

**GRADUATE SCHOOL OF PUBLIC POLICY (GraSPP)
THE UNIVERSITY OF TOKYO
CASE STUDY—PUBLIC-PRIVATE PARTNERSHIPS:
THEORY, PRACTICE, AND CASES
DAY 2: APRIL 13, 2013**

Financing

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Private sources of finance for PPPs

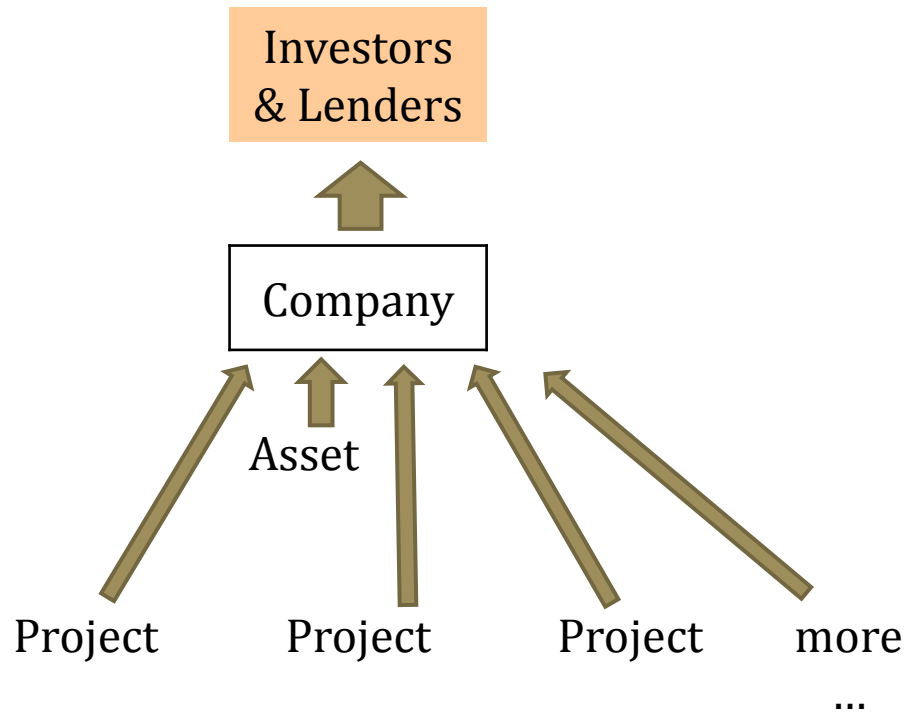
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- Limited-recourse finance, or “project finance”
- VS
- Corporate finance

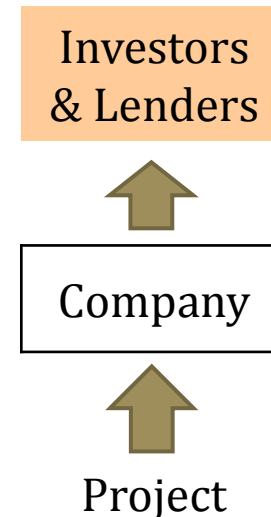
Private sources of finance for PPPs (continued)

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Corporate finance



Limited-recourse finance or “project finance”



Private sources of finance for PPPs (continued)

