

# 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)

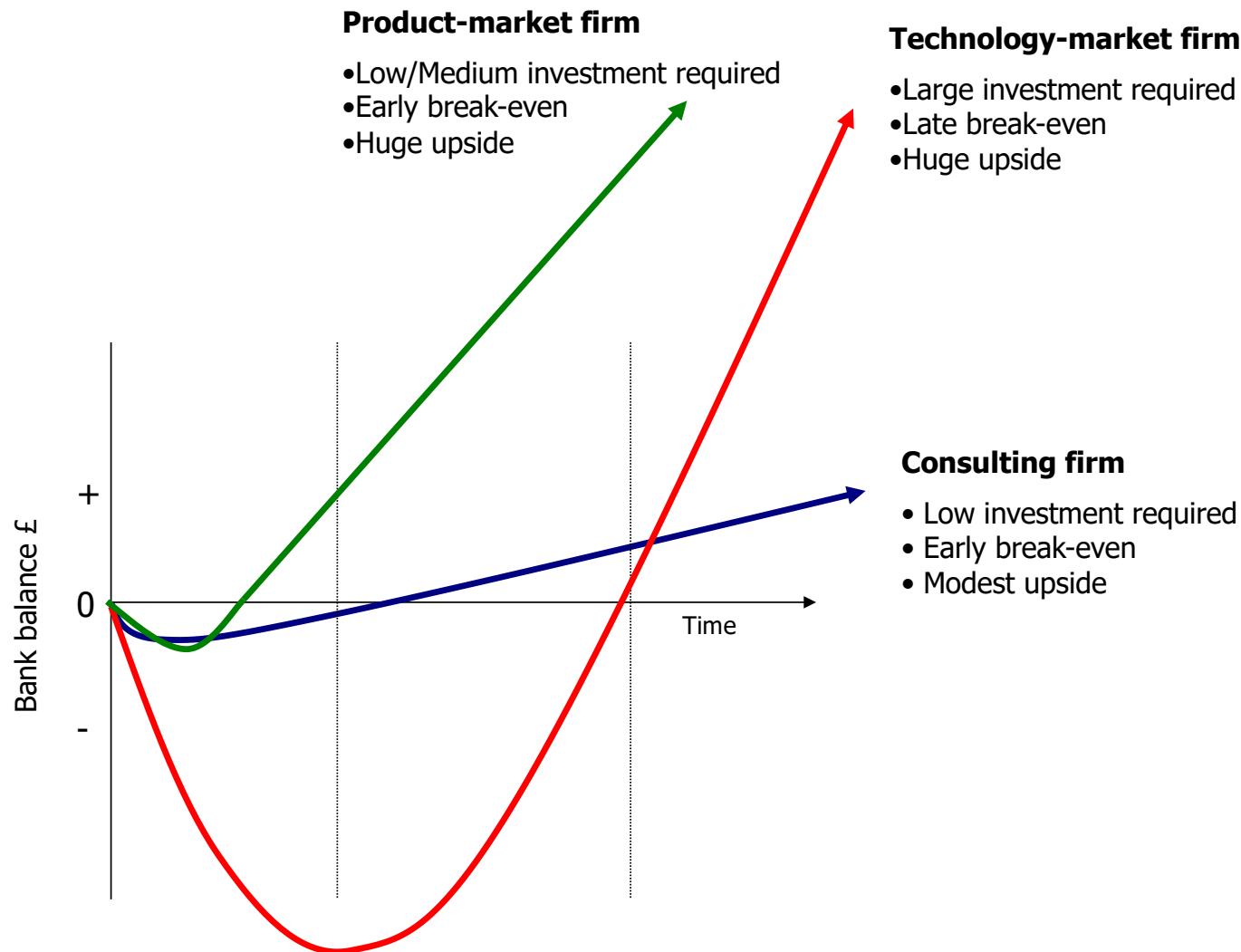


# INTRO

# Financial modeling set-up: Key Questions

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



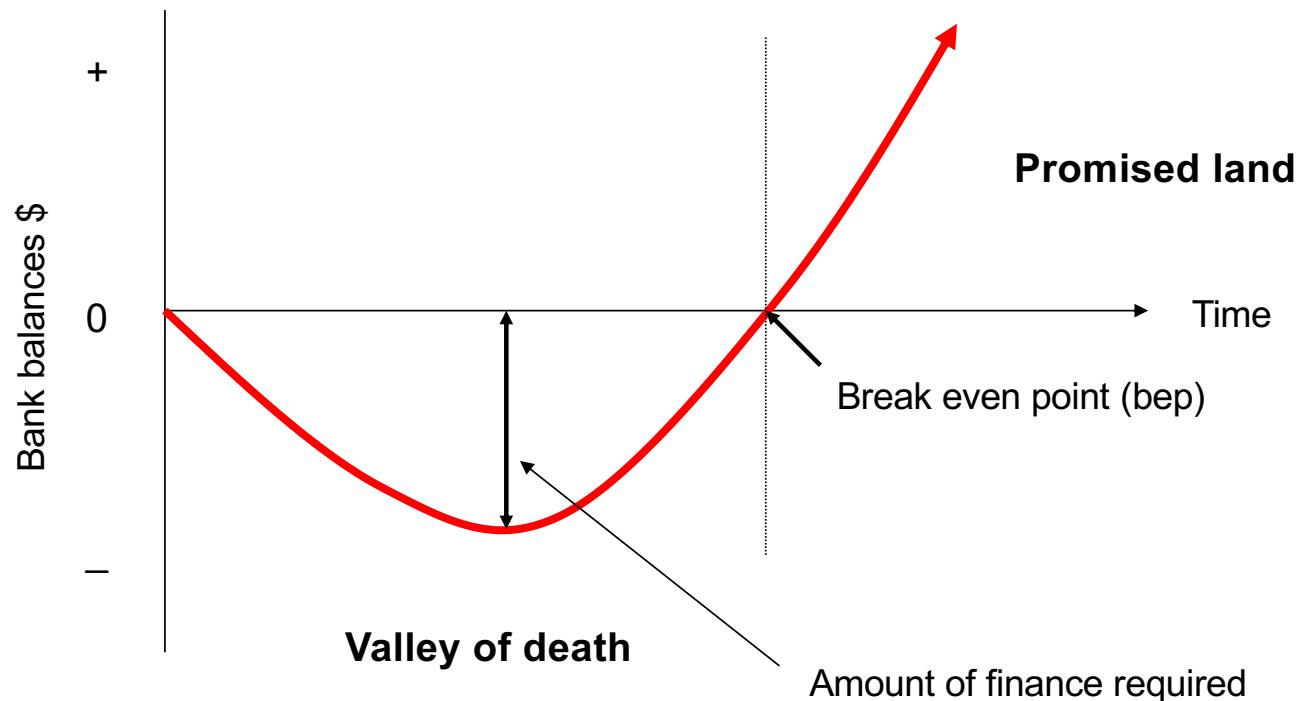


