TWU SERIES

THE WORLD BANK

Private Sector Development and Infrastructure

TWU-47

Transport Division

Road Funds Revisited: A Preliminary Appraisal of the Effectiveness of "Second Generation" Road Funds

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Discussion Paper

January 2002

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

This paper is based on work carried out under the Road Management Initiative (RMI), which has, since 1988, undertaken to develop awareness about the importance of road maintenance and has supported country level programs to set the management and financing of roads on a sustainable long-term basis. A major source of information has been the task managers directly involved in country operations and we are indebted to many who have generously shared their experience, in particular, Anil Bhandari, Pedro Geraldes, Stephen Brushett, Thor Wetteland, Simon Thomas, Yitzhak Kamhi and John Riverson. We would also like to express our appreciation to the many people in road agencies, local governments and transport associations in the sample of countries who have provided valuable information. All remaining errors remain our responsibility.

EXECUTIVE SUMMARY

i. Systematic underfunding and inefficient execution has been a perennial problem in the road sector. "Second generation road funds," involving direct payment of a levy on fuel tax and other revenues directly to a fund managed by a board representing users interests, have been established in a number of countries to address this. Such developments have long been viewed by macroeconomists as crude earmarking, and opposed because of their damaging effects on fiscal flexibility. In an article in this journal Gwilliam and Shalizi argued that such road funds should be subject to "sunset provisions" as an interim step towards **either** full commercialization of road maintenance **or** a return to good governance within the public sector, and that in deciding whether to create (or retain) a fund decision makers should estimate its effects on resource allocation, operational efficiency and rent seeking.

ii. This article reviews the empirical evidence with road funds in Africa. It observes that the new road funds have not, in practice, undermined fiscal flexibility, but have been the instrument through which the process of administration of road funding and its outputs have been somewhat improved in terms of execution capability and ultimately road condition. It is therefore concluded that, while the criteria for assessing road funds remain relevant, quasi-autonomous Roads boards administering road funds should not be automatically viewed as transient, and that in the establishment of new funds the role of government in respect of approving levels of revenue for expenditure on road maintenance programs should be explicitly recognized

The Objective of the Paper

Studies of road systems in developing countries over the last two decades have consistently shown an under-allocation of funds to road maintenance, demonstrated by very high rates of return to maintenance and rehabilitation investments, and inefficient maintenance performance, demonstrated by low levels of productivity in the implementation of works actually funded (Harral and Faiz, 1988). A new approach has therefore been sought to ensure more appropriate levels of funding and better implementation of road maintenance.

The most common prescription for this has been the earmarking of specific tax revenues to road funds. This has traditionally been opposed by macro-economists, both in the IMF and the World Bank, because it undermines the fiscal flexibility and responsibility of governments (Potter, 1997). Others have opposed it for the quite opposite reason that it was not believed that it actually did achieve a lasting reallocation of funds to the sector (McCleary, 1991).

A new approach has been adopted in the last decade in the establishment of so-called "second generation road funds" involving separation of control over funding from implementation responsibilities and the identification of "road user charge" and "general revenue taxation" elements of the traditional taxes. Both the determination of the level and the management of the allocation of revenues would be put into the hands of a user representative roads board (Heggie, 1995). It has been argued that this should reduce rent seeking behavior and increase the efficiency of resource allocation by introducing an explicit link between benefits and payment. New arrangements have been introduced in over twenty countries in the last decade.

In a previous paper Gwilliam and Shalizi (1999) highlighted the tension between the conventional macro economists' approach, which tended to presume that good governance existed, and the sector specialists' approach which was based on their perception that it did not. They therefore argued that road funds should be seen as a step towards **either** the re-establishment of good governance in the allocation of public revenues **or** the more general commercialization of road use, and that road funds should not be assessed on general principles but on a case by case basis in terms of their macro- and micro-economic effects. In particular they suggested that the establishment or continuation of a second generation road fund should be judged in terms of objective indicators of its effects (or likely effects) on efficiency of resource allocation, operational efficiency, and rent seeking behavior.

That undertaking is not easy. There is never a "right" time for a definitive appraisal. It can always be argued that it is too early to reach judgment, because the effects are likely to develop over a long period, or that is too late, because too much has changed in the ambient circumstances to identify cause and effect (or even both at once!). This is compounded by the impossibility of establishing a secure counterfactual which cannot in such a complex issue be evaded by the standard device of statistical analysis of pooled time series and cross section data. But that is no excuse for avoiding the challenge.

The architects of the second generation road funds argued that specific changes in the structure of road maintenance finance arrangements would make it possible to introduce improved business processes with a beneficial effect on performance. Although the road funds are of differing age, there are some indicators of each of these dimensions of structure, process and performance through which the effectiveness of the reform can be examined. The purpose of this article is to

set out that evidence and make some judgments on its implications for future development of a strategy to improve the approach to road maintenance funding.

The paper is based on detailed reviews of experience in seven African countries in which the World Bank has had some involvement in the establishment of second generation road funds (Kumar, 2000) and one (Uganda) where government sought to improve the performance of the sector but rejected the arguments for a road fund (Kumar, 2001). Experience in other countries for which there is less complete data is referred to where appropriate. The commentary is organized by element rather than by country. The article concludes with a judgment on what now needs to be done.

