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<td>Principles of Regulation</td>
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<td>6</td>
<td>Case Study</td>
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</tbody>
</table>
Public-Private Partnership (PPP): 
*Private Sector Participation in financing, building and/or operating public infrastructures*

PPP should be firstly considered as a tool for an economic development policy and for the reforms engaged by a Government.

The use of PPP allows:
- A greater flexibility of the public budgets *even if a PPP cannot be reduced to an infrastructure financial vehicle notion*
- The optimization of public projects by using the best management skills, more especially in term of *service quality improvement*
Main obstacles to its implementation:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream</td>
<td>• A meticulous planning</td>
</tr>
<tr>
<td>During the project set-up</td>
<td>• A reinforced comprehensive capacity of the stakes (especially for the public authorities), and adapted and transparent processes</td>
</tr>
<tr>
<td>Downstream</td>
<td>• Regulatory and control modalities between the different stakeholder perfectly clear</td>
</tr>
</tbody>
</table>
A project set-up naturally complex...

- A multidimensional partnership bringing together public and private partners, as well as clients/users of the service who, *a priori*, all have antagonistic interests
- A huge diversity of applicable contractual forms

...that must be inserted within a relevant legal framework:

- Offering a high visibility of the procurement and the setting-up processes of the PPP
- Allowing the stakeholders to ensure the continued follow-up of the execution and to impose contractual obligations
### Four main questions which characterize PPPs

<table>
<thead>
<tr>
<th>Which scope of activities is entrusted/delegated to the private sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Building of structures and equipment acquisition</td>
</tr>
<tr>
<td>- Operation of the service</td>
</tr>
<tr>
<td>- Maintenance and repair of structures and equipment</td>
</tr>
<tr>
<td>- etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who is paying for the service?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Service costs are fully borne by users, the concession is referred to as ‘private-payment-based concession’</td>
</tr>
<tr>
<td>- Service costs are fully borne by taxpayers, the concession is referred to ‘public payment based’ concessions</td>
</tr>
<tr>
<td>- Service costs are partly borne by users and by taxpayers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who is funding assets?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Funding fully endorsed by the private partner</td>
</tr>
<tr>
<td>- Funding fully endorsed by the public partner</td>
</tr>
<tr>
<td>- Mixed funding by both partners</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who is bearing the risk?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Risk distribution between private and public sectors using a risk allocation matrix set up for the purpose</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Multidimensional partnership gathering various economic agent</th>
<th>Various contractual structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex financial structure: project financing techniques</td>
<td>Long term investment</td>
</tr>
</tbody>
</table>

Four main economic and financial characteristics
### Multidimensional Partnership

<table>
<thead>
<tr>
<th>Type of Partner</th>
<th>Example of Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Partner</td>
<td>Governments, local authorities, privatization agencies, regulatory agencies...</td>
</tr>
<tr>
<td>Private Partner</td>
<td>Sponsors, operators, contractors, banks, International Financial Institutions (IFI), insurers...</td>
</tr>
<tr>
<td>Client</td>
<td>Public authority (Take or Pay) versus Users (Tariff)</td>
</tr>
</tbody>
</table>
### Various contractual structure: a European Union definition

<table>
<thead>
<tr>
<th>CONTRACTUAL STRUCTURE</th>
<th>EU DEFINITION</th>
</tr>
</thead>
</table>
| Institutionalized PPPs      | • “Involve the establishment of an entity held jointly by the public partner and the private partner”  
                             | Privatization, BOO (Build Own Operate), Joint Venture, etc.                  |
| Contractual PPPs            | • “Refers to a partnership based solely on contractual links between the different players”  
                             | BOT, Concession, Lease, Management Contracts, etc.                           |
Institutionalized PPP project set-up:

<table>
<thead>
<tr>
<th>INSTITUTIONALIZED PPP</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Privatization</td>
<td>• Total or partial cession of existing public assets</td>
</tr>
<tr>
<td>BOO (Build, Own, Operate) operations</td>
<td>• Realization of a greenfield project totally entrusted to the private sector which retains ownership over the asset</td>
</tr>
<tr>
<td>Joint-Venture operations (Société d’Economie Mixte in French)</td>
<td>• Private capital injection into an existing public entity</td>
</tr>
</tbody>
</table>
Contractual PPP project:

- **Concession contract type or BOT (Build, Operate, Transfer):** the private sector finances partially or totally the assets. In a concession, the public sector grants a private operator an exclusive right to provide, maintain and operate an asset over a long period of time in accordance with performance requirements set forth by the government. More specifically, we distinguish:

<table>
<thead>
<tr>
<th>CONTRACTUAL PPP</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Concession with private payment”</td>
<td>• Concession where the Client is the final user: ports, airports, railway, toll highway, drinking water or electricity service provider, etc.</td>
</tr>
<tr>
<td>“Concession with public payment”</td>
<td>• Concession where the Client is a public authority: electricity Independent Power Producer (IPP), public lighting, desalination water plant, shadow toll highway, hospitals, etc.</td>
</tr>
<tr>
<td>“Mixed”</td>
<td>• Concessions set-up: urban transport, sport facilities, etc.</td>
</tr>
</tbody>
</table>
Leasing contracts: a private entity takes over the management of a state owned enterprise for a fixed period while ownership and investment decisions remain with the state: service contract, management contract, etc.

Source: PPIAF
Various contractual scheme

Risk

Service contract (Fee)
Management contract (cost + fee)
Management contract (cost + fee + incentives)
Lease
Concession
BOT
BOO
Privatization

Financing

Service structure
Concession structure
Privatization structure

Contractual PPPs
Institutionalised PPPs
### Main PPP models

<table>
<thead>
<tr>
<th>Types of PPP</th>
<th>Descriptions</th>
</tr>
</thead>
</table>
| **1. Operation-Maintenance (OM)**   | • The private sector is responsible for all aspects of operation and maintenance  
• Although the private sector may not take the responsibility of financing, it may manage a capital investment fund and determine how the fund should be used together with the public sector |
| **2. Design-Build-Operate (DBO)**   | • The private sector is responsible for the design, construction, operation and maintenance of a project for a specified period prior to handling it over to the public sector |
| **3. Design-Build-Finance-Operate (DBFO)** | • The private sector is responsible for the finance, design, construction, operation, and maintenance of a project  
• It nearly all cases, the public sector retains full ownership over the project |
| **4. Build-Operate-Transfer (BOT)** | • The private sector is responsible for the finance, design, construction, operation, and maintenance of a project for a concession period  
• The asset is transferred back to the government at the end of a concession period, often at no cost |
| **5. Build-Own-Operate (BOO)**      | • Similar to BOOT project, but the private sector retains the ownerships of the asset in perpetuity  
• The government only agrees to purchase the services produced for a fixed length of time |
A complex contractual scheme

Special Purpose Company - SPC

- Public Authority
- Insurers
- Banks
- Insurer Agreement
- Credit Agreement
- PPP Contract
- Shareholders Agreement
- O&M Agreement
- Put or Pay Contract
- EPC Contract
- Operators
- Suppliers
- Contractors

- Sponsors
### Long term investments cycles

#### Project set-up

- Preliminary studies (technical, economic, financial, legal, institutional...), project awarding process, technical and financial negotiation, Financial Closing.

#### Project coming into force

- Construction versus operation period (periods timing and sequencing depend on PPP contractual structures & sectors).
Step n°1 : Project feasibility

- Needs analysis and market study: traffic forecast, tariff system review, master planning, competitive position assessment, macro-economic analysis, benchmarking, etc.
- Design of the preferred technical option: preliminary design, operating system, cost assessment (CAPEX and OPEX)
- Environmental Impact Study (EIS)
- Economic analysis: Cost / Benefit analysis (measure of the project overall economic return for the society)
- Legal and institutional study
- Risk analysis (identification, assessment, allocation and mitigation)
- Financial feasibility: risk adjusted Public Sector Comparator model and PPP reference model, value for money analysis
- Procurement strategy and project implementation
- Financial feasibility study and risk analysis (identification and allocation)

Realization of project’s Business plan and set-up of the transaction strategy
Prior to entering into a PPP scheme, the PPP option must demonstrate that it will save money compared to a publicly financed project (Public Sector Comparator -PSC-)

To realize this « value assessment », a government undertakes a four steps process as follow:

1. Risk identification, valuation and allocation
2. Definition of the preferred technical option
3. Risk-adjusted PSC Model
4. Decision on the procurement strategy: PPP vs. traditional public procurement
Purpose: « A Public Sector Comparator (also called Outline Business Case -UK-) is used by a government to make decisions by testing whether a private investment proposal offers value for money in comparison with the most efficient form of public procurement »

Definition: PSC estimates the hypothetical risk-adjusted cost if a project where to be financed, owned and implemented by government

PSC evaluation: The Net Present Cost (NPC) of the risk-adjusted PSC is compared to the NPC of the proposed future service fee paid to the bidder over the life of the PPP. The risk-adjusted PSC model and the PPP reference model should be developed using identical output specifications, particularly regarding:

- Macroeconomic assumptions: inflation, exchange rate
- Public service performance requirement
- Investment program
- Discount rate used to compute the project’s Net Present Cost
The PSC provides a benchmark for estimating Value for Money from alternative bids.
Step n°2: Project awarding process

- **Organization of a competitive bidding process versus competitive dialogue**
  - Preparation of the tender documentation: letter of invitation, scope of the assignment and procurement process, instruction to tenderers, draft of contract and tender specifications, information memorandum
  - Set up the financial and technical bid evaluation criteria

- **Marketing of the project (road show)**
  - To develop an optimal marketing strategy for the project is vital for its success
  - The market needs to be associated right from the beginning to the project’s design

- **Invite expression of interest, prequalify tenders, evaluation of technical and then financial proposal**

- **Negotiation, financial engineering structuring and contract award to the preferred bidder**
  - Memorandum of understanding
  - Contractual terms negotiation with the sponsors, financing terms negotiation with the lenders (term sheet and credit agreement), credit enhancement mechanism and security package (partial risk guarantee, investment guarantee, etc.)
  - Financial closing
Signature of the concession agreement and financial closing: the PPP enters into force

Achievement of the project’s construction

Start of operation

Debt repayment

Renegotiation

Contract termination, assets hand back

Contract duration highly depends on the PPP contractual form and the project’s sector
A partnership involving many economic stakeholders on a long term basis

and...

