



URBAN MOBILITY



Profitability and Financing of Urban Public Transport Microenterprises in Sub-Saharan Africa

*An Overview of the Regional Study conducted in
Abidjan, Bamako, Harare, and Nairobi*

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PREFACE

This overview provide a synthesis of four earlier, individual studies on the operation and organization of urban transport which were published as SSATP Working Papers Nos. 45, 49, 50, and 53. It has been shown that these microenterprises share a number of common features. To cite only the major examples, the sector is highly fragmented, small vehicles are the norm, the sector is entirely unregulated, working conditions for drivers are sub-standard, and the sector generates many jobs.

These same characteristics naturally explain the findings obtained from the survey described in this overview of the issues surrounding financing and replacement of the vehicle fleet.

A number of underlying factors determine how the sector is financed: virtually no recourse to traditional banking channels; considerable reliance on self-financing (derived mainly from personal or collective savings); a preference by owner-investors for liquidity over profitability in the financial sense of the word; an absence of traditional accounting procedures (such as amortization of invested capital); and restoration of liquidity over very short time frames.

The methodology the experts of the SITRASS network employ, which is based on operating cash flow, and thus on the concept of discretionary cash flow, is consistent with the approach these “informal” microenterprises take to their operations and financing. Moreover, under current operating conditions, investors consider these enterprises profitable.

How should the existing vehicle fleet be replaced, particularly with regard to new vehicle purchases? Recourse to traditional banking channels is out of the question in the present circumstances. One alternative would be to finance renovated vehicles at subsidized rates, a scenario that would work in Nairobi and Abidjan. This is in fact what is being done to replace Dakar’s *Cars Rapides* under the Urban Mobility Improvement Project financed by the World Bank.

The methodology followed also points the way toward potential options for these entrepreneurs and their mode of operation: increasing use of larger-capacity vehicles (which are safer, pollute less, and cause less road congestion), gradual professionalization of the sector, and development of formally organized businesses that will take the place of individual operators.

This development pattern will improve travel conditions for urban populations in Sub-Saharan African cities. Fostering of such improvements is the mandate given to the Urban Mobility Component of SSATP.



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FOREWORD

This overview is part of a comprehensive study of the organization, financing, and profitability of urban transport microenterprises in four African cities: Abidjan, Bamako, Harare, and Nairobi. These studies – based on field surveys conducted by the SITRASS network (*Solidarité internationale sur les transports et la recherche en Afrique subsaharienne*) – were launched under the Urban Mobility Component of the Sub-Saharan Africa Transport Program (SSATP) administered by the World Bank and with financial support from the French Government.

SITRASS brings together researchers from *the Laboratoire d'économie des transports* (LET) of the *Institut national de recherche sur les transports et leur sécurité* (INRETS) and African teams to prepare studies and conduct research on the Sub-Saharan African transport sector. Researchers from *the Centre de recherche sur le transport et la logistique* (CRET-LOG) at the University of Aix-Marseille II assisted in carrying out this series of studies on urban transport microenterprises.

Detailed monographs on the four cities have been published and may be read on or downloaded from the World Bank's website: <http://www.worldbank.org/afr/ssatp/pubs.htm>. Readers are invited to refer to these monographs for additional information on the organization and operation of the sector in each of the cities discussed.

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This report was prepared by Eddy Bloy.

The overall study was carried out under the joint supervision of Alain Bonnafous and Eddy Bloy.

SUMMARY

Financial behaviors in the four cities surveyed (Abidjan, Bamako, Harare, and Nairobi) are very typical of what one would expect in this “informal” sector, although this term is somewhat ambiguous and is only partially applicable to urban transport.

On the operations side, the following characteristics were noted:

- management focused on capital conservation,
- high margins, mainly attributable to the informal nature of the business,
- a strong preference for rapid restoration of liquidity,
- reinvestment of cash flow in diversified activities.

On the financing side, the characteristics noted were:

- the usual marked propensity to save,
- a resulting high level of self-financing,
- virtually no recourse to official financing,
- a puzzling absence of decentralized financing systems.

These characteristics required a methodology consistent with the management behaviors observed. It was therefore decided to forego the usual presentations based on income statements and on performance estimates based on rates of return, in favor of cash accounts and performance estimates based on payback periods.

An examination of income statements focusing on financial flows generated by the vehicles in use shows much the same cost structure in all cases but considerable differences – essentially a function of revenues – in terms of absolute value. Revenue differences seem to be a function of the price effect. In Abidjan and, especially, Nairobi, where fares are relatively high, cash flow is significant. In contrast, revenues from operations of the same type in Harare and Bamako are lower. In addition, 25- and 30-seat vehicles are generally more profitable, obviously in terms of absolute value, but also in structural terms.

The ability of operators to recover the cost of their vehicles from cash flow is astounding. With the exception of Harare, the payback period is approximately one year, if not less, an indication that urban passenger transport is a highly profitable activity. However, this profitability is obviously mainly the result of capital conservation, inevitably achieved to the detriment of safety.

In these circumstances, encouraging the introduction of new vehicles would seem a sound policy. However, the study shows that it is clearly impossible to finance new vehicles with traditional bank financing, given likely operator expectations, payback periods under such arrangements would be too long. Subsidized financing may seem like a way to get around this obstacle and combine costlier investment with rapid recovery of capital. The study demonstrates that this is a viable option in Nairobi, provided operators supply sizeable sums themselves, that it would not work as well in Abidjan, and that it is out of the question in Bamako and Harare. A compromise solution – subsidizing purchases of renovated vehicles – would work in Nairobi and Abidjan, but not in Bamako and Harare.

The study concludes by underscoring the limitations of policies that promote indiscriminate financial assistance, and by emphasizing the benefit of financing higher-capacity vehicles and – no doubt paradoxically – the more successful operations, in the interests of gradual development of a sector with an entrepreneurial structure.

INTRODUCTION

This overview discusses the financial aspects of the four studies of urban transport microenterprises referred to in the Foreword.

These studies covered far more than financial issues, since the objective was to understand how such enterprises operate, and to grasp all the factors which enter into play in this transport subsector, taking, if not a macroeconomic, then at least a meso-economic perspective.

However, given the need to replace vehicle fleets, the financial issues appeared particularly relevant, and it was thought advisable to examine financial arrangements that would encourage replacement, and to assess their feasibility in the cities studied. While the subject had already been dealt with in each of the monographs, a more targeted discussion of it was considered desirable.

The various objectives of this financial overview may therefore be summed up as follows:

- First, the methodological options available need to be validated and explained. While this was of course done in the four case studies, it was necessarily done briefly, given the considerable number of other issues covered.
- Second, by presenting financial snapshots of urban public transport microenterprise operations in the four cities in a single document, it is possible to highlight both the specific structural characteristics of the operations – as will be seen, there are many such features – and in particular the underlying trends observable, irrespective of local differences. It is especially important to compare the ability of the various operations to generate sufficient cash flow to help finance the vehicles.
- Third, it is necessary to incorporate into the picture the impact of potential financial measures on fleet replacement capacity. The situation will be seen to be far from identical in the four cities, mainly because of the differences in available cash flow among them.

A number of decisions were made concerning the content of this report.

- It was decided not to discuss all the types of operations described in the individual monographs, since the objective was to simplify, although without creating distortions. A plethora of figures is not conducive to a clear picture of such complex issues, so it was considered preferable to supply less information in order to highlight the key points more sharply.
- It was decided to focus on informal operations, since sufficiently reliable information was available on the four cities. Emphasis was placed on the capacity of a single vehicle to generate both financing flows and the wherewithal to cover its own refinancing, rather than on the capacity of a business that might operate several vehicles to ensure its internal financial stability and provide for replacement of its fleet. This point will be dealt with again in the conclusion to this paper. However, the monographs on the two French-speaking cities show clearly that there is no fundamental difference between owner-investors and owner-drivers with regard to their capacity to finance fleet replacement. Thus, by focusing the study on the latter, conclusions may be drawn that will also be applicable to non-driver owners.

This overview has been structured as follows: It was considered important, before discussing the quantitative picture, to provide a general outline of the financial behaviors revealed through the surveys conducted. This preliminary step will shed light on the issues discussed subsequently. Next, the financial methodology applied in the four studies will be described, with an emphasis on the African management characteristics justifying the accounting frameworks and indicators used. A financial accounting review will follow for each city, broken down by vehicle capacity, in order to determine their respective financing capacities. Finally, fleet replacement options will be considered using various financing scenarios.

The following brief presentation of the four cities will set the stage for discussion of the issues outlined above. (Readers may wish to refer to the monographs for more detailed information on each city).

PRESENTATION OF THE FOUR CITIES

Before addressing the main subject of this overview, a brief geographical orientation is in order.

ABIDJAN

Abidjan, the economic capital of Côte d'Ivoire, had approximately three million inhabitants in 1998, representing 20 percent of the national population. Located on the Atlantic coast, and extending over an area of 60,000 hectares, it has expanded to incorporate increasingly more distant zones as its central districts have become saturated. There are two principal zones:

- the South, which provides 60 percent of the jobs, is home to only 34 percent of the population;
- the North, which provides 40 percent of the jobs, consists of dormitory communities that are home to 66 percent of the population.

Urban transport services are provided by:

- SOTRA, a semipublic company which operates Sub-Saharan Africa's largest network.
- Minibus services, run by private operators on an "informal sector" basis. In 1999, the fleet consisted of approximately 3,000 *gbakas*, vehicles with between 14 and 32 seats, although most (two-thirds of the fleet) have 18 seats.
- City taxis, called *woro-woro*, which offer shared rides.

SOTRA's market share fell from 47 percent in 1988 to 27 percent in 1998, a period when the *gbakas* increased their market share from 6 percent to 17 percent.

BAMA KO

Bamako is the capital of Mali, a landlocked country with some 11 million inhabitants. The population of the city, which is on the right bank of the Niger River, was slightly over one million in 1998. Its public transport system has a radial structure in keeping with that of the road network. The transport lines operate on paved roads, which offer the best driving conditions. The system is organized around town squares from which service is provided to the various districts.

