

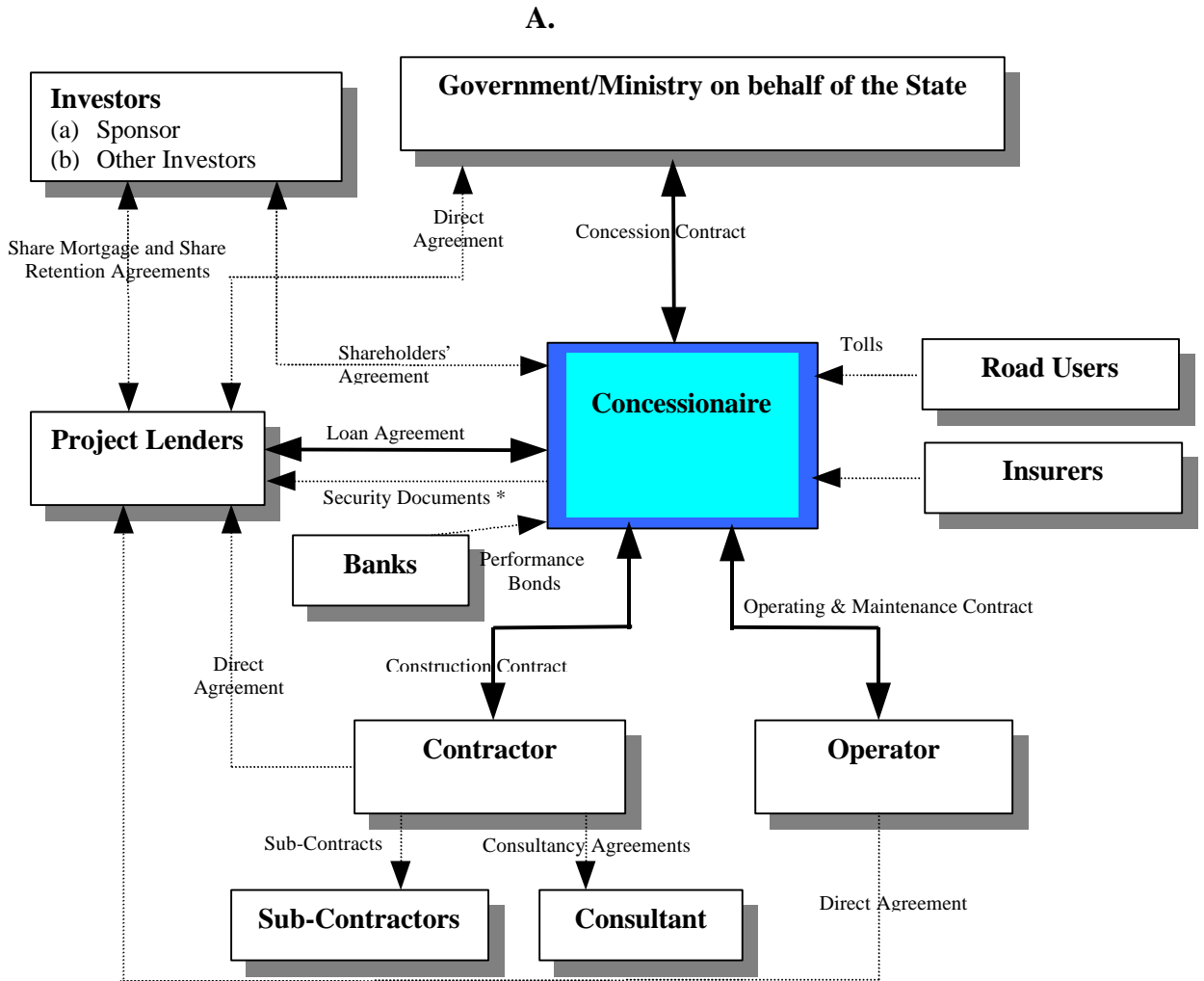
APPENDIX H

TOLL ROAD BOT MODEL

A. BOT Contract Structure

1. The principal responsibilities for toll road development include design, construction, maintenance, toll collection, arranging financing, and legal ownership. The build-operate-transfer (BOT) model is the most common approach used to assign responsibilities in toll road projects. BOT is a broadly defined term that includes build-own-operate-transfer (BOOT), build-lease-transfer (BLT), rehabilitate-operate-transfer (ROT), lease-rehabilitate-operate (LRO), and similar arrangements that are used to develop new facilities or improve existing ones.
2. BOT structure involves the grant of a concession (sometimes called an authorization or a license) by a properly empowered governmental authority (the grantor) to a special purpose company (the concessionaire). Under the concession, the concessionaire would agree to finance, build, control and operate a facility for a limited time, typically 20 to 35 years in Asia, after which responsibility for the facility is transferred to the government, usually free of charge. The concessionaire typically assume primary responsibility for constructing the project, arranging financing, performing maintenance, and collect tolls, while the public sector retains legal ownership. In most projects design responsibility is shared, with the public sector taking the lead in the preliminary design (including route alignment, number of lanes, interchanges, and other high-level design specifications) and the private sector completing the detailed design, subject to government approval.