Facing with potential conflicting objectives !!!
## Stakeholders constraints and objectives

### For the private partner

<table>
<thead>
<tr>
<th>Business intrinsic constraints</th>
<th>Financial constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Commercial constraints</strong> = Revenue Risk</td>
<td></td>
</tr>
<tr>
<td>- Demand forecast over the long run</td>
<td></td>
</tr>
<tr>
<td>- Estimate elasticity (sensitivity) of consumption to prices and consumer's income</td>
<td></td>
</tr>
<tr>
<td><strong>Industrial constraints</strong> = Cost Overrun Risk</td>
<td></td>
</tr>
<tr>
<td>- Construction and / or operation period</td>
<td></td>
</tr>
<tr>
<td>- Technology risk</td>
<td></td>
</tr>
<tr>
<td>- Non performance risk</td>
<td></td>
</tr>
<tr>
<td>- Delay risk</td>
<td></td>
</tr>
<tr>
<td><strong>Financial constraints</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Requirement for Financial Risk Management (Default of Payment Risk)</strong></td>
<td></td>
</tr>
<tr>
<td>- Liquidity Risk</td>
<td></td>
</tr>
<tr>
<td>- Operating Risk: revenues below the break-even point</td>
<td></td>
</tr>
<tr>
<td>- Financial Structure Risk: project ability's to support debt financing</td>
<td></td>
</tr>
<tr>
<td><strong>Requirement for Financial Return Management</strong></td>
<td></td>
</tr>
<tr>
<td>- A Cash Flow Analysis</td>
<td></td>
</tr>
<tr>
<td>- Financial Return requirement function of the parties concerned: Sponsors (Contractor, Operator, Investor, etc.) and Lenders (Banks, ECA, IFI, etc.)</td>
<td></td>
</tr>
<tr>
<td>- NPV, IRR, Payback, ROE and shareholder return, ROCE, Cash-in Cash-out etc.</td>
<td></td>
</tr>
</tbody>
</table>

ADSCR, LLCR, PLCR, Gearing
### Stakeholders constraints and objectives

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<thead>
<tr>
<th>Economic constraints</th>
<th>Budgetary constraints</th>
<th>Social constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing Public Service access</td>
<td>Priority in public funds allocation (health, education, security...)</td>
<td>Tariff level and structure taking into account social affordability issues</td>
</tr>
<tr>
<td>Upgrading Services quality</td>
<td>Deficit Reduction Policy</td>
<td>Public staff restructuring</td>
</tr>
<tr>
<td>Monetary constraints</td>
<td>Budgetary and monetary policy</td>
<td>Social policy</td>
</tr>
</tbody>
</table>

**Development policy**

**Budgetary and monetary policy**

**Social policy**

---

**And electoral constraints**
## Economic assessment of a project for the public partner

### Public partner economic assessment tools

<table>
<thead>
<tr>
<th>Socio-economic return</th>
<th>Value for Money</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Notion of Economic Return</strong></td>
<td><strong>“VfM is defined as the optimum combination of whole-of-life costs and quality of the good or service to meet the user’s requirement”</strong>&lt;br&gt;(UK’s economic and finance ministry)</td>
</tr>
<tr>
<td>▪ A differential Cost/Benefit Analysis: with versus without project</td>
<td>▪ PPP should only be pursued where it represents Value for Money (VfM) in procurement</td>
</tr>
<tr>
<td>▪ Measurement of costs in terms of Economic Value (externalities)</td>
<td>▪ The VfM of a PPP project is assessed by comparing its cost to the public sector in comparison to a conventional public procurement</td>
</tr>
<tr>
<td>▪ Economic Return requirement depends on the public authority considered: government, local authority, municipality…</td>
<td></td>
</tr>
</tbody>
</table>

### Commonly Used Economic Return Indicators

| Social & Economic Benefit = Economic Net Present Value | Internal Rate of Return = Economic Rate of Return (ERR) |
## Stakeholders constraints and objectives

### For the users

<table>
<thead>
<tr>
<th>Access to public services</th>
<th>Performance and quality</th>
<th>Price constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Equitable access to the public service</td>
<td>▪ Quality</td>
<td>▪ Affordability and equity in the tariff level and structure (Utilities)</td>
</tr>
<tr>
<td>▪ Continuity of public service delivery</td>
<td>▪ Equity between users</td>
<td>▪ Competitive tariff level (Transport)</td>
</tr>
<tr>
<td>▪ Users‘ equal treatment <em>versus</em> “affirmative action”</td>
<td>▪ Service reliability</td>
<td>Requirement for lowest price</td>
</tr>
</tbody>
</table>

*Requirement for best quality*
A set of conflicting constraints leading to the need for a comprehensive management methodology

⇒ A global approach
Need for a comprehensive management methodology

- Regulatory Engineering
- Risk Management
- Financial Engineering
- Technical Engineering
- Legal & Institutional Engineering
- Social Engineering
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<td>6</td>
<td>Case Study</td>
</tr>
</tbody>
</table>
Risks affecting the project according to the period

Project risks

Pre-completion
- Feasibility
- Land acquisition & expropriation
- Administrative agreements

Construction
- Completion
- Time overrun
- Cost overrun
- Technology
- Sub-performance
- Material labor availability
- Project site conditions
- Contractor’s failure

Performance & Supply risks
- Low operating activity
- O&M cost overrun
- Management
- Logistics risks
- Supplies

Market & Revenues risks
- Insufficient revenues
- Inaccurate pricing and demand estimate
- Fall of demand
### Risks affecting the project over the whole project life

#### Country risks

<table>
<thead>
<tr>
<th>Country risks</th>
<th>Political risks</th>
<th>Legal risks</th>
<th>Financial risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expropriation, reliability &amp; creditworthiness of the government</td>
<td>Prejudiced &amp; unfair process of awarding the project</td>
<td>Unfavorable economy in the host country</td>
</tr>
<tr>
<td></td>
<td>Change in law in government policy</td>
<td>Disapproval of guarantees by the government</td>
<td>Rate of return restrictions</td>
</tr>
<tr>
<td></td>
<td>Political opposition</td>
<td>Change of host-country’s fiscal regime</td>
<td>Lack of credit worthiness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inability to service debt</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Bankruptcy</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Complex financial structure of PPP projects</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Loan ability</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fluctuation of the inflation rate, interest rate, foreign currency exchange rate</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Unfavorable international economy</td>
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</tbody>
</table>

- Corruption
- Delay in approvals
- Non cooperation between agencies
- Poor legislation
- Vague & inconsistent clauses and specifications & inaccurate phasing
- Complex financial structure of PPP projects
- Loan ability
- Fluctuation of the inflation rate, interest rate, foreign currency exchange rate
- Unfavorable international economy
Risk are shared between different parties involved in the project.
Principles of risk management

Each risk identified should be either reduced, transferred or allocated

Reduction of the project’s global risk requires the adequate allocation of risk

Risk supported by those who are the best suited to bear them

Each risk identified by the Private Partner conduct to an additional requirement for financial return (Premium Risk)
• It is not always easy to allocate risk to the party best suited to bear it, or to determine the adequate risk mitigation action.

• The level of risk aversion by the different parties involved in the transaction could justify at times risk sharing arrangements between private and state-related participating parties.
<table>
<thead>
<tr>
<th>Commercial Risks</th>
<th>Non-Commercial Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Private sector Related)</td>
<td>(State Related)</td>
</tr>
<tr>
<td>Completion Risk (engineering &amp; construction cost / time cost control)</td>
<td>Political Risk (expropriation, political violence, currency convertibility &amp; transfer)</td>
</tr>
<tr>
<td>Operational Performance Risk (technical &amp; retailing know-how)</td>
<td>Contractual Risk [Regulatory Risks]. (Government’s default on contractual obligations, <em>i.e.</em> pricing formulas)</td>
</tr>
<tr>
<td>Market Risk (Traffic &amp; Tariff fluctuations)</td>
<td>Macroeconomics Environment -- Volatility Risk (changes in macro balance in relatively short periods, <em>i.e.</em>, exchange rate, inflation, etc...)</td>
</tr>
<tr>
<td>Financial Risk (Exchange Rate and Interest Rate Fluctuations)</td>
<td>Legal Environment (<em>rule of law, i.e.</em>, judicial system, regulatory procedures and arbitration)</td>
</tr>
<tr>
<td>Environmental Risk (past and future liabilities, project delays, costs overruns)</td>
<td></td>
</tr>
</tbody>
</table>
A comprehensive identification of the project’s associated risks should be conducted.

The impact of each risk on the project needs to be measured: impact on revenues, costs, timing, etc.

Estimation of the likelihood of the risk occurring through (i) subjective method or (ii) statistical risk method (e.g. Monte Carlo).
Each identified risk should be considered as a cash flow item or as risk premium in the discount factor.

