Case Study 1: Example of a Financial Model for Roads

Wednesday, 12:00 to 13:00

Session agenda

1. Motivation for the session
2. Case Study Introduction
3. Model Assumptions
4. Financial Model (Base Case Scenario)
5. Reduced Economic Activity Scenario

Motivation for the session

- Provide a practical example of PPP concession to develop an applied understanding of financial modelling in project viability assessments.
- Develop an understanding of the key terms and techniques involved in PPP contracts, including:
    - Cash flows with segregated accounts
    - Amortisation schedules
    - Financial coverage rates
    - Project viability assessment
    - Scenario sensitivities

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The Tribasa toll road project

- Concessionaire: two wholly owned subsidiaries of Grupo Tribasa S.A. de C.V. ("Grupo Tribasa").
- Tribasa toll roads comprise:
    - 13.9 mile Ecatepec - Piramides toll road located near Mexico City (1991) – initial concession for approx 4 years, extended to 20 years; and
    - 29 mile Armeria - Manzanillo toll road located on the west coast of Mexico (1991) – initial concession for approx 9 years, extended to 13 years.
- Both concessions can be extended if traffic volumes fail to reach certain specified targets.
- Initial funding was a mix of contractor and local financing.
- Refinanced in 1993.

Refinancing of the Tribasa toll roads

- In 1993, Salomon Brothers placed US$110m of 10.5% notes due 2011, issued by a single-purpose Mexican Trust ("Tribasa Toll Road Trust 1 Financing").
- It consisted of a Eurobond offering and a simultaneous Rule 144A private placement in the US.
- The obligations of the Trust were secured by collection rights under the two toll road concessions and the toll revenues generated by them as well as the investment income the Trust earns on its assets and any insurance proceeds received.
- At the closing for the Note issue, the Trust entered into an operating agreement with a subsidiary of Grupo Tribasa to serve as the toll road operator.

Refinancing of the Tribasa toll roads

- During the project, toll revenues are collected by The Operator and (after deducting VAT) are deposited into a General Account (GA). Funds are then either dispersed from GA, or are transferred to one of three segregated accounts based on a series of criteria.
- The four dedicated accounts which were established on behalf of the Trust are:

1. General Account (GA) – initially all toll revenues are paid into this, and funds dispersed from this to cover opex, debt service payments, and other expenditures.
2. Government Concession Fee Account – collects funds each year to make the necessary annual payments to the Mexican government, as specified in the concessions.
3. Major Maintenance Account – collects funds (pesos) to cover the costs of major maintenance and repairs on toll roads.
4. Debt Service Reserve Fund – holds US dollar balances to pay debt service should the GA lack sufficient funds to cover a scheduled debt service payment. This fund has a specified level for the minimum balance, and cash flows remaining after opex and administrative expenses are deposited here on an ongoing basis.

