

Criteria Report

**Global Toll Road Rating
Guidelines**

Analysts

New York, U.S.A.

Cherian George
+1 212 908-0519
cherian.george@fitchratings.com

Scott Trommer
+1 212 908-0678
scott.trommer@fitchratings.com

Mike McDermott
+1 212 908-0605
michael.mcdermott@fitchratings.com

Gersan Zurita
+1 212 908-0318
gersan.zurita@fitchratings.com

Chad Lewis
+1 212 908-0886
chad.lewis@fitchratings.com

London, U.K.
Laurence Monnier
+44 20 7417-3546
laurence.monnier@fitchratings.com

Singapore
William Streeter
+65 6339-0441
william.streeter@fitchratings.com

Monterrey, Mexico
Eugenio Lopez
+5281 8356-6880
eugenio.lopez@fitchmexico.com

Santiago, Chile
Cristian Fuenzalida
+562 499-3313
cristian.fuenzalida@fitchratings.cl

■ **Summary**

The toll road sector is evolving rapidly and has become increasingly global, as entities with the expertise to build, operate, maintain, and finance these facilities have loaned their services across international boundaries. The private sector brings a level of competition and efficiency that can benefit toll road project development and operations. At the same time, traditional publicly managed toll roads continue to operate in many parts of the globe. The management structure of publicly managed toll roads may be affected, in some cases, by private-sector involvement. Regardless, management strategies in both publicly and privately managed toll roads will likely evolve over time to take advantage of project development and operational efficiencies to meet the growing transportation needs of increasingly urbanized economies.

Historically, toll roads as an asset class have been subject to relatively low default rates. However, a number of projects have been subject to periods of distress, in large part due to the inability to forecast initial traffic and revenue performance with accuracy. In stable, developed economies, incorrect predictions and project externalities caused downgrades, debt restructurings, workouts and some payment defaults, such as in the United States and Europe. In developing economies, the added risk of economic cyclicalities has similarly caused downgrades and defaults, such as the 1994 Mexican fiscal crisis. In countries without a history of toll roads, affordability and the willingness to pay have affected project viability, as in the case of Hungary. Ultimate recovery was strong in most developed economies but not as strong in developing economies.

Fitch Ratings' fundamental credit view on the growing strength of toll roads has not changed. In fact, it has been bolstered with increasing evidence of that strength in various parts of the world, even for what have been considered economically challenged projects. These guidelines are intended to cover the broad spectrum of permutations in toll road types and management structures. The report

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describes Fitch's view in more detail and guides readers through the analytical framework used in assessing the credit quality of various types of toll roads and financing structures.

User-pay toll roads tend to be more complex and require application of most of the criteria identified in this report. Shadow toll and availability payment mechanisms, which are less exposed to the risks of traffic and road pricing, require application of a subset of the criteria, as appropriate. This report also identifies new structural and analytical approaches to enhance bondholder security and achieve and maintain investment-grade ratings for highly leveraged and very long-lived concessionlike arrangements. This enhancement is accomplished largely through forward-looking tests and related covenants that ensure maintenance of manageable levels of leverage. Importantly, this report also provides added definition to the development of Fitch's base and stress cases.

The rating levels discussed in the report relate to Fitch's international credit rating scale. For debt issuances in local markets that require national scale ratings, Fitch will issue the appropriate rating with a special identifier for the country concerned.

■ Types of Toll Roads

Toll road financing, construction, revenue generation and operation can be undertaken through several organizational structures and frameworks. Revenues can be generated through traditional direct user charges, in which motorists using the facility pay a toll, or through third-party payments. Third-party payments are typically from a public-sector sponsor to a private-sector concessionaire, either in the form of shadow toll payments based on facility usage or availability payments based on the concessionaire's ability to meet certain performance benchmarks. Ownership and operating models range from public-sector sponsor responsibility for all aspects of financing, construction and operation to public-private arrangements in which the public-sector owner grants a concession to the private sector to handle a toll road's development and operation, according to well-defined requirements and operating benchmarks. Whether publicly owned and operated or developed as a public-private partnership, toll roads can be organized as stand-alone projects, either greenfield or existing facilities, or as a system of toll

roads with long operating histories serving well-established markets.

User-Pay Toll, Shadow Toll and Availability Payment Mechanisms

Both the public and private toll road models utilize the user-pay revenue mechanism. Under this system, a vehicle makes a payment via cash or an electronic method for the use of a road facility. The amount of the payment can either be a fixed charge or distance based. The amount of the payment is also a function of the type of vehicle, with two-wheelers and automobiles usually paying a lower base fee and commercial and other multi-axle vehicles paying a higher fee on a graduated scale.

In the explicit user-pay model, revenues are directly linked to traffic and, thus, susceptible to economic downturns, elasticity of demand from toll increases, rising fuel prices and competing facilities. However, Fitch notes that these risks are generally mitigated over time, given the growing long-term value associated with toll facilities. Historically, toll rate increases have resulted in some magnitude of traffic diversion in the short term; however, given the lack of quality competing free roads, it has been Fitch's experience that traffic levels have recovered (the pace of which is a function of local conditions), given growing demand and time savings.

Typically, shadow toll and availability payments are in the form of a medium- to long-term concession, whereby a private contractor receives payments over time for the successful construction and operation of the facility from a public sponsor. The user is not responsible for a payment. In the case of shadow toll roads, the amount of payment is a function of a theoretical toll rate per vehicle with revenue minimums and maximums in many cases, limiting exposure to traffic forecasting risk to the operator on the low end and the government's exposure to increased subsidy on the high end. Revenues on road availability payment schemes are generally a function of satisfactory operations, maintenance and capital reinvestment.

In the shadow toll model, the road user has no price incentive to use another road. Criteria used by governments for choosing this funding method have included more efficient project delivery and operations versus traditional means, lack of

alternative free roads, political unwillingness to charge users directly, insufficient traffic for a user-paid toll to be feasible and a lack of appetite in local financial markets to invest in user-paid roads.

While availability payments have no traffic risk, they have other types of exposure. Once construction is complete, satisfactory operations and maintenance (O&M) remains the primary risk in availability payment structures. Fitch views this risk as manageable since these costs tend to be smaller and more predictable, though financial margins can be partially eroded. Additionally, predictable and limited mandatory capital expenditures allow for more highly leveraged financial structures. As a result, high levels of unanticipated capital cost can rapidly eat into margins.

The degree of leverage significantly affects the ratings on all three types of toll road structures. Facilities with very low levels of leverage can achieve 'AA' ratings. Those that are highly leveraged (startups and established facilities), but that retain adequate margins of financial flexibility to deal with predictable downside events, can achieve investment-grade ratings. Start-up, stand-alone projects under construction are usually restricted to low investment-grade rating levels.

Public Versus Private

Generally, publicly operated toll facilities maintain a goal of operating solely in the public's best interest by providing an essential service at least cost. In contrast, private operators maintain a goal of maximizing cash flows and returns to equity partners while providing an acceptable level of service. Fitch's credit analysis for both obligor groups focuses on assessing the underlying economic factors of the road that drive revenues, the maintenance of financial flexibility and the alignment of management's interests in the legal and financing structure with the goal of full and timely repayment of debt.

Historically, public-sector goals have been achieved with conservative debt structures and low toll rates. While debt structures were flat to slightly escalating in most cases, that is changing with the higher cost of system expansions and start-up projects. Additionally, public entities have a track record of limiting toll increases due to political considerations, despite their economic ability to raise rates. When

absolutely necessary, they are generally implemented in combination with planned capital improvements or system expansions. The angst that accompanies toll increases for publicly operated facilities creates the potential of timing risk that can lead to weakened credit profiles for certain periods.

In most cases, privately operated toll facilities have had greater success at regularly imposing toll rate hikes due to the generally growing economic rate-making ability of most toll facilities, the profit motive and less concern by management of the political implications. When concessions are initially granted, toll rates tend to be lower than revenue maximization levels. Nevertheless, once under concessionaire control, toll rates will likely increase to maximum economic or legal revenue levels. However, aggressive toll rate increases, at rates well-above inflation, can also subject these facilities to political risk, which potentially carries greater adverse consequences.

While the analytical considerations are largely the same, the differing motivations of public- and private-sector management result in key distinctions in their toll rate structures, abilities and willingness to raise tolls, revenue and expense profiles, legal frameworks and debt structures. Nonetheless, both publicly and privately operated toll facilities have achieved investment-grade ratings, in some cases very high ratings with appropriate legal structures, debt and liquidity levels, financial flexibility, and reasonable traffic and revenue projections.

In the public-sector model, management's independence, ability and willingness to act to maintain fiscal balance in challenging economic times are key rating considerations. Fitch also considers the conservatism built into budgets and long-term forecasts for ensuring fulfillment of future obligations, as well as the ability to deliver capital programs and expansion projects on time and budget. Since these factors are often not completely within the control of a public entity, maintenance of untapped financial flexibility by a public operator to withstand downside stress events is an important input into the rating.

