Finance Administration and Control

1. Basic finance

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Outline

Life cycle of the company
1. Startup phase
2. Investment phase
3. Operational phase

Economic and financial cycles

Goals
- Balance sheet
- Assets and Liabilities
- Profit and Loss (P&L)

Life cycle of the company

1. Startup phase
    - Business idea
    - Business plan
    - Not yet production
    - Funding

2. Investment phase
    - Investment into assets
    - Cash absorption

3. Operational phase
    - Start production
    - Cash generation

Startup phase

Business idea

- Entrepreneurship
    - Innovation
    - imitation

A business idea is based on the identification of an economic opportunity: the resources used and consumed in the realization of the enterprise will be *lower* than the revenues obtained.

In principle this disequation should be verified only at the end of the overall life of the company.
In practice this is too long- we conventionally assume the year as unit of observation and want that Total cost < Total revenues, or $\pi > 0$.

Startup phase

Business plan

Formal written document prepared in order to show to all interested parties

- Business idea
- Pain and gain
- Estimated size of the market
- Competitive analysis
- Appropriability of the business idea (e.g. IPR)
- Investment plan

Expected

- Profit & Loss
- Assets & Liabilities
- Breakeven point

Funding

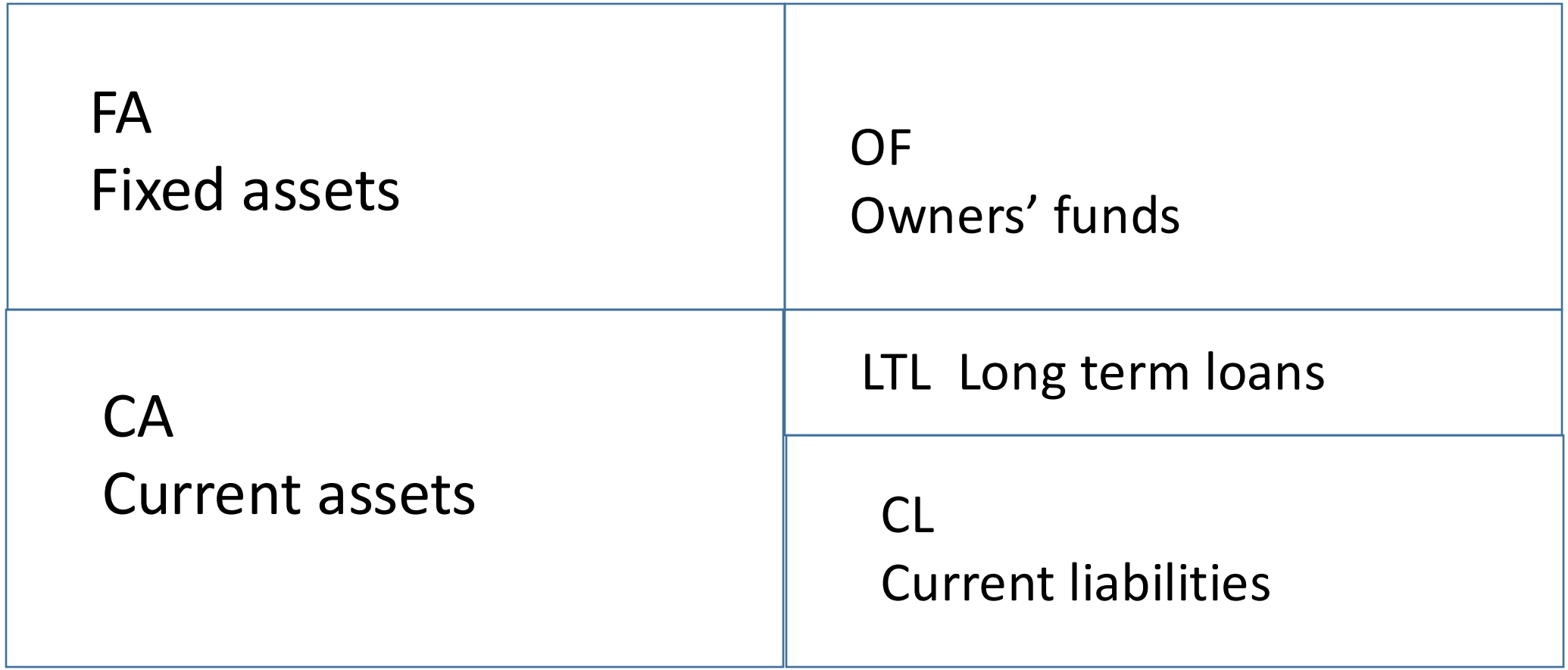
Two main sources of funding

- Owner capital (equity)
- Debt capital

Main differences

- duration (whole life vs. expiration date)
- remuneration (shareholder remuneration vs. interest rate)
- risk (loss of capital vs. insolvency)
- rules for allocation (limited responsibility of shareholders)

Assets and liabilities



Assets

Fixed assets

1. Intangibles
2. Net fixed accounts
3. Long term investment

Current assets

1. Inventories (stocks)
2. Acccounts receivable
3. Cash
4. Miscellaneous

Liabilities

Owners' funds

1. Issued common stock
2. Capital reserves
3. Revenue reserves

Long term loans

Current liabilities

1. Accounts payable
2. Short term loans
3. Miscellaneous

Owners' funds

1. **Issued common stock**
   - nominal value
   - book value
   - capital value

2. **Capital reserves**
   - revaluation of fixed assets
   - premium on shares issued at a price in express of nominal value
   - currency gains on balance sheet items or non-trading profits

3. **Revenue reserves**
   - earnings retained in past years

Debt funds

Long term loans (LTL)