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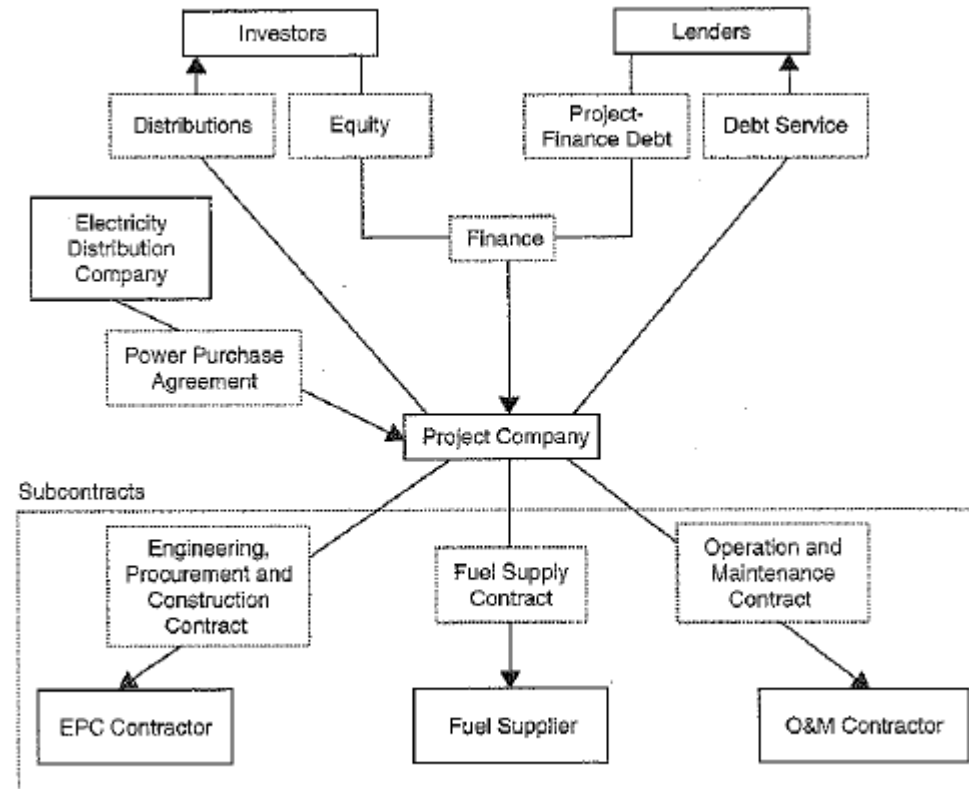


Figure 1.1 Project Finance for a Power Purchase Agreement (PPA)

Source: Yescombe [2007]

Private sources of finance for PPPs (continued)

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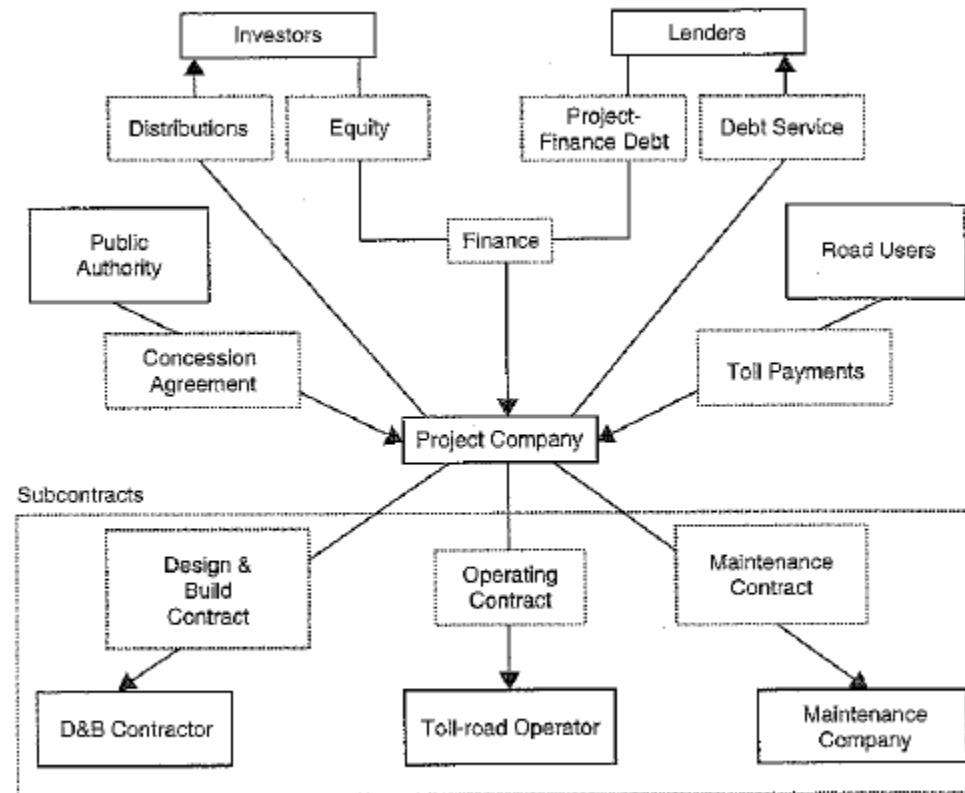


Figure 1.2 Project finance for a road Concession

Source: Yescombe [2007]

Private sources of finance for PPPs (continued)