Transportation is provided mainly by two private companies, SOTRACA (Bamabus) and STUB (Tatabus). The SOTRACA fleet consists of large-capacity vehicles, while STUB operates 40-seat minibuses.

Informal sector operators supplement these services. These include Peugeot 404 covered trucks (*durunis*) and 18-seat Toyotas (*sotramas*). In 1998, there were an estimated 510 *durunis* and 2,000 *sotramas*.

HARARE

Harare is the capital of Zimbabwe, a landlocked country in southern Africa with a population of 12 million in 1998. Harare itself had 1.2 million inhabitants.

The urban agglomeration is very spread out and includes distant suburbs with several hundred thousand inhabitants. Public transport is vital for these people, who are poor.

ZUPCO, a semipublic company, provides mass transport services. It has been losing market share steadily in recent years and has a poor reputation among the population. "Commuter buses", minibuses with more than seven seats, were authorized in 1993. This type of service has evolved, and now includes large-capacity vehicles with more than 120 seats alongside others with 14-30 seats. There were some 6,000 of these buses in 1999, with 3,300 of them in Harare. A number of operators with large fleets (with several dozen "big buses") are actually structured as companies. The Ministry of Transport estimates that the "commuter bus" fleet today accounts for 90 percent of the market.

NAIROBI

Nairobi is the capital of Kenya, a country in East Africa with 29 million inhabitants. In 1997, Nairobi itself had a population of approximately 2.2 million.

The public transport market is currently shared by Kenya Bus Service (KBS), which run large-capacity vehicles, and private operators running minibuses (18-25 seats) known as *matatus*".

KBS, which now focuses on the most profitable part of its network, is still losing ground. It currently has roughly one-third of the market, and the *matatus* the remaining two-thirds. There were some 4,500 *matatus* in 1998.

1. FINANCIAL BEHAVIORS

In order to set the stage for the rate-of-return calculations to be presented later, this first section will document the attitudes of operators with regard to the financial management of their activities. This necessarily brief review will focus on two financial management issues:

- reporting arrangements and basic monitoring measures,
- sources of financing.

1.1 REPORTING PROCEDURES

Owner-investors are more likely to utilize some kind of reporting system than owner-drivers, at least in the English-speaking cities surveyed. However, operators – whatever their status – in all four cities generally keep records. The precise nature of these records could not be determined, but people familiar with microenterprise operations in Africa will understand the situation. The single-entry method is used, and income and expenses are recorded in cash terms. With typical operations, the method is adequate, by and large, for determining how they are faring. It is important to understand, however, that operators' management criteria are a direct product of this cash-based approach. Operations are expected to show at least balanced income and expenditures (i.e., that they are solvent) and, if possible, some flow of surplus cash. In other words, management of these microenterprises is focused entirely on liquidity, and not on profitability in the financial sense of the term. Accrual basis accounting and balance sheets are unheard of in this context.

Ticketing, which makes it possible to monitor revenue to some extent, is not very common, with the exception of Nairobi. Tickets are also used on some lines in Harare, but not at all in the French-speaking cities.

In short, while record-keeping does exist, it is neither thorough nor rigorous. What recording is done appears adequate in the context of the simple operations surveyed.

1.2 SOURCES OF FINANCES

Underlying trends predominate here, too, irrespective of the type of microenterprise or the particular city.

(1) Firstly, bank financing is virtually nonexistent in this sector. Although many owners in Abidjan indicated that they had used bank financing for their transport operations at least once, they are an isolated example. In any event, bank financing, in the few instances when it is forthcoming, is confined to those who are owner-investors only and is almost never found among owner-drivers.

(2) Paradoxically, the fact that bank financing is not sought does not rule out relationships with banks, as many operators, especially owner-investors, have bank accounts. It is easy to understand why owner-investors, more than others, have such accounts, since most of them are engaged in one or more other activities in addition to their transport operations.

(3) Operators do not often state their reasons for not seeking bank financing. When they do, they mention the following:

- interest rates are too high,
- loan periods are too short,
- they lack access to credit (mentioned frequently),
- they do not need credit.

The last two items point to a number of facts showing why recourse to banks is difficult or pointless:

- the accounting records typically maintained do not meet bank requirements;
- buyers are often interested in used vehicles, which banks do not finance;
- since vehicles are inexpensive, buyers do not necessarily need to seek credit;
- in the case of new vehicles, prospective buyers are not sufficiently creditworthy to obtain the amount of credit likely to be sought.

(4) The vast majority of operators finance vehicle purchases using their own capital, in various ways:

- by simply saving their own money over time;
- by augmenting their savings with loans from family members, or by selling previously acquired assets (especially in Harare).

(5) The "work-and-pay" method is often cited in French-speaking Africa. This type of credit is referred to as a "lease," but bears little resemblance to a lease in the usual sense of the word. Under such credit arrangements, the driver operates a vehicle belonging to another person and pays him a predetermined fixed fee over a given period of time. Once the period has ended, the vehicle belongs to the driver. Many drivers become informal operators in this manner.

(6) Both owner-investors and owner-drivers indicate that they save something – and often substantial sums – every month, a fact that explains the earlier observation that buyers do not turn to banks and that self-financing is the norm. In all four cities surveyed, respondents, and particularly owner-investors, often stated that they used some of their savings *for* other activities. However, income *from* other activities does not appear to be used for transport operations. While vehicle purchases are clearly financed mainly with personal savings, it is difficult to know what proportion of such savings is generated by transport operations and what proportion comes from other activities.

(7) Informal financing channels are almost never mentioned, whatever the city and whatever the type of operation. This was definitely the most surprising revelation of the survey, inasmuch as all our field investigations in sectors other than transport have demonstrated that informal activities – and minibus operations are for the most part informal – are generally able to take advantage of informal financing opportunities. Does this mean that the transport sector does not fit this pattern? That may be a partial answer. The fact is, transport operations are not entirely informal, since they are subject to some administrative controls, and investment costs in the sector are considerably higher than is the case with most other informal activities. Thus, transport microenterprises appear to exist in a kind of financing vacuum, in that they are too small and their status is too uncertain to interest banks, while their investment capital needs are too large for traditional informal channels.

However, that is not the whole story. For example, Nairobi's "car dealer" channel was not mentioned at all in the survey. Similarly, although some of Bamako's savings and loan associations finance vehicles, they were mentioned only on one occasion. This could perhaps imply that operators believe informal or semiformal financing channels are still viewed as clandestine.

In conclusion, while the survey did not reveal any specific financial behaviors that could be regarded as clearly typical of the transport microenterprise sector, it broadly mirrored what is usually encountered in Africa in the context of similar activities, namely:

- substantial reliance on self-financing;
- a highly developed savings culture;
- involvement of formal banking channels;
- very marked risk diversification, as evidenced by the fact that a proportion of savings are reinvested in other activities;
- management focused sharply on liquidity and solvency, and on rapid recovery of invested capital.

Capacity to finance replacement of the minibus fleet will be analyzed in the light of these financial behaviors. Such a specific environment naturally calls for an appropriately targeted methodology, which is now described below.

2. THE METHODOLOGICAL APPROACH TAKEN

Before discussing the problem of urban transport activities, it is important to view it within the broader context of informal activities as a whole.

2.1 STRUCTURE OF FINANCIAL FLOWS IN AFRICAN MICROENTERPRISES

2.1.1 A brief look at management practices in African microenterprises

African microenterprises operate across the board in an extremely precarious environment, a fact that prompts entrepreneurs to prefer very short economic timelines, and even to ignore the time dimension of management almost entirely. Any concept relating directly or indirectly to a time framework thus has little meaning in the context of African microenterprise management.¹ This is also true of the concept of capital, a durable good capable of generating income over time. The concept of the profit and loss account geared to time segments of a fiscal year is similarly meaningless. And again, the idea of viewing accumulated capital as a specific good producing a yield tied to a calendar period, for the purpose of calculating a rate of return that can be used to measure financial performance, is totally meaningless to an African microentrepreneur. By extension, the idea that debt may be incurred when the economic rate of return on capital exceeds the interest rate payable has absolutely no significance either.

In this environment, the performance of an enterprise is assessed on a radically different basis. Capital is merely one of many expenses, a cash flow item that drains the entrepreneur's cash reserves and must therefore be reduced to the maximum extent compatible with the conduct of the activity. The result that counts is not the difference between inputs and outputs, which are totally abstract accounting concepts, but rather the difference between cash inflows and outgoings. It cannot be overemphasized that the concept of amortization as construed in the West, an abstract accounting concept describing capital depreciation, is absolutely meaningless to the African microentrepreneur. It is completely futile to attempt to describe the financial behavior of these businesses using accounting categories that are irrelevant in this particular economic and social context. These operations should be expected to generate enough cash flow to survive, plus a surplus with which to replenish the cash spent on the investment. Thus, instead of assessing performance over a fiscal year, this study will focus on cash flow during a period corresponding to the enterprise's operating cycle, and, instead of looking at the rate of return, will focus on the period required to recover invested capital.

2.1.2 Relevant accounting frameworks

In line with what has just been said, non-traditional accounting frameworks are needed in order to put the reporting emphasis on cash flows capable of rebuilding invested capital and subsequently of generating cash internally with which to form additional capital.

¹ See E. Bloy and C. Dupuy, "Adaptation des règles de gestion aux contraintes du financement informel" in G. Hénault and R. M'Rabet, "L'Entrepreneuriat en Afrique francophone : culture, financement et développement," AUPELF/John Libbey & Co., 1990, pp. 68-73.

Although cash accounting methods of this type have existed for a long time, they are not widely used by small and medium enterprises, even in economically advanced countries. They belong in the category known as cash flow statements. This paper will adapt this type of statement to urban transport microenterprises in order to describe their performance and their capacity to generate sufficient self-financing to replace their vehicles, as well as to cover finance charges when funds are borrowed for this purpose. The general structure of these statements is as follows:

- Presentation of value added:

Output or turnover

- Inputs

= Value added

This step measures the intensity of the transformation process carried out by the enterprise, and highlights its capacity to enhance the value of the production factors it utilizes when selling its products.