- loan= sum of money borrowed from banks (e.g. mortgage)
- loans have the following structure

- nominal value= amount of money
- duration= fixed date for mortgage repayment (it may be postponed but only upon decision of the bank)
- rate of interest= amount to be paid regularly each year as a percentage ratio of the nominal value
    - fixed interest rate
    - variable interest rate (formula)
- mortgage payment= yearly amount of money which includes the rate of interest and a share of the nominal value, to be repayed progressively
- interests are a cost for the company; repayment of the nominal value is not a cost but a reduction in the debt

Debt funds

Current liabilities

Accounts payable

- they result from commercial transactions in which the firm has purchased items (e.g. raw materials, components, services etc.) but has not yet transfered the cash to the supplier against the price
- they have nominal value defined by a formal document (invoice)
- accounts have terms of payment such as date of payment and penalties for late payment

Short term loans

- amount of money made available by banks to support daily operations of firms against an interest rate and managed as a bank credit on a deposit account
- in principle, the bank may ask for immediate repayment of the bank credit, should the customer miss the payment of interest rate

Miscellaneous

Assets

Fixed assets

Intangibles

- Intellectual Property Rights (patent, copyright, design)
- capitalization of Research and Development expenses (R&D)
- goodwill (resulting from know how, or brand recognition/ brand equity)

Intangibles are the immaterial elements that increase the potential for future profits.
They are the result of costly investment by the firm

- acquisition of external resources (e.g. licensing of patent)
- in-house activities over many years

They are subject to formal accounting rules for their measurement and representation in the balance sheet.

Assets

Fixed assets

Net fixed accounts

- fixed accounts are the accounting measure of fixed assets: building, equipment, machinery, computer, computer network, fleet of cars or trucks and the like
- all assets stay with the firm for many years (multiannual assets)
- they are measured with the principle of historical cost (=cost of acquisition at that date)
- they deliver a contribution to the operations of the firm without being consumed entirely
- they correspond (roughly) to the economic notion of capital in the production function Y= f(K,L)

Why «net»?

