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October 20, 2004

Managing Lenders' Exposure to Traffic Risk Is Key Credit Driver for Shadow Toll Roads

Primary Credit Analyst:
Robert Bain, London (44) 20-7176-3520; robert_bain@standardandpoors.com

Secondary Credit Analyst:
Jan Willem Plantagie, Frankfurt (49) 69-33-999-132; jan_plantagie@standardandpoors.com

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(Editor's note: The chart in this article has been amended to clarify the illustrated example.)

The credit quality of shadow toll road transactions can be improved if lenders are sufficiently shielded from traffic risk. A review of the international shadow toll road sector carried out by Standard & Poor's Ratings Services demonstrates that the key credit strengths of shadow toll projects do not flow from shadow tolling per se, but from the flexibility retained by concession grantors regarding the structure and composition of the payment mechanism used to compensate private operators.

Conventional wisdom states that, all things being equal, shadow toll financings incorporate less market risk than user-paid toll roads, and that this inherently reduced risk profile enhances creditworthiness. Empirical evidence, however, does not support this view (see "Traffic Forecasting Risk 2004 Study Update", published on Oct. 19, 2004, on RatingsDirect, Standard & Poor's Web-based credit analysis system). In terms of error, the traffic forecasting performance for toll-free roads is broadly comparable to that observed for toll roads. Our analysis suggests that removing the challenge of having to predict drivers' responses to the imposition of point-of-use pricing does not automatically improve forecasting performance. Furthermore, as explained below, it is possible to have shadow toll payment structures that actually increase lenders' exposure to market risk. Shadow tolling, absent any other mitigating factors, is not a derisking strategy.

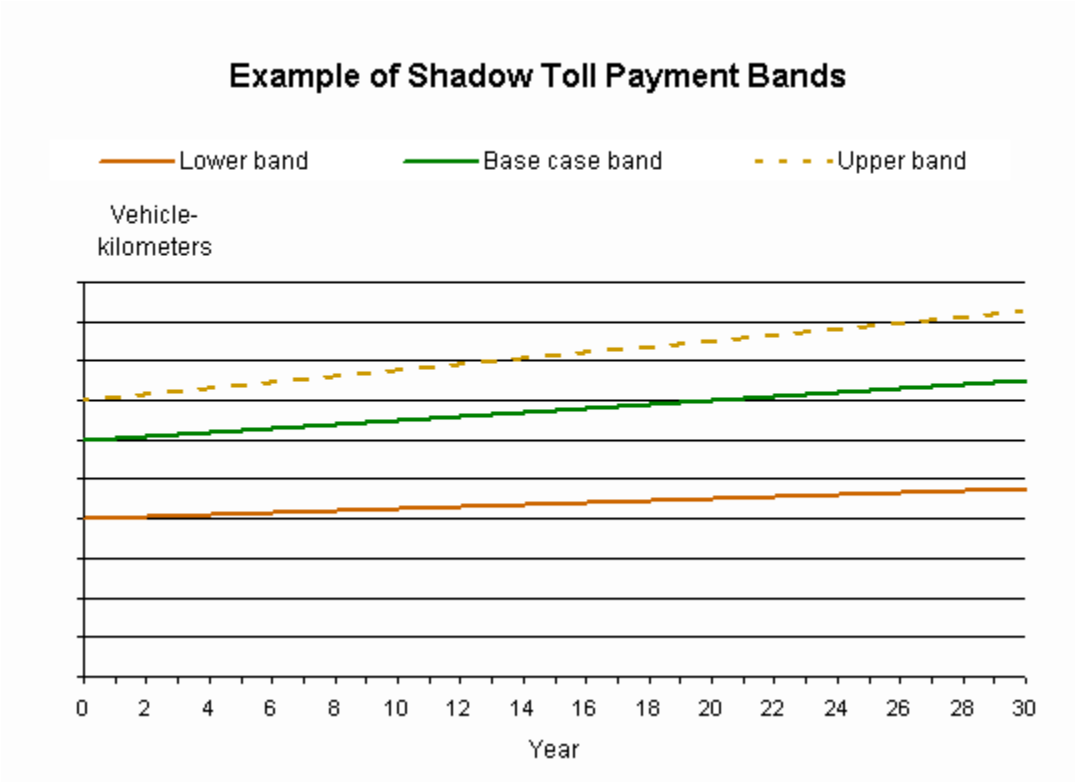
The derisking benefits of shadow tolling--where they exist--are to be found in the way in which the concessionaire payment mechanism is structured and applied. This remains entirely at the discretion of the grantor. Synthetic structures can be designed that, for example, compensate lower future traffic levels--about which there can be more confidence--with high reimbursement rates. For lenders, this flexibility, effectively a form of risk sharing, is the key benefit of shadow tolling.