# Financial modeling set-up: Key Questions

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

$$\text{Assets} = \text{Liabilities} + \text{Owners' equity}$$

**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

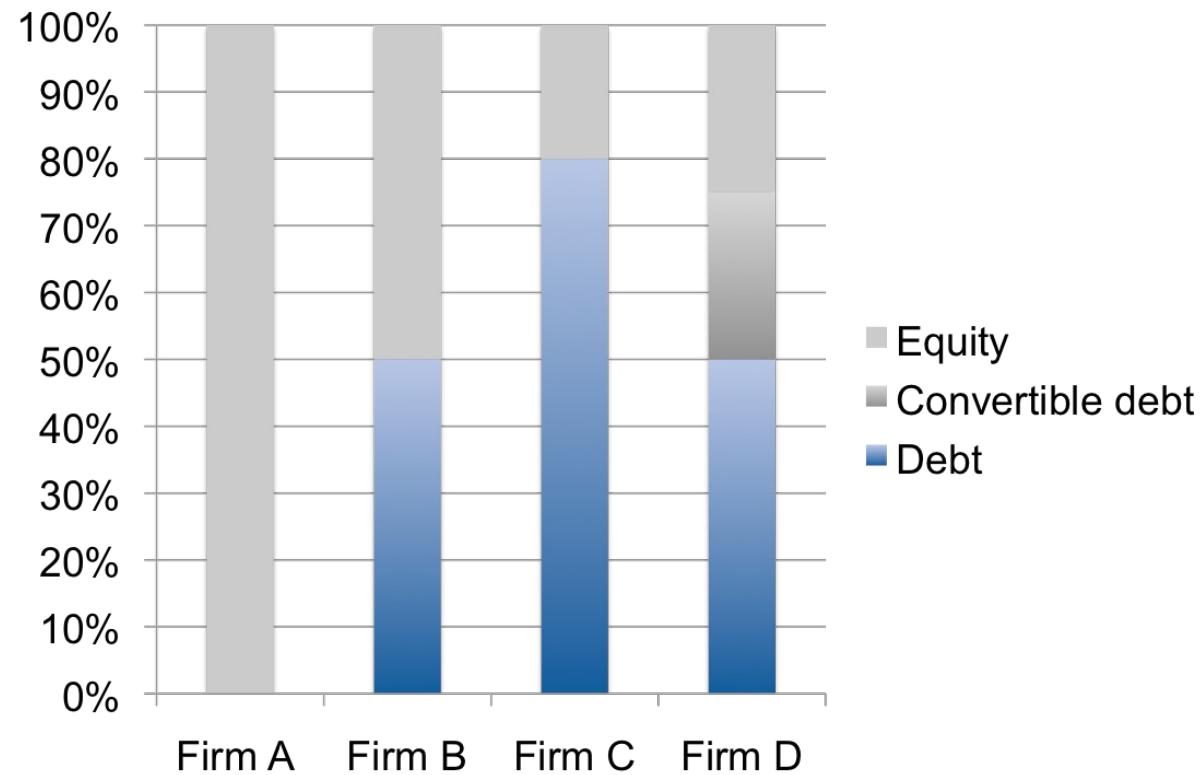
**Equity:** What belongs to the shareholders (owners)