Pricing of a risk =

\[(\text{Value of the risk}) \times (\text{Likelihood of the risk to occur})\]
Identification of the risks which should be carried by the private sector or by the public sector and allocation according to the following principle:

“Risks should normally be borne by the party best able to assess, control and manage them or by the party with the best access to the hedging instruments, the greatest ability to diversify the risks or the lowest cost of bearing them”

- Each risk identified by the Private Partner conduct to an additional requirement for financial return (Risk Premium)
- Construction of a risk matrix which consolidate all identified project risks, their impact and their associated costs
Use of risk mitigation instruments specific to PPPs:

- Political risks: Political risk insurance (PRI), Partial risk guarantee (PRG)
- Financial risks: SWAPs, Futures, Forward, Options, credit guarantee such as Partial Credit guarantee (PCG) and Export Credit (EC)
- Counterpart guarantee: performance bonds
- Insurance
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Financial Engineering of a PPP project

Structuring of Financial vehicles

- Public contributions structuring
- Equity Structuring
- Debt Structuring

Structuring of financial and political risk mitigation instruments against

- Market risks:
  - Exchange Rate
  - Interest Rate
  - Credit Risk
  - Political Risk
Payments Mechanisms & Tariffs Policy

Operating Cash Flow (EBITDA)

Project's ability to carry the Debt: Maximum Debt (EBITDA/P+I)

Financial Need (CAPEX) – Max Debt = Private Equity vs. Public financing need

Acceptable return for the Operator i.e. IRR > WACC?

YES

Profit sharing mechanism (such as concession fees) so as IRR = WACC

Social versus Competitive constraints

Commercial Banks ADSR equilibrium constraint

Public budgetary constraint & Investor constraint WACC (return constraint)
2 principles of project’s bankability: (1) Financial equilibrium

- The financial equilibrium constraint refers to three kinds of risks:
  - Liquidity risk: SPV’s liquidity > 0
  - Financial structure risk: ADSCR > 1.3
  - EBITDA > 0 and/or EBIT > 0
The debt tenor is not in line with the profile of project’s cash flow: ADSCR < 1

The debt tenor is in line with the profile of project’s cash flow: ADSCR > 1
2 principles of project’s bankability: (2) Financial return

<table>
<thead>
<tr>
<th>Asset</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public subsidy</td>
</tr>
<tr>
<td></td>
<td>Equity (30%)</td>
</tr>
<tr>
<td></td>
<td>Debt (70%)</td>
</tr>
</tbody>
</table>

- Investor’s IRR target: $\text{IRR} > \text{WACC}$ corresponding to a $\text{NPV} > 0$
- Regulator’s IRR target: $\text{IRR} = \text{WACC}$ corresponding to a $\text{NPV} = 0$

Internal Rate of Return (IRR)

$\text{r}_e$

$\text{r}_d$

$\text{WACC}$
Public support can be of different types

- Debt guarantee
- Exchange risk guarantee
- Subsidy tied to profitability
- Fixed grants / subsidies
- Subordinated loans
- Minimum revenue guarantee
- Increase tariffs
- Increase concession length

Impact on the ability to raise funds

Authorities financial risk
Various Public Financing

Public financing drawn from the State / local municipality

Export Credit via ECAs (COFACE, US EXIM, Japan EXIM, ECGD…)

Multilateral Financing via MLAs (WB & AsDB…)

Bilateral Financing via BLAs (AFD)

Capital market: Bonds market, Equity Capital Market (ECM)

Infrastructure funds

EU Financing (EIB, other facilities)

Financial Governmental Protocols (RPE)

Various Public Financing Means with Public Debtor

Cash contribution

Guarantee contributions

Contribution of assets: lands, extension projects (Brownfield)

Various forms of public contribution

Public financial contribution
Private financing sources (equity & debt)

**Equity structuring**
- Vendors Financing (Shareholder loan)
- IFI’s (MLAs/BCAs)
- Private equity Funds
- Junior Debt (Mezzanine)
- Commercial Banks (international & local)

**Debt structuring**
- Retail Bank Market
- Institutional investors
- Bonds Market

**Financial Scheme of a PPP Project**
- MIGA/Development banks
- Insurance
- MLAs/ECAs (Guarantees)
- Private Institutions

**Risk management instrument**
Sponsors Equity
- SPC Share Capital & Confirmed letters of credit
- Quasi Equity: Subordinated Debt & Mezzanine Debt

Investment by Multilateral Institutions
- IFC, EBRD, IDB, AsDB ...

Equity structuring

Specialist Investment Funds

Investment by Bilateral Institutions
Long term Commercial Debt (Banks)
- “Corporate Finance” & “Project Finance”
- Commercial Debts in local currencies
- Senior Commercial Debt vs. Junior Commercial Debt: Subordinated Debt or Mezzanine Debt

Long term Debt “Guaranteed”
- Export Credit Financing with ECAs: “Export Finance”
- Commercial Debt “under Multilateral Umbrella”

Debt structuring

Short term Debt & Revolving Credit

“Private Investment” & Bonds Issues
- Set-up of a Special Purpose Company (SPC)
- High leverage wished by the Sponsors: Ratio $E/E+D \approx 20$ to $40\%$
- Financing without recourse or with limited recourse:
  - No financial guarantee provided by the sponsors
  - No loan guarantee provided by the public authorities
- Financing of a project merely through credit facilities, which are reimbursed by the revenue generated by the project
- Reimbursement guaranteed by the cash flow of the project to cover:
  - Debt service
  - Operation costs
  - Return on equity for the Project Company
**Exporter**: Party to the supply contract with registered office in France

**Importer**: Counterparty to the supply contract with registered office outside France

**COFACE**: Risk insurance for export. Provides global coverage of risk

**Importer’s Bank**: Bank covers the commercial risk of the importer by issuing a bank guarantee

**Lender**: The French bank as lender grants the importer as borrower a direct credit

---

1. **Supply / Delivery Contract**

2. **Request / Promise non-payment risk**

3. **COFACE insurance**

4. **Loan Agreement**

5. **Payment Guarantee**

6. **Exporter’s Agreement**

7. **Advance payment / Opening of L/C**

8. **Delivery(ies)**

9. **Disbursement(s)**

10. **Repayment of Loan**

---

**Coface**

**French Bank**

**Importer’s Bank**
1. **Supply contract**: Importer and exporter sign a contract for the supply of goods/services. The terms of payment in the contract must refer to the separate financing agreement between the French bank and the importer.

2. **Request / Promise non-payment risk**: Declaration of authorization and obligation and prevention of corruption.

3. **COFACE insurance**: Cover for political / transfer and credit risks; issued directly to the French bank.

4. **Loan Agreement**: Between the French Bank and the importer up to 85% of the value of the supply contract.

5. **Payment Guarantee**: Irrevocable and abstract bank guarantee in case of non payment of the importer (commercial risk). It must cover loan amount and interest.

6. **Exporter’s agreement**: Agreement between the exporter and the French bank regarding the assignment of the claims / collateral and the sharing of risk and liabilities.

7. **Advance payment / Opening of L/C**: At least 15% of the contract must be paid as advance, down or interim payments by the date of delivery.

8. **Delivery(ies)**: Performance of the contractually agreed scope of supply of goods / services.

9. **Disbursements(s)**: Simultaneous, pro rata delivery disbursement of the export credit to the exporter.

10. **Repayments**: Half yearly amortization of the export credit by the importer over the agreed loan period.
## Comparison of financing means

<table>
<thead>
<tr>
<th>Financing Sources</th>
<th>ECAs</th>
<th>MLAs</th>
<th>Vendors financing</th>
<th>High yield bonds</th>
<th>International banks</th>
<th>Local Banks</th>
<th>Local bond</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Finance Expertise</strong></td>
<td>Increasing</td>
<td>Extensive</td>
<td>Increasing</td>
<td>Extensive</td>
<td>Extensive</td>
<td>Low</td>
<td>Low to negligible</td>
</tr>
<tr>
<td><strong>Dependence on market conditions</strong></td>
<td>Medium/Low</td>
<td>Medium/Low</td>
<td>Medium</td>
<td>Medium/High</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td><strong>Financing Term</strong></td>
<td>Up to 20 years</td>
<td>Variable</td>
<td>8–10 years</td>
<td>10–15 years</td>
<td>5–9 years</td>
<td>Variable</td>
<td>Variable</td>
</tr>
<tr>
<td><strong>Covenants</strong></td>
<td>Restrictive</td>
<td>Restrictive</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Restrictive</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Time period to funding</strong></td>
<td>6–12 months</td>
<td>6–12 months</td>
<td>3–6 months</td>
<td>3–6 months</td>
<td>3 months</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td><strong>Refinancing flexibility</strong></td>
<td>Medium/Low for fixed rate</td>
<td>Medium</td>
<td>High</td>
<td>None</td>
<td>High</td>
<td>High/Low for fixed rate</td>
<td>None</td>
</tr>
</tbody>
</table>
## Market risk mitigation instruments

<table>
<thead>
<tr>
<th>Type of Market &amp; Credit risks</th>
<th>Mitigation instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Rate Risk</td>
<td>Inter-bank Market (Forward) &amp; Organized Markets (Futures)</td>
</tr>
<tr>
<td>Exchange Rate Risk</td>
<td>SWAP, Futures, Options, Forward-Forward, Forward Rate Agreement, etc.</td>
</tr>
<tr>
<td>Counterpart Risk &amp; Credit Risk</td>
<td>Performance Bonds</td>
</tr>
<tr>
<td>Change in commodities prices</td>
<td>Credit Derivatives</td>
</tr>
</tbody>
</table>
Political Risk Insurance (PRI) covers equity investors and debt providers against the occurrence of «classical» political risks such as:

- Currency inconvertibility and transfer restriction
- Expropriation
- War and civil unrests

Partial Risk Guarantee (PRG): besides traditional political risks, PRG covers government’s contractual obligation such as:

- Government’s contractual payment obligation
- Government action / inaction impacting adversely a project
- Contractual performance of public counterparts
- Frustation of arbitration
- Breach of contract
<table>
<thead>
<tr>
<th>1</th>
<th>Introduction to PPP and project financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Risk Assessment and allocation</td>
</tr>
<tr>
<td>3</td>
<td>Financial Engineering of PPP projects</td>
</tr>
<tr>
<td>4</td>
<td>Main ratios used for bankability assessment of PPP projects</td>
</tr>
<tr>
<td></td>
<td>- From the lenders perspective</td>
</tr>
<tr>
<td></td>
<td>- From the equity investor perspective</td>
</tr>
<tr>
<td></td>
<td>- From the regulator perspective</td>
</tr>
<tr>
<td>5</td>
<td>Principles of Regulation</td>
</tr>
<tr>
<td>6</td>
<td>Case Study</td>
</tr>
</tbody>
</table>
Notion of project bankability

Management of « intrinsic » constraints

- Commercial constraints
- Industrial constraints
- Social constraints

Management of financial constraints

- Financial balance requirement
- Financial return requirement
## Overview of the main ratios used for bankability assessment

<table>
<thead>
<tr>
<th>Notion of Financial balance constraint = Financial risk</th>
<th>Indicators generally used</th>
<th>From the equity investors point of view: financial return</th>
</tr>
</thead>
<tbody>
<tr>
<td>From the lenders point of view: <strong>financial equilibrium</strong>:</td>
<td>Account receivable turnover</td>
<td>Payback</td>
</tr>
<tr>
<td>- Requirement for Cash Flow Balance = Liquidity Risk</td>
<td>- ADSCR</td>
<td>- IRR</td>
</tr>
<tr>
<td>- Requirement for Operating Balance = Economic Risk (revenues below the break-even point)</td>
<td>- LLCR</td>
<td>- NPV</td>
</tr>
<tr>
<td>- Requirement for Financial Structure Balance = project’s ability to support the debt financing</td>
<td>- Gearing</td>
<td>- ICR</td>
</tr>
<tr>
<td></td>
<td>- Liquidity ratio</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Notion of Financial balance constraint

- Financial risk

<table>
<thead>
<tr>
<th>Requirement for Cash Flow Balance</th>
<th>Requirement for Operating Balance = Economic Risk (revenues below the break-even point)</th>
<th>Requirement for Financial Structure Balance = Project’s ability to support the debt financing</th>
</tr>
</thead>
</table>

Financial Structure ratio = Equity/(Equity + Debt)

Indicators generally used

- Operating Risks & Global Risks ratios
- Net Present Value of Debt Service Cover Ratio (NPV DCR)
- Annual Debt Service Cover Ratio (ADSCR)

Financial risk

- Liquidity Risk
- Economic Risk

Project’s ability to support the debt financing
## Annual Debt Service Cover Ratio (ADSCR)

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Debt Service Cover Ratio (ADSCR)</td>
<td>[ ADSCR = \frac{\text{Available Cash flow for Debt Service}}{\text{Debt Service (P + I)}} ]</td>
</tr>
</tbody>
</table>

Lenders mostly require a ratio higher than 1.2

## Loan Life Cover Ratio (LLCR)

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Present Value Debt Cover Ratio (LLCR)</td>
<td>[ LLCR = \frac{\text{NPV (Available Cash flow for Debt Service)}}{\text{Outstanding debt}} ]</td>
</tr>
</tbody>
</table>

Lenders mostly require a ratio higher than 2
### From the lenders perspective: PLCR & Gearing

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Present Value Debt Cover Ratio: Project Life Cover Ratio (PLCR)</strong></td>
<td>( PLCR = \frac{\text{NPV (Available Cash flow for Debt Service over Project Life)}}{\text{Outstanding debt}} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gearing</td>
<td>( \text{Gearing} = \frac{\text{Debt}}{\text{Equity}} )</td>
</tr>
</tbody>
</table>
From the lenders perspective: Accounts receivables turnover & Liquidity ratio

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts receivable turnover</td>
<td>Accounts receivable turnover = ( \frac{\text{Accounts receivable} \times 365}{\text{Revenues}} )</td>
</tr>
</tbody>
</table>

Lenders mostly require not more than 90 days of turnover in accounts receivable

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity ratio</td>
<td>Liquidity ratio = ( \frac{\text{Current Assets}}{\text{Short term Liabilities}} )</td>
</tr>
</tbody>
</table>

Lenders mostly require a ratio higher than 1.4
Many indicators exist to assess financial return on invested capital!!!

- **Payback**
- **Internal Rate of Return of the project = Project IRR**
- **Net Present Value of the Project = Project NPV**
- **Equity & Shareholders returns**
- **Return On Capital Engaged (ROCE)**
- **Investment Cover Ratio = ICR**

**Notion of Financial Return Constraint**

An analysis based on cash flow

Analysis based on the nature of the investor concerned: Sponsors (contractor, operator, manufacturer, shipping company…) & Lenders
From the equity investor perspective: Payback

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payback</td>
<td>PayBack = ( \frac{I}{R - C} )</td>
</tr>
<tr>
<td></td>
<td>I = capital expenditures</td>
</tr>
<tr>
<td></td>
<td>R = operating revenues</td>
</tr>
<tr>
<td></td>
<td>C = operating expenditures</td>
</tr>
</tbody>
</table>

The payback period is the time necessary to recover the initial outlay on an investment.
## From the equity investor perspective: IRR

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Rate of Return or IRR</strong></td>
<td>$\sum_{i=1}^{n} \frac{-I_i + R_i - C_i}{(1 + r)^i} = 0$</td>
</tr>
<tr>
<td>$I_i$ = capital expenditures of year $i$</td>
<td></td>
</tr>
<tr>
<td>$R_i$ = operating revenues of year $i$</td>
<td></td>
</tr>
<tr>
<td>$C_i$ = operating expenditures of year $i$</td>
<td></td>
</tr>
<tr>
<td>$n$ = duration of the contract</td>
<td></td>
</tr>
<tr>
<td>$r$ = discount rate</td>
<td></td>
</tr>
</tbody>
</table>
From the equity investor perspective: NPV

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Present Value of the project or NPV Project</strong></td>
<td>( NPV_{Project} = \sum_{i=1}^{n} \frac{-I_i + R_i - C_i}{(1+t)^i} )</td>
</tr>
</tbody>
</table>

- \( I_i \) = capital expenditures of year \( i \)
- \( R_i \) = operating revenues of year \( i \)
- \( C_i \) = operating expenditures of year \( i \)
- \( n \) = duration of the contract
- \( r \) = discount rate
### From the equity investor perspective: Investment Cover ratio

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Définition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment Cover Ratio or ICR</td>
<td></td>
</tr>
</tbody>
</table>
| ICR                          | \[
|                              | \[ \frac{\sum_{i=1}^{n} \frac{R_i - C_i}{(1 + t)^i}}{\sum_{i=1}^{n} \frac{I_i}{(1 + t)^i}} \] |

- \( I_i \) = capital expenditures of year \( i \)
- \( R_i \) = operating revenues of year \( i \)
- \( C_i \) = operating expenditures of year \( i \)
- \( n \) = duration of the contract
- \( r \) = discount rate
From the equity investor perspective: ROE & Shareholders Return

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Equity or ROE</td>
<td>Net Income</td>
</tr>
<tr>
<td></td>
<td>Equity</td>
</tr>
<tr>
<td></td>
<td>It is a measure of the profitability from the shareholders’ point of view since it considers the net income of the year after taxes and interests have been debited</td>
</tr>
<tr>
<td>Cash – In / Cash Out</td>
<td>$$\sum_{i=1}^{n} \frac{-E_i + D_i}{(1 + t)^i} = 0$$</td>
</tr>
<tr>
<td></td>
<td>El_i = equity injection of year i</td>
</tr>
<tr>
<td></td>
<td>D_i = dividends of year i</td>
</tr>
<tr>
<td></td>
<td>n = duration of the contract</td>
</tr>
<tr>
<td></td>
<td>r = discount rate</td>
</tr>
</tbody>
</table>
### From the equity investor perspective: ROCE

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Capital Engaged or ROCE</td>
<td>Net Operating Profit after Tax (NOPAT)</td>
</tr>
<tr>
<td></td>
<td>Equity + Debt</td>
</tr>
</tbody>
</table>
**From the regulator perspective: Regulatory Equilibrium**

- Which “allowable” financial return for the Private Partner?
- Price control by the NPV method:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>If IRR &gt; WACC</td>
<td>Excessive Profits for the Private Partner = Privileged position at the expense of Users and/or Public Authorities</td>
</tr>
<tr>
<td>If IRR &lt; WACC</td>
<td>Bankruptcy Risk of the Private Partner</td>
</tr>
<tr>
<td>If IRR = WACC</td>
<td>Idealistic situation from a regulatory viewpoint because comparable to profit made in a competitive market</td>
</tr>
</tbody>
</table>

→ NPV = 0
WACC calculation: Which discount rate to use?