The key rating considerations for privately managed toll facilities are concession certainty, the independence to set toll rates within a clearly defined toll setting framework, the strength and expertise of

the sponsor, the maintenance of adequate levels of equity in the credit structure, and financial flexibility to withstand reasonable downside stress events.

Systems Versus Stand-Alone Facilities

Toll facilities classified as systems include main long-distance, interregional or regional routes linking multiple key economic centers and portfolios of major intraregional corridors. They may be managed via structures such as government enterprise funds, independent public authorities, corporations and investment funds. Typically, systems comprise a network of toll roads that produce a diverse revenue mix derived from both commercial and passenger vehicle traffic. Furthermore, systems also tend to have existing facilities that provide a cross-subsidy to expansion projects, usually in the short term during the construction and ramp-up phases. Toll facilities classified as standalones include nonrecourse bridges, tunnels, connectors, and circumferentials, as well as express, high occupancy toll (HOT) and truck-only toll (TOT) lanes, all of which rely on the facility as their sole source of revenue. Fitch classifies stand-alone toll road projects into two groups: greenfield or start-up projects (which are all new construction) and established projects (which are operated in their current configuration or with service improvements, capacity expansions or extensions).

Systems with mature segments are generally able to support all direct operating and capital obligations with lower toll rates. Stand-alone facilities, depending on their level of maturity and debt, tend to need to charge higher toll rates to support all of their obligations. Under private operation, both tend to maximize the toll rates to maximize revenues and equity returns. The ability to do so is generally greater with systems than with standalones. As a result, systems have a greater ability to be positioned to support high leverage by government policy to pay for public investment unrelated to the toll facilities themselves. While the geographical and economic diversity of systems provide inherent strength, such leveraging effectively makes their credit risk profiles more akin to those of standalones.

■ Economic Fundamentals

A toll road's economic fundamentals provide the foundation that enables a user-pay toll facility operator to set rates and generate revenues to raise capital; construct, operate and maintain the facility;

repay debt; and generate surplus funds to support other toll facilities, regional transportation services and governmental needs, as well as to provide shareholder returns. Economic fundamentals are also of value in assessing a shadow toll road's exposure to market risk. Fitch evaluates a toll road's economic strengths by analyzing the underlying regional economy, including its sensitivity to economic cycles and one-time events, the depth and diversity of the travel demand served by the toll facility, competitiveness relative to alternative routes, economic rate-raising flexibility and toll collection methods. The following sections describe the data sources Fitch uses in our analysis and how we evaluate the factors contributing to a toll facility's economic fundamentals.

Data Sources and the Traffic and Revenue Forecast

Fitch utilizes a number of sources provided by regional planning bodies and the toll facility's land use and traffic and revenue consultants to assess economic fundamentals, including historical and projected employment, population, income, motorization and land use trends, as well as historical regional and corridor traffic conditions and projected traffic and toll revenue. The quality of the data set used is of particular importance. Structured national and regional systems for data collection and maintenance are essential to ensure reliability of inputs. To the extent that such infrastructure is not in place, it could make the toll road more difficult to rate on a stand-alone, nonrecourse basis.

While the risks of traffic and revenue forecasts, particularly for user-pay, greenfield projects, are well known with actual results coming in significantly below expectations for a number of facilities, Fitch continues to view—albeit cautiously and in a limited fashion—traffic and revenue consultant reports as a necessary input to our analysis of a toll road's economic fundamentals. The traffic consultant's analysis provides an important assessment of the economic, demographic and land use profile of the toll facility's service area, existing traffic conditions, planned transportation improvements and motorists' perception of the toll facility's utility. This analysis also provides an indication of how economic, demographic, and corridor traffic and transportation network conditions contribute to a toll facility's traffic and revenue. As such, the inputs to the

forecasting process are viewed as useful. The forecasts for established facilities with long track records of operation and no expectation for drastic changes in tolling policy are viewed as more reliable. The forecasts for start-up, stand-alone projects and highly leveraged facilities are viewed with skepticism. As a result, the track record of the consultant with similar projects over time will be a key input into the rating process.

The limitations of the modeling process in accurately forecasting traffic and revenue levels on user-pay greenfield projects on the downside and the inexperience with forecasting revenue maximization levels on mature facilities are key risks that Fitch evaluates. Fitch notes that traffic and revenue forecasts for shadow toll roads may be subject to a lower degree of uncertainty than forecasts for user-pay facilities. This is because shadow toll forecasts generally involve the expansion of existing facilities where there is existing traffic demand data and/or are not subject to uncertain assumptions about potential users' value of time saved, since motorists using the facility do not pay a toll. While traffic and revenue forecasts are modeled on long-range planning platforms that are subject to significant uncertainty, they provide a gauge of demand in the medium to long term. Therefore, Fitch views these projections as a starting point in analyzing the relative magnitude of a toll facility's expected demand profile.

For greenfield projects and those in ramp up, Fitch will drastically discount the development and value of time assumptions to gauge the effect on traffic and revenue. Fitch will likely assume a five-year lag in development to approximate a deep and prolonged recession and lower initial value of time savings to attempt to significantly reduce economic forecasting and model risk. Fitch will then use the economic profile laid out in the consultant's report as the basis for developing a Fitch base-case level of initial-year traffic, growth assumptions and toll rate increases that are expected to result in little to no toll elasticity (minimal elasticity scenario). Fitch will overlay the toll rate framework provided in the sponsor's financial plan to the traffic profile that is developed.

To the extent that planned toll increases are above the Fitch minimal elasticity scenario, toll rate sensitivities based on available comparable data will be developed and applied to traffic growth

assumptions. To the extent that planned toll increases are below the Fitch minimal elasticity scenarios, little or no traffic effect will be assumed. Fitch will then compare the sponsor's financial forecast with the Fitch-developed financial profile and assess the feasibility of the sponsor's financial plan relative to the desired rating level. On balance, more conservative profiles than Fitch's analysis will achieve higher ratings than more aggressive profiles. A sketch of the steps Fitch follows to develop base and stress tests for projects in developed economies seeking investment-grade ratings is provided in the appendix on pages 20 and 21.

Regional Economic and Demographic Analysis

The regional economic and demographic analysis focuses on determining, on a historical and projected basis, the strength and diversity of key economic, demographic and land use factors that contribute to a toll facility's travel demand. Demographic measures include population and the number of households. Economic factors encompass total employment, employment by industry, household income and any relevant local/regional indices of economic activity. For those markets that are significantly influenced by the national economy, gross domestic product will be a consideration. Land use measures include the mix of existing commercial, residential and retail development as measured by number of units, square footage/meters and vacancy/absorption rates, as well as the dependency on the timing and magnitude of future developments.

Toll facilities obviously benefit from regional economies with growing population and employment levels across a number of sectors that contribute to continuing residential, commercial and retail development, in addition to growing household incomes. A history of volatile economic cycles and a dependency on particular industries/sectors of the economy pose an added layer of risk and will constrain credit quality.

Fitch evaluates projected economic, demographic and land use activity relative to historical trends and assesses differing rates of projected activity based on factors, including the addition of new developments in high-growth regions with developable parcels, slowing rates of increases for maturing regions and flat to declining trends for regions facing economic

challenges. A particular risk is the dependency on the timing and magnitude of new development that is expected to significantly benefit a toll facility's traffic and revenue-generating capability. To the extent the sponsor's assumptions are viewed to be aggressive, Fitch will estimate the toll facility's base level of traffic, excluding the new development, and incorporate more conservative prospects for development coming online based on information provided by the toll facility operator and other third-party sources, as appropriate. Fitch's analysis will incorporate the status of commercial and residential developments, governmental approvals and permits, level of investment, stage of construction and leasing/sales activity. Assumed traffic levels from new land use activity will be discounted, given the uncertainties associated with the timing and pace of new development.

Traffic Profile and Competition

A toll facility's traffic profile is primarily influenced by its regional economic and demographic conditions and the physical attributes (i.e., the route and capacity) of the toll facility, as well as other competing and connecting elements of the transportation network. Motorization rates (i.e., the number of licensed drivers and motor vehicles) are a key input to assessing the traffic profile for toll facilities in developing countries where such rates have been low but are generally escalating.

A diverse traffic base that includes some combination of intercity, commuter, business-related and recreational travel, all coming from and going to multiple origins and destinations, allows a toll facility to better withstand a downturn in a particular segment. Fitch will assess the risk of dependence on particular types of traffic (e.g., commercial or recreational), origin and destination markets or a particular toll facility in a system. In particular, Fitch views toll facilities dependent upon commercial vehicles for a significant share of revenues as potentially more sensitive to economic downturns. Given that recreational and intercity traffic patterns are more sensitive to gasoline price increases than commuter travel, Fitch will also assess how those toll facilities that are more dependent on noncommuter travel may be adversely affected by a gas price spike.

