Project and Enterprise Financing

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a.o.Univ.-Prof. Dr. Wolfgang Aussenegg

Vienna University of Technology
Institute of Management Science
Financial Enterprise Management Group

http://www.imw.tuwien.ac.at/fc/people/wolfgang_aussenegg/
e-mail: wolfgang.aussenegg@tuwien.ac.at

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Overview of Lectures

- Project and Enterprise Financing – Overview (L1)
- Credit Financing (L2)
- Corporate Bond Financing (L3-5)
- Equity Financing: Overview (L6-8)
- Financial Leverage and Capital Structure (L9)
- Public Equity Financing - Initial Public Offerings (IPOs) (L10-12)

Additional References

Berk, J., and DeMarzo, P. (2014): Corporate Finance, 3rd (global) edition, Pearson Education Limited

Brealey, R.A., and Myers, S.C. (2003): Principles of corporate finance, 7th edition, McGraw Hill

Gatti, S. (2008): Project Finance in Theory and Practice, Elsevier

Ross, S.A., Westerfield, R.W., and Jaffe, J. (2002): Corporate Finance, 6th edition, McGraw Hill

Ross, S.A., Westerfield, R.W., and Jordan, B.D. (2003): Fundamentals of Corporate Finance, 6th edition, McGraw Hill

Lecture 1: Project and Enterprise Financing - Overview

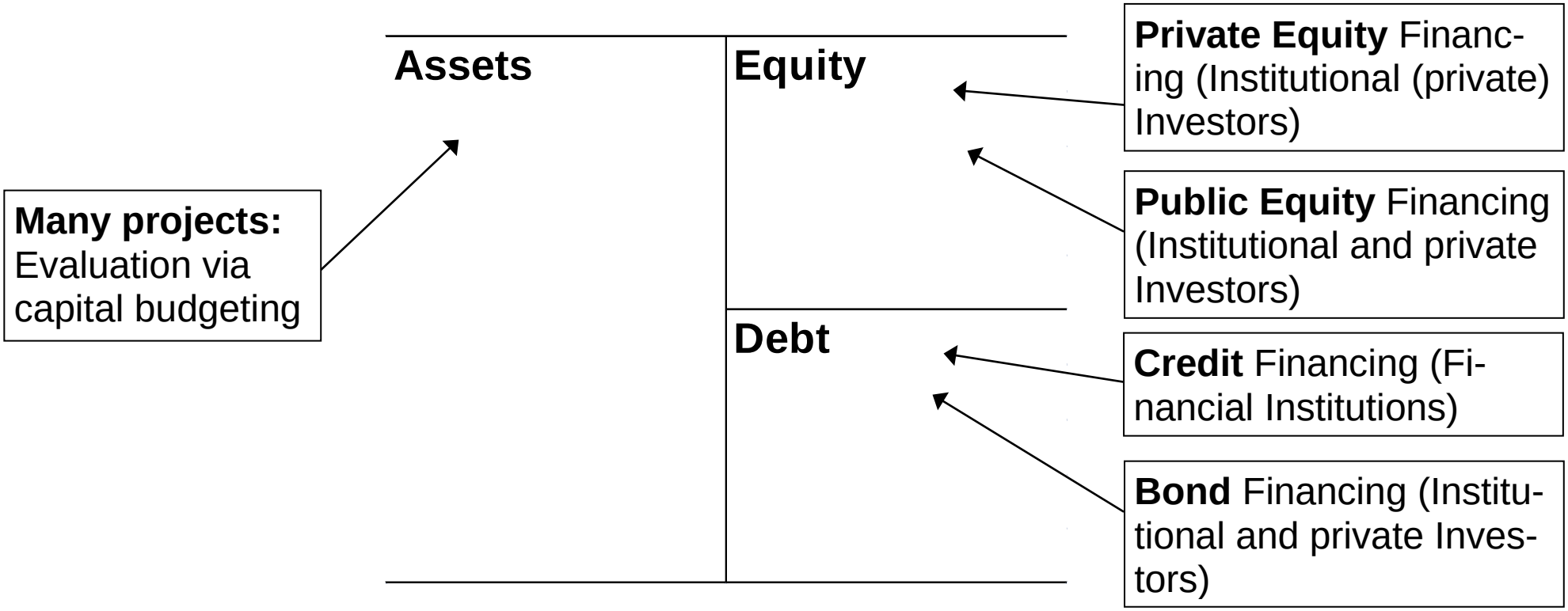
Content

1. Main aspects of Corporate (Enterprise) Financing
2. Main additional aspects of Project Financing

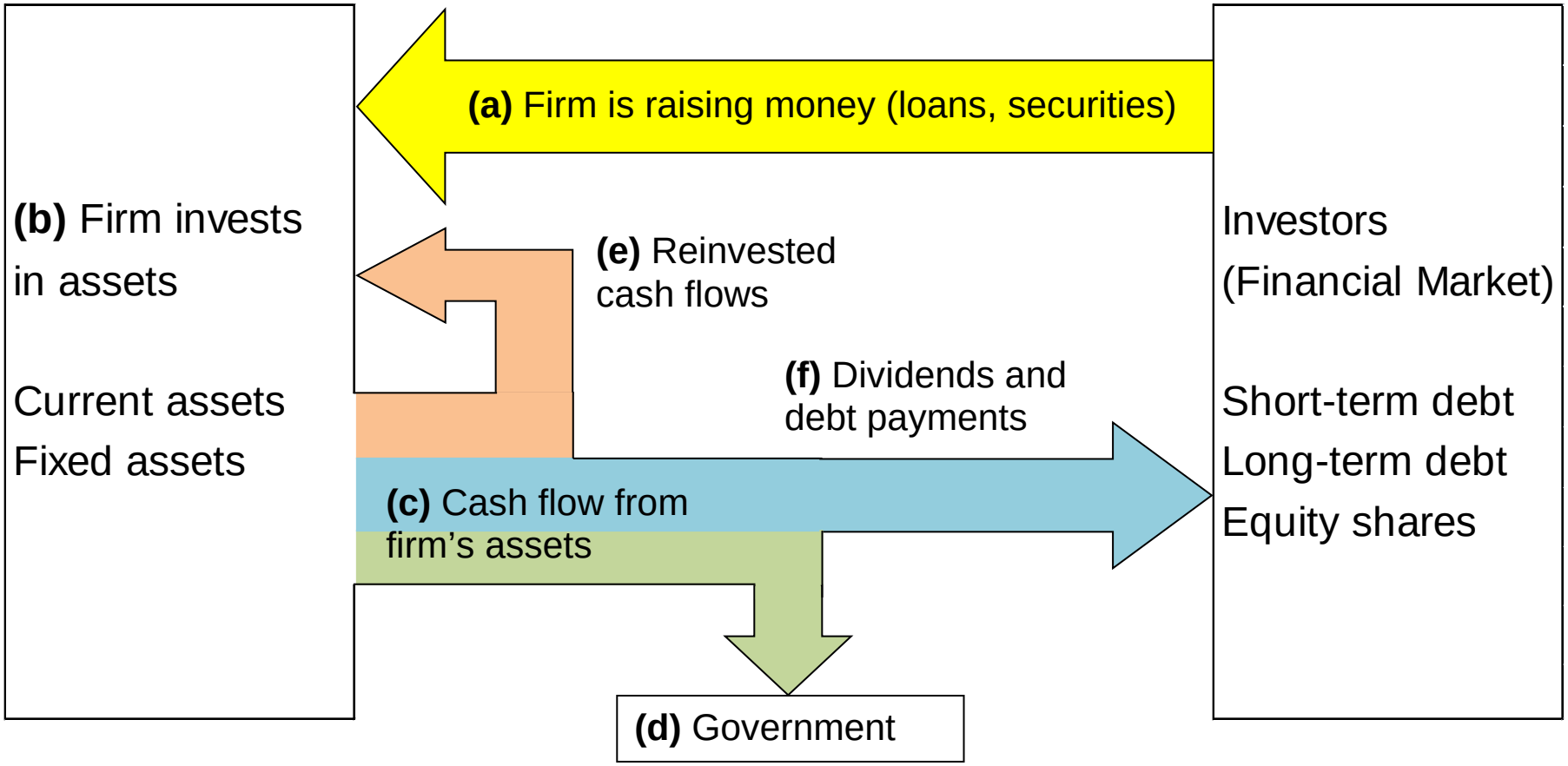
Corporate (enterprise) financing vs project financing

