1.040 Project Management
Spring 2009

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Project Finance

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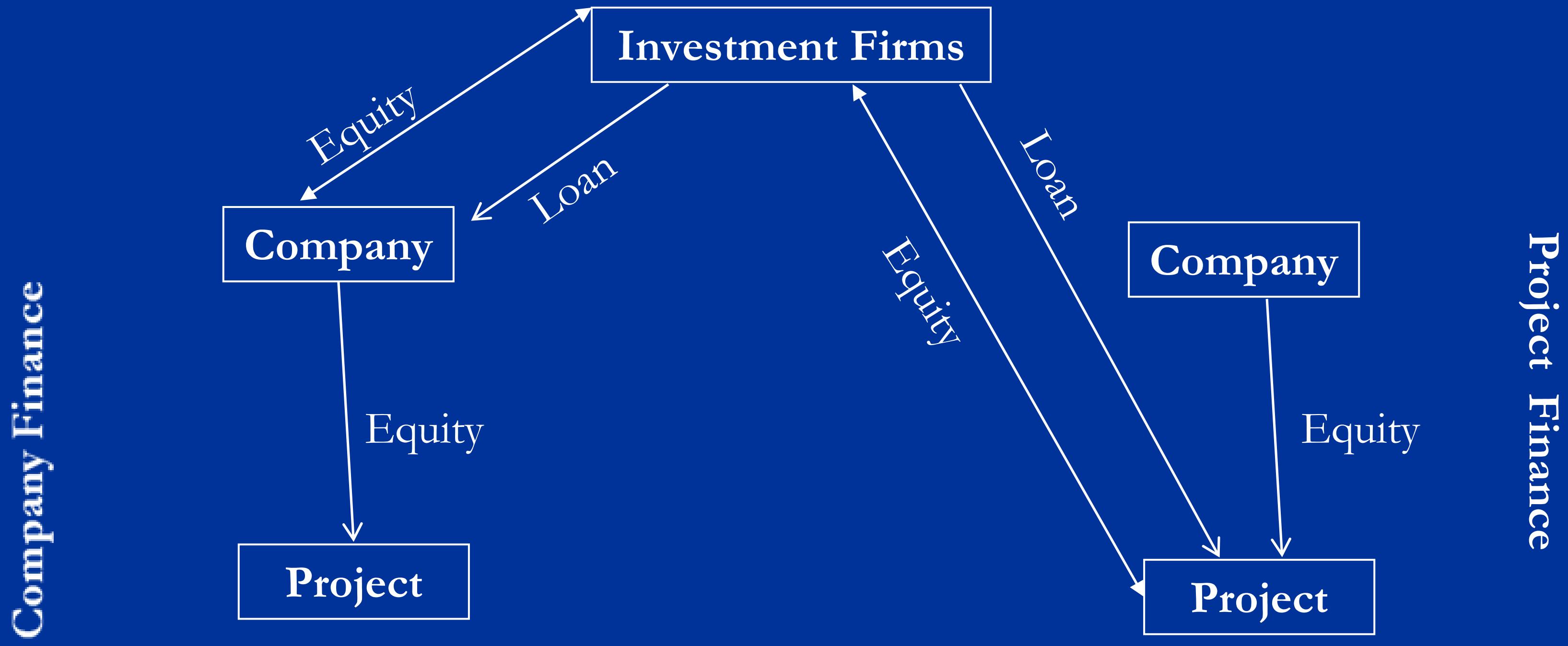
Project Financing

- Main Features
  - Economically separable capital investment
  - Cash Flow of the project the main source of the capital recovery
  - Assets of the project is the only source used as collateral
  - No recourse to the assets of sponsoring companies. Unless specifically required in the contract
  - Debt serving has priority over investors equity
  - During construction, interests on debt is accumulated as part of the debt.

Context: Feasibility Phases

- Project Concept
- Land Purchase & Sale Review
- Evaluation (scope, size, etc.)
- Constraint survey
  - Site constraints
  - Cost models
  - Site infrastructural issues
  - Permit requirements
- Summary Report
- Decision to proceed
- Regulatory process (obtain permits, etc)
- Design Phase

Finance


Company Finance
Investment Firms
Equity
Loan
Company
Equity
Project
Loan
Equity
Company
Equity
Project
Project Finance

Company Finance Vs. Project Finance

	Company Finance	Project Finance
Capital Formation	Will impact debt capacity	Will not impact debt capacity, because it is off balance sheet
Risk Exposure	Could impact overall risk structure or the cost of capital	Limited
Tax Shield	Hard to take advantage of	Easier to bundle
Cash Flow	To corporate treasurer: subject to corporate policy on dividend	Directly to the investor
Cost of Project Financing	None	High due to setting up cost
Capital Cost	Company's track record	High Due to no history
Oversight by the Sponsors	None	Very Demanding

Analysis of Financial Performance

Strategic Objectives
(Long Run)

- **Market Share**
- **Growth Rate**
- **Market Leadership**
- **Technology Leadership**

Financial Objectives
(Short Run)

- **Return on Investment (ROI)**
- **Return on Equity (ROE)**
- **Return on Asset (ROA)**

Project Decision

- **Does the project make financial sense?**
- **Is the project within the overall strategic framework of the company?**
- **If there is a clash between the objectives, has financial evaluation correctly taken all the costs and benefits into account?**

Financial Ratios

- Profitability Ratios
- Liquidity Ratios
- Debt Ratios
- Activity Ratios
- Leverage Ratios