- fixed assets are not a cost to be charged to the Profit & Loss account because they contribute to the operations for several years
- each year only a share of the cost is charged to the P&L, usually following a fixed percentage
- this share is called depreciation, or amortization

Net fixed accounts

Two solutions

1. Net fixed accounts

With this technique we represent in the same section of the Assets & Liabilities document both the nominal value of the assets and their depreciation

Buildings	Euro 100,000
(-) Depreciation of buildings	Euro 20,000
Net buildings	Euro 80,000
Equipment	Euro 300,000
(-) Depreciation of equipment	Euro 100,000
Net equipment	Euro 200,000

Net fixed accounts

Two solutions

2. Depreciation fund in the Liabilities section

Using this technique the annual charges of depreciation are cumulated into a separate section of the balance sheet in the Liabilities section, called «Depreciation fund».
The overall impact is the same, but this techniques emphasize that depreciation can be considered a source of funding.

Assets		Liabilities	
Buildings	Euro 100,000	Depreciation fund of buildings	Euro 20,000
Equipment	Euro 300,000	Depreciation fund of equipment	Euro 100,000

Depreciation

Depreciation rates are different by type of assets, representing the average duration of the technical life and the pace of technological progress (risk of technical obsolescence).

In practice, the depreciation percentages are fixed by the fiscal authority. Firms are free to adopt different rates, but the fiscal authority does not recognize them and charges the corporate income taxation according to its own coefficients.

Annual depreciation is a cost to be charged to the P&L and it reduces the profits. This means that it reduces the transfer of cash to shareholders, in the form of dividends.

Contrary to all other costs, it does not involve a cash outflow (i.e. there is not an external party to be payed with a cash transfer). For this reason depreciation is a way for retaining cash.

Long term investment

Financial assets that represent long term investment into
- shares of other companies
- corporate bonds
- sovereign bonds

The most common situation is the ownership of shares of other companies that are controlled within a *group* governance structure. In a group the mother company («capogruppo») is the majority or 100% owner of the shares of controlled companies («controllate»). The group may be operational or industrial (i.e. the mother company actively coordinates the business of controlled companies) or financial.

More unlikely is the ownership of debt obligations issues by companies (corporate bonds) or States (sovereign bonds). This investment is mostly done by banks.

Current assets

Inventories (stock)

- all inventories of
    - raw materials, components, consumables
    - work-in-progress, semi-finished products
    - finished products
- all items are initially recorded following the cost of acquisition
- contrary to fixed assets, however, inventories are subject to infra-annual rotation- i.e. items enter and exit several times a year
- this creates a problem of measurement at the end of the year, since the stock may be formed by items that entered at different dates and with different prices

Solutions

- FIFO (First in, first out)
- LIFO (Last in, first out)
- Automatic tracking of individual items in the inventory and valorization item by item

Current assets

Accounts (receivable)
They are the result of commercial transactions in which the firm has sold products to clients but has not yet received the cash payment.

They represent credits of the firm with respect to clients.
In a certain sense, by giving time to clients to transfer the cash, the firm «funds» its clients. Extending credits too much may create serious cash problems.

Receivable accounts have a date of expiration and may include clauses for penalties in case of late payment. In practice the delay in payment is a matter of commercial relations and is subject to bargaining power of the two parties.

If there is some risk of insolvency, receivable accounts should be cut by a percentage share representing the probability of not receiving the cash.

Current assets

Cash

Liquid money in the form of

- coins and banknotes
- availability on a bank account

Liquidity is the ability of something to be transformed in a desired good

- immediately
- with certainty

Illiquid assets (e.g. shares, or real estate) do have value, but they cannot immediately be transformed into a desired good (it takes time to sell a share or a house) and with certainty (the asset may loose value).

Careful cash management is crucial in the early life of a company because

- funds available are totally invested into assets
- operations absorb cash instead of generating cash, because revenues are low (e.g. the new product must be known by customers) are costs are high

Remarks

The activities of the firm may be seen as a continuous process of transformation of financial sources into investments.

The basic principle is that the all sources of funding must be compensated.
Bringing funding to a firm means sacrificing short term consumption opportunities in exchange for a future return.