- Corporate (enterprise) financing deals with the entire company
- A company typically consists of several projects, thus is a portfolio of projects
- Project financing deals only with one project
- Typically, a special economic entity (SPV or special-purpose vehicle) is established to deal with this single project

1. Main aspects of corporate (enterprise) financing



❍ Cash flows to and from the firm[1]



[1] Adopted from Ross et al. (2003), Fundamentals of Corporate Finance, p. 17ff.

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(a) Firm raises money (from banks; issuing of securities): cash inflow

(b) Firm invests in assets.

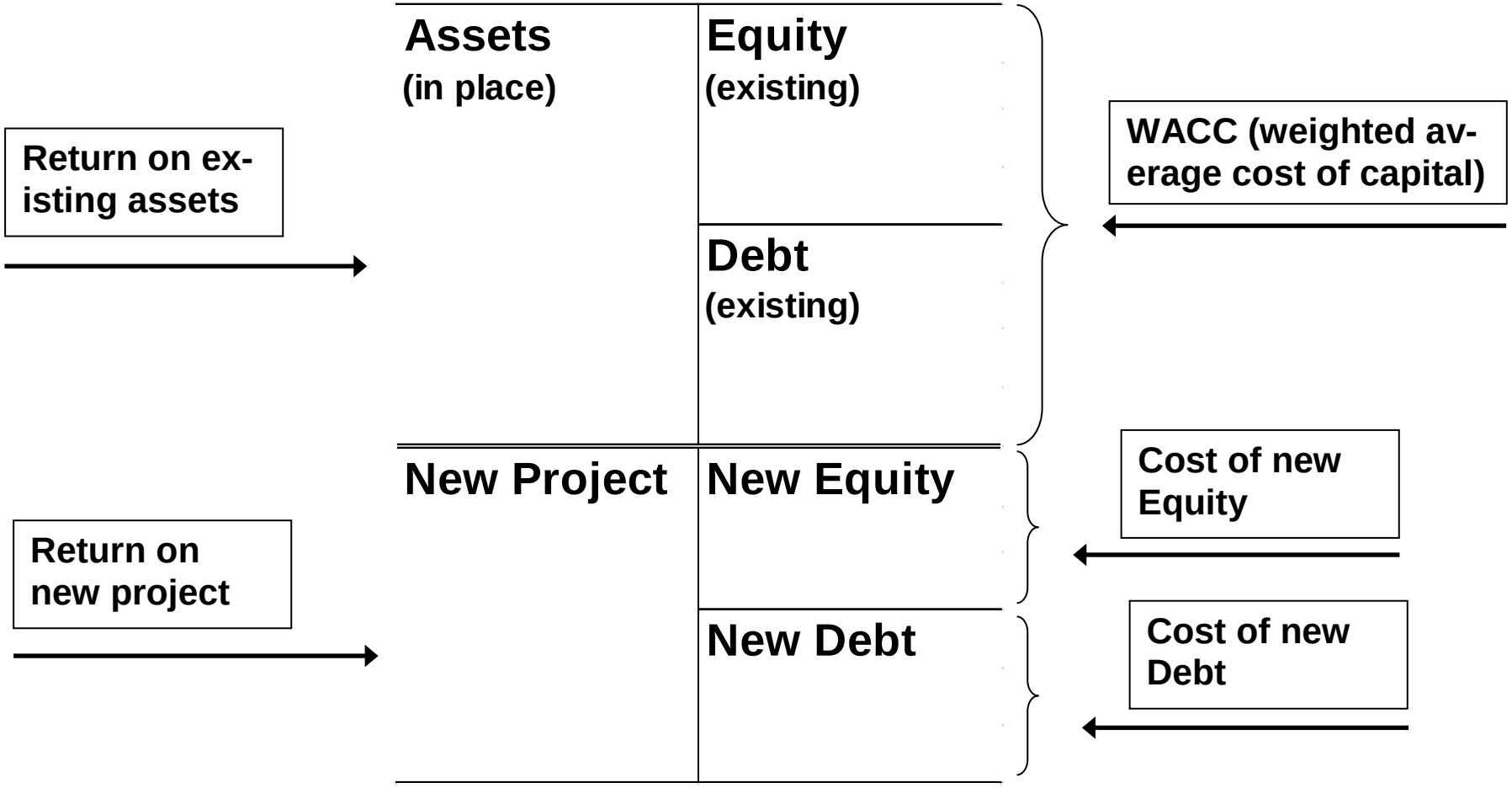
(c) Firm's operations generate cash flow.

(d) Cash is paid to government as taxes.

(e) Reinvested cash flows are plowed back into the firm.

(f) Cash is paid out to investors in the form of interest, dividends and debt re-payments.

