes	\$7,500
Total long-term liabilities	\$45,000

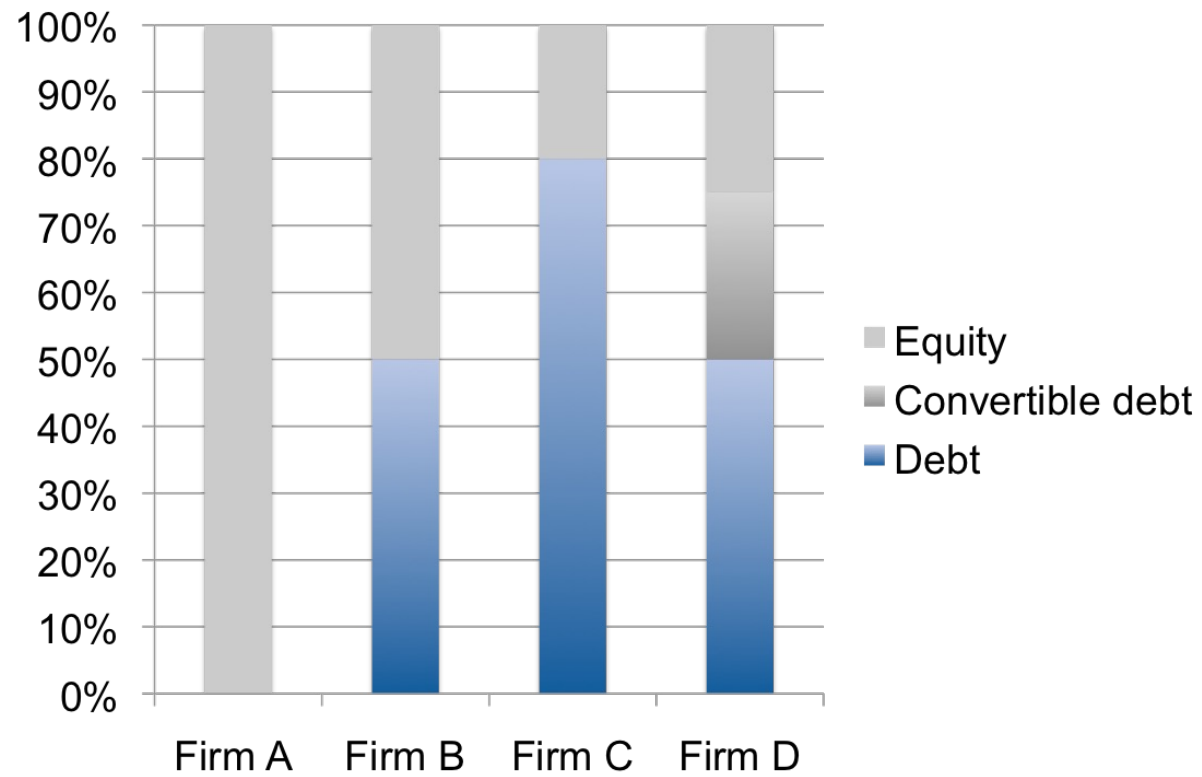
Total liabilities	\$99,000
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Stockholders Equity

Capital	\$259,305
Retained earnings	-\$54,000
Total stockholder's equity	\$307,205

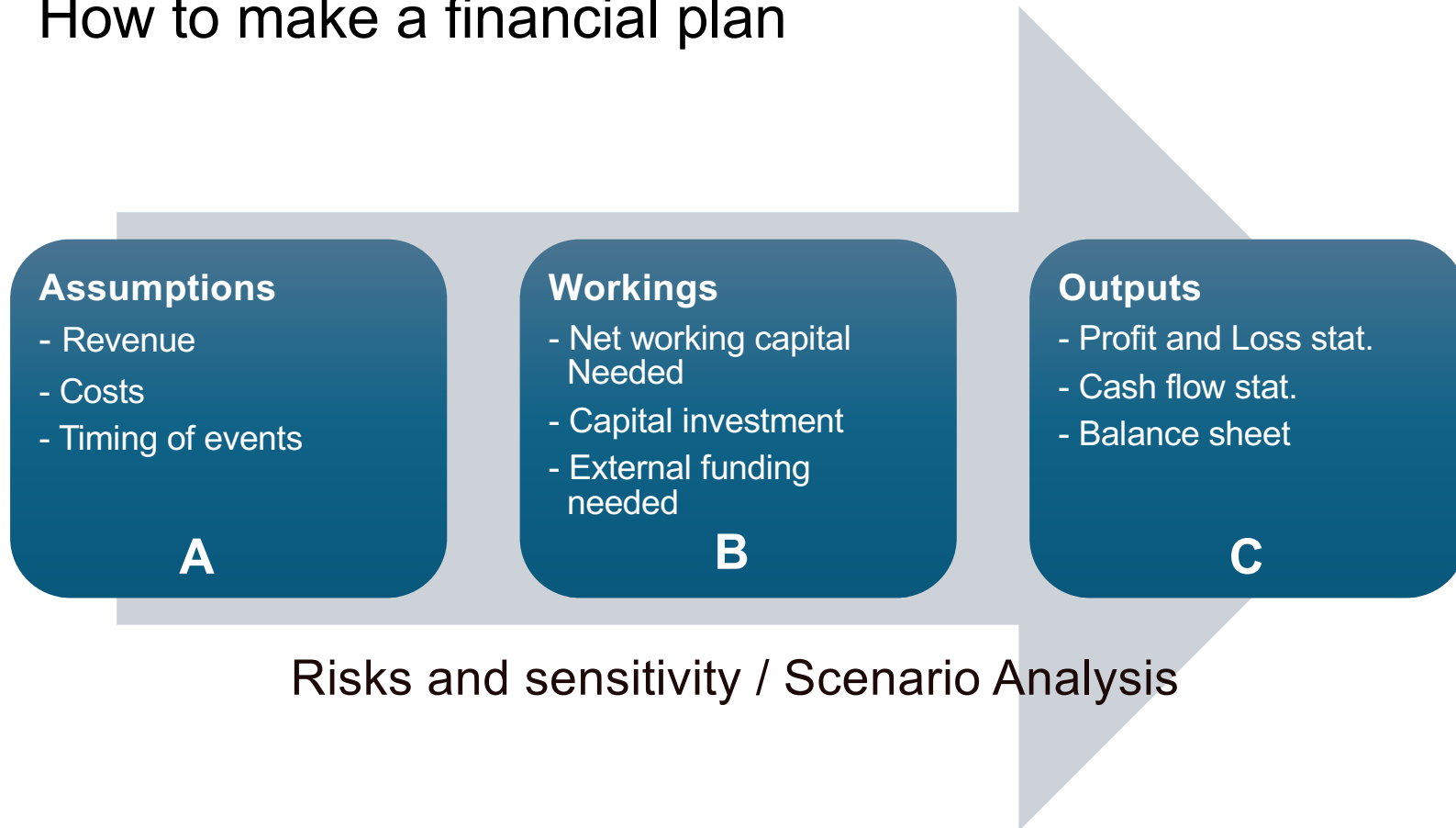
Total liabilities and equity	\$424,305
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Different capital structures



