





Debunking Traffic & Revenue Risk in Highway PPP Projects – Different Perspectives



"Indiana Toll Road Seeks Bankruptcy as Traffic Declines"

Bloomberg Business, September 22, 2014

"Spain to rescue empty toll roads in deal avoiding deficit hit"

Reuters, November 28, 2013

"Prediction is very difficult, especially if it's about the future"

Nils Bohr, Nobel Laureate in Physics

"Optimism is the madness of insisting that all is well when we are miserable"

Voltaire

Defining the Problem – What is Traffic and Revenue Risk?



- For decades governments have raised both public and private finance to fund highway construction and improvements against the cash flows of future toll revenues
- There is always a risk that actual traffic and revenues may be lower than forecast, which will inflict damage on financiers and possibly on road users and governments such as:
 - Higher than anticipated toll rates
 - Bankruptcies (e.g. Indiana toll road, Australian toll roads)
 - Government bail-outs and large fiscal liabilities
 - 'White elephants' empty toll roads and congested free roads!
- The result is that relatively few projects are reaching financial close
- A capital flight for these assets (accentuated by the financial crisis) appears to have occurred which puts further pressure on constrained government capital budgets to develop their highway networks



The empirical evidence seems to confirm the story:

- Large variance in actual traffic compared to forecasts for road projects in general
 - Flyvbjerg et al. (2005) compared forecast an actual traffic for 183 public (toll-free) road projects. Half of projects had a difference over 20% and a quarter had a difference greater than 40%.
- Studies of toll roads found tendency to overestimate traffic levels
 - Only 1 of 14 US toll roads studied by JP Morgan (1997) exceeded original revenue forecasts
 - On average, **actual traffic was 60%** of the forecast
 - Standard & Poors (2005) found actual traffic averaged 77% of forecast levels in a study of 104 international toll roads



Actual/ Forecast Traffic

Defining the Problem – What is Traffic and Revenue Risk?



- So, should we never even consider trying to raise finance (particularly private finance) against future toll revenues?
- Are toll road concessions never to be considered as a reliable asset class?
- <u>On the contrary</u>, toll road concessions are both necessary and potentially valuable but are prone to hysteresis and misunderstanding
- So what can we do ? This is what we are here to discuss today
- To frame the discussion, we perhaps need to run through 4 sequential questions



Where does traffic and revenue risk come from?



Forecasting Error

- Forecasting is a probabilistic and not deterministic exercise – error happens!
- The range of error increases depending on the type of traffic you are forecasting



 These errors can be internal (endogenous) to the forecasting process or external (exogenous)

Forecasting Bias

- Traffic forecasts are prone to **optimism bias**, which causes project parties to believe they are less exposed to risks than similar projects
- Optimism bias typically starts with government promoters who are seeking project approval
- It can extend to scheme sponsors/bidders keen to win a bid by minimizing the cost to government (e.g. lower subsidy) and users (e.g. lower tolls)
- It then can extend to 3rd party financiers who may be pressured, incentivized or poorly positioned to do adequate due diligence

How can governments reduce and mitigate traffic and revenue risk?



Forecasting Error

- Fund a high-quality traffic study by an independent_and reputable consultancy firm early in the process
- Facilitate the consultant in this study (e.g. logistics etc.)
- Have clear policy intentions (e.g. toll policy, competing network expansion) to minimize exogenous risks
- Adhere to any contractual obligations (e.g. toll enforcement) that might ensure stable revenues
- Traffic study must have robust risk analysis so that government can understand the 'risk envelope' – this is crucial for understanding how to allocate the risk and how to manage its liabilities

Forecasting Bias

- Use independent traffic study as basis for government approval (see opposite)
- Potentially realign bidder incentives by setting 'deliverability' criteria of traffic forecasts in bid evaluation
- Require evidence of lender due diligence in bids
- Minimize moral hazard by reducing perception of 'too big to fail'
- Potentially set 'hard' minimum equity requirements – particularly from EPC contractor
- Potentially invest government equity creates an 'in it together' sentiment and can capture upside
- Encourage development/attraction of project finance vs corporate finance

How do we manage and allocate remaining risks?



