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Approach road

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The key risk in most PPP road projects is the assessment of future traffic flows: this is true whether the road is a real toll or a shadow toll.

While the use of real tolls has found favour in jurisdictions like Germany and Ireland, the UK and Norway have questioned the value of real and shadow tolling and are moving towards an output based payment model with no explicit link to traffic volumes. To date there have been few real toll deals to be closed in Germany and Ireland: however a comparison of those deals indicates that financiers have not obviously required a significant risk premium in exchange for assuming traffic volume risk. Whether this will continue to be the case, particularly in Ireland, remains to be seen.

And a review of Irish and German projects indicates that the real tolls in those countries closed to date have not incorporated a significant risk premium into the cost of debt capital: it is unclear whether a risk premium relating to the assumption of traffic risk has been attached to equity instead, and whether higher levels of equity funding (and thus a higher overall cost of capital) are required to reflect the higher real toll risk.

But irrespective of national tolling policy, it is clear that only certain types of road can be financed via real toll and that the public sector is still required to make a significant financial contribution -frequently 50% or more of the capital costs - to ensure that a project is deliverable.

Tolling policy issues and mechanisms

While the sheer cost and demand for roads dictates the use of PPP, the key question is what risk allocation model is the most efficient - does the tolling risk allocation model produce the greatest incentive at the least cost for the private sector to act in the way which is most consistent with public sector policy objectives?

Although a real toll may free the public sector from a funding obligation, that does not mean that the funding is 'free' or that private tolling therefore leads to the lowest net economic cost of procurement. If the private sector is asked to assume a risk that it cannot effectively control, and therefore price, the overall economic cost is likely to be larger than if the asset was being funded directly by the public sector.

Alternatively, if public policy requires a free alternative network to be maintained in addition to the tolled road, the cost of procuring both the toll and the free alternative route may result in a higher overall economic cost.

Similarly, the obligations placed on the public sector by a real toll model, such as restrictions on the development of transport networks that compete for traffic with the project road, may be repugnant on public policy grounds, or it may not be within the legal power or practical control of the authority procuring the project road to give effect to that undertaking.

The risks associated with traffic levels falling below those forecast for the project, or toll rates being set too low, are the greatest risks faced by toll road projects. Whether the project economics of a given road are sufficient to support a real or shadow toll largely depends on the function of the road and on market demand.

Roads operated on a real toll basis have usually been designed to connect or relieve congestion in large cities where

demand is more certain, often being upgrades of existing networks with a history of traffic flows. Shadow tolling is more forgiving - the price elasticity of user demand is removed as a project risk.

The key advantages of shadow tolling are:

* the shadow toll payments are paid over time by the public sector;

* the mechanism allows for tolling to be introduced when actual traffic volumes have been determined;

* linking payment to traffic volumes enhances the operator's incentive to attract users to the facilities; and allows for greater flexibility in terms of sculpting revenue streams to reflect actual operating costs.

The key disadvantages of shadow tolling include:

* The absence of a toll levied on users removes road pricing as a means for influencing road user behaviour.

* Shadow tolls may not be an efficient use of government funds: they may inadequately protect investors when traffic levels fall below expectation and may result in unnecessarily high revenues when traffic exceeds expectation.

* A reliance on public sector payment introduces public sector credit risk as a further project risk.

The shadow toll model was initially adopted for UK road projects, producing project revenue streams that were highly dependent on traffic volumes. However the Highways Agency subsequently queried on policy grounds whether the shadow toll mechanism provided the most appropriate means for payment on urban road projects where traffic was consistently heavy and there was little traffic risk: it resolved that in future it would determine the ultimate objectives of a service (which predominantly related to asset availability and performance) and link payment to the delivery of a service meeting those objectives.

The National Audit Office in a separate analysis concluded that the transfer of traffic volume risk to the private sector was not a value for money risk transfer as it placed a risk with the private sector that it is no better placed to manage than the public sector.

Following these analyses there was a substantial modification of the payment mechanisms used in UK road projects. There was a reduced emphasis on traffic volumes and an increased emphasis on asset availability, performance, safety and environmental issues, defined in such a way as to motivate the operator to ensure the road was operated and maintained in accordance with specific 'output' requirements.