Summary of Financial Ratios

Profitability Ratios	Liquidity Ratio	Activity Ratios
Gross Point Margin An indication of margin available to cover operating expenses and yield profit (Sales – Cost of Goods Sold) /Sales	**Current Ratio** Indicates the extent to which the claims of short term creditors are covered by assets that are expected to be converted to cash in a period roughly corresponding to the maturity of liabilities Current Assets/Current Liabilities	**Inventory Turnover** When compared to industry averages, it provides an indication of whether a company has excessive/inadequate finished good invent. Sales/Inventory of finished goods
Operating Profit Margin An indication of firms profitability from current operations without regard to interest changes accounting from capital structure Profit Before Tax and Interest/Sales	**Quick Ratio (Acid Ratio)** A Measure of firms ability to pay off short term obligations without relying on the sale of its inventory (Current Asset-Inventory/Current Liability)	**Fixed Asset Turnover** A Measure of sales productivity and utilization of plant and equipment Sales/Fix Assets
Net Profit Margin Shows after tax profit per dollar of sales. Subpart profit margin indicates that the firm sales prices are relatively low or that costs are relatively high or both Profit After Tax/Sales	**Inventory to Newt Working Capital** A measure of the extend to which the firm's working capital ties up in inventory Inventory/(Current Assets- Current liabilities)	**Total Assets Turnover** A measure of utilization of all firm's assets ratio below the industry average indicates the company is not generating a sufficient volume of business, given its asset size Sales/Total Asset
Return to Total Asset A Measure of total investment in the enterprise. It is sometimes desirable to add interest to alter tax profits to add form the numerator of the ratio since the total assets are financed by creditors as well as by stockholders; hence it is accurate to measure the productivity of assets by the returns provided to both classes of investors Profit After Tax/Total Assets	**LEVERAGE RATIOS** **Debt to Asset Ratio** Measures the extend to which borrowed funds have been used to finance the firm's operation Total Debt/Total Equity	**Account Receivable Turnover** A Measure of the average length of time it takes the firm to collect the sale it made on credit Annual Credit Sale/Account Receivable **OTHER RATIOS**

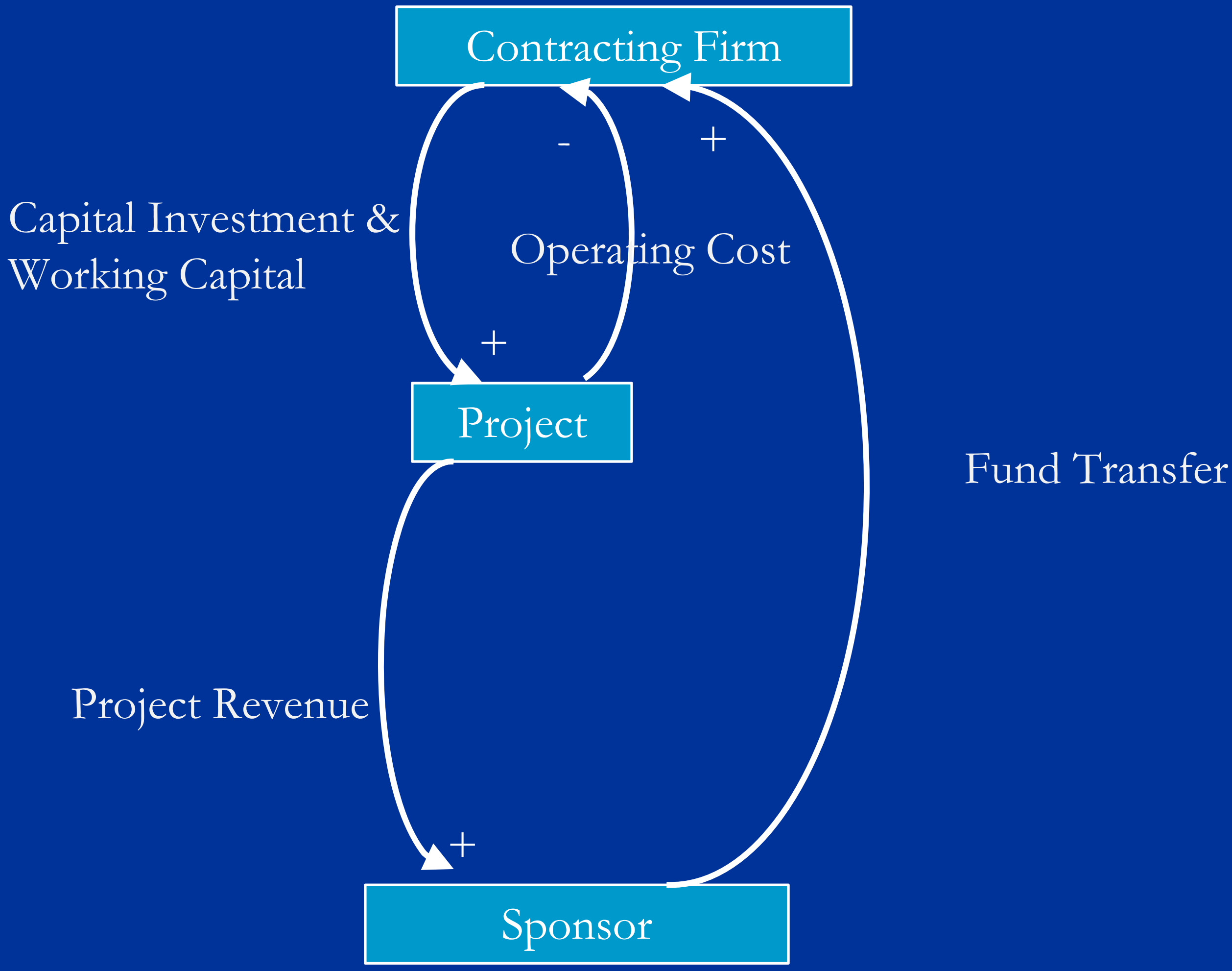
Summary of Financial Ratios

Profitability Ratios	Liquidity Ratios	Activity Ratios
Return on Stockholders Equity A measure of the rate of return on stockholders investment in the enterprises Profit After Tax Total Stockholders Equity – Par Value Pref. Stock)	**Debt Equity Ratio** Provides measure of the funds provided by creditors and equity in the firm's long term capital structure Long Term Debt/Total Shareholders	**Dividend Yield on Common Stock** Measure of returns to owners received in dividends Annual Dividend per share/Current Market Price
Return on Common Equity A measure of the rate of return on investment which the owners of the common stock have made in the enterprise (Profit After tax-Preferred Stock dividends) [Tot. Stockholders Equity-par value Pref. Stock]	**Long Term Debt to Equity Ratio** A widely used measure of balance between debt and equity in the firm's long term capital structure Long Term Debt/Total Shareholders	**Price Earnings Ratio** Faster growing or less-risky firms tend to have higher P/E than slower growing or risky firms Current Market Price/After tax Earning per share
Earning Per Share Shows the earnings available to the owners of each share of common stock (Profit After tax-Preferred Stock dividends) Number of Common Stocks Outstanding	**Time Interest-Earned Ratio** Measured the extent to which earnings can decline without the firm becoming unable to meet its annual costs . Profit Before Interest and Taxes/ Total Interest	**Dividend Payout Ratio** Percentage of profits as dividends Annual Dividends share/After tax Earning share
	Fixed Cost Coverage A more inclusive indication of the firms ability to meet all of its fixed charge obligations	Cash Flow Per Share A measure of the discretionary funds over and above expenses that are available for use by the firm After tax Profits + Depreciation Number of Common Shares Outstanding