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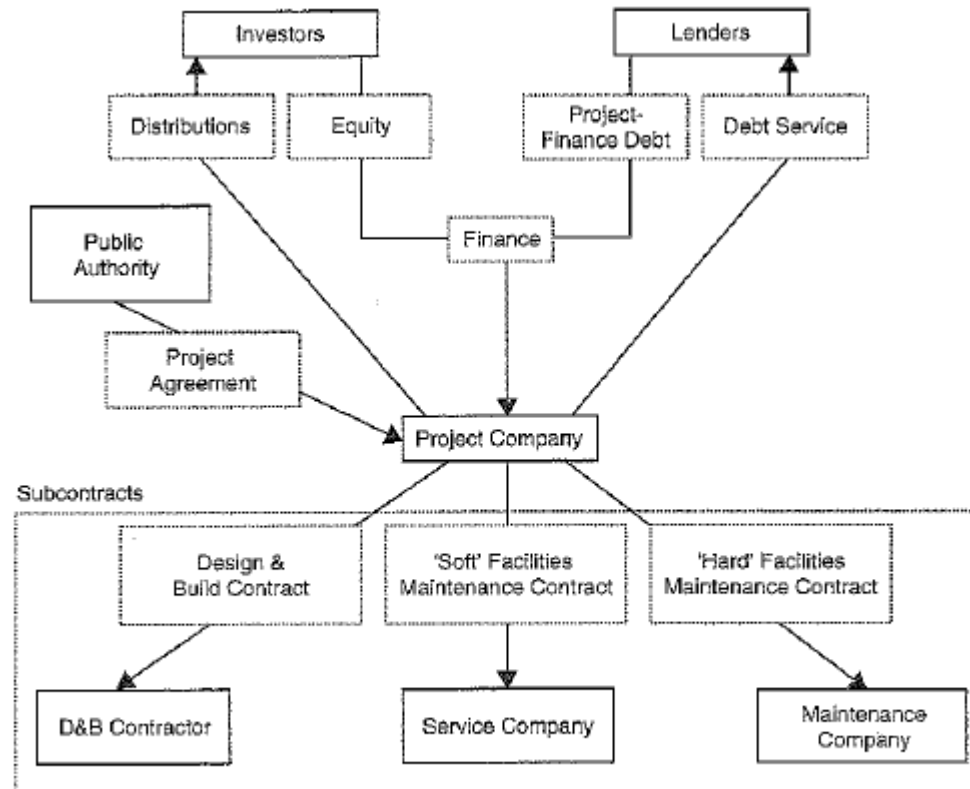


Figure 1.3 Project finance for a PFI school project

Source: Yescombe [2007]

Private sources of finance for PPPs (continued)

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Table 1.1
Public and private provision of infrastructure

	Public project ←————→ Private project					
	←———— Public-Private Partnership ———→					
Contract Type	Public-sector procurement	Franchise (<i>Affermage</i>)	Design-Build-Finance-Operate (DBFO)*	Build-Transfer-Operate (BTO)**	Build-Operate-Transfer (BOT)***	Build-Own-Operate (BOO)
Construction	Public sector ⁽²⁾	Public sector ⁽²⁾	Private sector	Private sector	Private sector	Private sector
Operation	Public sector ⁽³⁾	Private sector	Private sector	Private sector	Private sector	Private sector
Ownership ⁽¹⁾	Public sector ⁽⁴⁾	Public sector	Public sector	Private sector during construction, then public sector	Private sector during Contract, then public sector	Private sector
Who pays?	Public sector	Users	Public sector or users	Public sector or users	Public sector or users	Private-sector off-taker public sector ⁽⁵⁾ , or users
Who is paid?	n/a	Private sector	Private sector	Private sector	Private sector	Private sector

* Also known as Design-Construct-Manage-Finance (DCMF) or Design-Build-Finance-Maintain (DBFM)

** Also known as Build-Transfer-Lease (BTL), Build-Lease-Operate-Transfer (BLOT) or Build-Lease-Transfer (BLT)

*** Also known as Build-Own-Operate-Transfer (BOOT)

(1) In all cases, ownership may be in the form of a joint venture between the public and private sectors (cf §17.3).

(2) Public sector normally designs the Facility and engages private-sector contractors to carry out construction on its behalf (design-bid-build).

(3) Public sector may enter into service (outsourcing) contracts (for operation and maintenance) with private-sector contractors.