A New Project: Corporate (Enterprise) Financing



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A New Project: Project Financing

Existing Firm (sponsor/parent of SPV)

Assets (in place)	Equity (existing)
	Debt (existing)

Return on existing assets →

← WACC (weighted average cost of capital)

SPV (special purpose vehicle)

New Project	New Equity
	New Debt

Return on new project →

← Cost of new Equity

← Cost of new Debt

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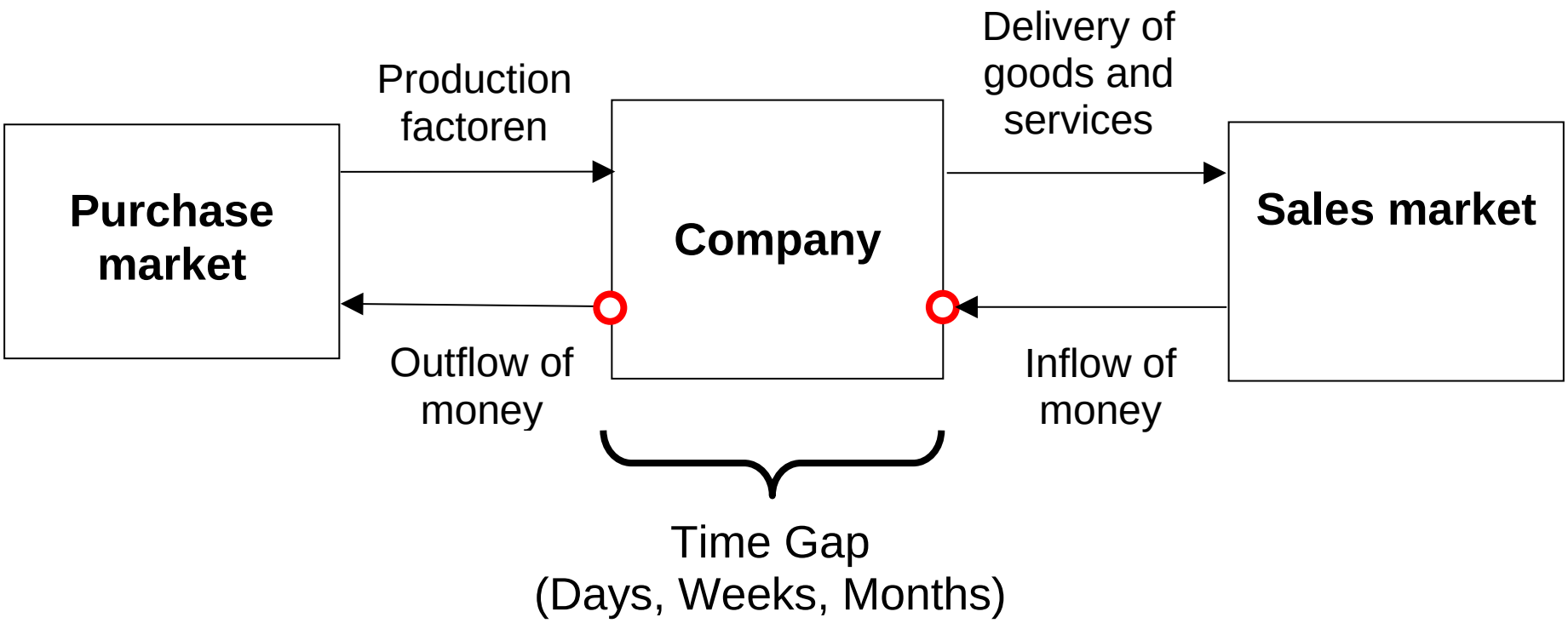
- Institutional and organizational differences (enterprise financing vs. project financing).

- **Instruments to finance** an **enterprise** (i.e. a company consisting of several projects) and to finance a **SPV** (that typically deals with only one project) are to more than 95% **similar**.

Financing GAP



Financing is necessary!

The Balance Sheet – A quick review[2]

GLOBAL CONGLOMERATE CORPORATION

Consolidated Balance Sheet
Year Ended December 31 (in $ million)

Assets	2012	2011	Liabilities and Stockholders' Equity	2012	2011
Current Assets			Current Liabilities		
Cash	21.2	19.5	Accounts payable	29.2	24.5
Accounts receivable	18.5	13.2	Notes payable/short-term debt	3.5	3.2
Inventories	15.3	14.3	Current maturities of long-term debt	13.3	12.3
Other current assets	2.0	1.0	Other current liabilities	2.0	4.0
Total current assets	57.0	48.0	Total current liabilities	48.0	44.0
Long-Term Assets			Long-Term Liabilities		
Land	22.2	20.7	Long-term debt	99.9	76.3
Buildings	36.5	30.5	Capital lease obligations	—	—
Equipment	39.7	33.2	Total debt	99.9	76.3
Less accumulated depreciation	(18.7)	(17.5)	Deferred taxes	7.6	7.4
Net property, plant, and equipment	79.7	66.9	Other long-term liabilities	—	—
Goodwill and intangible assets	20.0	20.0	Total long-term liabilities	107.5	83.7
Other long-term assets	21.0	14.0	Total Liabilities	155.5	127.7
Total long-term assets	120.7	100.9	Stockholders' Equity	22.2	21.2
Total Assets	177.7	148.9	Total Liabilities and Stockholders' Equity	177.7	148.9

[2] Source: Berk and DeMarzo (2014), Corporate Finance, 3rd edition, p. 24.

The Income Statement – A quick review[3]

