Project Finance

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Outline

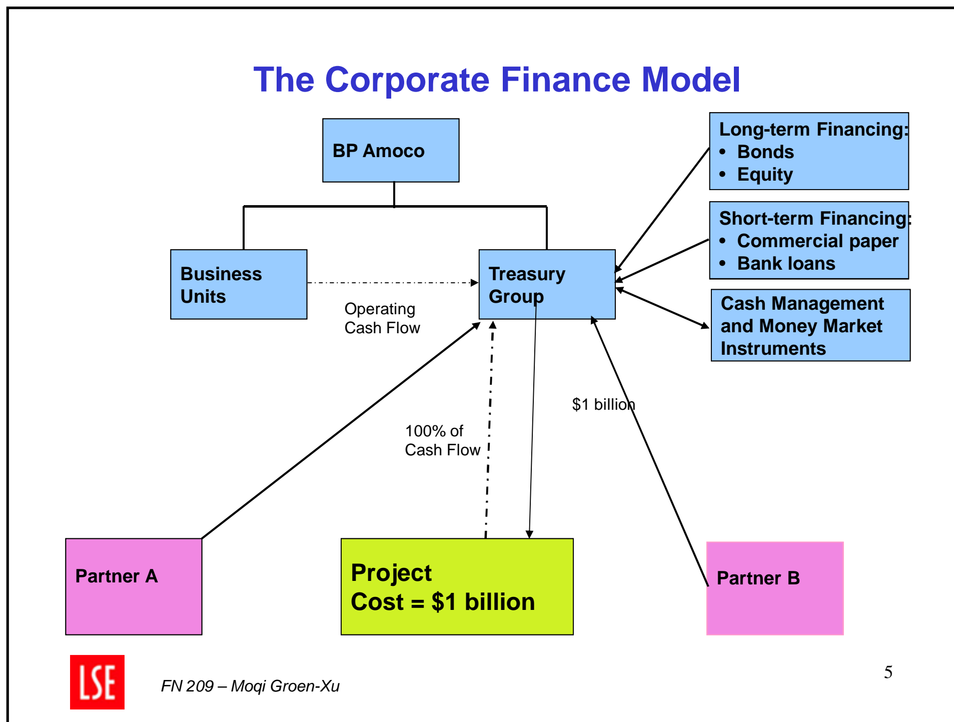
1. **Overview**
2. Financing
3. Advantages and disadvantages

Overview

What is project finance?

Project Finance involves

- a corporate sponsor investing in and owning
- a single purpose, industrial asset
- through a legally independent entity
- financed with non-recourse debt.


