

Overview of Toll Financing in Countries That Are Members of the Organization for Economic Cooperation and Development

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In 1985 the Organization for Economic Cooperation and Development (OECD) established an international committee to draw information for future application from the experiences of OECD nations and developing countries in financing highway improvements through tolls or direct private-sector provision of highway services. As the representative for the United States, the author was selected to chair the group that included representatives from France, Italy, Spain, Ireland, England, Belgium, West Germany, Norway, the European Economic Community, and the World Bank. The purpose of this paper is to highlight the findings of the report prepared by this committee.

Toll financing has been used extensively in many Organization for Economic Cooperation and Development (OECD) member countries as a means of funding necessary highway improvements at times when increases in other taxes used to support highway projects might have been politically infeasible. Other OECD countries have chosen not to use tolls to finance highways. However, some of these countries, as well as a number of developing countries in various parts of the world, have expressed renewed interest in identifying revenue sources outside the traditional areas of government taxation. Among the topics addressed in this paper are

- A historical overview of toll financing,
- Economic principles underlying toll financing,
- Current practice in toll financing and direct private-sector provision of highway improvements including institutional arrangements,
 - Innovative techniques such as shadow tolls or zone tolls, and
 - Toll collection technology.

A number of conclusions are drawn regarding the viability of tolls as a financing mechanism and specific recommendations are included for consideration by governmental or private-sector entities contemplating the use of toll financing.

A significant number of new toll highways have been built since World War II, particularly in Italy, France, and Spain. In these countries the toll highways actually form a system of highways made up, in general, of important national highways. At the same time West Germany has developed its national

highway system without the use of toll financing and in its efforts to assist developing countries the World Bank has taken a general position in opposition to toll highways.

Whether a developed country or a developing country is being considered, there is complete agreement that adequate surface transportation for the efficient movement of people and goods is essential to the economic development and vitality of a country or region. Nearly all consumer and industrial goods are transported on a highway at some point in their journey. In most industrialized countries, the vast majority of workers travels from home to work by automobile, and the location of commercial firms along accessible transportation corridors is often crucial to their success. Given the competitive nature of business decisions, those nations and regions with better transportation networks are more likely to benefit from economic development opportunities than are those areas where the transportation system is inadequate.

Unfortunately, most governments are finding it difficult to raise sufficient public funds to improve their highway systems as fast as may be desirable from a purely economic theory point of view. Given this situation, many governments permit, and some encourage, the use of alternative funding sources such as tolls. Toll financing normally allows highway investments to be made without placing significant additional pressures on the government's budget because private capital is involved.

The differing attitudes toward toll highway financing in the OECD countries is the product of an evolutionary process that has been shaped by political, financial, and economic conditions in each country. To understand the different attitudes it is necessary to look at the history of postwar development of the highway systems.

In those countries with a positive attitude toward toll financing there appear to be few objections to expanding the network, rebuilding, or increasing capacity, within a total framework of toll financing. In other countries the development of a toll financed road system is not very likely, even though tolls could be placed on a specific segment of an existing main highway system for future rebuilding, additional capacity, maintenance, and the like. However, this appears to be unlikely from a political point of view except in limited urban areas with heavy traffic problems. In these instances, zone tolls could be introduced as a means both to reduce traffic and to raise additional money for increasing network capacity. In these countries toll financing is likely to be used only for special projects that may not have priority within a shrinking highway budget and that have other attributes that make them fit for toll financing. It is

difficult to suggest fixed criteria for the use of toll financing in such cases.

Nonetheless, evidence suggests that toll financing often provides a viable alternative to other methods of financing road construction or maintenance, or both. Toll financing is popular with governments in many developed and developing countries and is being actively applied in Europe, America, and the Pacific area to build freeways and supporting roadway systems. Those programs are wide in scope and objectives and are financed under a number of different toll-based plans. However, a common element is that in one form or another nearly all have been permitted by or have the support of national governments.

Toll financing has several major advantages and disadvantages. In most countries toll projects will usually be built sooner than projects that are financed through other user taxes. This is primarily because the starting point can be accelerated but also because complete funding is available at the beginning of the project so the construction period can be shortened.

The main advantage of toll financing, however, is that it enables society to raise more money for road construction than would be possible through ordinary public financing. In countries with toll roads it has generally been found that toll facilities provide better quality maintenance than comparable free facilities. This is because the typical financial arrangement for a toll facility requires periodic inspection and maintenance reports to protect users and lenders. Toll rates generally are established at a level to provide necessary funds for amortization, maintenance, and operation of the investment.

Finally, tolls can be used as a method of congestion pricing to encourage users to make more efficient route choices or use alternative modes of transportation. Even if the main purpose of such tolls is not to raise money but to reduce traffic, the toll revenues can, of course, be used to increase road capacities.

A major drawback generally associated with toll financing is that the cost of toll collection imposes extra expenses that are not incurred on a tax-supported project. This cost has been estimated at about 10 percent of gross revenue in OECD countries. An additional intangible cost of collection is the delays and increased fuel consumption that occur as motorists queue at toll plazas. Anticipated advances in toll collection technology will make the collection of tolls and the variation of rates easier and less costly, and this in turn should enhance acceptability to users.

Another aspect of toll financing is the interest cost for borrowing funds. This cost will vary depending on the type of financing arrangements, the nature of the bond market at the time, the estimated feasibility of the project, and the credit rating of the agency issuing the bonds. Even in areas where borrowing is used to finance nontoll highway improvements, the interest cost for toll revenue financing is generally higher than that for general obligation bonds issued by the government.

