Study on Toll System in Vietnam

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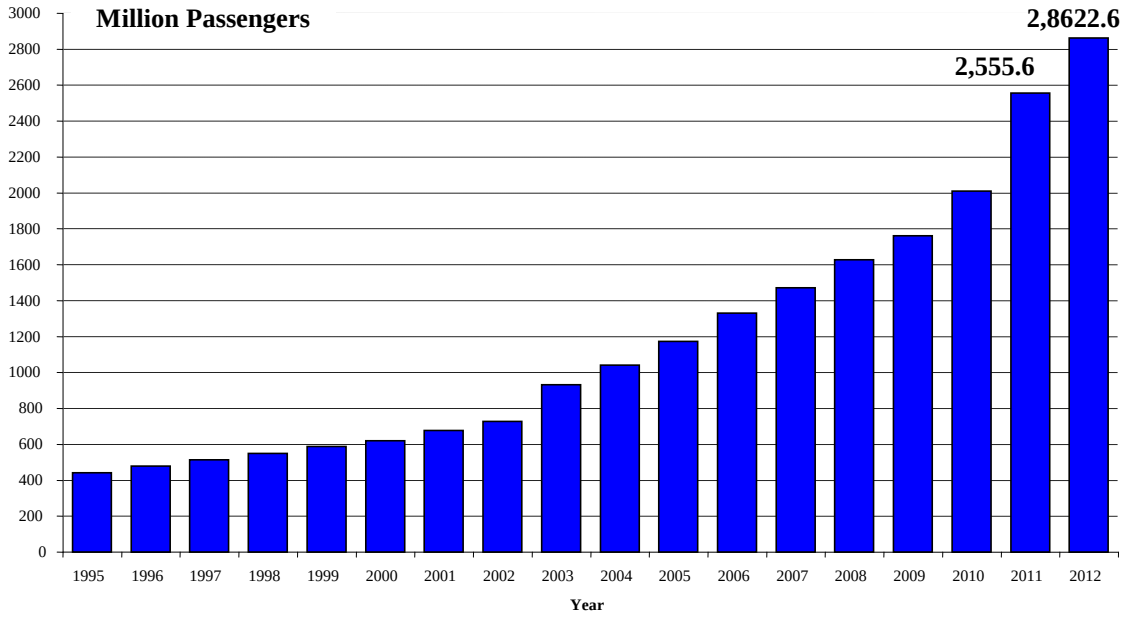
Abstract: Road transport infrastructure has important implications in the socio-economic development of the country, thus every year significant funds are needed for road investment and maintenance. In recent years, toll road methods have been developed in Vietnam. Toll system creates revenue for road system, reduces the shortage of the state budget investment for transport infrastructure. Toll System is continuing to encourage the mobilisation of participation of the private sector - Private Sector Participants are known to contribute an important capital sources for the development of expressway systems in Vietnam, and are strongly encouraged to develop. Vietnam has applied the road fee collection since 1st January 2013. This paper presents the proposal solution for strengthening management of the Toll system of BOT road project in Vietnam.

Keywords: Road Pricing, Development Policy, Toll system, Private Sector Participant

1. THE NECESSARY OF RESEARCH

According to the General Statistics Office (GSO), the road infrastructure of Vietnam is 279,925 km of length, in which 17,646 km of national highways, 32,119 km of provincial roads and city roads, 124,663 km of county roads. In addition, it is about 151,000 km of town roads. Road density calculated up to district roads is 0.52 km/km^2, and 2 km/1000 people. The volume of road passenger transport has increased rapidly over the years (Figure 1).



Source: General Statistics Office (GSO)

Figure 1. Road passenger average rate with 10.8% per year

Road quality in recent years has improved significantly. 82% of National Highway and Provincial Road have been constructed with asphalt concrete or asphalt. However, road technical quality is not so high; road development has not kept pace with the growth rate of transport means; traffic congestion is getting worse. Therefore the fund for road investment and road maintenance are required to develop plentifully.

Along with the innovation and development of Vietnam, transport infrastructure should be strengthened and developed appropriately. According to the Vietnam Transport Master Plan to the year 2020, the estimated total investment for road infrastructure by the year 2020 is about 1,000,000 billion Vietnamese Dongs (VNDs), equivalent to nearly $US 60 billions.

The average investment capital per year is about 66,000 billion VNDs, of which, a highway investment capital is about 22,000 billion VNDs per year, more than twice in comparison with the present. Investment capital demand is quite large, but the Government budget satisfies only 30 - 40% of the total need. The number of toll stations has increased from 44 stations in the early 2000s to more than 60 toll stations in 2010. Every year, these toll stations collect the thousands of billion VNDs for the state budget (Table 1).