MAKING A FINANCIAL PLAN

How to make a financial plan

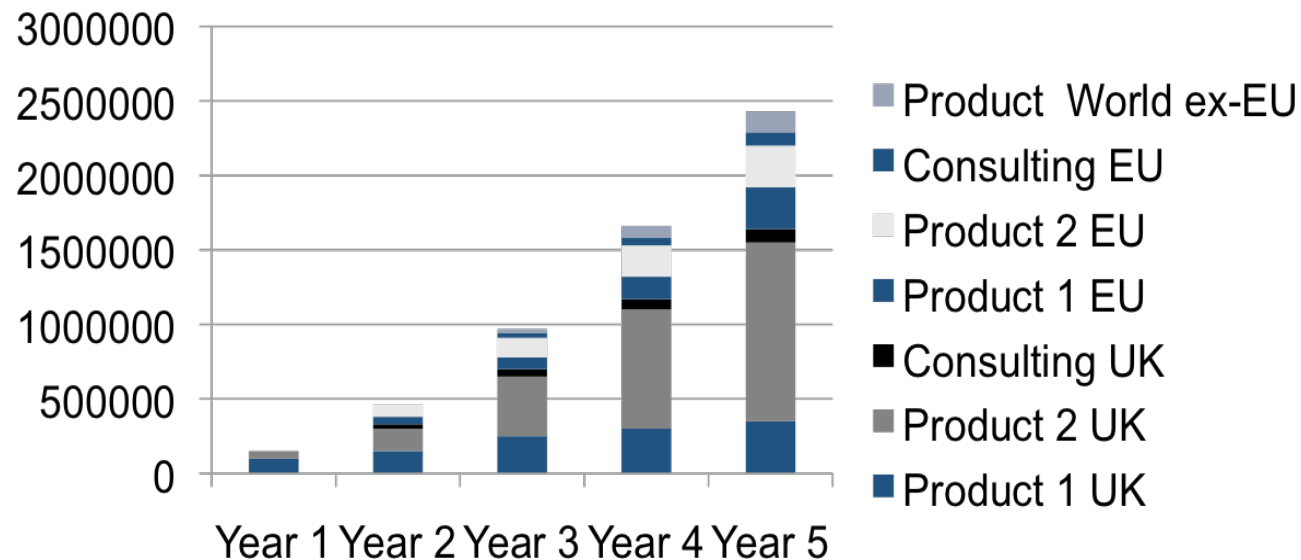


A - Assumptions – revenues, costs, timings

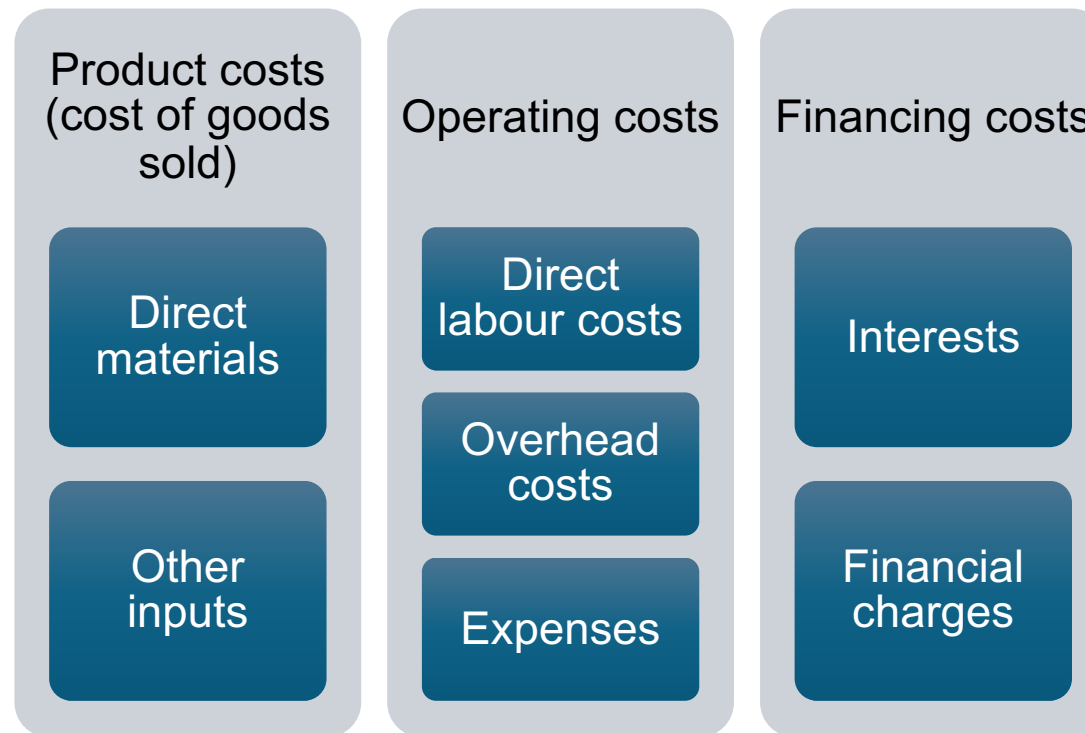


Revenues

- Different types: variable, fixed, semi-variable
- Depend on your market estimates
- Arise from your entrepreneurial **market research** and market testing
 - Market size & Pricing
 - Market development speed / growth



