MSc® Banking and International Finance

Corporate finance and financial management

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Corporate finance and financial management

- Objective of finance is to **maximize value of firm for shareholders**
- Objective of financial managers is to make decisions with the **objective of value creation**
- Key financial decisions are
  - **Investing and financing (a primer) => part 1**
  - **Discount rates (a primer) => part 2**
  - **Optimizing the value creation => part 3**

Corporate finance and financial management

The recommended course textbooks are:

Corporate Finance by Berk & deMarzo (BdM)

Principles of Corporate Finance by Brealey, Myers, & Allen,

- These lecture notes are intended to be comprehensive. If you understand everything in the lecture notes, you should do very well on the final exam.

- **Final exam: deadline : 11th of October on campus and sent to jf.verdie@tbs-education.fr**
  - **Nokia Case to be solved by groups of 2 students**

A Rapid Overview of the Corporate Finance and financial Management Course

What is finance?

A set of tools allowing the best allocation of scarce resources through time and space

• A well-developed financial system is an essential characteristic of any developed economy (see e.g. Ross LEVINE)

A well-developed financial system encourages investment

• *Financial markets*, *intermediaries*, and *financial management* are the important components of any financial system

What is financial management ?

Field of finance which analyses the financial decisions undertaken by a firm.

Some important questions that are answered using financial management:

1. What long-term investments should the firm take on?
   ⟹ Capital Budgeting *(choix d'investissement)*

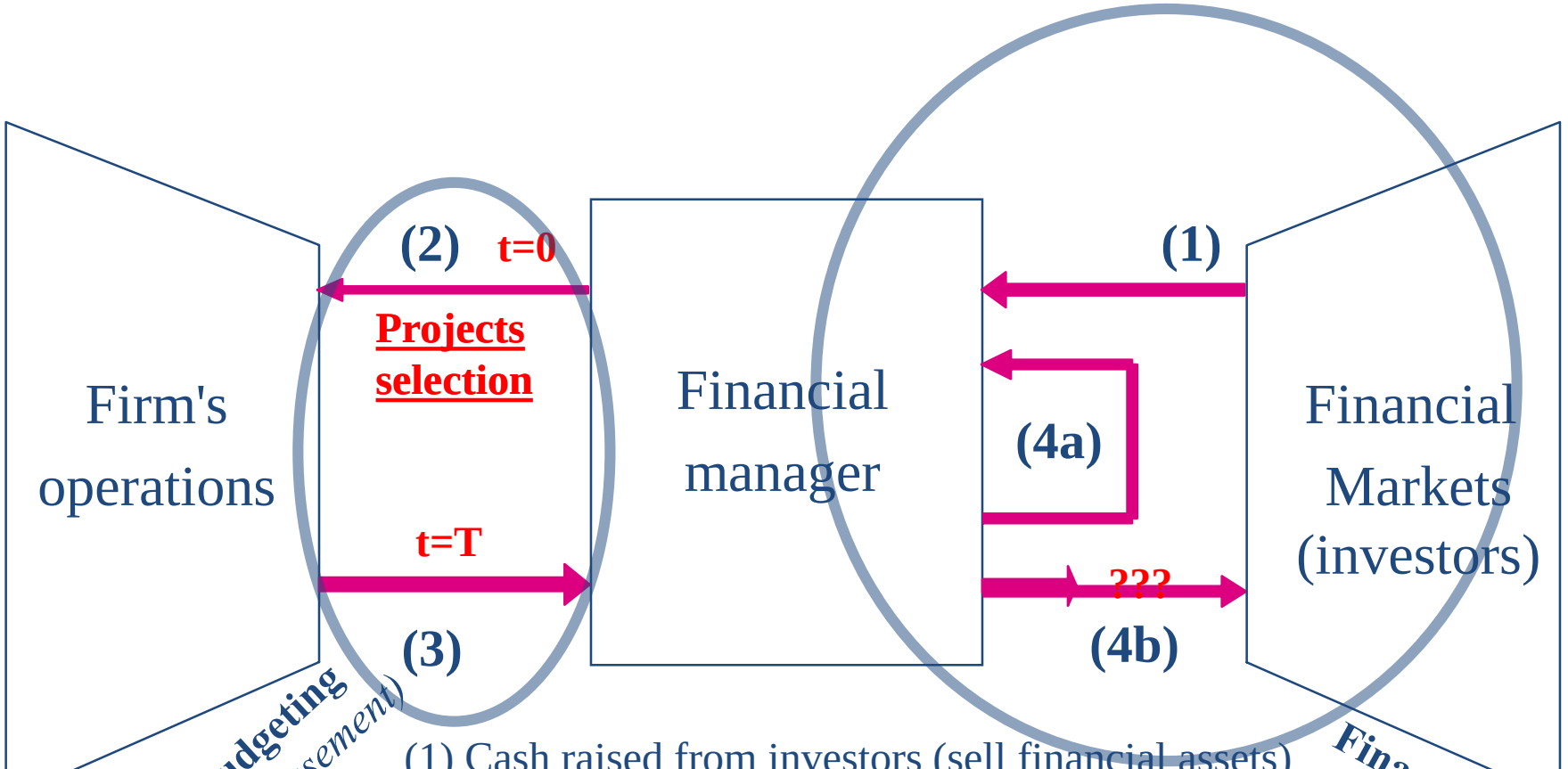
2. Where will the firm get the financing to pay for the long-term investment?
   ⟹ Financing policy (*politique de financement)*

3. How will we manage the everyday financial activities of the firm?
   ⟹ Working capital management *(gestion financière à court terme)*

A few considerations before starting …

- What is an asset for us ?
- Book value / Financial value
- Return / risk analysis
- Interest rate components
- Accounting / Finance views

Role of The Financial Manager



(1) Cash raised from investors (sell financial assets)

(2) Cash invested in firm (*i.e.* investment in projects)

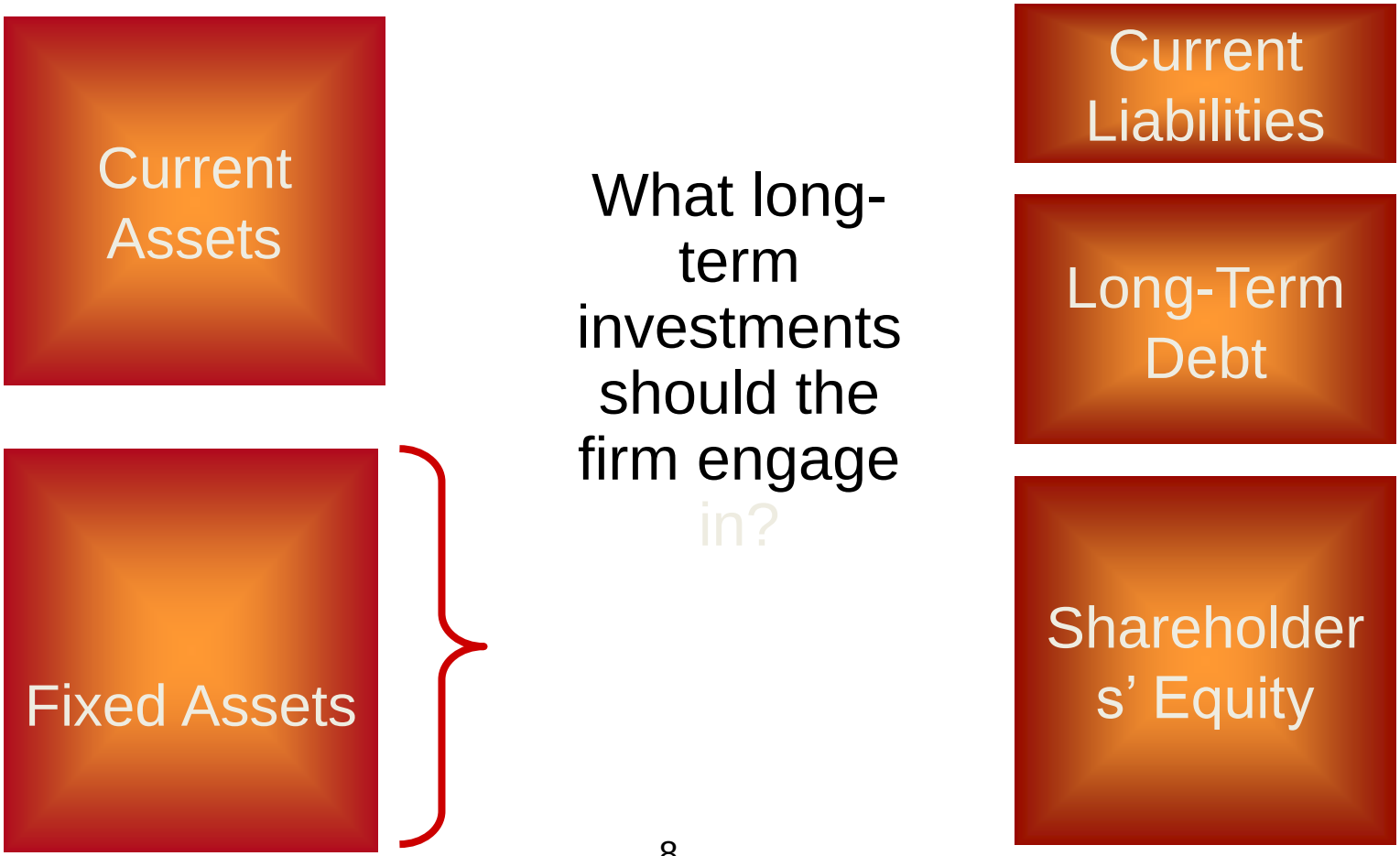
(3) Cash generated by operations (if projects well selected!)