Table 1. State Budget Revenues from Toll Road 1995-2004

Unit: Billion VND

Year	Toll Road Revenue
1995	38.05
1996	62.75
1997	113.36
1998	234.73
1999	364.29
2000	466.49
2001	500.50
2002	688.80
2003	893.56
2004	1,157.54
2005-2009 (average each year)	More than 1,000

Source: Scheme Road Maintenance Fund, (2010), Directorate for Roads of Vietnam

The toll road revenue has increased over the years in either absolute and percentage value of the total road traffic revenues, contributing significantly to the state budget revenues. According to the data in the following table 2, the proportion of this revenue represents the corresponding match over the years. However the effect of road investment capital should be evaluated for the total of investment capital.

Table 2. Toll Road Revenues and Expenditure 2005 - 2006

Category	2005	2006	Compare 2006 / 2005 (%)
1. Toll road revenue	100 %	100 %	116%
2. Staff	0.60 %	0.44 %	84%
3. Payroll	11.51 %	10.97 %	111%
4. Ticket printed cost	0.91 %	0.44 %	56%
5. Remain (Balance)	86.98 %	88.16 %	

Source: Audit Report on Management and Road Fee Use in 2 years 2005–2006 of the Vietnam Road Department

By applying the automatically collective technology since 2006, the total revenue has increased by 16% in comparison with the manual collection method in 2005, reducing ticket printed costs and salary expense.

Last time, the Government was interested in allocating capital for road management, road maintenance. However this funding only meets about 40% of maintenance and management needs for highway system and about 20-30% of maintenance management needs for local road system.

Table 3. Toll Road Revenue 2007 -2012

Year	Toll road revenue (billion VNDs)	Growth rate (%)
2007	1,169.921	
2008	1,249.179	107%
2009	1,028.082	82%
2010	713,515.627	694%
2011	559,454.535	78%
2012	862,607.027	154%

Source: The author collected data from Infrastructure Department, Ministry of Transportation, July 2013

The toll road fee fluctuates in recent years due to transferring some stations for BOT and selling the right to collect fees. The toll road fee of the year of 2012 increases much due to having more station of Saigon-Trung Luong expressway.

80 percent of total fee is used for road maintenance (including budget payment and loan payment); 15 percent of total fee is used for fee collected organizations; 5 percent of total fee is used for modernization of fee collection method.

From January 1st 2013, the road fee collection has been implemented in the whole country according to the Decree of the Government on the Road Maintenance Fund (No. 18/2012/ND-CP dated 13/3/2012), applied to cars, tractors, trailers, and two, three wheeled motorcycle, motorbike (Table 4, Table 5). Accordingly, motorcycles with a cylinder capacity up to 100 cm^3 will pay a fee from 50,000 - 100,000 VND/year, motorcycles with a cylinder capacity exceeding 100 cm^3 will pay a fee from 100,000-150,000 VND per year. With cars, the toll road fee is divided into 11 categories: under 10-seater private registration pays 130,000 VND per month, equally 1.56 million VND per year; Trucks, specialized vehicles with gross loaded weight from and over 27 tons pay 1,040,000 VND per month or 12.48 million VND per year.

To avoid duplicate charges, the State has been removing the toll fee booths for State budget collection (about 17 stations on the highway). Road feed on vehicles is only used for the purpose of road maintenance invested by the State budget. For road BOT projects, businesses have invested capital to construct new and better roads, the holding BOT stations to collect fees for paying back construction investment is needed and does not overlap. Therefore, BOT toll fee stations are continuing to operate until the end of the contract term. Until December 2012, 29 BOT toll stations, 4 stations supported BOT projects have been operating on the highway. In addition, in each province, usually having some BOT road projects are in operation.

In such conditions, the study on BOT toll road management completely is very necessary.

2. RESEARCH WORK AND METHODOLOGY

The research work is based on methods: collect second data; make an assessment and analyze situation of toll system and road fee in Vietnam; consider world experience; recommend some necessary solutions in order to manage, organize toll road BOT project stations better and completely.

3. MANAGEMENT OF TOLL ROAD

The State management for the system of toll road stations: the Ministry of Transportation authorizes the Vietnam General Road Department to manage the toll system. In recent years, activities of road fee collection have changed rapidly and become quite complicatedly.

