Lesson 5. Finance

5.1. Financial analysis

5.2. Financial resources

5.3. Investments appraisal

At a glance

Lesson 5 focuses on the firm's financial function.

Firstly, we will review some key concepts on accounting and some indicators about the firm's financial situation will be introduced.

Secondly, several forms of acquiring funds will be studied. These funds, called financial capital, are required to purchase the firm's assets and finance its operations.

Not only is Finance the area responsible for finding the best sources of funds but also the best way to use them. For this reason, we will last study some criteria to evaluate and decide among projects with the aim of maximizing the firm's value.

Lesson 5. Finance

5.1. Financial analysis

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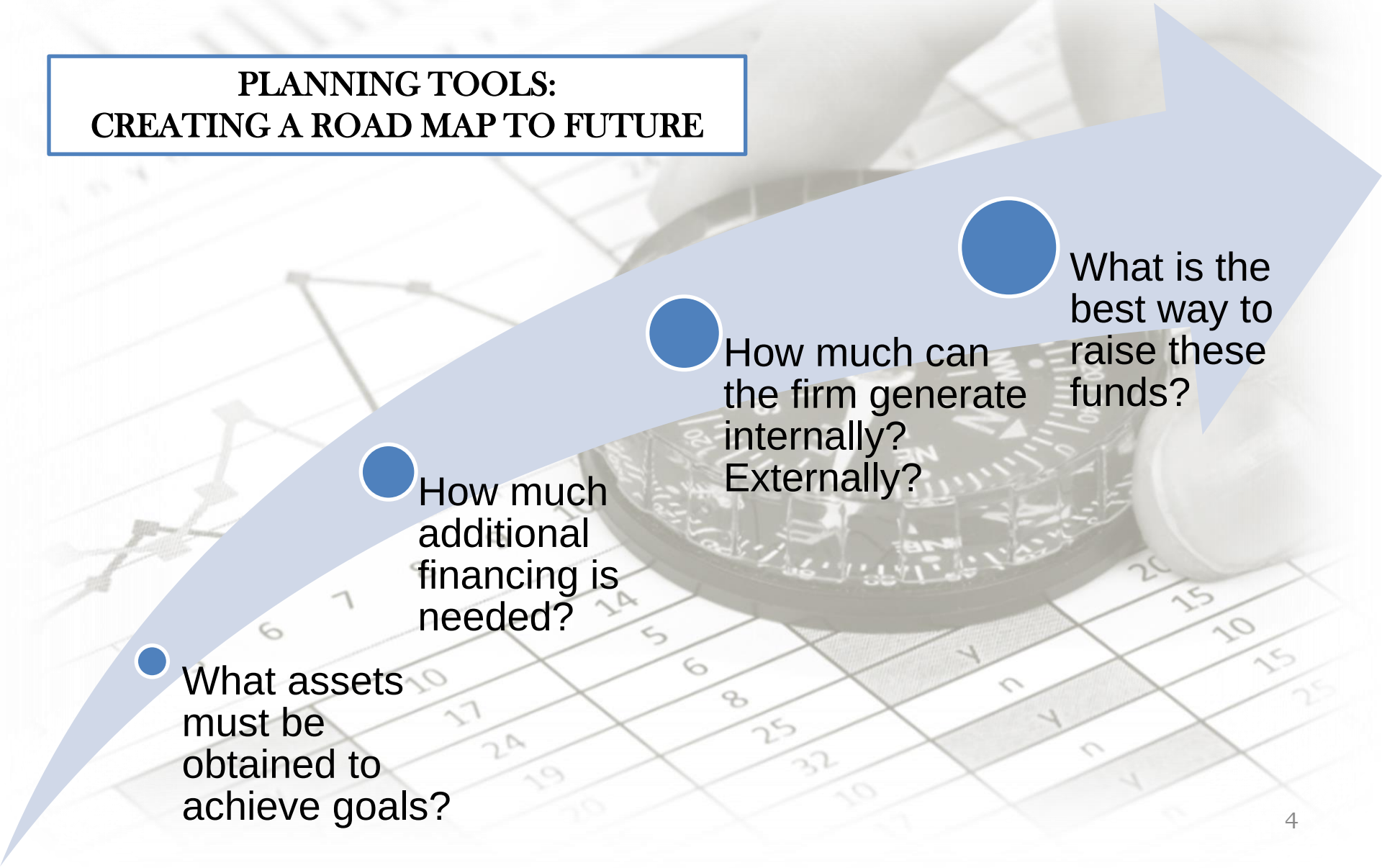
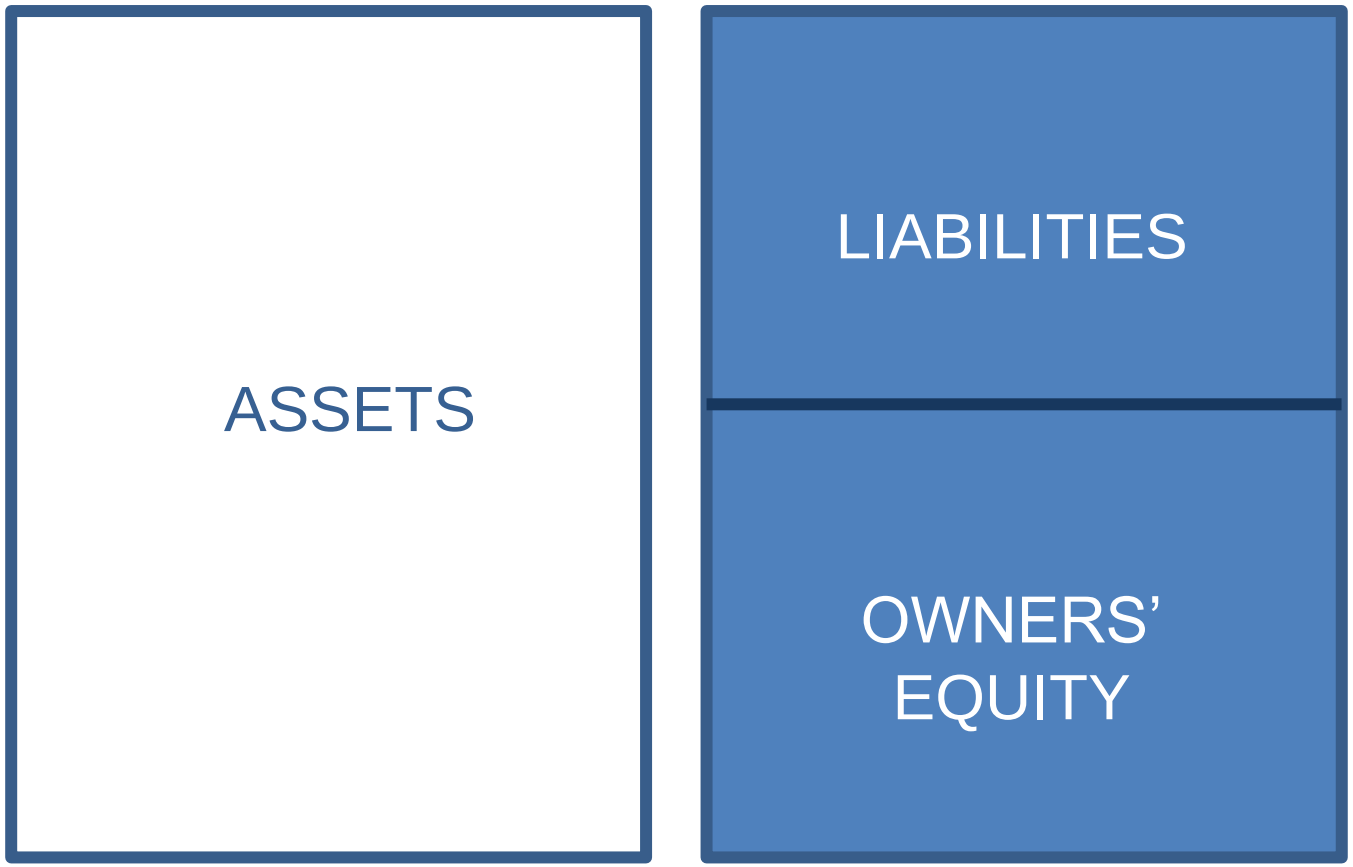
A. INTRODUCTION