(4a) Cash reinvested

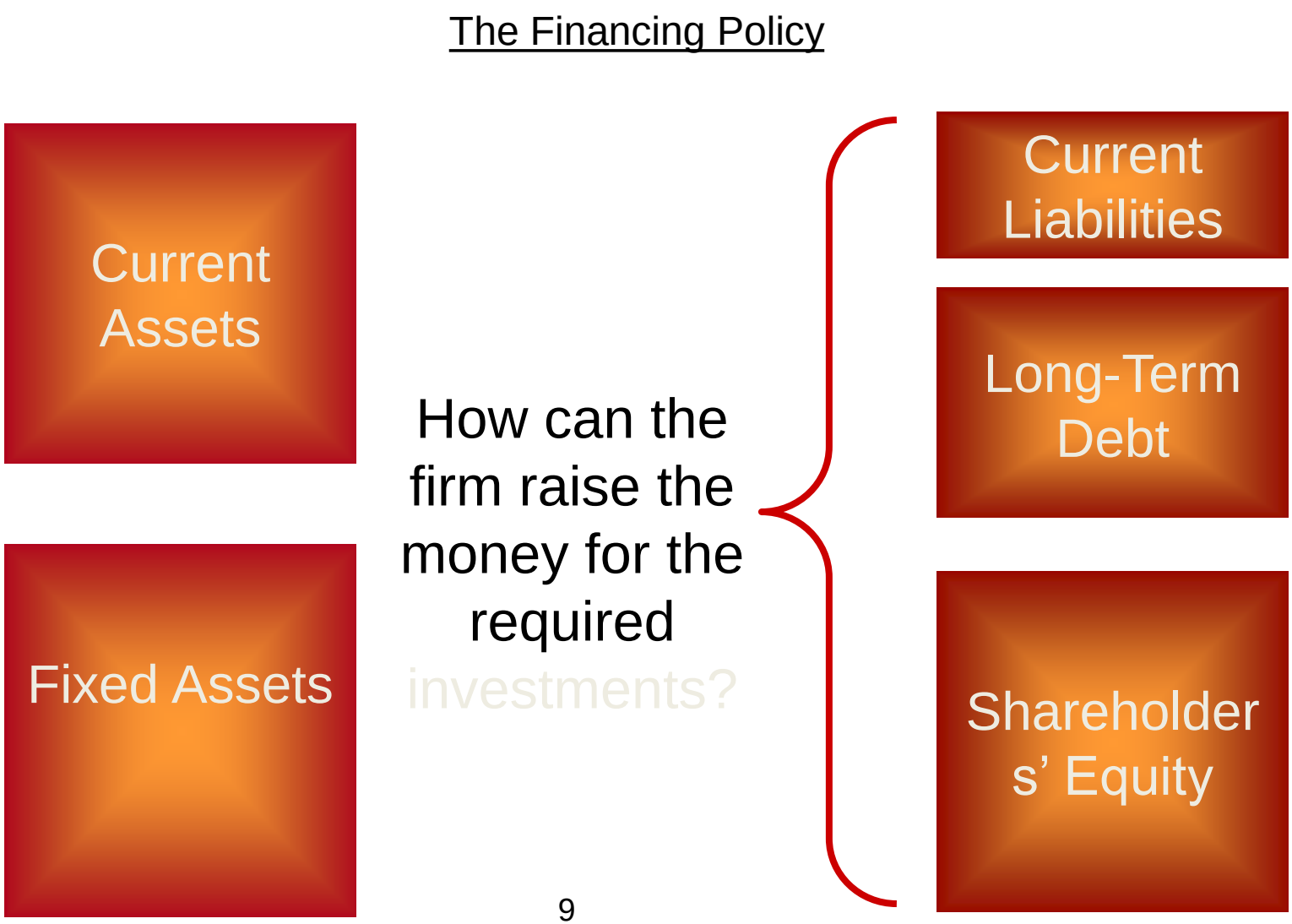
(4b) Cash returned to investors

The Balance-Sheet Model of the Firm (1/3)

Capital Budgeting Decisions

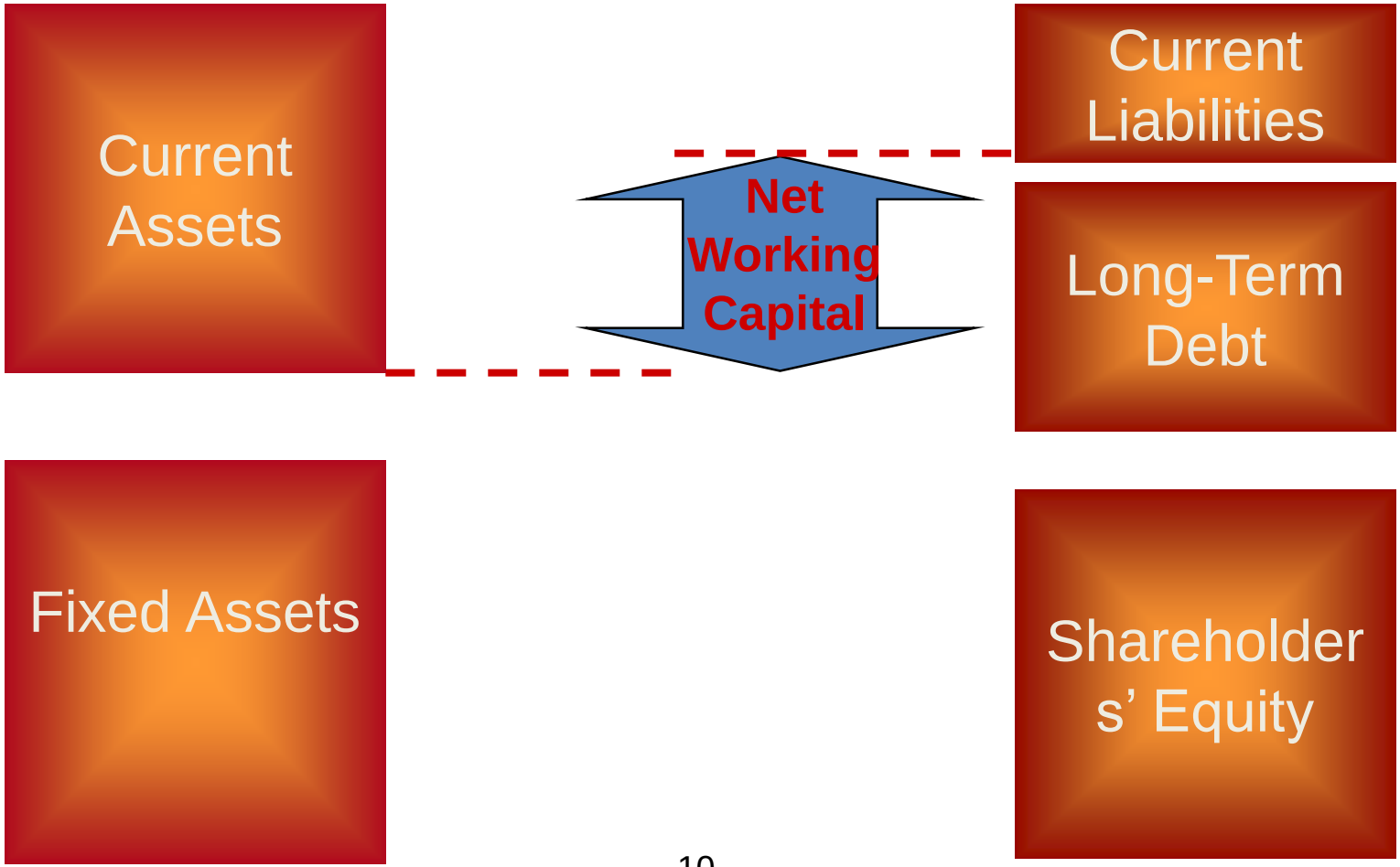


The Balance-Sheet Model of the Firm (2/3)



The Balance-Sheet Model of the Firm (3/3)

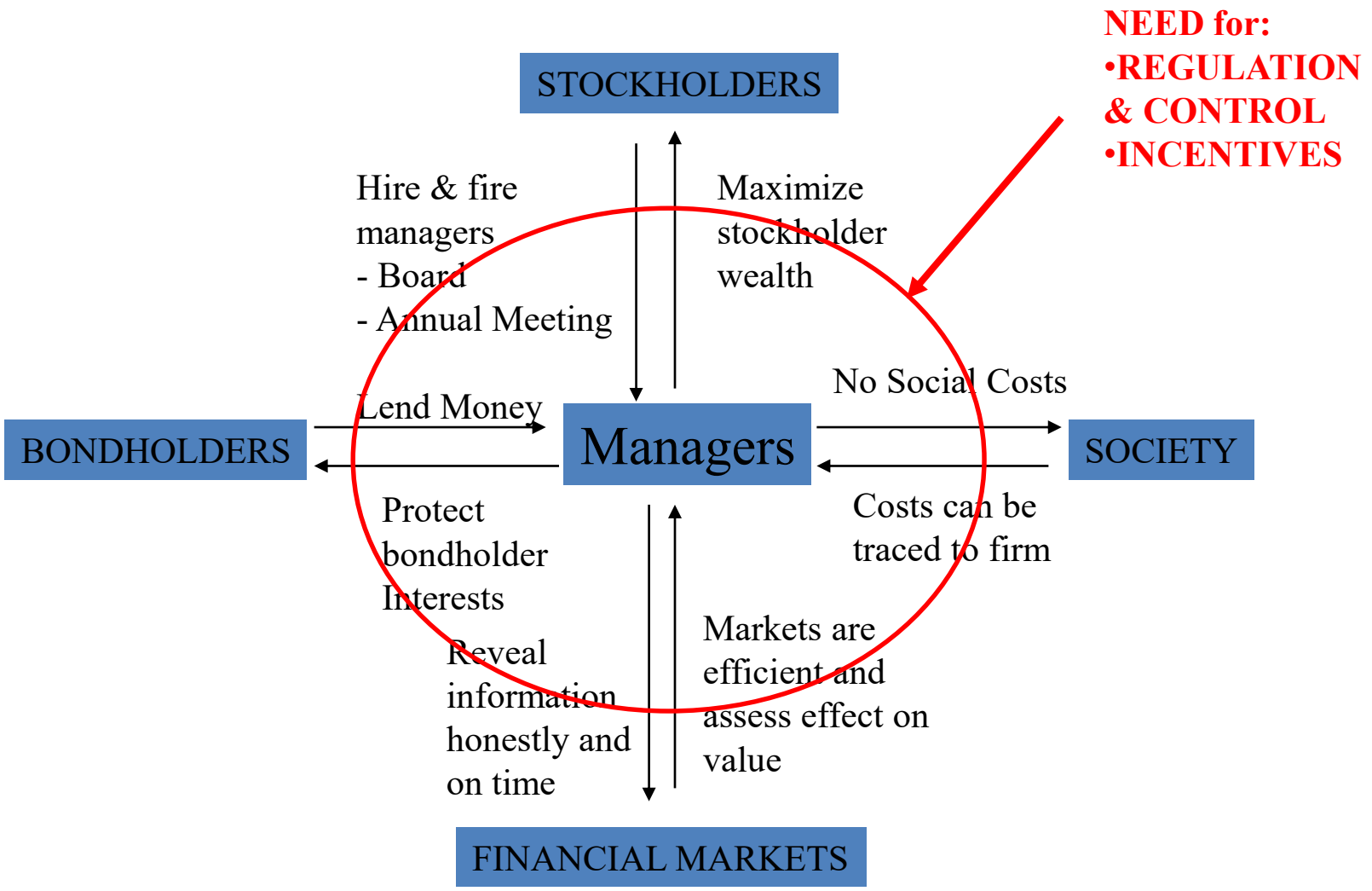
The Net Working Capital Decision and cash generation



Goal of Financial Management (1/3)

- **The need of a Good Objective Function: 3 criteria !!!**
  - **It should be clear and unambiguous**
  - **It should come with a clear and timely measure that can be used to evaluate the success or failure of decisions.**
  - **It should not create costs for other entities or groups that erase firm-specific benefits and leave society worse off overall.**
- **What should be the objective function (goal) of a corporation?**
  - Maximize profit? (Accounting type of argument)
  - Minimize costs? (Accounting type of argument)
  - Maximize market share? (Marketing type of argument)
  - Maximize the current value of the company's stock?

Goal of Financial Management (2/3)



Source: Damodaran

Finance vs. Accounting

We use the same statements but in very different ways:

- Accounting focuses on the accruals of revenues and expenses;
- Finance focuses on the determination of cash flows.