Traffic "Bands" and Market Risk

One common example of the grantor's flexibility is the use of traffic payment "bands". Under a shadow tolling regime, road operators are reimbursed for use of the asset by the concession grantor on behalf of users. This reimbursement is usually made on a rate per vehicle-kilometer basis that differs by traffic type.

Our shadow toll road sector review demonstrates that a number of transactions have in part mitigated lenders' exposure to traffic risk through the use of payment-related traffic bands. Within these traffic bands, different reimbursement rates apply to different types of vehicles, which are usually categorized by length (a proxy for weight). An indexation formula is commonly employed to increase the tolls over time. By itself, a banded payment structure does not reduce lenders' risks. Reducing-rate banding structures, as outlined in more detail below, however, limit the exposure of lenders to some longer-term traffic demand projection uncertainties.

Usually, although not always, the shadow toll tariff is reduced for higher traffic volumes (diminishing marginal compensation). In revenue terms, this gives a higher weighting to lower traffic forecasts, about which there is more confidence. The chart illustrates a conceptual banding structure.



Traffic in each of the four bands rewards the concessionaire as follows:

- Traffic in the lower band attracts a high rate of, for example, 10p per vehicle-kilometer.
- Traffic in the base case band attracts a lower rate (e.g. 3p per vehicle-kilometer).
- Traffic in the upper band attracts an even lower rate (e.g. 1p per vehicle-kilometer).
- Traffic above the upper band attracts 0p per vehicle-kilometer, thereby capping the concession grantor's liability.

Shadow toll transactions can, however, magnify traffic risk if increasing-rate banding structures are employed. This places a higher revenue weighting on high traffic volumes, about which there is less certainty. Increasing-rate tariff bands were imposed on one shadow toll road operator in order to meet the concession grantor's risk transfer requirements and off-balance-sheet treatment of the project. This subsequently exacerbated problems for the concessionaire when traffic fell short of forecasts and eventually led to financial restructuring.

Additional Traffic Risk Mitigants

Aside from exposure to traffic risk, a number of other issues need to be taken into account when assessing the credit strength of a shadow toll road financing. These are discussed below. No hierarchy of importance should be assumed from their ordering.

Fine-tuning shadow tolls as a risk mitigant.
Defining band structures and their associated tariffs is central to effective traffic risk mitigation. Complex interrelationships exist. For example, truck flows--and therefore revenues--affects maintenance profiles and expenditure. When defining shadow toll payment mechanisms, the links between project costs and revenues need to

be carefully thought through.

A reducing-rate banding structure was successfully used on one project, such that a 20% reduction in traffic resulted in a revenue loss of just 2%-3%. Bands can be sculpted to reflect a project's capital structure. It is common, for example, for lower band revenues to be used to pay fixed costs and senior debt, middle band revenues to cover operations, and upper band income to provide equity upside. This upside is capped by concession grantors when the top band tariff is set at zero.