- Presentation of the distribution of value added, to give earnings before interest, taxes, depreciation, and amortization (EBITDA):

Value added

- Taxes and fees

- Personnel costs

= EBITDA

Gross operating profit, the difference between the value of goods produced and expenses incurred during the operating cycle, provides a measure of an operation's profitability. Since it is calculated before amortization, it also indicates potential operational cash flow.

- From profitability to liquidity:

EBITDA

- Variation in working capital needs

= Operating cash flow

This step shows that not all the potential profit represented by the operating cash flow ends up being liquid. Only the part that is not absorbed by variations in working capital needs may be considered liquid. Working capital is the difference between current assets linked to the operating cycle (inventories, accounts receivable) and related debts (accounts payable). It therefore represents the net financing requirement for the operating cycle. If this net financing requirement increases during a given period, the liquidity of the company will automatically decrease.

- Utilization of operating cash flow:

Operating cash flow

- **Core household expenditures**

= Discretionary cash flow

In industrialized countries, operating cash flow is treated as self-financing that can be allocated directly to cover investments. Although this scenario may seem pertinent, it is irrelevant in the African context. Cash flows produced by microenterprises are intended to be used first and foremost to ensure family survival. If there is a surplus, it is this that may be used for discretionary allocations, which could include investment.

2.2 ADAPTING THE GENERAL FRAMEWORK TO URBAN TRANSPORT MICROENTERPRISES

The following framework is proposed as a means of taking the specific characteristics of the sector into account:

Revenue

- Fuel
- Administrative services
- Technical services
- Taxes and fees

= Value added

- Personnel costs

= EBITDA = Operating cash flow

- Operator salary

= Discretionary cash flow

This description does not differ fundamentally from the structure described earlier, but, given the framework selected for this exercise, actually clarifies it at a number of points:

- (1) Inputs have been broken down into administrative services (mainly insurance premiums), technical services (vehicle maintenance and repairs), and taxes and fees.²
- (2) Personnel costs consist of payments to ticket collectors and drivers. In the case of owner-driver operations, any payments to co-drivers would of course also be included. In the case of owner-investors in either of the French-speaking cities, only fixed payments to drivers would fall into this category; other, variable amounts would be deducted from the takings handed over to the owners.

² The concept of “gross operating profit” has been replaced by the concept of “value added at factor values” (“*valeur ajoutée au coût des facteurs*” in French). In Harare and Nairobi, taxes and fees were included in administrative services.

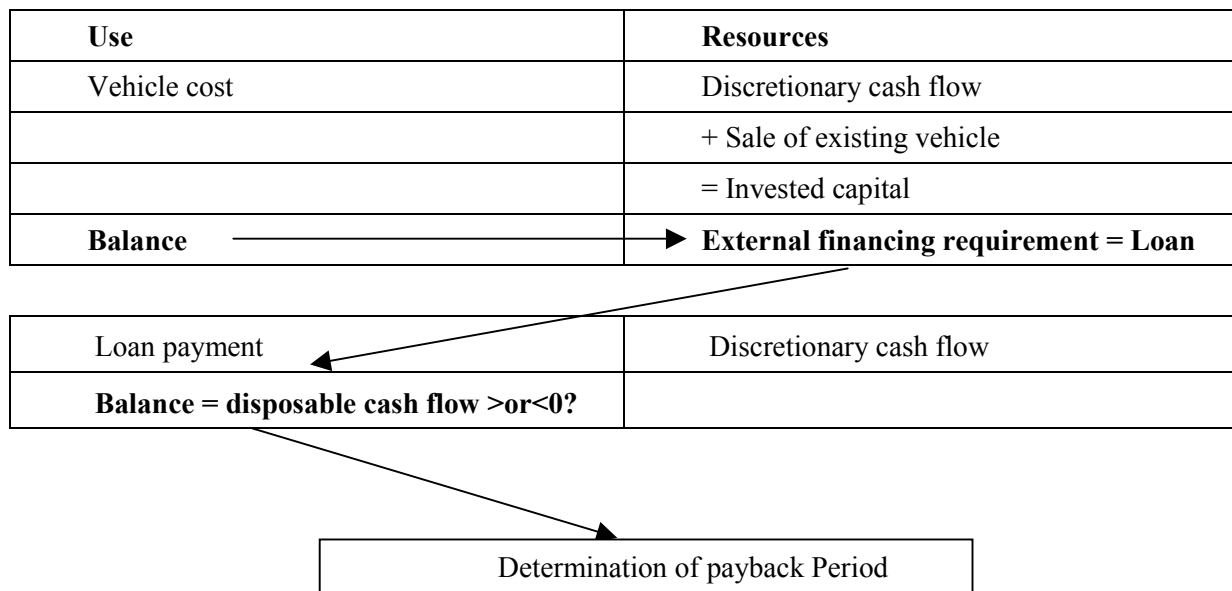
- (3) In this type of business, the EBITDA figure is not affected by variations in working capital needs. In fact, it became apparent very quickly that, given the nature of the activity, there should be no such variations or, at most, negligible ones. In these circumstances, EBITDA and operating cash flow are identical.
- (4) In the case of owner-driver operations, household expenditures have been replaced by “operator salary.” Given the variety of scenarios possible in this study, instead of allocating what would necessarily be an arbitrary figure to household expenditures, it was decided to deduct from the discretionary flow an amount equal to the sum the operator would have received as a salaried driver, which he supposedly would spend on household requirements.

This shows that the savings capacity of owner-drivers has been underestimated, since in many cases the operator’s entire salary need not be allocated for household purposes; part of it can be set aside as savings. Such scenarios are so common that many salaried drivers are able to buy vehicles with their own savings.

Operator salaries were not deducted from the operating cash flow of owner-investors, which is logical, since they are not drivers. Nor were core household expenditures substituted for operator salaries, on the assumption that, since most owners have other sources of income, they can meet their household requirements with funds from sources outside the transport sector. As a result, owner-investors’ accounts show discretionary cash flow and EBITDA as equal. However, in the case of owner-investors with no other means of livelihood than one vehicle, then obviously their financing capacity has been overestimated – unlike that of owner-drivers.

When purchase of a vehicle has been entirely self-financed, the operator’s discretionary cash flow can be compared directly with the acquisition cost to determine the payback period. Naturally, the shorter the period, the better the investor’s position. This is actually what happens most of the time.

In the case of new vehicle purchases – which require a much higher initial investment – discretionary cash flow becomes part of a more complex scenario, as the following diagram illustrates:



Under this scenario, the cost of the new vehicle is aligned against the purchaser's contribution from his own resources, which consist of his annual discretionary cash flow and potential proceeds from the sale of an old vehicle. Any shortfall represents the operator's external financing requirement. If this can be covered by a loan, the corresponding annual loan payment can be calculated. The balance remaining after the payment is charged against discretionary cash flow is the amount of disposable cash. This amount provides the basis for determining the "feasibility" of the operation, in the light of these questions:

- Is the operation creditworthy? (Is the cash flow situation positive or negative?)
- Is the operation profitable – in the sense that the payback period meets operator expectations? (The calculation of payback periods will be discussed in greater detail later on in this paper.)

This concludes the general outline of the financial methodology followed in the monographs. Our attention will now turn to the findings obtained from these four studies.

3. GENERATION OF SELF-FINANCING

3.1 GENERATION OF SELF-FINANCING : OWNER-DRIVER OPERATIONS USING 18 –SEAT VEHICLES

3.1.1 Overall results

The four cities were compared on the basis of monthly accounts, which seemed to be the most representative. The following table breaks down the results, in both local currency and US dollars (US\$1 = CFAF 652, Z\$42.22, and K Sh 62),³ into their various components.

Table 1: Monthly cash position of owner-driver transport operators

| CITIES | ABIDJAN | | BAMAKO | HARARE | NAIROBI | |
|-------------------------------|----------------|----------------|--------------|--------------|--------------|--------------|
| | Owner-driver 1 | Owner-driver 2 | | | Diesel | Gasoline |
| Revenue (in foreign exchange) | 1 757 700 | 1 581 930 | 868 000 | 46 800 | 189 540 | 189 540 |
| REVENUE IN US\$ | 2 696 | 2 426 | 1 331 | 1 103 | 3 057 | 3 057 |
| Fuel | 336 000 | 294 000 | 197 000 | 13 000 | 39 000 | 52 000 |
| in US\$ | 515 | 451 | 302 | 306 | 629 | 839 |
| in % | 19.12 | 18.58 | 22.70 | 27.78 | 20.58 | 27.43 |
| Technical services | 295 000 | 295 000 | 128 500 | 8 370 | 36 800 | 36 800 |
| in US\$ | 452 | 452 | 197 | 197 | 594 | 594 |
| in % | 16.78 | 18.65 | 14.80 | 17.88 | 19.42 | 19.42 |
| Administrative services | 164 600 | 163 200 | 49 100 | 1 550 | 6 500 | 6 500 |
| in US\$ | 252 | 250 | 75 | 37 | 105 | 105 |
| in % | 9.36 | 10.32 | 5.66 | 3.31 | 3.43 | 3.43 |
| Taxes | 7 930 | 7 930 | 8 000 | | | |
| in US\$ | 12 | 12 | 12 | | | |
| in % | 0.45 | 0.50 | 0.92 | | | |
| Value added | 954 170 | 821 800 | 485 400 | 23 880 | 107 240 | 94 240 |
| in US\$ | 1463 | 1260 | 744 | 563 | 1 730 | 1 520 |
| in % | 54.29 | 51.95 | 55.92 | 51.03 | 56.58 | 49.72 |
| Personnel costs | 168 000 | 70 000 | 46 000 | 1 885 | 22 000 | 22 000 |
| in US\$ | 258 | 107 | 71 | 44 | 355 | 355 |
| in % | 17.61 | 8.52 | 9.48 | 7.89 | 20.51 | 23.34 |
| EBITDA | 786 170 | 751 800 | 439 400 | 21 995 | 85 240 | 72 240 |
| in US\$ | 1206 | 1153 | 674 | 518 | 1 375 | 1 165 |
| in % | 82.39 | 91.48 | 90.52 | 92.11 | 79.49 | 76.66 |

³ Conversion rates applicable during the survey, January 1999.

| | | | | | | |
|-------------------------|------------|------------|------------|------------|--------------|------------|
| Operator salary | 160 000 | 160 000 | 170 000 | 3 885 | 15 600 | 15 600 |
| in \$ US | 245 | 245 | 261 | 92 | 252 | 252 |
| in % | 16.77 | 19.47 | 35.05 | 16.27 | 14.55 | 16.55 |
| Taxes | 33 300 | 33 300 | | | | |
| in US\$ | 51 | 51 | | | | |
| in % | 3.49 | 4.05 | | | | |
| Discretionary cash flow | 592 870 | 558 500 | 269 400 | 18 110 | 69 640 | 56 640 |
| in US\$ | 909 | 857 | 413 | 427 | 1 123 | 914 |
| in % | 62.13 | 67.96 | 55.50 | 75.84 | 64.94 | 60.10 |

Those items listed in the table prior to the entry for value added are expressed as a percentage of turnover, while those following the entry for value added have been calculated in relation to that figure.