- The residual value after all liabilities have been paid



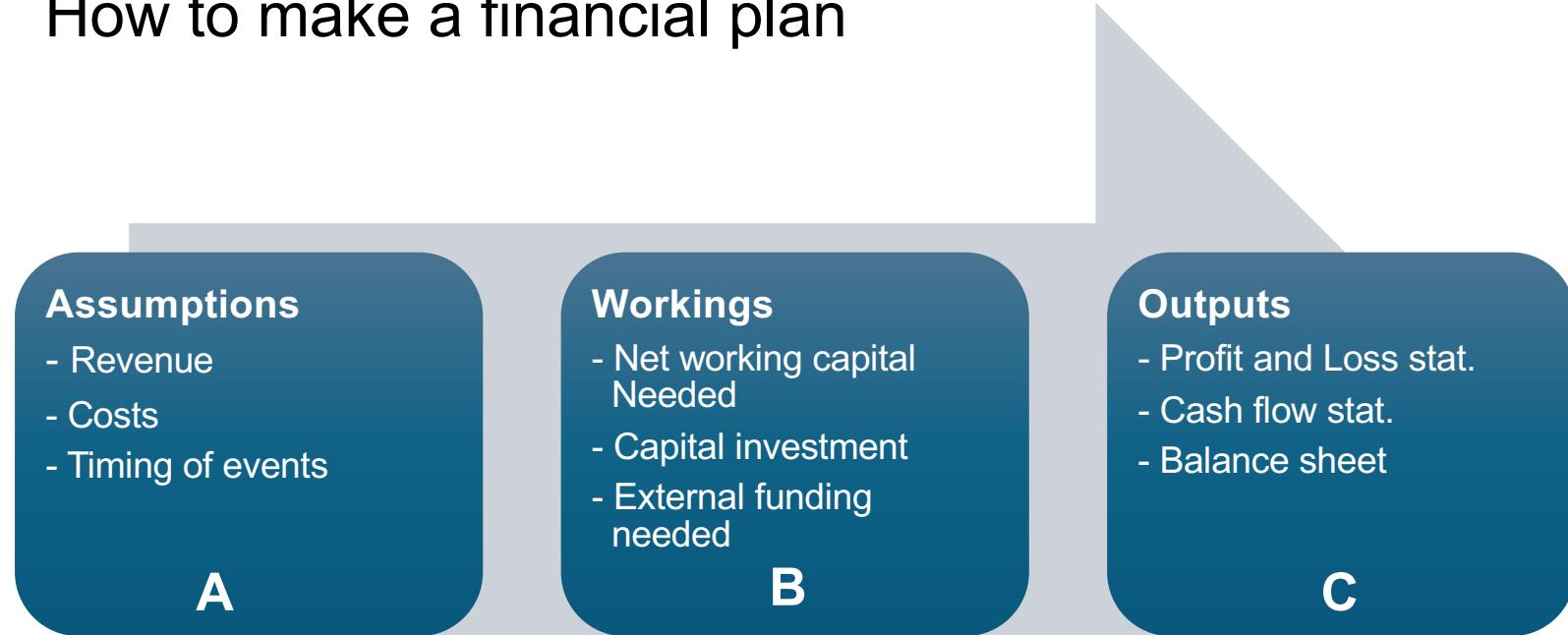
Assets		Liabilities	
<b>Current Assets</b>		<b>Current Liabilities</b>	
Cash	\$125,100	Account payable	\$30,000
Short-term investments	\$12,000	Short-term loan	\$15,000
Inventory	\$32,205	Payable income taxes	\$9,000
Supplies	\$10,000	<b>Total current liabilities</b>	<b>\$54,000</b>
Receivable	\$23,000		
Prepaid expenses	\$12,000		
<b>Total current assets</b>	<b>\$214,305</b>		
<b>Non-current Assets</b>		<b>Long-term Liabilities</b>	
Investments	\$100,000	Mortgages	\$22,500
Equipment	\$60,000	Bonds payable	\$15,000
Intangible assets	\$25,000	Deferred taxes	\$7,500
PPE	\$14,000	<b>Total long-term liabilities</b>	<b>\$45,000</b>
Goodwill	\$11,000		
<b>Total non-current assets</b>	<b>\$210,000</b>	<b>Total liabilities</b>	<b>\$99,000</b>
<b>Non-current Assets</b>		<b>Stockholders Equity</b>	
	\$16,000	Capital	\$259,305
<b>Total assets</b>	<b>\$424,305</b>	Retained earnings	-\$54,000
		<b>Total stockholder's equity</b>	<b>\$307,205</b>
		<b>Total liabilities and equity</b>	<b>\$424,305</b>

