

PAYING FOR ROAD ACCESS IN ZIMBABWE: ADDRESSING TRAFFIC MANAGEMENT ISSUES OR RAISING REVENUE FOR THE FISCUS?

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ABSTRACT

On 8 August 2009, the Government of Zimbabwe introduced road user charges by setting up 22 toll gates centers at designated locations around the country. This measure was undertaken without conducting any feasibility studies. The tolling system was introduced at a time when most roads in the country are in a very bad state. The paper explores the application of the *Road User Pay Principle* to establish whether Zimbabwe's toll road system augurs well with road pricing objectives. The paper also tries to ascertain public perceptions and whether traffic levels can sustain the tolling system?

1. INTRODUCTION

The main source of funding road transport infrastructure worldwide has traditionally comprised of direct Government allocation through Public Sector Investment Programmes (PSIP), indirect vehicle licences and fuel levies. Due to the paucity of funds from these sources, some Governments are resorting to the *road user pay principle*, which involves motorists paying a fee (toll) for driving on a particular road. In principle road users need to be availed with alternative transit routes. The road pricing strategy has two distinct objectives, namely, revenue generation for road infrastructure financing and secondly, for traffic demand management purposes.

On 8 August 2009, the Government of Zimbabwe introduced toll fees on its regional trunk road network by gazetting Statutory Instrument 39 of 2009 cited as the Toll Roads (Regional Trunk Road Network) (Amendment) Regulations No 1. A total of 22 toll collection centers were set up. In introducing these toll roads, no feasibility study was undertaken. It is also instructive to point out that the road user pay principle was mooted as early as the mid-1990s but could not be implemented, partly due to the need to encourage regional growth in the country.

Whilst the public has viewed the introduction of toll roads with general suspicion, the Government has heralded them as an imaginative, prudent and timely intervention management strategy. There is thus considerable variance and divergent thinking in understanding of Zimbabwe's new road management approach.

Zimbabwe has a road network of 85 000 kilometres comprising surfaced, gravel and earth roads. Approximately 8 900 kilometres constitute primary and regional trunk road network. The average age of the regional trunk road network is over 40 years and thus many roads have outlived their design life and are in need of rehabilitation (Gumbie and Kudenga

2009). Road infrastructure continues to deteriorate and requires progressively higher funding to restore it to a reasonable condition. The inability of the Government to raise revenue for road maintenance and the deteriorating state of regional trunk roads compelled Government to introduce toll fees. In announcing the new approach of generating revenue for road maintenance, the Minister of Transport, Communications and Infrastructural Development outlined the importance of Government to act quickly in order to save roads from total collapse. Visible potholes and a high carnage on trunk roads provided adequate justification and urgency for introducing the road toll charges.

In the context of the above backdrop, *the user pay principle* was seen as a viable option to address the shortage of road maintenance funds. This is the first time a road pricing strategy has been implemented in Zimbabwe. The objective of this paper is to explore the application of the *Road User Pay Principle* to ascertain whether Zimbabwe's toll road system augurs well with road pricing objectives. The paper will also try to answer the following questions inter alia; what is the public perception on toll roads? Can traffic levels sustain the tolling system? Is the road tolling system viable?

2. LITERATURE REVIEW

This section focuses on a review of existing literature on road tolling. It analyses road funding in general and then focuses on tolling in terms of brief history, different methods in use worldwide, as well as the traffic management focus of the system. It is, however worth noting that literature, which specifically examines toll roads and their impacts in Africa, is still relatively small. As a result, this research is one of the pioneering studies to be conducted in Zimbabwe.

2.1 Road Funding

Transportation funding, particularly in the developing countries, has traditionally been the responsibility of the government. Experience across the world has proven that the capacity of most governments to adequately fund transport infrastructure construction and maintenance is limited. The challenge has been exacerbated by the fact that transport infrastructure provisioning competes strongly for funding, with other sector needs such as water, health, education, housing, etc. Therefore, a number of innovative fund raising, as well as, partnerships with, particularly, the private sector, have continued to be researched and implemented.

The South African National Department of Transport (NDoT 2009) recommends that the choice among different transport funding methods should be based on a number of parameters including equitability, efficiency, adequacy, and ease of administration. This is fundamental, although it is rare to find any source of funding that concurrently fulfils these criteria. The main sources of road funds (construction and maintenance) that are common in many countries include the fuel levy, motor vehicle licenses, road tolling, etc. In other countries like South Africa, transfers from the National Treasury, including the equitable share, conditional grants, and grants to the South African National Roads Agency, are used. The Provincial Department of Transport also provides funding in the form of Municipal Infrastructure Grants, etc (NDoT: 2009).