Traffic risk can also be mitigated by keeping the shadow toll component of the payment mechanism low. Early shadow toll payment mechanisms were 100% shadow toll-based, whereas the subsequent trend has been for shadow tolls, as a proportion of the total revenue due to concessionaires, to be reduced to between 10% and 40% (see "The Evolution of DBFO Payment Mechanisms: One More for the Road?", published on March 13, 2003, on RatingsDirect). The bulk of the payment due to concessionaires is therefore derived from availability and performance-related payments.

Traffic counting, vehicle categorization, and trucks.
Some early shadow toll road projects reported problems with traffic counting equipment reliability. The output from traffic counters feeds directly into the revenue calculations, and so this issue can become a significant concern for concessionaires. Procedures must be put in place to ensure that accurate and independently verifiable traffic count data from appropriate locations along the project road are available quickly and at minimal cost. Inductive loops embedded in the project pavement form the usual technology of choice, although video detection and profiling has been employed on some shadow toll roads. Although more costly to install, one advantage of cameras is that incident detection and response can be quicker, minimizing the potential for performance or availability-related penalties to impair the project's revenue stream.

A simple vehicle classification system is generally employed on shadow toll roads. Although road maintenance expenditure is driven by vehicle weight (or, more accurately, axle loadings), vehicle length--which is easier to detect--is commonly used as a proxy. In this context, defining the different vehicle length categories is important. Early U.K. shadow toll roads employed a "cut-off" of 5.2 meters to differentiate light vehicles (shorter than 5.2 meters) from heavy ones (longer than 5.2 meters). A number of vans, known as "long lights", however, marginally exceed 5.2 meters in length. Concessionaires consequently received extra revenue from vehicles that, compared with trucks, did little damage to the road. The "cut-off" was consequently raised to 5.3 meters.

An unexpected growth in truck volumes has been a problem for some shadow toll concessionaires. If truck flows are already in the upper tariff bands, and consequently do not provide much revenue, there can be a mismatch between the incremental revenue generated by additional trucks and the damage they cause to the pavement, requiring increased maintenance expenditure. Some concessionaires have made a case for dealing with truck-related revenues outside the simple tariff banding structures described earlier.

Characteristics of International Shadow Toll Projects

Owing to the absence of roadside toll collection infrastructure, most shadow toll road users remain unaware that they are travelling on a form of toll road and that their passage contributes to revenue received by the concessionaire. Consequently, users elect to drive on shadow toll roads in the same way that they would chose any other toll-free road. They have no cost/benefit trade-off to consider.

Standard & Poor's international review of the shadow toll road sector indicates a number of other important points. First, the global portfolio of 31 operational shadow toll roads is still relatively small compared with the number of user-paid toll facilities around the world. Although this number may grow, the sector's restricted sector size and limited history (most have only opened to traffic in the last five years) suggest that generalizations regarding shadow tolling experiences, performance characteristics, and lessons to be learned should be treated with caution.

Second, international shadow tolling applications are clustered geographically. In general, countries that have embraced the concept have done so with enthusiasm. Spain, Portugal, and the U.K. account for more than 90% of all applications, although Portugal has recently announced that it will convert from shadow tolls to user-paid tolls in the near future.

Third, the payment mechanisms used show considerable variety, from 100% shadow tolls to composite structures rewarding asset usage, performance, availability, and safety in different proportions. This is part of a broader trend observed by Standard & Poor's relating to increasing diversification (and sophistication) of the ways in which private sector road developers are compensated for their investment and investment-related activities. This diversification compounds the challenge for credit analysis, requiring an in-depth understanding of:

- The payment mechanism, its components, and their respective weightings;
- The sensitivity of the revenue stream to these components (individually and in aggregate); and
- The potential for the revenue stream to be impaired, given the characteristics of the underlying asset, its performance requirements, and the related penalties regime.

Shadow toll payment mechanisms cannot therefore be analyzed in isolation. Their credit quality characteristics can only be determined when compared with the specific features of individual projects, on a case-by-case basis.

Group E-Mail Address

InfrastructureEurope@standardandpoors.com