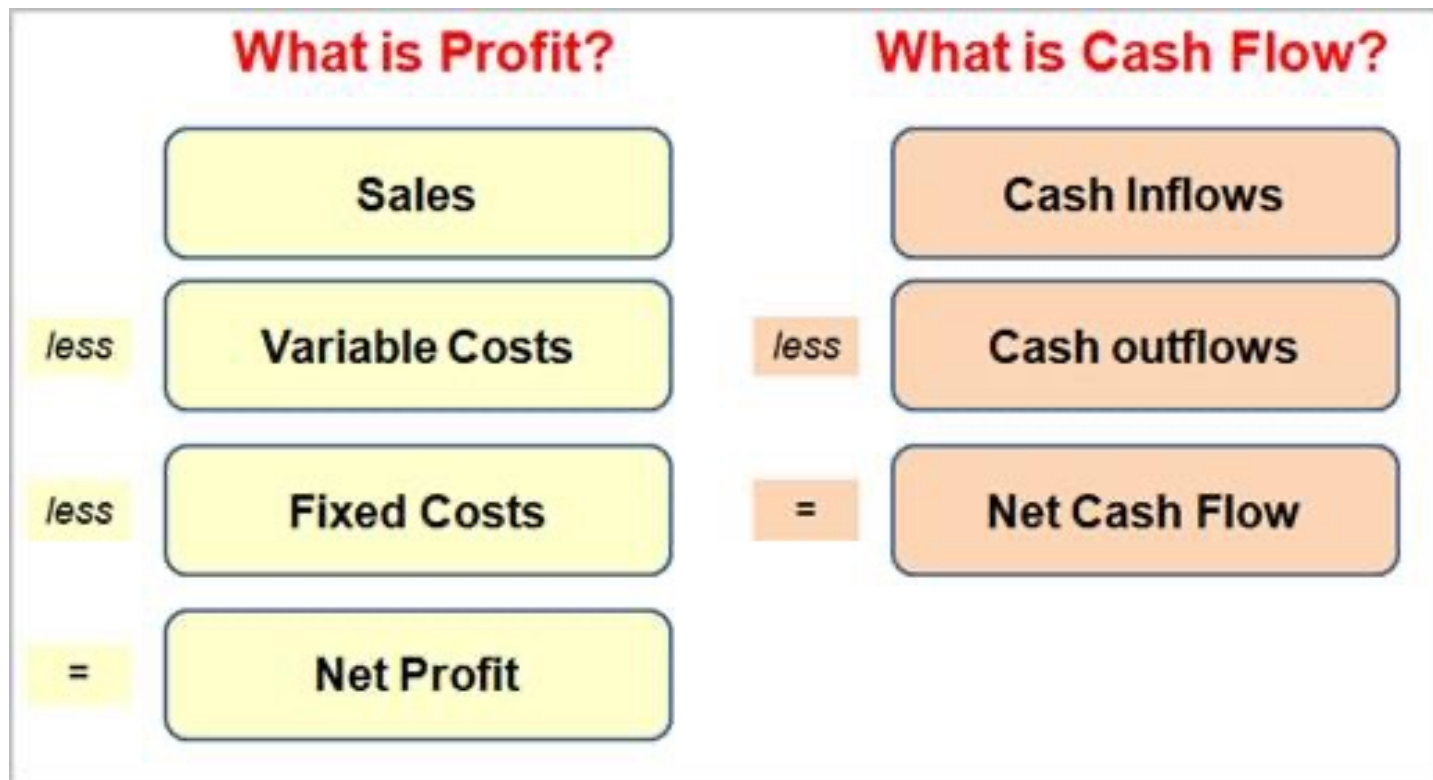
Cost Typology



Variable vs. Fixed costs



Profit & cash flow...in plain words

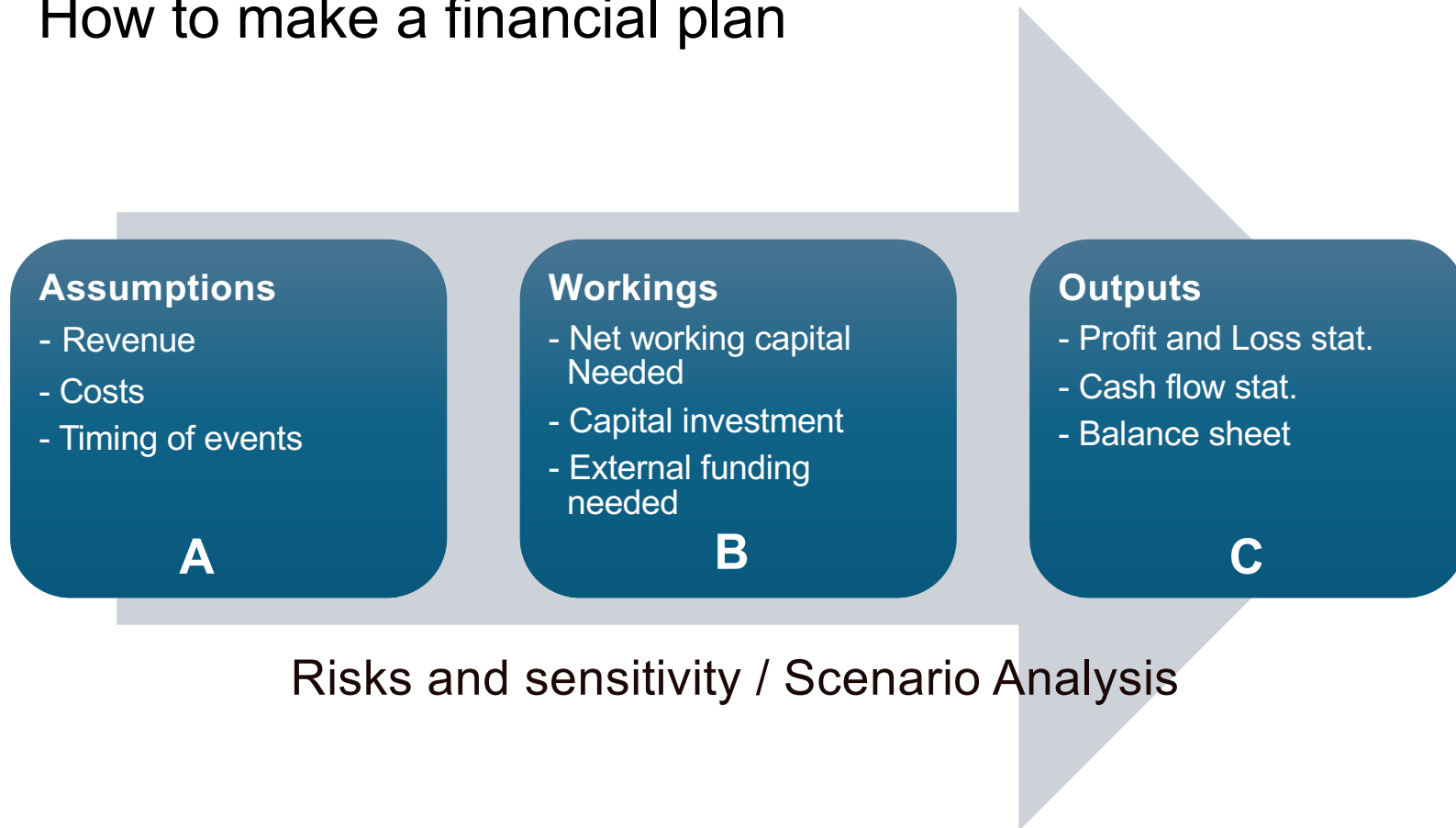


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How to make a financial plan