The situation is clearly different in Abidjan and Nairobi on the one hand, and Bamako and Harare on the other, the amount of discretionary cash flow being twice as high in the first two cities as in the second two.

However, this difference in absolute values does not show up in the value added percentages. Although discretionary cash flow accounts for a lower percentage of value added in Bamako than in Nairobi and Abidjan, this is not the case in Harare, which registered the highest percentage among the four cities for this item. This would suggest that the volume of activity, rather than the cost structure, is the determining factor. The comparisons will need to be refined on the basis of a closer look at the various factors that account for self-financing cash flows.

3.1.2 Revenue

The cities form two distinct pairs, as monthly revenues in Abidjan and Nairobi are twice as high as in Bamako and Harare. Per-vehicle revenues are highest in Nairobi.

The differences in revenue levels are explained by the combined effect of the various factors shown in the accompanying table: fares, passenger load factors, number of daily round trips, length of routes looked at, and per kilometer cost.

Table 2: Revenue components (in US\$)

| Vehicle capacity | 18 seats | | | | 32 seats | 30 seats | 25 seats |
|-----------------------|----------|--------|--------|---------|----------|----------|----------|
| | ABIDJAN | BAMAKO | HARARE | NAIROBI | ABIDJAN | HARARE | NAIROBI |
| Fare | 0.20 | 0.13 | 0.12 | 0.36 | 0.15 | 0.12 | 0.36 |
| Length of line | 11 | 7.4 | 14 | 14 | 10 | 14 | 14 |
| Cost per kilometer | 0.018 | 0.018 | 0.008 | 0.026 | 0.015 | 0.008 | 0.026 |
| Number of round trips | 15 | 12 | 10 | 10 | 14 | 11 | 10 |
| Load factor | 0.93 | 0.95 | 0.9 | 0.9 | 0.7 | 0.9 | 0.9 |

The two cities with the highest revenue figures are also the ones with the highest fares and the most daily round trips.

Revenues in Bamako are somewhat higher than in Harare because fares are slightly higher and more round trips are made daily in Bamako.

Load factors in the four cities are virtually identical.

3.1.3 Creation of value added

The dispersion of value added rates is low in the cities where diesel-powered vehicles operated with co-drivers are the norm, namely Nairobi, Bamako, and Abidjan, which have high value added rates, between 55 percent and 56 percent. The rates are lowest for gasoline-powered vehicles: in Nairobi; in Harare, which probably has a mix of the two vehicle types; and in Abidjan, for vehicles operated by only one driver. In all three situations, the rates hover around 50 percent. As expected, this type of transport activity generates considerable value added.

Fuel consumption is about the same in the four cities, absorbing around 20 percent of turnover. The same is true of technical services, which absorb 17-19 percent of turnover. Thus, technical operating data are very similar in the four cities.

However, administrative services, which consist mainly of insurance costs, are another matter: there is a considerable difference – which can be as high as threefold – between the English-speaking and French-speaking cities.

3.1.4 Distribution of value added

The impact of personnel costs is low, in terms of both absolute and relative values, ranging from a minimum of eight percent to a maximum of 23 percent. However, these costs are widely dispersed, as would be expected given the higher salaries paid in Abidjan and Nairobi and the very low salaries paid in the two other cities.

The result of this distribution shows up in all four cities as high EBITDA in relation to value added, although absolute values differ significantly. The ratio in Abidjan and Nairobi is twice as high as in Bamako and Harare.

However, it should be noted that the operation studied in Harare did not include personnel costs for a co-driver, whereas operations with co-drivers were considered in the other cities. Bearing in mind that the cost for a driver is approximately Z\$3,000 or US\$71, then operating cash flow in Harare is US\$447, or 79 percent of value added, which is on a par with Nairobi.

3.1.5 Determining discretionary cash flow

The dispersion in personnel costs in the four cities is not mirrored in operator salaries, which are virtually the same in Bamako, Nairobi, and Abidjan, but much lower in Harare. This clearly exerts considerable pressure on EBITDA (35 percent of value added) in Bamako, a seemingly paradoxical outcome, since vehicle revenues in Bamako are half what they are in Abidjan.

But a qualification is in order regarding Bamako's position compared to that of Abidjan. Operator revenues in Abidjan were calculated on the basis of drivers' average real income, whereas the findings in Bamako were based on the figures for a typical route, which may not be representative of all operations. There are obviously drivers in Abidjan whose real income exceeds CFAF 170,000, but the average figure is CFAF 160,000. These paradoxes are explained by the ways primary drivers are paid in these cities.⁴ By

⁴ See Section 3.4.2 below.

comparing the situation of two drivers in Abidjan and Bamako item by item, Annex 2 shows that it is entirely possible that income generated in Bamako can be as high as in Abidjan. It also demonstrates that calculations based on the revenue of the lower-earning Bamako operator does not fundamentally alter the overall conclusions of this study.

On the other hand, given the low level of driver salaries, operations in Harare perform best in terms of the impact of discretionary cash flow on value added, although the absolute value of this flow is no higher in Harare than in Bamako. If a co-driver is factored into the equation in Harare, the discretionary cash flow is US\$35, significantly lower than in Bamako, and represents 63.2 percent of value added, which is similar to the percentages in Abidjan or Nairobi. If a higher revenue figure were also factored in (more round trips per day), the typical Harare operation may well look more attractive. A more extended variant for Harare will be examined in Annex1.

3.2 GENERATION OF SELF-FINANCING : OWNER-DRIVER OPERATIONS USING VEHICLE WITH MORE THAN 18 SEATS

3.2.1 Overall results

These results are presented in the following table:

Table 3: Self-financing generated by owner-driver transport operators using vehicles with more than 18 seats

| CITIES | ABIDJAN | HARARE | NAIROBI |
|-------------------------|--------------|--------------|--------------|
| <i>Seating capacity</i> | 32 | 30 | 25 |
| Revenue | 2 195 200 | 80 000 | 263 250 |
| in US\$ | 3 367 | 1 885 | 4 246 |
| Fuel | 420 000 | 17 000 | 59 800 |
| in US\$ | 644 | 401 | 965 |
| in % | 19.13 | 21.25 | 22.72 |
| Technical services | 330 800 | 11 330 | 49 300 |
| in US\$ | 507 | 267 | 795 |
| in % | 15.07 | 14.16 | 18.82 |
| Administrative services | 212 400 | 3263 | 10 250 |
| in US\$ | 326 | 77 | 165 |
| in % | 9.68 | 4.08 | 3.89 |
| Taxes | 13 220 | | |
| in US\$ | 20 | | |
| in % | 0.60 | | |
| Value added | 1 218 780 | 48 407 | 143 900 |
| in US\$ | 1 869 | 1 141 | 2 321 |
| in % | 55.52 | 60.51 | 54.66 |
| Personnel costs | 210 000 | 2 100 | 22 000 |
| in US\$ | 322 | 49 | 355 |
| in % | 17.23 | 4.34 | 15.29 |
| EBITDA | 1 008 780 | 46 307 | 121 900 |
| in US\$ | 1 547 | 1 091 | 1 966 |
| in % | 82.77 | 95.66 | 84.71 |
| Operator salary | 170 440 | 4 500 | 15 600 |
| in US\$ | 261 | 106 | 252 |
| in % | 13.98 | 9.30 | 10.84 |
| Taxes | 33 300 | | |
| in US\$ | 51 | | |
| in % | 2.73 | | |
| Discretionary cash flow | 805 040 | 41 807 | 106 300 |
| in US\$ | 1 235 | 985 | 1 715 |
| in % | 66.05 | 86.36 | 73.87 |

Bamako is not included in the comparison, since only 18-seat vehicles are in service there. The results of the comparison demonstrate clearly that the larger vehicles produce a better rate of return than the 18-seat minibus. The difference in the case of Harare is all the more striking because discretionary cash flow more than doubles. As before, there now follows an analysis of the various factors explaining the generation of self-financing.

3.2.2 Revenue

Revenue figures are appreciably higher than with 18-seat vehicles. As we see it, this is obviously the basic explanation of the profitability difference between the two classes of minibus. The fact that Harare shows the widest gap in revenue is a persuasive argument for its reorganizing its transport fleet around the larger vehicles, the more especially as conversations with various operators indicate that this is already what is likely to happen. At the same time, however, it is clear that the gap can be largely ascribed to Harare's fare levels, over which operators have no control.

3.2.3 Creation of value added

Value added is high, and slightly higher – approximately two percentage points – on average than in the previous case. The increase over operations with 18-seat vehicles is greatest in Abidjan and Harare, and least in Nairobi. This rise in value added is explained by lower rates of consumption of fuel and technical services.