Legal fundamental: the operation, fee collection, payment to state budget as well as use of road fee collection of the system of toll road stations are in accordance with the Circular 90/2004/TT-BTC dated 07 September, 2004 of the Ministry of Finance on "The guidance for collection, remittance and use of road traffic fee"

Basic contents of the Circular provisions on the minimum distance between two toll stations is 70 km; the fee for all type of motor vehicle means passing the route invested by the state budget (with the car less than 12 seats, the truck less than 2 tons, public transport buses) is 10,000 VND per one way ticket.

Responsibility of organizations and individuals colleting road fee is to organize ticket selling points at toll station conveniently for drivers and vehicles to avoid traffic congestion; expanding networks and various forms of selling ticket to ensure a convenience for people to buy tickets as well as to ensure strict management, and to avoid a loss of ticket fee. In addition, fee collection units must sell ticket promptly and in a full range of tickets according to buyers' requirement without a limitation for subjects and numbers of tickets sold. Also according to the circular 90/TT-BTC, the road invested by loan capital or joint venture capital, the road fee may increase as twice as regulated fee (Table 3).

Table 4. Road Fee
(Circular 90/2004/TT-BTC dated 07 September 2004 of the Ministry of Finance)

Vehicles	Road Fee		
	One way ticket (VND/ticket/ trip)	Monthly ticket (VND/ ticket/trip)	Quarterly ticket (VND/ ticket/trip)
Two-wheeled motorcycle, three-wheeled motorcycle, motorbike	1,000	10,000	
Three-wheeled taxi, tractors, agricultural vehicles	4,000	120,000	300,000
Vehicle less than 12 seats, truck less than 2 tons, public transport buses	10,000	300,000	800,000
Vehicle from 12 to 30 seats, truck with load capacity from 2 tons to less than 4 tons	15,000	450,000	1,200,000
Vehicle with more than 30 seats, truck with load capacity from 4 tons to less than10 tons	22,000	660,000	1,800,000
Truck with load capacity from 10 tons to less than 18 tons and 20 feet container truck	40,000	1,200,000	3,200,000
Truck with load capacity more than 18	80,000	2,400,000	6,500,000

tons and 40 feet container truck

Source: Circular 90/2004/TT-BTC dated 07 September 2004 of the Ministry of Finance

Circular 197/2012/TT-BTC dated 1 November 2012 of the Ministry of Finance guides the collection, remittance, management and use of road fee according to the number of means, which will be put in effect since January 1, 2013 with the fee range from 130,000-1,040,000 VND per month for cars and from 50,000-150,000 billion per year for motorcycles.

Table 5. Road fee for motor vehicle
(Circular 197/2012/TT-BTC dated 1 Novermber 2012 of the Ministry of Finance)

No.	Vehicles	Road Fee (thousand VND)						
		1 month	3 months	6 months	12 months	18 months	24 months	30 months
1	Private vehicle less than 10 seats	130	390	780	1,560	2,280	3,000	3,660
2	Vehicles less than 10 seats (except private vehicle); truck, trailer, specialized vehicle with load capacity less than 4,000 kg	180	540	1,080	2,160	3,150	4,150	5,070
3	Trailer with load capacity from 4,000 kg to less than 13,000 kg	230	690	1,380	2,760	4,030	5,300	6,470
4	Vehicle from 10 to less than 25 seat; truck, specialized vehicle with load capacity from 4,000 kg to less than 8,500 kg, tractor with capacity less than 8,500 kg	270	810	1,620	3,240	4,730	6,220	7,600
5	Trailer with load capacity from 13,000 to less than 19,000 kg	350	1,050	2,100	4,200	6,130	8,060	9,850
6	Vehicle from 25 to less than 40 seats; truck, specialized vehicle with load capacity from 8,500 kg to less than 13,000; tractor with load capacity more than 8,500 kg	390	1,170	2,340	4,680	6,830	8,990	10,970
7	Trailer with load capacity from 19,000 to less than 27,000 kg	430	1,290	2,580	5,160	7,530	9,960	12,100
8	Vehicle with more than 40 seats; truck, specialized vehicle from 13,000 to less than 19,000 kg	590	1,770	3,540	7,080	10,340	13,590	16,600
9	Trailer, semi-trailer with load capacity more than 27,000 kg	620	1,860	3,720	7,740	10,860	14,290	17,450
10	Truck, specialized vehicle with load capacity from 19,000 to less than 27,000 kg	720	2,160	4,320	8,640	12,610	16,590	20,260
11	Truck, specialized vehicle with load capacity more than 27,000 kg	1,040	3,120	6,240	12,480	18,220	23,960	29,260