PLANNING TOOLS:
CREATING A ROAD MAP TO FUTURE



A. INTRODUCTION



FINANCIAL RESOURCES

Firms need to raise funds for financing investment projects and activities (assets)

Assets = Liabilities + Ownership equity

INVESTMENTS = FINANCIAL RESOURCES

A. INTRODUCTION

Financial Managers must consider:

- The available internal alternatives.
  - How much financing will the firm be able to generate through additional earnings?
- The available external alternatives, which depends upon the firm's stage of development, the financial situation, the firm's reputation…
  - New firms or companies that lack liquidity / solvency have fewer choices.
- The right balance between external and internal alternatives.
- The temporal scope of the required assets.
  - Do we need cash? Do we need major long-term investments?

B. FUNDING SOURCES

Financial Leverage and Capital Structure:
How much debt is too much debt?

Equity Financing

Acquired from owners

Debt Financing

Acquired from lenders

The **capital structure** is how a firm finances its overall operations and growth by using different sources of funds.

The **financial leverage** considers the debt-to-equity ratio (ROA-i)D/E.

B. FUNDING SOURCES

Financial Leverage and Capital Structure:
How much debt is too much debt?

The financial goal:
minimizing weighted cost of capital

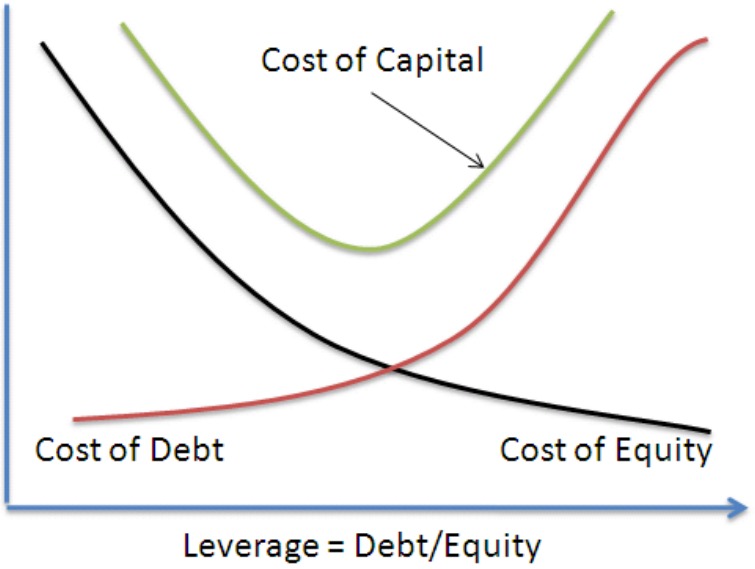
LIABILITIES

OWNERS' EQUITY

→ *Cost of debts (interests)*

→ *Cost of equity (opportunity cost)*

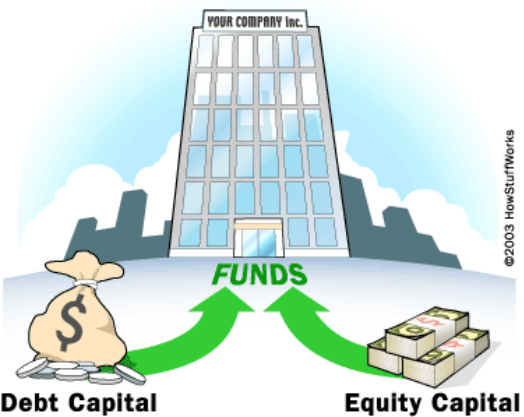
Minimize



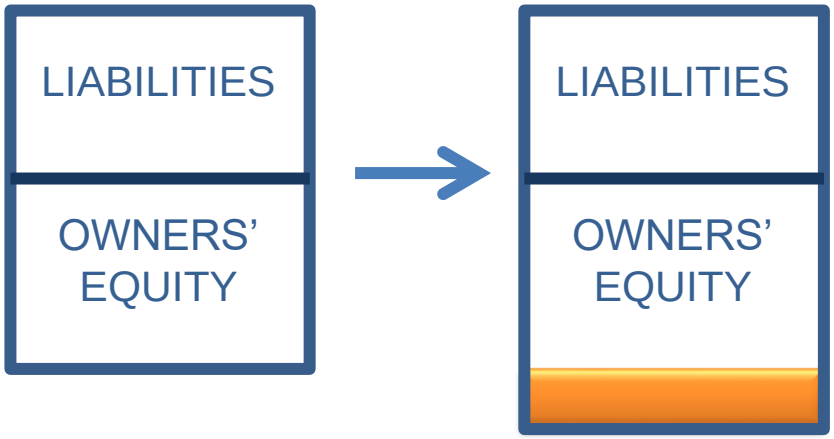
B. FUNDING SOURCES

Finding funds: What are the options?

- **Funding sources**
  - **Equity Financing**
    - **Internal sources**
      - ✓ Retained Earnings
    - **External sources**
      - ✓ Direct Owners Investments
      - ✓ Owners
  - **Debt Financing**
    - **Long-term Funds**
      - ✓ Long-term Loans
      - ✓ Corporate Bonds
      - ✓ Leasing
    - **Short-term Funds**
      - ✓ Short-Term Bank Loans
      - ✓ Trade Credit
      - ✓ Line of Credit
      - ✓ Commercial Paper



C. EQUITY FINANCING



CONS

No tax benefit

Owners may not want to dilute their ownership

Equity financing forgoes financial leverage

More flexibility and less risk

No monthly payments

Avoid covenants*

PROS

*Requirement a lender imposes on the borrower as a condition related to the loan.