## Different capital structures



# MAKING A FINANCIAL PLAN

# How to make a financial plan

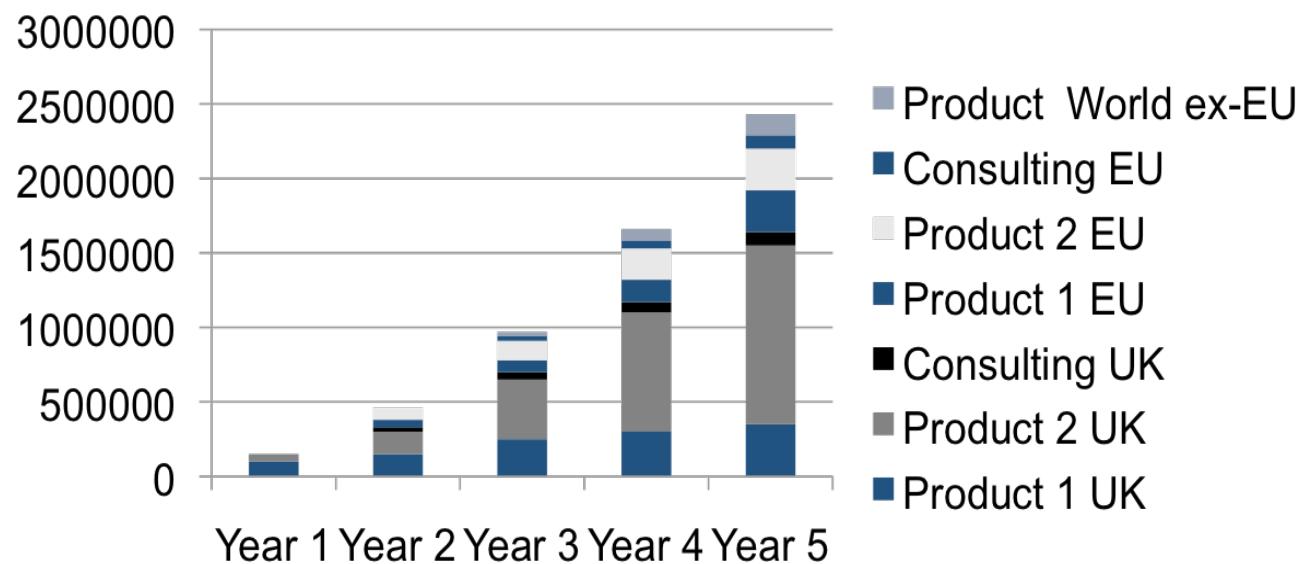


Risks and sensitivity / Scenario Analysis

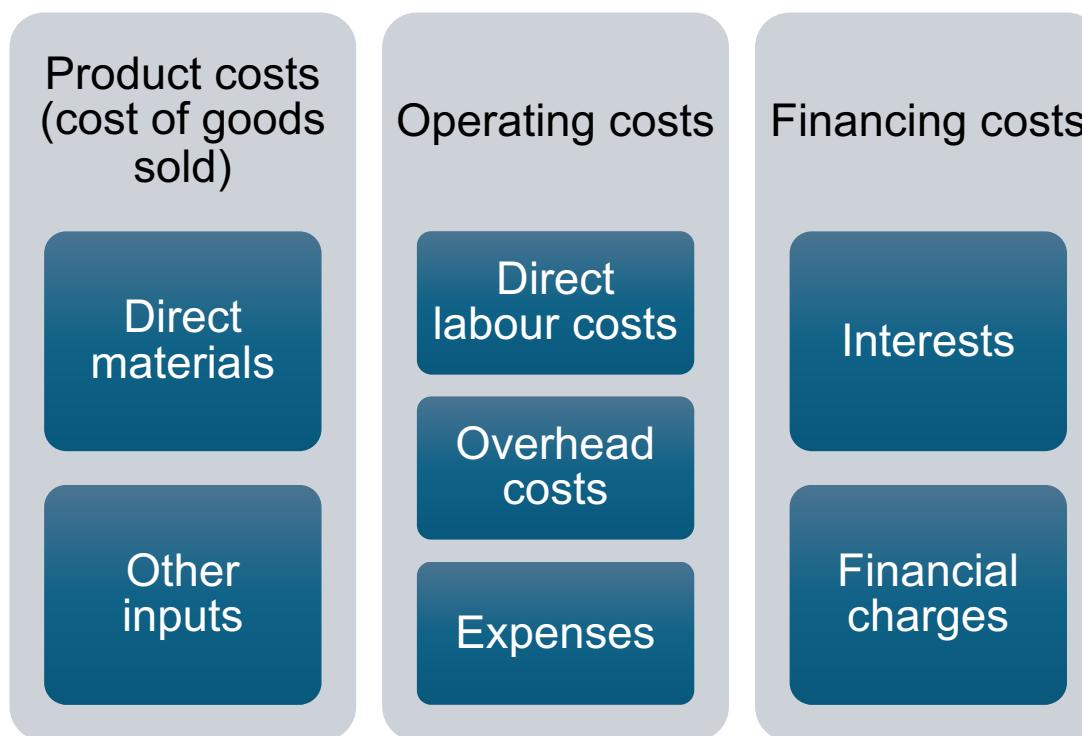
## **A - Assumptions – revenues, costs, timings**