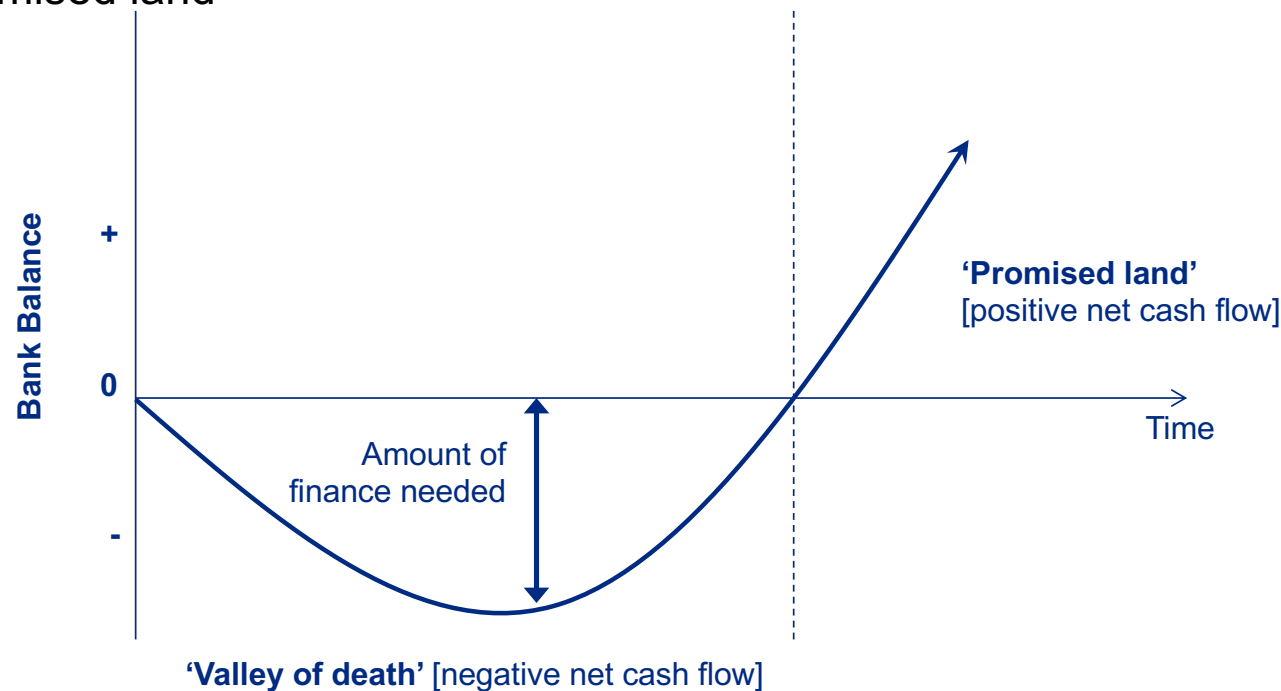


B - Workings – NWCN, capital investments, finance needs



Financing Need

- Start-ups usually spend a long time in the red **before break-even**
- **Need financing** to cover the amount of finance needed and get to the promised land



B - Workings – NWCN, capital investments, finance need

i) Net working capital needed (NWCN)



Timing of events – Net Working Capital

- Estimate when you expect to **book sales**
- Estimate product and operational **costs**
- Estimate ***when*** costs will actually be incurred and when *sales* proceeds arrive
- Determine **Cash Flow** and **Net Working Capital Need**
- **This indicates need for external finance**



Net Working Capital Need

Net working Capital = Current assets – Current liabilities

- Because of **timing differences** between invoicing and actual payment, NWC could be negative
- If negative, you need cash to cover operations =
Net Working Capital Need (NWCN)



Timing differences:
Profit & Loss vs. Cash flow

	November	December	January	February