Despite the various innovative efforts, most governments still shoulder a disproportionate share of the burden for transportation capital and operational investments. Research shows that while transitional countries are expected to spend at least 5% of GDP on road infrastructure, most developing countries are currently spending about 2%. (Metschies. et, al: 1991; Kuang: 2006; Gwilliam. et, al: 1996; Queroiz. et, al: 2008). This scenario indicates that road systems are generally underfunded. The NDoT (ibid) reports that in

South Africa, the National Treasury transfers over 95 percent of provincial revenue requirements for the construction and maintenance of road infrastructure.

Given the limitations associated with the funding sources, most governments are pursuing the option of involving the private sector, through different forms of public-private partnerships (PPPs). Forces driving the different forms of partnerships include the associated acceleration of infrastructure provision, faster implementation, reduced whole life cost, better risk allocation, better incentives to perform, improved quality of services, generation of additional revenues, enhance public management, etc. The most common of such partnerships include service contracts, management contracts, leases, build-operate-transfer (BOT), concessions, divestiture (full scale privatization), etc. These different options exhibit different levels of public and private sector involvements and responsibilities. The greatest public and private sector involvement is found under service contracts and divestiture, respectively.

2.2 Road Tolling

Road tolling evolved largely on a trial and error basis. Early toll systems were called turnpike roads, with the first of these being the Turnpike, which was authorized in 1663 for a section of the Great North Road in Hertfordshire (Coleman, 2006). The systems involved the establishment of twenty-year trustees, whose responsibility was to erect gates, demand statute labour or cash, in return for repairing of road and erection of mileposts. In the United States of America (USA), the first toll road was a Pennsylvania turnpike, which was chartered in 1792, with the numbers increasing rapidly until the 19th century. (Jones. et, al, 2001; Laura Coleman, 2006). Generally, these systems were not well received by residents, who were used to free use of road systems.

Over the years experiences with road tolling projects has differed across the world. According to Fitch Ratings (2007) a global rating company which publishes periodic investment reports, toll roads have been associated with relatively low default/failure rates. However, a number of toll projects were subjected to distress, mainly due to inaccurate traffic forecasts and associated revenue performance. In the developed world, incorrect predictions and project externalities caused problems such as downgrades, debt restructuring, and at times payment defaults. In developing economies, risks of economic cycles similarly caused downgrades and defaults, as was the case with the 1994 Mexican fiscal crisis. For countries with no history of toll roads, problems of affordability and the associated willingness to pay affected project viability, as was the case in Hungary. Therefore, the performance of toll roads was relatively better in the developed than in developing economies (Fishbein. et, al: 1996).

Despite the challenges cited above there has been growing evidence of good payback advantages associated with toll roads across the world. The trend has largely been the same even for economically challenged projects. Fitch Ratings (ibid) however warned that existing locational economic fundamentals influence a toll facility's capacity to generate adequate revenues and remain sustainable. Thus, economic fundamentals like the underlying regional economy, the depth and diversity of the existing travel demand, competitiveness relative to alternative routes, toll collection methods, etc are critical in assessing a toll road's exposure to market risk. Fishbein et, al (1996) pointed out that the success or failure of tolling projects depends on the allocation of responsibilities between public and private sector participants. For instance Chile, Colombia, Hungary, United Kingdom and the United States had favourable concession environment as compared to China, Mexico and Malaysia (Fishbein & Babbar 1996).

According to Collier (2004), in respect of the actual revenue collection systems, there are four alternatives, which are Manual Toll Collection Systems (MTCS), Automated Coin Machine (ACM), Electronic Toll Collection (ETC) or Automatic Vehicle Identification (AVI) and Video Tolling (VT). MTCS are the most common tolling method. It comprises of toll plazas/booths, in-lane toll equipment, toll collectors and staff, cash handling systems and back office systems. Saffarzadeh et, al (2006), highlighted the challenges associated with MTCS in Iran. They noted that, generally, average travel times along tolled highways were higher than along other non toll roads.

