



World Bank



# Public Sector Comparator for Highway PPP Projects

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# Presentation Outline

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- Purpose and Definition of PSC
- Basis for comparison between Public v. Private
- Valuing risk
- Characteristics of Public Procurement
- PSC stages & principles
- Risk Matrix and risk allocation
- Discounted cash flow and discount rate
- Case Study of a typical Motorway PPP
- Overall Conclusions



# Public Sector Comparator

- Purpose:

“A Public Sector Comparator (PSC) 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:

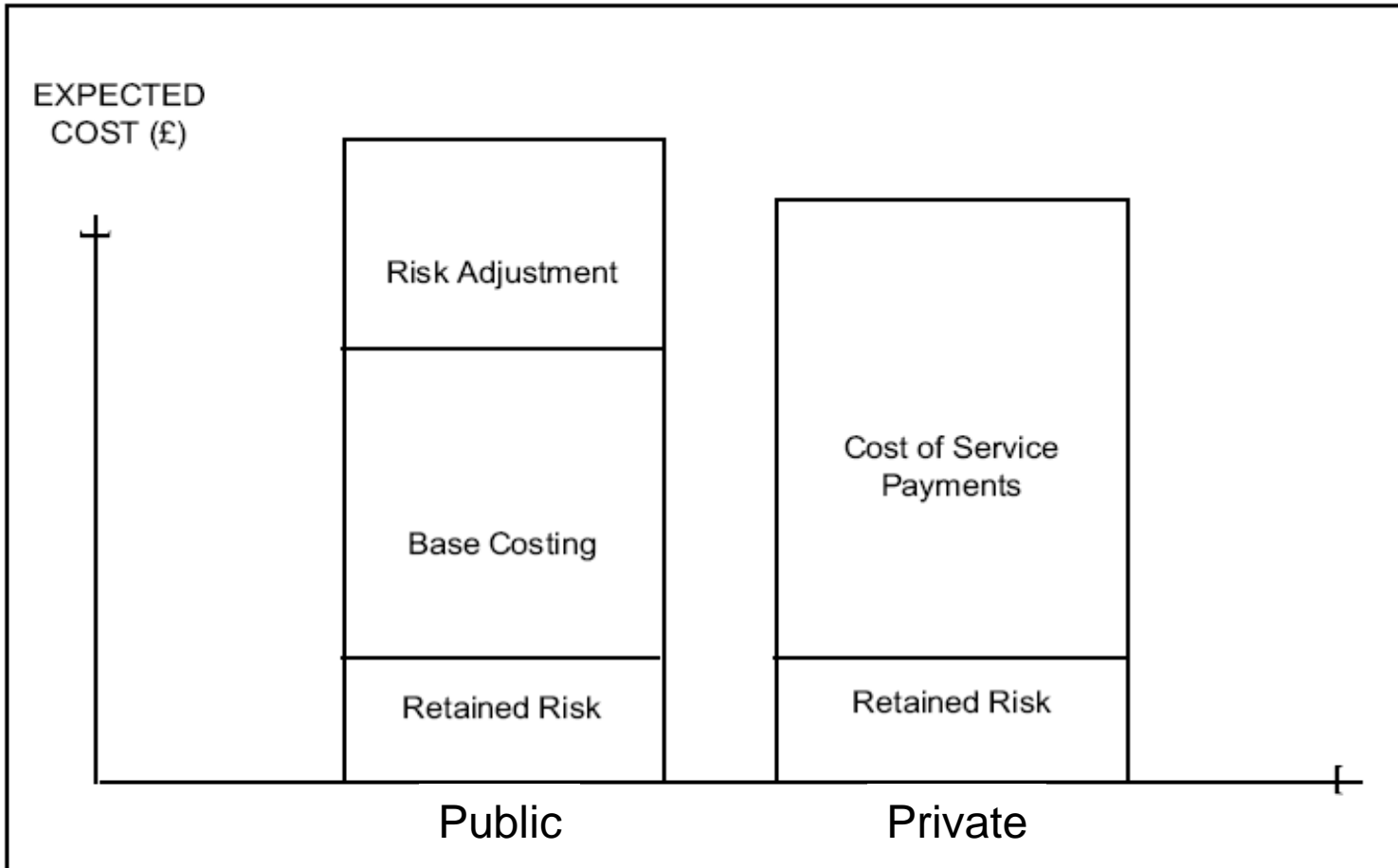
“The PSC estimates the hypothetical risk-adjusted cost if a project were to be financed, owned and implemented by government.”