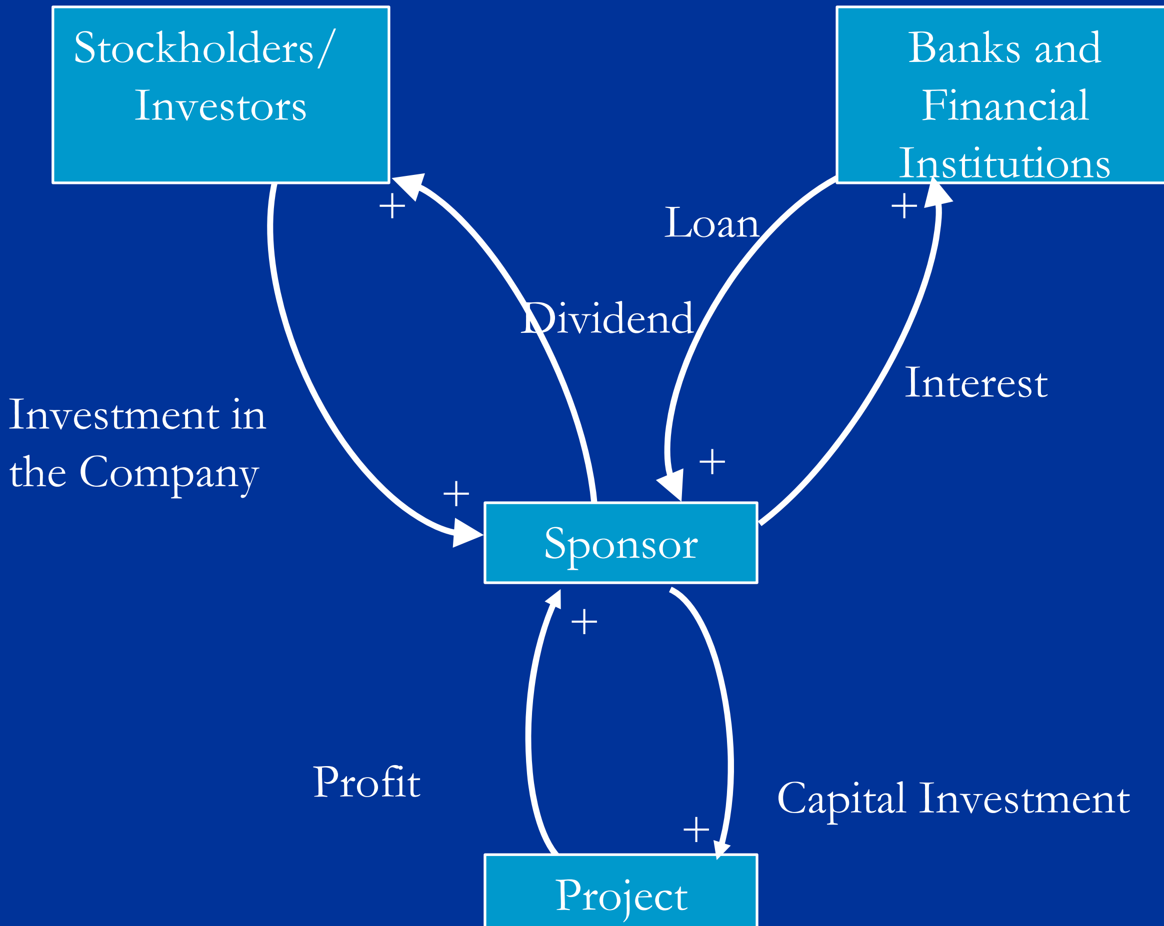
In Construction

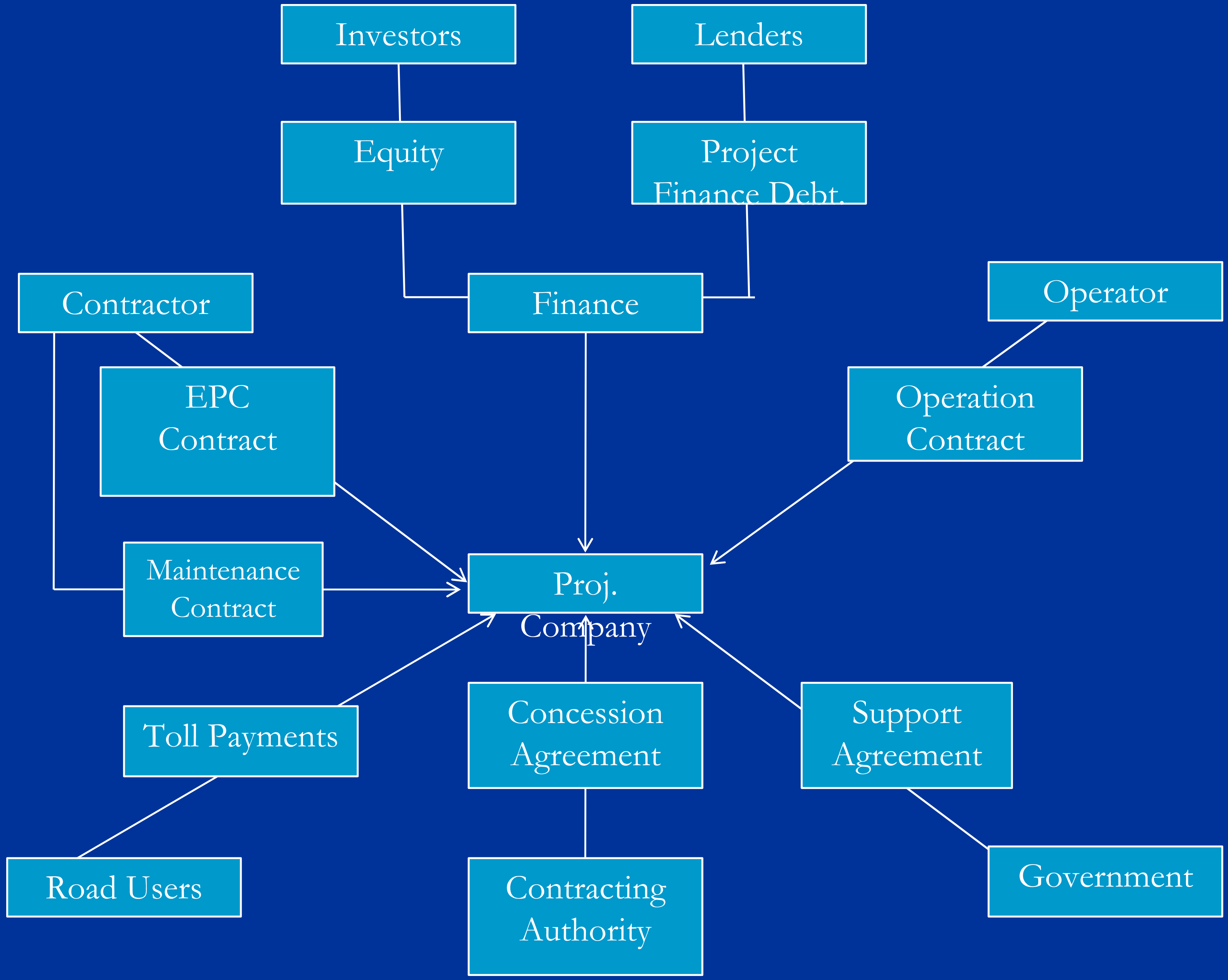
- Liquidity Ratios:
  - Short term obligations:
    - Account Payable
    - Accrued Interest and Employee Benefits
    - Advanced billings on contracts
  - Short Term Assets
    - Cash Accounts Receivable
    - Inventory
    - Contract in Progress