Allowable Financial Return = Weight Average Cost of Capital (WACC)

\[ \frac{E}{E+D} \times R_e + \frac{D}{E+D} \times R_d \]

Where:
- \( E \) = Equity
- \( D \) = Debt
- \( R_e \) = Equity Cost
- \( R_d \) = Debt Cost

How to assess the Equity and Debt Remuneration Requirement?
If the private company is listed in a Stock Exchange, $r_e$ can be estimated by using the CAPM (Capital Asset Pricing Model):

$$r_e = r_f + \beta_e (r_m - r_f) + r_{sov} + r_{reg}$$

- $r_f$ = Risk-free rate: usually, US or UK Bonds Rate (2 to 6%)
- $\beta_e$ = Equity beta reflecting the sensibility of the sector compared to the whole capital market
- $r_m$ = Market Return
- $r_m - r_f$ = Equity Risk Premium or Market Risk Premium (4% to 8%)
- $r_{sov}$ = Country Risk Premium or Sovereign Risk Premium
- $r_{reg}$ = Regulatory Risk Premium
The sensitivity of a company’s returns to market risk is measured by beta $\beta$. 

$$\beta = \frac{\text{Covariance between the returns on the security and the market}}{\text{Variance of market returns}}$$
The meaning of the value of beta $\beta$

- When $\beta = 1$, if the market rises by 5%, the security rises on average by 5%

- Beta can be negative as well as positive

- If $\beta$ is negative, when the market rises, the stock falls, and conversely, when the market falls, the stock rises

- The majority of utility companies have $\beta$ values of between 0.6 and 1.0
The cost of debt is based on the market performance of new Public Bonds within the host country of the project plus a risk premium associated to the operator and/or the Sector.

\[ r_d = r_f + IP + r_{mat} + r_{sov} + r_l + r_{def} \]

- \( r_f \) = Risk Free Rate \( \approx \) (2 to 5% in France)
- \( IP \) = Inflation premium
- \( r_{mat} \) = Maturity risk premium
- \( r_{sov} \) = Sovereign Risk Premium
- \( r_l \) = Liquidity premium
- \( r_{def} \) = Default Risk Premium

The different risk premium should reflect the intrinsic characteristics of debt (type of debt, maturity, duration...).
| 1     | Introduction to PPP and project financing          |
| 2     | Risk Assessment and allocation                     |
| 3     | Financial Engineering of PPP projects              |
| 4     | Main ratios used for bankability assessment of PPP projects |
| 5     | Principles of Regulation                           |
|       | - Institutional models for regulation              |
|       | - Financial and price regulation                    |
| 6     | Case Study                                         |
Recent experiences show that regulation is critical to PPP success
- Many PPP reforms have failed due to inadequate regulatory mechanisms
- Inadequate regulation can increase investors’ perception of regulatory risk

Projects are too expensive (due to high cost of capital) which has a negative impact on consumers through high tariffs
- Or projects cannot reach financial closure

It may be difficult to define what “good regulation” is and to test it in practice
Institutional Models for regulation: what is regulation?

- General: “Sustained and focused control exercised by a public agency over activities that are valued by a community”

- Ensuring that service providers comply with existing rules (tariffs and quality standards) and adapting those rules to cope with unforeseen events (e.g. need for a certain degree of discretion)

- Formal and informal rules: laws, contracts, bye-laws, personal commitments, financial incentives, fear of reprisal, etc...

- Not necessarily when an autonomous regulator is in place – alternative institutional models possible
Regulation = Give incentives

- Setting tariffs
- Regulating service quality
- Monitoring competition (entry/exit, competitive behaviors)
- Protecting consumers
- Arbitrating disputes

Incentives

Via a regulatory framework

- Rules defined in laws, decrees and contracts
- Implementation procedures
- Legitimate, competent and independent institutions

Governance mechanisms

- Recreate similar incentives as in a competitive market
- Influence service providers and consumers’ behavior
Objectives, Functions and Tasks

Objectives:
- Financial viability
- Allocative efficiency
- Productive efficiency
- Equity

Functions:
- Setting tariffs
- Regulating service quality
- Monitoring competition
- Protecting consumers
- Arbitrating disputes
- Gather information and data
- Monitor the implementation of existing rules
- Determine rules
- Enforce decisions
### Institutional Models for regulation

**Regulation as a set of functions**

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Price Regulation</th>
<th>Service Quality Regulation</th>
<th>Competition Regulation</th>
<th>Consumer Protection</th>
</tr>
</thead>
</table>
| **Gather information and data** | - Get information on current and projected tariff revenues and costs  
- Get information on willingness-to-pay, for alternative service levels | - Obtain information on current service levels  
- Carry out technical studies | - Obtain information on illegal conduct or monopoly behaviour | - Conduct customer Surveys  
- Organise call centres to file complaints |
| **Monitor the implementation of existing rules** | - Audit financial accounts  
- Ensure that adequate tariffs are charged | - Monitor that levels of service are met  
- Monitor that coverage targets are met | - Investigation of abuses of monopoly power – predatory practices, etc… | - Administrative audit of systems and procedures in place to educate customers, and share information |
| **Determine rules** | - Tariff reviews, linked to inflation or tariff rebasing  
- Modify tariff structures and payment methods | - Define or review quality standards  
- Adapt existing quality standards to real needs | - Organise bidding process  
- Rule on competition case following complaint | - Define consumer service standards or requirements |
| **Enforce decisions** | - Define tariff adjustments on basis of performance  
- Apply penalties | - Require improvements in service quality | - Mandate break-up of monopoly power or changes in access terms | - Resolve dispute between consumers and regulated firm |
Institutional Models for regulation

Policy functions: define sector policy
- Define long-term objectives for sector development
- Choice of supply methods (e.g. between alternative energy sources)
- Coverage targets and allocation of financial resources
- Define levels of subsidies to poor customers and methods of subsidy targeting
- Broad tariff-setting principles (preferably via legal framework)
- Type and quality of service

Introduction of private sector participation
- Formulate key choices on whether to introduce private sector participation
- Select private sector operators
- Define initial rules applying to the private operator (via law or contracts)

Institutions in charge of policy functions
- Line Ministries
- Ministry of Finance
- Regional and local governments (Regions, municipalities)
Institutional Models for regulation

Institutional models for regulation

Advantages of “regulation by agency” model

- Self-regulation
- Peer regulation
- Regulation by contract (e.g. with Ministry in charge of supervision)
- Regulation by agency
- Hybrid models

- Responsibilities more clearly assigned
- Obvious interlocutor for adapting rules
- Pole of competence
- Repository of sector knowledge
- Independence?
Clarity of Roles and Objectives

- **Separation** of policy, regulation and service provision
- Distinction between roles of regulator as advisor to the Government and regulatory decision maker
- Regulatory functions defined by law

Autonomy

- **Procedures for appointing and removing** regulators are clear and precise so as to reduce the risk of political interference
- **Rules on conflicts of interest**: regulators must not derive any political or financial benefit from their position
- **Adequate funding** and clearly defined funding sources that are separate from Government budgets
- Regulator has the freedom to **make decisions**
- Regulator can establish its own **internal operating procedures**, particularly in the area of recruitment and remuneration
Responsibility

- A formal mechanism exists for appealing against decisions made by the regulator, where the latter has failed to follow a legitimate process in reaching a decision
- The regulator is accountable to the legislative authority, to which it submits its annual report

Participation

- External parties can participate in the decision-making process, via a formal consultation process and consumer surveys

Transparency

- The regulator publishes explanations for its decisions
- The relevant documents are available to the public

Predictability

- The functions assigned to the regulator cannot be modified easily (modification of legislative framework required)
- Regulatory principles are clearly stipulated and timetable available in advance
Institutional Models for regulation

**Legitimate in stakeholders’ eyes**
- Well-known by consumers, who see the regulator as an independent arbiter able to solve their problems
- Respected by politicians, who consult regulator on sector issues
- Respected by companies, who accept its judgement

**Independent**
- Not captured, by politicians or companies (or consumers!)

**Competent:** Several years of successful practice at regulating tariffs and quality
- Transparent processes
- Predictability of decisions
- Ability to adapt regulatory practices to unforeseen events
- Ability to match private operators’ levels of competence in the regulatory process
Institutional Models for regulation

Trade-offs between those Qualities

- Competence at the expense of independence: if relying extensively on regional regulators or on the same external consultants
- Independence at the expense of competence: if refusing to get external advice and training for critical decisions
- Competence at the expense of legitimacy: if heavy reliance on external experts
- Legitimacy at the expense of competence: if location of regulator at a low level of government with limited capacity

- Independence at the expense of legitimacy: if protection over data and confidentiality rules
- Legitimacy at the expense of independence: if extensive public consultation reduces regulator’s ability to take difficult decisions
Most regulatory agencies adhere to “good regulation” principles on paper BUT...

- Risk or threat of removal
- Low pay relative to hours worked
- Unable to determine recruitment and internal operating procedures

- Difficult to recruit – and above all retain - staff with the necessary competencies
- Staff come from Government departments in which they are required to maintain certain functions, so roles get confused

One of the biggest constraint the regulator has to face is the lack of staff with regulatory expertise
Institutional Models for regulation

Fostering Transparency

- Transparency is key to independent operation while assuring the legitimacy of the regulatory process

- Transparency encourages efficient initial investment by reducing regulatory risks faced by investors
  - Many investors view transparency as a threshold to investment decisions prior to consideration of other factors
  - Lower risks = lower cost of capital = lower required rate of return

- Transparency may be difficult to establish
  - General institutional framework may not be conducive
  - Information dissemination mechanisms must be appropriate
  - Needs to take account of commercial confidentiality requirements for regulated entities
**Institutional Models for regulation**

**Characteristics of a Transparent Process**

- **Clarity of Roles and Objectives**
  - Regulatory functions defined by law
  - Obligations and functions of the regulator and utilities specified in a licence/contract

- **Predictability**
  - Tariff review procedures, value of utility assets and “normal” rate of return stipulated by the legislation/contract
  - Publication of timetables for the regulatory process and for tariff reviews
  - Publication of contract/licence amendment procedures in the case of changed circumstances
  - Publication of methodology for reviews

- **Transparency of Decisions**
  - Regulatory documents in the public domain (including contracts, licences and main decisions)
  - Stakeholder consultation responses made available to the public together with the regulator’s response to the consultation findings
Institutional Models for regulation

Characteristics of a Transparent Process

- **Participation**
  - Consultation of stakeholders obligatory (embedded in legislative framework) or voluntary (at the discretion of the regulator)
  - Stakeholder views obtained via public hearings, publication of methodology + preliminary versions of reports, consumer surveys, meetings, etc.