3. The concessionaire would engage a construction company (the contractor) to perform the construction works on the terms and conditions contained in a construction contract. The concessionaire would also usually engage an independent party (the operator) to operate and maintain the project on the terms and conditions contained in an operating and maintenance contract.
4. The intention would be that the concessionaire is to receive sufficient revenues during the operational phase: to service the debt that would be provided by the banks and financial institutions (the project lenders) for the design, development and construction of the toll road; to cover the concessionaire's working capital and maintenance costs; to repay the investment of the investor who are initiating the project (the sponsors), as well as the other investors who would participate in the project later; and, hopefully, also provide a reasonable profit for the sponsors and other investors (Figure 1).

Figure 1 Toll Road BOT Contract Structure



- * Assignment of Concession Contract
- Assignment of Construction Contract
- Assignment of Operation & Maintenance Contract
- Charges over Bank Accounts
- Liens & Pledges over Movable Property
- Mortgages over Land
- Assignment of Insurances
- Assignment of Performance Bonds

B. Project Economics (Costs and Revenues)

5. Project economics refers to the cost of developing, constructing, and operating a project relative to the revenue it generates. This is typically measured in terms of net present value or internal rate of return on investment/ equity. The project economics of a toll road are determined by a number of factors, including the toll road's function, physical characteristics, and market demand:

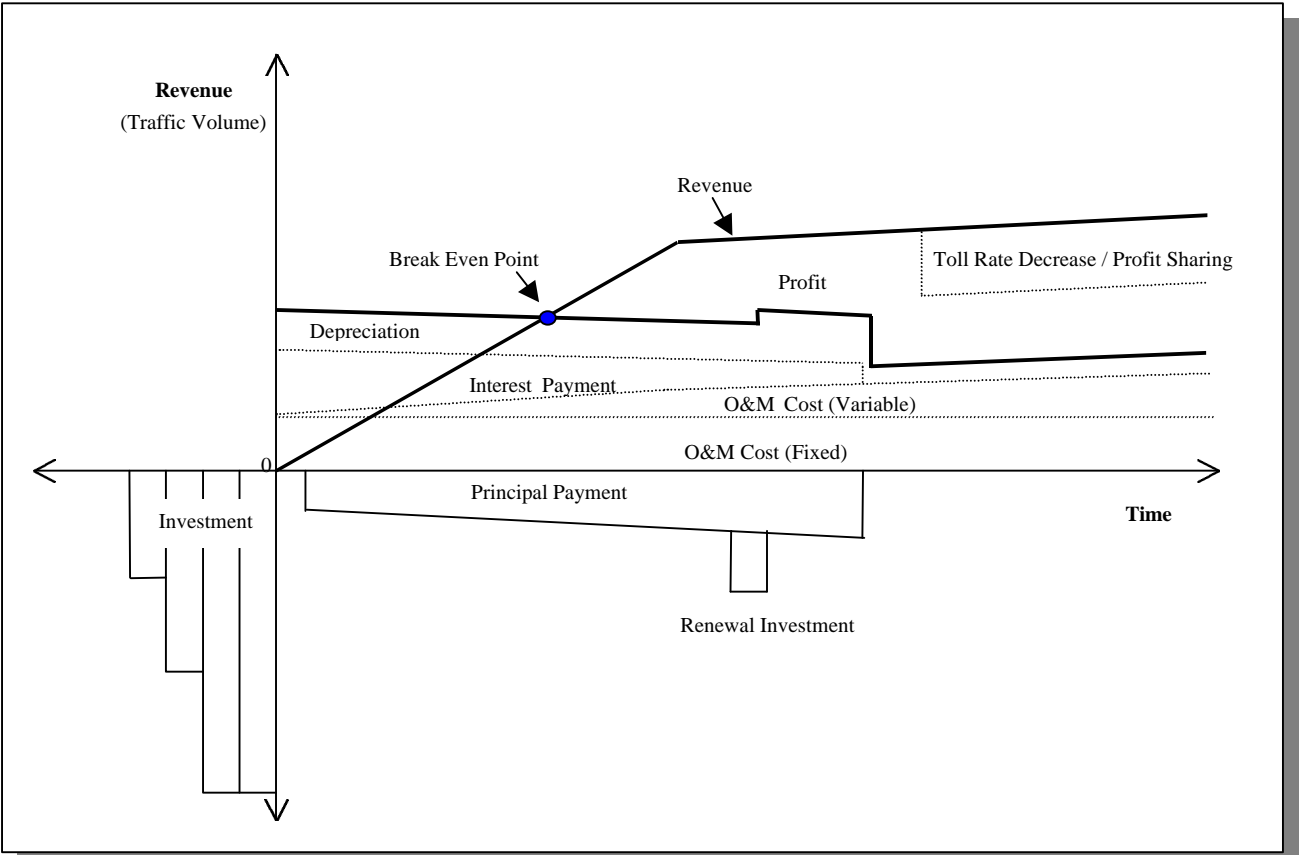
- *Function*: congestion relievers, inter-city arteries, development roads, or bridges and tunnels.
- *Physical characteristics*: new facility or expansion, length and capacity, geography, toll collection mechanism.
- *Market demand*: actual or expected traffic levels, predictability of expected traffic, willingness of user to pay tolls.

6. A BOT toll road project, when it is a greenfield project, has a typical cost and revenue profile of capital intensive business where a break-even point is high and if such threshold level revenue (namely traffic volume) is not attained, huge loss would occur. On the other hand, once the traffic volume exceeds such threshold level, the project could enjoy a high profitability. Therefore, the project economics of toll road development is very sensitive to the threshold level of traffic volume.

7. If it is financed on highly leveraged and floating interest rate basis, as most of toll road projects are, the amount of debt service payment in the beginning years may become considerable, sometimes much more than the aggregate of operation and maintenance costs required. Therefore, again the project economics is very sensitive to the threshold level of interest rate.

8. A toll road project in general has a long start up operating years in loss due to its long lump-up period for the traffic level to stabilize. Therefore the sponsors of the project would have to wait for many years before they start enjoying dividends form the project meaning that recouping of the investment would generally take a long time (Figure 2).

Figure 2 Project Economics of Toll Road BOT Model (Green Field Project)



C. Critical Elements for BOT Project Evaluation

9. In order to attract private capital, a toll road project must have strong project economics and contract structure which result from a combination of the following elements (Figure):

- country environment
- concession environment
- public-private risk sharing
- sponsors' ability
- project economics/project structure
- financing structure
- financial market environment