Competitive toll facilities are those that provide a more direct route and faster travel times relative to other

nontolled roads and public transit services within a transportation corridor. A toll facility's competitiveness is primarily measured by the amount of travel time saved and its value to motorists relative to the toll paid. These are key inputs to the traffic forecasting efforts that are nevertheless subject to uncertainties, given that they are based on assumptions about the expected physical capacity of the regional transportation network, including the toll facility; underlying economic, demographic and land use conditions; and motorists' perceived value of time saved. As a result, Fitch will test the sensitivity of a toll facility's traffic profile to changes in its travel time savings and perceived value relative to existing and planned alternative routes. This includes an evaluation of historical traffic trends and congestion levels for competitive nontolled highway routes and, if applicable, for operating toll facilities; actual and expected diversions from the toll facility to other highways due to capacity improvements at those facilities; the sensitivity of a toll facility's traffic to changes in motorists' value of time saved; and the potential traffic effects due to the availability of competitive transit services.

For greenfield, user-pay projects, where the ability to approximate value of time savings is limited, Fitch will discount the value of time to reflect the initial unwillingness to pay tolls but then gradually increase it toward the consultant's assumption to reflect the likelihood for a greater perception of value of time savings to develop as usage continues.

A detailed analysis of truck traffic and its sensitivity to tolls is not widely available. While studies have assumed commercial traffic is likely to choose tolled routes (due to their greater value of time savings), that has not always been borne out in actual performance. As a result, for start-up projects, Fitch will assume more drastic reductions in truck traffic than for passenger vehicles during the first year of traffic to reflect a greater initial resistance to tolls but then incorporate higher growth assumptions during the first decade of operation to reflect the greater likelihood that trucks will use the tolled route, as the benefits become more evident over time.

Economic Rate-Raising Ability

The strength and competitiveness of a toll facility's regional economy directly influence its economic rate-raising ability. For operational toll facilities, economic rate-raising ability is captured by

examining the magnitude of toll increases relative to traffic diversions following a rate hike and the time it takes for traffic to recover to prior levels. Obviously, the assessment of economic rate-raising ability for start-up toll facilities with little or no operating history is less direct. As such, Fitch bases our analysis on traffic and revenue forecasts, available traffic data for facilities in ramp-up and traffic diversion data for peer facilities, if appropriate.

Currently, there is limited data supporting a meaningful assessment of elasticity at different levels of toll increases and the corresponding effect on traffic volumes, particularly for start-up projects. Comparisons used in Fitch-reviewed traffic and revenue studies appear very often to be best guesses based on a limited population of toll roads having some similar characteristics. As a result, their value to Fitch's analysis is limited. A lack of broad global experience with annual toll increases at levels well-above inflation also brings into question the gauges of elasticity that have been used in traffic and revenue studies for established facilities that seek to maximize revenues.

Based on Fitch's experience with a variety of toll roads operating in various parts of the world, it is Fitch's best judgment that in most developed countries with high motorization rates, regularly scheduled toll increases that are pegged at or close to inflationary levels will likely have minimal adverse traffic effect. Toll facilities, typically those under public ownership, that have a history of setting rates below inflation have the additional flexibility to raise rates more steeply without materially affecting demand until tolls have caught up with inflation. It is also Fitch's opinion that existing toll rates, proposed toll increases and their correlation with local economic activity are important factors in determining the revenue maximization point of a toll road.

Fitch may discount inflationary increases in weak economies and/or in periods of high inflation and may assign a premium in strong economies and/or in periods of low inflation in an attempt to approximate a facility's maximum revenue point. For facilities with stronger economic profiles, depending on the toll road's market position (e.g., startup or mature, among others) and local economic conditions, Fitch will consider a range of possibilities, from Consumer

Price Index (CPI) minus 150 basis points to CPI plus 200 basis points, in evaluating the limits of a facility's rate-making flexibility. To reflect the inability to see into the future with certainty and the likelihood that public policy and competitive influences have the potential to affect a toll road adversely, Fitch will assume reduced rate-making flexibility by tapering CPI margins over time, particularly in the long run.

Toll increases that largely trend with inflation are viewed by Fitch as moderators of political risk. To reflect the lower risk profile of such regimes, Fitch will consider tapering CPI margins to a lesser extent or not tapering them at all in certain circumstances when economic and demographic trends justify it. Legal and political constraints on toll increases will be superimposed on top of the economic profile developed by Fitch in conjunction with sponsor traffic and toll rate assumptions to arrive at base-case and stress-case forecasts.

Toll Collection Methodology

With the growing use of electronic toll collection (ETC), toll facility operators can offer users a number of pricing and payment options. In addition, ETC contributes to a toll facility's competitiveness, given the technology significantly reduces the time spent paying a toll and increases capacity by eliminating chokepoints at toll plazas. As a result, this can reduce pressure on toll facility operators to widen toll plazas to accommodate additional traffic. Anecdotal evidence indicates electronic toll payment lessens the elasticity effects of toll increases since customers are not required to pay in cash at the time they pass through the toll plaza (i.e., it separates the decision to use the toll facility with the payment process).

While the vast majority of toll facilities continue to collect tolls electronically and in cash at toll barriers, many facilities are implementing open-road tolling (ORT) where electronic toll paying customers are charged as their transponder-equipped vehicles pass under a gantry. Under this concept, cash tolls are not collected at the time of use of the facility. Registered users may choose to prepay for passage. Unregistered users without transponders are billed via a video tolling process and are subject to the base toll rate plus an administrative fee. The customer is sent a bill using a system-activated license plate photo of the non transponder-equipped vehicle passing under the

gantry. System accuracy under operating conditions has improved but currently remains less than ideal, resulting in some uncollected tolls.

The key risk to ETC, particularly ORT, is toll evasion and the potential for growing enforcement and collection costs. Fitch will use historical data to arrive at a reasonable toll violation rate for each facility. Fitch will evaluate projected toll evasion rates, as well as enforcement and collection costs relative to actual data for the toll facility, if available, or for peer facilities. In addition, Fitch will review administrative, legal, technological, and enforcement strategies and measures undertaken by the toll facility operator in concert with law enforcement and vehicle and driver licensing agencies to minimize toll evasion. To the extent that a detailed historical track record is not available, Fitch will apply a worst-case assumption based on comparable industry data.

It is important to note that while Fitch identifies and will stress the risks of ETC, the overall operational and financial consequences of these systems, especially those that facilitate faster travel, will likely result in greater traffic volumes and potentially reduced capacity constraints. Consequently, a net positive effect could permit higher levels of leverage or improved credit quality over time.

Express, HOT and TOT Lanes

The high cost of expanding roadway capacity, the practical right-of-way limitations in congested urban corridors and safety considerations have resulted in increased consideration of express, high occupancy and truck-only toll lane projects. These projects increase capacity in a limited fashion while also serving to manage demand through pricing. The projects are typically built in the median or left lanes of an existing highway with some form of separation from the free lanes running parallel. The level of separation can vary from roadway striping to concrete barriers. For safety and operational purposes, entry and egress from these lanes is legally limited to certain areas. The nature of access is important, as the need to merge through free lane traffic to use the toll lanes can negatively affect demand for short trips. The nature of separation between toll and free lanes is also important, given the potential for unlawful shifting of traffic in and out of the toll lanes to affect lane performance and revenue. Truck-only toll lanes have additional layers

of complexity, given the limited understanding of usage patterns and behavior. This issue is magnified if toll lane use is not mandatory due to the greater sensitivity of trucks to tolls and the higher toll rates payable.

The close proximity of competing capacity makes the economic viability of these projects much more sensitive to overall demand levels. Fitch will evaluate the level of congestion in the corridor, in particular focusing on volume-capacity ratios by hour of day and day of week, to assess the core periods and levels of demand. Fitch will use the limited comparable experience with such projects to assess the reasonableness of demand projections at various toll rate levels. The physical design of the facility, the ease of accessibility to and from the lanes, the legal flexibility to adjust toll rates to maintain highway speed free flow conditions, the perceptions of user value for short-distance and long-distance trips, management's track record in pursuing violators and unlawful use of toll lanes, and the level of exposure to expanded free lane capacity will all be important rating considerations.

Given the limited experience with such toll projects, the forecasting risk associated with opening-year traffic and revenue, ramp-up and steady-state operations is greatly heightened. In corridors where strong demand and high congestion levels exist, the uncertainty is at what toll rates operating performance standards are met and revenue is maximized. The flexibility to adjust the price point to optimize volume and revenue in real time is critical. If so, once open, ramp-up is likely to be rapid. Fitch will evaluate the level of liquidity structured into the transaction and its ability to cushion forecasting risk and user reluctance to paying the toll for the first few years.

■ Legal Framework

The legal framework under which a toll road operates is among the more significant qualitative factors that Fitch considers in rating toll facility debt. Taken together, the nature of the legal authority and associated requirements found in financing documents can have meaningful effects on credit risk, leading to improvements to the underlying credit quality of the asset in some cases or to credit ceilings in other cases, notwithstanding the facility's underlying economic or financial metrics.