Recent mechanisms have more in common with facilities maintenance contracts than previous road projects: there is no shadow toll component and the principal payment now relates to congestion management, with payments to the operator being reduced as users experience congestion. However traffic volume remains an important indirect component of revenue as the preparation of an accurate traffic forecast is critical to determining the potential for congestion on a project road.

Additional forms of government financial support

Despite the popularity of real tolling in German and Ireland - and the renewed interest in Portugal where the government has been hit hard by future SCUT payments - real tolling is unlikely to become a substantial part of highway funding. At its most basic there is a limited number of roads, particularly new roads, with project economics strong enough to attract private financing without government support.

There are however a range of options open to the public sector to assist real toll projects to completion.

Land acquisition: A common form of risk sharing whereby the government is responsible for land acquisition.

Extension of concession period: A supplemental measure for compensating the private sector for loss of revenue, which may be lost for a variety of reasons such as the adverse affect of tolling on traffic volumes or other external and natural

events. However, any future cashflow benefits during the extension of a concession period may not enhance a project's immediate cashflow and thus will not provide any short-term protection from traffic and revenue shortfalls.

Construction of related facilities: The construction of related facilities (such as access roads) may be a critical element of a toll road operation, feeding traffic to the project road and allowing for the development of ancillary facilities.

Revenue support and revenue enhancement: This may take the form of minimum traffic or revenue guarantees, revenue from existing roads and bridges or limiting competition to the project road. The latter in particular may however be problematic as there are public policy issues relating to the fettering of a government's ability to facilitate future development: such an undertaking may be unacceptable to the public sector.

Development rights and third party revenues: This type of support is relevant to the financing of a project that may generate large economic benefits but which has weak project economics.

Subsidies, grants or loans: Direct government financing may fill the gaps in a project's economics but, depending on where repayment of public sector subordinated loans rank in the project's payment cascade (before, after or equally with equity), it may render the project unattractive to equity investors or alternatively dilute the transfer of risk from the public to the private sector.

The different European schemes

While the UK continues to push the envelope of toll road methodology, Norway is following a similar route. The Norwegian Public Roads Administration (NPPA) has identified three pilot projects for its PPP programme. The roads will be toll roads, but they will be tolled by a local government owned non-profit company which has entered into an agreement stipulating how the tolls will be made available to the NPPA.

As in the UK, there has been a policy decision that traffic risk will not be transferred to the operator: payment will therefore be made to the operator by reference to a system of payment and deductions measured against an output-based specification.

The first Norwegian road PPP to reach financial close in early 2003 was the E39 (Klett-Bardshaug). The concession period is 25 years, and it is thought that the term loan element of the senior debt is priced at 100 bps during construction and 80 bps thereafter. As noted above, while motorists will pay real tolls the operator has not assumed traffic risk: revenues will be in the form of a unitary payment, with around 80% being availability based, and the operator will be compensated for additional maintenance costs arising from traffic levels in excess of the state's traffic forecasts.

The Norwegian and UK programmes are running fairly smoothly (although some sceptics argue that cost of equity in the UK is still too high). Conversely Ireland and Germany have suffered some hiccups.

In 2001 Republic of Ireland embarked on a PPP road programme comprising 11 selected projects. Four schemes had been put out to tender by March 2002 - the N4/N6 Kilcock-Kinnegad, N25 Waterford Bypass, N1/M1 Dundalk Bypass and N8 Fermoy Bypass, with the estimated capital cost for each of the projects ranging from Eu100-350 million.

All roads in current programme are real tolls and it is the state that sets the tolls, subject only to CPI adjustment, with indicative levels specified by the public sector. The state will offer financial support by way of subsidy (subvention) payments payable in the construction or operations period, and the financial comparison of bids is largely assessed on the required level of those payments.

The first deal to reach financial close in the Irish PPP roads programme was the N4/N6 Kilcock-Kinnegad scheme in March 2003. Capital costs are estimated at Eu320 million while total investment over the life of the concession period is around Eu400 million. The principal term loan facility of Eu185 million has a tenor of 25 years and carries a margin of 120bp with a step-up to 150 bp at a point during the operations period.