The Corporate Finance Model
BP Amoco
Business Units
Treasury Group
Operating Cash Flow
Long-term Financing:
• Bonds
• Equity
Short-term Financing:
• Commercial paper
• Bank loans
Cash Management and Money Market Instruments
$1 billion
100% of Cash Flow
Partner A
Project Cost = $1 billion
Partner B
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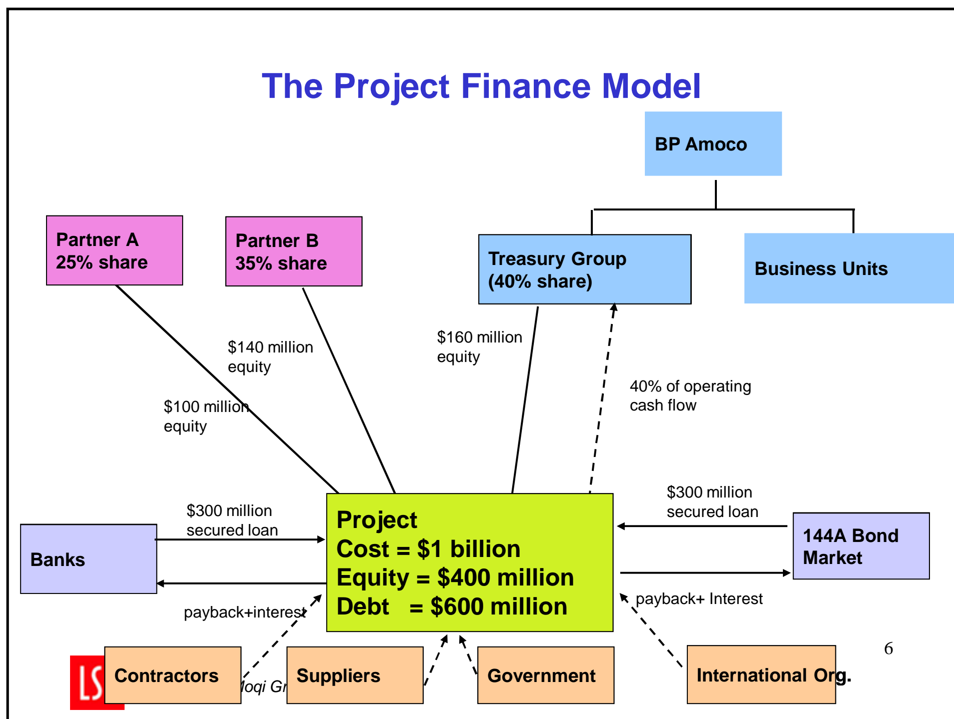
The Project Finance Model
BP Amoco
Partner A 25% share
Partner B 35% share
Treasury Group (40% share)
Business Units
$140 million equity
$160 million equity
$100 million equity
40% of operating cash flow
$300 million secured loan
$300 million secured loan
Banks
Project
Cost = $1 billion
Equity = $400 million
Debt = $600 million
144A Bond Market
payback+interest
payback+ Interest
Contractors
Suppliers
Government
International Org.
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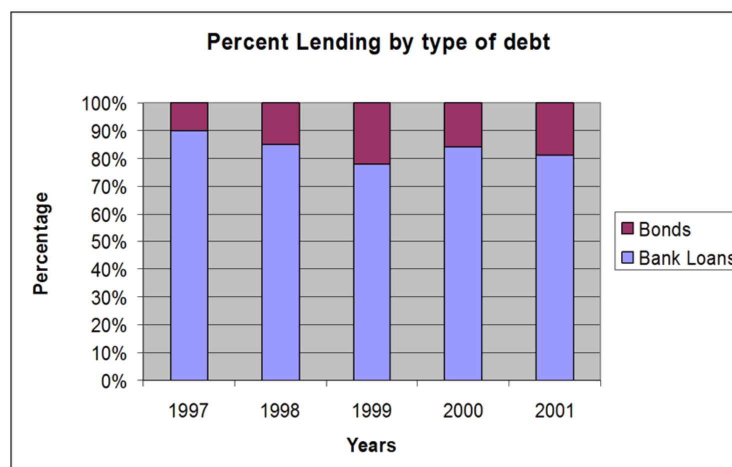
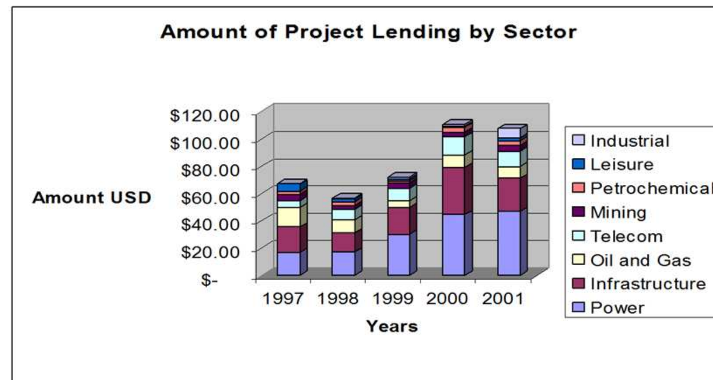
Some statistics

- Outstanding Statistics
  - Over $220bn of capital expenditure using project finance in 2001
  - $68bn in US capital expenditure
  - Smaller than the $434bn corporate bonds market, $354bn asset backed securities market and $242bn leasing market, but larger than the $38bn IPO and $38bn Venture capital market
- Some major deals
  - $4bn Chad-Cameroon pipeline project
  - $6bn Iridium global satellite project
  - $1.4bn aluminum smelter in Mozambique
  - €900m A2 Road project in Poland

Project Finance Statistics



Project Finance Statistics



- 37% of overall lending in Power Projects, 27% in telecom.
- 5-Year CAGR for Power Projects: 25%, Oil & Gas:21% and Infrastructure: 22%.