Relation Between Contracting Firm, Sponsor and Project

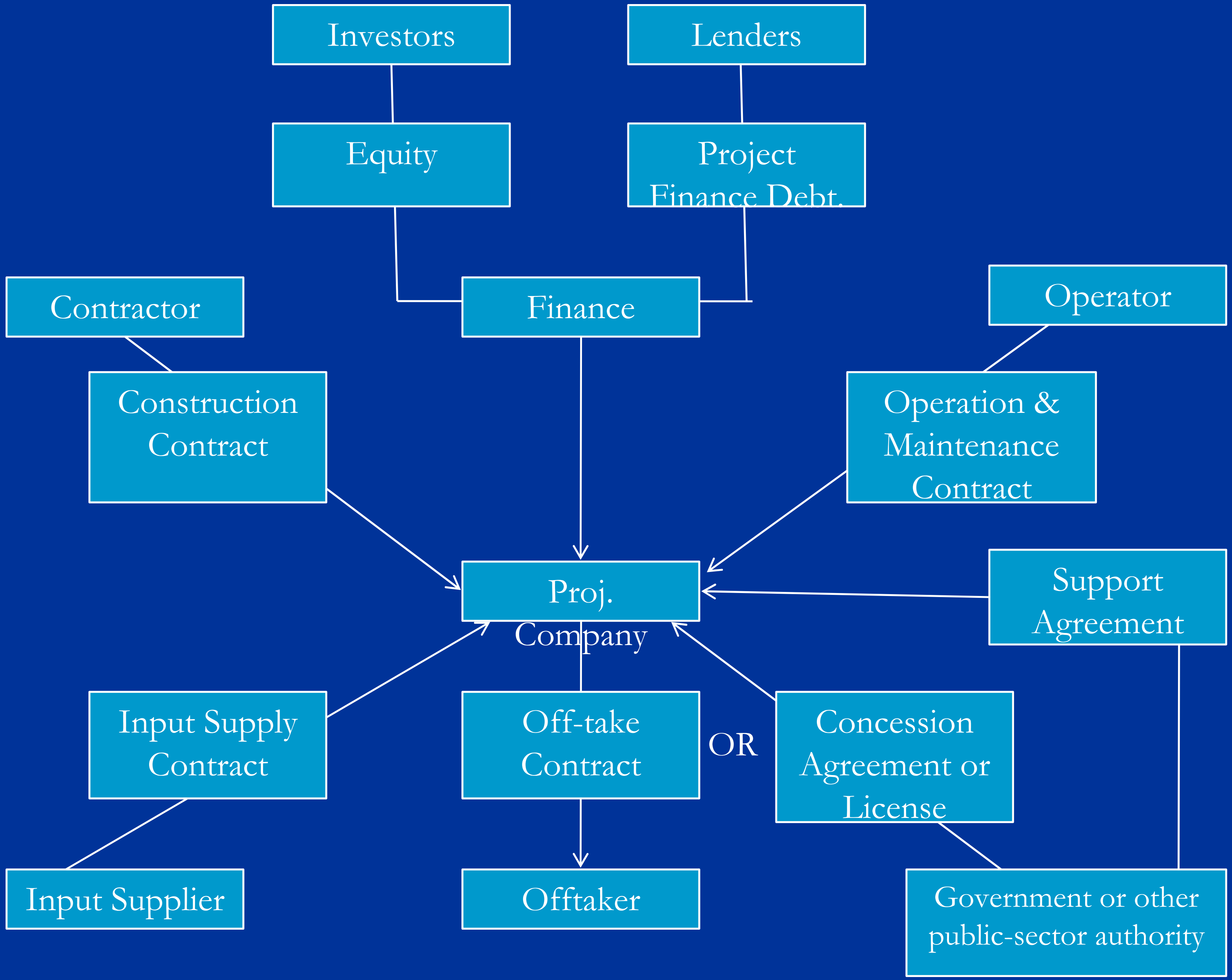


Traditional Financing Structure





Toll Road Project Finance Structure



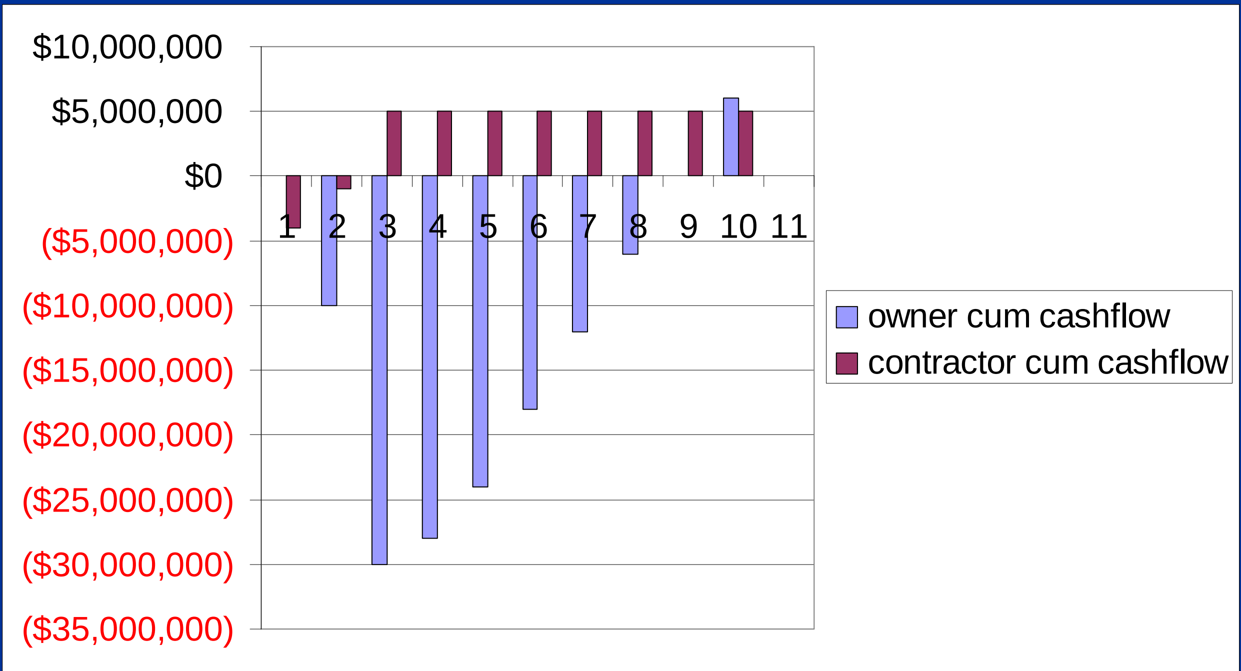
Simplified Project Finance Structure

Financing – Gross Cashflows

Design/Preliminary Construction

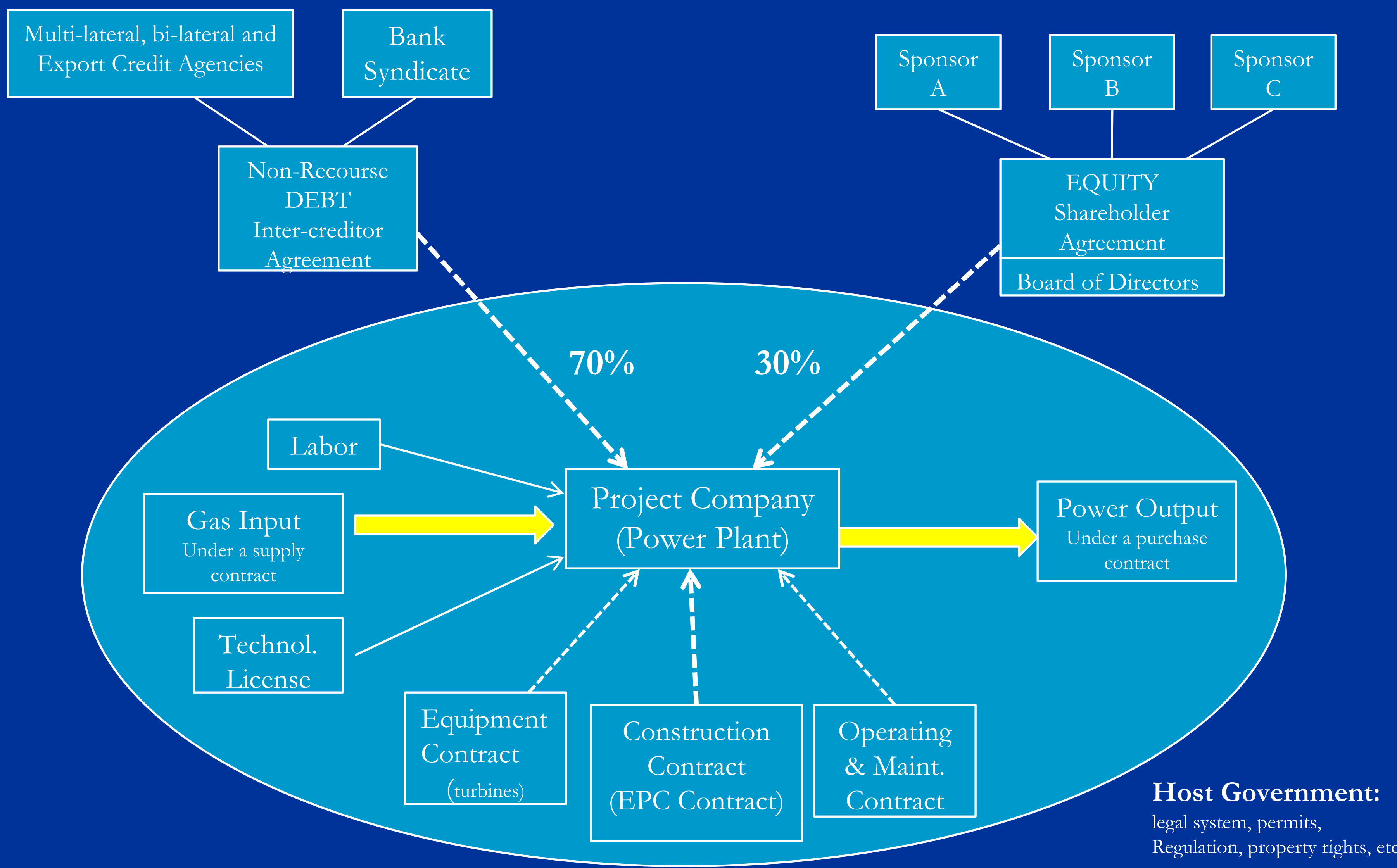
years	1	2	3	4	5	6	7	8	9	10
OWNER										
investment		($10,000,000)	($20,000,000)							
operation incomes				$2,000,000	$4,000,000	$6,000,000	$6,000,000	$6,000,000	$6,000,000	$6,000,000
owner cashflow	$0	($10,000,000)	($20,000,000)	$2,000,000	$4,000,000	$6,000,000	$6,000,000	$6,000,000	$6,000,000	$6,000,000
owner cum cashflow	**$0**	**($10,000,000)**	**($30,000,000)**	**($28,000,000)**	**($24,000,000)**	**($18,000,000)**	**($12,000,000)**	**($6,000,000)**	**$0**	**$6,000,000**
CONTRACTOR										
costs	($4,000,000)	($7,000,000)	($14,000,000)	$0	$0	$0	$0	$0	$0	$0
revenues	$0	$10,000,000	$20,000,000	$0	$0	$0	$0	$0	$0	$0
contractor cashflow	($4,000,000)	$3,000,000	$6,000,000	$0	$0	$0	$0	$0	$0	$0
contractor cum cashf	**($4,000,000)**	**($1,000,000)**	**$5,000,000**	**$5,000,000**	**$5,000,000**	**$5,000,000**	**$5,000,000**	**$5,000,000**	**$5,000,000**	**$5,000,000**