Structure

The concept of the second generation road fund and board was that of an autonomous agency controlling the funding of road maintenance, directed predominantly by road users, having power to raise revenue and control funding allocations, and having a strong incentive to insist on commercially and professionally efficient management. It was not part of the concept that it should execute works, that task being normally exercised by separate national and regional road agencies which would submit plans and programs for consideration by the roads board for financing from the road fund. The indicators of **structure** (logically derived from the declared objectives of second generation road funds), including the strength of the legal basis of the road fund; the size, composition and chairmanship of its managing board; the duties and powers attributed to the boards; and the provisions to assure the technical competence of its permanent staff are set out in Table 1.

Table 1. The new structure of road maintenance administration

	Benin	Ethiopia	Ghana	Kenya	Malawi	Tanzania	Zambia	Uganda
Year of establishment	1996	1997	1997	2000	1998	1999	1994	**
Statutory basis	Law	Law	Law	Law	Law	Law	Order	**.
Private sector share on board	5/9	4/15	8/13	8/13	9/12	5/9	7/11	**.
Board Chairman	Minister of Works	Minister of Works	Minister of Works	Private Sector	Private Sector	Ex-PS, Minister of Finance	Private Sector	**
Planning separate from execution	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Board sets fuel tax levy	No	No	No	No	No	No	No	**
Board proposes fuel tax levy	Yes	No	No	Yes	Yes*	No	Yes	**n.a.
Professional management	Partly	Yes	Yes	In process	Yes	Yes	Yes	Yes
Board has additional functions	No	No	No	No	Yes	No	Yes	**
Semi/ Independent executing agencies established	No	No	No	No	Partly	Yes	No	Yes

* See text: in practice the NRA always seeks ministerial approval

** See text: Uganda chose not to set up the road fund and instead committed to meet road maintenance requirements through the normal budgetary process.

The **legal basis** of the road funds and boards is generally secure. Road funds and boards were set up in Benin, Ethiopia, Ghana, Malawi, Tanzania and Kenya by Parliamentary Acts between August 1996 and January 2000. In contrast, Zambia, which was amongst the first countries to reform road institutions and set up a National Roads Board (NRB), did so in 1994 by regulation under an existing Ministerial Order. Despite this, and in the context of some inconsistency in the allocation of responsibilities in the statutory instrument, the Zambia National Road Board has proven its credibility is securing improvement in road conditions despite the weak capacity of the road agencies.

The **declared role** of the road boards varies rather more. All are in principle responsible for resource generation, allocation and evaluation. Mostly, the road fund boards serve as financer of services rather than as provider of services with the programming, tendering, evaluating, negotiating, awarding, supervising and managing of contracts generally being the responsibility of the road agencies to whom the funds are allocated. But there are variants. In Zambia, the roads board provides advice to agencies on procurement and monitors performance under the national road sector investment plan, ROADSIP. In Malawi the National Road Administration is also at present a "de facto" road implementation agency, having taken over most of the professional road staff of the Ministry of Works and Services, though it is intended ultimately to separate out implementation staff in an independent Central Roads Authority. In some respects the duties are extended beyond those envisaged in the original concept. For example, several boards have responsibility for advising on general road policy matters such as vehicle overloading. In Zambia the road board is responsible for coordination of donor financed programs, including management of the ten year road investment program.

The actual **resource generation and distribution powers** of the roads boards are much more restricted than originally envisaged. For example, the Benin Board is required to implement policy "as laid down by the Review Council" (a body consisting of one representative of the government and two of donors). Only in Malawi does the board formally have the power to determine the levy, though in practice it always seeks the approval of the Minister of Transport and Public Works and the Minister of Finance. In no case therefore are they able to finally determine the level of the tax levy which is the core of their income. Even where they have the power to recommend levy rates the evidence so far is that the ultimate decisions of government continue to be motivated more by general fiscal considerations than by perceived sector needs. In other respects the autonomy of the boards is legally restricted. In most cases the programs of expenditure have also to be approved by one or more government ministries.

The **composition of the road fund boards** differs significantly among countries? in Ghana, Kenya, Malawi and Zambia the boards have a dominant private sector representation, while in Ethiopia and Benin the boards are dominated by the public sector (in Ethiopia, the composition of the board is to be revised every two years allowing for changes in structure based on past experience). The chairmanship arrangements also vary. In Ethiopia it is legally reserved for a public official; in other cases the chairman is appointed by the minister, but not necessarily from the public sector (Malawi, Kenya) or chosen by the board from its members (Zambia). In Benin, Ethiopia and Ghana, the Minister of Works is the board chairman. In Tanzania, the board has nine members, of whom four are from the public sector and five from user groups (including the chairperson, who is appointed by the President from amongst persons outside the civil service).

One of the weaknesses of the second generation road fund concept concerns its ability to respond to the range of policy objectives and stakeholder interests that exist in practice. In particular, the danger is that the main commercial interests to be represented on the board would not be

concerned about rural roads, non-user interests, environmental impacts, etc. That has been partly addressed by superimposing appraisal processes on the allocation process? to be discussed later. But it does also suggest a wide ranging public sector presence. The road board in Ethiopia has high level public, especially regional, representation on the board which has given it strong support from the government as laid out in the Road Sector Development Program (RSDP).