Source: Circular 197/2012/TT-BTC dated 1 Novermber 2012 of the Ministry of Finance

Table 6. Road fee for motocycle (not included electric motobike)

No.	Vehicles	Road fee (thousand VND per ticket per year)
1	Motorcycles with a cylinder capacity up to 100 cm^3	From 50 to 100
2	Motorcycles with a cylinder capacity exceeding 100 cm^3	From 100 to 150
3	4 wheel truck motor with a cylinder	2,160

Source: Circular 197/2012/TT-BTC dated 1 Novermber 2012 of the Ministry of Finance

The principal management forms for the toll road stations operating presently

Toll road BOT stations: the revenue is used to recover capital funds for investors invested money into road building. In recent years, to mobilize other capital sources for the development of transport infrastructure beside the state budget, the Vietnamese Government has permitted to construct highway routes in the form of BOT (Building – Operating – Transferring: Enterprises build a road and operate it in a number of years then transfer to the government) and also allow investors to collect fee for making return on their investment. This is the way to mobilize different investment capital sources out of the state budget for the development of transport infrastructure.

After the term period is ended, competent authorities continue to make a further public tender, then assign to enterprises or individuals with the highest bidding to manage and administer a project. This approach not only facilitates a better environment for investors, but also reduces the investment cost for the state in the field of transport development, while contributing a larger proportion for the state budget, reducing expenditure and payroll for operating apparatus. It simultaneously prevents negative phenomena, collusions between individuals, businesses and state employees that had happened in many toll road stations in the previous years and caused losses to the state budget.

After transferring fee collection right to BOT companies, the fee level at some stations are adjusted to increase by BOT companies, in which two stations apply the highest rates: more than 2 times as for the road invested by the state budget and seven stations with the rate of 1.5 times of basic rate.

The transfer of road fee collection right: has been applied on some routes since 2005. They are the highway No.5, the highway No. 51 and some urban roads in Ho Chi Minh City such as Dien Bien Phu street, Hung Vuong Street. This fee collection is used to repay capital loan and interest (transferred roads are invested, innovated and expanded by capital loan), to invest in construction, renovate, expand, repair and maintain for road projects (transferred roads are invested, innovated and expanded by the state budget) approved by the competent authorities.

After four discontinuous years, recently, three tender packages on the transfer of toll road right within the term condition on the highway 1A and the highway 18 have the highest bidding to date. This event showed that the sell of fee collection right has appealed to all kinds of businesses.

Expectedly, the Vietnam Road Department will continue to perform the road fee collection at 30 toll road stations across the country, implementing the government advocate on the socialisation of road fee collection right. "Attractive" toll stations have actually attracted more businesses to participate in the biddings. The model of toll road stations transferring fee collection right to the business has been implemented in many countries around the world and resulted in positive effects: businesses will strictly and carefully control in - out tickets, because this will associate with their sales. Also, businesses must have the

initiatives, new service attitudes and quickly improve their service quality at these toll stations.

The Vietnam Road Department will sell the fee collection right of the toll stations for a duration of about 5 years. During this time, the Department will hand over the whole works, machinery, equipment and staffs to business use, and after the expiration of the contract, toll stations will be handed over to the Vietnamese Road Department. VRD will reinvest the sale of the toll stations into other transport projects. This is a pattern to encourage private sector participation in road investments (Private Sector Participants – PSP).

To avoid traffic congestion at the toll road stations happens in recent years, Vietnam Road Department has specific regulations and applies sanctions to businesses immediately after winning bidding such as: ensure hygienic safety, not allow vehicles to change a lane and set up wrongly milestone, etc.; especially not allow refusing the number of tickets sold. In the coming time, each toll road station will have a separate ticket approved by the Ministry of Finance, thus help to avoid the situation of ticket rotation between stations.

4. ENGINEERING TECHNOLOGY APPLICATIONS AT TOLL ROAD STATIONS

Beside some stations still apply manual fee collection, some stations have applied electronic fee collection, and few stations have used semi-automatic fee collection, mainly at the control phase with two-stop process: a stop to buy a ticket and a stop to verify ticket.

Semi-automatic technology is used in the vehicle identified devices (place in the front or at the back of a ticket inspective position), in the ticket magnetically inspective devices/ paper / smart card, computer networking equipment, surveillance camera equipment (available at some stations). Some stations have used semi-automatically electric barrier equipment together with traffic signal lights.