Owner investment = contractor revenue



- Early expenditure
- Takes time to get revenue

Typical Project Structure for IPP



Adapted from: Esty & Sesia; HBS Oct. 2007

Private Owners w/Collateral Facility
Distinct Financing Periods

- Short-term construction loan
  - Bridge Debt
    - Risky (and hence expensive!)
    - Borrowed so owner can pay for construction (cost)
- Long-term mortgage
  - Senior Debt
    - Typically facility is collateral
    - Pays for operations and Construction financing debts
    - Typically much lower interest
- Loans often negotiated as a package

Typical Terms

- Project Company has to complete the project under the terms of contract
- Public Authority provides the land and the right-of-way
- Ownership remains by the Public Sector
- Concession is given for limited period of time
- Operation and Management is in the hand of Project Company

Project Finance and Privatization

- Project finance should be distinguished from privatization, which:

  either conveys the ownership of public-sector assets to the private sector-this does not necessarily involve project finance; a privatized former state-owned company may raise any finance required through a corporate loan.

  or provides for services to be supplied by a private company that had previously been supplied by the public sector (e.g., street cleaning) – again, this does not necessarily involve project finance: the private company may not have to incur major new capital expenditure and so not require any finance at all, or may use a corporate loan to raise the finance to make the investment required to provide the service.

Project finance may come into the picture if a company needs finance for the construction of public infrastructure on the basis of a contract or license, e.g.,

- An Off-take Contract, based on which a project will be constructed to sell its output to a public-sector body (e.g., construction of a power station to sell electricity to a stat-owned power company)
- A Concession Agreement under which a project will be constructed to provide a service to a public-sector body (e.g., provision of a public-sector hospital building and facilities)
- A Concession Agreement under which a project will be constructed to provide a service to the general public normally provided by the public sector (e.g., a toll road)
- A Concession Agreement or license under which a project will be constructed to provide new services to the public (e.g., a mobile phone network).

Examples of other types of structured finance

- Receivables financing
- Securitization
- Leveraged buyout (“LBO”) or management buyout (“MBO”) financing
- Acquisition finance
- Asset finance
- Leasing

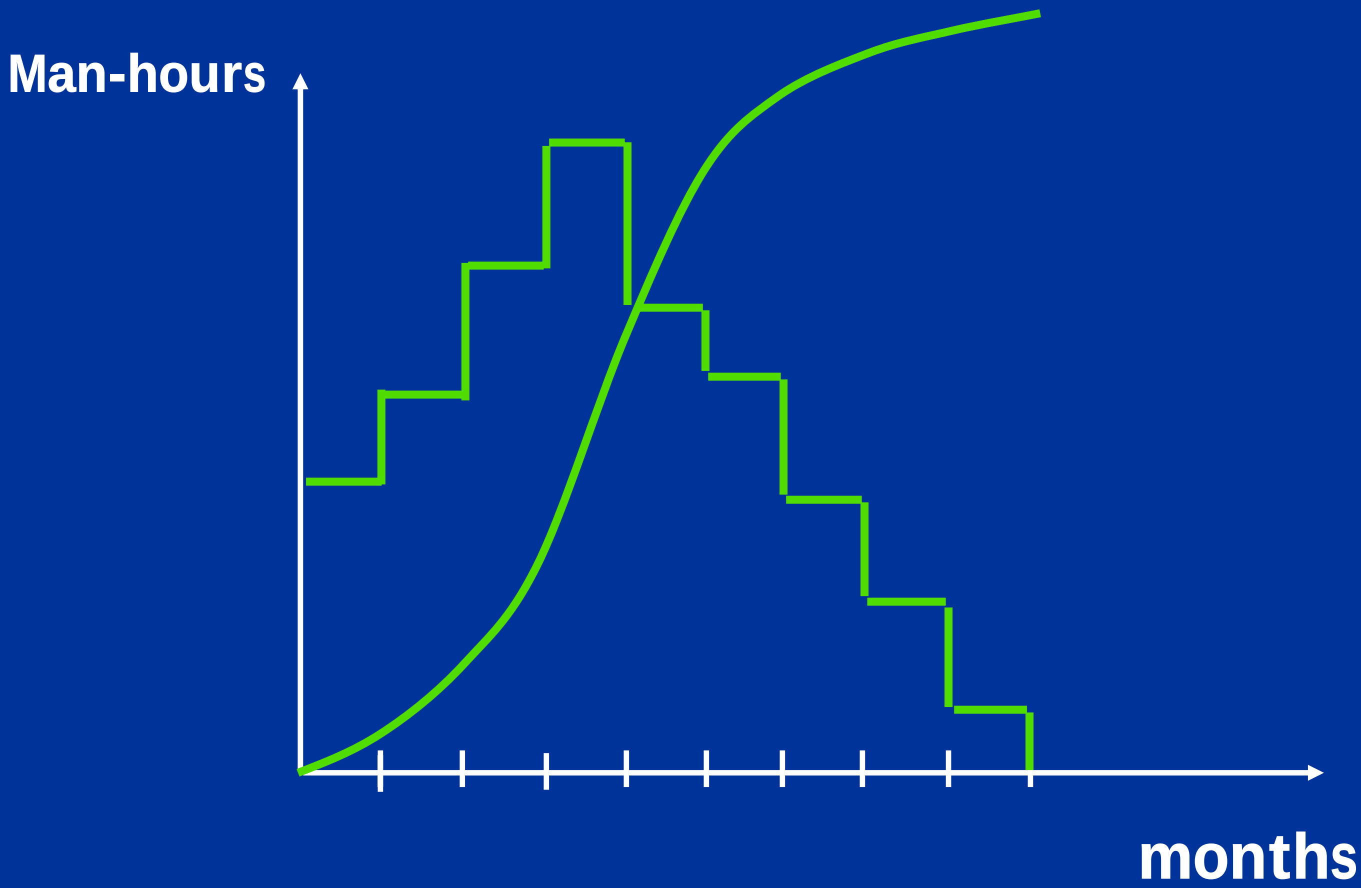
Benefit of Leverage on Investor's Return