2.3 Role of Tolling in Traffic Management

Tolling has been used as a revenue generation method as well as traffic management tool. In the latter case, tolling of congested routes assist in discouraging travelers from either using the tolled route or riding low occupancy vehicles. In the latter case, travelers will be forced to use high occupancy vehicles and modes such as public transport, pool cars, etc. According to Yang. et, al, (2005), the application of tolling as a traffic management tool reduced peak traffic volumes from 40 000 to 15 000 vehicles along highways in Singapore. Despite the achievements in Singapore and other countries across the world, experience has also shown that traffic problems are often a result of complex interactions among the vehicles, infrastructure, users and the surrounding environment. Therefore traffic management strategies should not be focused around one method such as road tolling. Ideally, the first thing should be to do a thorough problem structuring and streamline a combination of measures that can be implemented to holistically address the traffic challenges.

3. **THE ZIMBABWE CASE**

3.1 Modus operandi

As mentioned earlier, there are 22 toll points located on all the regional trunk roads throughout the country. In locating the toll gates, the criteria adopted was for toll gates to be outside urban areas and approximately 100 kilometres apart. Both criteria proved to be difficult to implement. Firstly, there were numerous complaints raised by some people living on the outskirts of urban areas who found themselves paying the toll fees daily. Consequently, Government was forced to relocate some toll gates. Secondly, the need to ferry revenue collection personnel to and from their residential areas meant that tolling points had to be as close as possible to urban areas.

The Zimbabwe Revenue Authority (ZIMRA), a quasi body was appointed by Government to collect toll fees on behalf of the Zimbabwe National Roads Authority (ZINARA), a road agency responsible for the administration of the road fund as well as coordination and monitoring of the maintenance of the entire road network. ZIMRA retains 10% of revenue collected to cover its administrative expenses. This institutional arrangement is not an ideal one. In the absence of a memorandum of understanding, ZIMRA is not answerable to ZINARA. The latter has also accused ZIMRA for lack of transparency, late disbursement of collected revenue and corruption. The suspicion was buttressed by the arrest of ZIMRA revenue collection personnel over revenue pilferage (Herald: 21 October 2009).The system is based on the manual toll collection system (MTCS) with rudimentary infrastructure, manned by ZIMRA personnel and police (See Figures 1 and 2).



Figure 1: Typical toll gate



Figure 2: Rudimentary facilities provided

The charges are pegged as follows; US\$1 light vehicles, US\$2 minibuses, US\$ conventional buses, US\$4 trucks of less than 10 tonnes and US\$5 for heavy goods vehicles of more than 10 tonnes. Transit vehicles with proof of payment, ambulances and diplomatic vehicles are exempted from paying toll fees. Government vehicles which initially were exempted are now required to pay.

3.2 Traffic Volumes and Management

As cited in the introductory and literature review sections, the ability to manage demand is one of the reasons for developing toll roads. Owing to the growing traffic volumes, the demand for road capacity keeps on increasing. Thus, toll roads provide a mechanism to raise funds directly required for road network capacity expansion and maintenance.

The busiest regional trunk road in the country is the Harare-Beitbridge road connecting to South Africa. Twenty four hour traffic counts that were conducted recently have indicated that the Harare to Beatrice section (55 kilometres), which experiences the heaviest flow, recorded just above 4 000 vehicles per day. The average flows for the remaining sections of the road were around 2 000 vehicles per day. Thus, vehicle flows are far below the 5 000 vehicles per day normally regarded as the threshold for a viable toll road.

Vehicle population in the country is relatively low. According to the Zimbabwean Central Vehicle Registry, the country has a registered vehicle population of about 850 000 which equates to approximately 57 vehicles per 1 000 people. The majority of these vehicles are registered in urban areas where they spend most of their time. Considering the traffic density indicator, the number of vehicles equate to approximately 6 vehicles per kilometre (entire road network) or 16 vehicles per kilometre (excluding earth roads). Thus, traffic congestion is minimal.

In respect of traffic passing through the 22 toll gates that were set up on the regional trunk roads, Table 1 summarises the flows for the period 7 September 2009 to 16 December 2009.

Table 1: Traffic flows passing through toll gates

Period	Light vehicles	Minibuses	Conventional buses	Lorries	Heavy Goods trucks	Total
11-30 Sep 2009	512370	32368	26603	27492	52735	651 568
01-31 Oct 2009	791186	69960	41387	41523	81346	1025402
01- 30 Nov 2009	774415	70679	40389	40559	81828	1007870
01-16Dec 2009	454571	44109	23823	21589	38618	582710
Total	2532542	217116	132202	131163	254527	3267550

Source: Adapted from data obtained from Ministry of Transport, Communications and Infrastructural development

For the period 11 September to 16 December 2009, a total of 3 267 550 fee paying vehicles passed through the 22 toll gates. This comprises of 78% cars, 8% heavy goods vehicles (HGV), 7% minibuses and conventional buses and Lorries 4% each. The total number of vehicles that passed through the toll gates equate to 33 682 vehicles per day or 1 531 vehicles per toll gate per day. It is evident that the volume of traffic passing through the toll gates is low and consistent with evidence from traffic counts cited earlier.