C. EQUITY FINANCING

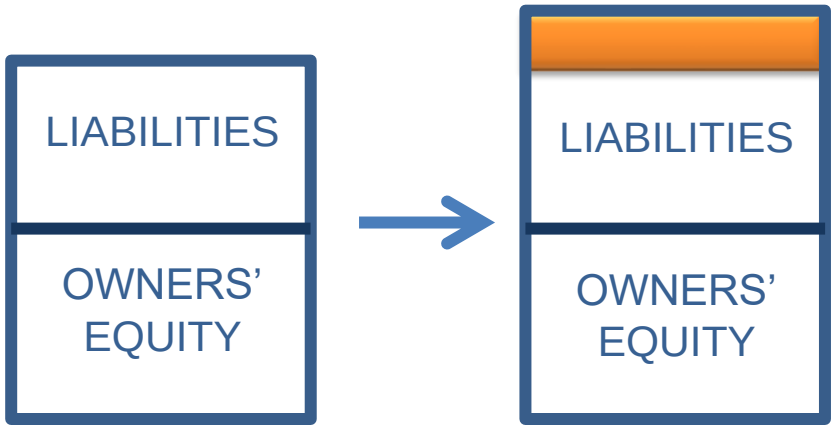
<u>Internal source:</u> Self financing.

Retained earnings: transforming profits into reserves

<u>External source</u>: Capital increase.

Issuing new stock (new capital)
Stockholders must decide between
investing more money on the company
or assuming a loss of influence.

D. DEBT FINANCING



CONS

Debt is a legally binding agreement to repay (more risk)

Debt requires payments

Some lenders impose covenants*

Interest payments are tax-deductible

Avoids additional investment of stockholders / loss of influence

Debt financing may increase the financial leverage (check sign)

PROS

*Requirement a lender imposes on the borrower as a condition related to the loan.

D. DEBT FINANCING

<u>Long-term</u>: maturity > 1 year

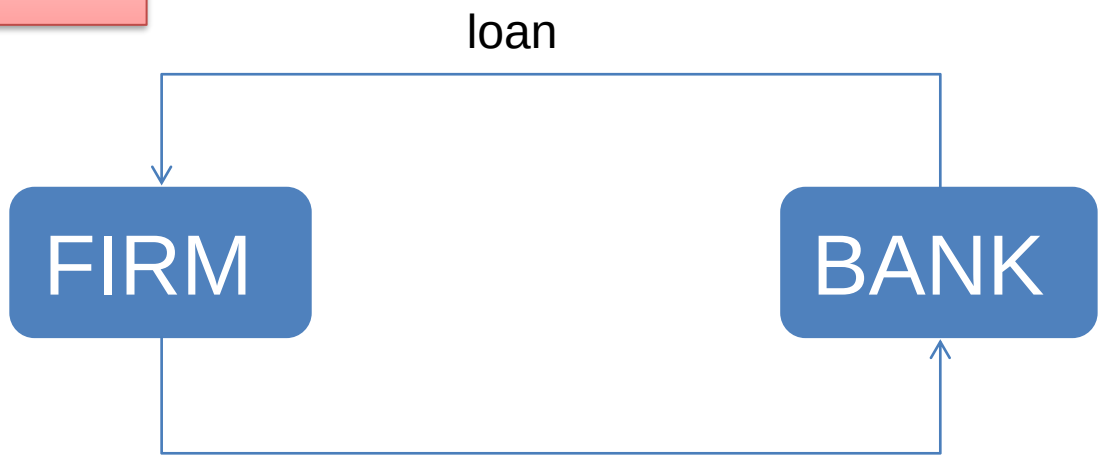
Bank loans (long-term)
Corporate bonds
Leasing

<u>Short-term</u>: maturity < 1 year

Bank loans (short-term)
Trade credit
Line of credit
Commercial paper

D. DEBT FINANCING

BANK LOAN



There are different loan repayment methods.

Fixed annual payment: principal payment increases (interest decreases).
Fixed principal payment: annual payment decreases (interest decreases).

And interest rate may be fixed or variable.

D. DEBT FINANCING

Table 1. Example of loan amortization: equal total payment plan.

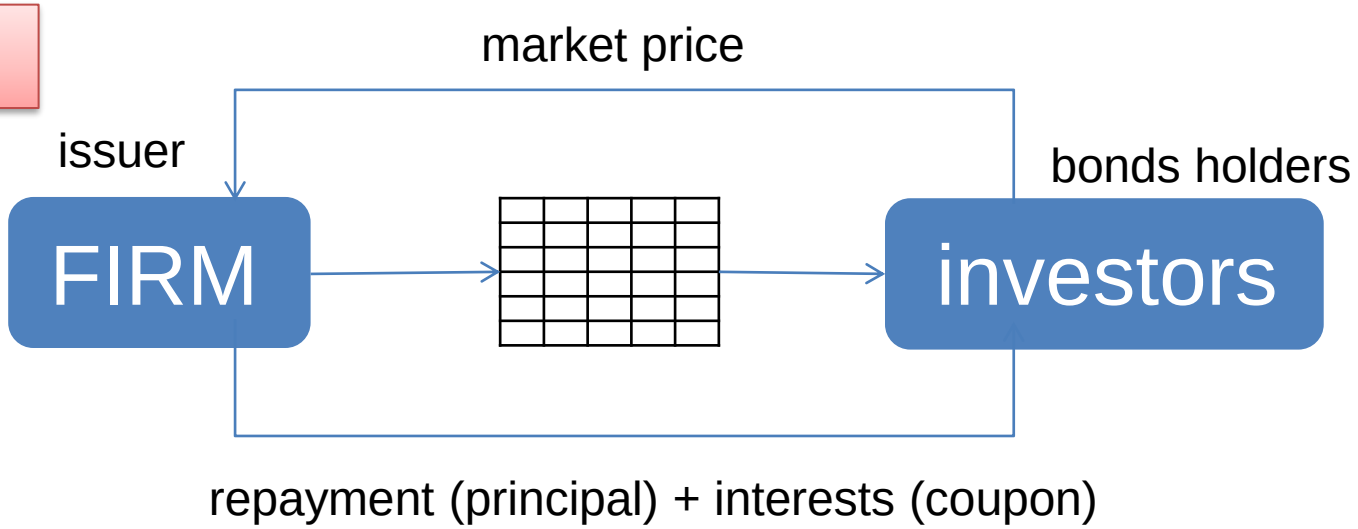
Year	Loan amount $10,000, annual rate 12% 8 annual payments			
	Annual payment	Principal payment	Interest	Unpaid balance
				$10,000.00
1	$2,013.03	$ 813.03	$1,200.00	9,186.87
2	2,013.03	910.59	1,102.44	8,276.38
3	2,013.03	1,019.86	993.17	7,256.52
4	2,013.03	1,142.25	870.78	6,114.27
5	2,013.03	1,279.32	733.71	4,834.95
6	2,013.03			
7	2,013.03			
8	2,013.03			
Total	$16,104.24			

Table 2. Example of loan amortization: equal principal plan.

Year	Loan amount $10,000, annual rate 12% 8 annual payments			
	Annual payment	Principal payment	Interest	Unpaid balance
				$10,000.00
1	$2,450.00	$1,250.00	$1,200.00	8,750.00
2	2,300.00	1,250.00	1,050.00	7,500.00
3	2,150.00	1,250.00	900.00	6,250.00
4	2,000.00	1,250.00	750.00	5,000.00
5	1,850.00	1,250.00	600.00	3,750.00
6	1,700.00	1,250.00	450.00	2,500.00
7	1,550.00	1,250.00	300.00	1,250.00
8	1,400.00	1,250.00	150.00	0
Total	$15,400.00	$10,000.00	$5,400.00	0

D. DEBT FINANCING

BONDS



A **bond issue** is a big loan that is divided into smaller debt securities that are bought by investors. The issuer has to pay the interest (coupon, which can be fixed or variable) and repay the borrowed money.