		Low Leverage	High Leverage
	Project Cost	1,000	1,000
(a)	Debt	300	800
(b)	Equity	700	200
(c)	Revenue from project	100	100
(d)	Interest rate on debt (p.a.)	5%	7%
(e)	Interest payable [(a)x(d)]	15	56
(f)	Profit [(c) – (e)]	85	44
	Return on equity [(f)÷(b)]	12%	22%

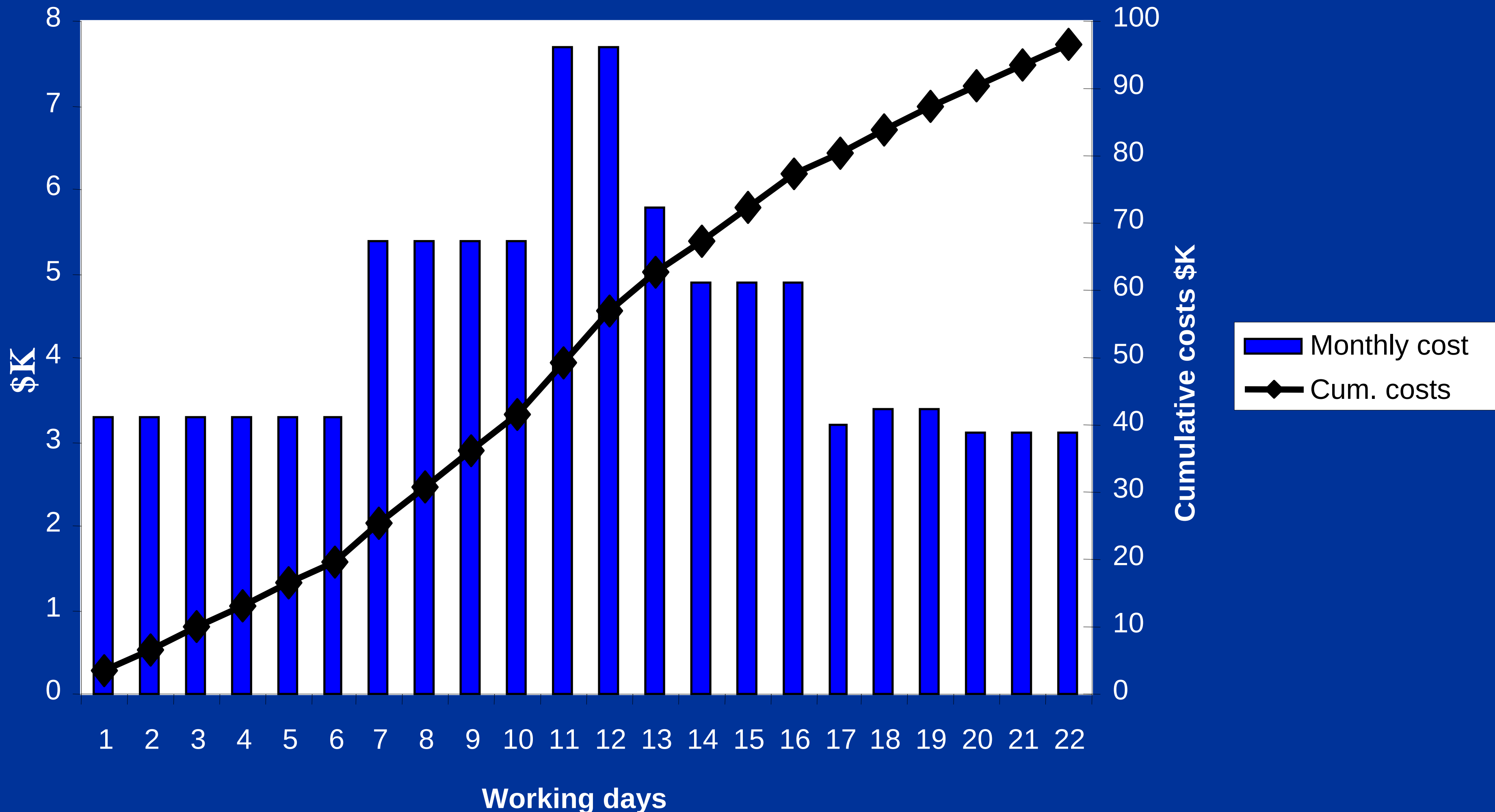
Contractor Financing

- Payment schedule
  - Break out payments into components
    - Advance payment
    - Periodic/monthly progress payment (itemized breakdown structure)
    - Milestone payments
  - Often some compromise between contractor and owner
  - Architect certifies progress
  - Agreed-upon payments
    - retention on payments (usually, about 10%)
  - Often must cover deficit during construction
  - Can be many months before payment received