- Even after we have tried to minimize the risk, forecasting imperfections will always exist and some residual risk will always remain
- Allocating this risk should adhere to the general principle that the party best positioned to manage the risk should be responsible for it
- BUT THIS SHOULD NOT BE A ZERO SUM GAME WHERE THE DEFAULT POSITION IS TO ALWAYS ALLOCATE THIS RISK TO THE PUBLIC SECTOR
- There are some assets where the risk can be managed and its important to look for the 'tell-tale' signs

How do we manage and allocate remaining risks? UPPIAF



| Category | Low Traffic Risk | Medium Traffic Risk | High Traffic Risk | | |
|--|--|--|---|--|--|
| Type of Asset | Brownfield highway improvements with existing traffic flows | Existing highways that require substantial improvements or extensions or partially developed | Greenfield or very early stages of development | | |
| Level of User Benefit | Offer substantial benefit to users and address clear transport need | Offer significant benefit to users and address a transport need | Offer small, difficult to monetize, user benefits and do not address a specific need | | |
| Traffic Mix | Designed to attract peak traffic movements and/or relieve severe congestion | Expected to attract mix of peak and off-peak trips and/or relieve areas of reasonable congestion | Expected to attract high proportion of discretionary trips and not relieve congestion | | |
| Integration | Efficiently linked to highway network with few competing alternatives | Reasonably linked to highway network with some competing alternatives | Not well-linked to existing network and experience strong competition | | |
| Toll Strategy & Willingness to Pay | Have a relatively simple, transparent toll strategy with WTP demonstrated by revealed preference | Simple toll strategy with some discounts offered and WTP demonstrated by stated preference | Have a complex toll strategy and no history of willingness to | | |
| Policy | Government policy on approach to expanding competing network is clear | Government committed to expand competing network but within specified horizon | Government's policy to expanding competing network is unclear and unpredictable | | |

High-Level Framework for Allocating Risk between the Private and Public Sector





How do lenders manage what is allocated to them?



- Once the deal structure/risk allocation has been established 'last men standing' are the lenders (e.g. banks) and the borrowers (e.g. SPV) of the private finance
- However much risk is allocated to the private sector through the deal structure lenders will only be in a position to 'bank' the project if they can manage the risk with the borrower
- Lenders may do this in a number of ways:
 - Thorough due diligence/credit analysis and downside sensitivity testing of bidder traffic forecasts
 - Adequate debt service cover ratios to protect against downside risks
 - Debt service reserve accounts to protect against downside risks
- Result will be that lenders will set their exposure to a level whereby they are mostly sheltered from the downside risks <u>and this will be reflected in the</u> <u>debt:equity ratio (i.e. gearing of the project)</u>





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Traffic risk mitigation and the LAC experience*

- Two research questions?
 - Have governments in the region shifted traffic risk towards riskier projects?
 - Has the risk sharing and traffic risk mitigation schemes useful in increasing competition and reducing renegotiations?
- Database of 194 toll roads from 1990-2010

*Dealing with Traffic Risk in Latin American Toll Roads, Carpintero, S. J.M. Vassallo, & A Sánchez Soliño (2015)



Have governments in the region shifted traffic risk towards riskier projects?

| Parameter | Brownfield | Greenfield | Total |
|---|------------|------------|-------|
| Number of concessions | 146 | 48 | 194 |
| Traffic risk borne by government or users | 80 | 0 | - |



Has the risk sharing and traffic risk mitigation schemes useful in increasing competition and reducing renegotiations?

| | Traffic risk borne by | | | | | | |
|---------------------------|-----------------------|-----|-------------------|------------|----------------|----------------|--|
| | Government | | Gov & users | Users | Total gov. and | Concessionaire | |
| Category | AP | MIG | DSLG & flex. term | Flex. term | users | Concessionaire | |
| # of projects | 16 | 44 | 12 | 8 | 80 | 114 | |
| Contracts renegotiated | 7 | 36 | 12 | 4 | 59 | 71 | |
| Bidders (average) | 1.8 | 3.2 | 4.0 | 3.3 | 3.2 | 6.2 | |

AP: Availability PaymentsMIG: Minimum Revenue GuaranteeDSLG: Debt-Service-Liquidity Guarantee