

Shadow Toll in Colombia*

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Abstract

The growing development in infrastructure projects in Colombia has been linked to legal adjustments and capital markets. These two last factors have provided important elements for project developers to design funding strategies. Based on the shadow toll scheme, this paper proposes a new financing strategy for funding highway projects. This strategy may be implemented in Colombia. Finally, the paper proposes future research on shadow toll schemes as a financial mechanism.

Keywords: Infrastructure, Shadow Toll, Projects.

Classification JEL

H54, H76, G32, R51

Content

Introduction; 1. Methodology; 2. A Financial innovation strategy into infrastructure sector: shadow toll mechanism; 3. New perspective about financing infrastructure; Conclusion; References

* This paper presents the partial results of the research: Project Finance in Colombia, which was conducted at the University Institution Esumer in 2015.

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Peaje sombra en Colombia

Resúmen

El creciente desarrollo de proyectos de infraestructura ha estado acompañado de diversos ajustes jurídicos y de mercado los cuales han proporcionado elementos para que los desarrolladores diseñen estrategias de financiación. Basado en el Peaje Sombra, este artículo plantea una nueva estrategia para financiar proyectos de autopistas, la cual puede ser implementada en Colombia. Finalmente, el artículo plantea investigaciones futuras acerca del Peaje Sombra como mecanismo de financiación.

Palabras clave: infraestructura, Peaje Sombra, proyectos.

Le péage virtuel en Colombie

Résumé

Le développement croissant des projets d'infrastructure en Colombie a été lié à des ajustements juridiques et à des marchés financiers. Ces deux derniers facteurs ont fourni des éléments importants pour les développeurs de projets afin de concevoir des stratégies de financement. Basé sur le système de péage fictif (virtuel), cet article propose une nouvelle stratégie de subvention pour les projets routiers. Cette stratégie peut être mise en œuvre en Colombie. Enfin, le document propose des recherches futures sur les systèmes de péage virtuels en tant que mécanisme financier.

Mots-clés

Infraestructure, péage virtuel, projets.

Introduction

Currently, private sectors play an important role to increase the development of infrastructure projects worldwide. In the Colombian case, in order to improve and increase coverage and services in the infrastructure sector, particularly highways, the central government enacted laws 1508 and 1682, in 2012 and 2013 on Public-Private Partnerships (PPPs) and Infrastructure, respectively. Their fundamental purpose is to encourage private participation presenting all the available mechanisms for participating in developing infrastructure projects, particularly highway projects (Congreso de Colombia, 2012). Indeed, these acts aim to support private participation and efficiency through increasing the coverage and service levels, as well as accelerating infrastructure development projects (González, Arboleda, & Botero, 2015).

Thus, since Law 1508 was enacted, infrastructure projects in different sectors have been presented. However, due to budgetary restrictions, the Government has not intervened as private investors expected. At the same time, private investors have faced some issues for raising financial resources through capital market and banks.

Moreover, shadow toll is a particular strategy for funding infrastructure projects. This mechanism is used in Europe since 1998 in Spain (Rangel, Vassallo, & Herraiz, 2013), and it has never been used in Colombia.

Because of this, there is a great opportunity to explore shadow toll as a financing strategy in Colombia, since it will allow interrelating debt capacity based on traffic level, collateral, and debt service ratio as well as risk profile. Moreover, an important objective of this paper is to introduce a new model for financing infrastructure projects.

Therefore, a new financial strategy is proposed, one which would be especially applied in the highway sector. However, it could be implemented in other infrastructure sectors as well. Hence, this paper addresses a new thinking model on infrastructure project financing, which based on shadow toll, proposes an additional financial strategy to be used by both private and public sectors.

The paper is structured as follows. Section 2 describes the methodology. Section 3 reviews financial innovation strategy into infrastructure sector, especially shadow toll. Section 4 proposes a new perspective about financing infrastructure, section 5 concludes, and section 6 includes references.