Major Players

- **Sponsors**
- **Banks**
- **Bond-holders**
- **Government**
  - Role of type of contract: Build-own-operate (BOO) or Build-operate-transfer (BOT) or build-own-operate-transfer (BOOT).
  - Control on revenues:
    - + Examples: Eurostar, British rail,
- **Suppliers and Contractors**
  - Role of Turn-key contracts
- **Customers**

Main Characteristics

- **Independent, single purpose company formed to build and operate the project.**
- **Extensive contracting**
  - As many as 15 parties in up to 1000 contracts.
  - Contracts govern inputs, off take, construction and operation.
  - Government contracts/concessions: one off or operate-transfer.
  - Ancillary contracts include financial hedges, insurance for Force Majeure, etc.
- **Highly concentrated equity and debt ownership**
  - One to three equity sponsors.
  - Syndicate of banks and/or financial institutions provide credit.
  - Governing Board comprised of mainly affiliated directors from sponsoring firms.
- **Extremely high debt levels**
  - Mean debt of 70% and as high as nearly 100%.
  - Balance of capital provided by sponsors in the form of equity or quasi equity (subordinated debt).
  - Debt is non-recourse to the sponsors.
  - Debt service depends exclusively on project revenues.
  - Has higher spreads than corporate debt.

Financing

Bank loans

Public bonds

Agency loans

Advantages and disadvantages

Advantages: Solution to the Hold Up Problem

Problem

Hold up: Opportunistic behavior by trading partners: ***hold up***. Ex-ante reduction in expected returns

Standard Approach

- Vertical integration.
- Long term contract.

Project Finance Approach

- Joint ownership.
- High debt level.

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Advantages: Solution to the Expropriation Problem

Problem

Expropriation: Opportunistic behavior by host governments. Either direct through asset seizure or creeping through increased tax/royalty. Ex-ante increase in risk and required return

Standard Approach

- Visibility/reputation
- High leverage.

Project Finance Approach

- High leverage.
- Joint Ownership.
- Multilateral lenders' involvement.

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Advantages: Solution to Debt/Equity holder conflict

Problem
Debt/Equity holder conflict in distribution of cash flows, re-investment and restructuring during distress.

Standard Approach
- Cash flow waterfall reduces managerial discretion and thus potential conflicts in distribution and re-investment.
- Strong debt covenants allow both equity/debt holders to better monitor management.

Project Finance Approach

- Clear allocation of priorities and property rights.
- Earmarking of revenue.
- To facilitate restructuring, concentrated debt ownership and less classes of debtors are preferred.

Other Advantages: Taxes, Location, Heterogenous Partners

- **Tax**: An independent company can use tax holidays.

- **Location:** Large projects in emerging markets cannot be financed by local equity due to supply constraints. Investment specific equity from foreign investors is either hard to get or expensive. Debt is the only option and project finance is the optimal structure.

- **Heterogeneous partners**:
  - Financially weak partner needs project finance to participate.
  - Financially weak partner if using corporate finance can be seen as free-riding.
  - The bigger partner is better equipped to negotiate terms with banks than the smaller partner and hence has to participate in project finance.

Advantages: Solution to Risk Contamination

Problem

- A high risk project can potentially drag a healthy corporation into ***distress***. Short of actual failure, the risky project can increase cash flow volatility and reduce firm value. Conversely, a failing corporation can drag a healthy project along with it.

Standard Approach

- Hedging

Project Finance Approach

- Project financed investment exposes the corporation to losses only to the extent of its equity commitment, thereby reducing its distress costs.
- Through project financing, sponsors can share project risk with other sponsors. Pooling of capital reduces each provider's distress cost due to the relatively smaller size of the investment and therefore the overall distress costs are reduced.

Main Idea

Combined cash flow variance (of project and sponsor) with joint financing increases with:

- –Relative size of the project.
- –Project risk.
- –Positive Cash flow correlation between sponsor and project.

Firm value decreases due to cost of financial distress which increases with combined variance

Project finance is preferred when joint financing (corporate finance) results in increased combined variance.

Corporate finance is preferred when it results in lower combined variance due to diversification (co-insurance).

Advantages: Solution to the Expropriation Problem

Corporate-financed investment involves the combination of 2 risky assets: Sponsor (S) + Project (P)

Total Risk = Variance of Combined returns

Compare Risk with and without investment: $Var(R_P+R_S)$ vs. $Var(R_S)$

Portfolio Theory tells us:

$$\mathbf{Var(R_P+R_S) = w_P^2 Var(R_P) + w_S^2 Var(R_S) + 2w_P w_S Corr(R_P+R_S)\sigma_P\sigma_S}$$

where:
w_P ,w_S = proportion of value in the project/sponsor
$Var(R_P)$, $Var(R_S)$ = variance of project/sponsor returns
σ_P ,σ_S = standard deviation of project/sponsor returns
$Corr(R_P ,R_S)$ = correlation of returns.