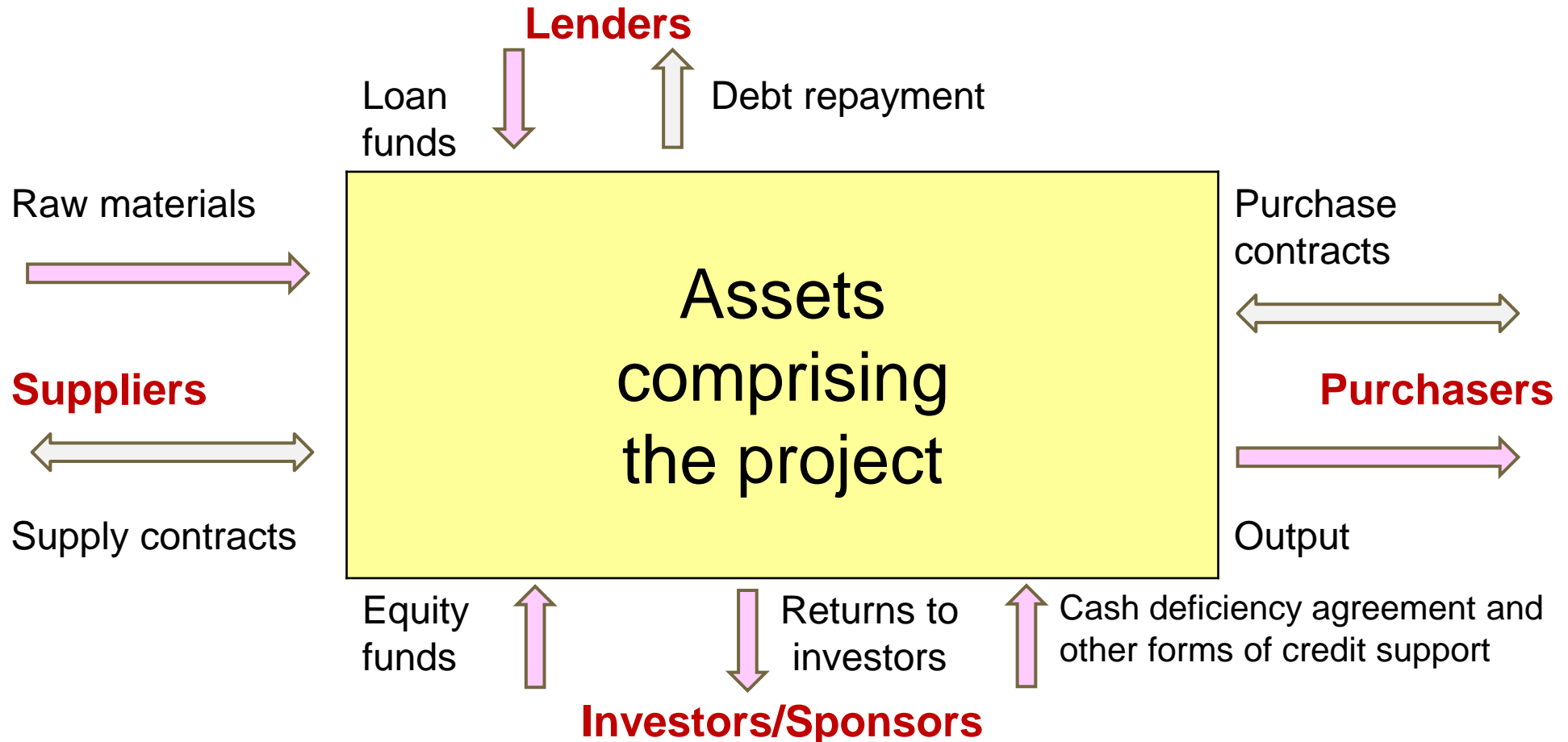
(4) Ownership may be through an independent publicly-owned Project Company, i.e. a 'Public-Public Partnership' (cf §17.2.2).

(5) The BOO Contract form applies to PPPs in the minority of cases where ownership of the Facility does not revert to the Public Authority at the end of the PPP Contract (cf §15.11).