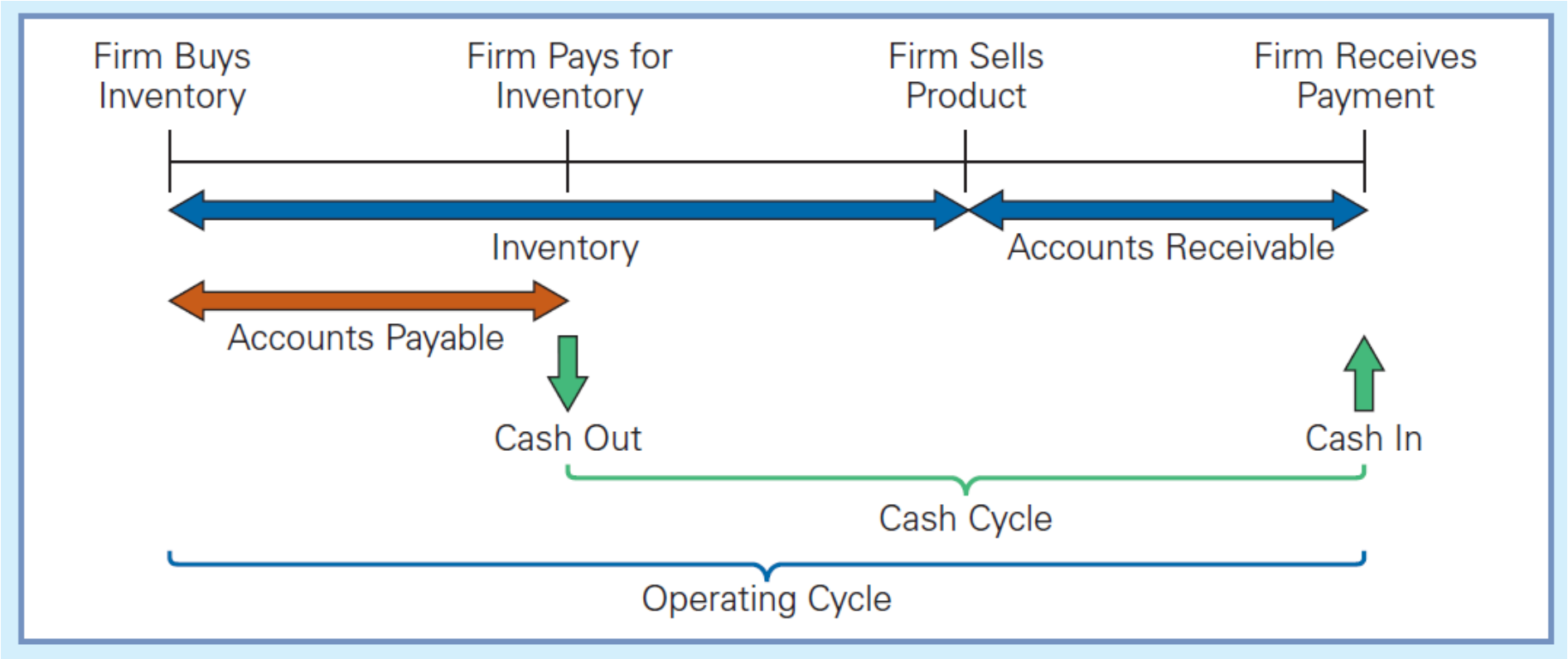
GLOBAL CONGLOMERATE CORPORATION

Income Statement
Year Ended December 31 (in $ million)

	2012	2011
Total sales	186.7	176.1
Cost of sales	(153.4)	(147.3)
Gross Profit	33.3	28.8
Selling, general, and administrative expenses	(13.5)	(13.0)
Research and development	(8.2)	(7.6)
Depreciation and amortization	(1.2)	(1.1)
Operating Income	10.4	7.1
Other income	—	—
Earnings Before Interest and Taxes (EBIT)	10.4	7.1
Interest income (expense)	(7.7)	(4.6)
Pretax Income	2.7	2.5
Taxes	(0.7)	(0.6)
Net Income	2.0	1.9
Earnings per share:	$0.556	$0.528
Diluted earnings per share:	$0.526	$0.500

[3] Source: Berk and DeMarzo (2014), Corporate Finance, 3rd edition, p. 29.

❍ Cash Conversion Cycle (CCC) and Operating Cycle (OC)[4]



[4] Source: Berk and DeMarzo (2014), Corporate Finance, 3rd edition, p. 887.

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❍ Cash Conversion Cycle

- **Operating Cycle (OC)**: Duration from the moment of purchasing materials until the payment of the produced goods by customers.

Operating Cycle = Inventory Days + Accounts Receivable Days

- **Cash Conversion Cycle (CCC):** Duration from the moment of purchasing materials until cash inflow through the sale of produced goods.

Cash Concersion Cycle = Operating Cycle – Accounts Payable Days

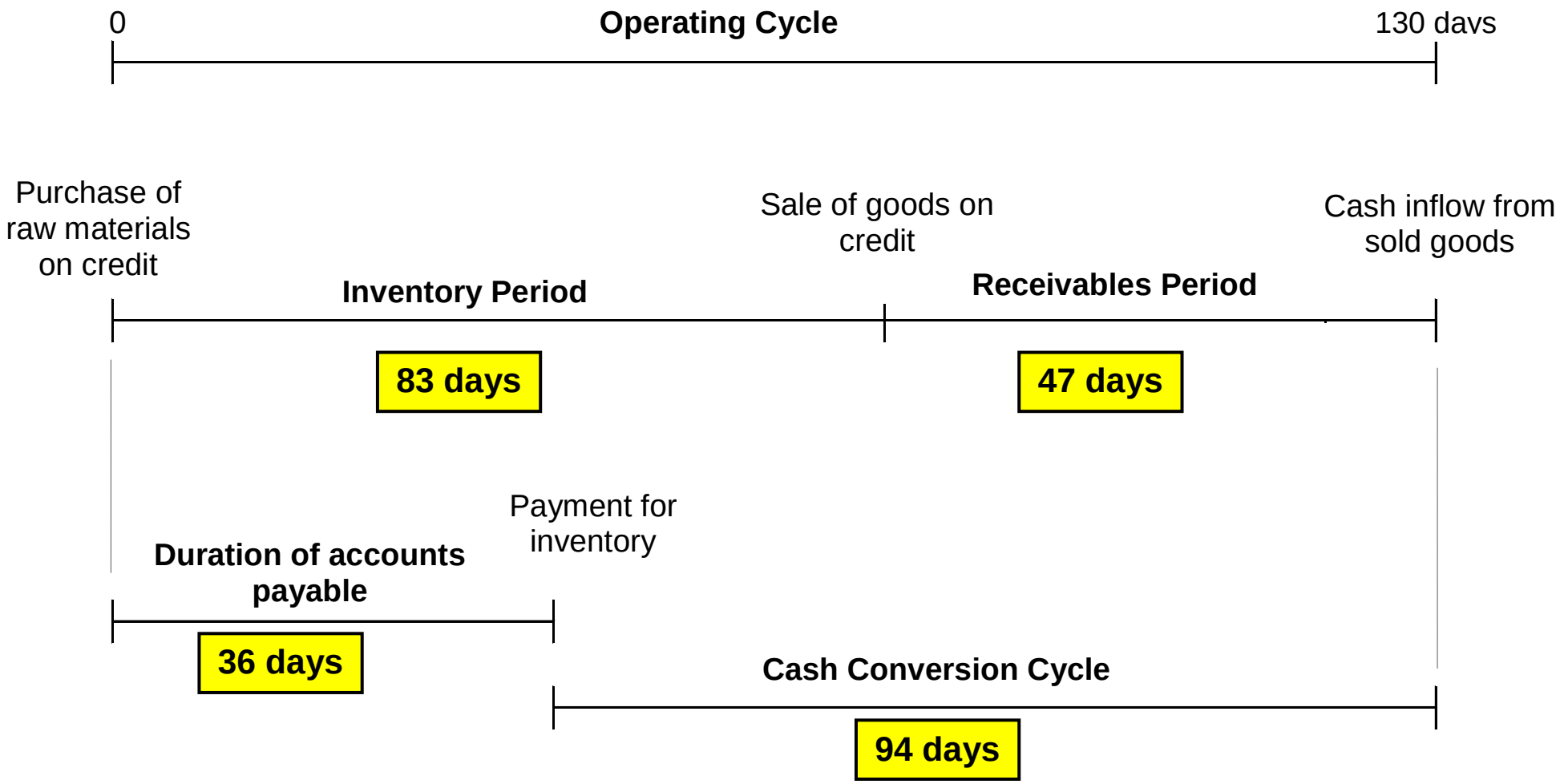
CCC and OC for Global Conglomerate Corporation:

$$\text{Accounts Receivable Days} = \frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$$

$$\text{Inventory Days} = \frac{\text{Inventory}}{\text{Average Daily Cost of Goods Sold}}$$

$$\text{Accounts Payable Days} = \frac{\text{Accounts Payable}}{\text{Average Daily Cost of Goods Sold}}$$

Example: OC and CCC for Nike in 2012



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Cash Conversion Cycle for some Companies in 2012[5]

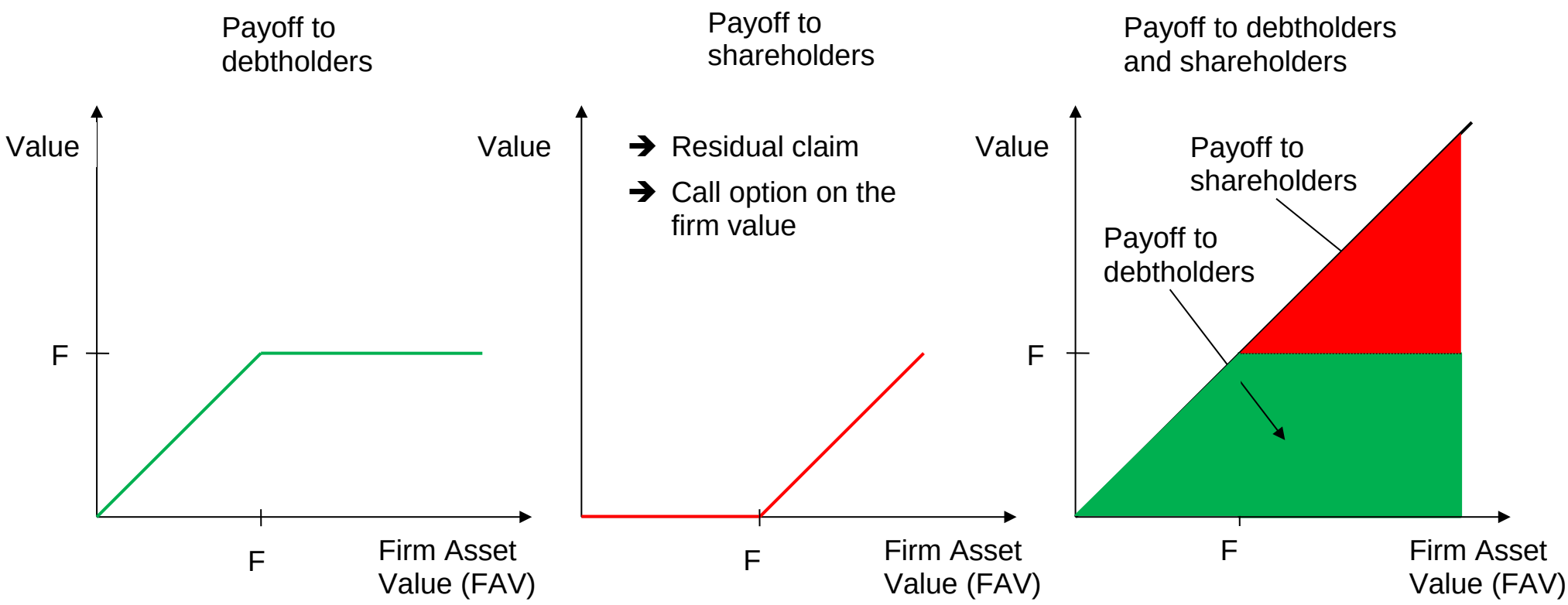
Company	Ticker	Industry	Accounts Receivable Days	Inventory Days	Accounts Payable Days	CCC
Verizon Communications	VZ	Telecommunications	36	8	116	−72
The Washington Post	WPO	Publishing	34	1	95	−60
Apple	AAPL	Computer Hardware	19	5	77	−53
Pepsico	PEP	Beverages	38	45	118	−35
Southwest Airlines	LUV	Airlines	8	12	31	−11
Amazon.com	AMZN	Internet Retail	14	41	66	−11
Chipotle Mexican Grill	CMG	Restaurants	1	2	11	−8
Microsoft	MSFT	Software	67	28	93	2
Bristol-Myers Squibb	BMY	Pharmaceuticals	59	125	180	4
The Kroger Co.	KR	Grocery Stores	4	24	22	6
Wal-Mart Stores	WMT	Superstores	4	44	40	8
FedEx	FDX	Air Freight	40	5	19	26
Starbucks	SBUX	Restaurants	12	77	24	65
Nordstrom	JWN	Department Stores	64	67	60	71
Sears Holdings	SHLD	Department Stores	6	115	43	78
Nike	NKE	Footwear	47	83	36	94
Sotheby's	BID	Auction Services	183	88	60	211
Constellation Brands	STZ	Distillers and Vintners	65	324	34	355
KB Home	KBH	Homebuilding	18	392	20	390
Tiffany & Co.	TIF	Luxury Goods	18	525	57	486
Major U.S. Firms (value-weighted Average)			44	65	66	43

Source: www.capitaliq.com

[5] Source: Berk and DeMarzo (2014), Corporate Finance, 3rd edition, p. 888.

❍ Corporate securities as contingent claims on total firm value

- What is the essential difference between debt and equity?
- Just think: What happens to the payoffs to debt and equity when the value of the firm changes?
- Basic feature of debt: It is promised by the borrowing firm to repay a fixed Euro amount by a certain date.