- PSC provides a benchmark for estimating value for money from alternative bids.





# Value for Money Comparison





# Value of Risk

- Risk: “uncertainty as to the amount of benefits. This includes potential for gain and exposure to loss.”
- Two essential elements of risk:
  - it is a cost
  - it is a possibility and not a certainty, i.e. more than one outcome is possible.
- Uncertainty makes it difficult to identify and estimate the costs of risks



# Public Sector Procurement

- Tends not to value risk,
  - Budgets for projects are often optimistic
  - Tendency to budget for the best possible, lowest cost and earliest completion outcome
- Estimates should be for the most likely outcome!
- Private sector generally includes risks in cost estimates.
- However, if most risks are transferred to the private sector, value for money will decline since the premium demanded will outweigh the benefit





# PSC Stages

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- Capital costs
- Operating costs
- Projected revenues
- Asset values
- Risk matrix
- Sensitivity analysis
- Discounted cash flow
- Comparison of alternative bids



# General Principles

- Capital costs:
  - should reflect the full resource costs of the project, including opportunity cost of public assets used in the project, and adjusted for risks.
- Operating costs:
  - whole life cost of maintaining the asset to the same standard as required from the Private operator.
- Revenue streams:
  - Included only if bidders will be allowed to set tolls.





# Risk Matrix & Sensitivity Analysis

- Construction of a risk matrix:
  - identification of risks involved in the project;
  - assessment of the impact of these risks;
  - assessment of the likelihood of such risks arising; and
  - the calculation of the financial impact and ranges of possible outcomes.
- Sensitivity analysis allows estimates to be made of the impacts and likelihoods of individual risks
  - Monte Carlo simulation is most often used for this;
  - The result provides the “most likely outcome”.



# Discounted Cash Flow Analysis

- Selection of the Discount Rate is the most important issue:
  - Discount Rate should represent the real opportunity cost of capital, adjusted for inflation (& subsidies, if any), for public projects
  - Government issued bonds can be used as a guide.
- This is not the interest rate of private finance!
- IFI loans are generally subsidized and need to be adjusted to reflect commercial ratings



# Case Study

Proposed Motorway PPP Project

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# Project characteristics

- Motorway project involves the design, construction, operation and maintenance of a high quality motorway
- Private sector bidders expected to:
  - undertake the detailed design and construction of the Motorway to the requirements of the Client
  - procure finance for the associated capital costs; and
  - operate and maintain the Motorway to the requirements of the Client over a concession period of 30 years



# Capital cost estimates

- Construction costs characteristics:
  - Initial estimated cost by the Client = €388 million
  - estimate of the Client's overhead costs = €49 million
  - Total capital cost to the Client = €437 million
  - Estimated construction period = 3½ years
- Past history of road construction:
  - Cost over-runs range from -11.5% to +138%, avg =+44% (adjusted for inflation over construction period)
  - Construction duration ranged from -27% to +230%, avg +84% of original estimate (but cost is included in over-runs)
  - expected value of the cost overrun is €172 million (44%),
- Risk adjusted total estimated capital cost = €609 million



# O&M cost estimates

- No previous experience of public O&M costs to the specified standard
- Estimated annual costs for public O&M to the same standard ranged from €1.37 to 2.27 million, with an average of €1.45 million
- Economic and social costs of road closure for periodic maintenance assumed between 4% to 6% of total project benefits



# Government payments

- Capital cost contribution to the project = € 110 million
- Availability payments by the Client to Concessioners comprises fixed and indexed components in both local currency and €, with allowance for lane closures during periodic maintenance
- Weighted availability combines both local and foreign payments assuming long term currency inflation
- Total availability payments = €427 million over 30 years