Authority to Operate and Toll

The legal documents that establish both the authority under which the facility can be constructed, operated and tolled, as well as the operating and financial performance requirements placed on the operator, are extremely important as they provide the legal foundation upon which a debt financing can then be built. The legal authority will vary based on the nature of the obligor. Public obligors should have unambiguous statutory language enacted by local, state/provincial or central governments that establishes the responsibilities and power of the entity. Private obligors should be party to an agreement that delegates the rights granted to the public sponsor or to an agreement based on established concession or contract law. An investment-grade rating may not be achieved if there is an absence of concession or contract law or precedence for the legal standing of the arrangements being contemplated. In Fitch's view, the authority to build, operate and toll will be regarded more positively if it is granted at the highest sovereign level possible, such as a state or provincial government in the case of a local or regional toll facility or the central government in the case of a national roadway.

Investors in toll roads expect their credit exposure to be derived strictly from the toll road. Consequently, legal structures supporting the financings must be ring-fenced to protect investors from external credit risks. Without ring-fencing, revenues of facilities leased or owned by private obligors may be at risk in the event of the bankruptcy or other credit problems of such owners, related parties or other projects owned or operated by the project owner. Such risks and consequent necessary protections to investors vary by country. In the context of such local laws, Fitch evaluates the organizational documents, including articles of incorporation, partnership agreements and trust documents, to ensure project finances are remote from such external credit risks. The enforceability of the bondholder remedies (such as share pledges and step-in rights) in the event of default will also be reviewed in this context. Fitch will rely on legal opinions, issued by local, reputable, expert legal counsel, addressing the enforceability of bondholder remedies and structural credit protections. An opinion addressing the risk of consolidation between the operator/obligor and any parent (nonconsolidation opinion) may also be required by Fitch. Where relevant, the absence of a nonconsolidation opinion will likely limit the credit

rating of the toll road to the lower one of the project rating or the corporate parent.

Once the legal foundation is in place, the ability to generate revenue is the next step in a viable financial structure. A key rating consideration for toll facility debt is the legal framework under which a public or private obligor can raise tolls to cover financial obligations. The nature of toll rate regimes varies widely, from the unlimited nature of most public entities to the more limited nature associated with private obligors under concessions, leases or licenses. In countries where national law and/or government policy tightly controls rate setting, there also tend to be provisions for compensation in the event of adverse statutory or regulatory action (for example, changes in toll policy or competing infrastructure, among others). Fitch views positively the presence of legal protections that foster financial equilibrium under the concession. Fitch views unlimited rate-making authority as providing the most credit protection, as opposed to rate-making authority limited by a formula or subject to regulatory approval. Limited or no legal revenue-raising flexibility can constrain credit quality—which is likely, at best, to be in the 'A' rating category for stand-alone projects—even if economic and financial metrics are robust.

Concession, Lease or License Agreements

The concession, lease or license agreement must clearly transfer the relevant authority to the private party and establish reasonable performance requirements to be met by the private obligor in order to maintain the right to operate and toll the project. Fitch will review the relevant documents for clear standards that the private obligor must meet for road condition, safety, level of service and future expansion of the existing roadway or the addition of other facilities. While Fitch believes the profit motive provides private obligors an incentive to keep the road in good operating condition, it is important that legal documents adequately align those incentives.

The inability of governments to anticipate future public policy objectives or network capacity needs accurately requires that flexibility be built into concession documents. In Fitch's view, needed expansion of existing facilities to maintain satisfactory levels of service or the eventual construction of competing facilities (road or transit)

are events likely to occur during the course of long-term concession or ownership agreements. Given the likelihood of consequent disputes arising between the contracting parties from unforeseeable events, legal documents should include a process through which such unanticipated disputes can be managed. Fitch considers the inclusion of economic-leveling mechanisms (through compensation payments, easing of concession requirements or extensions of term, among other things) as essential from a credit standpoint. Furthermore, while such provisions promote long-term financial stability, their absence increases the risk that disputes may result in government and/or concessionaire actions that undermine investor security.

Negative credit events are likely to manifest themselves if the public sponsor's objectives are not met, regardless of contract language protecting the operator. Public dissatisfaction can result in charges and determinations of nonperformance under the contract, whether merited or not. As a result, concession, lease or license agreements should include lender step-in rights upon a default for nonperformance or other such events, as well as a reasonably sized cure period that allows for sufficient time to replace the defaulting operator before any termination is triggered.

Termination under a concession, lease or license agreement can occur for a variety of reasons, including force majeure, operator default, default by the public sponsor or an early termination decision on the part of the public sponsor. Fitch will positively view clearly established termination conditions and procedures that result in a full takeout of the outstanding debt. This is particularly important in a termination for convenience and a force majeure event (where a decision is made by the public sponsor not to rebuild). In the latter event, the requirement for the use of applicable insurance proceeds for debt takeout could commensurately reduce the termination payment. Treatment of such proceeds as concession revenue and requirements for deposit directly with the trustee for debt defeasement are also important.

Financial Covenants, Remedies and Flow of Funds

In addition to authority to raise tolls and provisions for performance and termination, the financial

covenants, the flow of funds and remedies under an event of default contained in the financing documents can have significant effects on credit. A key underpinning to the economic and financial rationale for a credit rating is the financial covenant package. For an investment-grade rating on toll facility debt, Fitch will positively view the following financial covenants/requirements.

For obligors with fixed amortization (suitable for toll roads with predictable operating profiles, mainly public obligors):

- A minimum toll revenue covenant (referred to as a "rate covenant" in the United States) requiring the maintenance of debt-service coverage from net toll revenues (i.e., after O&M) of at least 1.25 times (x) and coverage of all obligations (including subordinate debt payments, reserve deposits and mandatory capital-expenditure set-asides) of at least 1.00x will be viewed positively for public obligors. Such covenants are also a credit positive for private obligors, as they could permit rate increases in excess of the prescribed rate-setting framework. Public obligor rate covenants are often "soft," in that a violation only requires a consultant be hired to provide recommendations. Documents that trigger an event of default if toll rate covenant violations persist for a period of a few years (as little as three years in certain instances) will be viewed positively. Such covenants, when judicially tested and enforced, as in the United States, can enhance the prospects of timely debt-service payment and improve recovery.
- An additional bonds test tied to the rate covenant or other limitations on additional debt. A strong historical and projected coverage test can act to support a higher credit rating if it effectively limits leverage.
- A fully funded debt-service reserve fund or a combination of an O&M reserve and a renewal and replacement reserve.

For obligors with flexible amortization (suitable for toll roads with a growing but unpredictable profile, including both public and private obligors):

- Toll rate covenants and additional bond tests tailored to the chosen structures that enhance bondholder security are essential. Projected tests

that incorporate the escalating nature of debt and the future economic value of the facility can provide additional protection.

- Cash sweep or equity lock-up requirements if traffic and revenue levels or debt service and loan-life coverage ratios fall below certain levels are necessary for an investment-grade rating to ensure structural subordination of equity. The level at which the lock-up takes place will be a function of the amount of risk in the revenue profile and should involve an assessment of historical and projected performance. If a debt-service coverage ratio (DSCR) is the gauge, the lock-up level will likely be higher than the rate covenant under a fixed-debt structure, given that principal may not be currently amortizing or a portion of interest may be capitalizing.
- In Fitch's view, forward-looking equity distribution tests and covenants to deleverage are important to the achievement of investment-grade ratings on transactions with flexible amortization schedules, term-loan structures, bullet maturities or accreting debt structures. For example, a test that begins to lock up surplus cash if the project life coverage ratio (PLCR) drops below 3.00x and locks up increasing amounts at lower levels with all distributions being terminated if the PLCR drops below 2.00x would be viewed positively for such structures. Given the potential for PLCRs to be driven by post-refinancing cash flows, actual cash surplus on an annual basis may be minimal in the near term. As a result, the additional requirement for covenants to deleverage below 3.00x provides added comfort that timely action will be taken to stabilize the credit in a severe downside scenario. Such provisions help mitigate the added risks in these structures from unknowable long-term economic and market conditions and the exposure to very high levels of leverage.
- Debt structures with a planned refinancing or those that rely on the ability to refinance will be viewed more positively if they incorporate a covenant requiring the obligor to begin best efforts to refinance well in advance (up to five years for long-dated refinancing scenarios, i.e., in excess of 15–20 years) of the scheduled refinancing or the point at which one would be necessary under a stress case. Establishment of an event of default under the documents if an acceptable refinancing plan is not in place at

least one year before final maturity or payment default is projected would provide added assurance that a timely remedy will be implemented in debt structures not actively managed by lenders. Fitch will evaluate alternative approaches to minimizing refinance risk, including the use of soft or staggered bullets. Fitch will also consider management's experience and track record in accessing the debt markets and executing refinancings.

- A fully funded debt-service reserve fund or the equivalent availability of committed liquidity, adequate supplemental liquidity accounts subject to minimum performance requirements for release, and adequately sized capital expenditure or renewal and replacement reserves.