Profit & Loss				
Sales (invoiced)	10,000	8,000	8,000	9,000
Costs (incurred)	-5,000	-5,000	-4,000	-4,000
Profit for period	5,000	3,000	4,000	5,000



Timing differences: Profit & Loss vs. Cash flow

- Suppose you pay your suppliers **30 days after** invoice
- Your customers pay you **60 days after** invoice
- **Timing of *profit* and *cash in hand* will differ**

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Sales (invoiced)	10,000	8,000	8,000	9,000
Costs (incurred)	-5,000	-5,000	-4,000	-4,000
Profit for period	5,000	3,000	4,000	5,000
Cash flow				
Sales (receipts in)	0	0	10,000	8,000
Costs (paid out)	0	-5,000	-5,000	-4,000
Opening cash	0	0	-5,000	0
Net cash flow	0	-5,000	5,000	4,000
Closing cash	0	-5,000	0	4,000



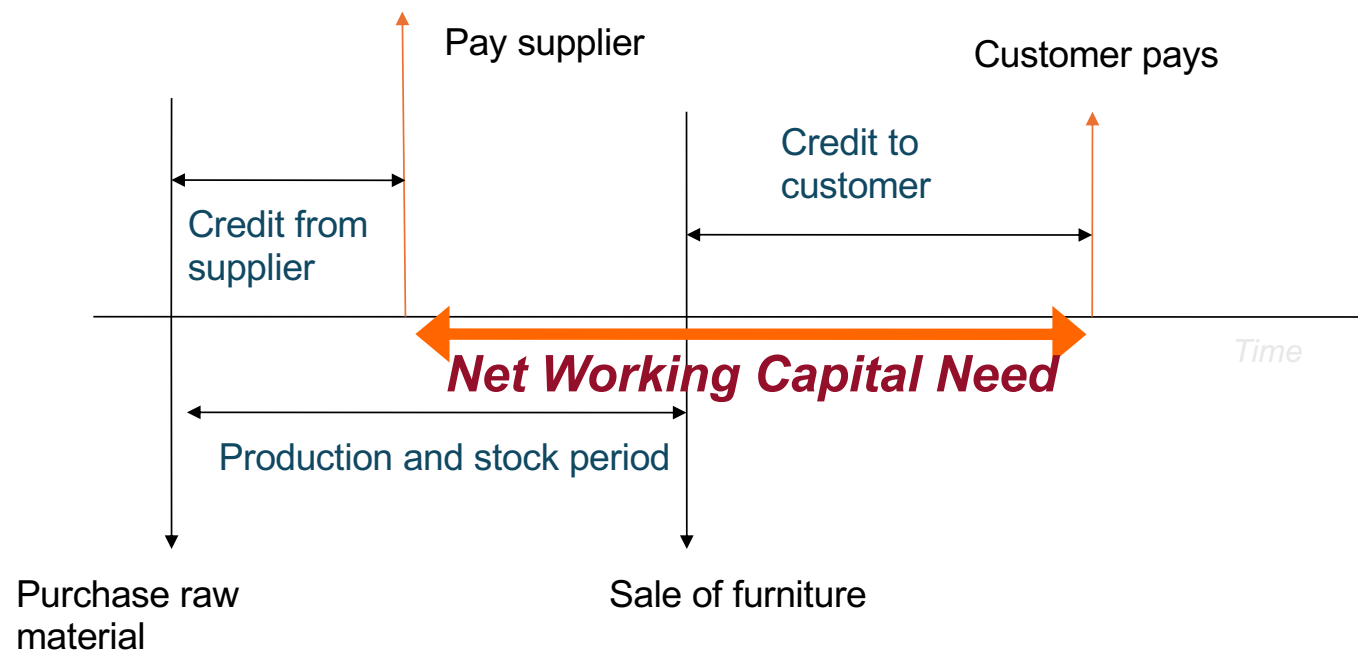
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Closing cash	0	-5,000	0	4,000



Example:
Timing differences in operations and NWCN



Credit/payment conditions depend on the industry and your power in the market



How much NWC does a company need?