- **Access to Information**
  - Regular RA declarations to the press, up-to-date web site, information centre for the public, representation offices, brochures and other media to reach the poor (literacy problems)

- **Responsibility**
  - Possible to appeal the regulator’s decision to a special Court of Appeal (eg. in case of unfair competition) or Administrative Tribunal
  - Regulatory Impact Assessments
### Institutional Models for regulation

#### Implications for Organization

<table>
<thead>
<tr>
<th>The set-up of a transparent regulatory process requires effective information systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Organising documents for dissemination in real time</td>
</tr>
<tr>
<td>- Following up requests for information and complaints, as well as responses provided</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Clear processes for treating information and making decisions</td>
</tr>
<tr>
<td>- Code of conduct for decision-makers and staff</td>
</tr>
<tr>
<td>- Internal audit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chains of communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Officers responsible for communication (perhaps responsible for coordinating the consumer representatives)</td>
</tr>
<tr>
<td>- There could be specialists for poor areas or for interaction with non-government or community organisations</td>
</tr>
</tbody>
</table>
Establishing a successful regulatory agency is a real challenge:
- Human resource constraints are the main problem – need for long-term and sustained training
- Financial resource constraints are less of an issue

There are no miracle solutions but useful tips
- Seek to achieve the right balance between legitimacy, competence and independence
- Identify the constraints up-stream and factor those in regulatory design
- Establish clear appeal mechanisms
- Contract out in a smart way
- Foster transparency to strengthen legitimacy and independence

Need to implement regulatory tools
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
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<td>Financial Engineering of PPP projects</td>
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<td>4</td>
<td>Main ratios used for bankability assessment of PPP projects</td>
</tr>
<tr>
<td>5</td>
<td>Principles of Regulation</td>
</tr>
<tr>
<td></td>
<td>- Institutional models for regulation</td>
</tr>
<tr>
<td></td>
<td>- Financial and price regulation</td>
</tr>
<tr>
<td>6</td>
<td>Case Study</td>
</tr>
</tbody>
</table>
Financial and Price regulation: Regulatory Engineering of a PPP

Regulatory Regime
- Price or Revenue Cap Regulation
- Rate of Return or Cost Plus Regulation
- Yardstick Regulation

Price Control Regulation
- Tariff Structure
- Tariff Level
- Escalation & Adjustment Mechanism (periodical versus automatic)

Investment Regulation
- Investment Public Subsidy
- Investment level obligations & Phasing

Operation Regulation
- Operating Public Subsidy / Payment to government (Lease Payment)
- Contract Duration (Concession Period)
Financial and Price regulation: Matching Regulatory Objectives & Instruments

- Tariff Level & Structure
- Regulatory Regime
- Investment Public Subsidy
- Investment level obligations & Phasing
- Payments to Government / Operating Public Subsidy
- Contract Duration

Regulatory Instruments
Financial and Price regulation

- **Price Control Principles:**
  *Which “allowable” financial return for the Private Partner?***

- **For the Private Partner:**
  - Financial Return = Internal Rate of Return (IRR)

\[
\sum_{i=1}^{n} \frac{-I_i + R_i - C_i}{(1+r)_i} = 0
\]

- \( I_i \) = Investment of the year \( i \)
- \( R_i \) = Revenues of the year \( i \)
- \( C_i \) = Operating Expenditures of the year \( i \)
- \( R_i - C_i \) = Operating Cash Flow of the year \( i \)
- \( n \) = Contract Duration
For the Public Partner
Under a Regulatory Approach basis:

Allowable Financial Return

\[ \text{Allowable Financial Return} = \text{Weight Average Cost of Capital (WACC)} \]

\[ \frac{E}{E+D} \times R_e + \frac{D}{E+D} \times R_d \]

With:

- \( E \) = Equity
- \( D \) = Debt
- \( R_e \) = Equity Cost
- \( R_d \) = Debt Cost
Which “allowable” financial return for the Private Partner?

Price control by the NPV method:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>If IRR &gt; WACC</td>
<td>Excessive Profits for the Private Partner = Privileged position at the expense of Users and/or Public Authorities</td>
</tr>
<tr>
<td>If IRR &lt; WACC</td>
<td>Bankruptcy Risk of the Private Partner</td>
</tr>
<tr>
<td>If IRR = WACC</td>
<td>Idealistic situation from a regulatory viewpoint because comparable to profit made in a competitive market</td>
</tr>
</tbody>
</table>

$NPV = 0$
Allowable Financial Return = Weight Average Cost of Capital (WACC)

\[
\frac{E}{E+D} \times R_e + \frac{D}{E+D} \times R_d
\]

Where:
- \( E \) = Equity
- \( D \) = Debt
- \( R_e \) = Equity Cost
- \( R_d \) = Debt Cost

How to assess the Equity and Debt Remuneration Requirement?
Equity risk measurement $r_e$

If the private company is listed in a Stock Exchange, $r_e$ can be estimated by using the CAPM (Capital Asset Pricing Model):

$$r_e = r_f + \beta_e (r_m - r_f) + r_{sov} + r_{reg}$$

- $r_f$ = Risk-free rate: usually, US or UK Bonds Rate (2 to 6%)
- $\beta_e$ = Equity beta reflecting the sensibility of the sector compared to the whole capital market
- $r_m$ = Market Return
- $r_m - r_f$ = Equity Risk Premium or Market Risk Premium (4% to 8%)
- $r_{sov}$ = Country Risk Premium or Sovereign Risk Premium
- $r_{reg}$ = Regulatory Risk Premium
Debt Cost Measurement $r_d$

- The cost of debt is based on the market performance of new Public Bonds within the host country of the project plus a risk premium associated to the operator and/or the Sector

$$r_d = r_f + IP + r_{mat} + r_{sov} + r_l + r_{def}$$

- $r_f$ = Risk Free Rate $\approx$ (2 to 5 % in France)
- IP = Inflation premium
- $r_{mat}$ = Maturity risk premium
- $r_{sov}$ = Sovereign Risk Premium
- $r_l$ = Liquidity premium
- $r_{def}$ = Default Risk Premium

- The different risk premium should reflect the intrinsic characteristics of debt (type of debt, maturity, duration...)
Price control mechanism (once the contract come into force)
Level of Required Revenue at each control period:

\[
\text{Required Revenue} = \text{WACC} \times \text{Asset Value} \times \text{Depreciation Rules} \times \text{Asset Value} \times \text{OPEX} \times \text{Efficiency}
\]
Price Control according to the Accounting Approach:

Allowed revenues during the control period are calculated by summing:

1. Present value of the operating expenses
2. Present value of depreciation
3. Present value of return on capital

\[
\text{ALLOWED REVENUES} = \text{PV [Operating expenses]} + \text{PV [Depreciation]} + \text{PV [Return on capital]}
\]
Price Control according to the Cash Flow Approach:

Allowed revenues during the control period are calculated by summing:

1. Present value of the operating expenses
2. Present value of the “capital expenses" (new investments)
3. Present value of variation of assets value during the period

\[
\text{ALLOWED REVENUES} = PV \text{ [Operating expenses]} + PV \text{ [Capital expenses]} + PV \text{ [Initial value of assets – Final value of assets]}
\]
Financial structuring of a PPP project = Regulatory equilibrium which solve the equation:

\[ 0 = -K_i \sum_{j=1}^{N} \frac{P*Q - O&M - I - T \pm Tr}{(1 + r)^j} + \frac{K_f}{(1 + r)^N} \]

- **P*Q**: Revenue = Average Tariff \((P)\)* Quantity volume \((Q)\)
- **O&M**: OPEX
- **T**: Taxes
- **I**: Investment or CAPEX
- **r**: WACC
- **K_i**: Initial Value of Regulated Assets
- **K_f**: Final Value of Regulated Assets at the Period \(N\)
- **Tr**: Transfers (Payment to Government / Operating Subsidy)
Financial and Price regulation

WACC, from the regulator’s view point:

- Level of allowed profits: \( \text{Allowed profit} = \text{regulatory asset base} \times \text{WACC} \)
- Rate of return required for the operator to finance future investments
- Estimation errors affect investment
  - Too high \( \Rightarrow \) over-investment
  - Too low \( \Rightarrow \) under-investment
- Benchmark for all forms and structures of finance
- Forward looking approach: \( \text{WACC} = \text{cost of marginal financing} \)
- Imposes going through a fair assessments of risks:
  - Business risk
  - Financial risk (gearing)
  - Political risk
  - Regulatory risk
  - Returns available elsewhere
  - Type of guarantees
Financial and Price regulation

WACC calculation approach:

- No perfect approaches, but various options and a range of WACC
- Need of a transparent, consistent and justified methodology
- Set the methodology according to:
  - The Information needs
  - The Incentive effects on the operator
  - The definition of the regulatory asset base and the cash flows: Be Consistent!!
- Design and implement regulatory processes to share and refine this methodology with the operator at the time of scheduled or unscheduled tariff revisions

→ Accepted and pragmatic methodology which preserves the incentive to invest of the operator
Asset Base Valuation Issues:

- Components: What assets should be included in a regulated asset base?
  - Specific to the regulated service
  - Prudential criteria (used and useful)

- Valuation: How to value assets?