# Summary of results

10% Discount Rate

<b>NPV (€millions, discounted)</b>	<b>Public</b>	<b>Bid-1</b>	<b>Bid-2</b>
<b>Capital Costs</b>	<b>530.1</b>	<b>427.2</b>	<b>484.3</b>
<b>Economic &amp; Social costs of delay</b>	<b>50.5</b>		
<b>Development costs</b>		<b>12.5</b>	<b>13.6</b>
<b>Administration &amp; Inspection</b>	<b>6.1</b>	<b>30.4</b>	<b>26.4</b>
<b>Insurance</b>	<b>14.8</b>	<b>15.3</b>	<b>15.6</b>
<b>Operating Costs</b>	<b>30.8</b>	<b>49.6</b>	<b>44.7</b>
<b>Periodic Maintenance/Rehabilitation</b>	<b>34.2</b>	<b>27.6</b>	<b>32.1</b>
<b>VAT</b>	<b>3.2</b>	<b>3</b>	<b>3.1</b>
<b>Corporate Tax</b>		<b>20.5</b>	<b>21.3</b>
<b>Cost of Finance</b>		<b>61.2</b>	<b>63.4</b>
<b>Total</b>	<b>669.7</b>	<b>647.3</b>	<b>704.5</b>
<b>Value-For-Money</b>		<b>22.4</b>	<b>-34.8</b>