Loan or bond documents should require the expeditious transfer of revenue to trust-held accounts while minimizing third-party bankruptcy risk. They should also require that the annual operating and maintenance expense budgets be evaluated and adjusted to meet the requirements established by an independent engineer. Forecasts of upcoming renewal, replacement and operating expenses, as well as associated annual deposits to fund such expenses, should also be evaluated and adjusted to meet the requirements established by the independent engineer. Publicly managed facilities are subject to less precise and stringent operating and reinvestment mandates. To ensure adequate investment in ordinary maintenance and reinvestment, Fitch will positively view the added requirement that minimum required deposits based on those recommendations be incorporated into the system's or project's toll rate covenant.

Regardless of public or private control, the financing documents also need to incorporate lender step-in rights to cure covenant or payment defaults. In the case of concessions, this should occur well before a termination. For public obligors, such rights should include the ability to raise tolls and replace the operator.

The flow of funds in a debt structure needs to be designed to align the interests of debtholders with those of management. Payment of O&M prior to any other expenditure is essential to ensure uninterrupted flow of revenue. Public obligors may choose to pay for mandatory capital expenditures further down in

the flow due to the lack of overt performance risk, but private obligors are subject to this risk and, as a result, these expenditures need to be treated similarly to O&M and paid ahead of debt service. In the case of public obligors, the risk is more political and the ramifications less clear. Senior debt service (and parity net swap) payments followed by reserve deposits and subordinate liens of debt add layers of credit protection. Similarly, subordinating swap termination payments to the corresponding lien of debt and deeply subordinating external distributions (nonsystem and equity returns) to all toll facility needs serve to provide credit enhancement. The lack of cross-default or acceleration from defaults on subordinate lien obligations, including swap termination payments, to senior lien obligations and liquidity facilities is a credit positive.

■ Construction Risk

As with other types of projects, construction risk often constitutes the greatest risk in the credit quality chain of a stand-alone toll road project. In certain circumstances, it can constrain the rating to a level below what it would be after completion. While construction risk is an important consideration for projects involving the addition to and expansion of existing toll road systems, tolls generated from the system's operating segments and available liquidity help to mitigate this risk to a degree. Completion risk refers to the risk that the road will not be completed on time, on budget or up to the required performance standards. For strong, economically viable projects, construction completion risk can be mitigated and investment-grade ratings can be achieved. Irrespective of whether the project is categorized as greenfield or brownfield (addition, modification or extension to an existing road) or sponsored by a concession or owned and managed by a government authority, Fitch will carefully consider the project's complexity and technology, projected costs, delay risk, quality of contractors and terms of the construction contract.

Toll roads vary widely in complexity, ranging from two-lane highways on flat terrain to multilane superhighway corridors traversing rugged topography or waterways requiring bridges, tunnels, cantilevered alignments and other highly engineered components. Fitch relies on the expertise and opinion of independent and reputable engineers (I/Es) to evaluate the design specifications of the project and

the reasonableness of development cost estimates and ongoing maintenance expenditures. The role of the I/E is crucial during the development phase, as one of the critical tasks is to monitor the works process, milestone compliance, and critical path or schedule. Typically, the I/E also approves the release of escrowed funds to compensate the contractors.

After completion, the I/E is usually relied upon to monitor a project's compliance with the terms of the concession agreement between a government authority and a concessionaire, or bond indenture for a publicly owned facility, particularly for repairs and maintenance. Construction quality and proper maintenance are fundamental for toll roads, as they are long-lived assets that can support long-term, nonrecourse financing. The I/E's assurances regarding construction quality and maintenance represent a vital link between the toll road (the asset) and the financing's structure, particularly when it incorporates accretion, bullet maturities and refinancing incentives.

Project complexity will affect the likelihood that the road will be completed on time (delay risk). Delays can also occur due to permitting, stop-work orders, availability of critical equipment or labor, weather or seasonal conditions, and other factors. Delays that cannot be controlled by the contractor, such as force majeure and permitting or right-of-way acquisition, must be addressed by other means, such as compensation from the government or insurance. Of note, potential delays and construction cost overruns caused by incomplete, ambiguous or evolving specifications, beyond the customary and often inevitable work changes requested by either the sponsors or contractor, are of great concern. Fitch expects projects financed by the capital markets will be undertaken on the basis of minimal design risk. Neither Fitch nor the I/E has the capacity to estimate the ultimate effect on project costs and cash flows from material changes in design once a project has initiated construction, especially if appropriate mechanisms, such as completion and performance guarantees from sponsors, governments or solid third parties, are insufficient or not provided.

Construction Contracts

Ideally, the project sponsor (government authority or concessionaire) will undertake the toll road project under a fixed-price, turnkey, appropriately drafted engineering, procurement and construction (EPC)

contract with an experienced and creditworthy contractor. The contract is designed to achieve construction at the lowest price by insulating the operator and lenders from changes in the price of materials and runaway labor costs. The contract also protects against delay risk through incentives for early completion and penalties (liquidated damages) for delays. Performance milestones are specified to ensure the facility can begin generating toll revenues with an adequate cushion before financing obligations begin. An EPC contract will be expected to be legally consistent with the ownership structure of the project and the terms of a concession. While an EPC framework is particularly important to mitigate completion and cost risks for stand-alone toll road projects, it is also beneficial for projects involving the expansion and/or extension of existing systems. Nevertheless, Fitch recognizes public or private toll road system operators may not incorporate all of the features of an EPC contract for expansion or extension projects, given the financial protections offered by their current liquidity position and revenues generated by existing operating segments.

Recognizing the complexity of some projects and the preference in certain cases to undertake construction through joint ventures (JVs) between a key contractor or among a group of contractors and subcontractors, Fitch will focus on all relevant agreements in addition to the EPC contract to ensure there is appropriate operator and lender protection against nonperformance, price increases, design flaws, bankruptcy of a member of the joint venture or force majeure. In the case of comparatively complex greenfield facilities for which a key contractor or JV undertakes significant financial commitments, the credit quality of the contractor or JV might constrain the toll-backed debt, especially when the contractor or JV is rated 'BB' or lower. The presence of adequate liquidity, construction contingencies, a standard security package and third-party support will be viewed more positively, allowing ratings to exceed that of the contractor. Importantly, stand-alone projects require minimum protections to achieve investment grade regardless of where the contractor is rated, such as liquidated damages sized to debt service, lease payments, fees and penalties payable if revenue operation is delayed, reasonably sized credit support in the form of letters of credit, and performance and payment bonds relative to project completion risks

Fitch also expects the project documents will provide for mechanisms to replace a nonperforming contractor or member of a JV and to resolve disputes clearly, efficiently and in a timely manner. The absence of these standard protections will likely limit credit quality. For systems undergoing reconstruction or expansion, the lack of these protections might result in negative credit action, depending upon the financial profile of the operator and management's response to problems. Contracts are also reviewed for clauses protecting lenders against termination. In particular, Fitch will expect adequate provision for contractor replacement and project cash flow protection in the event the owners exercise step-in rights or eventually terminate the construction contract.

■ Sovereign and Counterparty Risk

The analysis of toll road project debt might also include a review of sovereign risk and government support, project essentiality and reliance on commitments from various parties, including the sponsors, guarantors and contractors. In particular, the commitments and undertakings of governments are especially relevant, as more toll roads are being developed under public-private partnerships. However, irrespective of the degree of private-sector participation, toll roads are often supported by shadow tolls, government subsidies and revenue guarantees. The capital-intensive nature of toll roads and the limited capacity of certain weaker toll roads to cover fully all operating, repair and debt-service costs justify capital contributions and operating subsidies from government.

Government

Toll roads serve a public purpose and are, therefore, subject to either direct control or close regulatory oversight of a national government or local authority. Whether a project will, in fact, be developed, its scope, design specifications, cost, economic viability and other characteristics are largely determined by political considerations. Political and country risks are, therefore, important elements in the analysis of a toll road and can, in certain cases, limit the creditworthiness of project debts. In emerging markets, in particular, toll roads financed in the global capital markets are especially vulnerable to governments' shifts in capital-spending priorities, public finance management, macroeconomic fluctuations and inflationary pressures, as well as

sovereign risk (foreign exchange controls and transfer restrictions).

In highly rated countries, it is unlikely the rating of a toll road will be constrained by the country ceiling. However, to the extent the project's debt repayment capacity depends on shadow tolls, subsidies, minimum revenue guarantees and other support contingent on road performance, availability or need, Fitch will focus on the creditworthiness of the government counterparty, including management of public finances, as well as the legal framework and administrative procedures employed to provide for the shadow toll or revenue support. Of note, Fitch does not regard the probability of default of government support for a project to be equivalent to sovereign financial obligations. Government obligations under a concession that are not clearly designated on parity with the government's debt obligations, which is typically the case, will be viewed as having weaker credit quality, even in highly rated countries. This is due to the de facto lower priority assigned by governments to contractual obligations relative to debt service. Contractual obligations with respect to a project, moral obligations, cooperative endeavors and other forms of contingent support are usually budgeted for separately from debt service and subject to annual appropriation by legislatures.