By comparison the senior debt tenor in the competing bid was only 20 years, mitigating the perceived project risk by leaving a much longer senior debt tail than usually required. It is also noteworthy that the NRA is required to make a

significant financial contribution to the project, without which the project would not have been a bankable deal - Eu166 million in subsidies and a further Eu100 million to acquire land for the scheme. Therefore despite the project's real tolling revenues, substantial public sector support has been required to produce a viable project: public sector contribution to the only closed Irish road project to date was (inclusive of land acquisition costs) approximately 50% of total project costs.

There has been much criticism in banking circles of the parameters of the Irish PPP roads programme and the terms of the N4/N6 deal in particular. Particular criticisms have included that the operator is taking a real toll traffic risk in a comparatively underpopulated, largely rural country and a high degree of competing route risk. And the public sector, not the operator, retains the power to set and reset tolls.

However it is not clear that the transfer of traffic risk to the private sector has produced a corresponding risk premium in the N4/N6 senior debt margin, although in light of the terms of the competing and unsuccessful bid it could be suggested that the project's structure has adversely impacted on the bidding competition leading to the appointment of the successful bidder. It is noteworthy that monoline insurers have stayed away from Irish roads, and there has been adverse market comment concerning the ability of the deal to achieve syndication.

Even the NRA might concede its current programme is close to the limit in terms of identifying feasible real toll routes, and any further PPP road programme will would likely have to be predicated on alternatives to real tolling. It remains to be seen whether the N4/N6 is the start of a PPP programme producing senior debt funding at usual market margins, or whether it represents an exceptional outcome in light of the Irish PPP programme parameters.

In Germany the F-Modell was the earliest form of road PPP, allowing use of real toll road concessions and was developed pursuant to a law allowing tolling and private funding of roads (the FernstrasenbauPrivateFinanzierungsGesetz (FstrPrivFinG)). However despite a promising start the F-Modell programme soon ran into difficulties.

The Strelasundquerung (B96) on the Baltic sea coast in northern Germany, a bridge connecting the Baltic island of Rugen to the mainland, in particular proved problematic as bidding groups could not reconcile a bankable deal with the level of available subvention payments and a political requirement that the existing toll-free crossing near the site of the planned new toll bridge to the island of Rugen be maintained as a free alternative route. Despite numerous attempts to save the project the B96 was scrapped as a real toll project and procured under a traditional public sector procurement model.

The development of the Electronic Toll Collection (ETC) scheme, an electronic tolling system for HGVs using GPS tracking technology, subsequently led to the development of the A-Modell for road funding. The A-Modell programme provides for existing four lane stretches of autobahn to be upgraded to six lane stretches (two by three lanes), with the construction being funded by a mixture of private sector funding and public sector subvention payments. Operators will be able to bid an up-front subvention contributed as start-up funding direct from ETC revenues already received by state, with the parameters of that subvention being no more than 50% of construction costs

While the A-Modell does not require users to pay tolls directly to the operator it remains in principle a real toll rather than a shadow toll scheme, although price elasticity of demand risk may be mitigated by the fact that collection is indirect and that the tolls are payable only by commercial users. It should also be noted that while the A-Modell's focus is the expansion of existing elements of the high- speed highway network, and thus the traffic risk in relation to these projects is more of a known quantity, the A-Modell still requires a high level of subvention payments by the public sector.

Conclusion

Despite the use of diametrically opposed risk models the terms of debt financing for deals in the UK, Norway, Germany and Ireland are surprisingly homogeneous, and a review of Irish and German projects in particular indicates that the real tolls in those countries closed to date have not incorporated a significant risk premium into the cost of debt capital. It is unclear whether a risk premium relating to the assumption of traffic risk has been attached to equity instead, and whether higher levels of equity funding (and thus a higher overall cost of capital) are required to reflect the higher real toll risk.

However the German experience equally shows that the parameters for a successful tolled project can only be stretched so far. And irrespective of national tolling policy it is clear that only certain types of road can be financed via real tolls and that the public sector is still required to make a significant financial contribution - frequently 50% or more of the capital costs - to ensure that a project is deliverable.