The **professional base** for the road fund board also varies. In each country the board is supported by a Secretariat to perform the day-to-day functions. Zambia Roads Board Secretariat consists of eight professional staff and is supported by a Management Support Services Team. The Ethiopia Secretariat is supported by nine professional staff (approved staff of twenty-seven), Ghana by a thirteen staff secretariat and Benin by a three staff secretariat. The Tanzania Board Secretariat consists of five professional staff, including the Road Fund Manager, who is appointed for a period of five years through the process of open competition. The administrative and operating expenses for the secretariat in Zambia, Benin, Kenya, Tanzania and Ghana are paid from the road fund and are about 3 percent of the road fund collections; in Ethiopia, administrative expenses are allocated from the Ministry of Finance and are less than one percent of the collections. In most of the sample countries, the secretariat salary is competitive with the private sector. Where they are not, as in Kenya, there is great difficulty in attracting qualified staff. Even after two years of coming into existence, the Ethiopia Road Fund Secretariat is yet to be fully established, with less than 30 percent of the designated professional positions filled.

Effective executing agencies are essential to the reform. As will emerge in the later discussion lack of executing capability is the most serious element in poor road maintenance, particularly for regional and rural roads. While road works are increasingly contracted out to the private construction industry on a competitive basis, SSA governments are reluctant to delegate road management to autonomous agencies operating according to sound business practices (Nyangaga, 2001). Government departments (ministries) are mostly cumbersome and largely ineffective, with little or no commercial approach to the task at hand. In most of the countries, main roads are managed by the Roads Department (Ministry of Works), which is suffering all the ills of the civil service and little has been done to implement a decentralized management. Curiously, because of the focus on the road fund and road board, institutional reform of the executing agencies is not necessarily provided for in most of the founding statutes. In contrast, the creation in Uganda of an independent engineering organization to procure resources from the market by competitive tendering is a core part of the reform.

The alternative approach to reform adopted in Uganda merits some description at this point (Kumar, 2001). In that country the government introduced a Road Sector Development Plan (RSDP) in 1995. The objective of the plan was to restructure government involvement from the direct provision of services to the provision of policy guidelines and a clear legal framework for implementation. The institutional reforms within RSDP included commercializing and contracting of technical services on a performance basis under hard budgetary conditions; separating the planning and financing functions from procurement and implementation; decentralization of maintenance delivery on district, urban and community roads. But it did not provide for an autonomous road board. policy and regulation continued to be the responsibility of the Ministry of Works, Housing and Communications, and although a commitment was made in the plan to stable and secure funding for road maintenance it was left on budget.

As part of this reform the roles of the Ministry of Works, Housing and Communications (MoWHC) and the Ministry of Finance, Planning and Development (MoFPED) were redefined giving MoFPED responsibility for planning and updating the medium and long term investment

plans for roads and direct disbursement powers. The weakness of MoWHC in implementation was addressed by the provision for an autonomous Road Agency, preceded during the formation period by a Road Agency Formation Unit (RAFU) responsible to MoWHC. This reform is not yet complete. In practice RAFU is acting now as a professional procurement management agency with heavy external financial and technical support. Moreover, it has a focus on rehabilitation and reconstruction rather than maintenance - it remains to be seen how well it will transform into a sustainable maintenance focused roads agency.

In summary, while institutional arrangements have been established, implementation of the concomitant policy and legislative framework throughout the sector has been more difficult. For example, although it was one of the earlier countries to adopt the new style road fund and despite a strong user representation and dynamic leadership of the road fund board, implementation of institutional reforms in Zambia remain somewhat weak. This is largely because of inadequate action on the part of government with respect to the definition, clarification and assignment of authority with matching responsibility, as well as the legal foundation for the board's control over setting user rates and collection of proceeds. More generally difficulties result from the mind set and governance in the countries, which go beyond the mandate of reforms in a particular sector. But it is also a matter of time: however rapidly the roads board is established, it takes time to build the institutional capacity in the executing agencies necessary to bring about sustainable reforms.

Process

The concept of the second-generation road funds was as much concerned with process as with form. It was the explicit intention to develop businesslike, rather than bureaucratic, process in order to provide adequate and stable source of financing for road maintenance. The critical challenge was to improve the use of scarce resources is to develop a new strategy for maintenance, focused on out-sourcing most of the work requirements within a commercial environment. This required developing performance based long period area maintenance contracts, managed by key professional staff. The intention was that such an arrangement would reduce the huge overhead costs associated with maintaining the large road agencies and provide incentives to local contractors to invest in equipment. The indicators of **process** derived from this include the way in which revenue and expenditure totals are set, funds transferred and secured, expenditures allocated and implementation (both by the board and the executive agencies) monitored and audited. Their outcomes are shown in Table 2.

The **process for determining income** is the starting point. The fuel levy is the dominant source of contribution to these road funds in all the countries examined (more than 90 percent).

The nominal basis for the levy varies from country to country. In Zambia and Benin, the fuel levy is a fixed percentage of the wholesale price, set at 15 percent in Zambia (Usc4 per liter in 2000) and 10 percent in Benin (Usc2.5 in 1999). In Ghana, Ethiopia and Tanzania, the fuel levy is a fixed charge per liter, set at Usc3.5, Usc4.4 and Usc9.0, respectively in 2001. The danger of setting fuel levy as a percentage of the fuel price is that collections may have no relation to the maintenance needs and the road fund revenues may fluctuate with changes in the macro-economic environment.