The nature and magnitude of the government's commitment with respect to a toll road project usually reflect the essentiality of the project. Fitch views project essentiality as a favorable credit factor when economic viability is complemented by users' willingness to pay charges or tolls. Essentiality will also bolster the credit quality of roads that are vital to the economic development of a region or nation. Roads that provide the best or most efficient means for transporting industrial production or interconnecting areas that comprise an important share of the regional output will define the top end of the credit scale.

Nevertheless, a government may wish to have a road developed that contributes marginally to a regional or national economy. Often, these roads are regarded by governments as high-priority projects due to their strategic importance (i.e., they will serve to interconnect isolated or undeveloped areas with economically vibrant ones or link international borders). The success of the financing and

development of some of these roads might depend not only on ongoing subsidies but also capital contributions made by the government. Projects regarded by governments as strategic priorities that are not economically viable on their own are often best financed with maximum support and/or guarantees from subnational, national, bilateral or multilateral development entities, given their inability to repay toll-backed debt reliably.

Especially for concession-developed projects, the responsibility of acquiring rights-of-way, which is ideally suited to the government, is one example of the considerations examined by Fitch. Residual claims from property owners of wrongful expropriation or inadequate compensation against the concession or the project and allegations of property value degradation resulting from the project's development are costs that are best assumed entirely by the government. Likewise, changes in law that negatively affect the project's debt-repayment capacity as a result of reductions in the subsidies or other payments due to the concession, tax increases, more burdensome environmental regulation and new or costlier decommissioning expenditures will limit the rating unless explicitly and satisfactorily addressed in the concession agreement.

Sponsors

The undertakings of sponsors are as relevant to Fitch's credit analysis as those of governments. A clear indication of long-term commitment and the importance of the project to the sponsor is the magnitude of the equity invested in the project. This is of particular value to greenfield projects that rely partly on government subsidies. Generally, the more equity invested in the project, the greater likelihood the project will be completed. In addition to equity capital, Fitch will consider management's industry-specific track record and expertise, their historical commitment to their projects and their past actions relative to lenders' interests.

The project's contribution to the revenues and profits of the sponsors' portfolio of roads or assets also indicates a strong likelihood the sponsor will see the project through completion, ensure efficient operations and procure cost-effective financing. The nature of the commitments and the sponsors' ability to undertake them are of particular concern in the analysis of roads developed in areas where

permitting, community opposition and government interference impede timely completion and successful operations.

Guarantors

The credit quality of guarantors is often a key factor in Fitch's rating analysis of toll roads. As with other types of projects, unconditional guarantees are the preferred method of mitigating the construction completion risk of projects rated investment grade. Guarantees of solid third parties and adequately structured performance bonds are particularly valuable when the contractor's own liquidity or access to credit is limited and the contractor is committed to compensate the project for delays through liquidated damages.

The obligations of a low-rated government with respect to a project, such as subsidies or minimum revenue guarantees, are also often backstopped by multilateral agencies and insurers that are rated substantially higher than the government and the project. In such cases, Fitch will focus on a thorough review of the insurance contract or policy and the claims-payment process. In Fitch's experience, generally, the policies are insufficient to mitigate the likelihood of default on a project when the government fails to comply with its obligations. Namely, the arbitration, claims and recovery process undertaken by the project, the government and the guarantors will require more time to complete than is afforded by the debt-repayment schedule.

However, Fitch recognizes these guarantees can be valuable in at least two significant ways. First, governments are more reluctant to default on obligations with projects if, as a result of noncompliance, essential funding from a multilateral agency is jeopardized. Second, insurance proceeds can enhance the recovery of defaulted amounts from an insured project above the amounts that would have been received if the project had not been insured. Consequently, the rating of the project's debts will consider the recovery value derived from insurance or guarantees. In situations where the time horizon for recovery can be predicted, structured liquidity for that purpose may be used to enhance credit quality.

■ Financial Profile

An important consideration in Fitch's credit analysis of toll roads is the financial flexibility the issuer

retains to support the full and timely repayment of debt. Entities with strong financial profiles will tend to achieve high investment-grade credit ratings, and those ratings will rely more on the flexibility retained by management to respond to changing conditions. Entities with weaker or more leveraged financial profiles will tend to achieve low investment-grade ratings at best, and those ratings will rely more on the flexibility structured under the legal framework into the transaction. As such, Fitch's analysis assesses the factors discussed in the following sections.

Flexibility to Absorb Completion Risk

The level of dependence on the timely and successful completion of construction projects on future cash flow is a key factor. Fitch will evaluate structural protections to assess the project's ability to make full and timely debt-service payments under reasonable stress scenarios. Stand-alone projects in construction face the greatest risk from cost increases and delays and have a greater need for all these protections, as debtholder security is entirely dependent on project revenue being generated. On the other extreme, systems with the ability to cross-subsidize among their asset portfolio using currently operating segments to support increased levels of debt service for rehabilitation, improvement and expansion elements face the least risk. While systems can benefit from such protections as prudent business practices, the rating will be less dependent on the structural protections but more on management's track record in this area. Stand-alone projects in construction, operating projects, and highly and slightly leveraged systems will be evaluated for their relative level of flexibility within that continuum. Simple construction of roads with no river crossings, tunneling or major environmental concerns will be expected to tolerate up to a six-month delay in completion and a 5%–10% cost escalation. More complex construction will be expected to tolerate six- to 24-month delays in completion, depending on the type of facility, and cost escalations of 10%–20%.

Flexibility to Absorb Forecasting Risk

The level of dependence of debt-servicing ability on the accuracy of traffic and revenue forecasts is also a key factor. Fitch will evaluate the level of conservatism along a similar continuum to that of completion risk. Credit strength will be determined based on the ability to cushion Fitch-stressed downside traffic risk. Forecasts for projects in

construction with no comparative track record of traffic and revenue performance will be most critically evaluated. The use of internal liquidity to support debt service in a Fitch stress scenario in the early years of operation will be viewed as consistent with a low investment-grade rating to the extent there is a high probability that liquidity levels will not be fully depleted before performance strengthens and provides acceptable current levels of debt-service coverage. It is also important there be a reasonably strong expectation that essential liquidity accounts will be subsequently restored to required levels in a relatively short period. Forecasts for systems with long track records that require minimal levels of adjustment by Fitch for analytical purposes will be viewed more positively.

Dependence on Toll Rate Increases

The latent ability to raise tolls over time to respond to changing circumstances is an important factor in evaluating financial flexibility. Finance plans that seek to maximize toll rates to their economic and/or legal limits retain less flexibility to use toll increases as a means to strengthen their financial position. On the other hand, those that assume minimal, subinflationary toll increases will retain considerable financial flexibility. The degree of flexibility will be determined by the demand profile, the extent of backloaded debt and management policy.

Flexibility to Absorb Capital Expenditures

All toll roads require some reinvestment in order to maintain their peak operating capacity. Those with low, predictable capital maintenance needs that have been accounted for in the financial forecast with reasonable contingencies will, all else being equal, likely achieve higher ratings. Those with predictable but higher cost capital improvement and expansion needs will require greater levels of financial cushion for cost increases to achieve similar ratings. Lastly, those with wide-open mandates that generally retain high levels of financial flexibility may achieve high investment-grade ratings, but those ratings may be constrained if there is uncertainty as to the level and timing of future investment. Fitch will positively view the timely setaside of reserves in advance of future capital spending.

Level and Structure of Debt

The ability of the toll road to support the prescribed debt structure is of critical importance. Fixed debt-

service profiles are best suited to toll roads with a very predictable operating profile and manageable levels of leverage. Start-up and established operating facilities with high levels of leverage and uncertain cash flows require a more flexible debt structure that conforms to the economic and financial profile of the toll road as it changes over time. Fitch recognizes the growing long-term value of toll roads and will give credit to that growing strength. Structures that lower default risk, especially in the near to medium term through the use of flexible maturities, prepayment mechanisms and refinancing provisions, will be viewed more positively. While the use of these techniques may be consistent with an investment-grade rating, the dependence on them for full and timely payment, along with the use of longer maturities and escalating debt-service structures, will limit achievement of high investment-grade ratings. Fitch is generally comfortable with user-pay toll road debt structures that demonstrate full and timely repayment of all interest and principal within 50 years, or the concession period, whichever is shorter, with a reasonable tail.

Appropriateness of Variable-Rate and Swap Structures

The use of variable-rate debt and swaps or similar interest rate hedging mechanisms to manage interest rate risk actively within a toll road's asset-liability profile is considered appropriate if tailored to the financial, legal and political flexibility of a toll road. Toll roads with strong levels of financial flexibility (i.e., those with high levels of debt-service coverage, rate-making flexibility and internal liquidity) and low to moderate leverage are better suited to absorb variable-rate exposure and swap termination risk. The appropriate level of exposure will be a function of the level of financial flexibility to respond to stress situations that include sharp increases in interest rates. Start-up projects with completion and revenue forecasting risks are generally unable to absorb interest rate volatility and are therefore not suited for unhedged variable-rate debt. Fitch views nominal interest rate movements as being neutral, given the general ability to raise toll rates with inflation in situations where the rate-setting framework permits inflationary increases. However, the limited ability to pass on real interest rate movements constrains a toll road's ability to absorb interest rate volatility. Fitch will develop stress scenarios that are appropriate to the particular economic environment.