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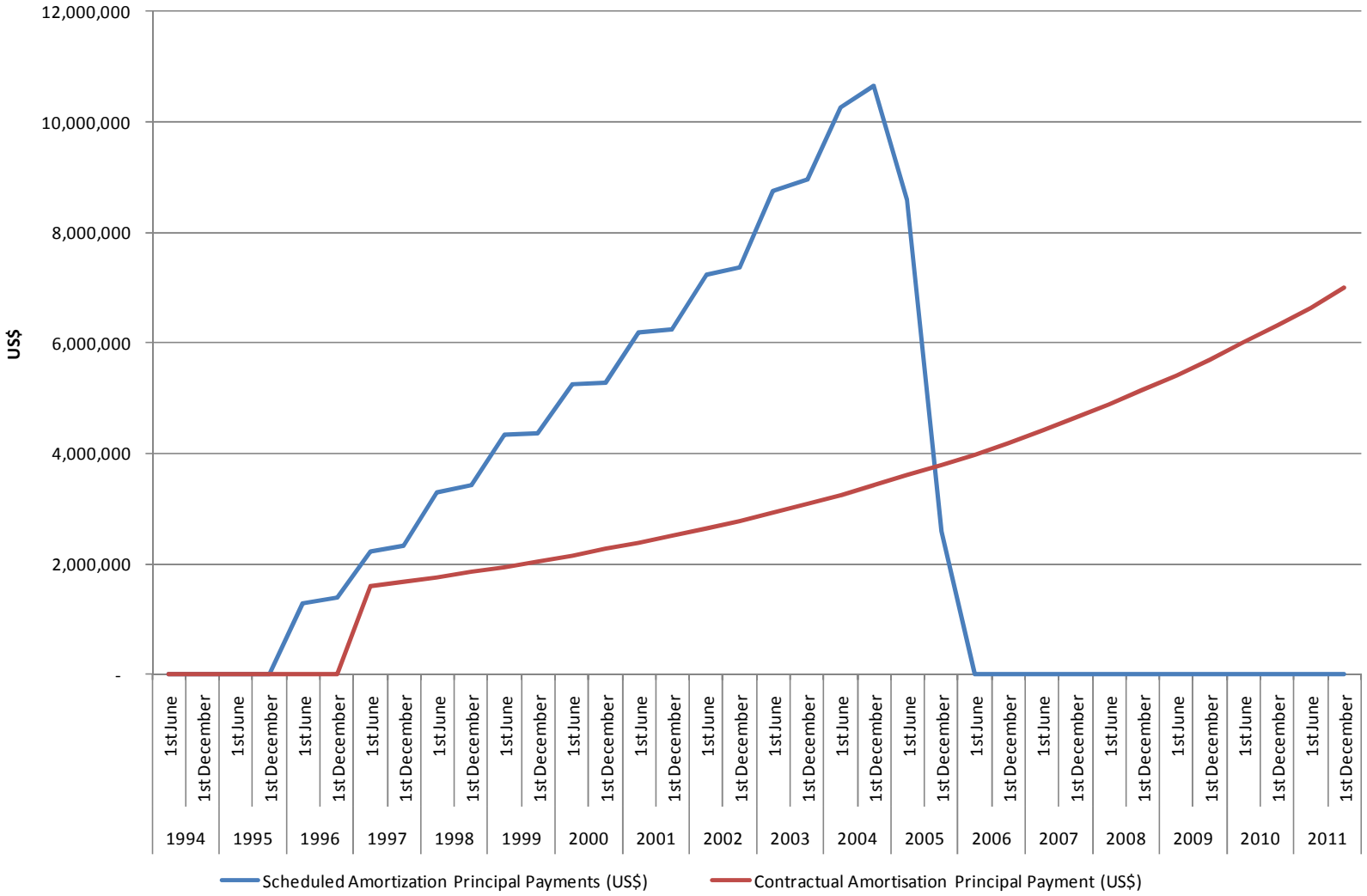
Model Assumptions

- Net Revenues sourced from Base Case in the Independent Engineer's Traffic and Revenue Report, less value-added tax and any payments to the Mexican Transportation Ministry.
- O&M = Operations and Management (Expenditure), estimated as 14% of " Net Revenue"
- Investment income is the combined income from interest payments on the General Account, Debt Service Reserve Fund (4% per annum) and Major Maintenance Account (equal to Mexico's annual inflation, plus 3% (1994-96) or plus 1% (1997 onwards).
- Interest payments based on the coupon rate of 10.5% per annum.
- 'Withholding tax payments' based on an assumed rate of 4.9% for the Debt Repayment Dates until June 1995, and 15% thereafter.
- Dividends distributed to Grupo Tribasa based on Restricted Payments formula.
- Employment growth in the region of the Pirámides toll road is 2.6% - 3.9% per annum.
- Inflation rate: ranging from 7.6% to 8,7% from 1994 to 1998 and 8.5% for all the following years
- Ps/US$ exchange rate: increasing exchange rate from 3.25 in 1994, to 6.69 in 2011.