The bond has a **market price** which changes depending on the general interest rate evolution, the creditworthiness of the issuer (rating agencies)…

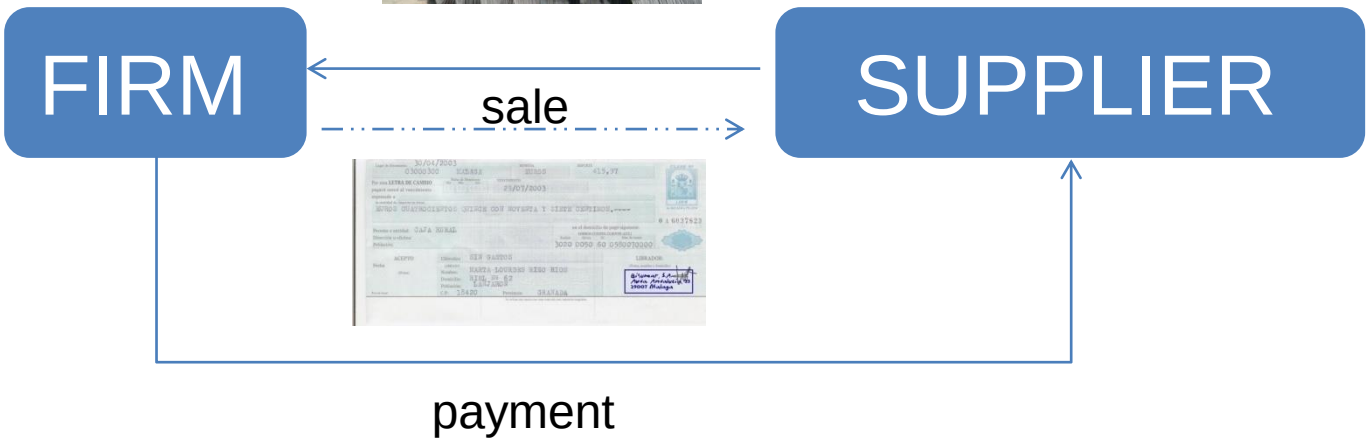
D. DEBT FINANCING

LEASING

Contract by which a firm can obtain the **use of a certain fixed assets** for which it must **pay a periodic rent**. At the end of the contact, the firm has the option to buy the asset at a pre-established price.

D. DEBT FINANCING

TRADE CREDIT

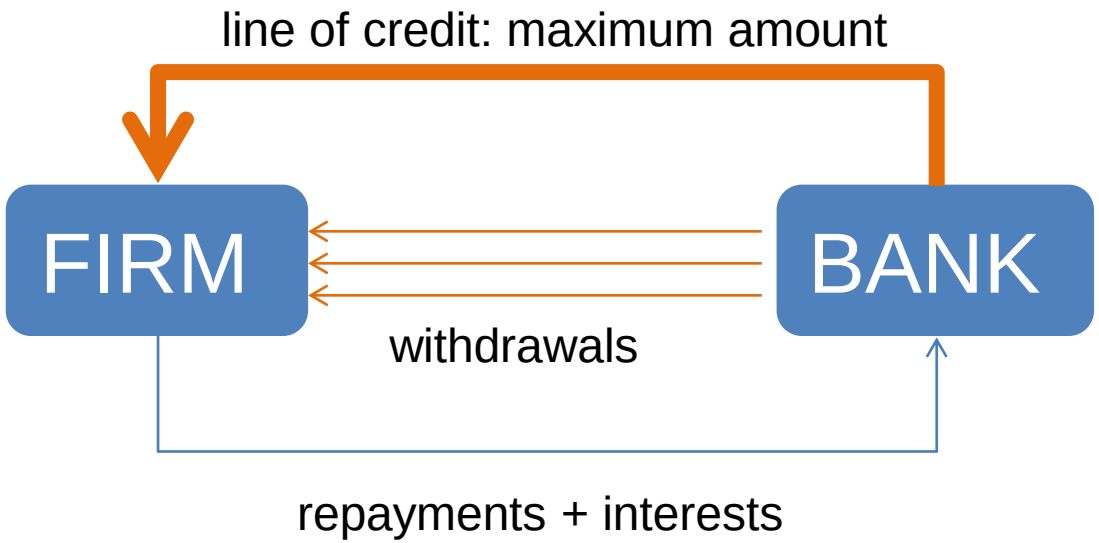


A trade credit is an agreement where **a firm can purchase goods on account** (without paying cash), **paying the supplier at a later date**.

When the goods are delivered, a trade credit is given for a specific number of days – 30, 60 or 90.

D. DEBT FINANCING

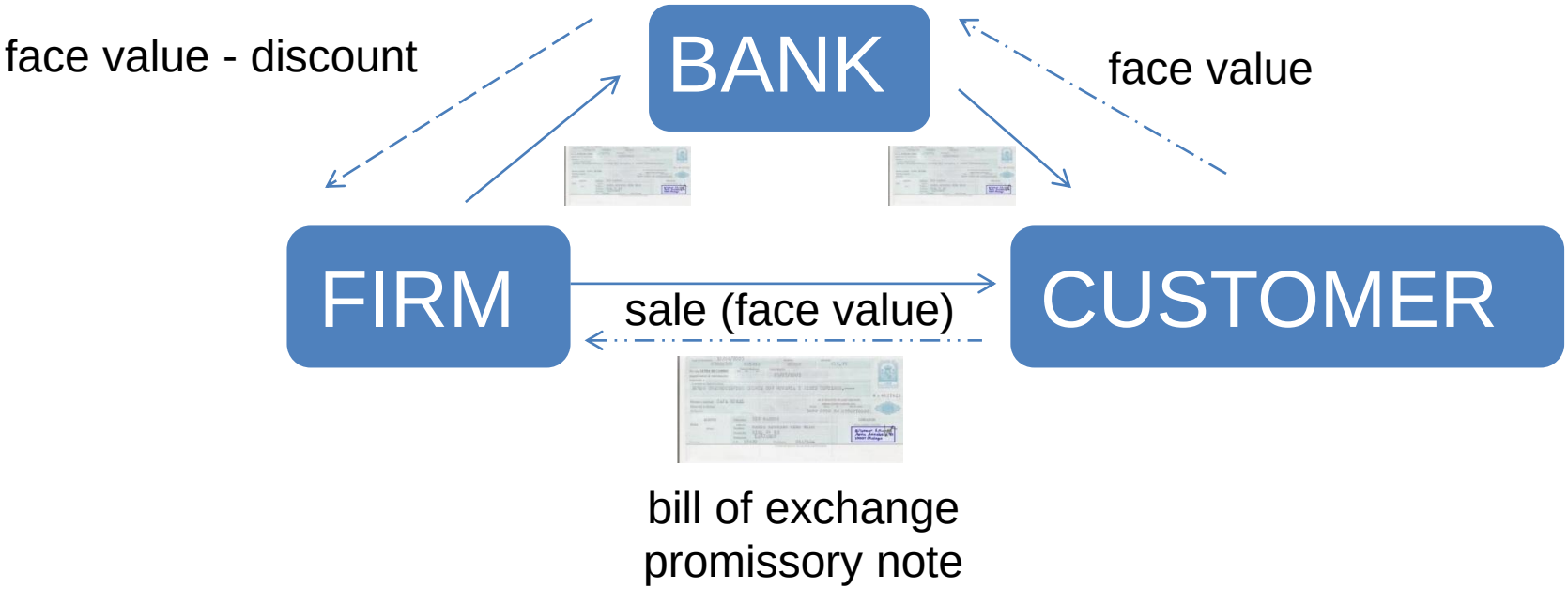
LINE OF CREDIT



An arrangement between a bank and a firm that **establishes a maximum loan balance that the bank will permit the borrower to maintain**. The borrower can draw down on the line of credit at any time, as long as he or she does not exceed the maximum set in the agreement.