Project Life/Loan Life Coverage Ratios

Project life and loan life coverage ratios (PLCRs and LLCRs, respectively) are important tools used to assess the ability of a project on a forward-looking basis to generate cash flow for debt service based on an established tariff or rate regime. In doing so, they measure the overall financial position of a project relative to its financial obligations. They look beyond the chosen method of debt amortization and the ability to support debt service on a current basis (as a debt-service coverage ratio [DSCR] does) and instead look to the ability to meet obligations over the life of a bond or loan, for the LLCR, or a concession agreement, as in the case of the PLCR.

The LLCR is defined as a ratio of the net present value of project resources (internal liquidity at the time of the projection and available future cash flow for debt service until the legal maturity of the debt) from any point onward to total outstanding debt obligations at the time of the projection. Internal liquidity includes any reserves available to pay debt service, including balances in revenue accounts and operating reserves, debt-service reserve funds, additional equity or liquidity accounts, and surplus funds tied up within the debt structure. Cash flow available for debt service is usually defined as operating revenues (from tolls, fees, charges, rental and investment income, etc.) net of operating and maintenance expenses, mandatory capital expenditures, concession payments and applicable taxes. The denominator is outstanding debt at the time of the projection. LLCRs can be calculated for all liens of debt (senior, junior, subordinate, etc.). The discount rate used on future cash flow available for debt service is the weighted-average cost of debt at each lien position.

A PLCR is similar to an LLCR, except that it factors in the cash flow generation capacity of the project beyond the scheduled maturity of the debt (i.e., it incorporates the value associated with the tail of a concession). As a result, the PLCR is more useful in evaluating refinancing risk (if structured into the transaction) and in recovery or loss severity analysis. For recovery purposes, the use of stressed cash flows is appropriate. PLCRs and LLCRs prove useful in structures (public and private) that incorporate flexible amortization and ultimate recovery. These ratios provide an efficient means to evaluate the financial flexibility available to protect against overleverage and ensure ultimate repayment.

The aggressive use of swaps will be viewed negatively. The use of nonstandard and illiquid swap structures will be reviewed on a case-by-case basis. The use of speculative-swap strategies will also be viewed negatively. Provisions that limit the rights of swap counterparties to those of debtholders, restrict swap termination to a default on the senior debt and subordinate termination payments will be viewed positively.

Flexibility to Absorb Refinancing Risk

Incorporating refinancing risk into debt structures may be appropriate, especially in instances where the future revenue profile cannot be predicted with certainty. While this might apply to almost any user-pay toll road, it is particularly important to start-up projects and long-lived concessions. To account for market access risks, Fitch will assess the ability of the structure to meet ongoing debt-service obligations from cash flow and internal liquidity for five years beyond the first year that a refinancing may reasonably be contemplated. The ability of future cash flows to support a significant increase in interest

cost at the time of the refinancing, such as 200–400 basis points (base-stress case) in the middle of the economic cycle will also be assessed. Higher and lower stresses will be applied in very low and very high interest rate environments, respectively.

Flexibility to Absorb Currency Risk

Fitch will evaluate the ability of the toll road's cash flow and liquidity to absorb reasonable scenarios for currency devaluation and transfer and convertibility controls. To the extent these are meaningful risks, the flexibility built into the structure will be important to achieve the desired rating. Offshore trust accounts and guarantees from highly rated multilateral agencies can provide some level of risk mitigation.

Mix of Equity and Debt

Fitch views the presence of sponsor equity as being an essential contributor to credit strength. The amount of equity will largely be a function of the risk profile of the toll road. In addition to making a toll road financially feasible, equity provides evidence of

a commitment to the successful development and operation of the facility.

The equity stake of public-sector owned and operated toll roads will be assessed through a combination of state ownership and project development costs incurred from public sources, as well as through the maintenance of untapped future economic value. Fitch defines untapped economic value as the net present value of future cash flows after operating and mandatory capital expenditures, concession payments, taxes (if applicable), etc., minus outstanding debt.

The equity stake of private entities will be assessed through the initial contributions that are retained in the transaction by the sponsor (including upfront equity, committed contingent equity from a creditworthy counterparty, and deeply subordinated, nonrecourse, sponsor-held debt) and through the maintenance of untapped future economic value. Projects facing construction and traffic risks need a higher equity commitment versus those in steady-state operations. Amortizing user-pay toll roads with shorter concession periods (less than 30 years) and shadow toll and availability payment arrangements will likely demand 10%–25% equity commitments, depending on their risk profiles. For established, highly leveraged user-pay toll roads with long-lived negative or nonamortizing debt structures (with 30- to 50-year repayment expectations), a minimum 25% equity stake through a combination of sources, as defined earlier, will be viewed positively.

Fitch will recognize the growing value of most user-pay toll roads in this evaluation. As a result, the prudent repayment of equity over time through additional leveraging by a public- or private-sector sponsor will not be viewed negatively, as long as growing future toll road or concession value adequately compensates for the equity takeout.

Benchmarks of Performance

Assessments of financial performance over time are important elements in the analysis of financial flexibility. DSCRs, loan life coverage ratios (LLCRs) and PLCRs will be used to assess a toll road's balance of financial flexibility (cash flow, liquidity and rate-making flexibility) to leverage. Minimum ratio levels to achieve an investment-grade rating will depend on the nature of the facility and the source

and length of time available for debt repayment. User-pay toll roads will generally require Fitch base-case DSCRs of at least 1.30x, LLCRs of at least 1.50x, and PLCRs of at least 1.75x. In a Fitch stress case, DSCRs of at least 1.00x (including use of internal liquidity), LLCRs of 1.25x and PLCRs of 1.50x will generally be required. Those that incorporate any form of negative amortization and are dependent on a long-dated refinancing will require a PLCR of at least 3.00x in a Fitch base case (excluding internal liquidity) to achieve investment-grade ratings if the planned window of refinancing is about 20 years. Increasing PLCR levels will be required if the planned window of refinancing is beyond 20 years.

Shadow toll and availability payment-based roads will be subject to lower thresholds, given the lack of traffic risk and the more moderate tenors of these arrangements, with Fitch's base-case DSCRs of at least 1.15x–1.20x, depending on the revenue profile of the project and the credit quality of the O&M provider, and LLCRs of at least 1.30x.

Fitch will calculate LLCRs and PLCRs by both including and excluding internal liquidity. Importantly, Fitch will exclude liquidity provided by repayable forms of debt, such as letters of credit.

Covenants to Maintain Financial Flexibility
Given the move to increasingly back-loaded debt structures and longer dated debt maturities, the inability to see into the future with certainty and the added risk of changing conditions, commitments to debtholders providing added assurance that financial flexibility will be maintained are essential. In addition to the standard covenants and tests used historically for toll roads, an additional forward-looking test that restricts equity distributions if financial performance falls below a specified level is a key element of a strong lender covenant package. This is even more pertinent for very long-lived concessions (30 years and more) using negative or nonamortizing debt structures. Such a test would annually assess the future value of the concession. An accompanying covenant to manage leverage by maintaining a minimum PLCR of 3.00x, for example during the planned window of any refinancing or beyond 20 years, whichever is shorter, would provide added protection. The lack of a covenant to annually

perform this test and deleverage to the prescribed level will be viewed negatively by Fitch.

Flexibility to Absorb Event Risk

It is Fitch's opinion that toll roads should be able to absorb events that are reasonably expected to occur with a high degree of certainty over the life of the debt based on actual experience, such as natural disasters (hurricanes, earthquakes, wildfires, tornados and floods, among others) or manmade events (war, expropriation, transfer and convertibility limitations, among other things) that could undermine bondholder security. Toll road structures exposed to such risk will be further stressed based on reasonable expectations for occurrence and severity of such events and will achieve investment-grade ratings only if they are able to support full and timely debt service under these conditions. The adequacy of internal and external liquidity, appropriately structured insurance (including business interruption insurance) and latent rate-making flexibility will be key factors in Fitch's analysis. Stand-alone projects will likely have their ratings capped at 'A+' to reflect single-facility revenue risk. Systems with geographic and economic diversity will not be similarly constrained.

■ Fitch Base and Stress Cases

To assess the ability to repay debt in a full and timely manner, Fitch will first evaluate the economic profile of the project and then layer onto it any legal, financial and policy constraints. To accomplish this, Fitch will initially design base and stress cases solely based on economic factors that incorporate reasonable scenarios that can occur based on Fitch's experience with the industry as a whole and with similar projects.