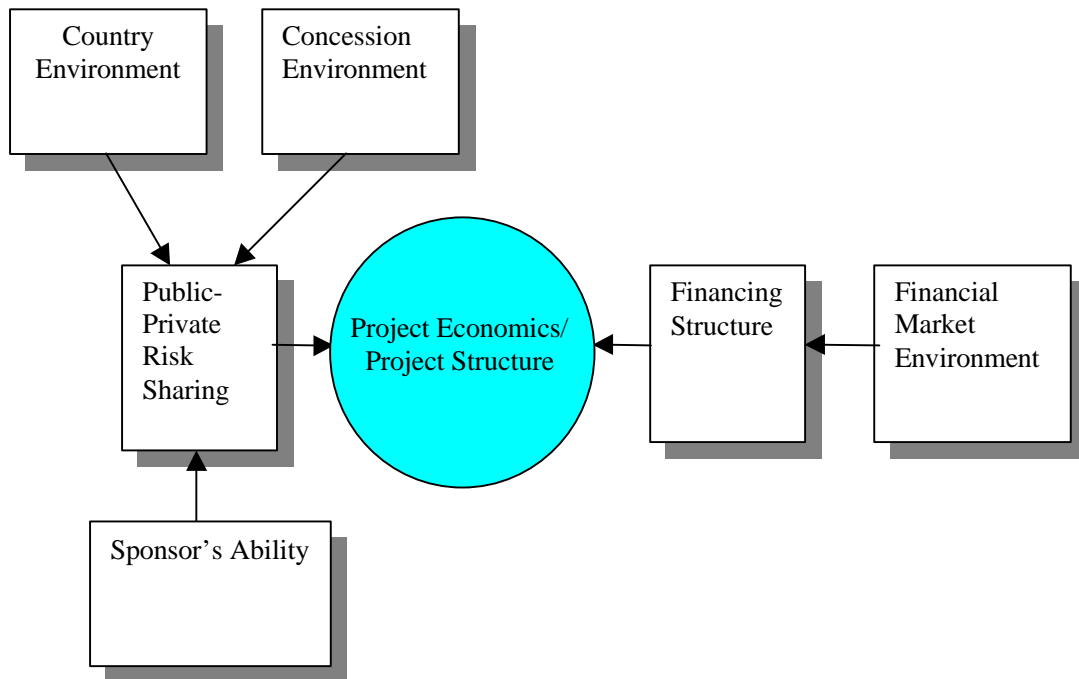
10. A favorable country and concession environment can be crucial to attracting financing and limiting the need for government assumption of risk, while an unfavorable environment may preclude financing without substantial government support.

11. In principle, project risks in private toll road development should be assigned to the public or private entity that is best able to manage them. The private sector is generally better at managing Comerica risks and responsibilities, such as those associated with construction, operation, and financing. But in order for a project to obtain financing, public participation may be required in areas such as acquisition of right-of-way, political risk, and, in some cases, traffic and revenue risk.

12. Sponsors' ability to successfully construct and operate a project is very important to attract financing. In the same manner, the sponsors' ability to assume necessary project risk is considered critical since it is very rare for a toll road project to be financed on a purely non-recourse basis.

13. Financing structure of a project is a reflection of all the above elements, but is generally composed of the equity of sponsors and other investors with debt financing of various sources, which sometimes includes that of the governments. The financing structure is also affected by the situation of financial market environment at the time of financial closing.

Figure 3 Critical Elements for BOT Project Evaluation



14. **Country Environment.** A stable economic and political environment is critical for attracting investment to a project. The environment can be evaluated on the basis of macro-economic stability, country risk rating, and sovereign debt ratings. Table 1 illustrates an example of comparative analysis for the economic and political environment among the target countries.