D. DEBT FINANCING

COMMERCIAL PAPER



Negotiable instruments that can be **transferred to the bank at a discount over face value**. **The bank holds the commercial paper until maturity and then asks the customer to pay the debt**. But if the customer does not pay the debt, the bank recovers the full face value from the firm.

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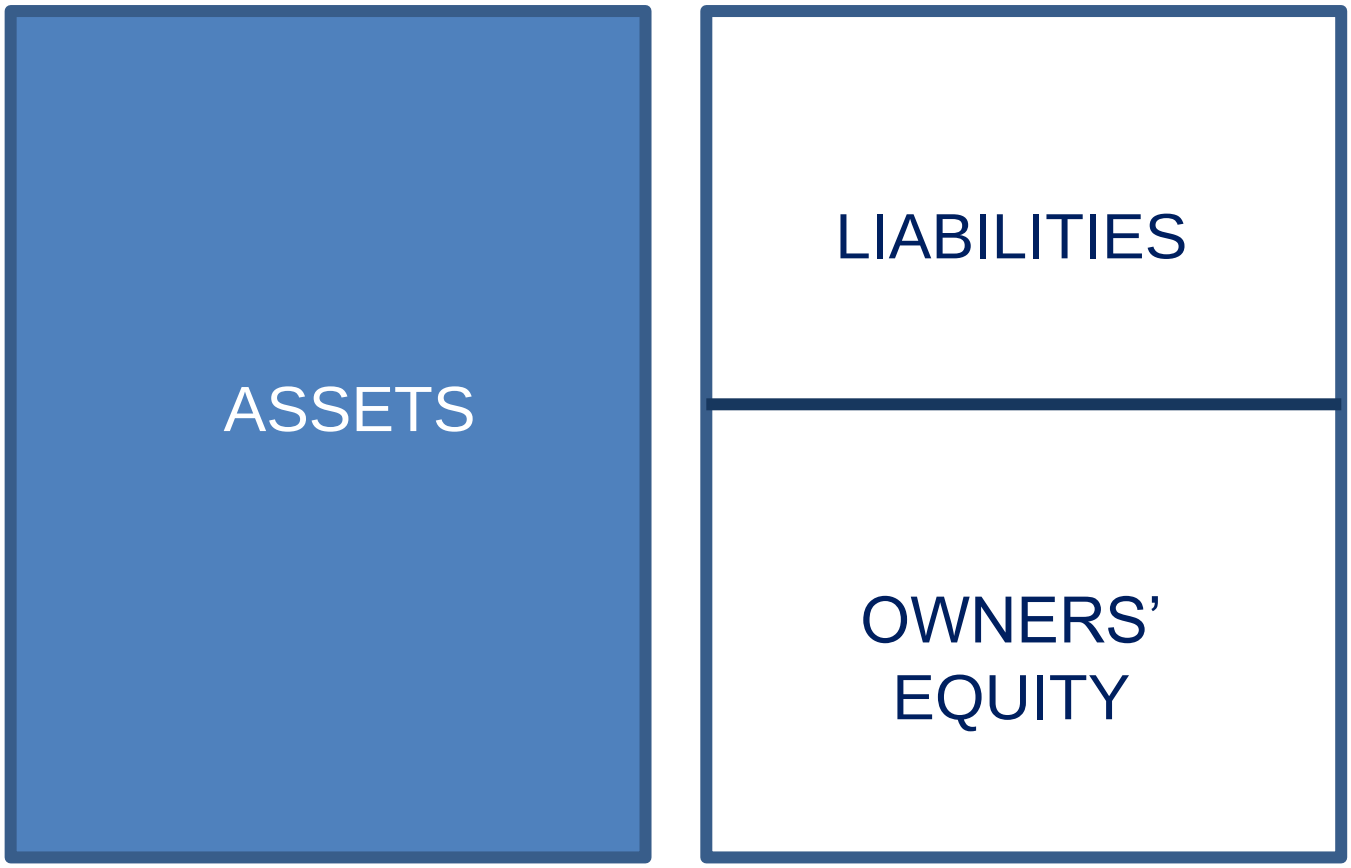
A. INTRODUCTION

INVESTMENT APPRAISAL

Firms evaluate their investments in order to allocate financial resources
All assets can be considered investment projects



Assets = Liabilities + Ownership equity

INVESTMENTS = FINANCIAL RESOURCES

A. INTRODUCTION

Managers have to make decisions:

Should we buy machine A or machine B?

Should we set up a new factory in country A or in country B?

Should we internalize this activity or outsource it?

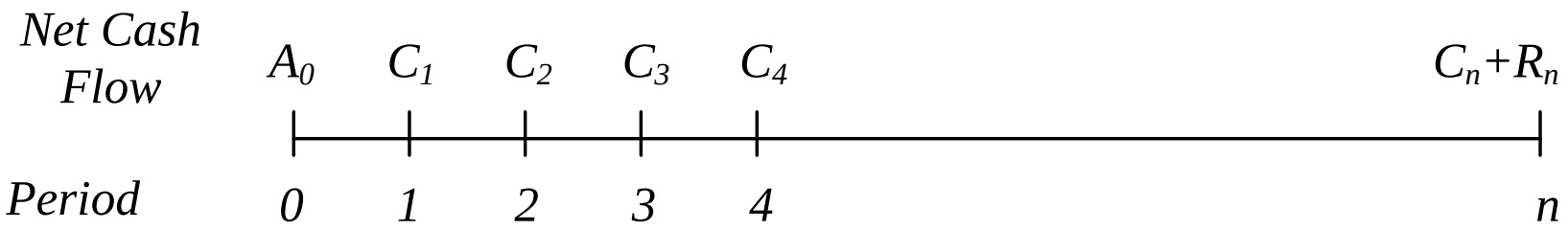
Should we develop a network of franchisees or establish our own shops?