3.2.4 Distribution of value added

EBITDA is appreciably stronger than with the 18-seat minibuses. The Nairobi rate is again twice the Harare rate, although the impact of EBITDA on value added is still highest in Harare. Obviously, as in the case of the 18-seat vehicles, this situation is explained by the very low level of personnel costs. However, here again inclusion of the personnel costs for a co-driver changes the result significantly. For instance, inclusion of a co-driver's salary of K Sh 4,000, or US\$94, gives an EBITDA figure of US\$997, or 87 percent of value added.

3.2.5 Determining discretionary cash flow

While discretionary cash flow is 34 percent higher in Abidjan than with the 18-seat minibuses, the differences are much greater in the two English-speaking cities:

- over 100 percent higher in Harare;
- 50 percent higher in Nairobi.

The effect of vehicle size is therefore plain to see. In terms of percentage of value added, the change in size has an equally significant effect in the two English-speaking cities: 86.4 percent compared to 75.8 percent in Harare, and 73.9 percent compared to 64.9 percent in Nairobi. Once again, inclusion of a co-driver in Harare would reduce discretionary cash flow to US\$891 at constant prices, or 78.1 percent of value added. Obviously, a more realistic evaluation of this scenario would take into account the increased revenue to be expected from a greater number of round trips (See Annex 1).

3.3 GENERAL CONCLUSIONS ON OWNER-DRIVER GENERATION OF SELF-FINANCING

The following figures summarize the experience of the four cities with the two kinds of vehicle :

Figure 1: Generation of self-financing (18-seat vehicles)

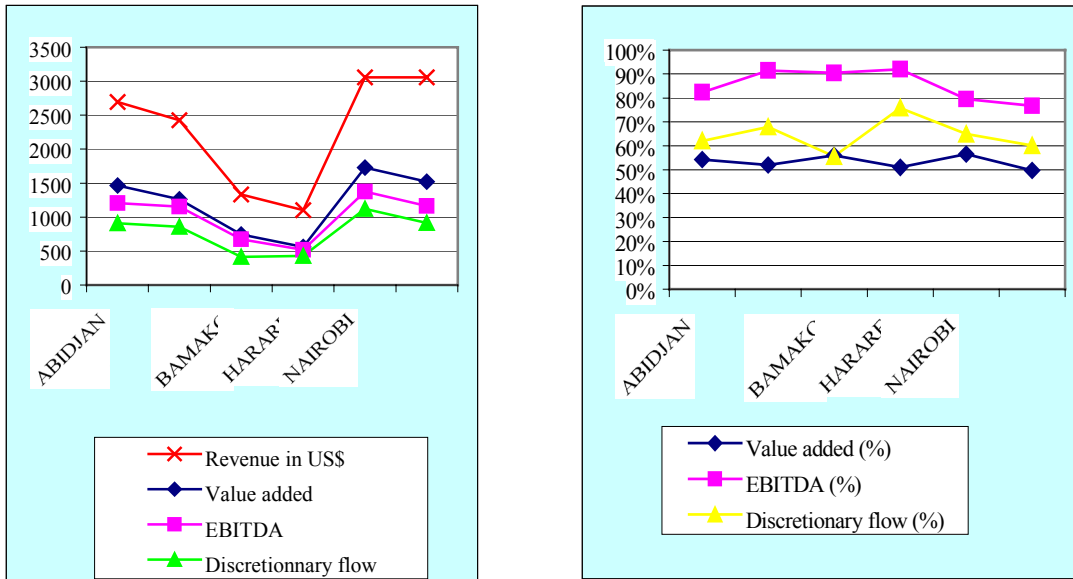
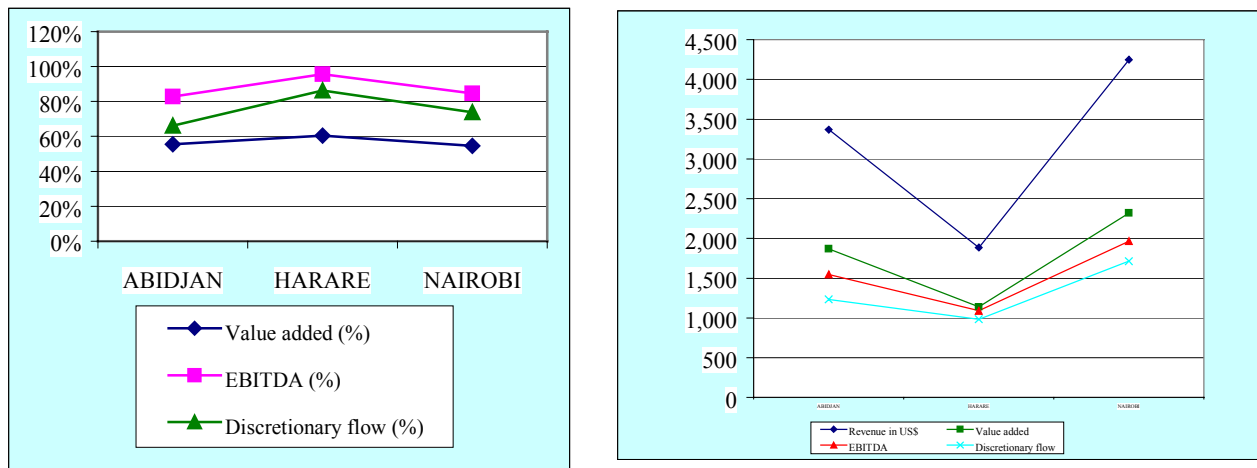


Figure 2: Generation of self-financing (vehicles with more than 18 seats)



There is a clear distinction between the cities with good transport revenue flows, Abidjan and Nairobi, and those with low transport revenue flows, Bamako and Harare. This gap is largely the result of fare levels.

Though transport revenue levels are very different, operational patterns are very alike, including the ways value added is created.

On the other hand, considerable differences underlie rate-of-return creation:

- Abidjan and Nairobi provide drivers and ticket collectors with good salaries and operators with good profits. On the African scale, this remuneration compares very favorably with average worker compensation.
- Harare and Bamako, on the contrary, pay considerably less, at least in the case of ticket-collector and co-driver wages. However, this does not prevent Bamako from remunerating owners of 18-seat minibuses considerably better than Harare, and even the other two cities, do. This is chiefly the outcome of the way drivers are paid in Bamako, through a levy on takings, which appears to be much less frequent in Harare, unless clear evidence of it was not obtainable there.

In any event, the discretionary cash flow produced by minibuses in both Bamako and Harare is weak. Where Bamako is concerned, this is partly the result of our methodological decision to assign an operator's salary to the minibus owner on a par with drivers' salaries, which were particularly high. There are therefore some grounds for believing that financing possibilities have been underestimated in Bamako.

3.4 GENERATION OF SELF-FINANCING: OWNER-INVESTOR OPERATIONS

We propose here to look at the situation of non-driver owners. The comparison will involve only the French-speaking cities, as the data available on them is free of ambiguities.

3.4.1 Overall results

These results are presented in the following table:

Tableau 4: Self-financing generated by non-driver owners (i.e. owner-investors)

| CITIES | ABIDJAN | | BAMA KO |
|-------------------------|--------------|--------------|------------|
| <i>Seating capacity</i> | 18 | 32 | 18 |
| Revenue | 980 000 | 1 260 000 | 455 000 |
| in US\$ | 1 503 | 1 933 | 698 |
| in % | | | |
| Technical services | 281 000 | 314 000 | 123 500 |
| in US\$ | 431 | 482 | 189 |
| in % | 28.67 | 24.92 | 27.14 |
| Administrative services | 49 800 | 78 000 | 31 000 |
| in US\$ | 76 | 120 | 48 |
| in % | 5.08 | 6.19 | 6.81 |
| Taxes | 7 930 | 13 220 | 8 000 |
| in US\$ | 12 | 20 | 12 |
| in % | 0.81 | 1.05 | 1.76 |
| Value added | 641 270 | 854 780 | 292 500 |

| | | | | |
|-------------------------|----------------|------------|--------------|------------|
| | in US\$ | 984 | 1 311 | 449 |
| | in % | 65.44 | 67.84 | 64.29 |
| Personnel costs | | 35 000 | 45 000 | 31 000 |
| | in US\$ | 54 | 69 | 48 |
| | in % | 5.46 | 5.26 | 10.60 |
| EBITDA | | 606 270 | 809 780 | 261 500 |
| | in US\$ | 930 | 1 242 | 401 |
| | in % | 94.54 | 94.74 | 89.40 |
| Taxes | | 33 300 | 33 300 | |
| | in US\$ | 51 | 51 | |
| | in % | 5.19 | 3.90 | |
| Discretionary cash flow | | 572 970 | 776 480 | 261 500 |
| | in US\$ | 879 | 1 191 | 401 |
| | in % | 89.35 | 90.84 | 89.40 |

Discretionary cash flow is of the same order of magnitude as with owner-driver operations, indicating the same financing potential in both cases. However, the potential could well be somewhat higher among owner-investors, who often own several vehicles.

3.4.2 Revenue

The owner's revenue is a fixed amount paid daily by the driver out of gross vehicle takings. The balance of the day's takings is retained by the driver to cover the expenses he is responsible for. Any remaining surplus, becomes a variable component of the driver's compensation, over and above his fixed percentage.

The owner's cut of gross takings in Abidjan is 56 percent on 18-seat vehicles and 57 percent on 32-seat vehicles; in Bamako, it is 52 percent.

Value added figures are clearly lower, in absolute terms, than in the case of owner-driver operations, but considerably higher in terms of percentage of revenue.

EBITDA figures are also lower than on owner-driver operations, but represent a slightly higher percentage of value added.

It is the fact that the owner receives no operator's salary which raises the discretionary cash flow to the level seen in owner-driver operations. Our methodological decision not to assign operator salaries is justifiable only if the owner-investors engage in other, non-transport-related activities, but this is the case with many of them.

Non-driver owners in Abidjan therefore earn very substantial incomes, significantly higher than the salaries of certain civil service professional grades. In Bamako, their earnings are half this level, but can probably still be regarded as high in terms of the national income scale.