A simple example:

- **Sales: $100,000 (50% still uncollected)**
- **Cost of Goods: $60,000 (20% unpaid)**
- **Expenses: $30,000 (10% unpaid)**

		ACCRUAL	CASH
(C.A.)	Sales	$100,000	$50,000
	- Cost of Goods Sold	$60,000	$48,000
(E.B.E.)	Gross Margin	$40,000	$2,000
	- Expenses	$30,000	$27,000
	Net Profit/(Loss) *Bénéfice net / (perte nette)*	$10,000	$(25,000)

Another big difference: **The time dimension**

Corporate finance and financial management

Part 1 : Investing and financing (a primer)

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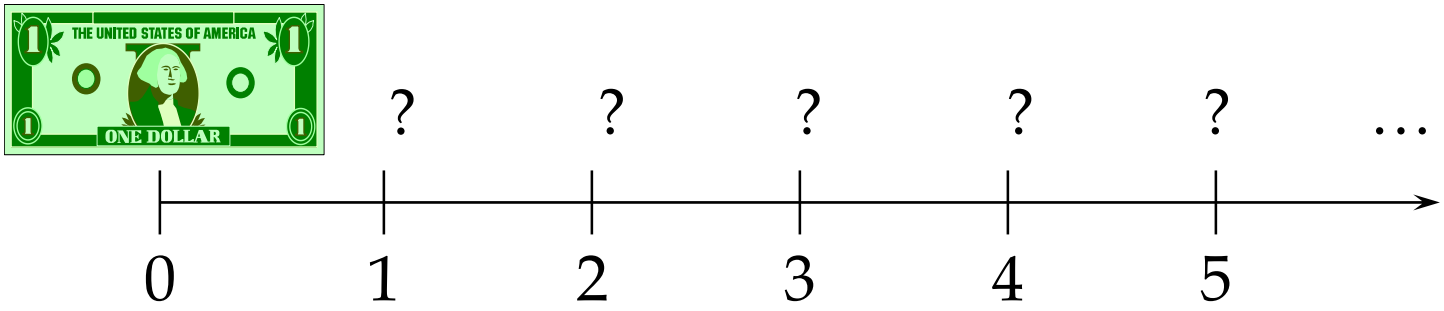
The Time Value of Money

Future Value

Objective: Computing the future value of an amount of money



Example:

- Suppose that you have an extra 100€ today that you wish to invest for one year. If you can earn 10% per year on your investment, how much will you have in one year?

$$FV_1 = 100(1+0.10) = 110$$

The Time Value of Money

Future Value

➢ Suppose now that at the end of year 1 you decide to extend the investment for a second year and then a third year. How much will you have accumulated at the end of year 2 (and then year 3) if the interest rate remains the same?

$$FV_2 = 100(1+0.10)(1+0.10) = 100(1+0.10)^2 = 121$$

and

$$FV_3 = 100(1+0.10)^3 = 133.1$$

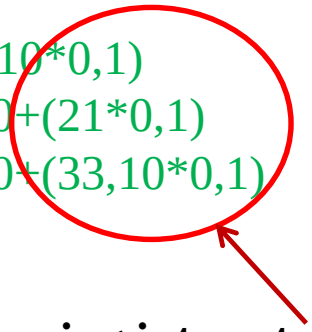
Notion of Compound Interests

Note from the example that the future value is increasing at an increasing rate

In other words, **the amount of interest earned each year is increasing:**

Year 1: 10 €
Year 2: 11 € = 10*1,1
Year 3: 12.10 € = 11*1,1
Year 4: 13.31 € = 12.10*1,1

11 € = 10+(10*0,1)
12,10 € = 10+(21*0,1)
13,31 € = 10+(33,10*0,1)



The reason for this is that each year you are **earning interest on the interest that was earned in previous years** in addition to the interest on the original principal amount.

The Time Value of Money

The general FV formula is: $FV_n = PV(1+i)^n$

Application:

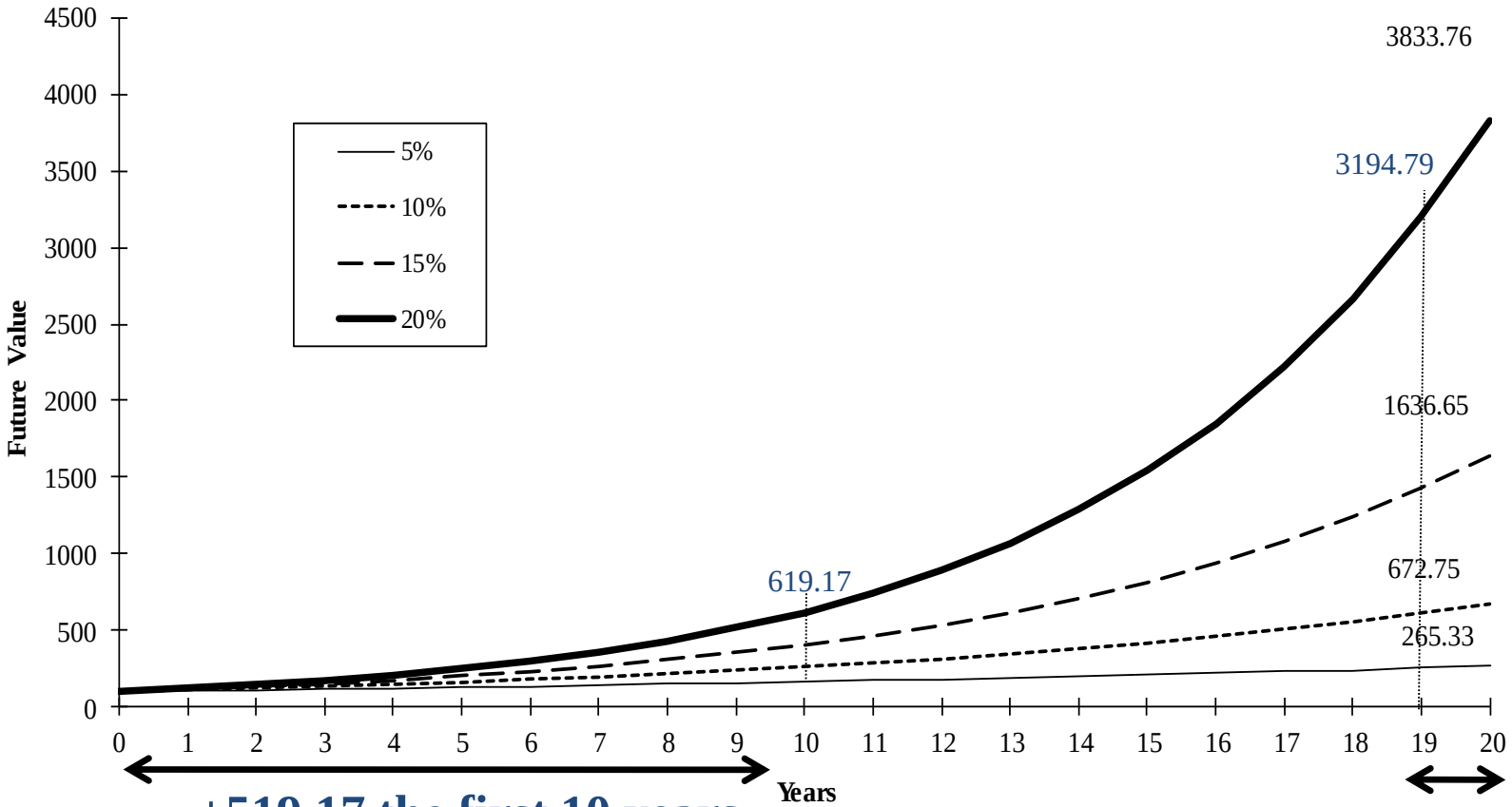
You can invest 8 000 € at 8 % per year, what will be the amount of money after 5 years?

$$FV_5 = 8000*1{,}08^5 = 11754{,}62\ €$$

The Time Value of Money

Future Value

Compound Interest Graphically:



The Time Value of Money

A firm plans to invest $230 million in a new site.
Consider that this firm expects to be able to sell this site in one year for $240 million.

Step 1: Forecast (estimate) cash flows

Cost of the investment = C_0 = 230

Sale price in one year = C_1 = 240

Step 2: Estimate the discount rate (the opportunity cost of capital)

If equally risky investments in the capital market offer a return of 7%,

then the cost of capital is r = 7%

Step 3: Discount future cash flows: $PV_{C_1} = \frac{C_1}{(1+r)} = \frac{240}{(1+0.07)} = 224.3$

Step 4: Go ahead if PV of payoff exceeds initial investment i.e. if NPV > 0

$PV_{C_1} = 224.3 < C_0 = 230$ Equivalently: $NPV = -230 + 224.3 = -5.7 < 0$

Conclusion: Do not invest in this factory since the **NPV of this investment is negative**.

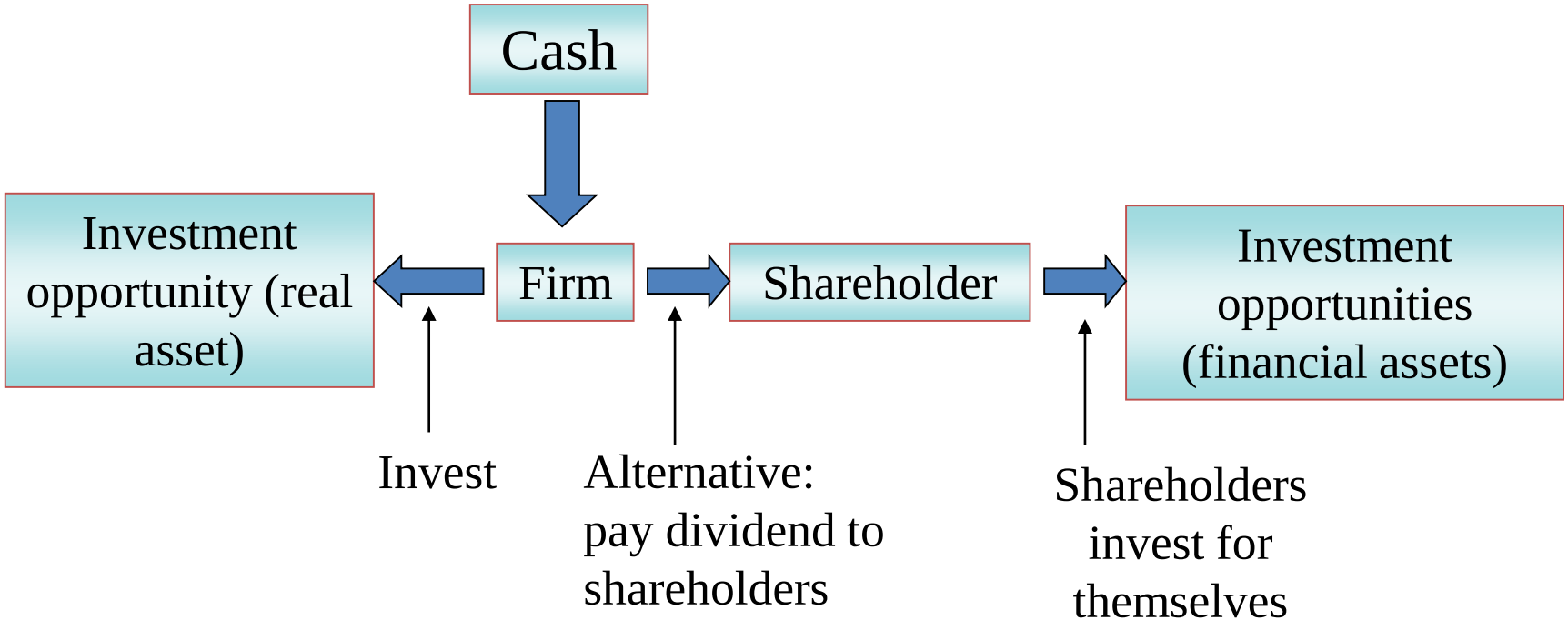
What if the opportunity cost of capital = r' = 3%

$$NPV = -C_0 + \frac{C_1}{(1+r')} = -230 + \frac{240}{(1+0.03)} = -230 + 233.01 = 3.01 > 0$$

Conclusion: Invest in this factory since the **NPV of this investment is positive**.