- Contract termination rule
Complex issues in practice

- **Risk of dominant position abuse from the Public Partner**
  - Political Risk ("Fait du Prince")
  - "Change in Law"

- **Risk of dominant position abuse from the Private Partner**
  - Monopoly / Oligopoly
  - Asymmetry of information phenomena

- **Long term involvement of both parties in a evolving & unpredictable environment**

- **Franchises or concessions usually involve a mixture of previously state-owned assets plus new investment:**
  - What is the value of the company at the beginning of the concession?
  - What is the value of the company at the end of the concession?
  - On what value should allowed revenue be calculated?

**Requirement for a continuous negotiating process between parties involved during the whole project cycle**
Example of antagonist objectives

OFFER (PRIVATE COMPANY)
- Operating Cost
  - Cost of Capital
    - TARIFFS ????
      - Tariff Level & Structure
        - DEMAND (USERS)
          - Cost Covering
            - Social Policy
A step-by-step negotiating process:

1. Define an affordable tariff for users
2. Financial Requirement OK??
   - NO
3. Choice of the Instruments:
   - Financial Engineering / Regulatory Engineering
   - Financial Requirement OK??
   - NO
4. Implementation
   - YES
   - NO
CONCLUSION:

➡ A partnership based on a continuous negotiating process between all parties involved...

➡ Requirement for an Analytical Process and Tools dedicated to the financial regulation:

**Economic & Financial Regulatory Model**
Financial and Price regulation

An essential tool for an efficient negotiating process during the whole project cycle:

- Evaluate restructuring options & regulatory policies before PPP implementation
- Initial Structuring & negotiation for PPP implementation (before the contract coming into force)
- Ordinary Tariffs Revision
- Extraordinary Tariffs Revision
- Renegotiation of the initial contract terms in case of “external shocks”: economic crisis, devaluation...
Financial and Price regulation

Logical Structure of the Model:

1. Macro-Economic Assumptions
   - Tariffs structure
   - Demand Assumption
   - CAPEX Assumption
   - Fiscal assumption
   - Payment to Government
   - Operating Assumption

2. Cash flow Model
   - Operating Revenues
   - CAPEX
   - OPEX

3. Financial Engineering Assumptions
   - P&L Statement
   - Cash Flow Statement
   - Balance Sheet

4. Financial Model
   - Corporate Finance Diagnosis
     - Financial Balance Constraint
     - Financial Return Constraint
   - Risk Premium Assumptions
     - WACC
     - Equity Cost
     - Debt Cost
   - Regulatory Diagnosis
     - Cash Flow Approach
     - Accounting Approach

5. Corporate Finance Module
   - Monitoring Board: Inputs & Outputs Set-Up

6. Financing Regulation Module

7. Regulatory Model

CAPEX: Capital Expenditures
OPEX: Operating Expenditures
CONCLUSION: WHY A FINANCIAL MODEL IN REGULATORY ACCOUNTING?

- Guarantee for a better transparency in the decision-making process because based on rational approaches shared by all actors involved in the project: public authority, private companies & users.

- Guarantee for the users to be better protected against the monopolistic position of the private operator due to the justification required in the price control process.

- Guarantee for the public authorities against the “capture” risk by the private company by reducing the phenomena of information asymmetry.

- Allow an ex post control of the private obligations taking into account the eventual change occurred since initial forecasts.

➡ Essential tool for the public regulators for an consistent decision-making process.
## Content

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<td>▪ Presentation of the case study</td>
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<td></td>
<td>▪ Economic model set-up</td>
</tr>
<tr>
<td></td>
<td>▪ Financial model set-up</td>
</tr>
<tr>
<td></td>
<td>▪ “Bankability” analysis, financial structuring and negotiation</td>
</tr>
</tbody>
</table>
Airport concession project in China
**Project presentation 1/2**

- **Object**: Concession project of a new airport terminal in China

- **Typology of the Public Partner**: Airport Authority (Ministry of transportation) as a Grantor

- **Typology of the Sponsors of the Special Purpose Company (SPC)**: A joint-venture formed by a Contractor and an Airport Operator
Perimeter of the Project falling to the responsibility of the Airport Authority

Financing and construction of the ground accesses to the new Airport Terminal

Perimeter of the Project falling to the responsibility of the SPC

Financing, Construction & Operating of the new Airport Assets
Contractual and financing structure outline

Public-Private contractual outline

“Vertical” Partnership based on a BOT Contract (Build Operate Transfer)

Private contractual outline (Sponsors/Contractors/Supplier/Operator)

EPC Contract (Engineering/Procurement/Construction) signed between the SPC and the Contractor (also shareholder of the SPC). The SPC is the operator of the Airport Terminal

Financing Engineering Structure

Debt financing under Project Finance basis
Project glossary
## General and macro-economic assumptions

<table>
<thead>
<tr>
<th>Information</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start of Construction Period</strong></td>
<td>12/31/2010</td>
</tr>
<tr>
<td><strong>Construction Period</strong></td>
<td>2 years</td>
</tr>
<tr>
<td><strong>Concession Life</strong></td>
<td>15 years from the end of the Construction Period</td>
</tr>
<tr>
<td><strong>Revision Indexes</strong></td>
<td>General Inflation Index</td>
</tr>
<tr>
<td><strong>Local currency</strong></td>
<td>China Yuan Renminbi (CNY)</td>
</tr>
<tr>
<td><strong>Foreign currencies</strong></td>
<td>Euro (EUR) &amp; US Dollar (USD)</td>
</tr>
<tr>
<td><strong>Interest &amp; Exchange rates</strong></td>
<td>We suppose that the financing is granted by the banking syndicate in Euros at a fixed rate (during the construction and operating periods), which means that Swaps of rate and exchange were granted to the SPC</td>
</tr>
</tbody>
</table>
### Capital Expenditures (CAPEX)

<table>
<thead>
<tr>
<th>Information</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction &amp; Airport Equipment Costs</td>
<td>They are registered in their currency of contractual payment for the SPC and according to their value in 2011</td>
</tr>
<tr>
<td>Capital Expenditures</td>
<td>They are calculated so as to obtain their current value for the considered period</td>
</tr>
<tr>
<td>Accounting Assumptions</td>
<td>We suppose that the depreciation mode of all assets is straight-line</td>
</tr>
</tbody>
</table>
# Operating Expenditures & Revenues (OPEX)

<table>
<thead>
<tr>
<th>Information</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Labour Costs</strong></td>
<td>The fixed labour costs include all the wages of the SPC employees: local labour (paid in CNY) and expatriates (paid in EUR)</td>
</tr>
<tr>
<td><strong>Other Fixed Expenses</strong></td>
<td>They include Maintenance Costs (which is a % of CAPEX) &amp; Administration Costs</td>
</tr>
<tr>
<td><strong>Variable Operating Expenses</strong></td>
<td>They are indexed to the traffic growth</td>
</tr>
<tr>
<td><strong>Lease Payment</strong></td>
<td>They both include a fixed &amp; variable part which is indexed to the traffic growth</td>
</tr>
</tbody>
</table>
### Information | Hypothesis
--- | ---
**Net Operating Revenues** | Net Operating Revenues calculation should identify clearly the Fixed from the Variable Expenses in order to assess, at each period, the level of the break-even point
**Working Capital Need** | Its calculation is based on Receivable & Payable time assumptions
**Net Operating Cash Flows** | They are obtained by subtracting at each period the Working Capital Need to the Net Operating Revenues
### Financial Structuring & Engineering

<table>
<thead>
<tr>
<th>Information</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equity</strong></td>
<td>The total amount of Equity is given by the ratio E/(E+D) accepted by the banking syndicate. This ratio is generally a function of the risk of the project and analysed according to the point of view of the lenders</td>
</tr>
<tr>
<td><strong>Financial Debt under Project Finance basis</strong></td>
<td>All the characteristics of the financial Debt (according to the Project Finance basis) are considered as parameters. We suppose that the intercalary interests (interests on Debt, Arranging &amp; commitment Commissions) during the drawing period (construction period) are not comprised in the calculation of the financing needs</td>
</tr>
<tr>
<td>Information</td>
<td>Hypothesis</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Fiscal Assumptions</td>
<td>We suppose that the local legislation authorizes losses to be carried forward</td>
</tr>
<tr>
<td>Corporation Tax</td>
<td>The corporation tax is calculated and paid at the end of each year</td>
</tr>
<tr>
<td>Dividends Distribution Policy</td>
<td>Dividends of year N are paid to the shareholders at the end of year N</td>
</tr>
<tr>
<td>Information</td>
<td>Hypothesis</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Cash Flow Account</strong></td>
<td>A “test” function has been incorporated into the Model in order to verify if the cash flow account was always positive</td>
</tr>
<tr>
<td><strong>Sources &amp; Uses Statement</strong></td>
<td>A “test” function has been incorporated into the Model in order to verify if the Sources &amp; Uses were well balanced at the end of each period</td>
</tr>
<tr>
<td><strong>Assets/Liabilities</strong></td>
<td>A “test” function has been incorporated into the Model in order to verify if the Assets &amp; Liabilities were well balanced at the end of each period</td>
</tr>
<tr>
<td>Information</td>
<td>Hypothesis</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Internal Rate of Return (IRR)</strong></td>
<td>This ratio is calculated (before and after corporation tax) on the basis of the Operating Cash Flows given in their current value</td>
</tr>
<tr>
<td><strong>Return on Equity versus Shareholders Return</strong></td>
<td>The main difference between these two ratios come from the various currencies taking into account in the return calculation: MCNY for the Return on Equity versus MEUR for the Shareholders Return</td>
</tr>
<tr>
<td><strong>Annual Debt Service Cover Ratio (ADSCR)</strong></td>
<td>ADSCR is a ratio calculated at each period. The maximal financial risk for the SPC occurs when this ratio is minimal. A “test” function has been incorporated into the Model in order to indicate if, at one period, its value is lower than 1</td>
</tr>
<tr>
<td><strong>Debt Cost</strong></td>
<td>They can be calculated either on the loan life (Loan Life Cover Ratio or LLCR), or on the duration of the whole concession contract (Project Life Cover Ratio or PLCR)</td>
</tr>
</tbody>
</table>
### Information