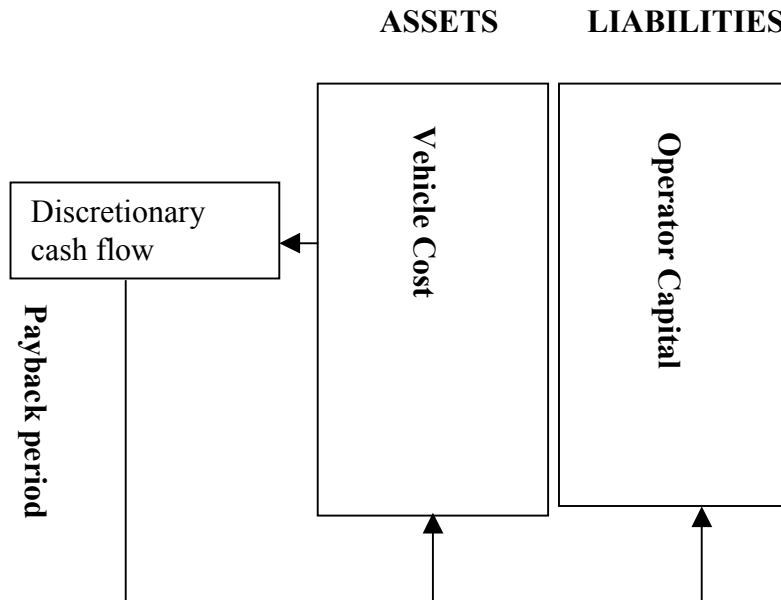
4. OPTIONS FOR REPLACING THE VEHICLE FLEET

Since owner-investors are in virtually the same position as owner-drivers where discretionary cash flow is concerned, and since any comparison of owner-investor operations can only be between the two French-speaking cities, we have decided to confine examination of the issue of fleet replacement to owner-driver operations. This comes down to the same thing as determining the capacity of a vehicle to generate cash flows. In the case of 18-seat vehicles, assessment of the situation in Abidjan has been limited to operations which employ a co-driver. Initially, we will look at the current rate of return on the vehicle fleet in the various cities. Subsequently, we will show that in all four cities it is impossible to envision replacing the fleet with new vehicles financed by bank loans on the terms and conditions currently offered in the market place. Finally, we will consider the possible impact on fleet replacement of concessional financing, at low interest rates and with longer repayment periods.

4.1 CURRENT PROFITABILITY

4.1.1 Preliminary comments

At present, the majority of operators run cheap vehicles entirely paid for out of their own resources. For this kind of operation, a simplified balance sheet would take the following form:



As emphasized in the earlier discussion of the methodology used in this report, the indicator best suited to the African context for measuring the rate of return on an investment is length of payback period. This means that the owner-driver is confronted with the need to replenish his capital from his discretionary cash flow.

The payback-period criterion lets the operator see how long it will take to reconstitute his capital. What makes it so serviceable as a criterion is that it measures not only the speed with which his technical capital can be reconstituted (How long will it take to pay the cost of the vehicle?), but also the speed with which he can replace the financial capital he has invested (How long will it take him to replenish his savings?)

4.1.2 Overall results

These results are summarized in the following table:

Table 5: Payback periods

| | Owner-driver operation | | | | | | |
|-------------------------|------------------------|--------|--------|-----------|---------|-----------|-----------|
| CITIES | ABIDJAN | BAMAKO | HARARE | NAIROBI | ABIDJAN | HARARE | NAIROBI |
| <i>Seating capacity</i> | 18 places | | | 32 places | | 30 places | 25 places |
| Cost of vehicle (\$US) | 12 270 | 6 518 | 14 138 | 11 290 | 18 405 | 23 563 | 16 129 |
| Discretionary flow/year | 10 912 | 4 958 | 5 124 | 13 478 | 14 817 | 11 820 | 20 574 |
| Payback period (years) | 1.1 | 1.3 | 2.8 | 0.8 | 1.2 | 2.0 | 0.8 |

What is striking is that these figures are so similar. With the exception of Harare, the payback period is close to a year in every case, indicating a rate of return of 100 percent. In two cases, the situation is nothing less than astonishing:

- *Bamako*: Here the payback period is very short despite a weak discretionary cash flow. This is the outcome of an adjustment to the amount of capital invested – in other words, to purchase of a vehicle that is cheap, although in poor repair;
- *Harare*: Here payback periods are significantly longer than in the other cities because of weak discretionary cash flow and lack of opportunity to adjust the amount of capital invested. This state of affairs is doubtless linked to a system of technical inspections sufficiently rigorous to dissuade operators from using vehicles which, though clearly cheap, would very likely soon be out of commission.

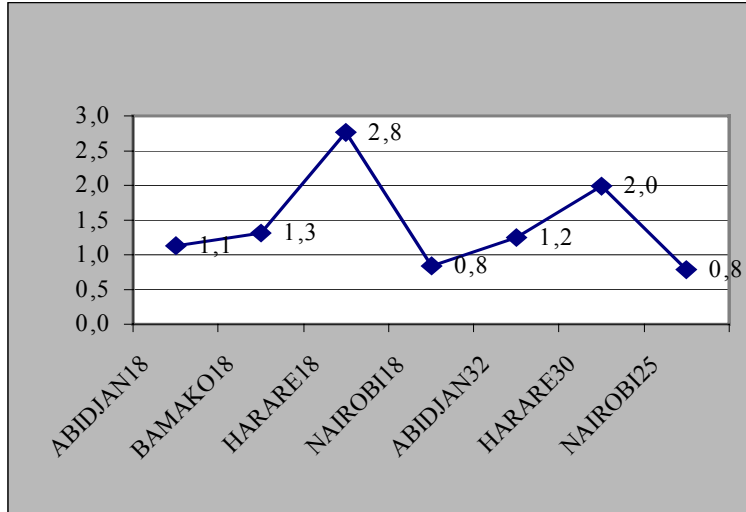
The following matrix contains the elements of profitability in this field:

Table 6: Rate of return in the different cities

| | | Discretionary cash flow | |
|-----------------|------|-------------------------|--------|
| | | High | Low |
| Cost of vehicle | High | Abidjan Nairobi | Harare |
| | Low | | Bamako |

This matrix generates the results shown in the following figure:

Figure 3: Payback periods, by vehicle seating capacity



To conclude these comments, we note that transport operations of the type under review are characterized by extremely short payback periods, the result of:

- a cost structure fully under operator control except for fares, which are favorable only in Nairobi;
- the fact that little capital is tied up, a direct outcome of reliance on used vehicles, which are probably in poor condition, especially in Mali.

4.2 IMPOSSIBILITY OF REPLACING THE FLEET UNDER EXISTING BANK-FINANCING OPTIONS

We have looked into the possibilities of financing new vehicles on the terms and conditions currently available in the four countries concerned.

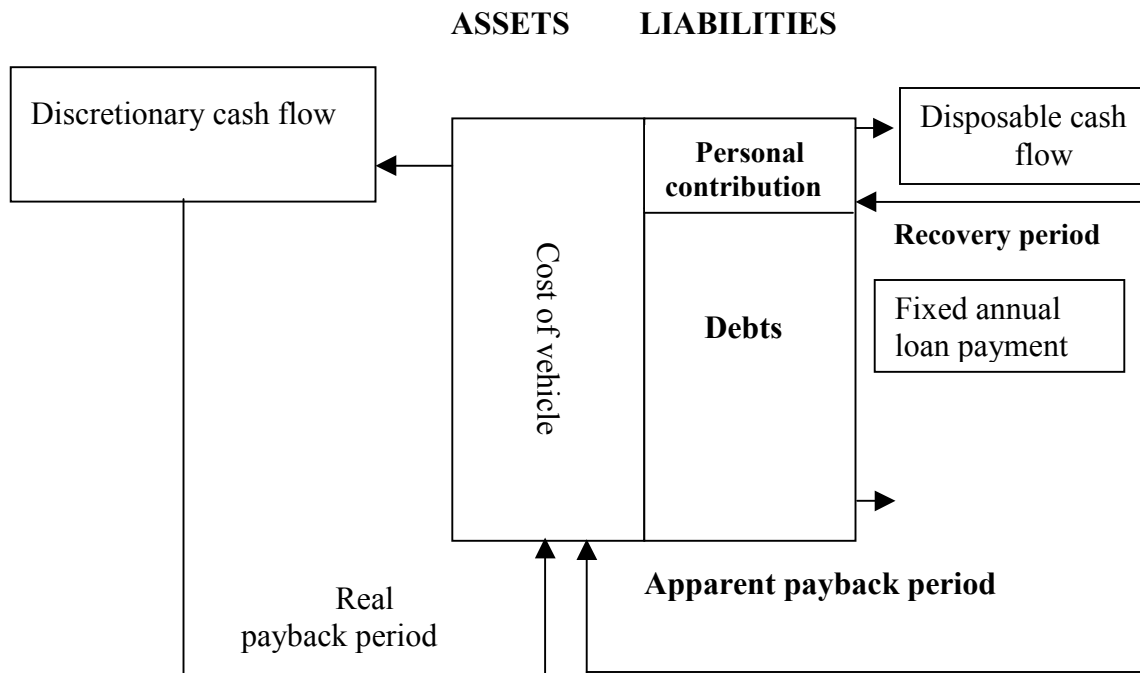
After stating the principles on which we base our evaluation, we will set out the facts and figures that demonstrate why it is not feasible to rely on conventional bank financing.

4.2.1 Evaluation principles

The following assumptions were made:

- That personal funds invested consisted of annual discretionary cash flow and proceeds from the resale of the existing vehicle.
- That the unpaid balance of the cost of the new vehicle is financed by borrowing at the usual rates in force in the countries concerned.
- That the length of the loan period is a uniform 36 months, the maximum period African banks will consent to on this type of investment.

The graphic representation of this financial package is as follows:



Under this type of arrangement, where the vehicle is financed partly with the operator's own funds and partly with debt, there are several ways to view the rate of return and so several ways to calculate a payback period.