Application to investing and financing

- The main task of a financial manager is to **ensure that the firm creates value**
- The main channel for value creation is to **invest in fixed asset**
- Investing in fixed asset corresponds to a **capital budgeting decision**



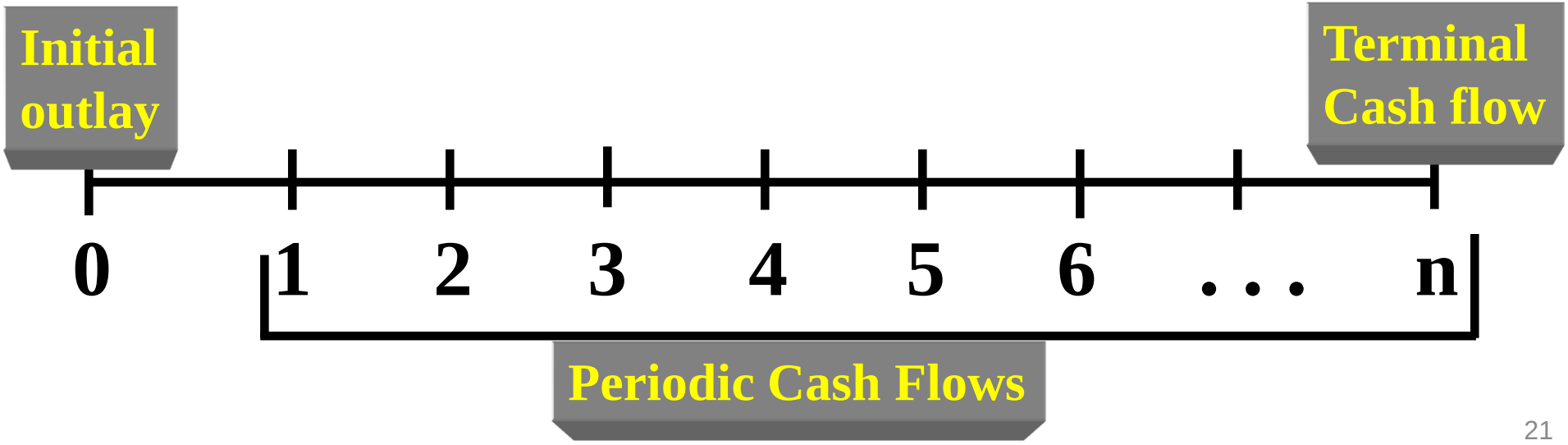
Investing

Step 1 - Evaluate Cash Flows:

- **Initial outlay** (costs of equipment, staff training, installation costs…)
- **Periodic CFs**: **Incremental** (or differential) Cash Flows over the life of the project

  ⇒Determination of the (Incremental) **Free Cash Flows** (FCF) of the project

- **Terminal Cash Flow** (CFs corresponding to the liquidation of the assets of the project)



Investing

Step 2 - Evaluate the risk of the project:

From now on, we will **assume that the risk of the project is the same as the risk of the overall firm.**

Definition: The discount rate is equivalent to an opportunity cost rate

Components of this rate: (cf. Finance 2)

Risk-free rate + Risk premium that depends on
- Risk of the investment project
- Sector Return
- Inflation

The cost of capital ("opportunity cost of capital") for a firm depends on the risk of the firm's portfolio of projects.

- In this part 1, the WACC, namely the discount rate, is always given in applications.
- You'll have all the necessary tools for computing the Weighted Average Cost of Capital (WACC) of the firm later (Laurent Germain lectures)

Step 3 - Accept or Reject the Project:

Application of one or more capital budgeting rule (e.g. project's NPV, or project's IRR) and make a decision.

Calculating Cash Flows

Calculate the operating cash flow for period 1 using 2 methods

- A firm decides to launch a new projet today (in millions USD).
- Expected revenues of year 1: 120
- Expected COGS of year 1: 65 (excluding depreciation)
- Depreciation of year 1: 30
- Corporate Tax rate: 39%
- Working capital needs estimation (based on revenues = normative approach)
  - Inventories year 1: collection period = 1.5 month of revenues
  - Receivables year 1: collection period = 2 months of revenues
  - Payables year 1: collection period = 1 month of revenues

High pressure on us: **29.4** to find!

Financing

How can Companies Raise Capital?

- **Internal Funding Sources:**
  - mainly cash flow generated by the company through operating its business = retained earnings.
  - Retained Earnings = Net income less dividends (bénéfices réinvestis)

- **External Funding Sources:**
  - Borrowing money: bank loans (prêts bancaires)
  - Selling (issuing) new bonds (émission de titres obligataires)
  - Selling (issuing) new stocks (émission de nouvelles actions) : selling new shares of common or preferred stock.
  - Approximately 75% of external corporate financing comes from new debt financing (I wonder why …).

Financial Markets (1/3)

- **Financial Market** = exchange of funds between savers (those with excess of funds) and users (those in need of funds)
- **Money Markets**
  - Financial markets for short-term financial securities with less than a year to maturity.
  - All debt issues (stock never matures)
  - All very liquid (low risk and low rate of return)
  - Can be issued by corporations or governments or banks
  - **Examples**: Treasury bills, commercial paper, short-term bank CDs, bonds with less than a year to maturity.
- **Capital Markets**
  - Financial Markets for long-term financial securities with more than a year to maturity.
  - Can be debt (notes, bonds) or equity (stock; only for corporations)
  - Liquidity, risk, and rate of return vary
  - Issued by corporations or governments
  - **Examples**: Treasury Notes and Bonds, Corporate Notes and Bonds, Municipal Bonds, Mortgages, Long-term bank CD's, Preferred Stock, Common Stoc

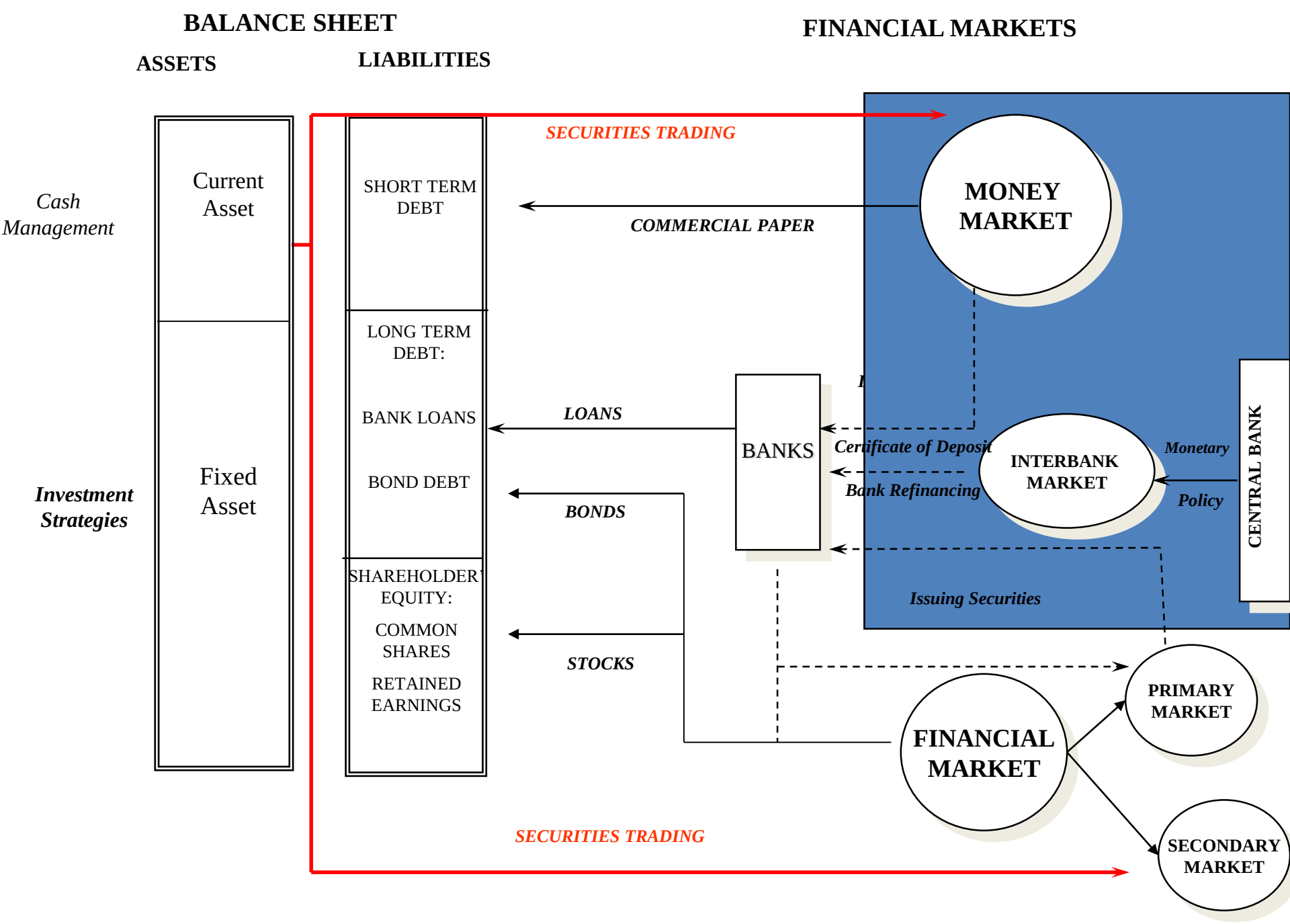
Financial Markets (2/3)

- **Primary** Market:
  - The market for newly created financial securities.
  - The issuer receives funds (directly or indirectly) when these securities are first sold.
- **Secondary** Market:
  - The market for "old" financial securities.
  - Allows investors to exchange securities among themselves IF LIQUIDITY
  - No money goes to the issuer (the firm) when its securities are resold.

Financial Market Organization:

- **Organized** Exchanges: meet at one central location
  - New York Stock Exchange (NYSE)
  - EURONEXT NYSE
  - London Stock Exchange

- **Over-the-counter** markets: work with dealer system.
  - Bid (dealer buys/Investor sells at) and Ask (dealer sells/investor buys at) prices.
  - NASDAQ for stocks
  - Vast majority of corporate & municipal bonds and all Treasury bills, notes & bonds trade on over-the-counter bond markets.


BALANCE SHEET
ASSETS
LIABILITIES
FINANCIAL MARKETS
Current Asset
Fixed Asset
SHORT TERM DEBT
LONG TERM DEBT:
BANK LOANS
BOND DEBT
SHAREHOLDER' EQUITY:
COMMON SHARES
RETAINED EARNINGS
Cash Management
Investment Strategies
SECURITIES TRADING
COMMERCIAL PAPER
LOANS
BONDS
STOCKS
MONEY MARKET
BANKS
Certificate of Deposit
Bank Refinancing
INTERBANK MARKET
Monetary Policy
CENTRAL BANK
Issuing Securities
PRIMARY MARKET
FINANCIAL MARKET
SECONDARY MARKET
SECURITIES TRADING

Valuation Principles of Financial Securities

• **What is Value?**

In general, the value of an asset is the price that a willing and able buyer pays to a willing and able seller.

• **There are several types of value:**

- **Book Value:** The asset's historical cost less its accumulated depreciation
- **Market Value:** The price of an asset as determined in a competitive marketplace
- **Intrinsic Value:** The present value of the expected future cash flows discounted at the decision maker's required rate of return
- Note that the intrinsic value of an asset can be, and often is, different for each individual (that's what makes financial markets work)

• **For valuing bonds and stocks we need to:**

- Estimate future cash flows (Size (how much) and Timing (when))
- Discount future cash flows at an appropriate rate
- The required rate of return (it is determined by a number of factors such as risk/return preferences, returns on competing investments, expected inflation, etc.)

Corporate Long-Term Debt: The Basics

- A bond is a tradable instrument that represents a debt owed to the owner by the issuer. Most commonly, bonds pay interest periodically (usually semiannually) and then return the principal at maturity.
- A bond or more generally a debt is not an ownership interest in the firm. Creditors do not usually have voting power (COVENANTS FOR PROTECTING THEM)
- The corporation's payment of interest on debt is considered a cost of doing business and is fully tax-deductible. Dividends are paid out of after-tax dollars.
- Unpaid debt is a liability of the firm. If it is not paid, the creditors can legally claim the assets of the firm.
- Some securities blur the line between debt and equity: Corporations are very adept at creating hybrid securities that look like equity but are called debt: CONVERTIBLES
  - Obviously, the distinction is important for tax purpose.
  - A corporation that succeeds is creating a debt security that is really equity obtains the tax benefits of debt while eliminating its bankruptcy costs.