# 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



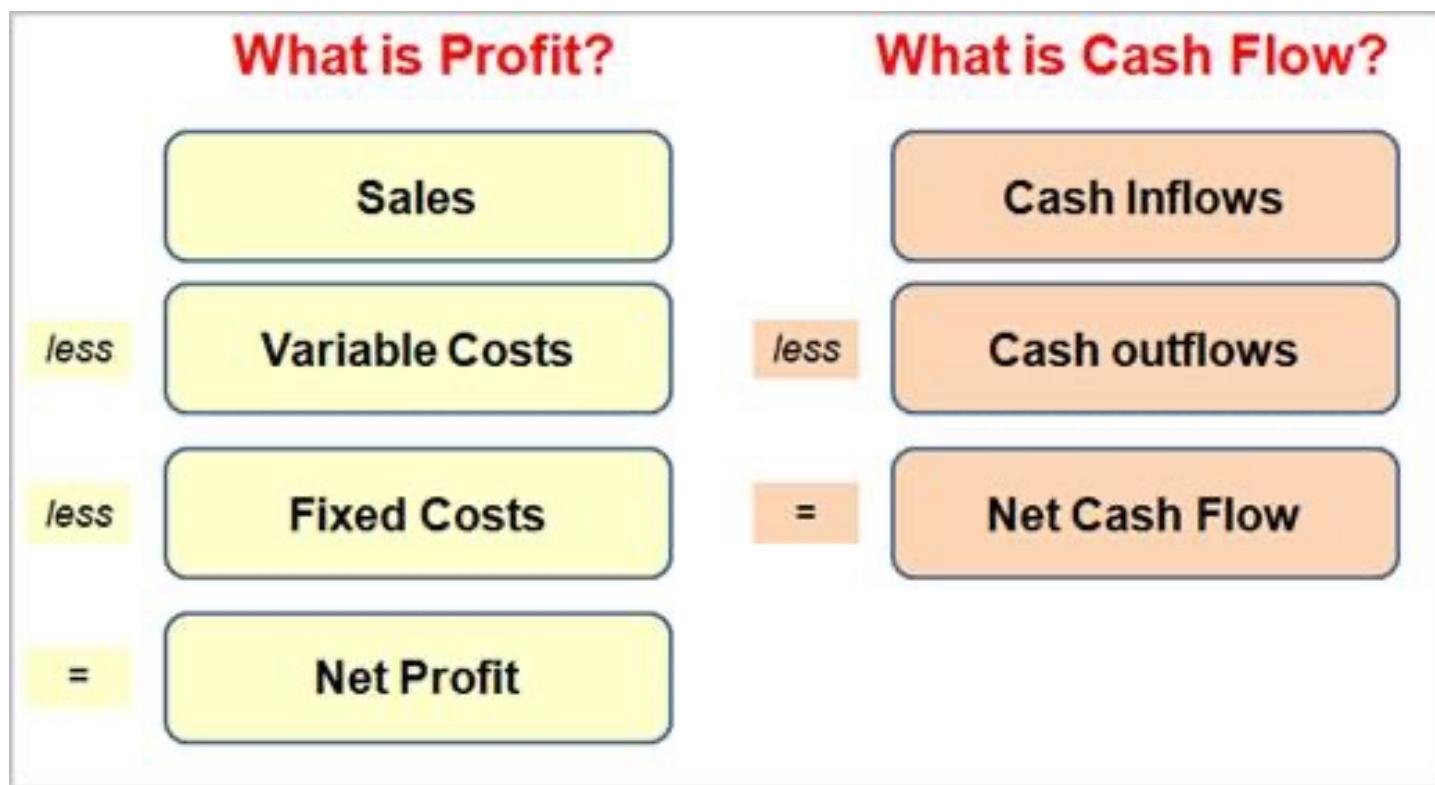
# Cost Typology



Variable vs. Fixed costs



## Profit & cash flow...in plain words

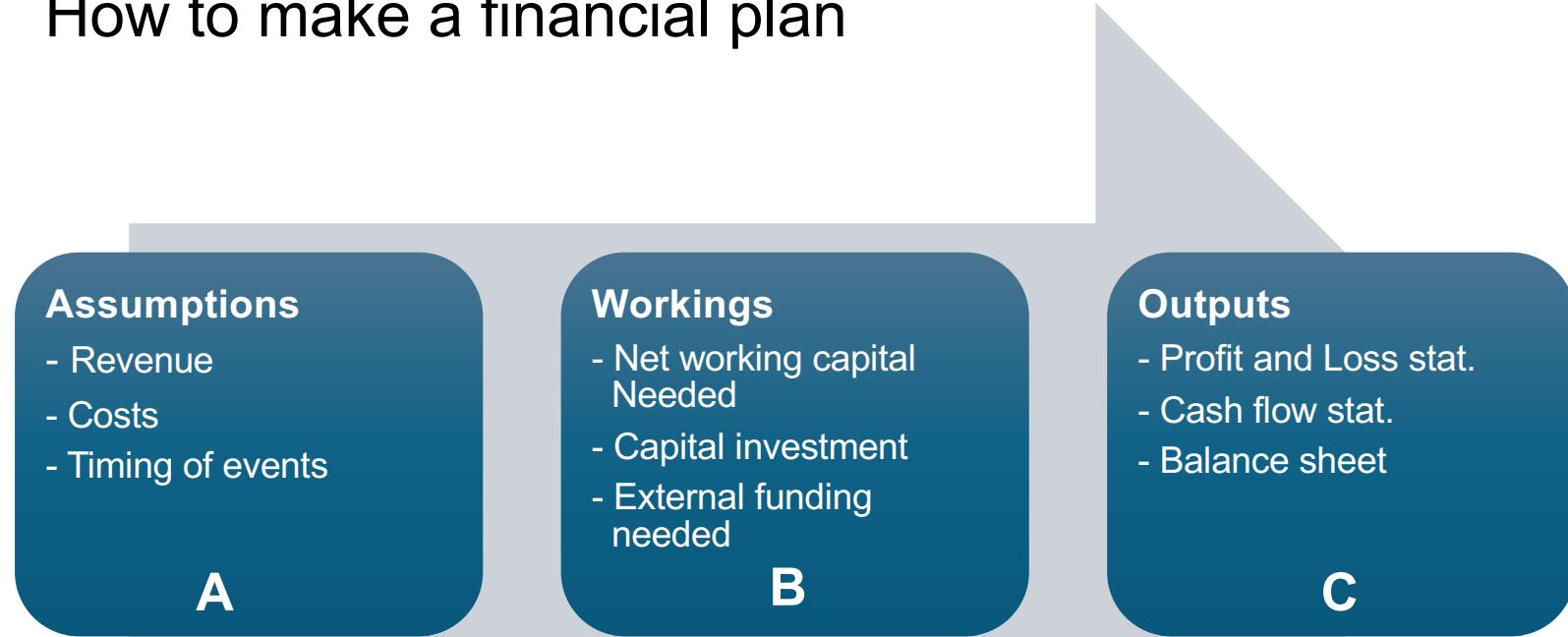