- A company is cash generative if $NWC > NWCN$
 - e.g.: supermarkets, insurance companies
- For **small companies**, situation often the reverse
 - Startups usually need to raise cash to cover $NWCN$



B - Workings – NWCN, capital investments, finance need

ii) Investments



Investments in Assets

- **Investments** may include
 - **Tangible** assets: property and equipment acquired to run the business
 - **Intangible** assets: IP costs and costs incurred for product development
- You need to determine:
 - **amount** and **timing** of these investments;
 - **life expectancy** of the assets acquired



B - Workings – NWCN, capital investments, finance need

iii) External funding needed



Financing Need



Your financing need is:

- the **amount of cash** you need to raise from external sources,
- to **cover necessary cash expenses** and investments
- that **cannot be met by your revenue**

Financing need =

Net Working Capital Need + Investment needed



C - Outputs – financial statements



Outputs

- **Income statement (P&L)**
 - Revenues, costs and profits
- **Balance sheet**
 - Snapshot of company assets at a given date, and how they are financed (debt and equity)
- **Cash Flow projection**
 - Timed projection of future cash receipts and outlays
 - Basis for estimation of financing need and timing of financing
 - Basis for valuation of company



Financial returns/analysis

1. **Break even point** (BEP) analysis:

- The volume of sales (in no. of units) at which costs = revenues



1. Break-Even Point (BEP) Analysis

[illegible]

1. Break-Even Point (BEP) Analysis

Sales price
per unit = 5 \$

	Y1	Y2	Y3	Y4	Y5
Units Sold (U)	1,000	1,250	1,500	1,750	2,000
Revenues (R)	5,000	6,250	7,500	8,750	10,000

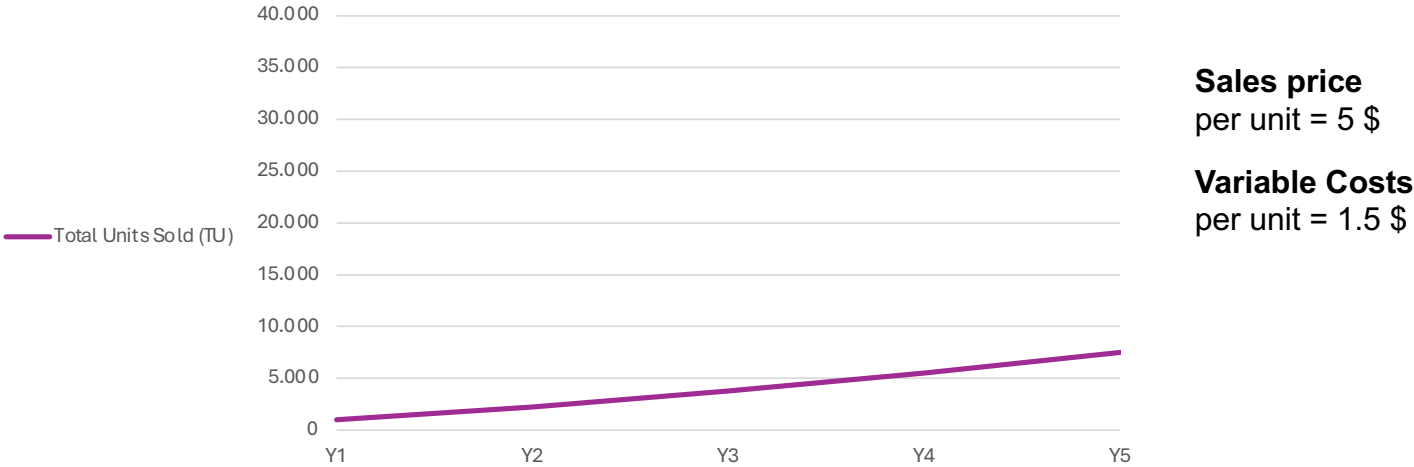
1. Break-Even Point (BEP) Analysis

Sales price
per unit = 5 \$

Variable Costs
per unit = 1.5 \$

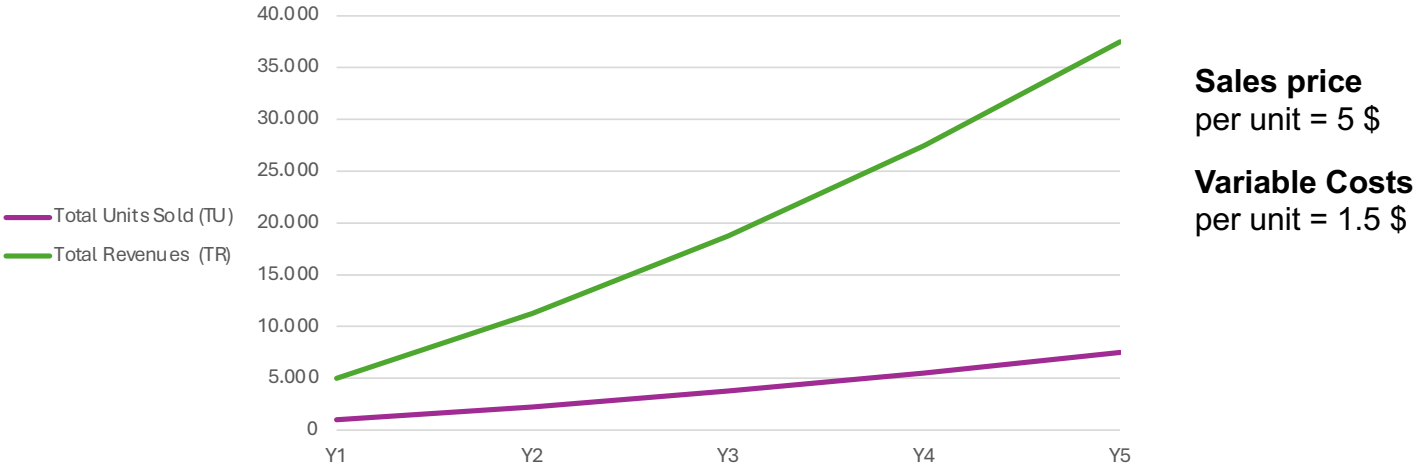
	Y1	Y2	Y3	Y4	Y5
Units Sold (U)	1,000	1,250	1,500	1,750	2,000
Revenues (R)	5,000	6,250	7,500	8,750	10,000
Variable Costs (VC)	1,500	1,875	2,250	2,625	3,000