Corporate Long-Term Debt: The major features

- The bond **indenture** (The written agreement between the corporate debt issuer and the lender) usually lists:
  - Amount of Issue, Date of Issue, Maturity
  - Denomination (Par value) (valeur nominale)
  - Annual Coupon, Dates of Coupon Payments
  - Seniority (priorité dans le remboursement)
  - Sinking Funds
  - Covenants (clauses juridiques)
- Features that may change over time:
  - Rating
  - Yield-to-Maturity
  - Market price
- Different Types of bonds:
  - A *debenture* is an unsecured corporate debt, whereas a *bond* is secured by a mortgage on the corporate property.
  - A *note* usually refers to an unsecured debt with a maturity shorter than that of a debenture, perhaps under 10 years.

Bond Pricing: A Primer

There are several terms with which you must be familiar to solve bond valuation problems:

- **Coupon Rate:** This is the stated rate of interest on the bond. It is fixed for the life of the bond. Also, this rate time the face value determines the annual interest payment amount.
- **Face Value:** This is the principal amount (nominally, the amount that was borrowed). This is the amount that will be repaid at maturity
- **Maturity Date:** This is the date after which the bond no longer exists. It is also the date on which the loan is repaid and the last interest payment is made.
- **Yield to Maturity (YTM):** The required rate of return by investors.

Obligations

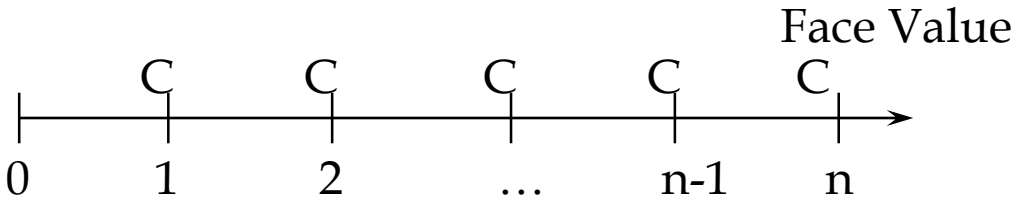
Supplied by RBC Dominion Securities Inc./ International from Reuters

	Coupon	Mat. Date	Bid $	Yld%
Government				
Canada	6.500	Aug 01/99	101.36	5.23
Canada	7.750	Sep 01/99	102.87	5.25
Canada	10.500	Jul 01/00	109.96	5.27
Canada	7.250	Jun 01/07	113.80	5.29
OMHC	8.200	Jun 30/00	105.42	5.35
OMHC	5.100	Jun 02/03	99.04	5.32
Corporate				
Bank of Mont	6.900	Oct 16/01	104.16	5.51
Cdn Imp Bank	4.500	Dec 06/99	98.73	5.41
Imperial Oil	9.875	Dec 15/99	106.12	5.53
Loblaws Co.	6.650	Nov 08/27	107.69	6.08
Royal Bank	11.000	Jan 11/02	117.46	5.53
Union Gas	8.650	Nov 10/25	133.29	6.13

Source: *The Financial Post*, 17 juin 1998, p. 45. Avec autorisation.

Bond Pricing: A Primer

- The coupon, the face value and the maturity date are all determined by the bond issuer; these are written into the bond.
- Standard corporate bonds have a face value of $1000 and are quoted in % of the face value
- Coupons are typically paid semi-annually and represent a regular annuity. Coupon rate is not an effective rate (if coupon are not paid annually) => 10% coupon rate means $50 every 6 months (*i.e.* one half of 10% of $1000)



$$\text{Bond Price} = \text{PV(coupon)} + \text{PV(Face value)}$$

$$= C\left(1 - \frac{1}{(1+r)^n}\right)/r + \frac{F}{(1+r)^n}$$

Where

- C is the coupon payment per period = F * coupon rate per period
- r is the required rate of return (YTM). **There is a one-to-one relationship between the market price of a bond and its YTM.**
- n is the number of periods until maturity
- F is the face value

Bond Pricing: A Primer

Example:

If today is October 1st 2006, **what is the value of the following bond?** An IBM Bond with Face Value of $1000, annual coupon payment paid every September 30th, with a coupon rate of 11.5% and a September 30th 2011 maturity date. The bond is rated AAA (WSJ AAA YTM is 7.5%)

Cash Flows:

Sept 07	08	09	10	11
115	115	115	115	1115

$$PV = \frac{115}{1.075} + \frac{115}{(1.075)^2} + \frac{115}{(1.075)^3} + \frac{115}{(1.075)^4} + \frac{1{,}115}{(1.075)^5}$$

$$= 115\frac{\left(1-\left(1/1.075\right)^5\right)}{0.075} + \frac{1000}{(1.075)^5} = \$1{,}161.84$$

Classes of stock

- Common Stock (Ownership shares in a publicly held corporation)
  - A share of common stock represents an ownership position in the firm. Typically, the owners are entitled to vote on important matters regarding the firm, to vote on the membership of the board of directors, and (often) to receive dividends.
  - In the event of liquidation of the firm, the common shareholders will receive a pro-rata share of the assets remaining after the creditors and preferred stockholders have been paid off.
  - Market Value is the price of the stock (on the secondary market) multiplied by the number of shares outstanding. Also known as Market Capitalization
  - Dividends: (Periodic cash distribution from the firm to the shareholders)
    - Unless a dividend is declared by the board of directors of a corporation, it is not a liability of the corporation => A corporation cannot *default* on an undeclared dividend.
    - The payment of dividends by the corporation is not a business expense => dividends are not tax-deductible.
  - **P/E Ratio**: Price per share divided by earnings per share.
  - **Preferred stocks** are also used.

Corporate finance and financial management

Part 2 : Cost of capital and Discount Rates for projects (a primer)

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Discount rates

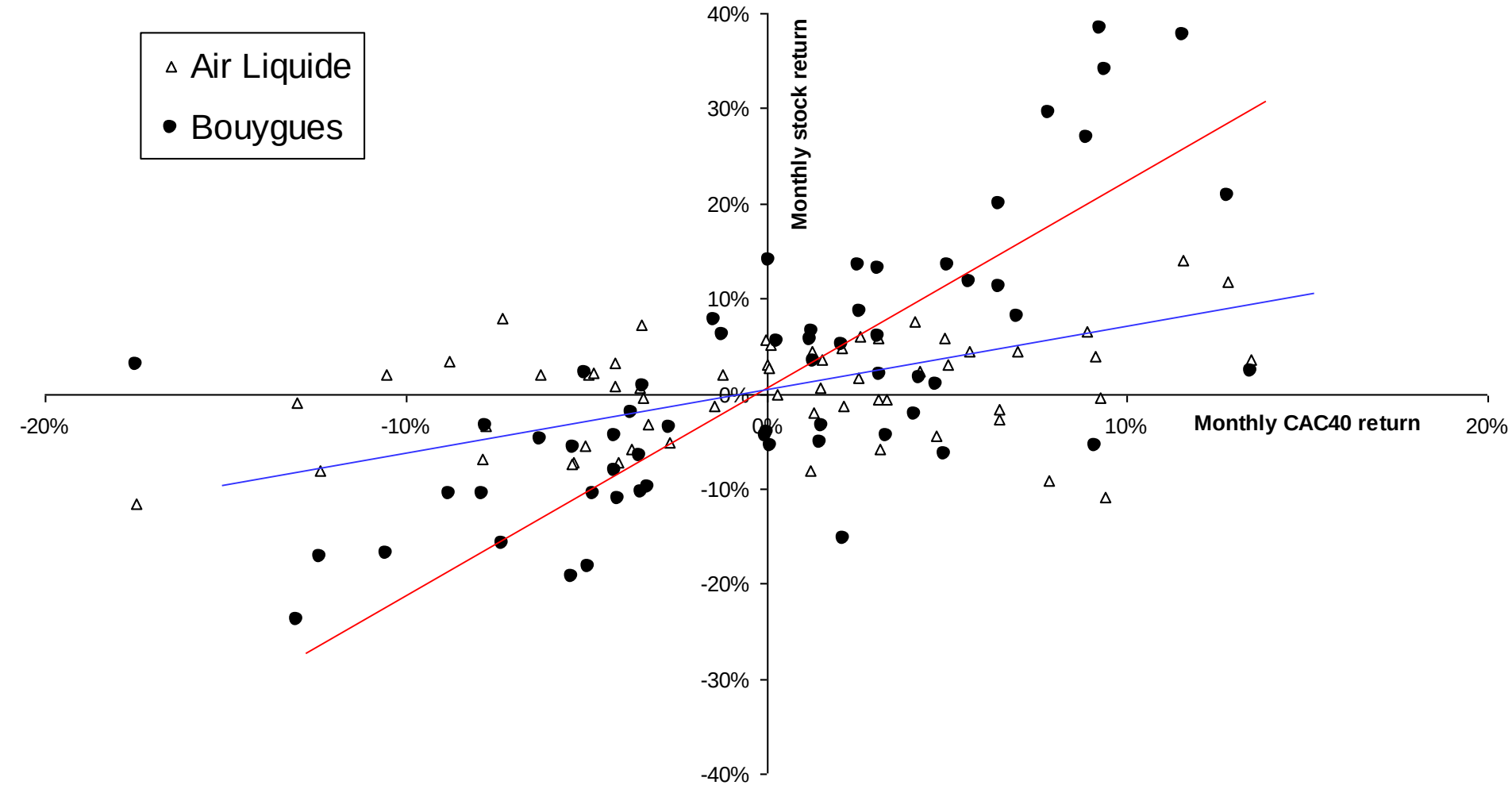
Market portfolio – In theory, portfolio of all assets in the economy. In practice, a broad stock market index such as the S&P500 (or the CAC40), is used to represent the market.

Beta (β) - Sensitivity of a stock's return to the return on the market portfolio.