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# How to make a financial plan



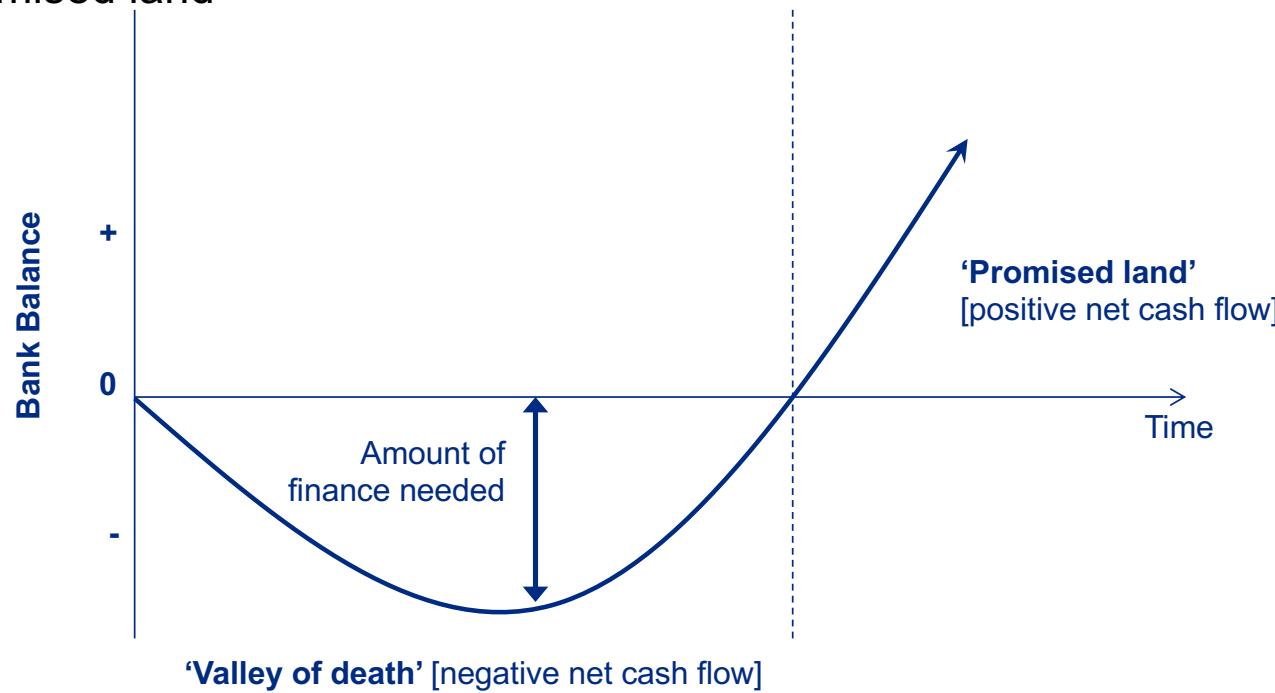
Risks and sensitivity / Scenario Analysis