Source: Yescombe [2007]

Private sources of finance for PPPs (continued)

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Private sources of finance for PPPs (continued)

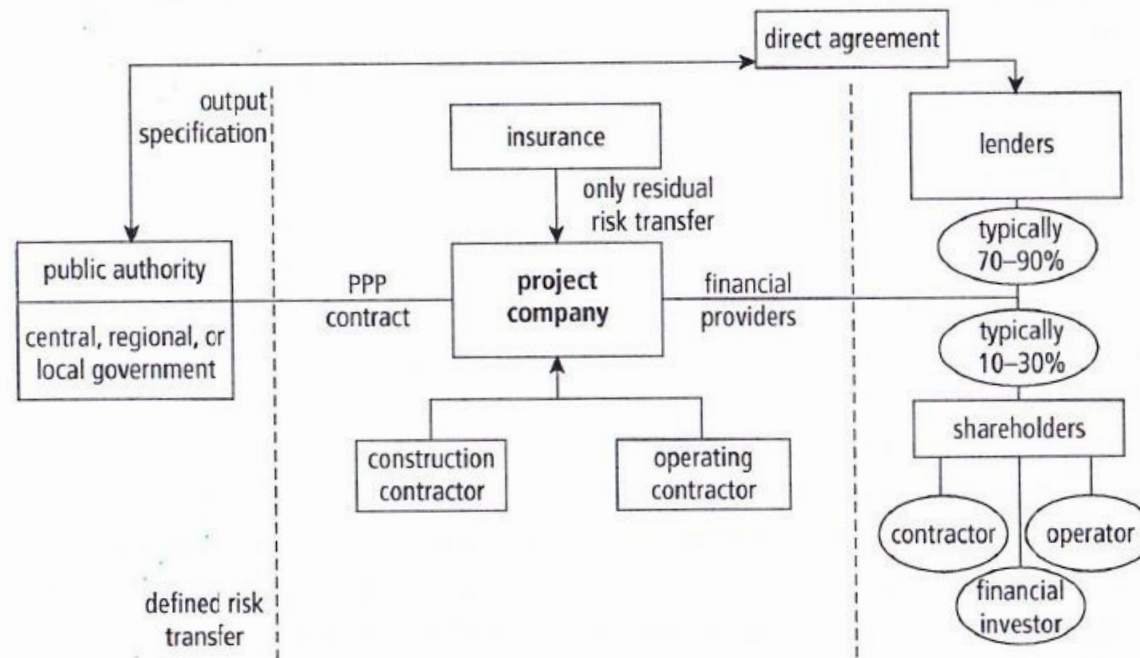
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- Equity, to be provided by investors in the project, with a “*first in, last out*” nature
- Third-party debt, to be provided by banks or through financial instruments such as bonds

Private sources of finance for PPPs (continued)

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Figure 5.1 Typical Contractual Structure of a Public-Private Partnership



Source: Authors.

Source: page 59, World Bank/PPIAF [2011]

Private sources of finance for PPPs (continued)

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- Question: *What does the “first in, last out” nature of equity mean in financing PPP projects?*
- Question: *Which is more expensive, equity or debt, in financing PPP projects?*
- Question: *How could we lower the overall funding costs of a PPP project assuming you could change the debt-to-equity ratio (“gearing” or “leverage”)?*

Private sources of finance for PPPs (continued)

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Benefit of leverage on investors' return

	Low leverage	High leverage
Project cost	1,000	1,000
(a) Debt	500	900
(b) Equity	500	100
(c) Revenue from project (<i>p.a.</i>)	75	75
(d) Interest rate on debt (<i>p.a.</i>)	5%	6%
(e) Interest payable [(a) x (d)]	25	54
(f) Profit [(c) - (e)]	50	21
Return on equity [(f) / (b)]	10%	21%

Source: page 120, Yescombe [2007]

Private sources of finance for PPPs (continued)

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- Question: *What would be the likely debt-to-equity ratio when a project is perceived as riskier than the other?*
- Question: *What would be the likely debt-to-equity ratio for a project when the banking sector have limited capacity or experience to provide long-term debt required for PPP projects?*

Private sources of finance for PPPs (continued)

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- Question: *What are the major constraints that project sponsors (leading investors) will most likely face in using corporate finance for a large-scale infrastructure project?*
- Question: *In limited-recourse finance, what are the main assets that lenders can rely on as security?*

Private sources of finance for PPPs (continued)

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Cover Ratios—level principal repayments

Assumptions:

Project cost	1,000
Debt to equity ratio	90:10
PPP contract term	25 years
Loan term	23 years, paid in equal annual principal installments
Interest rate	6% p.a.
Required equity IRR	15%

Source: page 163, Yescombe [2007]

Private sources of finance for PPPs (continued)

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Cover Ratios—level principal repayments

Year	0	1	2	3	20	21	22	23	24	25	Total
(a) CADS		95	95	95	95	95	95	95	95	95	2,375
Lenders' viewpoint:											
(b) Loan repayments		39	39	39	39	39	39	39			900
(c) Interest payments		54	52	49	9	7	5	2			648
(d) Total debt service [(b) + (c)]		93	91	88	49	46	44	41			1,548
(e) Year-end loan outstanding	900	861	822	783	117	78	39	0			
ADSCR [(a) / (d)]		1.02	1.05	1.07	1.96	2.06	2.17	2.29			
Average ADSCR		1.50	1.52	1.54	2.12	2.17	2.23				
LLCR [(NPV(a)*) / (e)]	1.30	1.33	1.36	1.39	2.16	2.23	2.29				
Average LLCR	1.73	1.75	1.77	1.79	2.23	2.26					
PLCR [(NPV(a)) / (e)]	1.35										
Average life of loan	12 years										

Source: page 163, Yescombe [2007] * : to year 23.

Private sources of finance for PPPs (continued)

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Cover Ratios—level principal repayments

Year	0	1	2	3	20	21	22	23	24	25	Total
(a) CADS		95	95	95	95	95	95	95	95	95	2,375
(b) Loan repayments		39	39	39	39	39	39	39			900
(c) Interest payments		54	52	49	9	7	5	2			648
(d) Total debt service [(b) + (c)]		93	91	88	49	46	44	41			1,548
(e) Year-end loan outstanding	900	861	822	783	117	78	39	0			
Investors' viewpoint:											
Equity investment	-100										
Distributions [(a) – (d)]		2	4	7	46	49	51	54	95	95	827
IRR	15%										
Payback period	c. 9 years										

Source: page 163, Yescombe [2007]

Private sources of finance for PPPs (continued)

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Types of risk mitigation

- Partial-credit guarantees
- Full-credit or “wrap” guarantees
- Export credit agencies
- Debt underpinning
- Political risk guarantees and guarantee funds
- Other forms of guarantees (e.g., minimum revenue guarantee)

Private sources of finance for PPPs (continued)

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Other sources of funding

- Public sector funded development banks
- Viability gap funding

Case: São Paulo Metro Line 4, Brazil

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- 30-year contract (concession agreement)
- The public sector (Companhia do Metropolitano de São Paulo) is responsible for construction of the metro line.
- The private sector is responsible for operation and maintenance as well as for the supply of trains and signaling and control systems.

Case: São Paulo Metro Line 4, Brazil (continued)

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Source: Railway Gazette International [<http://www.railwaygazette.com/home.html>]

Case: São Paulo Metro Line 4, Brazil (continued)

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- Public sector financing for construction of the metro line was provided by the World Bank and the JBIC.
- Private sector financing for the concessionaire responsible for operation and maintenance as well as for the supply of trains and signaling and control systems was led by the IDB.

Case: São Paulo Metro Line 4, Brazil (continued)

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- Financial close in October 2008
- US\$392 million for phase 1
 - ▣ Debt US\$309 million
 - ▣ Equity US\$83 million
- Consortium: Via Quatro (Concessionaria da Linha 4 do Metro de São Paulo)
- Financiers: IDB, Banco Santander, Southern Missouri Bancorp, KfW, Banco Espírito Santo, BBVA, Société Générale, West LB

Case: São Paulo Metro Line 4, Brazil (continued)

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- Question: *Why was the private sector not responsible for construction of the metro line?*
- Question: *What risks is the private sector faced with while being responsible for operation and maintenance as well as for the supply of trains and signaling and control systems?*

Case: São Paulo Metro Line 4, Brazil (continued)

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- Question: *How could the concessionaire cope with the situation where the state government requires commitment to financing the second phase, which is at the discretion of the state government?*
- Question: *How could the concessionaire cope with the situation where the state government is not on time in completing the construction?*

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Please feel free to send me e-mails with any question about the course or if you want to make an appointment. To help me not to miss your incoming e-mails, **please start the subject line with “5140489” (Course No.) when you send e-mails to Nishizawa and/or Miko.*