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Advantages: Solution to Risk Contamination

Financial Distress is costly

Expected distress costs = Prob(distress)*Cost of Distress

Probability(distress) is related to **Total Risk**.

Total Risk is a function of **Risk Contamination**.

So what factors matter the most for Risk Contamination?

- **Relative Size** = Project/(Project + Sponsor)
- **Project Risk** = $Var(R_P)$
- **Return Correlation** = $Corr(R_P,R_S)$

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Advantages: The Walkaway Option

- Downside exposure of the project (underlying asset) can be reduced by buying an insurance on the asset (written by the banks in the form of non-recourse debt).
- Project Finance generates such an insurance.
- Put premium is paid in the form of higher interest and fees on loans.
- The sponsor may not want to avail of project finance (from an options perspective) because it cannot walk away from the project because:
  - It is in a pre-completion stage and the sponsor has provided a completion guarantee.
  - If the project is part of a larger development.
  - If the project represents a proprietary asset.
  - If default would damage the firm's reputation and ability to raise future capital.

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Advantages: Solution to Asymmetric Information

Problem

- ***Asymmetric Information*** *increases monitoring costs and increases cost of capital.*

Standard Approach

- Disclosure.
- Analyst-relationship.
- Institutional shareholder, activist game.
- Signalling

Project Finance Approach

- Segregated cash flows enhance transparency, which decreases monitoring costs
- Segregation eliminates the need to analyze other corporate assets or cash flows
- Project structure reserves the sponsors' debt capacity/ flexibility to fund higher risk projects internally

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Advantages: Solution to Agency Problems (Free Cash Flows, Risk Shifting)

Problem
- ***Free cash flow***. Managerial mismanagement through wasteful expenditures and sub-optimal investments.
- ***Risk shifting***. Investment in high-risk negative NPV projects.

Standard Approach
- Traditional monitoring mechanisms such as takeover markets, staged financing, product markets absent.
- Reduce free cash flow through high debt service.
- Contracting reduces discretion.
- "Cash Flow Waterfall": Pre existing mechanism for allocation of cash flows. Covers capex, maintenance expenditures, debt service, reserve accounts, shareholder distribution.

Project Finance Approach
- Concentrated equity ownership provides critical monitoring.
- Bank loans provide credit monitoring.
- Separate ownership: single cash flow stream, easier monitoring.
- Senior bank debt disgorges cash in early years. They also act as "trip wires" for managers.

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Why Corporate Finance Can't Deter Opportunistic Behavior ?

- Direct expropriation can occur without triggering default.
- Creeping expropriation is difficult to detect and highlight.
- Multi-lateral lenders which help mitigate sovereign risk lend only to project companies.
- Non-recourse debt had tougher covenants than corporate debt and therefore enforces greater discipline.
- In the absence of a corporate safety net, the incentive to generate free cash is higher.

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Disadvantages

- Higher transaction costs due to creation of an independent entity. Can be up to 60bp.
- Project debt is substantially more expensive (50-400 basis points) due to its non-recourse nature.
- Extensive contracting restricts managerial decision making.
- Often takes longer to structure than equivalent size corporate finance.
- Project finance requires greater disclosure of proprietary information and strategic deals.
- Loss of managerial flexibility

Alternative Sources of Risk Mitigation

Risk	Solution
Completion Risk	Contractual guarantees from manufacturer, selecting vendors of repute.
Price Risk	Hedging
Resource Risk	Keeping adequate cushion in assessment.
Operating Risk	Making provisions, insurance.
Environmental Risk	Insurance
Technology Risk	Expert evaluation and retention accounts.

Alternative Approach to Risk Mitigation

Political and Sovereign Risk	• Externalizing the project company by forming it abroad or using external law or jurisdiction • External accounts for proceeds • Political risk insurance (Expensive) • Export Credit Guarantees • Contractual sharing of political risk between lenders and external project sponsors • Government or regulatory undertaking to cover policies on taxes, royalties, prices, monopolies, etc • External guarantees or quasi guarantees
Interest Rate Risk	Swaps and Hedging
Insolvency Risk	Credit Strength of Sponsor, Competence of management, good corporate governance
Currency Risk	Hedging