S-curve Work

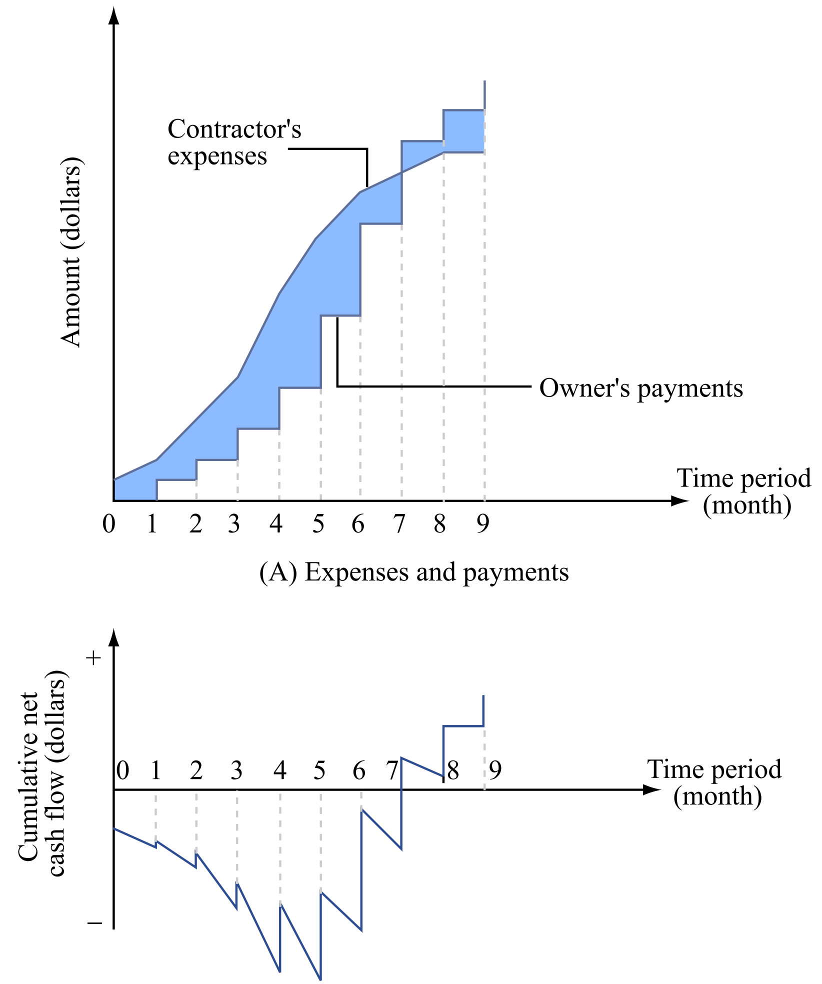


S-curve Cost



$K
8
7
6
5
4
3
2
1
0
100
90
80
70
60
50
40
30
20
10
0
Cumulative costs $K
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Working days
Monthly cost
Cum. costs

Expense & Payment



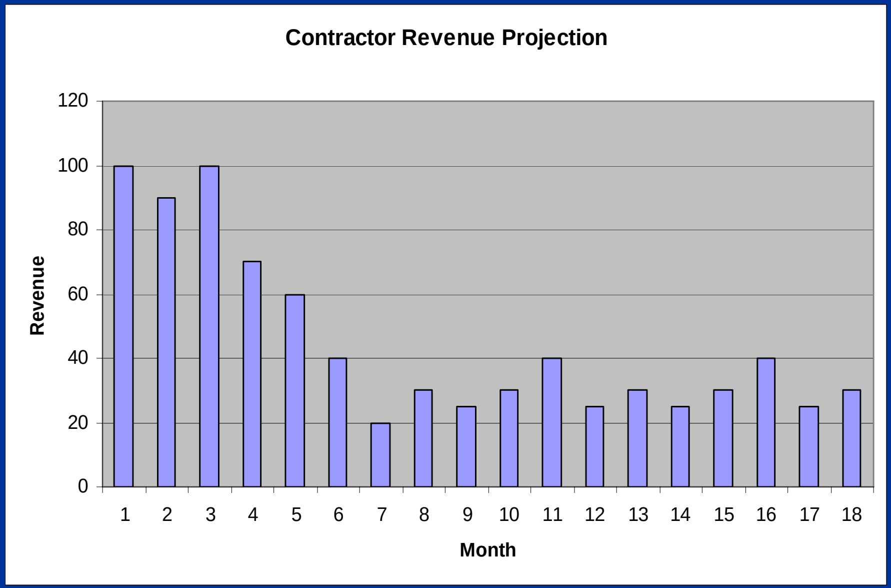
(A) Expenses and payments

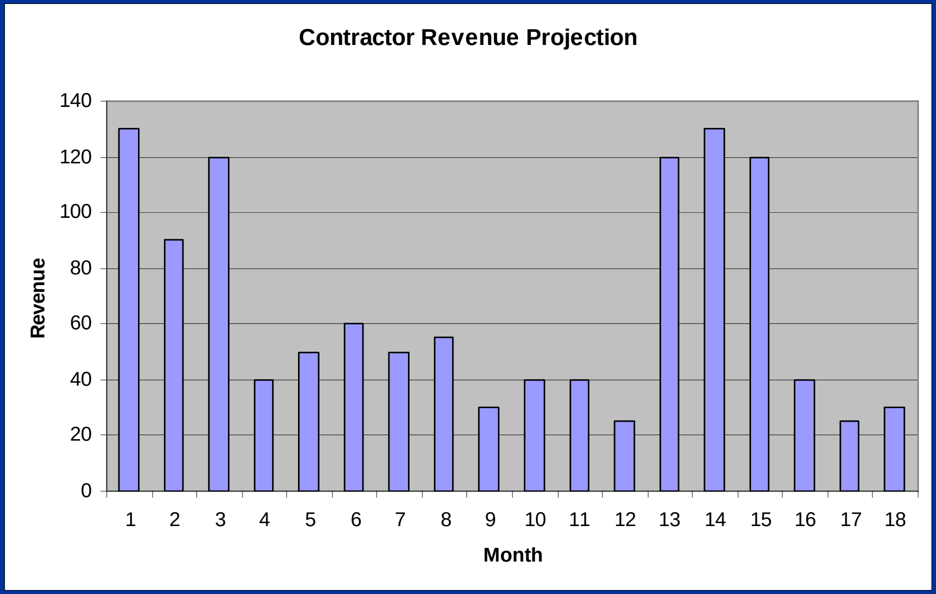
(B) Cumulative net cash flow of contractor

Image by MIT OpenCourseWare.

Contractor Financing

- Owner keeps an eye out for
  - Front-end loaded bids (discounting)
  - Unbalanced bids





Contractor Financing

- Owner keeps an eye out for
  - Front-end loaded bids (discounting)
  - Unbalanced bids
- Contractors frequently borrow from
  - Banks (Need to demonstrate low risk)
- Interaction with owners
  - Some owners may assist in funding
    - Help secure lower-priced loan for contractor
  - Sometimes assist owners in funding!
    - Big construction company, small municipality
    - BOT

Contractor Financing

- Agreed upon in contract
  - Often structure proposed by owner
  - Should be checked by owner (fair-cost estimate)
  - Often based on "Masterformat" Cost Breakdown Structure (Owner standard CBS)
- Certified by third party (Architect/engineer)

Latent Credit

- Many people forced to serve as lenders to owner due to delays in payments
  - Designers
  - Contractors
  - Consultants
  - CM
  - Suppliers
- Implications
  - Good in the short-term
  - Major concern on long run effects

Role of Taxes

- Tax deductions for
  - Depreciation -
    - the process of recognizing the using up of an asset through wear and obsolescence and of subtracting capital expenses from the revenues that the asset generates over time in computing taxable income
  - Others

Develop or Not Develop

- Is any individual project worthwhile?
- Given a list of feasible projects, which one is the best?
- How does each project rank compared to the others on the list?

Project Evaluation Example:

- Project A
- Construction=3 years
- Cost = $1M/year
- Sale Value=$4M
- Total Cost?
- Profit?

- Project B
- Construction=6 years
- Cost=$1M/year
- Sale Value=$8.5M
- Total Cost?
- Profit?