Table 2. Process changes in selected road funds

	Benin	Ethiopia	Ghana	Kenya	Malawi	Tanzania	Zambia	Uganda
Fuel tax levies paid direct to road fund	No	Yes	No	Yes	Yes	No	No	
Percent of funds from fuel levy	75%	25%	85%	>90%	95%	95%	95%	
Percent of revenue from own resources[1]	10%	75%	0%	10%		0%	0%	
Regular monthly transfer of funds	Yes	Yes	Yes	Yes	Yes	No	No	
Independent technical audit		In process	Yes	No[2]	No	Yes	No	In process
Independent financial audit		In process	Yes	No[2]	Yes	Yes	Yes	In process
Performance audit of implementation/management		Yes	Yes	No	No	No	No	Yes
Program to empower SME contractors	Yes	Yes	Yes			Yes	Partly	In process
Road fund financing objectives	Maint.	Maint.	Maint/ rehab	Maint/ repair	Maint.	Maint.	Maint./ rehab	

Notes: 1. Other duties and fees earmarked to the road fund.
2. Audits have not yet been completed, as the secretariat is newly in place, but are required by law.

More critical than the way in which the levy is stated, therefore, is the way in which its absolute amount is assessed and adjusted. There is some merit in relating fuel levy to assessed maintenance "needs" (as practiced in Ghana and Ethiopia) rather than a fixed percentage of fuel price (as followed in Zambia and Benin). For example, in Benin the road board negotiates the amount annually with the Ministry of Finance on the basis of the road fund budget. This is consistent with the principle of incrementality? that the "user charge" element was in addition to what would have been levied for general tax purposes in its absence? which appears to have been important in persuading ministers of finance to agree to the establishment of a fuel tax surcharge as the basic source of revenue for road funds. But that justification has its limits. For countries with already high levels of fuel tax, or for those neighboring countries such as Nigeria with very low tax levels, the price elasticity of demand might be sufficiently high to ensure that any increase in fuel surcharge did effectively reduce the yield of the basic fuel tax, even if its nominal level was unchanged. So, in the event, governments have generally insisted on retaining effective control over the level of fuel tax surcharges.

The stated objective of the road fund in most of the countries examined is to address the prioritized maintenance needs of the road network. However, an appreciable sum is being spent on "holding" maintenance (preserving a road awaiting maintenance in a fair or good condition) or "emergency" works. In view of the paucity of funding provided for road maintenance over the past decade, a 'maintenance backlog' has resulted and most of the road networks require substantial amounts of rehabilitation works carried out before they can be in a maintainable condition.[1] The focus of past efforts has been on performing emergency works (such as pothole

[1] Typically, routine maintenance such as grass cutting and drain cleaning should take place more than once every year. Grading of gravel roads should be carried out about twice every year. Resealing of surfaced roads should be carried out periodically over the whole length of the road. The frequency and extent of the works carried out in the past have been much less than these normal requirements.

patching and spot filling) just to keep the main roads passable. As a result, efforts to improve the poor state of the road network would require that maintenance funding is used for reconstructing parts of the network and, therefore, any estimate of resources required for maintenance must program beyond normal maintenance works.

While introduction of a fuel levy is a big step forward, it still remains a proxy (indirect) charge for road usage. In addition, fuel levy does not typically discriminate between users and non-users of roads. Arrangements to diversify road user charges, with the possibility of introducing direct charges for road use will need to be explored. Benin gets 10 percent of the total road fund collection from tolls and weight controls deposited directly into its account by the toll concessionaire. Zambia National Roads Board has solicited additional funds from international transit tolls, weigh bridge fines, motor vehicle license fees, etc. though legislative reform leading to broadening of the road fund resource base has not been effective so far. In Ethiopia, the dominant contribution to the road fund comes from the sales tax and municipality tax (almost 75 percent of total collections). As a result, while fuel levy has remained constant (Usc1.2) over the past few years, other taxes have been rising, and so has been the total contribution to the road fund.

The **process for securing income** is as important as that of determining what it should be. Arrangements for channeling the revenue vary. In Ethiopia, the fuel levy is credited directly from petroleum enterprise into the road fund account, regularly on a monthly basis, creating a stable basis for the road fund. In Kenya the payments are made from Customs to the Ministry of Public Works and Highways and then on to the road fund. In Benin and Zambia, the fuel levy is channeled into the road fund account from the Petroleum Commission through the Ministry of Finance, creating delays of four months and two months respectively. Even in Ethiopia where the payment is direct from the petroleum enterprise to the road fund, a delay of four months is involved in the transfer. Even worse, however, is the interposition of either a Ministry of Works or a Ministry of Finance in the channel which is highly likely to generate both leakages and irregularities in the flow. For example, in Zambia in 1999 only about two thirds of the fuel levy delivered by the Zambia National Oil to the Zambia National Revenue Authority, which should then be credited to the road fund through the Ministry of Transport and Communications, actually found its way on to the road fund. The Zambia Roads Board is working to reduce delays and streamline procedures beginning FY01. In Tanzania, the process is even more cumbersome. In Dar es Salaam region, fuel levy is collected by Tanzania Revenue Authority from the fuel importers and deposited in the Ministry of Finance account, from where the amounts are passed on to the Ministry of Works (for main roads) and Local Government (for district roads) in the agreed proportion. The amounts, in turn, are deposited into the road fund account, which is responsible for disbursements to the executing agencies. In addition, there are significantly more steps in the collection process from the up-country regions. The overall transit time between the payments of the fuel levy by the importers and the time when this credit reaches the road fund account exceeds sixty days, during which the funds remain on the TRA accounts.[2] Te road fund legislation in most countries does not allow the board to take any deterrent measure against non-payment or a delayed payment of the established "user fees" to the fund account.