Bar code technology has been tested for use in toll road station No. 2 – Dong Xoai - Binh Phuoc for more than one year. This technology has also been applied effectively in BOT toll station An Suong - An Lac. The application of bar code technology saves a lot of time: on average, each car takes only 3-5 seconds to stop for buying and checking ticket; information such as car counts, ticket face value, the number of priority tickets, monthly tickets, and highway tickets have been completely automatically updated through the management software. Thanks to the evidences recorded in detail from the multi-dimension automatic camera, counterfeit tickets or tickets used have been detected, eliminating completely ticket rotation, preventing revenue loss. And the most importance is no traffic jam at the ticket selling and ticket inspecting areas. Thanks to the bar code technology, the station's revenue grows rather fast. For example, the revenue of station No. 2 increases 20.85% in comparison with the same period of last year.

One-stop bar code fee collection system begins to be implemented for the toll station of My Thuan Bridge. However, the application of bar code technology has also generated many issues to be studied and overcome, such as unclear images of car’s number plate taken by a camera at the nighttime, errors of management software, data storage only 30 days, mistakes of selling bar code ticket lead to the money compensation.

Non-stop fee collection system ETC has been piloted in a number of toll stations. After receiving the signal, the barrier automatically pops up to let the car run through without stopping. The application of non-stop fee collection will make the fee payment more easily, reduce traffic congestion, create a civilization and remit pollution emission, especially save time, such as at the Can Tho bridge, Ninh An, Luong Met on highway 1A. This method will not only increase revenue for the state budget, but also contribute to reducing traffic

congestion, trouble at toll stations and bring more benefits to drivers. To use this fee collection service, vehicle owners must purchase an OBU of Vietin bank, OBU will signal to the aerial antenna system.

5. SOME COMMON SHORTCOMINGS

Organisation of Toll Stations: As enterprises own toll stations, thereby the appropriation of the state budget and improper use of funds are still happening. Some stations are located too close unreasonably; some toll stations on the essential highways do not meet the minimum distance requirement of 70 km between two stations. The dishomogenousness of face value ticket between stations and the rapid change of fee collection activities are making management process quite complex and bring about the stress (pressure) to people on the road.

Fee Collection Technology: Fee collection technology is generally backward and operating cost is comparatively high and the revenue loss of the state budget is still happening. Most of fee collection activities have been implemented by manual methods (selling paper tickets, checking and tearing tickets at the station), the collection process is prolix and inconvenient, does not guarantee traffic safety, and bring in negative affects. Some toll stations, even though have been equipped with automatic fee collection system, are operating independently in nature, and do not meet the requirement of sharing information for management and statistics.

Replacement costs of equipment and ticket printing costs are still high, and using a lot of labor force. Although there have been programs to modernize the toll stations, firstly "one-stop fee collection" to "non-stop fee collection", but the application also has faced to many limitations due to toll stations belong to different investors, therefore the connection between the stations is very difficult. Moreover, the fee payment is not synchronized, and must go through an inter-bank system.

6. SOME RECOMMENDATIONS TO STRENGTHEN THE ROAD FEE COLLECTION MANAGEMENT

Coordinating the Ministry of Transport with the Ministry of Finance to synchronize fee collection rates across the country to avoid pressing for fee payers and to avoid over-collection of toll stations. Establishing a modern toll system with simple, efficient and unified fee collection process. Modernizing the network of road toll stations with the purpose of creating the most favorable conditions for passing vehicles, and increase revenue for the state budget, anti-generated negative affects.

Synchronizing and standardizing equipments over the whole network system in order to apply efficiently the best inter-network payment. Along with applying various fees such as trip fees, daily fees, weekly fees, pre-paid fees and crossing country fees. Particularly, the modernization of toll system is to ensure traffic safety at the maximum level and to avoid congestions at the fee collection areas, enhancing the effectiveness of anti-negative surveillance. Suitable technology with reasonable price should be selected in accordance with actual conditions of Vietnam.

Continue researching and developing simultaneously with other management solutions to implement successfully broad application of non-stop toll stations. Should have priority policies for road infrastructure investment, especially investment for highways.

CONCLUSION:

Comparing with the current fee collection at toll stations, the new collection method would save about 15% of collected fees, save car-stopping time, avoid congestion and negative affects (according to Ministry of Transportation, 2010, Tuoitre paper). However, to put the new method in effect, all toll stations must be removed to avoid overlap fee charge. Therefore, the State must spend about 1,100 billion VNDs to acquire the fee collection right from six stations, which were sold the right to collect fees, spend about 100 billion VNDs to repay for investment capital loan for toll stations. Besides handling 29 state toll stations and 26 BOT project toll stations, the State also needs to settle the employment issue for nearly 2,900 employees.

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