As an illustration, Fitch provides some guidance on how we might design these cases in the appendix on pages 20 and 21. Fitch limits this analysis to developed economies. While many of the principles identified will apply in developing economies, tailored assumptions may be necessary based on local experience and broader legal, political, economic and financial considerations. The application of each of the factors identified will be a function of the type of the toll road (start-up or established, among others), the level of conservatism in key financial plan assumptions and the level of financial flexibility maintained. Most of the factors will likely apply to user-pay toll roads, while a subset will apply to availability payment and shadow toll roads.

For each factor, Fitch identifies an analytical approach and a range of possible adjustments. The level of adjustment within the identified ranges will be a function of the nature of the project and its risk profile, as well as Fitch's assessment of the conservatism or aggressiveness built into the sponsor's plan of finance. Fitch will then layer noneconomic factors to finalize our base and stress cases. Generally, Fitch's base case will be more conservative than the sponsor's base case, as it seeks to establish a scenario that is highly probable under normal conditions (i.e., it eliminates any built-in optimism in the assumptions). Fitch's stress case then seeks to assess the ability of the structure to withstand a combination of severe but reasonably probable stress situations while still paying debt service on a full and timely basis.

It is important to note the toll rate increase levels indicated reflect ranges that could represent a minimal elasticity scenario (i.e., little to no diversion). They do not preclude the assumption of higher levels of toll rate increases by project sponsors or by Fitch. At higher levels, Fitch will incorporate reasonable diversion assumptions.

The level of financial flexibility that remains after application of the stress test to absorb further downside events will be an important driver of the senior debt rating. Toll roads with minimal remaining flexibility will at best achieve low investment-grade ratings. Toll roads with higher levels of remaining flexibility will be able to achieve 'A' and 'AA' ratings. For toll roads with strong senior lien ratings, tranches of investment-grade junior and subordinate lien debt will be possible, depending on the amount of leverage at each lien. For low investment-grade senior lien debt ratings, the Fitch base-case analysis will guide Fitch's sizing of reasonable 'BB' category subordinate debt levels. For subordinate debt that is subject to the springing lien under the U.S. Department of Transportation's Transportation Infrastructure Finance and Innovation Act (TIFIA) program, Fitch's stress case will need to demonstrate full and timely repayment of both senior and TIFIA debt. Importantly, the degree of flexibility in the legal and financial structure for TIFIA debt repayment and the documented willingness of TIFIA to follow a prescribed process that provides a reasonable multiyear cushion for a cure in a TIFIA payment default could provide the ability to place more focus on LLCRs and less focus on annual DSCRs. This could permit a credit distinction between senior debt and TIFIA.

Appendix: Characteristics of a Typical Toll Road Analysis in Developed Economies that Are Consistent with Investment-Grade Ratings

(This table is intended to provide illustrative guidance on how Fitch might develop a base and stress case and does not represent an absolute approach to credit analysis. The application of each of the factors identified will be a function of the type of the toll road and the level of conservatism and financial flexibility in the transaction.)

	Fitch Base Case	Fitch Stress Case
Construction		
Simple Project		
Cost	0%–5% overrun	5%–10% overrun
Schedule	Zero to three-month delay	Three- to six-month delay
Complex Project		
Cost	0%–10% overrun	10%–20% overrun
Schedule	Three- to 12-month delay	Six- to 24-month delay
O&M Growth		
Established	Five- to 10-year historical average, excluding one-time savings, with a minimum of inflation	Base-case assumption plus 1%
Start-Up	Adjust initial year base by 0%–10% Inflation plus 1%–2%, excluding start-up and ramp-up costs	Base-case assumption plus 1%
Traffic Growth		
Established		
First 10 Years of Forecast	Five- to 10-year historical average adjusted for asset maturity, capacity constraints, expected demand and peer group profile	Base-case assumption
Years 11–30 of Forecast	Tapered reductions based on the above factors down to the low single digits approaching expectations for regional traffic growth	Base-case assumption minus 0%–1%
Years 31–50 of Forecast	0%–1% growth depending on the facility profile	0% growth
Start-Up		
Opening Year Base Traffic	Lag in likely economic growth/development between the base/calibration year of the study and planned construction completion of at least five years	Base-case assumption accompanied by a slower ramp-up in economic development
	Discount value of time assumption by 25%–50%	Discount value of time assumption by 50%–75%
	ETC violation rates up to 10%	ETC violation rates up to 15%
	Discount truck traffic levels by 25%–50% on regional roads and 15%–30% on national roads	Discount truck traffic levels by 50%–75% on regional roads and 20%–40% on national roads
Years 2–10 Forecast	Underlying economic fundamentals of project based on traffic study and peer group profile	Base-case assumption accompanied by acceleration of competing network facilities
	Ramp-down of discount on value of time assumption over 3–7 years	Ramp-down of discount on value of time assumption over 5–9 years
	Ramp-down of ETC violation rates to 5% over 3–5 years	Ramp-down of ETC violation rates to 5% over 5–9 years
	Increase in truck traffic at 1%–3% above auto traffic volumes	Increase in truck traffic at 0%–2% above auto traffic volumes
Years 11–30 of Forecast	Tapered reductions for asset maturity, capacity constraints, expected demand and peer group profile approaching expectations for regional traffic growth	Base-case assumption minus 0%–1%
Years 31–50 of Forecast	0%–2% growth depending on the project profile	0%–1% growth
Toll Rate Increases (Minimal Elasticity Levels)		
Established		
First 10 Years of Forecast	CPI plus 50–200 bps	CPI plus 0–100 bps
Years 11–20 of Forecast	CPI plus 0–50 bps	CPI minus 0–50 bps
Years 21–30 of Forecast	CPI minus 0–50 bps	CPI minus 50–100 bps
Years 31–50 of Forecast	CPI minus 50–100 bps	CPI minus 100–150 bps
Start-Up		
First 10 Years of Forecast	CPI plus 0–100 bps	CPI plus 0–50 bps
Years 11–20 of Forecast	CPI plus 0–50 bps	CPI minus 0–50 bps
Years 21–30 of Forecast	CPI minus 0–50 bps	CPI minus 50–100 bps
Years 31–50 of Forecast	CPI minus 50–100 bps	CPI minus 100–150 bps

O&M – Operations and maintenance. bps – Basis points. ETC – Electronic toll collection. CPI – Consumer Price Index. Note: The economic analysis developed using the above methods will be subject to legal and policy constraints. This analysis assumes that all standard protections to minimize construction risk have been incorporated. Simple projects are assumed to be those that do not have difficult construction conditions or significant environmental challenges and do not incorporate significant water crossings, bridges or tunnels. Fitch will use applicable historical local, regional and/or national inflation indices to develop inflation-indexed inflators. The toll increase rates identified are assumed to be minimal elasticity levels in normal, low to moderate inflationary environments that are in the middle of the economic cycle. Higher rates of toll increases in the finance plan will be incorporated with reasonable diversion levels. Deal structures that limit toll increases to inflationary or subinflationary levels may be discounted to a lesser extent in the long run. Fitch will develop alternative scenarios in periods of very high or very low inflation vis-à-vis historical trends.

Appendix: Characteristics of a Typical Fitch Ratings Analysis in Developed Economies to Achieve Investment-Grade Ratings (Continued)

(This table is intended to provide illustrative guidance on how Fitch might develop a base and stress case and does not represent an absolute approach to credit analysis. The application of each of the factors identified will be a function of the type of the toll road and the level of conservatism and financial flexibility in the transaction.)

	Fitch Base Case	Fitch Stress Case
Financial Ratios (x)		
User-Pay (Amortizing Structures)		
Minimum DSCR	1.30	1.00 (including internal liquidity in the near term)
Minimum LLCR	1.50	1.25
Minimum PLCR	1.75	1.50
User-Pay (Long-Dated Negative or Nonamortizing Structures)		
Minimum DSCR	1.30	1.00
Minimum PLCR	3.00	2.00
Shadow Toll and Availability Payment (Amortizing Structures)		
Minimum DSCR	1.20	1.05
Minimum LLCR	1.30	1.20
Refinancing Risk		
Interest Rate Assumption	Current rates plus 200 bps	Current rates plus 400 bps
Discount Rates on Future Cash Flows		
For LLCR/PLCR Calculations	Weighted-average cost of debt	Weighted-average cost of debt
For Asset Valuation	Weighted-average cost of capital (equity and debt)	Weighted-average cost of capital (equity and debt)

DSCR – Debt-service coverage ratio. PLCR – Project life coverage ratio. LLCR – Loan life coverage ratio. Note: Minimum ratios identified are largely applicable to established facilities. Higher ratios may be necessary on projects with meaningful construction and traffic forecasting risks. For negative or nonamortizing debt structures, Fitch will evaluate the minimum PLCR during the planned window of refinancing or beyond 20 years, whichever is shorter. Interest rate assumptions to evaluate debt structures with refinancing risk are assumed in the middle of the economic cycle. Upward and downward adjustments will be made in periods of very low and very high inflation to incorporate then current probabilities for interest rate movements.

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