It is instructive to note that there is no traffic being lost as tolling points are located in such a way that evading them would be impossible, making toll fee payments compulsory as there is no alternative route. The principle of providing an alternative route was described by a Ministry official as *“an old idea that does not apply to Zimbabwe”*. This was echoed by the Minister of Transport, Communications and Infrastructural Development when he said; *“There are many people who wanted us to improve the roads first. Yes, we should have done that, but we do not have the money, so we need road users to pay so that we can use the money to repair roads”*. (Herald 17 September 2009)

From the foregoing, it is clear that in the case of Zimbabwe, there is no noticeable congestion on the trunk roads network. Thus, traffic management cannot be a justification for introducing toll roads.

3.3 Revenue generated

From 11 September 2009, to 16 December 2009, the cumulative revenue amounted to US\$5 180 980. This translate to US\$53 416 per day (US\$2 428 per toll gate per day) and US\$1.6 million per month. Revenue contribution by each vehicle category is as follows; 49% cars, 25% HGVs, 10% lorries and conventional buses and minibuses 8% each.

Revenue flows could have been improved albeit insignificantly, with proper mechanisms that minimise leakages. Initially, there was one common ticket that was issued to all categories of vehicles although they were paying different amounts of money. The ticket was blank with no information detailing the amount and type of vehicle meaning a ticket issued to an HGV driver paying US\$ 5 can easily be accounted for as if it was issued to a light vehicle which pays US\$ 1.

The makeshift structures at toll gates are not ideal especially during the rainy season. With heavy rains, revenue collection officers are forced to abandon the tolling points resulting in some motorists going through without paying the requisite fee.

It was also observed that some impatient drivers pay the required amount and do not bother to take the receipt. In such cases, the declaration of charges where receipts are not collected by road users would therefore depend on the integrity of the collection officer.

Overheads in running the present system are high. Apart from ZIMRA officers, each tolling point would require the presence of policemen since by law it is a uniformed police officer who is authorised to stop vehicles. From observations made at a few tolling points, an average of 5 police officers were present. Staff manning toll gates need to be provided with transport to and from their residential areas. With three shifts per day, it means three trips being undertaken. For these costs and other administrative functions, ZIMRA retains 10% from the revenue collected, meaning that ZINARA only gets 90% of the revenue.

Of importance to the revenue leakage issue is the number of vehicles that are being exempted. From 11 September 2009 up to 16 December 2009, 357 108 vehicles representing 11% of the total vehicles that passed through the toll gates were exempted. This is a high figure which clearly shows a considerable amount of revenue not being collected. Interestingly, apart from the vehicles that officially are exempted, some Government officials and members of Parliament who ironically are the custodians of policy were refusing to pay, clearly abrogating their own policies (6 December 2009).

3.3.1 Use of revenue

The question of whether the revenue generated is going to be used for road maintenance or diverted elsewhere is a pertinent one. Since this is the first time a road pricing strategy has been implemented in Zimbabwe, the general public has viewed it with a lot of suspicion. There are no local projects against which current toll program can be modeled or benchmarked against. The authenticity of the road tolling system was questioned by the general public who were concerned that the money raised would be diverted elsewhere and not used as a dedicated fund to improve roads. Previous experiences with AIDS levy and Drought Relief levy were cited as examples where money raised was diverted from the intended purposes. Therefore, for most people, this new program is just a way of milking money from motorists, under the guise of the need to fund road maintenance. These suspicions have been buttressed by the fact that, while toll systems in most countries are privately administered on a Build Operate and Transfer (BOT) basis, the Zimbabwean Government has opted for an entirely state controlled toll system, where a state institution, the Zimbabwe Revenue Authority (ZIMRA) is responsible for collecting the toll fees. As one member of public said; *"We hope that the toll gates fees will not be another form of Government fund raising exercise under the guise of road development"* (Herald, 17 September 2009).