1. As before, the capital invested – in other words, the cost of capital – generates the discretionary cash flow. Financial logic dictates that it is this flow which should determine how long it will take to reconstitute the capital invested. The length of this payback period is independent of the financing solution the operator may choose.
2. The operator's own funds may be valued at a specific rate of return, or, inversely, a specific period of time may be assigned for their recovery. The basis for calculating these indicators is the disposable cash flow, meaning the discretionary cash flow less the fixed annual loan payment.
3. However, in the African context, it is quite unlikely these two indicators will be taken into account, since the operator is naturally going to compare the invested capital to cash flow after payment of financing charges. In other words, he is going to compare the disposable cash flow to the capital invested and then calculate an apparent payback period, which will be less favorable than the real payback period. Obviously, the latter is going to depend heavily on the terms and conditions on which the investment capital is to be financed.

We have estimated these various indicators for all four cities.

4.2.2 Evaluation of profitability using conventional bank financing

The results obtained are presented in the following table:

Table 7: Cost-effectiveness of conventional bank financing (in US\$)

| CITIES | ABIDJAN | BAMAKO | HARARE | NAIROBI | ABIDJAN | HARARE | NAIROBI |
|--|------------------|--------------|--------------|--------------|------------------|------------------|------------------|
| <i>Seating capacity</i> | 18 places | | | | 32 places | 30 places | 25 places |
| | | | | | | | |
| Cost of vehicle | 31979 | 28776 | 30631 | 32258 | 49693 | 47125 | 40323 |
| Personal contribution | 17047 | 8026 | 9833 | 21543 | 27087 | 30671 | 33477 |
| Amount borrowed | 14931 | 20750 | 20798 | 10715 | 22607 | 16454 | 6845 |
| Annual interest rate | 20 | 20 | 50 | 30 | 20 | 50 | 30 |
| Loan duration (months) | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| Discretionary cash flow | 10 | 49 | 5 | 13 | 14 | 11 | 20 |
| | 912 | 56 | 124 | 476 | 820 | 820 | 580 |
| Disposable cash flow | 4253 | - 4296 | - 8790 | 7857 | 4735 | 816 | 16983 |
| Real payback period on vehicle (years) | 3 | 6 | 6 | 2 | 3 | 4 | 2 |
| Apparent payback period on vehicle (years) | 7.5 | n/m | n/m | 4.1 | 10.5 | 57.8 | 2.4 |
| Payback period on own funds (years) | 4.0 | n/m | n/m | 2.7 | 5.7 | 37.6 | 2.0 |

n/m = not meaningful

This table shows that, except in Bamako and Harare, real payback periods are three years or less. This is very satisfactory, and demonstrates the high rates of return obtainable in the other two cities on the capital invested in new vehicles.

It shows as well that the cash flow disposable after financing is negative in Bamako and also (with 18-seat vehicles) in Harare, where it would therefore be impossible to balance accounts if recourse were had to bank financing at market rates. In all the other cases, disposable cash flow is positive, and bank financing is therefore feasible in strict terms of solvency.

Nairobi alone promises reconstitution of own funds in less than three years. In the other cities, the periods are too long to interest African operators (and negative with 18-seat vehicles in Bamako and Harare). In other words, it is necessary to recognize that these transport enterprises can be creditworthy but not sufficiently profitable to meet the financial expectations usual in Africa.

With the exception of 25-seat vehicles in Nairobi, apparent payback periods are too long to interest investors.

To conclude, it is impossible to envisage conventional bank financing in this transport field, despite satisfactory rates of return on capital employed. This is the direct outcome of terms and conditions of financing (a repayment period that is too short; interest rates that are too high) that put far too much pressure on discretionary cash flow.

This conclusion amply justifies the provision of concessional financing facilities.

5. FROM CONCESSIONAL FINANCING TO RENOVATED VEHICLES

5.1 IMPACT OF CONCESSIONAL FINANCING

Using a methodology identical to that employed previously, we attempted to determine whether financing based on lower interest rates and longer repayment periods would be likely to resolve the contradictions identified above.

The terms and conditions of financing assumed were:

- personal contribution of 25 percent of the cost of the new vehicle;
- annual interest at 8 percent, plus a 3 percent commission for a guarantee fund;
- a repayment period of 60, instead of 36, months.

The following table summarizes the results obtained:

Table 8: Concessional financing and requirements for cost-effectiveness (in US\$)

| CITIES | ABIDJAN | BAMAKO | HARARE | NAIROBI | ABIDJAN | HARARE | NAIROBI |
|--|-----------|--------|---------|---------|-----------|-----------|-----------|
| <i>Seating capacity</i> | 18 places | | | | 32 places | 30 places | 25 places |
| Cost of vehicle | 31979 | 28776 | 30631 | 32258 | 49693 | 47125 | 40323 |
| Personal contribution | 7995 | 7194 | 7658 | 8065 | 12423 | 11781 | 10081 |
| Amount borrowed | 23984 | 21582 | 22974 | 24194 | 37270 | 35344 | 30242 |
| Annual interest rate | 8 % | 8 % | 8 % | 8 % | 8 % | 8 % | 8 % |
| Loan duration (months) | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Disposable cash flow | 4901 | 2 | - 10009 | 7415 | 5476 | 7770 | 12221 |
| Real payback period on vehicle (years) | 3 | 6 | 6 | 2 | 3 | 4 | 2 |
| Apparent payback period on vehicle (years) | 6.5 | n/m | n/m | 4.4 | 9.1 | 6.1 | 3.3 |
| Payback period on own funds (years) | 1.6 | n/m | n/m | 1.1 | 2.3 | 1.5 | 0.8 |

n/m = not meaningful

This table reveals that operations with 18-seat vehicles in Bamako and Harare are still not creditworthy. (Although 18-seaters in Bamako break even, this cannot be considered true solvency, given the volatile nature of results in this type of context.)

We will not comment on real payback periods again. The results are identical to the previous case, since this criterion is independent of the type of financing arrangement.

The apparent vehicle payback period in the case of operations with a positive disposable cash flow is over three years in all cases. Virtually only operations in Nairobi with 25-seat vehicles would allow replacement under these financial conditions. With the exception of Nairobi, all payback periods are longer than the loan repayment period.

On the other hand, the payback periods on operators' own funds are very satisfactory, although:

- (i) this is as much the result of the decrease in personal contributions compared to the preceding case as of the improved loan terms; and
- (ii) operators are very unlikely to take this indicator into account.

However, no allowance was made for the financial advantage represented by surplus cash. Since one of the underlying hypotheses here is that the operator's personal contribution is limited to 25 percent of new vehicle cost, part of the discretionary cash flow and proceeds of resale of the old vehicle remain available to the operator. There are three ways of incorporating this advantage into our calculations:

- either by determining what income can be derived from this surplus cash and adding it to the operator's disposable cash flow;
- or by subtracting the amount of surplus cash from the cost of the new vehicle and calculating the recovery period on the net capital investment;
- or by returning to a situation where the operator's personal contribution includes the entire discretionary cash flow and the resale value of the vehicle, which is the simplest solution.

The first two methods were tried in relation to Abidjan and did not change the conclusions fundamentally⁵.

The third method was applied to all the cities, giving the following results:

Table 9: Inclusion of entire discretionary cash flow and requirements for cost-effectiveness (in US\$)

| CITIES | ABIDJAN | BAMAKO | HARARE | NAIROBI | ABIDJAN | HARARE | NAIROBI |
|--|------------------|--------|--------|---------|------------------|------------------|------------------|
| <i>Seating capacity</i> | 18 places | | | | 32 places | 30 places | 25 places |
| Cost of vehicle | 31979 | 28776 | 30631 | 32258 | 49693 | 47125 | 40323 |
| Personal contribution | 17047 | 8026 | 9833 | 21543 | 27087 | 30671 | 33477 |
| Amount borrowed | 14931 | 20750 | 20798 | 10715 | 22607 | 16454 | 6845 |
| Annual interest rate | 8 % | 8 % | 8 % | 8 % | 8 % | 8 % | 8 % |
| Loan duration (months) | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Disposable cash flow | 7170 | - 452 | - 92 | 10793 | 9151 | 7697 | 18859 |
| Apparent payback period on vehicle (years) | 4.5 | n/m | n/m | 3.0 | 5.4 | 6.1 | 2.1 |
| Payback period on own funds (years) | 2.4 | n/m | n/m | 2.0 | 3.0 | 4.0 | 1.8 |

Under these conditions, Nairobi shows an apparent payback period of three years or less for both sizes of minibus it operates. While the situation improves in most of the other cases, it does not do so enough to change behaviors.

Payback periods on operators' own funds increase, however, which is logical, since capital investment requirements are higher than under the preceding scenario.

⁵ Cf. Étude régionale sur l'organisation, le financement et la rentabilité des micro-entreprises de transport urbain en Afrique subsaharienne : le cas des *Gbabkas à Abidjan*, Banque mondiale, mai 2000, document de travail SSATP Working Paper N°. 45, pp. 87-89.

If the belief is that there is little chance of interesting owner-drivers when the apparent payback period is 36 months, and that in any case they will continue to opt for their present operating pattern despite the availability of concessional financing, then another solution has to be sought. This would involve offering cheap, long-term financing on used, and therefore less costly but still serviceable, minibuses – in other words, on *renovated* vehicles

5.2 IMPACT OF RENOVATED VEHICLES ON THE EQUATION

The next step was to examine cost-effectiveness under the following scenario: operation of used vehicles costing between 30 and 50 percent less than new vehicles. This reduction in costs does not necessarily mean that the vehicles operated would be in fairly good repair, but rather that some element of subsidization of renovation costs would be included. There can be little doubt that this would be the best solution. The same concessional financing arrangements would be available as in the preceding case. The results of these simulations, conducted only for Bamako and Abidjan, are summarized in the following table:

Table 10: Payback period in months according to cost of vehicle as percentage of new vehicle price

| CITIES | ABIDJAN | | BAMAKO |
|--|---------------------------------|-----------|-----------|
| <i>Seating capacity</i> | 18 places | 32 places | 18 places |
| Cost of vehicle (as % of new vehicle price) | <i>Payback period in months</i> | | |
| 70 % | 40 | 50 | 149 |
| 65 % | 36 | 44 | 118 |
| 60 % | 32 | 39 | 96 |
| 55 % | 28 | 34 | 78 |
| 50 % | 24 | 29 | 64 |

In the case of Abidjan, the cost of an 18-seat vehicle could not be more than 65% of the price of a new vehicle, and a 32-seater not more than 60%. As for Bamako, the cost of this type of operation would be well beyond operators' financial means.