Should we…

And they need tools for making these decisions

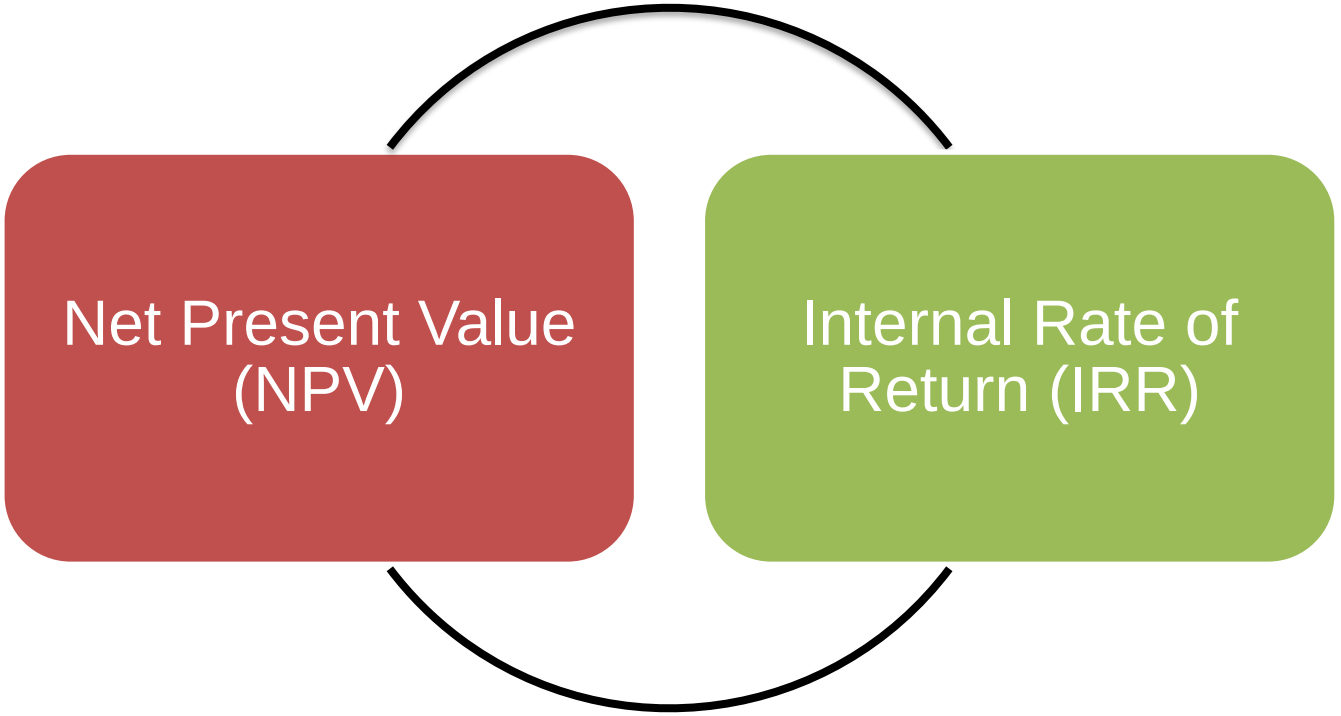
Variables of an investment project

- Initial investment (A_0)
- Time horizon (n)
- Inflows (I_t)
- Outflows (O_t)
- Net cash flows ($C_t=I_t-O_t$)
- Residual value (R_n)



B. DYNAMIC CRITERIA

Dynamic investments appraisal criteria consider the **time value of money**
i.e. they consider that a dollar received today is worth more than a dollar received in the future because the sooner you receive a sum of money, the sooner you can put that money to work to earn more money



B. DYNAMIC CRITERIA

Time value of money

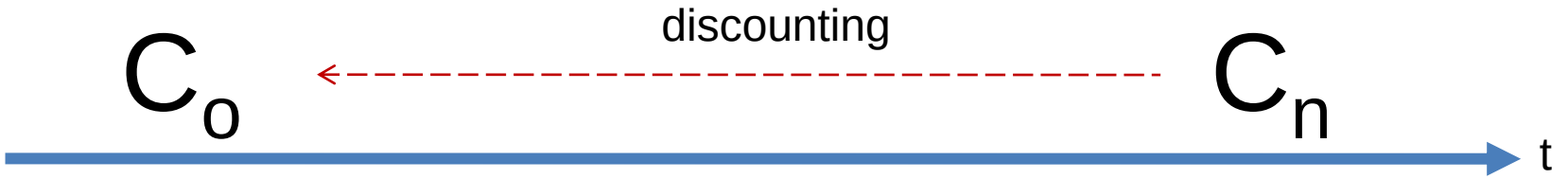
(i=discount rate=cost of capital)

Future Value – how much a given amount of cash received today will be worth in a future period, given the time value of money

$$C_n = C_0(1+i)^n$$

Present Value – how much a given amount of cash received in a future period is worth today, given the time value of money

$$C_0 = \frac{C_n}{(1+i)^n}$$



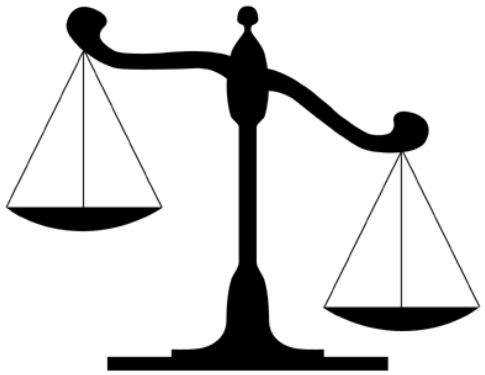
B. DYNAMIC CRITERIA

The Net Present Value (NPV) is the present value of all cash flows associated with an investment, including the initial investment and the residual value.

$$NPV = A_0 + \sum_{t=1}^{n} \frac{Q_t}{(1+i)^t} + \frac{R_n}{(1+i)^n}$$

The greater the NPV, the better.

initial investment



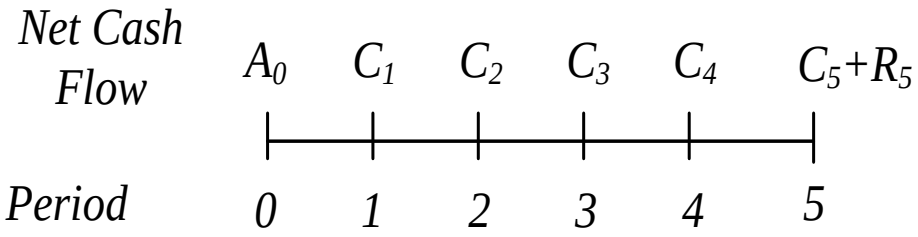
∑ discounted cash-flows

NPV > 0 This project adds value

NPV = 0 This project does not add value

NPV < 0 This project destroys value

B. DYNAMIC CRITERIA



i=4%

Cash flows

Project	0	1	2	3	4	5
A	-10000	8500	1000	1000	1000	1000
B	-10000	1000	2000	3000	4000	5000

Present value

Project	0	1	2	3	4	5
A	-10000,00	8173,08	924,56	889,00	854,80	821,93
B	-10000,00	961,54	1849,11	2666,99	3419,22	4109,64