## **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
<b>Profit &amp; Loss</b>				
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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<b>Profit &amp; Loss</b>				
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
<b>Cash flow</b>				
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



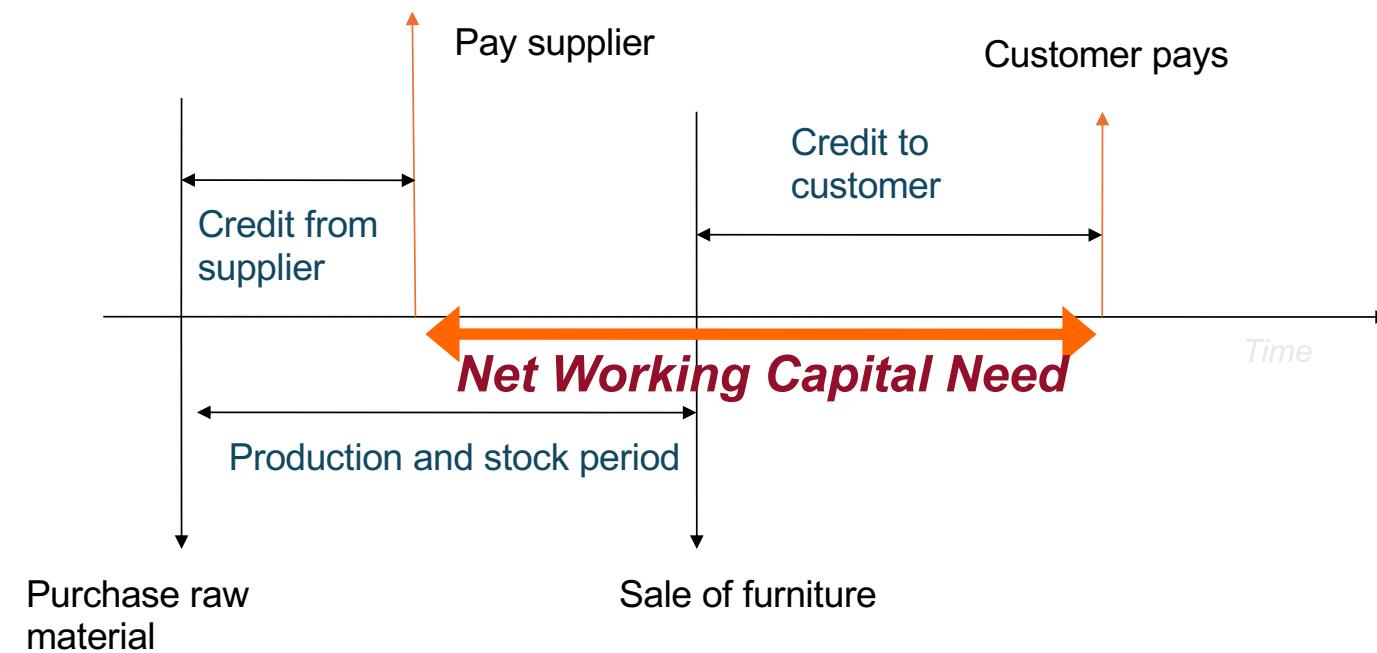
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Example:  
Timing differences in operations and NWCN