Table 1 Economic and Political Environment of Target Countries

Country	Country risk rating ¹	Standard & Poor's rating ²	Annual inflation rate ³ (percent)	Annual GDP growth (percent)	Local interest rate ⁴ (percent)	Change in U.S. dollar value of currency ⁵ (percent)
Indonesia	32.9/51.8	CCC+/BBB	59.9/4.83	1.37(97)/9.5(96)	70.68/13.47	409.3
Malaysia	59.0/66.7	BBB-/A+	4.13/2.24	8.21(96)	12.16/9.25	57.8
Philippines	43.0/44.3	BB+/BB+	41.93/4.78	4.69(97)	13.00/10.00	45.18
PRC	57.7/57.8	BBB+/BBB+	7.45/10.11	11.6(94)	7.98/10.08	-0.13
Thailand	47.5/59.9	BBB-/A	10.7/4.43	5.52(96)	12.50/10.50	28.63

¹ Higher number indicates less country risk; based on a country credit rating by Institutional Investor (left is dated in September 1998 and right is dated in September 1997)

² Rating of long term debt (left is dated in September 1998 and right is dated in July 1997)

³ left is dated in June 1998 and right is dated in June 1997

⁴ Local interest rate is measured by official money rate in Thailand and measured by call rate in other countries(left is dated in April 1998 and right is dated in April 1997)

⁵ Change in currency relative to the U.S. dollar between July 1997 and July 1998

15. **Concession environment.** The concession environment refers to the policy, laws, and procedures a country has in place to support the implementation of a concession program, including:

- *Overall road concession policy.* Is the government committed to a sound concession program that is coordinated with its broader transportation policy? Has the government successfully concessioned other roads?
- *Concession legislation.* Has the government enacted legislation to encourage concessions generally and to authorize toll road concessions specifically?
- *Concession process.* Are the concession term and regulatory mechanism conducive to attracting long-term private capital? Is the process competitive, transparent, and based on reasonable evaluation criteria?

16. **Public-Private Risk Sharing.** The private sector is primarily responsible for construction and toll collection, while the public sector retain legal ownership of the facility. Design responsibility is generally shared. The main risks facing private toll road projects include pre-construction, construction, traffic and revenue, currency, force majeure, tort liability, political, and financial. These risks must all be addressed in a manner satisfactory to debt and equity investors before they will commit to project funding.

17. **Sponsor's Ability.** A project company is generally a consortium of parties with different specialty required for the development of toll road project. The sponsor(s) of the project must have sufficient track records in executing a number of similar projects in the area and must be able to assign appropriate team of people at various stages of project development to coordinate the complicated process of a private financed toll road project. The team at the early stage must have an expertise not only in the technical aspect of the project but the financial and legal aspects in order to construct financial model and to draft essential contracts using outside experts in the areas.

18. **Financing structure.** Most private toll roads are undertaken on a project finance basis, whereby investors rely on the performance of the project for payment rather than the credit of the sponsor. This arrangement is also referred to as limited recourse financing, which indicates that lenders have limited recourse to the sponsors for payment if the project fails to generate adequate returns.

19. A primary benefit of project finance structure is that they allow sponsors to leverage their resources and expertise with outside capital in order to undertake projects that otherwise would not be able to finance on the strength of their own balance sheet. In addition, project finance allows sponsors to share project risks with lenders and maintain the project debt off their balance sheet. Governments also seek to limit the recourse of investors to their credit, except to the extent that they provide financial support through such means as minimum traffic and revenue guarantees and loans.

20. Toll road project financing normally involves:

- Complete analysis of the country, economic, legal, and political environment in which the project will be developed.

- Detailed studies by engineering experts and financial advisers, including traffic and revenue projections, construction cost estimates, preliminary design documents for the project, and financial feasibility studies.
- Complex loan and security documentation, often involving multiple lenders, investors, project sponsors, and government agencies.
- Negotiation of a concession agreement, including a detailed allocation of risks and responsibilities among the various project participants.

21. **Financial markets environment.** A private toll road project financing involves various financial markets; foreign equity investment, local equity investment, foreign commercial bank loan, domestic commercial bank loans, ECA loans and guarantee, Multilateral Agencies loans and guarantee, Bilateral Official Development Assistance, domestic and foreign bond markets, infrastructure equity funds, subordinated loans and so on.

22. Financial structure and financial closing of private toll road project may significantly be affected by the conditions of these markets, the details of which should be discussed in various chapters of this report.