1. Break-Even Point (BEP) Analysis



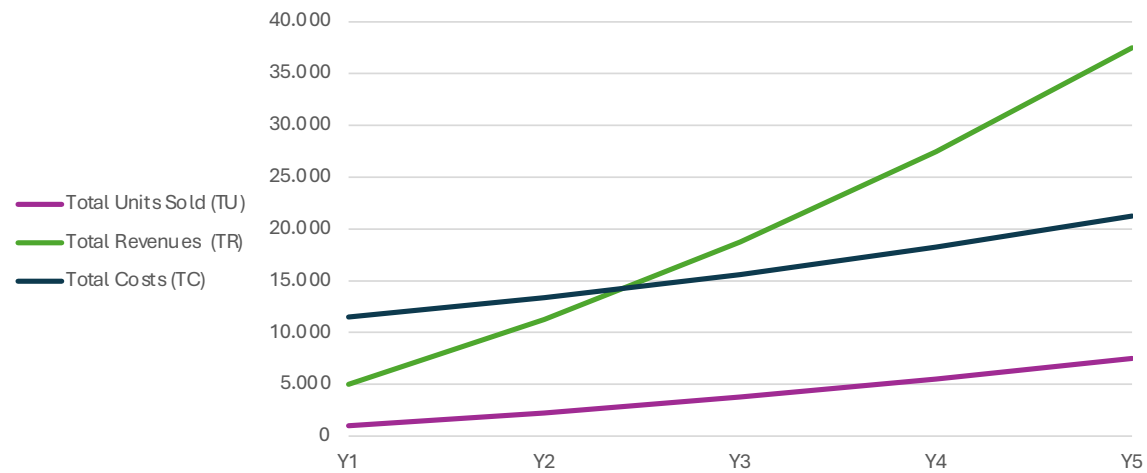
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Total Units Sold (TU)	1,000	2,250	3,750	5,500	7,500

1. Break-Even Point (BEP) Analysis



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Total Revenues (TR)	5,000	11,250	18,750	27,500	37,500

1. Break-Even Point (BEP) Analysis



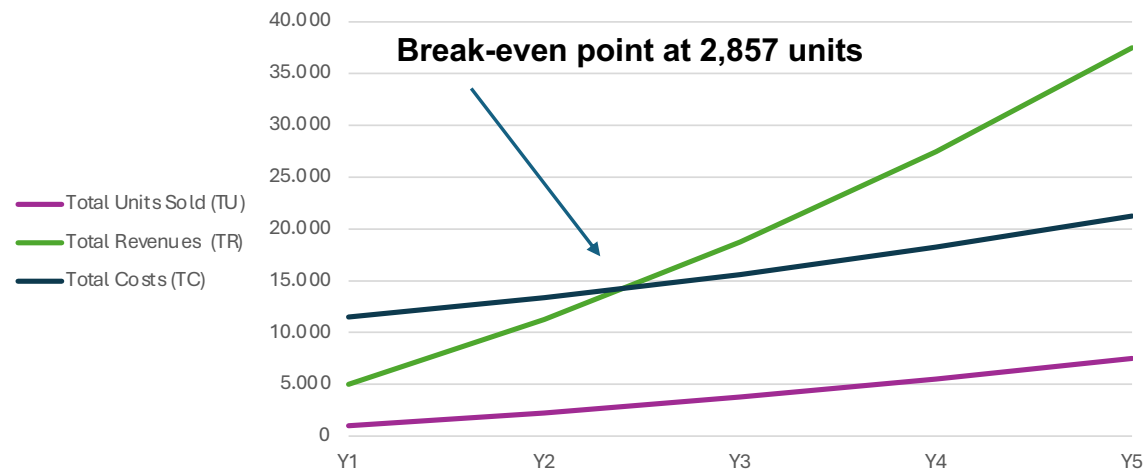
Sales price
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Variable Costs
per unit = 1.5 \$

**Total Fixed
Costs (Y1-Y5) =**
10,000 \$

	Y1	Y2	Y3	Y4	Y5
Units Sold (U)	1,000	1,250	1,500	1,750	2,000
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Total Revenues (TR)	5,000	11,250	18,750	27,500	37,500
Total Costs (TC) (var+fixed)	11,500	13,375	15,625	18,250	21,250

1. Break-Even Point (BEP) Analysis



Sales price
per unit = 5 \$

Variable Costs
per unit = 1.5 \$

**Total Fixed
Costs (Y1-Y5) =**
10,000 \$

	Y1	Y2	Y3	Y4	Y5
Units Sold (U)	1,000	1,250	1,500	1,750	2,000
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Total Costs (TC) (var+fixed)	11,500	13,375	15,625	18,250	21,250
TR-TC	-6,500	-2,125	3,125	9,250	16,250