This implies that the activities of the firm must generate a return, in the form of profits, with is at least equal, but hopefully larger, than the minimum compensation required by those who have brought the financial resources.

Weighted Average Cost of Capital (WACC)

r_D return to debt = rate of interest payed to banks (%)
r_E return to equity= remuneration of shareholders (%)

r_E= (dividend + capital gain)/ initial investment of shareholder
Assuming a share acquired at year zero at the price (market value) V_{m0} and sold at year one at the price V_{m1} if during year one the firm has distributed the dividend D_1 the total annual return for the shareholder is

$$r_{E1} = (D_1 + (V_{m1} - V_{m0}))/V_{m0}$$

D= total debt
E= owner funds
D+E= total liabilities = total assets

$$WACC\ (\%) = r_D\ (D/D+E) + r_E\ (E/D+E)$$

Remarks/2

Investing financial sources into assets means reducing the liquidity of these sources.

Some of them may be converted into cash immediately (cash, bank account).
Some may be converted in less-than-one year, but with a certain amount of work aimed at dealing with clients (accounts receivable) or at selling finished products (inventories).

Yet fixed assets are entirely illiquid, in the sense that cannot be transformed into cash without disrupting the overall company.
This means that these assets must be covered with financial sources that have the same time structure, i.e. are not mobilized in a short time frame.

These sources are the owners' funds (they do not have an expiration time) and the long term loans.

Remarks/3

At any time firms may be requested to provide cash against urgent needs of payment.

- Wages and salaries
- Welfare contributions to workers
- Taxes
- Interest payment.

Firms may ask for delay. Delay may be costly (penalties) or even impossible (legal obligation).

Firms must anticipate the need for cash payments and provide enough resources (cash, bank account, credits that can be cashed at very short notice) that can be immediately transformed into cash.
If this is not possible, firms enter into a vicious circle: in order to find cash they may sell their assets at low price (e.g. selling inventories undercost, or sell credits to the banks at high discount rate) and incur into losses. They may ask for new debt, which worsens the situation or may be impossible because banks are afraid of insolvency.