[2] Between FY96/97 and FY98/99, only 75 percent of the fuel levy revenues collected were actually released by the Ministry of Finance.

It is of course too simplistic to assume that road funds will always be inviolate. It is essential to design road funds to maximize the probability that they will not be abused, rather than simply legislating a road fund into existence. Raiding of the road fund may still be possible because of legal or bureaucratic holes in the system. One of the key advantages of setting up road funds is that user charges provide a link between the level and quality of service and price to be paid. However, in practice, governments are reluctant to relinquish control of cash flows and of opportunities to "borrow" funds for other purposes when need arises (Nyangaga, 2001). MoFs usually find a way for using funds for national emergencies (which may even be justified) as well as for non-emergencies. The structural safeguards necessary to provide protection to the road funds require a strong political will. In addition, adequate user representation and transparent dissemination of the board's activities are required to establish a check-and-balance system to improve accountability in the day-to-day activities. It is important for the road funds to be supported by well established enforcement tools to recover money owed to the road funds.

Monitoring performance in allocation. One of the requirements of the second-generation road funds is to set up arrangements for independent monitoring of performance of the flow of funds and the quantity, quality and cost of the road works. The available evidence offers mixed results. In Zambia, the National Roads board has for three years been operating on the basis of an Annual Works Program based on identified needs of the road agencies, as in the case of the IDA-financed strategic investment plan. The Zambia Road Fund accounts are prepared on a quarterly basis and audited by an independent external auditor. Though preparation of audited accounts is a big step forward in improving accountability in the use of funds, the accounts are prepared without any explanation in the use of funds and leave a number of unanswered questions. In Ethiopia, special procedures have been introduced to monitor the performance of the national roads agency (Ethiopian Road Authority, ERA) based on preparation and approval of payment certificates and monthly progress reports. The weaker regional and urban authorities have a long way to go before any performance based systems can be established. Currently they are required to report on funds utilization. Until recently disbursements were made to the agencies in Ethiopia on a monthly cash flow basis: that has now been changed to a payment system based on verified payments certification for work performed. Ghana Roads Fund Board has established proper planning and programming of road works with well defined disbursement and accounting procedures, which have facilitated timely contracting arrangements.

Technical audit. Technical auditing functions should involve continuous auditing of projects-in-progress for improving performance. This would eliminate projects being technically audited after the event rather than during the event. There is a need to (i) establish a credible and independent external auditing process to monitor the quantity and quality of work and ensure transparency and accountability in the use of road maintenance funds, most of which are now derived directly from the road-users; (ii) set up appropriate responsibilities for reporting and follow-up of the audit recommendations to ensure its effectiveness, and (iii) develop an updated and rationalized inventory and condition survey of the classified road network.

Arrangements to systematically carry out independent technical audits are still lacking in most countries, with the remarkable exception of the Ghana Road Fund, which has a firm basis, with detailed internal and external monitoring procedures to ensure efficient use of money and accompanied by monthly progress reports and external financial and technical audits.

The technical audit of the Tanzania Road Agency (TanRoads) for the main roads and of the Councils for the district roads was conducted for the year FY01. The audit has brought out a number of shortcomings related to the quality of works, disbursement on non-programmed

activities and inadequacy of available funding, especially with regards to district and urban roads. However, the evaluation of the quality of maintenance works performed during FY01 should be seen in view of the evolving role of the new road agency. The FY01 is the first year of TanRoads operation and represents a year of transition from works carried out by the Ministry of Works thus far. There have been organizational problems to resolve, which has compromised planning and evaluation capacity of TanRoads. The critical requirement is to set up arrangements to redress issues raised in the audit reports.

Formal allocation processes. In principle, second generation road funds, with their commercial orientation and strong constituency, should be much better set up than the traditional first generation road funds to allocate resources efficiently within the sector. In practice, however, resource allocations for road maintenance continue to be mainly dictated by "standard formulae" rather than a planned review of programs put forward by various road administrations. This is most apparent in Zambia, Kenya, Ethiopia and Benin. For example, in Kenya, substantial contractual commitments have been made on the non-prioritized core network while demands are increasing on the priority core network.

The disbursements also appear to be generally biased towards urban and main roads to the detriment of the rural/feeder road network (probably reflecting the dominance of central government ministries and national suppliers organizations in the composition of boards). However, in Kenya, 40 percent of the road fund revenues are allocated by rule to constituencies and districts for lower category road maintenance, while 57 percent goes to the roads department for the main road network.

In addition, in some countries even the planned expenditures are particularly poorly disbursed for the rural road network, primarily because of lack of capacity at the regional level. In Ethiopia, for example, only about 20 percent of the planned allocations for the rural road network were disbursed during FY99 because of the lack of absorptive capacity. In Tanzania, less than 40 percent of the programmed works for district roads were undertaken during FY01.

The road funds in Zambia and Kenya have not been immune to the kinds of political interference that has impacted the classical first generation road funds. Resources have been diverted to rehabilitate roads in the capital city over the past two years to the exclusion of road maintenance needs of the country's network. This is not surprising as after years of resource constraints, for the first time since establishment of the road fund, executing agencies have resources at their disposal. The first beneficiaries have been residents of large capital cities, in view of their high political profile, and the fact that the most ardent supporters of the road fund are urban residents, who also account for a dominant share of car ownership. However, to ensure sustainability of the road fund and adequately address the broader issues related to the quality of the road network, it is critical that in the coming years, attention is given not only to high volume urban roads but also to rural/feeder road network, to ensure equitable distribution of resources.