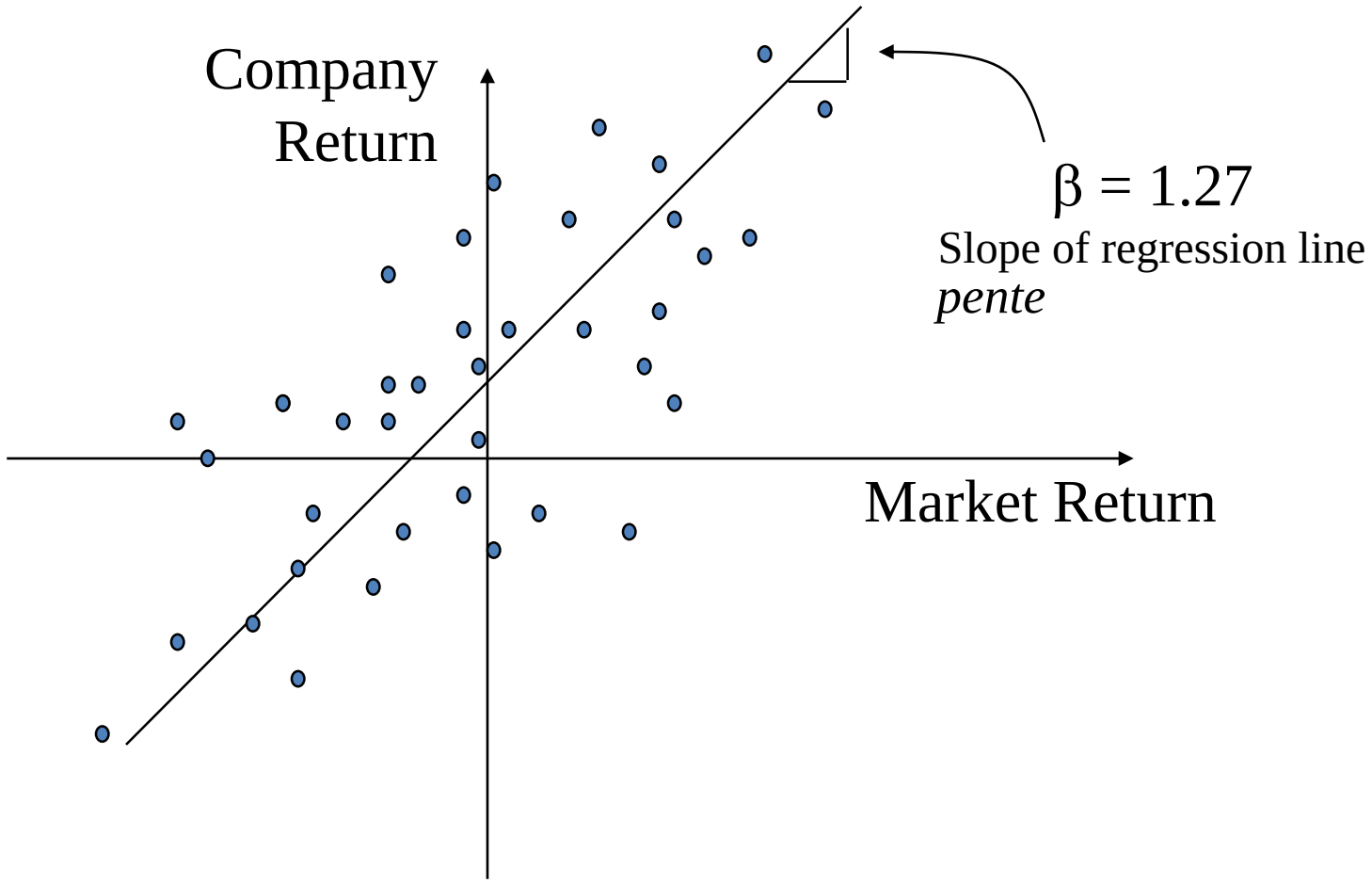
Beta: the basic idea

Stock vs. market returns

Monthly data, 10/1998-9/2003



Beta: the basic idea (2)



* The term "beta" comes from the fact that it is estimated as the coefficient β in the time-series regression:

$$r_s = \alpha + \beta r_m + \varepsilon$$

Some betas

Industry	Beta	Ticker	Firm	Beta
Gold and Silver	−0.04	NEM	Newmont Mining Corporation	0.02
Beverages (Alcoholic)	0.23	BUD	Anheuser-Busch Companies, Inc.	0.10
Personal and Household Prods.	0.25	PG	The Procter & Gamble Company	0.19
Food Processing	0.34	HNZ	H. J. Heinz Company	0.37
		HSY	The Hershey Company	−0.10
Beverages (Nonalcoholic)	0.43	KO	The Coca-Cola Company	0.50
Electric Utilities	0.48	EIX	Edison International	0.50
Major Drugs	0.48	PFE	Pfizer Inc.	0.54
Restaurants	0.69	SBUX	Starbucks Corporation	0.60
Retail (Grocery)	0.74	SWY	Safeway Inc.	0.67
Conglomerates	0.84	GE	General Electric Company	0.85
Forestry and Wood Products	0.95	WY	Weyerhaeuser Company	0.96
Recreational Products	1.00	HDI	Harley-Davidson, Inc.	1.14
Apparel/Accessories	1.12	LIZ	Liz Claiborne, Inc.	0.90
Retail (Home Improvement)	1.22	HD	Home Depot, Inc.	1.43
Auto and Truck Manufacturers	1.44	GM	General Motors Corporation	1.20
Computer Hardware	1.60	AAPL	Apple Computer, Inc.	1.35
Software and Programming	1.74	ADBE	Adobe Systems, Inc.	1.84
		MSFT	Microsoft Corporation	1.12
Computer Services	1.77	YHOO	Yahoo! Inc.	2.80
Communications Equipment	2.20	CSCO	Cisco Systems, Inc.	2.28
Semiconductors	2.59	AMD	Advanced Micro Devices, Inc.	3.23
		INTC	Intel Corporation	2.17

Table: Betas with respect to the S&P500 for individual stocks and average betas for stocks in their industries (based on monthly data for 2000-2005)

Source: BD Table 10.6

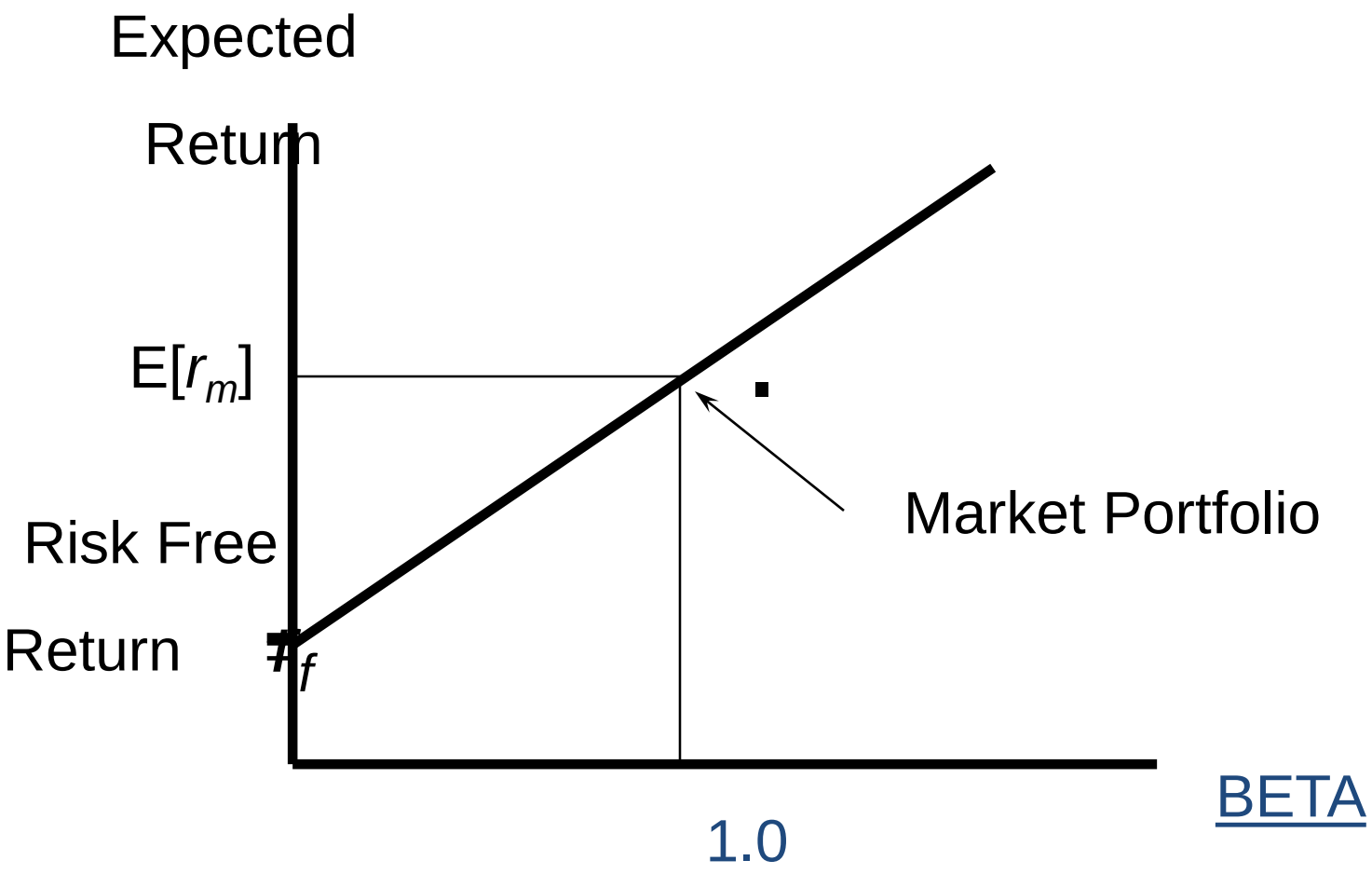
CAPM Formula

$$E[r] = r_f + \beta\,(\,E[r_M] - r_f\,)$$

The CAPM tells us that the expected return on an asset depends on:

1. The pure time value of money (the risk-free rate)
2. The reward for market risk (the market risk premium)
3. The amount of market risk (the beta)

CAPM
Security Market Line (SML)



Cost of capital, WACC.

The cost of capital (COC) for a firm is the expected return on the portfolio of its debt and equity.

COC depends on the risk of the firm's portfolio of projects.

= porteurs d'obligations

Bondholders

Shareholders

= actionnaires

Company

Project *1*

Project *2*

Project *N*

Question

The market value of XYZ's stock is $16 million, and the market value of its (risk-free) debt is $4 million. The beta of the company's stock is 1.25, and the expected risk premium on the market is 8 percent. If the Treasury bill rate is 4 percent, what is the company's cost of capital?

Answers:

A. 4%

B. 6%

C. 8%

D. 10%

E. 12%

F. 14%

Is WACC the real discount rate ?

Suppose a firm is deciding whether to invest in a new project. The investment is €100. The expected cash flows are €20 one year later and €100 two years later. The company COC is 12.2%, and the management thinks that the risk of the project is similar to the risk of the company as a whole.

Should the company invest?

Corporate finance and financial management

Part 3 : Short Term Financial Management and Value Creation

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Learning Objectives

- Discuss the challenges of measuring economic profits and indicate how approaches like market value added (MVA) and economic value added (EVA®) can be used to assess the wealth created by managers.
- Implement the Value Based Management Model.

Measuring Economic Profits

Part of the challenge of designing executive compensation systems is that accounting measures of profitability may not reflect the economic profitability being created in a given year. Two ways that can be used to measure the wealth created by manager are:

- **Market Value Added : MVA**
- **Economic Value Added : EVA®**

Market Value Added

MVA = Firm Value - Invested Capital

Firm value = market value of the firm's outstanding debt and equity securities.

Invested Capital = the sum total of the funds that have been invested in the firm.

