Are Credit Risks Lurking in the Shadows?

By Robert Bain

Shadow tolls, long popular in Europe, particularly in Spain, Portugal, and across the United Kingdom, are beginning to gain ground in the United States as several state DOTs explore them as an alternative to traditional point-of-use charging. Some important credit lessons surrounding shadow tolls should be heeded, however, before this type of transaction structuring is fully adopted.

Shadow Tolls and Traffic Risk

The Federal Highway Administration defines shadow tolls as "…per-vehicle amounts paid to a facility operator by a third party such as a sponsoring governmental entity and *not* by facility users." Shadow tolls are sometimes known as "pass-through" tolls because the charge for using a facility is passed through to the state. For the purposes of this article, a shadow toll road is defined as any highway, bridge, or tunnel for which the operator receives third-party income based on (and subject to the uncertainties of) asset use.

Conventional wisdom states that, all things being equal, shadow toll financing structures incorporate less market risk than user-paid toll roads, and that this inherently reduced risk profile enhances creditworthiness. Empirical evidence, however, doesn't support this view (see "Traffic Forecasting Risk 2004 Study Update," October 19, 2004, on RatingsDirect, www.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. Interestingly, Standard & Poor's (S&P's) analysis suggests that removing the challenge of having to predict drivers' valuing of time and responses to point-of-use pricing doesn't automatically improve forecasting performance. Furthermore, as explained below, it is possible to have shadow-toll transaction structures that actually increase lenders' exposure to market risk. Absent any other mitigating factors, shadow tolling is not, by itself, a "derisking" strategy. Nonetheless, the credit quality of shadow toll-road transactions can be improved if lenders are sufficiently shielded from traffic risk.

The key credit strengths of shadow toll projects don't 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.

A review of the international shadow toll-road sector carried out by S&P's Ratings Services demonstrates that the key credit strengths of shadow toll projects don't 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. Synthetic structures can be designed that, for example, compensate low future traffic levels, about which there is confidence, with high reimbursement rates. For lenders, this flexibility, effectively a form of traffic risk sharing, is the key benefit that flows from shadow tolling.

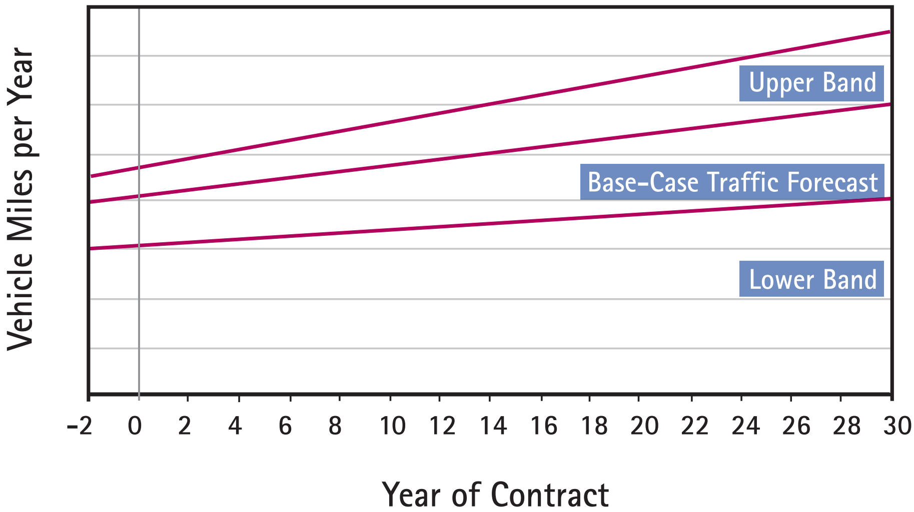
Traffic Bands and Market Risk

The most effective way a concession grantor can offer to share traffic risk is through the use of traffic bands. Under a shadow tolling regime, the concession grantor reimburses the road operator for use of the asset on behalf of the users. S&P's shadow toll-road sector review demonstrates that a number of transactions, particularly in the United Kingdom, Spain, and Canada, have in part mitigated lenders' exposure to traffic risk through the careful use of payment-related traffic bands. Within these 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 allow for tariff increases over time.

By itself, a banded payment structure doesn't reduce the lender's risk. Decreasing-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. In revenue terms, this gives a higher weighting (and hence more money) to low traffic forecasts, about which there is more confidence than high traffic forecasts. Figure 1 illustrates such a conceptual banding structure. (A specific range of vehicle miles per year is omitted because the figure varies from project to project.)

Figure 1 *Shadow Toll Traffic Bands*



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

- Traffic in the lower band attracts a high rate (for example, 10 cents per vehicle mile);
- Traffic in the base-case band attracts a low rate (such as 3 cents per vehicle mile);
- Traffic in the upper band attracts an even lower rate (say, 1 cent per vehicle mile); and
- Traffic above the upper band attracts zero per vehicle mile, thereby capping the concession grantor's liability.