B. DYNAMIC CRITERIA

Present value

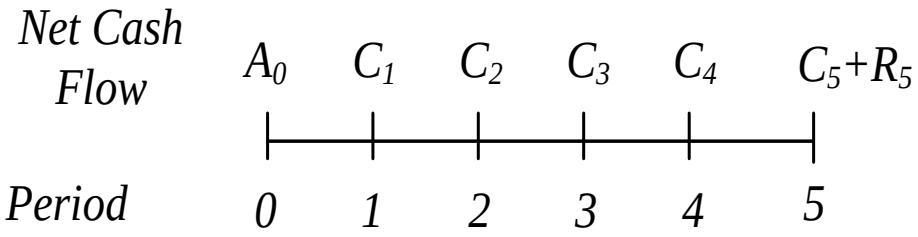
Project	0	1	2	3	4	5
A	-10000,00	8173,08	924,56	889,00	854,80	821,93
B	-10000,00	961,54	1849,11	2666,99	3419,22	4109,64

$$NPV = A_0 + \sum_{t=1}^{n} \frac{Q_t}{(1+i)^t} + \frac{R_n}{(1+i)^n}$$

$$NPV_A = 1{,}663$$

$$NPV_B = 3{,}006$$

B. DYNAMIC CRITERIA



i=12%

Cash flows

Project	0	1	2	3	4	5
A	-10000	8500	1000	1000	1000	1000
B	-10000	1000	2000	3000	4000	5000

Present value

Project	0	1	2	3	4	5
A	-10000,00	7589,29	797,19	711,78	635,52	567,43
B	-10000,00	892,86	1594,39	2135,34	2542,07	2837,13

B. DYNAMIC CRITERIA

Present value

Project	0	1	2	3	4	5
A	-10000,00	7589,29	797,19	711,78	635,52	567,43
B	-10000,00	892,86	1594,39	2135,34	2542,07	2837,13

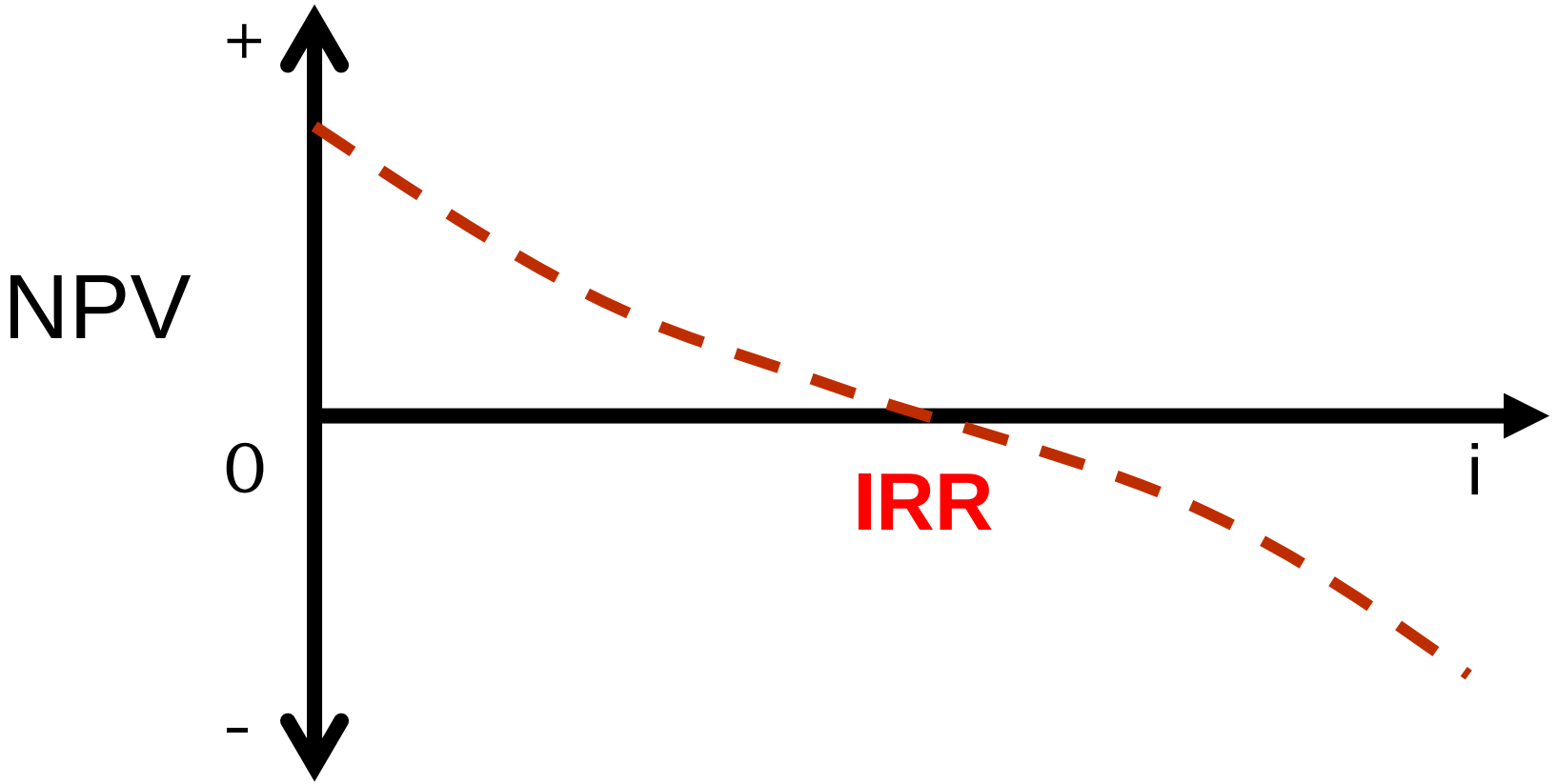
$$NPV = A_0 + \sum_{t=1}^{n} \frac{Q_t}{(1+i)^t} + \frac{R_n}{(1+i)^n}$$

$$NPV_A = 301$$

$$NPV_B = 2$$

B. DYNAMIC CRITERIA

As seen, the NPV is decreasing in i:



B. DYNAMIC CRITERIA

The Internal Rate of Return (IRR) is the discount rate that makes the net present value of all cash flows from a particular project equal to zero.

$$IRR = i \,/\, NPV = 0$$

The higher the IRR, the better.