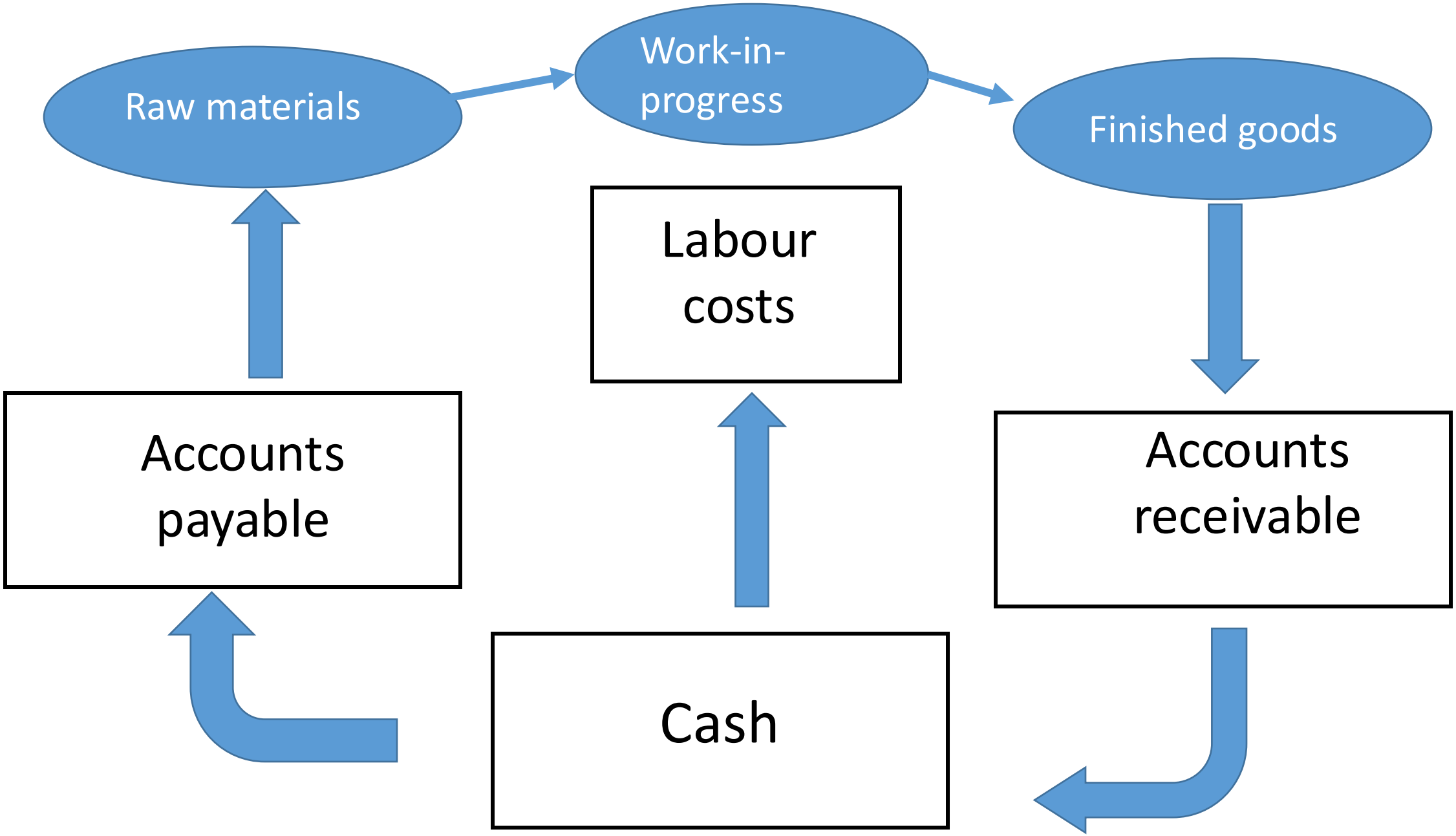
Operational phase

Financial sources for the startup phase have been acquired.
They have been invested into assets with various levels of liquidity.
Production starts.

Production has two consequences
- revenues
- costs

Revenues are the result of the sales of products and services. The monetary value depends on the combination between volume and price. Revenues have always monetary value, immediate (cash) or delayed (credit).

Costs are the consumption of resources needed in the production process. Costs may be monetary (immediate with cash, or delayed with debit) but also non monetary (depreciation, cost reserves for future risk or expenses).


Raw materials
Work-in-progress
Finished goods
Labour costs
Accounts payable
Accounts receivable
Cash

Economic cycle vs financial cycle

The economic cycle starts with the production and ends with the sales of the products.
The financial cycle starts with the payment for the costs needed to produce and ends with the reception of payment from sales.

The two cycles **are not synchronized**.

One of the major difficulties in general management, and particularly in the startup phase, is the smooth coordination between the economic and the financial cycles.

Economic cycle

Acquisition of factors of production
- raw materials
- wages and salaries
- services