In contrast, shadow toll transactions can magnify traffic risk if increasing-rate rather than decreasing-rate tariff bands are employed. Increasing-rate bands place increased revenue weighting on high traffic volumes, about which there is less certainty than low traffic volumes. Increasing-rate bands were recently imposed on one European shadow toll road (the A130 in the United Kingdom) to meet the concession grantor's accountancy-driven risk transfer requirements and, hence, achieve off-balance-sheet status for the project. This subsequently exacerbated problems for the concessionaire when traffic fell short of forecasts and eventually led to the need for financial restructuring.

Additional Traffic Risk Mitigants

Aside from exposure to traffic risk, several other issues must be considered when assessing the credit strength of shadow toll-road financing.

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, however. For example, truck flows, which generate proportionately higher revenues, affect maintenance profiles and expenditures. When defining shadow toll payment mechanisms, therefore, the links between project costs and revenues need to be carefully thought through.

A reduced-rate banding structure was successfully used on one Spanish project such that a 20-percent reduction in traffic resulted in a revenue loss of just 2 percent to 3 percent for one year. Bands can also be sculpted to reflect a project's capital structure. In Europe, for example, lower-band revenues are commonly sized to cover senior debt obligations, middle-band revenues are used to fund operations and maintenance, and upper-band revenues—the riskiest component of future cash flows—are used to provide equity upside. This upside is capped by concession grantors as the top band tariff is set at zero.

Traffic risk can also be mitigated by keeping the shadow toll component of the total payment mechanism low. Early shadow toll payment mechanisms in Europe were 100 percent shadow toll–based; the subsequent trend has been for shadow tolls, as a proportion of the total payment due to concessionaires, to be reduced to 10 percent to 40 percent (see "The

Evolution of DBFO Payment Mechanisms: One More for the Road?" March 13, 2003, on RatingsDirect).

Traffic Counting, Vehicle Categorization, and Trucks

Some early (mid to late 1990s) shadow toll-road projects reported problems with the reliability of traffic-counting equipment. Because output from traffic counters feeds directly into revenue calculations, reliability issues can become a significant concern for concessionaires. Procedures must therefore be put in place to ensure that accurate and independently verifiable traffic count data from appropriate locations along a project road are available quickly and at minimal cost. Inductive loops embedded in the road pavement are usually the technology of choice, although video-detection and vehicle-profiling equipment have been employed on some shadow toll roads. Although more costly to install than inductive loops, video cameras allow quicker incident detection and responses, minimizing the potential for penalties related to operational matters or road availability to impair the project's revenue stream.

Shadow toll roads generally use unsophisticated vehicle classification systems. Although road maintenance expenditure is driven by vehicle weight (or, more accurately, axle loadings), vehicle length, which is easier to determine, is commonly used as a proxy. Thus, defining the different vehicle length categories is important. Early U.K. shadow toll roads employed a cutoff of 5.2 meters to differentiate light vehicles from heavy ones. A number of vans, known as "long-lights," however, marginally exceeded 5.2 meters in length. Concessionaires consequently received extra revenue from vehicles that, compared with trucks, did little damage to the road. The cutoff was subsequently raised to 5.3 meters, thus enabling long-lights to be classified as light rather than heavy.

Another important factor in assessing the credit strength of shadow toll financing is truck traffic. 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 don't provide much revenue, a mismatch can occur between the incremental revenue generated by additional trucks and the damage they cause to the road, requiring increased maintenance expenditures. Some concessionaires consequently have made a case for dealing with truck-related revenues outside the simple tariff banding structures described earlier.

The global portfolio of 31 operational shadow toll roads is still relatively small. The sector's restricted size and limited history suggest that generalizations regarding shadow tolling experiences, performance characteristics, and lessons to be learned should be treated with some caution.

International Shadow Toll Projects

Because of the absence of roadside toll-collection infrastructure, most shadow toll-road users remain completely unaware that they're traveling 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 they would choose any other toll-free road, as in either case they have no toll–benefit trade-off to consider.

S&P's international review of the shadow toll-road sector reveals 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 size and limited history (most have opened to traffic only in the past five years) suggest that generalizations regarding shadow tolling experiences, performance characteristics, and lessons to be learned should be treated with some 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 United Kingdom presently account for more than 90 percent of all applications, although Portugal is considering converting some of its shadow toll roads to more-conventional user-paid tolls.

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

- 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 nature of the underlying asset, its performance characteristics, and the related penalties regime.

In terms of credit quality, therefore, shadow toll payment mechanisms cannot be analyzed in isolation. Their credit-quality characteristics can only be determined when weighed against the traffic composition and flows associated with specific highway projects.

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