1. Break-Even Point (BEP) Analysis

$$\begin{aligned} \text{TR} &= \text{TC} \\ &= \text{TVC} + \text{TFC} \end{aligned}$$

$$x \cdot \text{UP} = x \cdot \text{UVC} + \text{TFC}$$

$$\begin{aligned} x &= \text{TFC} / (\text{UP} - \text{UVC}) \\ &= \text{BEP} \end{aligned} \quad \rightarrow \quad x$$

TR: Total Revenues

TC: Total Costs

TVC: Total Variable Costs

UVC: Unit Variable Cost

TFC: Total Fixed Costs

UP: Units Price

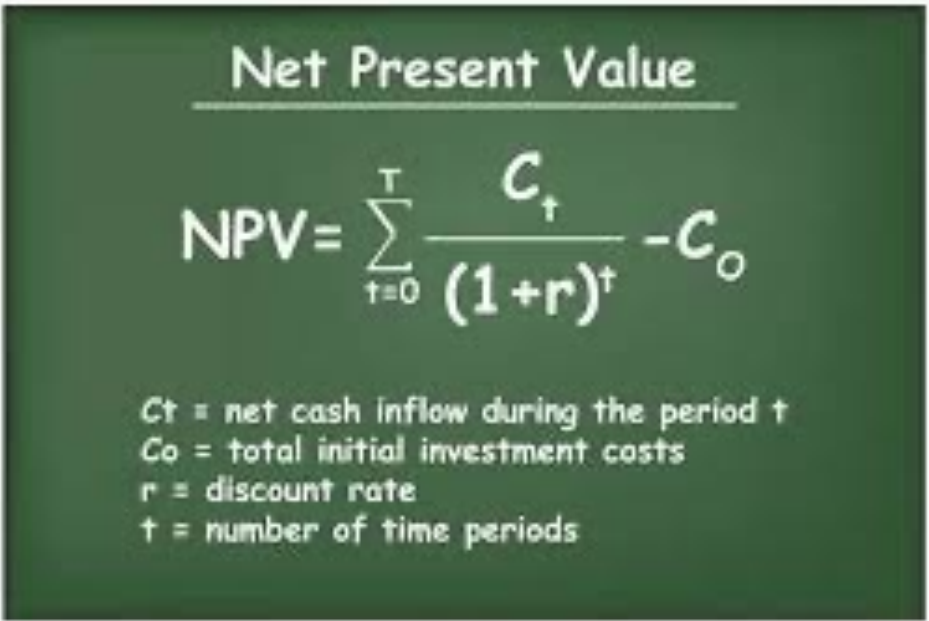
BEP: Break Even Point

$$x = 10,000 / (5 - 1.5) \quad \rightarrow \quad x = 2,857$$

2. Net present value analysis

2. Net present value analysis:

- The sum of (or the net of) the present value of all cash outflows and inflows related to an investment.



Net Present Value

$$NPV = \sum_{t=0}^T \frac{C_t}{(1+r)^t} - C_0$$

C_t = net cash inflow during the period t
 C_0 = total initial investment costs
 r = discount rate
 t = number of time periods



2. Net present value analysis

INPUTS:

Investment = 500,000 £

Variable costs (all paid to suppliers)

Depreciation = 50,000 £

Payment delay to supplier (months) = 2

Tax rate = 50%

Cost of capital = 0.25

NPV = 50,137 £



2. Net present value analysis

INPUTS:

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Year	0	1	2	3	4
Revenues		720,000	720,000	720,000	720,000
Variable costs		216,000	216,000	216,000	216,000
Fixed costs		100,000	100,000	100,000	100,000
Depreciation		50,000	50,000	50,000	50,000
<i>Income before taxes</i>		354,000	354,000	354,000	354,000
Tax		177,000	177,000	177,000	177,000
<i>Net income</i>		177,000	177,000	177,000	177,000

Cash flow from investing activities	-500,000	0	0	0	0
Cash flow from financing activities		36,000	0	0	-36,000
CASH FLOWS	-500,000	263,000	227,000	227,000	191,000
Discount factor	1.00	0.80	0.64	0.51	0.41
Discounted cash flows	-500,000	210,400	145,280	116,224	78,234

NPV = 50,137 £



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<i>Net income</i>		177,000	177,000	177,000	177,000
Non-cash expenses (depreciation)		50,000	50,000	50,000	50,000
Cash flow for operating activities		227,000	227,000	227,000	227,000
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Sensitivity analysis / Scenario analysis

- Step 1: assess the most sensitive parameters and **risks**
- Step 2: determine the effect of these risks on
 - Revenue and Profit
 - Financing need (need for cash)
- the sales volume is not feasible?
- the planned timing of first sales cannot be met?
- prices of raw materials increase? Interest rates?
- etc...
- Run these simulations in a spreadsheet.
- What are effects on profit and cash flow?
- What is your margin of safety?
- How can you mitigate the odds of risks becoming realities?



Sensitivity analysis / Scenario analysis

- Step 1: assess the most sensitive parameters and **risks**
- Step 2: determine the effect of these risks on
 - Revenue and Profit
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What if

- the sales price is not feasible?
- the sales volume is not feasible?
- the planned timing of first sales cannot be met?
- prices of raw materials increase? Interest rates?

Run these simulations in a spreadsheet.

- What are effects on profit and cash flow?
- What is your margin of safety?