Development of the supply agencies is critical to improved performance. While setting up adequate and sustainable financing arrangements are a necessary condition in the road reform program, it is equally necessary to ensure that the resources allocated are used in the most effective and efficient manner by the road executing agencies. The available evidence presents mixed results. While some countries have proceeded to set up semi-autonomous road agencies (Uganda, Tanzania), siphoning off the executing and service delivery functions from the Ministry of Works, others (Kenya, Ghana, Zambia) have attempted to reform the existing government departments. Still others (Malawi) have juxtaposed road financing and road executing functions

within the same agency. In general, the agencies lack a commercial environment and have continued to work as government departments (except Uganda), without a clear understanding of the mission objectives, clearly stated functions and a work program. The reporting arrangements between multiple regional offices and head quarters remains weak.

The capacity of road agencies at the district level raises even greater concern. The quality of works carried out is affected by (a) lack of uniform standards followed by different districts/councils; (b) lack of donor coordination and use of different mechanisms to channel funding for district roads; (c) different interests influencing the decision concerning the priority of the road maintenance works, not always justified on social, engineering or economic considerations, and (d) insufficient capacity. It is critical to develop institutional and implementation arrangements to deliver an efficient road maintenance program.

In summary, the level of income of the funds has remained largely under the control of government, rather than being effectively determined by the road boards. But, although delays still occur, transfer of approved revenues to the roads account is now more secure. Moreover, the funding arrangements are more transparent, with financial audits working well in most cases. Formal allocation procedures are still not well developed, and technical auditing is limited, though the arrangements are better than before in most cases. The capacity and effectiveness of implementing agencies has developed least rapidly, though here again, there are good signs of progress, particularly in respect of private contracting capability.

Performance Outcome

It was the general presumption in the establishment of second generation road funds that road maintenance was systematically underfunded and administered in such a way as to hinder effective disbursement, limit the development of the capability of the executing sector, particularly by discouraging the development of a private contracting capability, and hence cause a decline in the stock of roads in good condition and an increase of the proportion in bad condition.

Reliable and comprehensive data on outcome is sparse. For example, the Government of Ghana engaged consultants to conduct both financial and technical audit of all funds related to the Highway Sector Investment Program? including the road fund. The audit raised a number of concerns on the use of funds, inadequate reporting practices, need for upward revision in fuel levy collections, and greater focus on rehabilitation rather than on maintenance. However, the audit did not fully address issues related to (a) sector-wide discipline in expenditure management and control; (b) share of planned programs executed; (c) effectiveness in the use of money as measured by cost per km, and (d) relation between amount of money allocated for maintenance and the quality of work, over the past few years. This inadequacy of information seemed primarily because the Consultant's TOR did not include specific and detailed questions relating to such issues. More objective monitoring and evaluation criteria are clearly required. In the meantime, the evidence on performance remains incomplete and somewhat anecdotal.

Nevertheless some indicators of performance are available. These include trends in allocation and disbursement; efficiency of implementation; and the ultimate outcomes of road condition. The indicators are contained in Table 3.

Table 3 Performance impacts of road maintenance administrations

	Benin	Ethiopia	Ghana	Kenya	Malawi	Tanzania	Zambia	Uganda
Road fund administrative expenses as percent of income	2%	>1%		3%	<3%	1%	<3%	
Annual change in percent roads in good condition	+9.4	+3.0	+4.5				+4	
Annual change in percent roads in bad condition		-10.0	>-10.0		>-10.0		-5.5	
Annual change in percent maintenance works contracted out		+10	+30		+30	>+30	>+30	+10
Percent of estimated needs financed		75%	50%		30%	30%	30%	80%
Percent of funds allocated (trunk/urban/rural)			52/27/20		48/42/10	70/30[3]	40/20/40	
Percent of allocated funds disbursed (trunk/urban/rural)	55 (ave)	65/55/20		50/40/2		100/50[3]	24/69/8	

Notes: 1. The rates of change shown in the table are not all for the same period, but are selected to reflect the average annual rate of change since the introduction of the new arrangements
2. In absence of a detailed road inventory in most of the countries, it is difficult to comment on percentage change in quality of the road network, which explains the blank cells. In addition, heavy investments by donors in rehabilitation and reconstruction of the paved roads has significantly improved quality of roads and it is difficult to isolate the impact of improved maintenance funding on road quality.
3. Allocation available only between two agencies, the first responsible for the trunk network and the second responsible for urban and rural roads.

Underfunding. In all the countries reviewed, funding for maintenance shows consistent increases, though the amounts are still in most cases well short of estimated total requirements. Revenues accruing to the Zambia Road Fund are sufficient to address only about 30 percent of the road maintenance needs,[3] as compared to Ethiopia Road Fund, which is able to address about 80 percent of the assessed road maintenance needs. In Benin, the road fund revenues are sufficient to address maintenance needs of the main network only. The requirements will be greater if some sort of holding maintenance is to be carried out to preserve roads in a fair condition awaiting periodic maintenance or keeping roads passable awaiting rehabilitation.[4] In Tanzania, road fund revenues are sufficient to address only about 20 percent to 30 percent of the road maintenance needs. However, estimates of maintenance needs should be viewed with caution. Given the substantial backlog from the past, a large part of the network is "non-motorable" and requires rehabilitation to return to a "normal" state prior to application of the routine maintenance.