F: Promised payoff to debtholders, e.g. €100

FAV-F: Payoff to shareholders if (FAV - F) > 0, otherwise the payoff is 0.

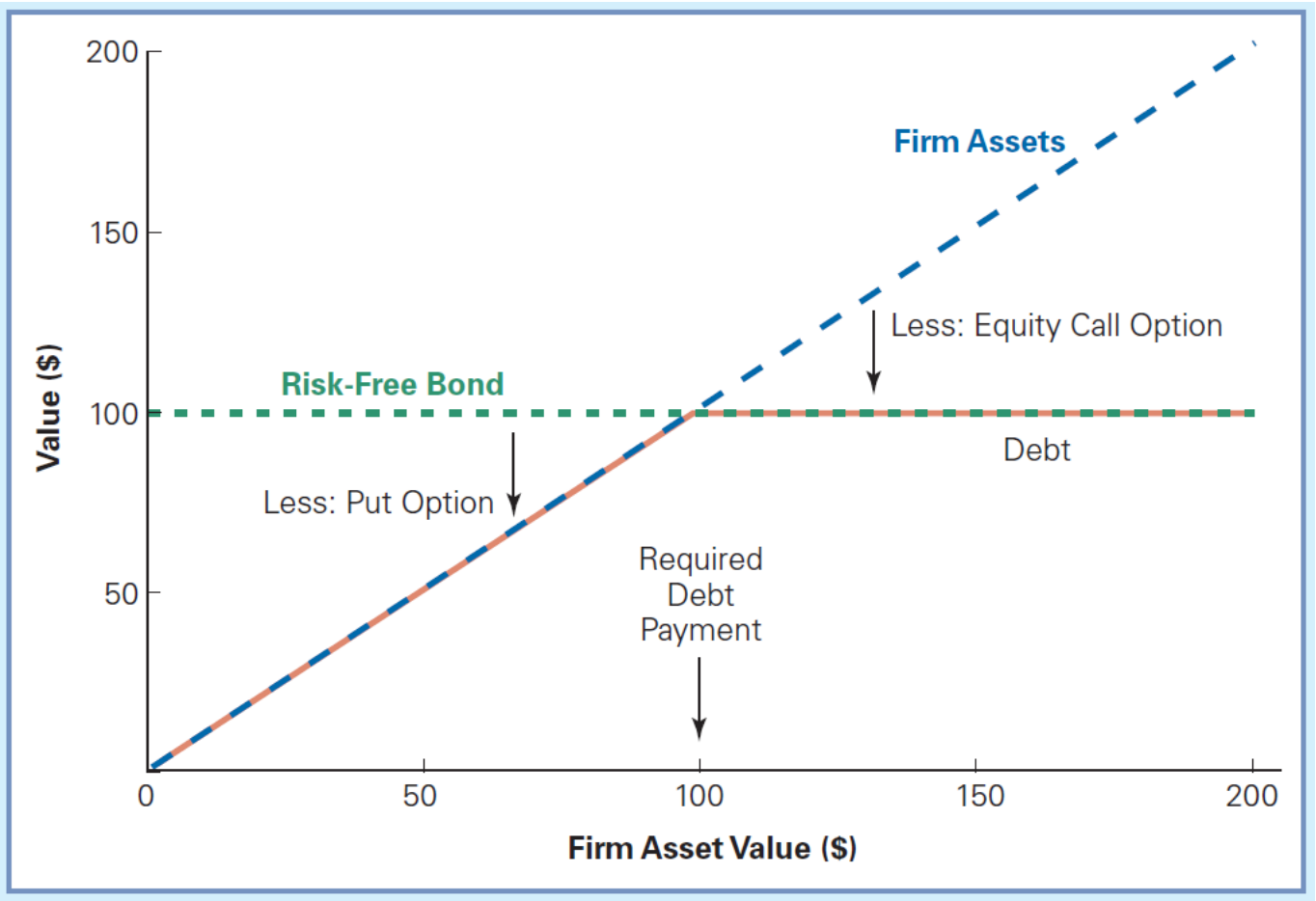
- **Equity as a Call Option on the Firm Asset Value**

  If the value of the firm's assets exceeds the pending debt, the equity holders receive the value that remains after all debt positions have been repaid.

  If the pending debt exceeds the firm asset value, the firm is bankrupt and its equity is worthless.

  Therefore, the payoff to equity is equivalent to a call option on the firm's assets with a strike (or exercise) price equal to the pending debt.

- **Debt as an Option Portfolio**[6]



[6] Source: Berk and DeMarzo (2014), Corporate Finance, 3rd edition, p. 728.

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If the value of the firm's assets exceeds the pending debt, debt holders can be fully repaid.

Otherwise, the firm is bankrupt and the debt holders receive all left firm assets, i.e. nothing is left for the equity holders (company owners).

Important:

The payoff to debt (the orange line in the graph on the previous page) can be viewed either as

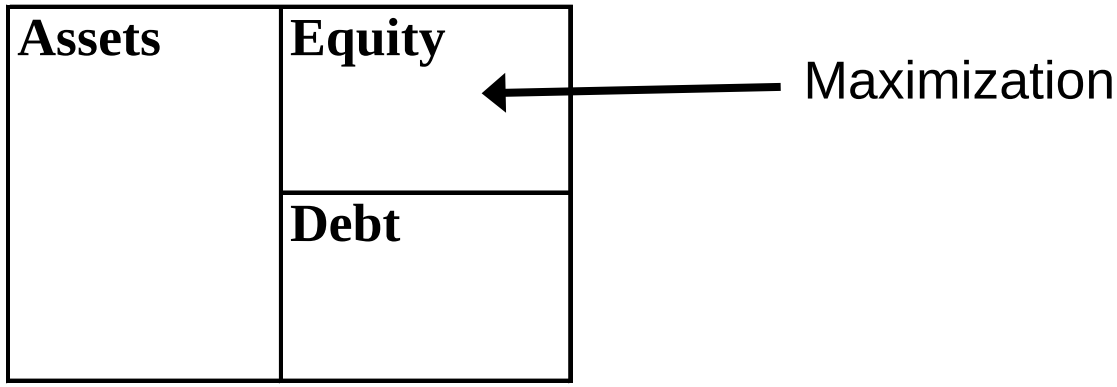
(i) the firm's assets **less** the equity call option, or

(ii) a risk-free bond **less** a put option on the firm's assets with a strike price equal to the pending debt.