Sales of products

Financial cycle

Economic and financial cycles

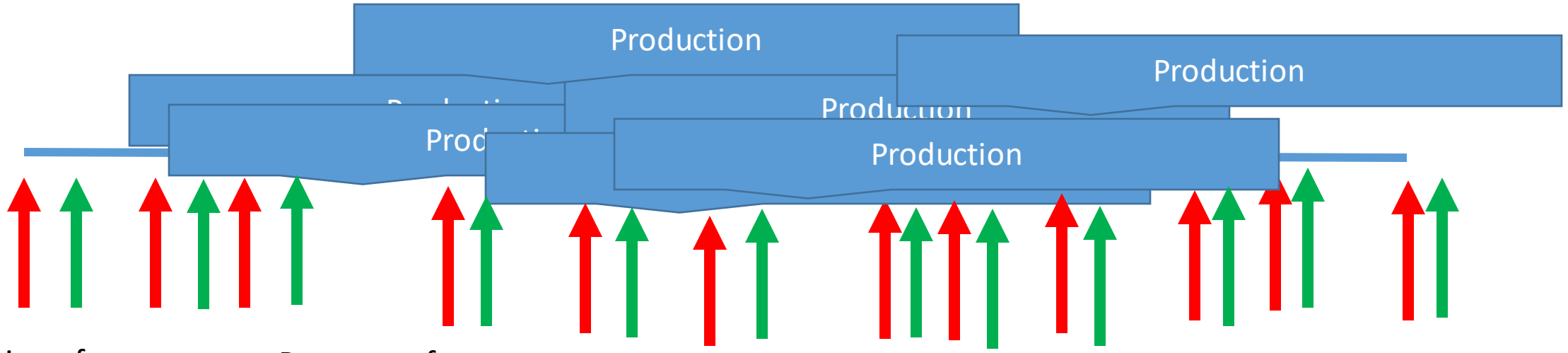
Acquisition of inputs of production
- raw materials
- wages and salaries
- services

Payment of accounts (payable) for inputs of production

Sales of products

Reception of payment from accounts (receivable) for sales of products

Repeated economic and financial cycles



Acquisition of inputs of production
- raw materials
- wages and salaries
- services

Payment of accounts (payable) for inputs of production

Sales of products

Reception of payment from accounts (receivable) for sales of products

Two notions of equilibrium

Economic equilibrium

- In each year it must be that total revenues > total cost
- It may happen that there are temporary losses. An economic disequilibrium can be sustained only occasionally and for few years in line
- Losses can be absorbed by decreasing the Issued common stock, but not beyond a given threshold defined by the legislation. In case of losses that exceed this threshold the company is liquidated
- Losses disrupt the financial equilibrium insofar as they translate into an excess of cash outflows (monetary costs) over the cash inflows (revenues) in the long term
- After economic disequilibrium firms may experience increasing difficulties in meeting the deadlines for cash payments and enter into liquidity crisis and insolvency
- Insolvency may lead the firm to the bankrupcy

Two notions of equilibrium

Financial equilibrium

- In each year it must be that
    - fixed assets are covered by owners' funds and long term loans
    - current liabilities are covered by current assets
    - short term cash needs are fully covered
- A firm may be profitable but in financial disequilibrium if
    - credits are subject to high risk of insolvency and
    - terms of payment of credits largely exceed terms of payment of debts
    - inventories are not sold regularly and frequently
- A firm may be in short term financial equilibrium but unprofitable (hence a candidate for future financial crisis) if
    - it anticipates cash inflows reducing profits (e.g. selling products at discount price)
    - it postpones cash outflows (e.g. investment needed to replace old equipment) reducing future profits

Total revenues

They include various sources of revenues.
Under normal conditions only operational revenues can be considered

- **Operational revenues**
    - Sales of products and services
    - Discount on purchases
- **Financial revenues**
    - Interest on bonds and other financial assets
    - Capital gain from sales of shares or other financial assets
- **Extraordinary revenues (non recurrent)**
    - Capital gain from sales of fixed assets (e.g. sales of used equipment)
    - Cancelation of debts
    - Fiscal benefits

Total costs (a) **Operational costs**

Research and development

- Direct R&D expenses (intramural, extramural)

Industrial costs, or cost of sales

- Cost of production personnel
- Purchases (raw materials, components)
- Industrial services
- Depreciation of assets

Selling costs

- Cost of sales personnel
- Promotion and advertising

General administrative expenses

- General management
- Corporate research and development
- Legal and regulatory affairs

Other operating expenses

Total costs (b) **Financial costs**

Interest costs

- Interest expenses on loans
- Interest expenses on debts
    - Net of interest income (on bank accounts)
    - Net of interest income on credits

Administrative expenses

- Bank fees for operations of accounts
- Bank charges for the management of credit lines and loan authorization

Total costs (c) **Depreciation costs**

These costs are recorded separately in the EBITDA definition (Earnings Before Interest, Taxation and Depreciation of Assets).
This indicator is often used in international comparisons in order to take into account differences in the fiscal treatment of depreciation.
Otherwise they are recorded within Operational costs.