Model Assumptions - Amortisation Schedule

- The contracted amortisation schedule specifies the minimum amount of principal that must be paid (on a cumulative basis) on or prior to each Debt Payment Date.
- In order to limit the Noteholders' (lenders') exposure to project risks, a duel debt amortisation schedule was developed to repay the principal amount of US$110 million:
    - Contractual amortisation schedule – specifying the scheduled debt repayments that the Trust must make to avoid an event of default, with full repayment by 2011.
    - Contingent amortisation schedule – an accelerated repayment schedule with full repayment by 2005. Failure to adhere to this second schedule incurs financial penalties (including a late payment premium), although it does not constitute an event of default.
- The dual debt amortisation schedule creates variability in the project's toll revenue stream, but ensures greater certainty for lenders as they are compensated (via the late payment premium) if repayments fall behind the contingent amortisation schedule.
- The two amortisation schedules are shown on the next slide.

Model Assumptions - Amortisation Schedule



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Financial model – Base Case Scenario

Revenue / Cash Flow / Debt figures in millions of Pesos
Expenditure figures in red

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2007	2009	2011
SOURCES AND USES OF FUNDS															
Piramides- Net Revenues	54.4	60.8	68.7	78	88.5	100	112.2	126.4	142.6	160		201.6	252.8	316.3	395.1
Manzanillo- Net Revenues	16.8	18.8	21.1	24.4	27.7	31.3	35.2	40.1	44.9	51		1.2	0	0	0
Net Revenues	**71.2**	**79.6**	**89.8**	**102.4**	**116.2**	**131.3**	**147.4**	**166.5**	**187.5**	**211**		**202.8**	**252.8**	**316.3**	**395.1**
O&M	10	11.1	12.6	14.3	16.3	18.4	20.6	23.3	26.3	29.5		28.4			
Insurance and Administration	2.4	2.6	2.9	3.1	3.4	3.7	4	4.3	4.7	5.1		6			
Operating Cash Flow	**58.8**	**65.9**	**74.3**	**85**	**96.5**	**109.2**	**122.8**	**138.9**	**156.5**	**176.4**		**168.4**			
Investment Income	2.8	5.1	8	9.1	9.4	9.6	9.5	9.2	8.5	6.9		5.8			
Revenue Available for Debt Service (RADS)	**61.6**	**71**	**82.3**	**94.1**	**105.9**	**118.8**	**132.3**	**148.1**	**165**	**183.3**		**174.2**			
Deposit to Major Maintenance Account	4.6	3.6	2.6	2.6	2.8	3.1	4.2	4.5	4.9	3.9		2.5			
Net Cash Flow (NCF)	**57**	**67.4**	**79.7**	**91.5**	**103.1**	**115.7**	**128.1**	**143.6**	**160.1**	**179.4**		**171.7**			
Interest Payments	38.9	38.8	40.1	40.7	40.5	39.3	37	33.6	28.8	22.5		3.7			
Withholding Tax Payments	2	4.4	7.1	7.2	7.1	6.9	6.5	5.9	5.1	4		0.7			
Scheduled Amortisation Payments	0	0	9.3	16.6	25.6	34.7	43.8	54	66	83.5		57.2			
Total Debt Service (TDS)	**40.9**	**43.2**	**56.5**	**64.5**	**73.2**	**80.9**	**87.3**	**93.5**	**99.9**	**110**		**61.6**			
Period Cash Flow	16.2	24.1	23.2	26.9	29.8	34.9	40.8	50.1	60.2	69.4		110.2			
Distribution to Grupo Tribasa	0	0	0	24.1	33.6	41.2	49.7	62.1	75.7	66.8		165.6			
MACROECONOMIC ASSUMPTIONS															
Period inflation	7.60%	8.10%	8.90%	8.70%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%		8.50%	8.50%	8.50%	8.50%
Ending Ps/US$ Exchange rate	3.25	3.39	3.53	3.69	3.86	4.03	4.2	4.38	4.57	4.77		5.19	5.65	6.15	6.69

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Reduced Economic Activity Scenario