IRR > i This project adds value

IRR = i This project does not add value

IRR < i This project destroys value

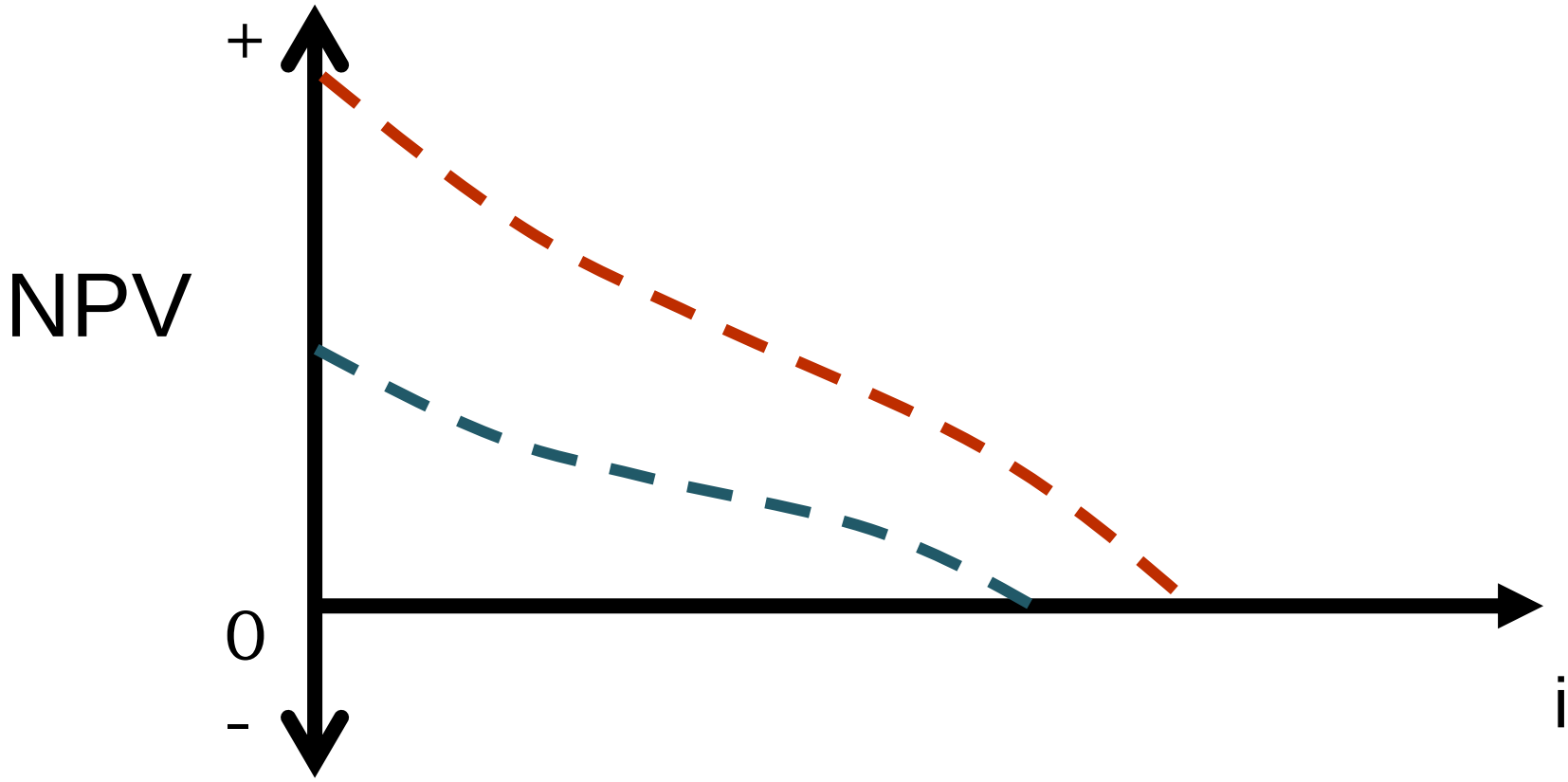
initial investment

∑ discounted cash-flows

B. DYNAMIC CRITERIA

When evaluating projects, there are two alternatives:

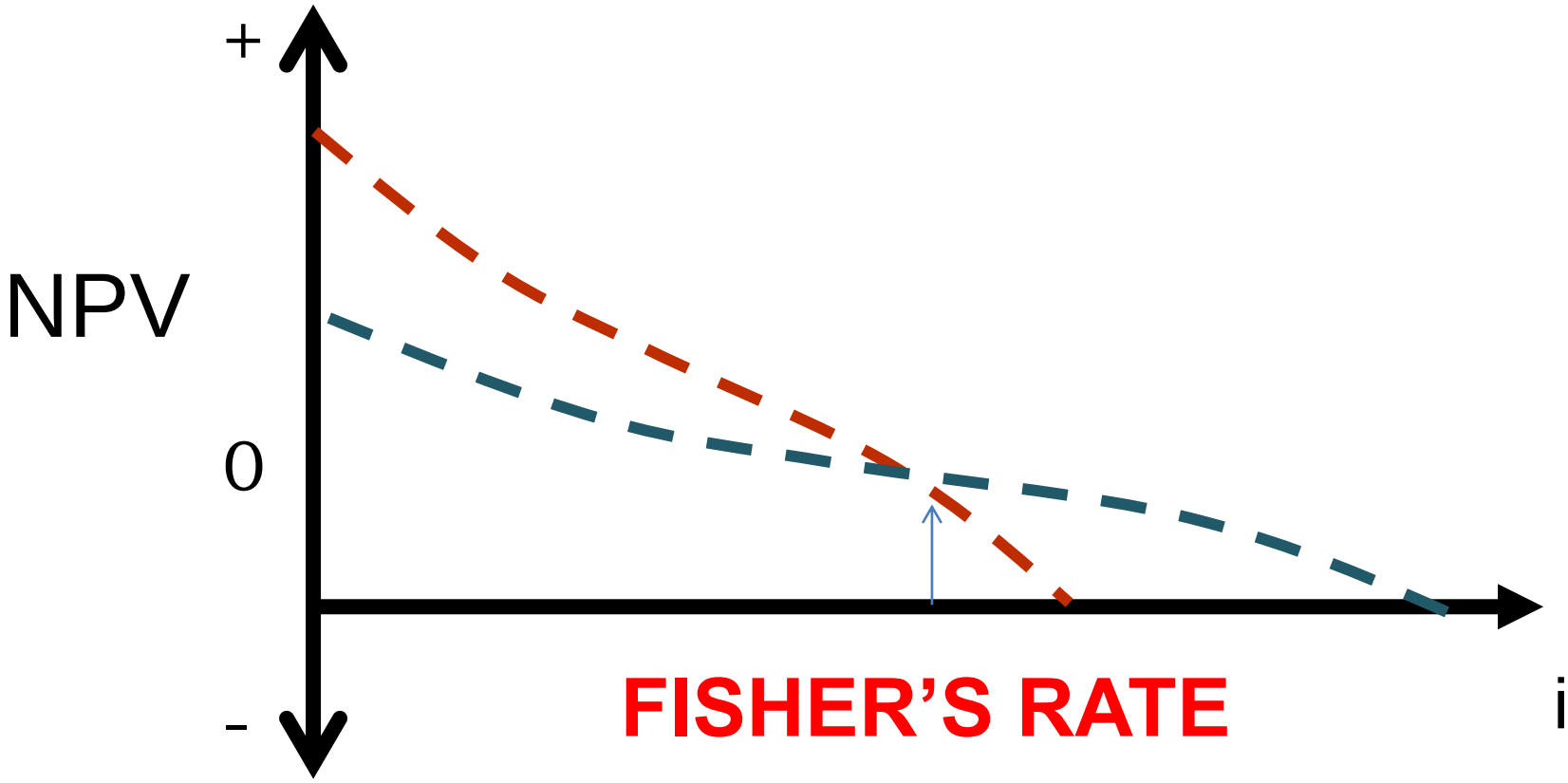
(a) $(NPV_A > NPV_B) or (NPV_B > NPV_A) \forall i \in [0, IRR]$



B. DYNAMIC CRITERIA

When evaluating projects, there are two alternatives:

(b) $\exists i \in [0, IRR] / NPV_A = NPV_B$



Key concepts

Funding sources
Financial leverage and capital structure
Self financing
Capital increase
Bank loans and repayments methods
Bonds and coupons
Leasing
Trade credit
Line of credit
Commercial paper

Investment appraisal and investment projects
Initial investment, cash flows and residual value
Time value of money and discount rate (i)
Net present value (NPV)
Internal rate of return (IRR)