Depreciation

- Annual depreciation charge for
    - buildings
    - equipment and machinery
    - vehicles
- Annual depreciation charge for
    - Capitalized R&D expenses

Total costs (d) **Taxation costs**

Cost of taxes

- taxes on income (% of gross profits)
- taxes on non-income items
    - property
    - regulation
    - others

Total revenues

(-) Total operating costs

= **EBIT Earnings before interest and tax**

(-) Interest

= **EBT Earnings before tax**

(-) Tax

= **EAT Earnings after tax**

(-) Dividends

= **RE Retained earnings**

Total revenues

(-) Total operating costs

= **EBIT Earnings before interest and tax**

(-) Interest

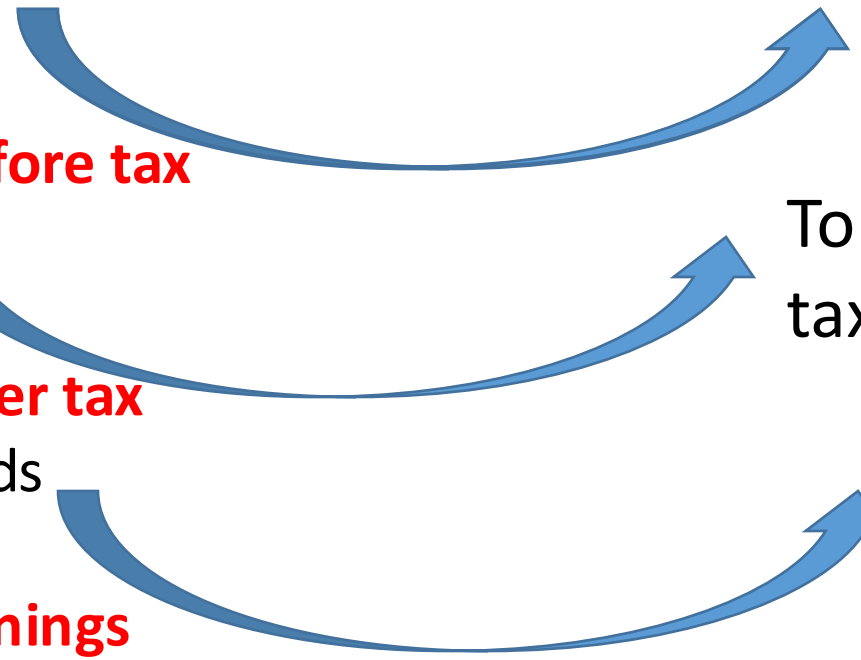
= **EBT Earnings before tax**

(-) Tax

= **EAT Earnings after tax**

(-) Dividends

= **RE Retained earnings**



To be paid to lenders of debt capital

To be paid to the taxation authority

Available for remuneration of shareholders

A simple example

Revenue	71,920
Cost of sales	51,165
Research and development expenses	4,065
Selling and general administrative expenses	10,424
Other operating income	656
Other operating expenses	194
Income from investments accounted for using the equity method, net	582
Interest income	1,058
Interest expenses	764
Other financial income (expenses), net	177
Income tax expenses	2,028
Income from discontinued operations, net of income taxes	108
Net income	5,507

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EXCLUSIVE AUTONOMOUS VEHICLES

Zoox, Self-Driving Car Startup Valued at $2.7 Billion, Is for Sale

By Amir Efrati May 7, 2020 11:06 AM PDT

Zoox, one of the most ambitious self-driving car developers that was valued at $2.7 billion in 2018, is contemplating a sale.