❍ Goals of the corporate firm

- What is the primary goal of the corporation?
- Traditional answer: Managers make decisions for stockholders.
- Stockholders: Own and control the firm.
- Then, the goal is: to add value for the stockholders

  ➔ ‘shareholder value maximization’



- **Shareholder value maximization:** Are interests of others damaged?

  e.g. employees, lenders, customers, state

  ➔ **No**, if shareholder value maximization is a **long-term goal**.

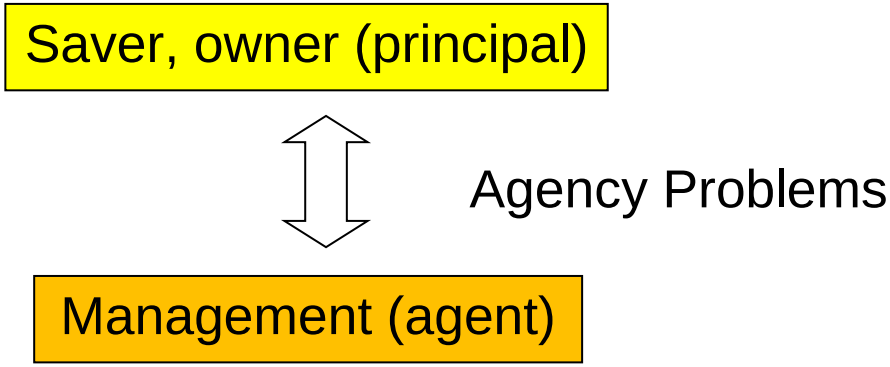
  ➔ As an optimal output in the long-run is **not** achievable via:

  - Bad working conditions (motivation ↓)
  - Products of low quality (revenue ↓)
  - Too much debt (danger of insolvency in economic stress situations)

- **Requirement for an overall (economic) optimum:**

  Supply of (a good) legal environment and **public goods** by the **state** (but only public goods). **Non public goods** should be provided by the **private sector**.

❍ Problems in realizing the long-term shareholder value maximization target:



- Savers (investors) that invest in a business firm typically do not intend to play an active role in its management.

  ➔ That responsibility is delegated to the entrepreneur/manager

- Self-interested entrepreneurs/managers have (sometimes) an incentive to make decisions that expropriate savers funds.

- **'Inappropriate' <u>spending of funds</u>** (see also Jensen and Meckling (1976))

  For example: managers can use/spend funds from savers

  - for investment or **operating decisions** that are harmful to the interest of outside investors

  - to pay **excessive compensation**

  - to generate **too high admin costs**

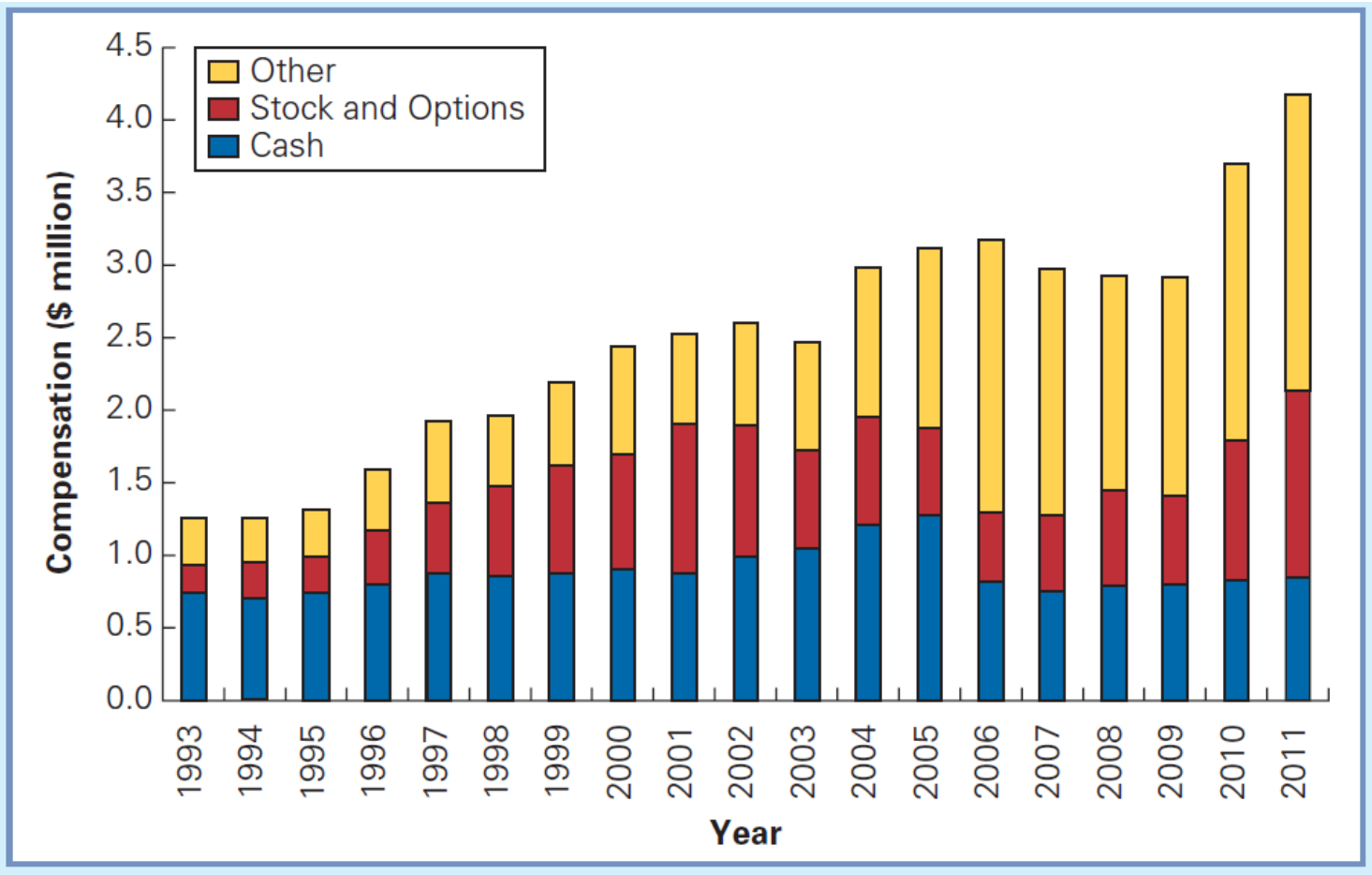
    (e.g. luxery cars, big business jets and office buildings, excessive meetings/events with clients/'friends' ➔ '**empire building**')

❍ Potential solutions to the agency problem

- Monitoring and discipline of management by board of directors
- Market for corporate control (e.g. hostile takeovers)
- Information intermediaries (e.g. financial analysts, rating agencies) engage in private information production to uncover any manager misuse of firm resources.
- Optimal contracts seeking to align the interests of the entrepreneur with those of external equity and debt holders

➔ Often used: **Stock options** as additional management compensation

- CEO Compensation[7]



Compensation for CEOs of the *1600 largest US public companies* over the period 1993 through 2011.
(Source: Execucomp)

Other payments include, e.g. long-term incentive payouts and deferred compensation.