[3] Available evidence suggests that USc 10 per liter may be a rough benchmark to realize full maintenance of the road network in Zambia.

[4] The estimates of road maintenance needs are based on the assumption that the road network is maintainable. However, neglect over many years has resulted in much of the network deteriorating to a point where rehabilitation is necessary before maintenance is possible. This requires that estimates of maintenance needs be prepared in a dynamic context with a gradual improvement in road conditions from poor to fair to good and monitoring the roads quality over a period of time.

In contrast to these road fund countries it should be noted that the government of Uganda, which has not adopted a road fund, has consistently met most of its maintenance budget requirements as well as counterpart funding needs though a normal budget process. It has committed greater resources for road maintenance per kilometer of road than any of the "securely funded" neighboring countries. It has also given explicit undertakings to sustain maintenance funding, as well as the salary levels and conditions of employment offered by the executing agencies after the main donor financing ends. Available evidence thus suggests that setting up dedicated financing arrangements, even under second-generation principles, while useful, is not a sufficient condition to ensure that a sustainable and stable basis for road maintenance is established which ultimately translates to improved service delivery and operational efficiency. Government commitment is also required.

Disbursement to the executing agencies has been a serious problem. In 1998 only 55 percent of planned funds were disbursed in Benin, and in 1999 only 55 percent of the planned funds disbursed in Ethiopia, and 30 percent in Zambia.. In Ethiopia, less than 40 percent of the road fund has been disbursed over the past two years and the remaining amount is invested in treasury bills. Ghana has been the most successful in disbursing over 90 percent of the allocated funds in 1998 and 1999 To some extent that poor outcome has been the result of over-optimistic planning by the road boards, whose capability to plan far outstripped the capability of the executing agencies to perform. It does appear that they are all learning from this. For example, Benin improved its disbursement proportion to 95 percent in 1999.

Disbursement performance differs significantly by type of road, with rural roads having very low disbursement rates usually less than half of that for main highways and urban roads. Several factors contribute to this. The first, noted before, is the poor executing capability in rural areas. The second, is the political pressure that is often exercised to maintain roads in the capital cities. For example, in Zambia the government put much emphasis on the rehabilitation of roads in Lusaka in the first years of the road fund and 50 percent of the allocation in Malawi for 1999 was to the cities of Lilongwe and Blantyre? half of which was for rehabilitation. The third is the low representation of rural road interests in most road boards.

Capacity of local construction industry. The road fund appears to have helped insulate road maintenance contracting and payment arrangements from financial uncertainties. One of the impacts of the road fund has been on improvements in work programming and a move towards contracting and the resurgence of the domestic contracting industry, which has brought efficiency gains in resource use. The share of maintenance works contracted out has increased to almost 90 percent in Zambia and Ghana, though in Ethiopia road maintenance continues to be carried out using force account. The Ethiopian Roads Authority (ERA) is seeking to improve its effectiveness by establishing commercial operations in maintenance districts and jointly implementing performance contract agreements with the Road Fund Authority. Gradually, ERA also expects to introduce contracting for maintenance works. In any case, road maintenance expenditure in Ethiopia has more than doubled over the past five years.

The increased reliability of funding arrangements has already had dramatic impact on private sector contracting capacity and capability. In Zambia, the number of local contractors have increased from four in 1994 to four hundred fifty in 1999 and local consultancy from six to twenty over this period. In Benin, the share of maintenance works carried out using force account has declined from 47 percent in 1997 to 40 percent in 1998. There is, however, considerable scope for further improving the capacity of local construction industry in all of the countries

examined. In fact, one of the key constraints to efficient use of road fund resources remains the lack of sufficient local capacity in road maintenance.

Operational Efficiency. In terms of operational efficiency, improved contract management and disbursement arrangements have resulted in a reduction in road maintenance cost per kilometer by 10 percent to 20 percent in Zambia, Ethiopia and Ghana. In Zambia, a community initiated cost sharing road improvement scheme has also been introduced.

While these are encouraging trends and represent a significant departure from the past, road administrations continue to suffer from past ills of the civil service and technical assistance and knowledge sharing is required over some time before effective arrangements can be put in place. Evaluation of maintenance works carried out in the past year in Zambia and Kenya reveal a number of shortcomings, mainly resulting from limited local capacity, technical constraints and inability to manage contractual arrangements. In Kenya, funds have been allocated to roads with little economic priority and in some cases without compliance with the contractual agreements. The absence of a fully functional maintenance management system makes it difficult to ensure that the maintenance budget is correctly allocated, despite what appears to be an adequate supply of small contractors to undertake minor works.

Quality of the Road Network. Absence of detailed time-series data on road condition makes it difficult to establish with precision what has been happening to the quality of the road networks, but periodic statistics of the proportion of the networks in good fair and poor condition allows a rough indication to be obtained. Furthermore, it must be recognized that the reforms were usually introduced during a period in which programs of donor financed rehabilitation were underway, and the aggregate statistics cannot separate the effects on road condition emerging from the maintenance and rehabilitation programs. So these statistics should be treated cautiously.