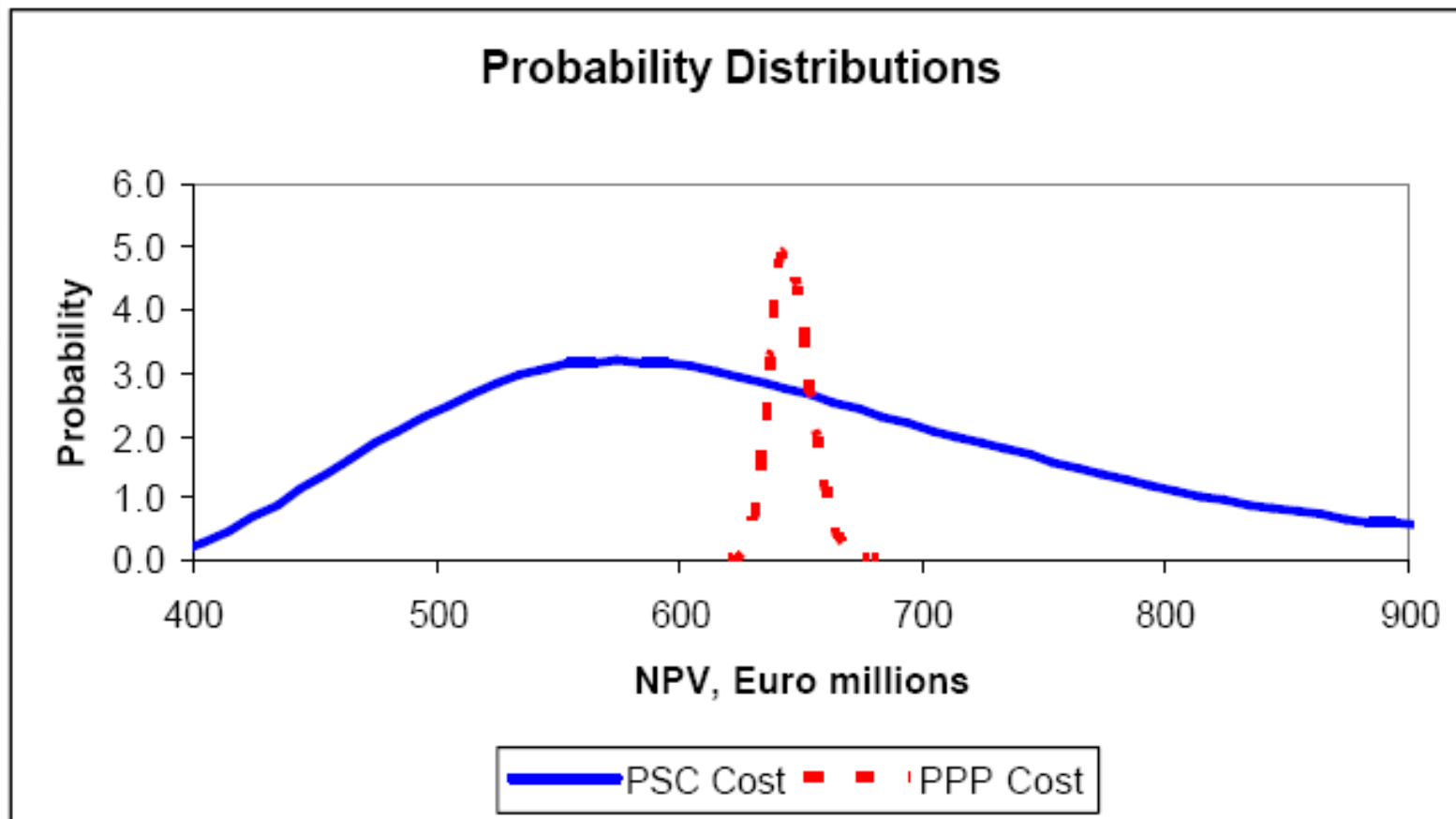






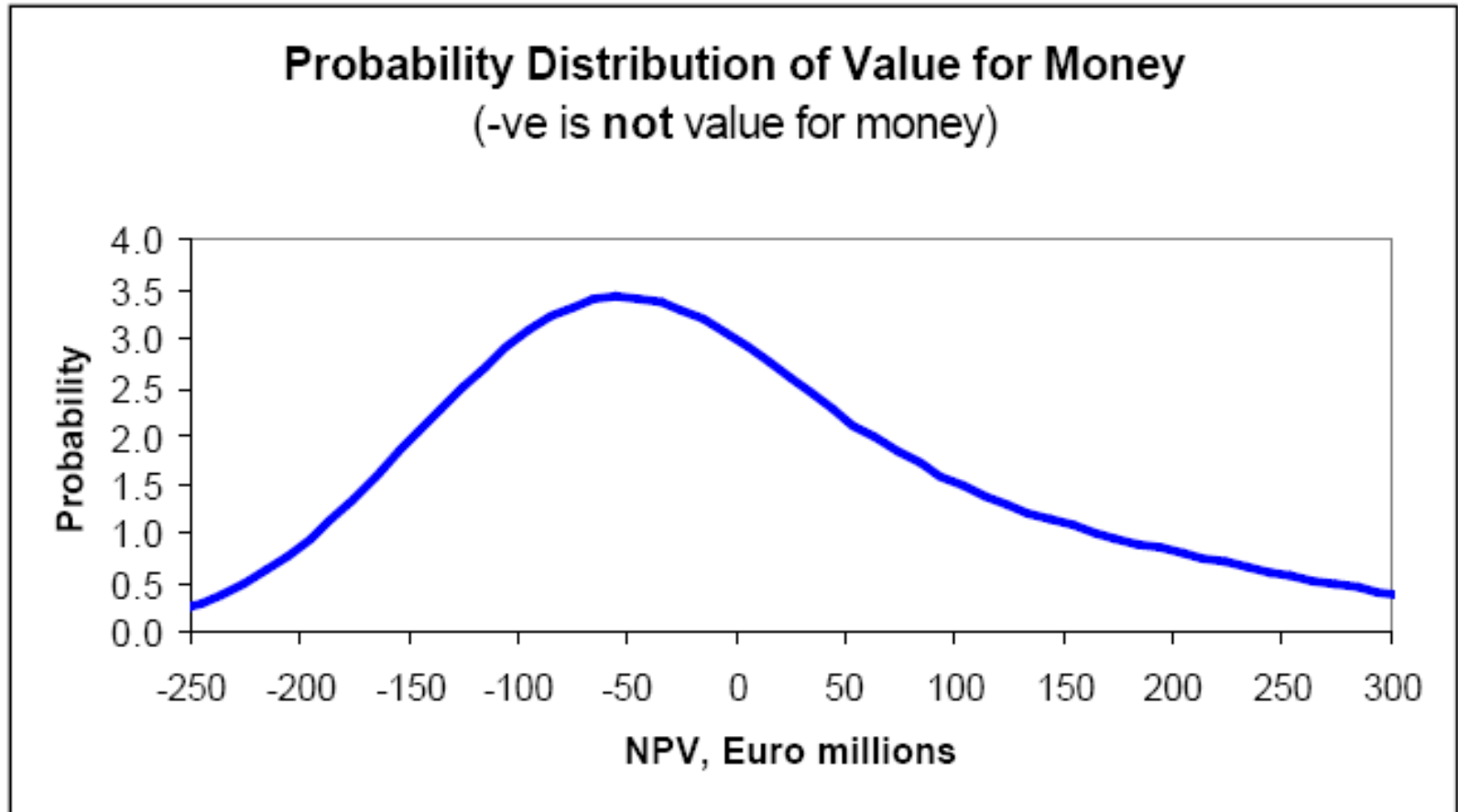
# Sensitivity analysis

Estimated Net Present Value of Total Costs



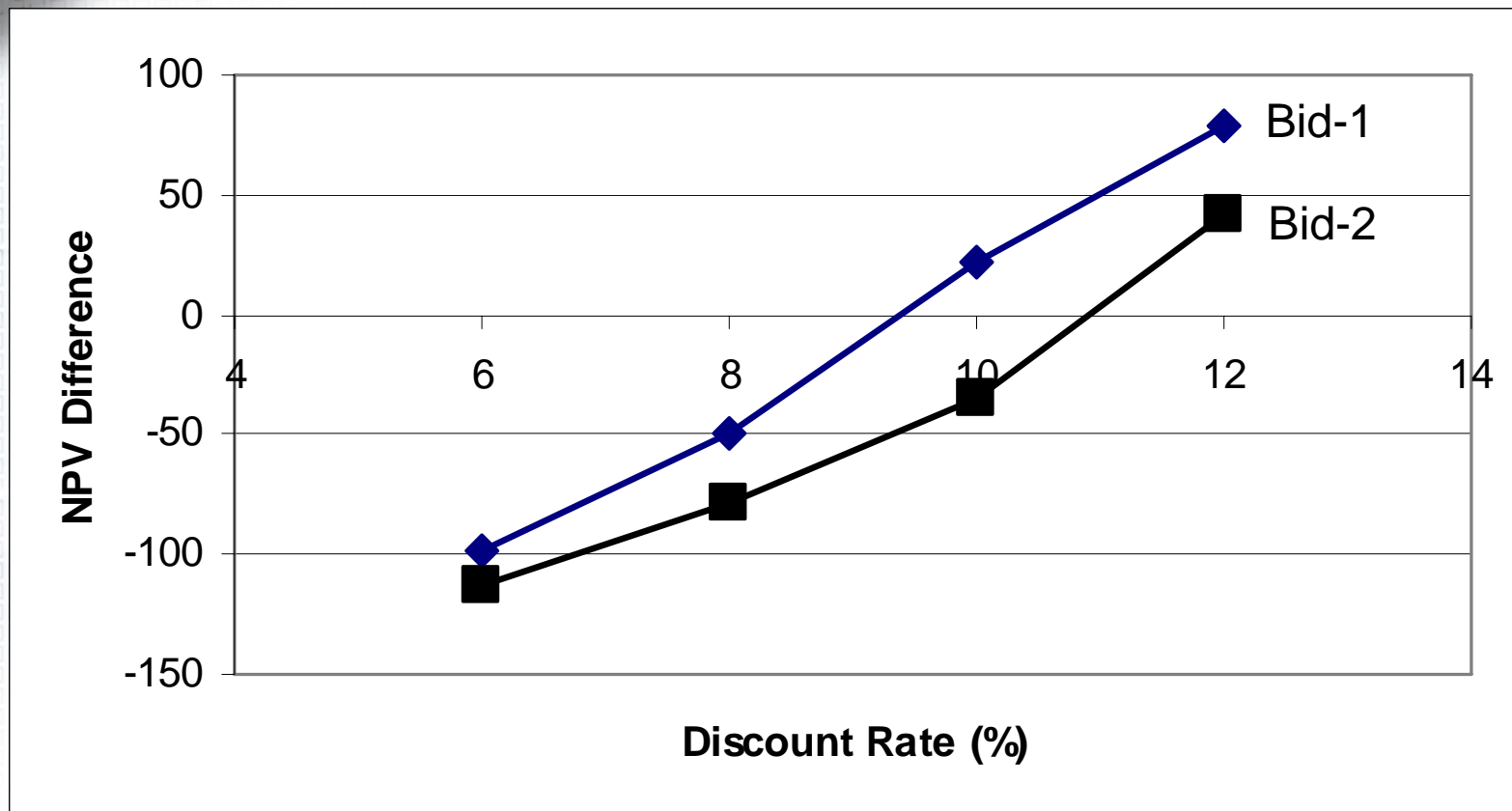


# Outcome likelihood analysis





# Impact of discount rate



The value for money of the Project as a PPP depends on the discount rate used.



# Key Conclusions

- The PSC is intended to provide a FAIR means of comparing PPP projects and/or competing bids against Public procurement.
- Inherent biases in public procurement (e.g. govt overheads, etc.) must be estimated and included
- Risks should be allocated and valued
- Sensitivity analysis provides an indication of the most likely outcome and not only the mean value.
- The main benefit of PPP is the value added through better construction, O&M and risk sharing.



# Other risk adjustments

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- Inflation
- Currency exchange between € and local currency
- VAT payment refund
- Timing of availability payments