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</thead>
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<tr>
<td><strong>Duration of the Price Control</strong></td>
<td>The financial model has been parameterised in order to take into account the duration of the Price Control decided by the Regulator</td>
</tr>
<tr>
<td><strong>Weight Average Cost of Capital or WACC Calculation</strong></td>
<td>A short module for the calculation of the WACC has been implemented. The requirement on Equity Return is calculated under a CAPM basis (Capital Asset Pricing Model)</td>
</tr>
<tr>
<td><strong>Calculation of the allowable revenues</strong></td>
<td>The allowable revenues of the Operator is calculated according to a Cash-Flow approach. The discount rate used is the WACC</td>
</tr>
<tr>
<td><strong>Calculation of the revenues received by the Operator</strong></td>
<td>The discount rate used in the calculation of the Revenues Present Value is the WACC</td>
</tr>
<tr>
<td>Information</td>
<td>Hypothesis</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Initial Assumptions</td>
<td>All the initial assumptions are recapitulated in their “average” value</td>
</tr>
<tr>
<td>Global Financing Plan</td>
<td>It is interesting to set-up a global financing plan of the project, kind of Global Sources &amp; Uses Statement</td>
</tr>
<tr>
<td>Graphs</td>
<td>3 main graphs required for a financial analysis of the project are proposed:</td>
</tr>
<tr>
<td></td>
<td>- Cash Flow Statement allocation  ;</td>
</tr>
<tr>
<td></td>
<td>- Annual Debt Service Cover Ratios;</td>
</tr>
<tr>
<td></td>
<td>- “Endogenous” Financial Risk Analysis (Net Operating Cash Flow versus Debt Service)</td>
</tr>
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</table>
Economic model set-up
Logical structure of the Financial Model

- **Macro-Economic Assumptions**
  - Tariffs structure
  - Demand assumption
  - CAPEX assumption
  - Fiscal assumption
  - Payment to Government
  - Operating assumption

- **Operating Revenues**
- **CAPEX**
- **OPEX**

- **Cash flow Model**

- **Financial Engineering Assumptions**

- **P&L Statement**
- **Cash Flow Statement**
- **Balance Sheet**

- **Financial Model**

- **Risk Premium Assumptions**
  - Corporate Finance Diagnosis
    - Financial Balance Constraint
    - Financial Return Constraint
  - WACC
    - Equity Cost
    - Debt Cost
  - Regulatory Diagnosis
    - Cash Flow Approach
    - Accounting Approach

- **Corporate Finance Module**

- **Corporate Finance Module**

- **Financing Regulation Module**

- **Monitoring Board: Inputs & Outputs Set-Up**

- **Regulatory Model**

**CAPEX:** Capital Expenditures  
**OPEX:** Operating Expenditures
Economic model set-up

<table>
<thead>
<tr>
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<th>Modelling of the project environment</th>
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<tbody>
<tr>
<td>A</td>
<td>Capital expenditures or CAPEX</td>
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<tr>
<td>B</td>
<td>Operating revenues</td>
</tr>
<tr>
<td>C</td>
<td>Operating expenditures or OPEX</td>
</tr>
<tr>
<td>D</td>
<td>Outputs of an economic model</td>
</tr>
</tbody>
</table>
A. Modelling of the project environment

- **Project Calendar**
  - Construction period
  - Operating period

- **Macro-economic assumptions: Economic Study Outputs**
  - Prices indexes: General inflation (local & international), construction index, salaries index...
  - Exchanges rates: EUR/CNY, USD/CNY...
  - Interest rates: EURIBOR 6 months...

- **Fiscal & Accounting Assumptions: fiscal study outputs**
  - Corporation tax rate, VAT; other taxes
  - Assets depreciation modes & rates
  - Overheads
B. Capital Expenditure or Capex

- Capital expenditures statement: Technical Study Outputs
  - Breakdown of CAPEX: initial capital, renewal expenses, new investments...
  - Breakdown by categories of assets: intangible versus capital assets
  - Investment breakdown
  - Investment currencies

- Assets depreciation statement: Fiscal Study Outputs
  - Breakdown of investments by “homogeneous” categories: mode & rate
  - Depreciation: intangibles & capital assets
  - Provisions for renewal of capital assets

- Residual Value of the investment at the end of the contract
C. Operating revenues

Revenues = Quantity x Unit Price

- Demand forecast: Traffic Study Outputs
  - Traffics of reference (be careful with “green-field” projects)
  - Growth Traffic Modes: linear, multi-linear, logarithmic...

- Tariff Structure: Tariff Study Outputs
  - Unit Tariffs activity by activity
  - Currencies of calculation & payment
  - “Free tariff” (i.e “market price”) or public tariff
  - Freedom to propose discounts under the Price cap or fixed public tariff to all port customers
  - Tariffs Indexation activity by activity
D. Operating Expenditures

- Operating Expenditures: Technical Study Outputs
  - An item by item & activity by activity breakdown of operating expenses: Maintenance, Labor, General & Administration ...
  - A fixed & proportional breakdown for each headings
  - Breakdown of currencies for each item

- Operating License Fee / Subsidy: Regulation Inputs
  - **Upfront Fee**: adjusting instrument as a counterpart of rights granted to the private operator
  - **Fixed part of subsidies**: adjusting instrument as a counterpart of obligations imposed to the private operator
  - **Variable part License Fee / Subsidy**: sharing instrument of risks (traffic risk) & profits between both partners
E. Outputs of the economic model

Operating statement of the SPC

- EBITDA
- Calculation of the Working Capital
  Need: receivables & payables
- Operating Cash Flows
- Cost accounting: Activity Based Costing and Activity Based Management

EBITDA

\[ \text{EBITDA} = \text{REVENUES} - \text{Fixed Costs} - \text{Variable Costs} \]

Operating cash flow

\[ \text{Operating cash flow} = \text{EBITDA} - \text{Variation in working capital} \]

Investment plan CAPEX

Internal Rate of Return based on free cash flow before financing
Financial model set-up
A  Cash Flow statement
B  Profit & Loss statement
C  Balance Sheet
## A. Cash Flow statements

<table>
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<tr>
<th>Financial structuring</th>
<th>Cash Flow Statement</th>
<th>Uses &amp; Sources Statement</th>
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<tbody>
<tr>
<td>Equity injection</td>
<td>Cash flows arranging according to the order of draw down</td>
<td>Cash flows arranging by “origin/destination”</td>
</tr>
<tr>
<td>Debt: Drawings, interest, repayments &amp; Debt service cover account (Trustee Account)</td>
<td>Calculation of the various Cash Flow balances</td>
<td></td>
</tr>
</tbody>
</table>

B. Profit & Loss Statement

Interim Management Balance
- Turnover
- EBITDA
- EBIT vs. NOPAT
- Financial Result
- Net Profit / Loss

Corporate Tax Calculation
- Establishment
- Rate
C. Balance Sheet

**Assets**

- Gross Assets Value
- Depreciation & Tax allowances for renewal

**Liabilities**

- Equity
- Debt & Revolving Credit

**Real Asset Value**

\[
\text{Real Asset Value} = \text{Gross Value} - \text{Cumulated Depreciation} - \text{Cumulated Allowances for renewal}
\]

**“Adjusted” Equity**

\[
\text{“Adjusted” Equity} = \text{Equity} - \text{Intangible Assets}
\]
Bankability analysis, financial structuring and negotiation
Your job as a financial analyst

- Set-Up the Economic Model
- Set-up the Financial model
- Analyze the “bankability” of the project and negotiate for an acceptable transaction strategy for all entities involved:

Group 1
US based operator

Group 2
French based operator

Group 3
Chinese based operator

Group 4
Brazilian based operator

Group 5
Emirati based operator

Group 6
German based operator
Glossary

- **ADSCR**: Annual Debt Service Cover Ratio
- **BLAs**: Bilateral Agencies (GTZ, MCC, AFD, etc.)
- **BOT**: Build Own Operate
- **CAPEX**: Capital expenditures
- **ECA**: Export Credit Agencies
- **EIB**: European Investment Bank
- **EIS**: Environmental Impact Study
- **IFI**: International Financial Institution (IMF, World Bank, etc.)
- **IRR**: Internal Rate of Return
- **IPP**: Independent Power Producer
- **LLCR**: Loan life cover ratio
- **MLAs**: Multilateral Agencies (World Bank)
- **NPV**: Net Present Value
- **OPEX**: Operating expenditures
- **PFI**: Project Finance Initiative
- **PLCR**: Project life cover ratio
- **PPIAF**: Public-Private Infrastructure Advisory Facility
- **PPP**: Public Private Partnership
- **PRG**: Partial Risk Guarantee
- **PRI**: Political Risk Insurance
- **PSC**: Public Sector Comparator
- **SPC**: Special Purpose Company
- **WACC**: Weighted Average Cost of Capital
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