[7] Source: Berk and DeMarzo (2014), Corporate Finance, 3rd edition, p. 966.

❍ **Example:** **Disadvantage** of stock options to align manager incentives with those of owners (stakeholders)

Suppose the current (t=0) stock price is €0.7 and managers are granted 1 million stock options as additional compensation, with:

Exercise price: €1.0 (one option one stock); time to maturity: 2 years; current (t=0) value of one option: €0.05

At t=0 the 1 million options are worth **£50,000**. If managers are able to increase the share price **from €0.7 to €2.0**, the **value of the options** would increase to **€1 million**!

Thus, managers have in this case a huge incentive to increase (maximize) shareholder (firm) value based on a quite **short horizon**:

➔ (more) **riskier projects**
➔ more (than optimal) **cost cutting** (products with lower quality)
➔ **higher financial leverage** (more debt, less equity)

2. Main additional aspects of Project Financing

2.1. What is Project Finance?

Project finance is the structured financing of a special economic entity.

➔ SPV: Special-Purpose Vehicle (= project company)

SPV: Is created by sponsors

SPV: Financed by equity and debt

SPV: Cash flows are the primary source of loan reimbursement

- **Typical features of a Project Finance deal:**

(a) The debtor is a **project company**, financially and legally **independent** from the sponsors.

(b) Lenders have only **limited (no) recourse** to sponsors.

(c) Cash flows generated by the SPV must be sufficient to **cover** payments for **operating costs** and to **service the debt** (capital repayment, interest).

(d) Collateral is often provided by sponsors to lenders.

2.2. Why is Project Finance used?

A sponsor can choose between **2 ways to finance a new project**:

- **Alternative 1 (Corporate Finance):**
  A new project is financed **on balance sheet**.

The sponsor is using all assets and cash flows from the existing firm to guarantee the additional credit provided by lenders.

If the project is not successful, all the remaining assets and cash flows can serve as a source of repayment for all creditors (old and new) of the combined entity (existing firm + new project).

Assets (in place)	**Equity** (existing)
	Debt (existing)
New Project	**New Equity**
	New Debt

- **Alternative 2 (Project Finance):**
  A new project is incorporated into a **new**ly created economic **entity**, the **SPV** and financed **off balance sheet** (**project financing (PF)**).

The new project and the existing firm are separated.

If the project is not successful, project creditors have (typically) no claims on the sponsoring firms' assets and cash flows.

Existing Firm (sponsor/parent of SPV)

Assets (in place)	**Equity** (existing)
	Debt (existing)

SPV (special purpose vehicle)

New Project	**New Equity**
	New Debt

2.3. What are the main advantages and disadvantages of Project Finance?

The main **disadvantage Project Finance** is that **structuring and organizing** such a deal is much **more costly** than the corporate financing alternative.

On average the total transaction cocts amount to **5-10%** of the total investment.

Reasons for these high costs:

- Legal, technical, and insurance **advisors**, loan arranger need time to **evaluate** the project and negotiate the contract terms.
- High **costs of monitoring** the project.
- Higher risks for lenders and, therefore, higher costs.

Thus, project finance does **in general NOT** offer a direct cost advantage.

Main advantages of **Project Finance** compared to Corporate Finance:[8]

(a) Agency cost motivation

- Project Finance can mitigate costly agency conflicts.
- SPV: Often highly leveraged capital structur (more debt compared to equity).
  - ↳ Has a disciplinary role, as it tends to prevent managers from wasting free cash flow.
- Lower agency costs may lower the financing costs.

[8] See e.g. Pinto and Alves (2016), Project Finance in Europe – An Overview and Discussion of Key Drivers, EIB Working Papers, 2016/04.

(b) Debt overhang motivation

- Companies with little debt capacity may not be able to invest in some positive NPV projects.
- In this case an SPV is crucial for sponsors as it does not impact the creditwortiness (rating) of the sponsor.

(c) Risk management motivation

- The SPV protects the sponsor from risk contaminations.
- And: Additional incentives for (improved) risk management in the SPV company (due to the higher leverage).
- Better risk management may lower the financing costs.

2.3. The market for Project Finance

(a) Regional composition of Project Finance[9]

	Loans (€m)		Bonds (€m)		% Bonds vs. Loans	
	2014	2013	2014	2013	2014	2013
North America	62,720	29,143	15,565	15,402	20%	35%
Europe	51,064	32,238	15,100	11,842	23%	27%
Latin America	13,763	8,162	4,931	3,870	26%	32%
Asia Pacific	60,306	51,843	4,091	2,166	6%	4%
Middle East Africa	27,166	26,637	1,899	2,454	7%	8%
Total	**215,019**	**148,021**	**41,584**	**35,735**	**16%**	**19%**

[9] Source: Association for Financial Markets in Europe (2015), Guide to infrastructure financing, p. 8, Figure 3.

(b) Industry composition of Project Finance (bonds) – global in 2014[10]

Sector	€m	%
Oil & Gas	15,000	36%
Infrastructure	14,952	36%
Power	9,047	22%
Social Infrastructure	1,212	3%
Petrochemicals	1,188	3%
Telecoms	186	0%
Total	**41,584**	

[10] Source: Association for Financial Markets in Europe (2015), Guide to infrastructure financing, p. 9, Figure 4.

(c) Composition of debt: Project Finance (PF) syndicated loans versus non-PF syndicated loans – global 2000-2014[11]

	Project Finance Loans			Non-Project Finance Loans		
	No of loans	**Total value ($ Bil.)**	**% of total value**	**No of loans**	**Total value ($ Bil.)**	**% of total value**
Credit Lines	836	110.4	5.2	79,363	20,891.3	51.8
Term Loans	10,114	1,992.8	94.8	110,960	19,445.9	48.2
Total	**10,950**	**2,103.2**	**100.0**	**190,323**	**40,337.2**	**100.0**

[11] Source: Pinto and Alves (2016), Project Finance in Europe – An Overview and Discussion of Key Drivers, EIB Working Papers, 2016/04, Appendix 1, Panel A.