- An alternative (more conservative) set of model assumptions were applied for sensitivity analysis, under the Reduced Economic Activity (REA) Scenario. These included:
    - Lower employment growth, and therefore lower traffic growth. Growth is 2.0% - 3.0% per annum in the region of the Pirámides toll road under REA, compared to 2.6% - 3.9% under the base case (BC). Consequentially, the annual rate of traffic growth is about 1% slower under REA.
    - Higher Mexican Inflation, and therefore greater peso devaluation. Higher inflation under REA means that the Mexican peso devalues faster relative to the US dollar.
- The results of these more conservative assumptions under REA are as follows:
    - A small increase in (nominal) revenue due to higher inflation.
    - A larger decrease in revenue (post repayments) due to greater peso devaluation. Faster peso devaluation will increase the proportion of peso revenues required for repayments, and because the US$110m principal needs to be repaid in dollars, this will reduce revenues (post repayment) and decrease the financial coverage ratios.
- The second effect is greater, and so under REA there is a fall in coverage ratios.

Reduced Economic Activity Scenario – Model Comparison

Revenue / Cash Flow / Debt figures in millions of Pesos

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2007	2009	2011
Revenues															
Base Case Scenario	71.2	79.6	89.9	102.4	116.2	131.3	147.4	166.5	187.5	211.0		202.8	252.8	316.3	395.1
REA Scenario	71.2	82.1	95.3	109.7	126.6	145.1	164.4	185.1	208.3	235.2		224.9	281.6	352.2	440.4
Revenues available for debt service (RADS)															
Base Case Scenario	61.6	70.9	82.3	94.0	105.9	118.9	132.3	148.1	165.0	183.3		174.2	-	-	-
REA Scenario	62.3	74.0	88.2	102.6	119.0	133.1	149.1	166.1	184.4	204.5		192.9	-	-	-
Net Cash Flow (NCF)															
Base Case Scenario	57.0	67.3	79.7	91.4	103.1	115.8	128.1	143.6	160.1	179.3		171.7	-	-	-
REA Scenario	57.6	70.2	85.3	99.7	115.7	129.4	144.1	160.6	178.3	199.6		189.6	-	-	-
Total Debt Service (TDS)															
Base Case Scenario	40.9	43.2	56.5	64.5	73.3	80.9	87.3	93.4	100.0	110.0		61.5	-	-	-
REA Scenario	42.7	47.3	63.9	75.1	87.8	98.5	107.7	116.9	126.8	141.4		81.1	-	-	-
RADS / TDS															
Base Case Scenario	1.51	1.64	1.46	1.46	1.44	1.47	1.52	1.59	1.65	1.67		2.83	-	-	-
REA Scenario	1.46	1.56	1.38	1.37	1.36	1.35	1.38	1.42	1.45	1.45		2.38	-	-	-
NCF / TDS															
Base Case Scenario	1.39	1.56	1.41	1.42	1.41	1.43	1.47	1.54	1.60	1.63		2.79	-	-	-
REA Scenario	1.35	1.48	1.33	1.33	1.32	1.31	1.34	1.37	1.41	1.41		2.34	-	-	-
(NCF + GA) / TDS															
Base Case Scenario	1.55	2.43	2.72	3.22	3.05	2.92	2.71	2.52	2.24	1.77		4.28	-	-	-
REA Scenario	1.47	2.20	2.37	2.86	3.01	2.78	2.55	2.33	2.02	1.53		3.56	-	-	-
(GA + DSRF) / Outstanding Principal															
Base Case Scenario	11.2%	17.6%	23.8%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	40.3%		-	-	-	-
REA Scenario	10.6%	16.1%	21.0%	26.6%	25.0%	25.0%	25.0%	25.0%	25.0%	40.1%		-	-	-	-

Reduced Economic Activity Scenario – Implications

- As shown in the previous slide, the financial coverage ratios differ between the BC and REA scenarios:
    - Net cash flow covers debt service each year at least 1.40 times under BC, but only at least 1.30 times under REA (see NCF/TDS).
    - Revenues available for debt service cover total debt service each year at least 1.45 times under BC, but only at least 1.35 times under REA (see RADS/TDS).
- Therefore, whilst BC coverage levels would be deemed appropriate, there would be greater uncertainty of the project's viability under REA, given the lower coverages.
- Prospective investors would undoubtedly perform additional sensitivity analyses. For example, they might want to see how large a peso devaluation the project could withstand.