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

	Y1	Y2	Y3	Y4	Y5
Units Sold (U)	1,000	1,250	1,500	1,750	2,000

## 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

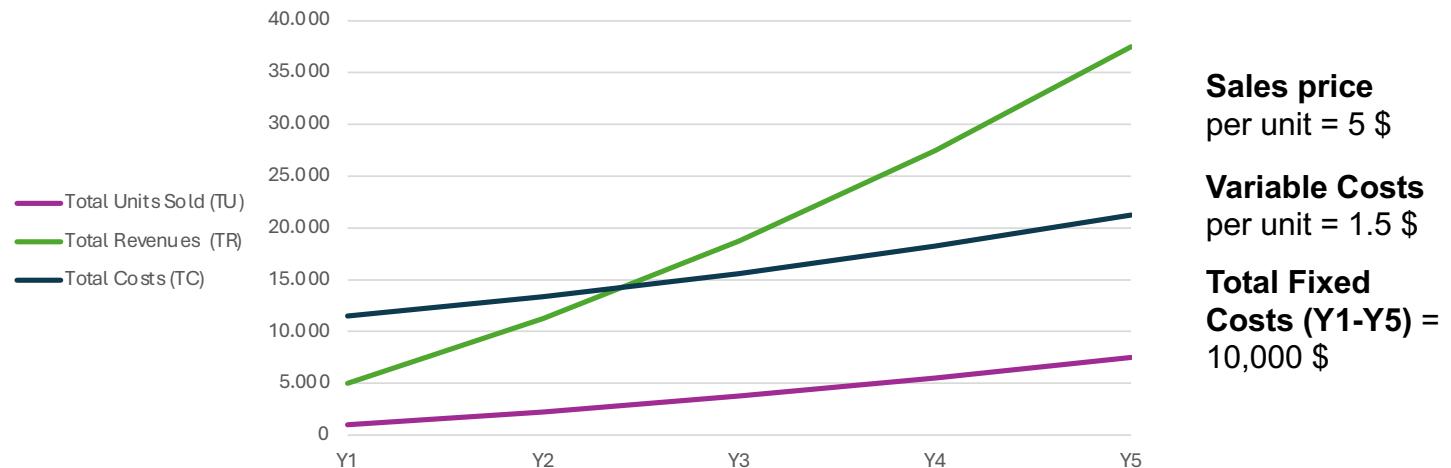


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Total Units Sold (TU)	1,000	2,250	3,750	5,500	7,500
Total Revenues (TR)	5,000	11,250	18,750	27,500	37,500

## 1. Break-Even Point (BEP) Analysis



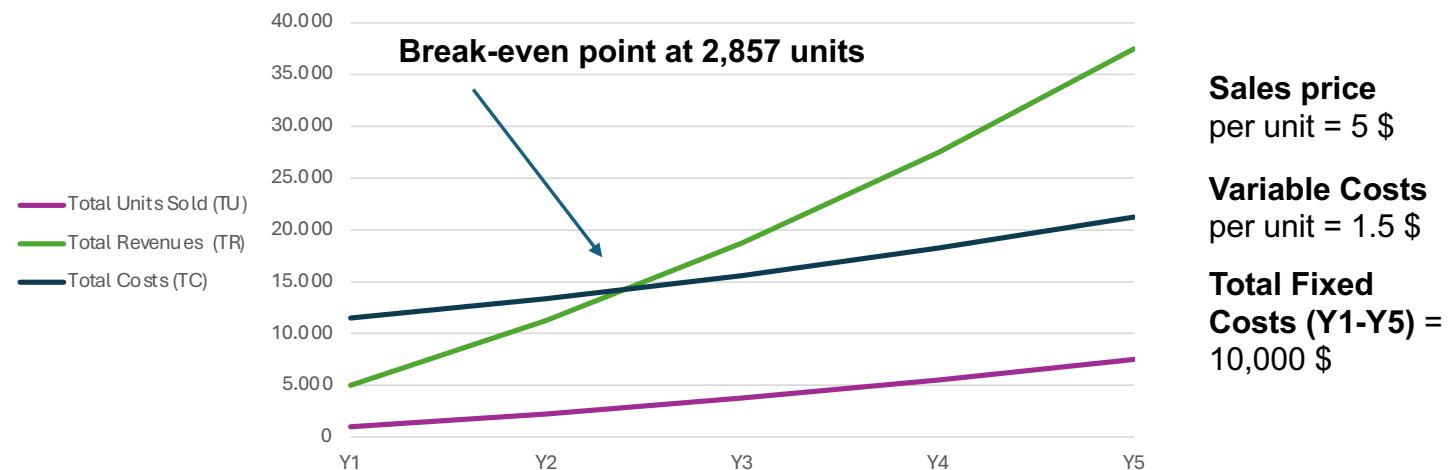
**Sales price**  
per unit = 5 \$

**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

## 1. Break-Even Point (BEP) Analysis



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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

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

$$x^* \text{UP} = x^* \text{UVC} + \text{TFC}$$

$$\boxed{x = \text{TFC} / (\text{UP} - \text{UVC}) \quad \rightarrow \quad x = \text{BEP}}$$

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

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

## 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<sub>t</sub>* = net cash inflow during the period *t*  
*C<sub>0</sub>* = 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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Tax rate = 50%

Cost of capital = 0.25

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

<b>Cash flow from investing activities</b>	-500,000	0	0	0	0
<b>Cash flow from financing activities</b>		36,000	0	0	-36,000
<b>CASH FLOWS</b>	-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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Non-cash expenses (depreciation)		50,000	50,000	50,000	50,000
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Discounted cash flows	-500,000	210,400	145,280	116,224	78,234

**NPV = 50,137 £**



## 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
  - Financing need (need for cash)

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?