It is only a few months since the introduction of road tolls in Zimbabwe. The time is very short to ascertain any long term trends on the use of revenue being generated from road tolls. However, there are some present indicators that one can scrutinise in order to respond to the question on whether the revenue is going to be used to improve the roads or diverted elsewhere.

Firstly, the responsible Minister has given an assurance on the use of revenue generated from road users; *"What we want to emphasise to the motoring public is that the money is not going to be used for any other purposes save for the rehabilitation and maintenance of the country's roads"*. (Herald, 10 September 2009). This assurance is backed by the revenue distribution mechanisms that were put in place. The money collected is transferred directly to the ZINARA account without going through the exchequer. This is a positive development from the past that at least gives assurance to the public that the money

collected is dedicated for the improvement of the country's road infrastructure. ZINARA has gone a step further to conduct independent traffic assessments to verify the amounts of money transferred into their account by ZIMRA.

Secondly, the road infrastructure is in such a bad state that it would be impossible to divert the meager funds elsewhere. With the motoring public paying *up front*, they would need to see a visible change that justifies the tolling system. At any rate, the amount of money generated by toll roads as discussed in the next section will not be enough and it will be difficult to divert it elsewhere. Government is desperate to make sure that the road network is improved to justify its reasons for collecting money from the motoring public. As one respondent who was interviewed remarked; *"it will be unheard of for the Government to divert the money as they owe road users a better road network. Remember we are paying now before the network has been improved"*

Thirdly, the present political environment which created a Government of National Unity provides adequate checks and balances to ensure that funds are not diverted elsewhere.

3.3.2 Adequacy of revenue

It has been established that the tolling system generates monthly average income of US\$ 1.6 million per month. The annual forecast will be approximately US\$19.2 million. This amount of money is inadequate, considering that most roads would now require rehabilitation at an estimated cost of about US\$200 000 per kilometre. Currently, it is estimated that 4 668 kilometres of the regional trunk roads are in dire need of rehabilitation. In 2005, a World Bank assessment mission estimated that the total road maintenance funding in the country was US\$160 million and only US\$10 million corresponding to 6% of requirements was provided (Gumbie & Kudenga 2009). In 2009 the financial requirements for road maintenance had increased to US\$225 million while the road rehabilitation requirement was approximately US\$1.3 billion (Ibid).

However, and in all fairness, the revenue generated from toll roads need to be assessed against other sources of revenue for road infrastructure maintenance. The estimated annual total amount to be raised from all road infrastructure maintenance revenue sources comprising fuel levy, transit charges, overload charges and toll fees is US\$35 258 800. Contribution from toll fees is the highest at approximately 54%. Therefore, notwithstanding the inability of total revenue to meet the road rehabilitation requirements, the tolling system is raising a significant amount of takings when compared to other sources of revenue. There is scope to increase tolling revenue if the leakages discussed in the preceding section are addressed.

Clearly, the US\$35 million expected to be raised from road user charges annually is a drop in the ocean compared to requirements. Any delay in carrying out the necessary maintenance means a continued deterioration of the infrastructure that would require reconstruction at higher costs. The tolling system may not be a panacea to the road maintenance challenges in Zimbabwe.

4. DISCUSSION AND CONCLUSION

The introduction of toll roads in Zimbabwe represents a bold decision by the authorities as it is the third country in Africa (after South Africa and Morocco) to operate a tolling system on the road network. The main objective was to raise money to improve roads characterised by numerous potholes and cracked surfaces. The need to raise as much money as possible has resulted in citing toll gates on locations which do not provide users with an alternative route, clearly negating a key principle in road toll system design.

Notwithstanding this compulsory tolling system, traffic levels are low to generate sufficient revenue for a meaningful road maintenance programme which, due to the state of most roads requires them to be rehabilitated at a higher cost. The low traffic levels show that demand management was clearly not an objective of introducing road tolls. There are a number of operational challenges being experienced, namely, revenue leakage, mistrust between the revenue collector and the benefactor, residents who pay toll charges daily due to their location, unpalatable operating environment due to the makeshift nature of tolling gates infrastructure and the need to convince the public that the tolling system is authentic.

Therefore, to answer the questions raised in the title of this paper, demand management is not an issue at all. Even those responsible for introducing toll charges have been careful not to mention tolling as a remedy to traffic management problems. Such problems are non-existent. It will be difficult to divert funds collected through toll charges because of the dire need to improve the road network. Road users expect to see visible improvements as they have in principle agreed to pay for an infrastructure which currently leaves a lot to be desired.

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