Market Value Added (MVA)

MVA measures shareholder wealth creation by looking at the difference between the market value of the firm's common stock (market capitalization) and the capital supplied by shareholders :

MVA = Market Value of the Common Stock - Equity Capital

Calculating MVA - Occidental Petroleum (OXY)

Market Value of Common Stock = $29.25/share

Share Outstanding = 341.126 million

Book Value of the Common Stock = $3.109 billion

MVA = $29.25 * (341.126 million shares) - $3.109 billion

= $6.869 billion USD

Top Creators of Shareholder Value

	MVA	invested capital	return	cost of capital
Microsoft	328,257	10,954	56.16%	12.64%
Gen Elect	285,320	65,298	19.29%	11.92%
Intel	166,902	23,626	35.44%	12.92%
Wal-Mart	159,444	36,188	13.24%	9.82%
Coca-Cola	157,536	13,311	31.22%	11.24%

Economic Value Added : EVA®

www.sternstewart.com

EVA® represents the after-tax operating profits of a company after it has been charged for all of the capital used to generate those profits:

$$EVA® = EBIT (1-T) - WACC * Capital\ Employed$$

Calculating EVA® - Occidental Petroleum (OXY)

EBIT = $962 million

Corporate Tax Rate = 32.3%

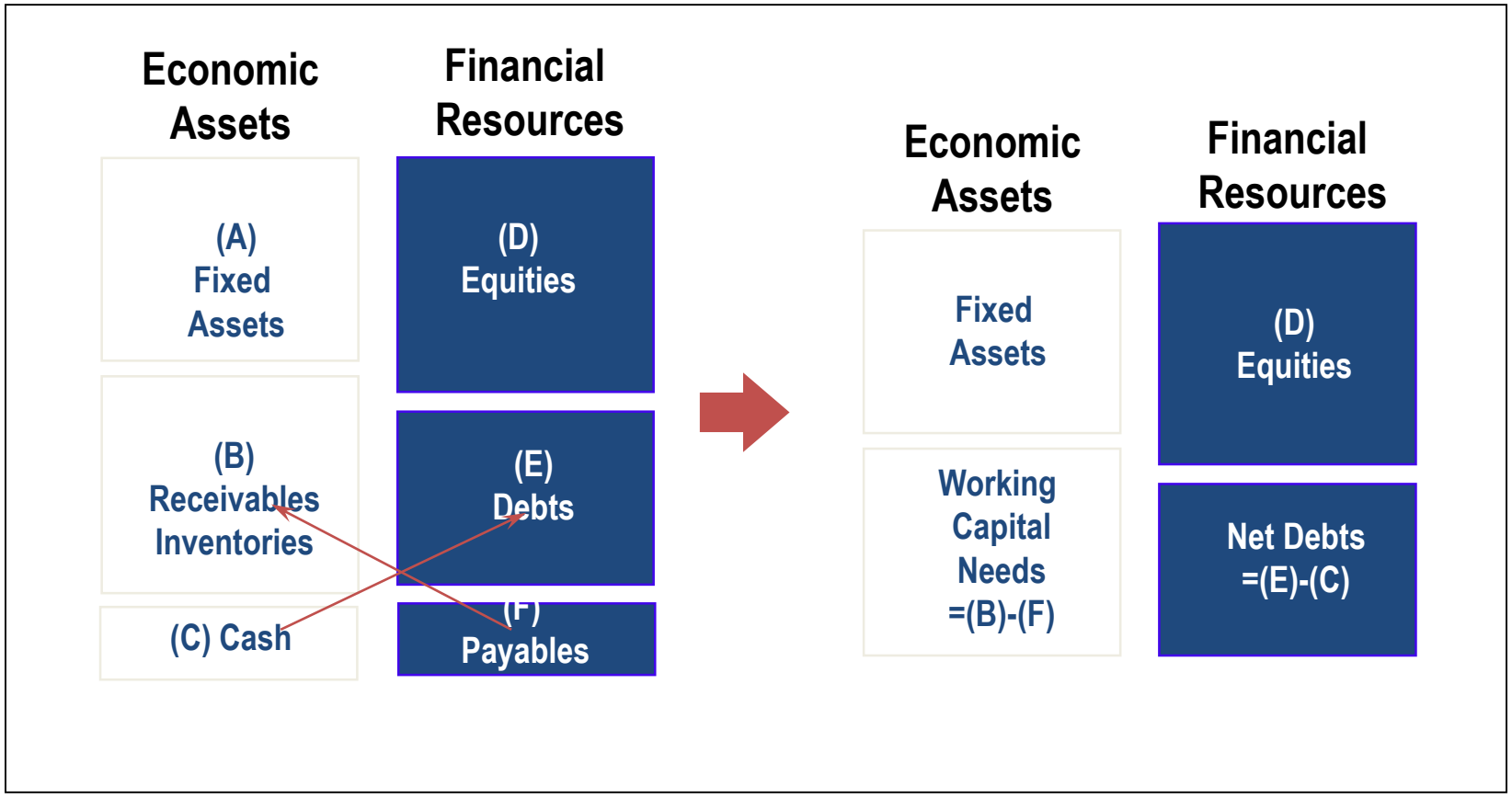
WACC = 10.1%

Invested Capital = $6.761 billion

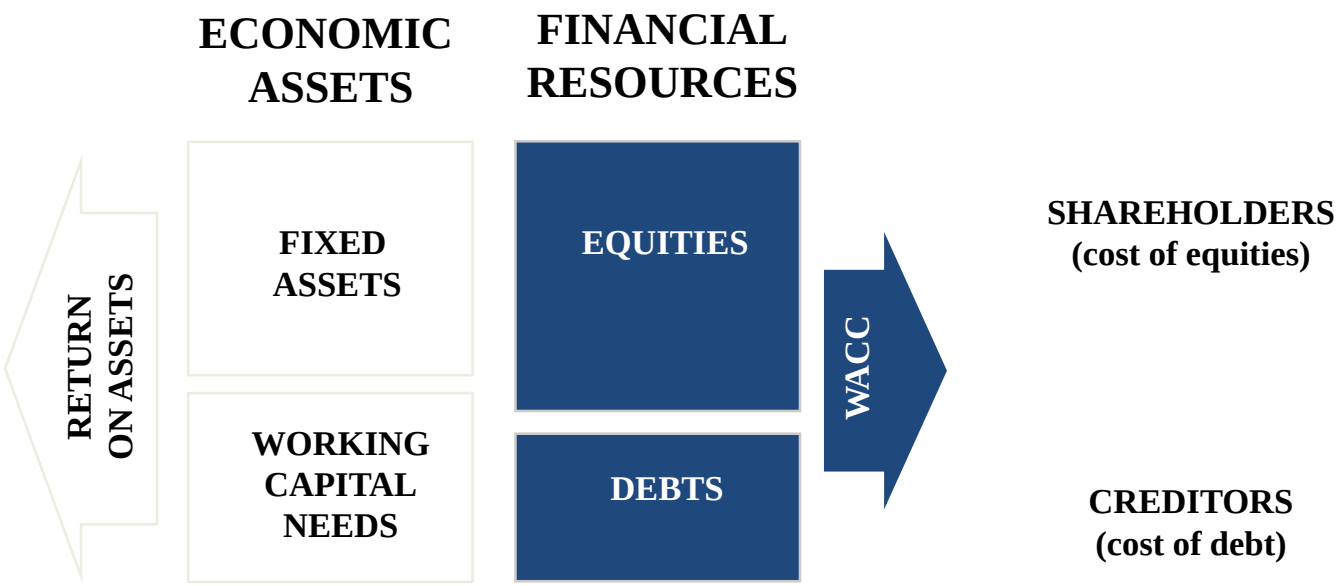
Calculating EVA®- Occidental Petroleum (OXY)

$$\begin{aligned} EVA &= \$962\text{ million}(0.677) - 0.101(\$6{,}761\text{ billion}) \\ &= \$651\text{ million} - \$683\text{ million} \\ &= -\$32\text{ million} \end{aligned}$$

More on EVA®

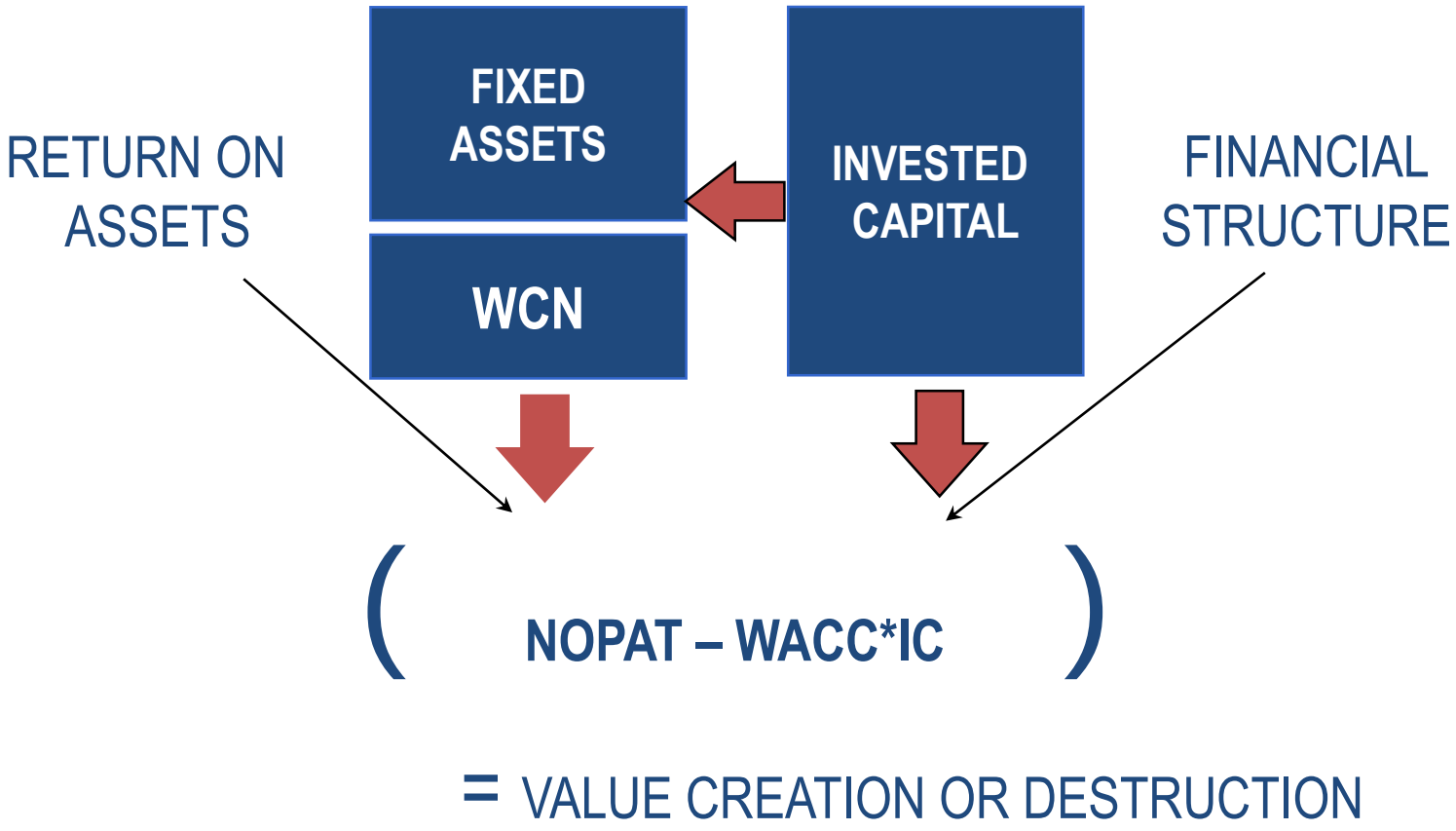

Economic Assets
Financial Resources
(A) Fixed Assets
(B) Receivables Inventories
(C) Cash
(D) Equities
(E) Debts
(F) Payables
Economic Assets
Financial Resources
Fixed Assets
Working Capital Needs =(B)-(F)
(D) Equities
Net Debts =(E)-(C)