Motorists who pay a toll are usually paying a tax on fuel consumed while on the toll facility. Some would argue that this represents double taxation and as such is a disadvantage of toll financing. This point is more theoretical than practical. Considerations such as this have not, in practice, been a major factor in deciding whether or not to build toll facilities.

There are several conditions under which the selection of a

toll financing alternative may be acceptable from a purely economic theory point of view:

- Tolls applied to captive users where no reasonable alternative mode of transportation exists and demand is, therefore, rather inelastic;
- Tolls used to relieve traffic congestion; and
- Situations in which it is considered desirable to transfer funds from the private to the public sector in order that economic road projects be constructed.

However, a definitive decision about the feasibility of implementing a toll financing scheme should not be made on economic grounds alone, especially because precise quantification of many factors that should be considered in such an analysis is virtually impossible. The interpretation of the economic analysis or the degree to which purely economic factors are considered in the final decision must be determined within the context of political and financial realities.

For example, it may be perceived to be politically difficult or impossible to finance specific highway improvements through existing revenue sources such as motor fuel taxes or vehicle registration fees. There may also be pressure on political subdivisions to preserve some part of their taxing power for other needs that do not have potential for revenue generation. Thus, to meet legitimate highway needs, alternative sources of revenue should be considered. Toll financing has provided this political and financial relief in many instances and, in effect, has freed available tax revenues in an equivalent amount for other necessary projects.

However, decision makers must be alert to distinguishing between the decision to construct a highway and the decision to use tolls as the financing mechanism; many of the benefits of a toll-financed highway can be achieved even if another financing mechanism is chosen, for example, use of gasoline tax revenues. Tolling may be preferable in some cases and not in others. There is no overall solution that can be applied to every situation; the ultimate analysis and decision must be made on a case-by-case basis. In addition, this ultimate decision should be part of an overall governmental transportation or development plan.

The concept of off-budget financing, or course, implies the involvement of private-sector capital for the front-end financing necessary to implement a toll project. In general, toll financing has involved the government sector in one of several ways: by itself as the issuer of bonds, in a joint venture with the private sector as is common in European concessionaire agreements, or through governmental guarantees of private financing arrangements.

Granting concessions to the private sector to construct and operate toll facilities allows the exploitation of business experience in maximizing the efficiency of an enterprise; however, the sharing of risks and responsibilities between the government and the private sector must be carefully evaluated. Wholly private toll financing arrangements are unusual and imply a degree of risk acceptance by the private sector that may raise the cost of financing a facility to a level that generally cannot be recovered through acceptable toll rate levels.

Other joint public-private ventures such as royalty financing, or shadow tolls, may have considerable merit provided that

their feasibility is verified. They have not been thoroughly tested on a widespread basis. The success of such schemes also hinges on the degree of risk each sector is willing to accept. Such potentially viable arrangements deserve more serious consideration to determine their ultimate feasibility.

Although it may appear to be desirable to heavily involve the private sector in the provision of highway facilities, there will always be concern about the autonomy and self-perpetuation of toll authorities or concessions. This situation can potentially be overcome by assuring that toll financing arrangements involving the private sector are under the jurisdiction of a government transportation agency. It is important to find some formulas, both with respect to state goals and the effectiveness of private management, in these agreements that clearly establish the duties and obligations of the two parties. However, the elimination of toll authority autonomy could negate some of the efficiencies associated with private-sector management.

Governments are also beginning to turn to the private sector for the provision of transportation services through methods that involve the recovery of the costs of public infrastructure from private-sector fees or contributions. This private funding has generally been the result of the desire of the private sector to improve access to commercial, industrial, or residential developments or to comply with a law or ordinance that specifically requires certain improvements to be made.

Finally, tremendous advances toward reducing the costs and inconvenience of toll collection are likely in the near future through the introduction of advanced technology such as automatic vehicle identification. However, the capital costs of such systems are still high, primarily because they are not yet used on a widespread basis. If the cost of such systems can be significantly reduced, one of the important disadvantages of toll financing will be significantly reduced. Thus continuing research in the area of toll collection technology is integral to the enhancement of toll financing as a viable funding alternative for transportation.

If governments are to consider toll roads in the context of their financial policies, due regard having been taken of macroeconomic theory, financial and political restraints, and inter-

national conventions, then such toll roads should be developed to accelerate a program of road development that is justifiable in its own right (i.e., with or without tolls) as a priority program when each project is ranked in priority order in accordance with the usual considerations of highway cost benefits, general economic considerations, and regional development, and the following conditions should be met:

1. Governments should permit maximum flexibility in the use of alternative funding sources.
2. Where toll financing is considered, techniques such as zone tolls and shadow tolls should be explored in addition to the more traditional toll financing mechanisms and their feasibility verified.
3. If toll highways are to be established, governments should take significant responsibility for their development and operation to ensure a cost-effective, integrated system of highways. The terms and conditions must be set out and controlled by the state according to specific requirements for the general design, minimum maintenance standards, and so forth.
4. Governments should pay particular attention to the economic and financial makeup of a toll concession operation in light of the evolving expectations of balancing factors under consideration. These conditions should be carefully monitored over the duration of the contract so that the government is prepared to take whatever action may be necessary to avoid a significant slippage from the anticipated time at which the project is no longer the responsibility of the concessionaire.
5. Governments should give consideration to the use of congestion pricing on toll highways in situations in which it is deemed desirable to effect route or transportation mode changes.
6. Continued research on collection methodologies that reduce the cost and inconvenience of collecting tolls should be encouraged and supported by governments.
7. Governments should examine and, under the proper circumstances, require nontoll private-sector contributions for the provision of highway services associated with new residential, industrial, or commercial development.