1. Methodology

This research is based on the hypothesis that the central government of Colombia must create additional mechanisms for increasing private participation in the development of infrastructure projects. Thus, new regulation must be enacted. Moreover, this paper addresses the main challenges for the creation of new financial policies to develop infrastructure projects through PPPs and PF schemes.

2. A Financial innovation strategy into infrastructure sector: shadow toll mechanism

According to the American Association of State Highway and Transportation Officials (2014) and Mostafavi, Abraham, & Vives (2014), finance innovation is a wide term that includes a mix of techniques designed to supplement traditional financing mechanisms or sources. Additionally, they extend the term including new measures as:

- Non-traditional sources of revenue
- Financing mechanisms designed to leverage resources
- Fund management techniques
- Institutional arrangements

In spite of the previous analysis, finance innovation does not necessary mean that government must increase financial resources for funding projects. However, in some places where private investors would not invest because of a low rate of return and/or higher risks, it is necessary to increase social development; governments must encourage private investors with special mechanisms that allow developing infrastructure projects with a social purpose.

On the other hand, infrastructure project development is based on relevant factors such as the economic growth and coverage increase in social and economic infrastructure systems, which are affected by the lack of public financial resources, underdeveloped capital market, and high financial costs (González *et. al*, 2014).

Furthermore, the main reason why it is necessary to innovate on financial strategies are mainly budgetary restrictions, especially for the public sector (Alonso-Conde, Brown, & Rojo-Suarez, 2007; Jin & Zhang, 2011). Thus, in the Colombian case, it is important to propose a new mechanism that allows lining up all financial participants such as government, sponsors, and financial institutions.

On the other hand, the shadow toll as a mechanism for financing infrastructure requires a significant financial commitment by the government.

In this case, the shadow toll is a scheme in which, through a concessionaire, sponsors collect income from government according to the number of vehicles using the roads (Ranganathan, 2010). It is important to notice that, in this case, users do not pay any toll fees. Because of that, the money that could be collected from users is provided by the government (World Bank, 2015).

The toll fees according to the kind of vehicle can be previously established by governments. These could provide mechanisms such as a guaranteed minimum income (GMI) schemes or payment according to a number of cars. Equation 1 represents total revenues collected by the concessionaire.

$$\text{Total Income} = \max \left(GMI; \sum_{j=1}^n \sum_{k=1}^m V_j T_k \right) \quad (1)$$

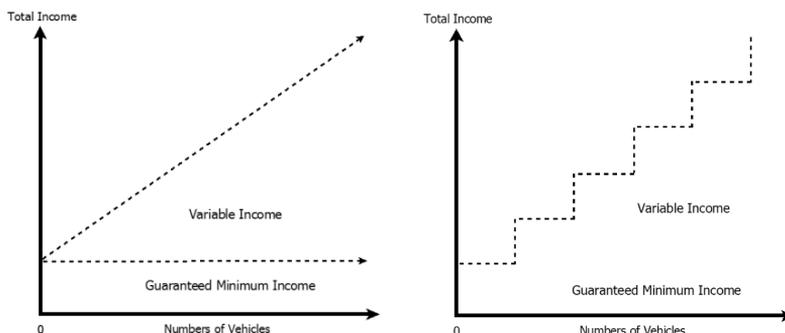
Source: The Authors

Where V_j and T_k represent the kind of vehicle and toll fees per each kind of vehicle.

In another case, governments may set out requirements for service levels; if these are not accomplished, concessionaries will not receive total income. These service levels must be agreed upon between both public and private parties on the contract (Congreso de Colombia, 2012) according to quality and availability of roads, maintenance, and ambulance staff in emergency situations.

On the other hand, the relation between total income and the number of vehicles could agree with gradual increases according to groups of vehicles. Graph 1 shows both schemes.

Graph 1. Total income according to traffic levels



Source: The authors

To sum up, in shadow toll schemes, concessionaires will be paid by governments according to road use. Therefore, the more roads are used, the more income concessionaires will receive.

