

**Problem Set 4:  
Mexican Toll Road Project Case Memo:**

Read the Tribasa Toll Road Trust case.

It is 1993. While, the Mexican government's Secretariat of Communications and Transport (SCT) is eager to see private investors help finance infrastructure projects such as the Tribasa Toll Road, it also has the responsibility to make sure they approve financing schemes that will not jeopardize the services of the road which are crucial to the local economy.

As was mentioned in the case, the private investors, Grupo Tribasa, hired an international consulting firm, URS Consultants to appraise the Tribasa Toll Road Trust Financing project. SCT has seen URS' report which recommended the project. But, upon further consideration, they have decided to hire you, an independent consultant, to further appraise the project's viability (project point of view) before they make their decision on whether to approve the financing project. The only numbers they have given you to work with for your report are in the case. Because URS' exhibits 5 and 6 in the original report were illegible, they provided duplicate copies in the attached Tables 12.2 (formerly Exhibit 5) and Table 12.3 (formerly Exhibit 6) from the report. Exhibit 3 is also reprinted for you below for ease of reading.

Table 12.2 is the Base Case financial projections. The footnotes contain the calculations assumed for line items for O&M, interest payments, withholding tax payments, and distribution to Grupo Tribasa. (The selected financial ratios indicate that net cash flow covers total debt service each year at least 1.40 times. Revenues available for debt service cover total debt service each year at least 1.45 times. Base case coverages at these levels would be deemed adequate.)

Table 12.3 shows the summary results of the sensitivity analysis that URS conducted. These projections analyze what would happen in the case of *reduced economic activity* (REA). The REA case is more conservative than the base case. It assumes that employment grows more slowly than in the base case and as a result, the annual rate of traffic growth is about 1 percent slower in the REA case. Furthermore, in the REA case, inflation in Mexico is greater and the peso devalues more rapidly (relative to the dollar). Therefore, revenues are greater in the REA case because higher inflation more than offsets the lower traffic volumes. But, the faster devaluation of the peso also increases the amount of pesos that must be set aside to service the notes denominated in dollars.

## The Assignment:

### **A, Reconstruct the Cashflows:**

- 1) Reconstruct the cash flows (showing figures in millions of pesos). On closer examination we see that URS did a sloppy job in their analysis. They did not show the projections for the year 2004 and some of their line items need to be re-calculated.

Label this cashflow “Table 1: New Base Case Table”. You may want to use the “define name” function for parameters such as loan principal, discount rates, etc.

#### Some missing figures for 2004:

Insurance & Administration	5.3
Investment Income	6.1
Deposit to MMA	3.1
Period inflation	8.5%
Ending Ps/US\$ Exchange Rate	4.98
REA Case NCF	195
REA Case TDS	155.11

#### Some simplifying assumptions:

- For the Operating and Maintenance line item, you can use the footnoted calculation of 14% of net revenues instead of the numbers from Exhibit 4.
  - Investment income is guaranteed at the current amounts listed in Table 12.2 instead of the calculation in the footnotes. However, all of these figures were converted from dollars at the current exchange rate.
  - The “Interest payments” line item was miscalculated in the previous tables. Re-calculate:  $\text{interest} = \text{remaining principal} * \text{coupon rate}$ . Note that principal is paid of semi-annually. Assume that the coupon rate is fixed during the life of the project.
  - Similarly, “withholding tax payments” needs to be re-calculated. This is the domestic income tax on the interest payments that the note holders would have paid but the project will pay instead. See the footnote for the calculations. Assume the tax rates do not change.
  - For this assignment use only the Scheduled Amortization Payment Plan (payments completed by end of 2005 at which point the road is transferred to Mexico.). Re-calculate these as well.
- 2) Using a discount rate of 8% for the total investment point of view, what is the nominal NPV in the base case? What about in real terms? Note: First construct the cash flow table in nominal terms, and then obtain the cashflow in real terms. Assume that the US’ annual inflation rate is 2%.
  - 3) Now using a discount rate of 15%, look at Grupo Tribasa’s point of view as an equity holder. They transferred their asset (the road) and their debt into the Trust. Their equity investment into this financing project was the rights to the toll road revenue. To simplify the analysis, assume that their return is all the net proceeds (“Period Cash Flow”) instead

of the dividends calculated according to the restricted payment schedule in the contract. What is their nominal NPV and real NPV?

- 4) Find the NPV of URS' REA case in nominal terms for total investment point of view and equity point of view (remember to use the TDS of URS' REA case to get the period cash flows for equity point of view). Label this (small) cashflow "Table 2: URS' REA case"

**B. Now conduct your own financial risk analysis:**

- 5) SCT is concerned about what inflation would do to the project's financial feasibility. Examine the project's risk to inflation. Assume traffic levels remain the same as in the base case (demand is price inelastic) and that there are strict price controls on tolls due to political constraints. What would happen to the project's nominal and real NPV if inflation increased from both the total investment point of view and Tribasa's? SCT asks you to analyze three annual rates of inflation increases: 10%, 15%, and 20%. (Hint: you will also have to calculate new nominal exchange rates with a new relative inflation index applied to the previous real exchange rate). Please label this analysis "Table 3: Inflation risk"
- 6) Another thing SCT wants you to analyze is how sensitive the project is to changes in exchange rate since the project is engaging the international capital markets and will therefore be denominated in foreign currency. What is the break-even exchange rate for Tribasa? In other words, starting from the base case, how much would the peso have to devalue in nominal terms in order for the project to be jeopardized (i.e. problems paying the international debt)? Devalue the base case exchange rates by percentages and see what it does to the NPV. What happens to the NPV from the project point of view at Tribasa's break-even exchange rate? Please label this "Table 4: Exchange rate risk"
- 7) Now do a worst-case scenario. Pick both an inflation rate and an exchange rate that you think are reasonable and see what happens to the project returns from both total investment and Tribasa's point of view. Please clearly identify the rates you have chosen and label the cashflow "Table 5: Scenario analysis"

**C. Write a memo** to SCT that discusses the additional analysis you have done (mention all five tables). The maximum length of the memo is one page and less than 350 words (SCT will not read more).

In your memo, also discuss how robust the Tribasa Toll Road Trust financing project is to macro-economic risks. Compare it to URS's study.

**Exhibit 3:**

**Scheduled Amortization Principal Payments**

<i>year</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
June principal pyt	0	0	1,284,630	2,210,660	3,282,140	4,344,160	5,259,840	6,192,170	7,237,370	8,739,840	10,260,630	8,590,560
Dec principal pyt	0	0	1,384,650	2,333,560	3,436,150	4,365,730	5,278,220	6,248,590	7,355,510	8,949,340	10,647,280	2,598,970