ROA AND WACC



IF ROA > WACC THEN FINANCIAL VALUE > BOOK VALUE

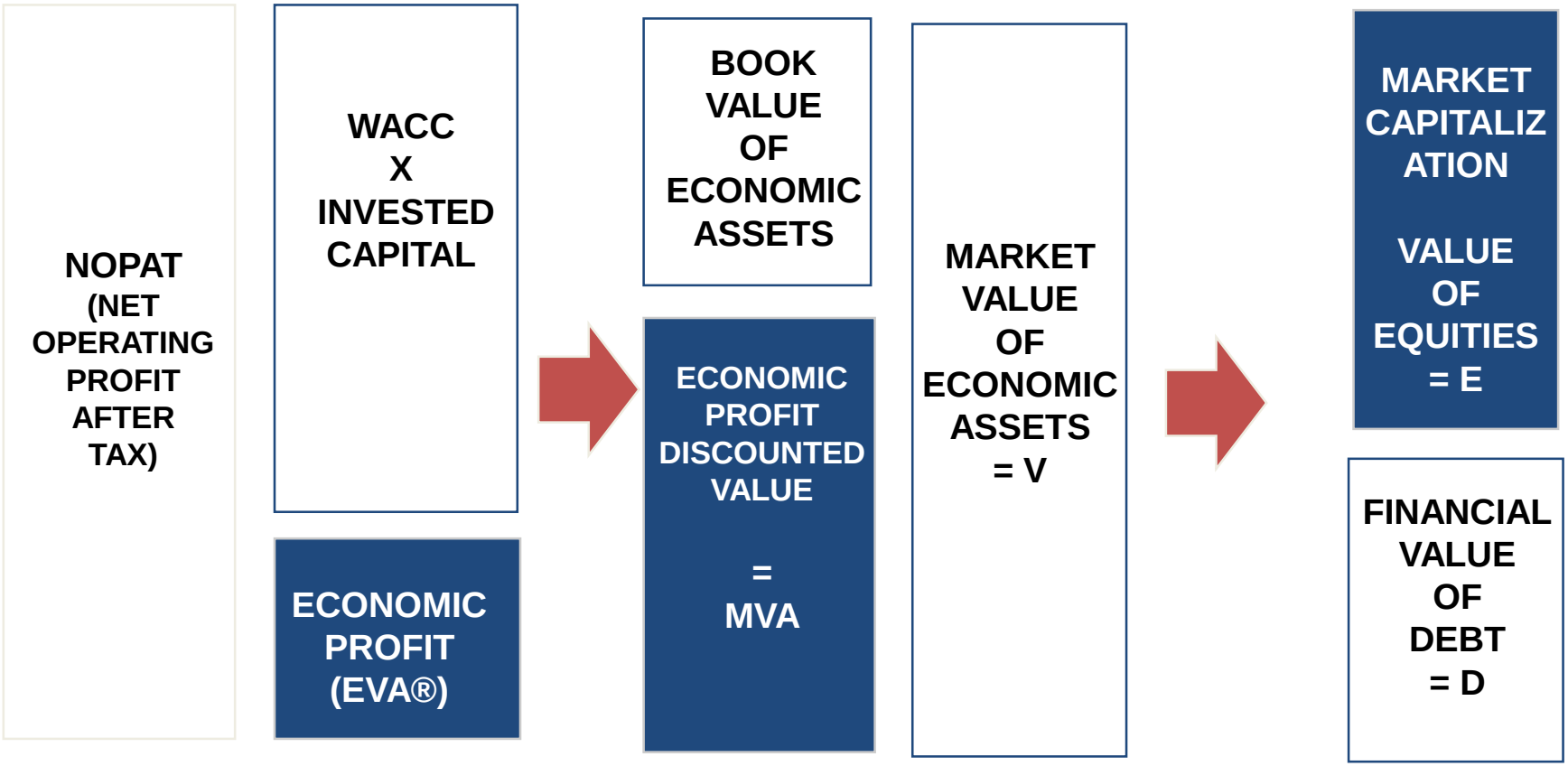
EVA®


FIXED ASSETS
WCN
INVESTED CAPITAL
RETURN ON ASSETS
FINANCIAL STRUCTURE
(NOPAT – WACC*IC)
= VALUE CREATION OR DESTRUCTION

EVA®

- **GOODWILL IS THE DIFFERENCE BETWEEN RETURN ON ASSETS AND WACC.**
- **SAME IS TO SAY :**
  - **IF NOPAT > WACC*IC ➔ value creation**
  - **IF NOPAT < WACC*IC ➔ value destruction**

EVA®


NOPAT
(NET
OPERATING
PROFIT
AFTER
TAX)
WACC
X
INVESTED
CAPITAL
ECONOMIC
PROFIT
(EVA®)
BOOK
VALUE
OF
ECONOMIC
ASSETS
ECONOMIC
PROFIT
DISCOUNTED
VALUE
=
MVA
MARKET
VALUE
OF
ECONOMIC
ASSETS
= V
MARKET
CAPITALIZ
ATION
VALUE
OF
EQUITIES
= E
FINANCIAL
VALUE
OF
DEBT
= D

A NEW LOOK AT PROFITABILITY

	Company A	Company B
Revenues	1000	2000
Costs	850	1700
Income	150	300

A NEW LOOK AT PROFITABILITY

	Company A	Company B
Revenues	1000	2000
Costs	850	1700
Income	150	300
Economic Assets (EC)	1500	3500

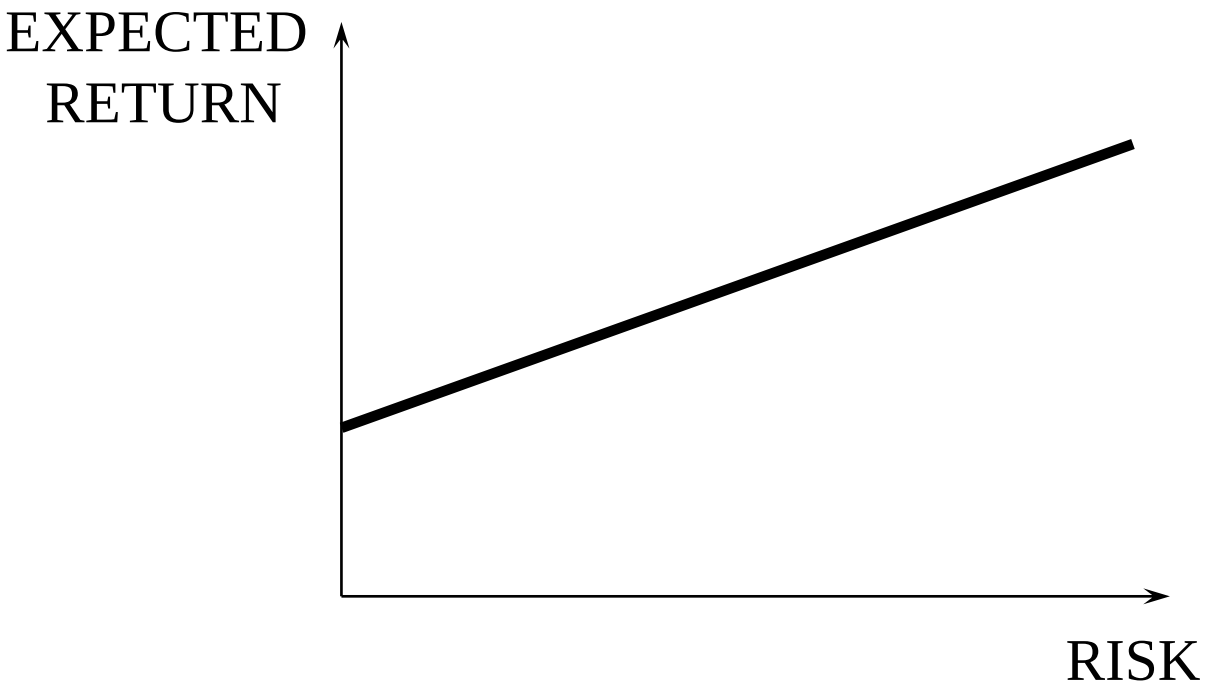
A NEW LOOK AT PROFITABILITY

	Company A	Company B
Income/EA	10 %	8.6 %

A NEW LOOK AT PROFITABILITY

	Company A	Company B
Income/EA	10 %	8.6 %
Income/Revenues	15 %	15 %
Revenues/EA	0.66	0.57

RISK AND RETURN



CAPM 1961

A NEW LOOK AT PROFITABILITY

	Company A	Company B
Income	150	300
Economic Assets	1500	3500
Cost of capital	12 %	8 %

VALUE CREATION

	Company A	CompanyB
Income	150	300
EA	1500	3500
Cost of capital	12 %	8 %
EA * Cost of Capital	180	280
Value creation	-30	+20

- **<u>Comparison of measures for financial value</u>**
  - **Accounting performance measurement**
  - **Economic Profit (EVA®)**
  - **Cash Flow measurement : CFROI et CVA**

EVA®

- **Accounting performance measurement :**
  - **Net income**, **Earnings per share**, **EBIT**, **EBITDA** , …
  - Depends on financial accounting assumptions
  - Doesn’t consider cost of equities.

EVA®

- **WHY USE EVA® ?**

– EVA® is **correlated with MVA** (Wallace, University of California ?) ;
– EVA® can be used to **measure performance of business units ;**
– Theoretically **simple** to understand and implement ;
– EVA® is **relevant** and **compatible** with the Finance Theory (link between **MVA** and **EVA®).**

INTERNAL VALUE CREATION AND PERFORMANCE MEASUREMENT

- Company ABC has a client XYZ and it is a one of the best !
- Revenues: 1000 euros (8% of total firm's revenues)
- Gross Margin : 50% (average for the firm = 42%)
- Other direct costs : 250 euros (average : 26%)
- Economic capital for this client (including WCN) : 1300 euros (depreciation = 65 euros)
- Other information:
  - Tax rate = 30%
  - WACC = 10%

  Is XYZ agood customer?

Using EVA - Limitations

- **Limitations**
  - **EVA® only measures the benefits of the assets in place. It is not suitable for firms with significant growth opportunities.**
  - **EVA® is a short-term measure. It doesn't capture the impact of actions that look bad immediately but can create long-term value (analyse EVA® changes !).**
  - **EVA® subject to accounting changes (more than 160 ways to calculate EVA® according to PWC);**

CFROI et CVA

- A firm decides to invest into a new project which will become its only one.
- The managers would like to measure on a yearly basis the value created by this new project.
- Initial invested capital : 410 (360 in fixed assets and 50 in working capital)
- Asset life : 5 years (no terminal value)
- Annual EBIT after Tax : 28
- Annual depreciation : 72
- WACC : 10%
- No change in working capital needs during the life of the project

CFROI et CVA

- What is the Net Present Value of this investment ?
- Annual free cash flow = EBIT after tax + Depreciation = 28+72= 100
- In this case, the NPV is equal to 0 ! ➔ there is no value creation for this firm
- What about FCF, ROIC and EVA® ?

CFROI et CVA

- FCF, ROIC and EVA® indicate value creation or value destruction !
- ➔ these three measures are inadequate because they are based on book value of invested capital !!!
- In order to get the right metric, we need to include the opportunity cost of invested capital.

CFROI et CVA

- **THE ECONOMIC DEPRECIATION (ED) REPRESENTS AN ANNUAL AMOUNT THAT MUST BE SET ASIDE IN A SINKING FUND EARNING THE WACC TO OBTAIN EXACTLY AT THE END OF THE YEAR 5 THE AMOUNT NEEDED TO REPLACE THE ASSET (IN THAT EXAMPLE : 360)**
- **NOW, WE CAN DEFINE THE CVA OR CASH VALUE ADDED :**
- **CVA = CF – ED – wacc*IC**
- **CVA = (CFROI – wacc)* IC**
- **With CFROI = (CF – ED)/IC**

CFROI et CVA

- **IN THIS EXAMPLE, THE CVA CALCULATION SHOWS A VALUE EQUAL TO 0 EACH YEAR REFLECTING THE FACT THAT THE INVESTMENT IS CONSTENTLY GENERATING A COST OF CAPITAL RETURN**

EVA® and CVA

- A firm decides to invest into a new project which will become its only one.
- The managers would like to measure on a **yearly basis** the value created by this new project.
- Initial invested capital : **1100** (**1000** in fixed assets and **100** in working capital)
- Asset life : **5** years (no terminal value)
- Annual EBIT after Tax : **200**
- Annual depreciation : **100**
- WACC : **10%**
- No change in working capital needs during the life of the project
- Calculate NPV, ROCE, EVA® and CVA.

ROA, ROE, EVA®, WACC, growth, pay out and investment rate

EBIT AFTER TAXES: 20 millions USD

Book value of debt: 200 millions USD.

Book Value of Equities: 150 millions USD.

Corporate tax rate: 30%.

YTD (Yield to Debt): 4% (per year).

BETA equities: 1.2

Tbill rate: 2% and MRP : 2%

Target gearing ratio : 40%

Growth rate : 3%