Concerning bands in shadow toll schemes, the World Bank proposes 3 bands, based on different traffic levels (World Bank, 2015):

- Base case: designed to service senior debt but not to provide a return on equity.
- Higher bands: provide a return on equity.
- Top band: concessionary has a toll rate of zero

Additionally, advantages and disadvantages in shadow toll schemes must be considered, the main ones are shown in the next table.

Table 1. Advantages and disadvantages of shadow toll schemes

Advantages	Disadvantages
Environment is perceived to be hostile to real tolls, then: PPPs structures can be implemented.	The project's cost depends on the public purse.
Multiple sources of funding can be drawn on by government	If traffic volumes are significantly high in excess of forecasts, government may find itself paying more "toll" than it was originally budgeted This can represent an advantage for private investors.
Mechanism of traffic risk transfer should reduce complexity of project; reduced level of due diligence required.	It may not be possible to get capital structure with high leverage.

Advantages	Disadvantages
In order to enhance the quality of roads, it is possible to incorporate incentives for increasing efficiency.	Governments have budgetary restrictions, which could affect developing infrastructure projects in highways, especially in the poorest areas.

Table 1. Source: Authors based on World Bank (2015) and Vassallo, Perez & Villar (2010).

3. New perspective about financing infrastructure

For developing infrastructure projects and return rate estimation, it is suggested to include both market conditions like macroeconomic variables as well as special characteristics of projects, which could impact results of projects.

In this context, this paper proposes a new perspective for funding shadow toll scheme projects. This proposal is based on the main characteristics of PPPs and PF.

According to Law 1508/2012, PPPs require creating a Special Purpose Vehicle (SPV), which would take debt and manage total income of projects. It has to be created by the private investor responsible for developing the project.

This investment vehicle (SPV) will be supervised by a special agent representing the interests of the public sector whose purpose is to guarantee that these resources will only be used in a particular project (González, Arboleda, & Botero, 2015).

As it has previously been mentioned in regards to the funding strategies of projects such as bonds, securitization, and debt bank, it is important to have strategies that include profit for both public and private parties. Hence, special characteristics must be considered.

The proposal is based on the relation among free cash flow, debt cash flow, and equity cash flow according to the 3 bands suggested by World Bank and explained above.

Firstly, based on the Base Case Band, which is the first one, it is directly related with free cash flow and debt cash flow since the first one should cover debt-service (interest plus capital). Therefore, the GMI must cover the debt-service as long as service levels have been met. On the other hand, the private investors should pay the remaining amounts due.

When public and private investors are defining the GMI, it is important to know what will the capital structure of project, interest rate, covenants be and the financial covenants that the project will have, since it could affect the incentive to private investors to develop the project.

In this way, it is important to consider that debt cost (k_d) must be lower than the Equity Return Rate and that the debt-service coverage ratio (DSCR) must, at least, equal 1.

Secondly, government and private investors can agree on the Equity Return Rate. It must be according to the risk profile of the project, the conditions market, and the expectations of profitability of investors. In other words, the Equity Return Rate will be based on the numbers of vehicles using the roads and the limit established by government and private investors. This limit will be on the Higher Band.

In addition to that, the DSCR must be higher than 1. Also, the private investors could expect that the Equity Return Rate will be higher than the cost of equity (k_e).

Thirdly, when traffic levels result to be higher, it is possible to establish mechanisms that allow to encourage the private investors to participate in a project. Thus, through a mechanism that goes beyond its economic value up to including fairness, this proposal aims to propose two ways when income will be higher from Higher Band up to Top Band:

- To Share income between government and private investors in equal values.
- To use income for repaying accelerated debt.

Therefore, when private investors reach the Equity Return Rate indicated on the Top Band, the additional income will be for the government.

Conclusion

Colombia requires the implementation of financial mechanisms for funding infrastructure projects. Because of that, this paper proposes a new mechanism for financing infrastructure projects based on the shadow toll scheme. Even though the proposal has been developed for highway projects, it could be used in other sectors such as the drinking water or waste management. When the new mechanism is applied, it is important to consider the DSCR level which

is directly related to the capital structure and traffic levels. Future research could be developed in this area. For example, research on the optimal capital structure and Return on Equity.

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