Despite these caveats, the general picture is more promising than it has been for many years. In Zambia, the impact of reforms in the roads sector in terms of improved quality of road network is substantial and there appears to be in place a sound strategic framework to reverse the deteriorating trend and address the neglect of past decades. In Ethiopia, the proportion of main roads in "good" condition has increased from 15 percent in 1996 to 25 percent in 1999. In Ghana, the proportion of "good" roads has increased from 21 percent in 1997 to 30 percent in 1999.

But the picture is not all rosy. While maintenance of main and urban road network has improved, quality of feeder/rural road network continues to deteriorate in some countries. This is partly a reflection of an inadequate planning and programming framework and partly a lack of capacity in the regional administrations. Years of neglect has limited the capacity of the road agencies to carry out maintenance works, a deficiency most apparent in rural and feeder road agencies. Gains in productivity in implementation have been registered only when the road funds were instrumental in fostering the outsourcing of works and services with private suppliers. Revenue-raising through road funds should thus match absorptive capacity rather than identified maintenance expenditure needs.

In summary, although underfunding of maintenance has been reduced in some cases it has certainly not been eliminated. Similarly, although the ability of the contracting sector to absorb the allocated funds has improved it is still not adequate in several countries. Despite these limitations, costs of maintenance have been reduced and the long term trend of decline in road quality has been arrested and in some cases significantly reversed.

Conclusions

It may seem too early to jump to final judgment on the "second generation" road funds. But some interesting patterns can already be discerned which are of relevance to the traditional arguments on the topic.

First, it is clear that, whether the boards have a majority of private sector members and a private sector chairman or not, the freedom that they have to redistribute national resources from other sectors to road maintenance is severely constrained. Most countries are still not able to fully fund their desired levels of road maintenance because of residual controls of the Ministry of Finance over the level of the fuel tax levy. And many countries are unable to disburse even those funds that are allocated because of the low absorptive capacity of the maintenance contracting sector. In that sense the worst fears of the macroeconomists have not been realized.

Second, despite this limitation on overall funding, there is already evidence of increased efficiency in implementation associated with greater security of funding and extended private sector contracting. This depends not on the availability of full funding for desired programs but merely on the security of a sufficiently high proportion of finance on a multi-annual basis to maintain continuous work programs and to effect payments in a timely fashion. In that sense some of the more optimistic expectations of the proponents of the new funds have been met.

Third, however, there is no strong and systematic link between the form of the fund (user majority on boards, private sector chair, etc) and their performance (reduction in costs, improvement in road condition). Even continued reliance on the budget for a substantial part of funding has not been a particular impediment.

Fourth, there are three essential functions contributing to effective road maintenance: financing, planning and performance monitoring, and works execution. As reform of works execution is to some extent a consequence of changes in their financing, planning and monitoring, improvements in execution are likely to be lagged. But improved execution also depends on the willingness of governments to take reforms further than the establishment of a road fund and board.

The elements which link and reconcile these conclusions in our sample of countries is a commitment of government to (a) facilitate a more businesslike approach to road maintenance, and (b) ensure that road maintenance receive high priority in budget allocation. As the experience of Uganda shows, it is possible to improve works execution without the creation of a second generation road fund. But that can only be achieved by the adoption within the traditional structures of many of the procedures and processes (separation of implementation from financial control, improved managerial procedures, extended private sector contracting, etc.) associated with the new road funds. Improvement in performance is thus largely independent of either structure or resource allocation but highly dependent on some critical aspects of process. In this context it is clear that many countries have initially adopted road funds in response to donor pressure rather than out of conviction. But that does not seem to matter. The importance of the creation of the funds has been as much an indicator of the willingness of the country and a focus for change of process as an essential mechanism for efficient maintenance policy.

In that light let us return to the Gwilliam and Shalizi propositions from which we started. They argued that second generation road funds should be viewed as an interim step towards **either** full commercialization of road maintenance **or** a return to good governance within the public sector, and that in deciding whether to create (or retain) a fund decision makers should estimate its

effects on resource allocation, operational efficiency and rent seeking. The implication of their argument was that the funds being established should only have a limited life.

They were clearly driven to that conclusion by their recognition of inherent validity of **both** the macro-economic desirability of fiscal flexibility **and** the micro-economic argument for reformed processes to improve the efficiency of performance within the sector. But the history of the argument appeared to offer no compromise. In order to finesse the earmarking arguments the proponents of road funds had constructed an edifice in which part of a fuel tax was renamed as a user charge, and in support of that device had given its determination the status of an internal business decision of what might be construed as a road users co-operative. While macro-economists might not be fooled by the finesse, their fears could perhaps be appeased by the imposition of a "sunset clause" on new road funds.

In the event, practicality has wished a plague on both of these rather intransigent houses. Governments have been willing to recognize the advantages of most of the process change brought by the second generation road fund argument without yielding the principle of their ultimate control over either taxation or expenditure responsibilities for an important public good. And the outcome has often been surprisingly favorable in terms of the efficiency of maintenance expenditures quite irrespective of whether those expenditures met the needs as assessed by the sector.

That experience suggests a rather less strident stance for both schools. The proponents of road funds should recognize that total commercialization, in the sense of complete reliance on unfettered market processes to determine all decisions about roads, is not an achievable (or even desirable), end. The macro-economists should abandon any knee jerk tendency to resist the development of quasi autonomous road boards in any circumstances. And on that basis, while the Gwilliam and Shalizi criteria remain relevant in assessing the performance of arrangements, they should not necessarily be linked to a defined sunset for the institution.

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