To conclude, the availability of concessional financing would certainly not be a general panacea. While it would suit Nairobi well, in the other cities it would be of limited benefit only, mainly given – and we repeat – the expectations of African operators where payback periods are concerned. Substituting renovated vehicles for new vehicles, while it would clearly improve the financial stability of transport microenterprises in Abidjan, would change nothing in Bamako, or in Harare, its virtual twin.

GENERAL CONCLUSIONS

The above rapid, but nevertheless thorough, examination of the financial landscape in which urban transport microenterprises operate in the four cities studied enables us, we believe, to identify certain inescapable factors and also to recommend certain worthwhile remedial measures.

1. KEY FINANCIAL CONSIDERATIONS

In the larger sense, the results of this survey were no surprise to us. Microenterprises that produce urban transport services repeat almost all the financial behaviors of microenterprises in other sectors. For example:

- (i) Management focused on operating liquidity. The fundamental performance criterion is generation of enough cash flow to cover living expenses and, if possible, allow some savings, a goal that is virtually always achieved.
- (ii) Well-recognized savings behaviors, which result in accumulation of sums that are significant on the operators' own particular scale.
- (iii) Diversification of business interests, a behavior that often interferes with development of the various activities the operators invest in. It doubtless explains the limited size of their transport enterprises. Even if these enterprises generate major savings, reinvestment of a part of the savings flow in other activities is a definite obstacle to the formation of full-scale transport enterprises.
- (iv) Widespread ignorance of the banking channels through which financing needs could be covered.
- (v) Management practices mainly focused on quick recovery of invested capital, which affects both sides of the payback period equation:
 - ❖ First, the amount of capital invested. The behaviors observed are clearly aimed at achieving maximum savings through investment in used vehicles whose state of repair does not always guarantee their safety.
 - ❖ Second, pursuit of the highest possible profit. Since fares are either regulated (Harare) or subject to heavy competition (Nairobi), only costs allow some room to maneuver. It is here that the management practices of the informal sector come into their own, in the form of a hotchpotch of: low wages (no social security, insane work hours), tax evasion, economizing on maintenance (at the expense of safety) – a list that is hardly exhaustive.

One thing is very clear: this policy succeeds very well in all the cities studied except Harare. Profits are high, and capital is reconstituted at stupefying speed. In addition, the surveys largely confirm stakeholders' high opinion of the profit potential of this activity.

In the circumstances, what chance has a policy that advocates replacing old vehicles, often in poor repair, with new vehicles that cost their operators far more? This, precisely, is the second point we wish to deal with in these Conclusions.

2. WHAT CAN BE EXPECTED OF A POLICY FAVORING NEW VEHICLE PURCHASE?

It is readily understandable that such a policy can succeed only if fits in with the logic of the operators' themselves. Many of these microentrepreneurs are clearly prepared to accept a lower rate of return (meaning a less rapid payback period) in exchange for the privilege of operating a new vehicle, but not all that much lower. We have worked on the hypothesis that a payback period longer than three years will be a deterrent to potential investors. This is clearly the maximum, since it is already three times longer than the present period; it also corresponds with the maximum loan term granted on this type of investment. An additional factor is the great rapidity with which these vehicles deteriorate, given the conditions under which they are operated.

Even considering the very concessional lending terms and conditions envisioned in this report, this three-year period is obviously unlikely to prove widely acceptable. In terms of the real rate of return on invested capital, it would be workable with all sizes of vehicle in Abidjan and Nairobi. However, given the apparent rate of return, which is the indicator likely to carry the most weight with operators, it would be valid only in Nairobi for 25-seat minibuses, and then only when the operator is personally able to put up 25 percent of the price of his vehicle. If higher personal contributions were possible, equal to a year's discretionary cash flow plus the proceeds of any vehicle resale, it would also be feasible to replace 18-seat vehicles, but again only in Nairobi. None of the other three cities could meet the prevailing rate of return standard.

Nevertheless, since the methodology followed in this report reduces the actual discretionary cash flow, as was noted previously⁶, then this type of financing arrangement could be considered feasible as part of profitable operation of 18-seat vehicles in Abidjan, but not 32-seaters. Perhaps thought should be given to an intermediate-size vehicle for Abidjan, a little less expensive than the Mercedes but large enough to ensure operating solvency. It should also be remembered that the calculations in this report are based on capacity to finance one vehicle only. The problem would have to be posed in different terms for an enterprise running a fleet of several minibuses, since financing capacity should be easier to establish.

Financially speaking, the best solution in Abidjan would be fleet replacement with the less costly renovated vehicles, financed on concessional loan terms. And there would be no reason for not extending the same policy to Nairobi, where it would improve payback periods even further, besides encouraging operators to advance and expand their replacement plans. In Harare and Bamako, if the aim is to keep payback periods reasonable, there is clearly no use in looking to financing arrangements for the solution. Instead, it would be advisable to deregulate fares in both cases, thus paving the way for revenues to improve substantially

However, deregulating fares in Harare would come into collision with the realities of its economic life. During the course of our survey there, respondents indicated that spending on transport was already a very heavy item in their household budgets. A fare increase large enough to enable the city's transport microenterprises to be self-financing would probably be unaffordable for wage-earners forced to travel to and from work each day by bus.

The preceding remarks lead us to make the following points:

- Measures of this type will very often produce short-lived windfall effects. An attractive prospect is likely to trigger fleet replacement and improvement behaviors which, once the measure becomes a thing of the past, will give way again to old behaviors. It is a dangerous illusion to believe that "financing" is a powerful panacea. Though good terms and conditions

⁶ Refer to paragraph Part 2, Section 2.2, above.

of financing are often an inducement to try out new behaviors, they rarely lead to radical changes. What this means in the transport sector is that such measures definitely need to be an integral part of substantive moves to transform its whole business environment.

- The temptation represented by uniform measures needs to be resisted. However, since 25- and 30-seat vehicles are clearly more satisfactory than smaller vehicles in all respects, including financial performance, some sort of premium needs to be attached to greater size. We also advocate encouraging real transport “enterprises,” meaning owners of various vehicles, because they are likely to be in a less precarious financial position, and to be more professional in their business behaviors, than microenterprises, and certainly than owners of a single vehicle. It is unfortunate that the survey findings do not allow a clear picture to be obtained of the operating patterns and degree of financial stability of enterprises of this larger type. However, given the need to obtain data not confined exclusively to financial matters, the survey terms of reference resulted in a “vehicle approach” rather than an “enterprise approach.” We believe it is absolutely crucial to carry out a study specifically focused on fleet-based transport enterprises. In many respects, this type of survey would prove much less complex than the earlier one because it would be more targeted, and would assuredly show the precise direction a financing policy should take. It would obviously be necessary to develop a toolkit that would help target the particular characteristics of these enterprises in each city more easily and more realistically.

ANNEXES

ANNEX 1
VARIANT OF CASE STUDY: HARARE

1. Changes in operating pattern

Hypotheses:

- Co-driver employed
- 12 round trips per day
- Other parameters not changed

| Seating capacity | 18 places | 30 places |
|-----------------------------|------------------|------------------|
| Revenue in foreign exchange | 55 224 | 87 020 |
| Revenue in US\$ | 1 301 | 2 050 |
| | | |
| Fuel | 15 341 | 18 492 |
| in US\$ | 361 | 436 |
| in % | 27.78 | 21.25 |
| Technical services | 8 370 | 11 330 |
| in US\$ | 197 | 267 |
| in % | 15.16 | 13.02 |
| Administrative services | 1550 | 3263 |
| in US\$ | 37 | 77 |
| in % | 2.81 | 3.75 |
| Taxes | | |
| | | |
| Value added | 29 963 | 53 935 |
| in US\$ | 706 | 1 271 |
| in % | 54.26 | 61.98 |
| Personnel costs | 4 885 | 6 100 |
| in US\$ | 115 | 144 |
| in % | 16.30 | 11.31 |
| EBITDA | 25 078 | 47 835 |
| in US\$ | 591 | 1 127 |
| in % | 83.70 | 88.69 |
| Operator salary | 3 885 | 4 500 |
| in US\$ | 92 | 106 |
| in % | 12.97 | 8.34 |
| Taxes | | |
| | | |
| Discretionary cash flow | 21 193 | 43 335 |
| in US\$ | 499 | 1 021 |
| in % | 70.73 | 80.35 |

2.- Impact on replacement possibilities assuming concessional financing with personal contribution equivalent to annual discretionary cash flow and proceeds of resale of old vehicles (in US\$)

| Seating Capacity | 18 places | 30 places |
|--|------------------|------------------|
| Cost of vehicle | 30 631 | 47 125 |
| Personal contribution | 10 705 | 31 103 |
| Amount borrowed | 19 926 | 16 022 |
| Annual interest rate | 8 % | 8 % |
| Loan duration (months) | 60 | 60 |
| Disposable cash flow | 848 | 8 118 |
| Real payback period on vehicle (years) | 6 | 4 |
| Apparent payback period on vehicle (years) | 36 | 5.8 |
| Payback period on own funds (years) | 12.6 | 3.8 |

This variant, although it improves operating cash flow, does not change the conclusion that it is unsuitable for this type of operation.

ANNEX 2

COMPARISON OF DRIVER INCOME IN ABIDJAN AND BAMAKO

In the process of interpreting the survey findings, we took the option of linking operator income to driver salaries. The determination of driver salaries thus became a central element in the calculation of discretionary cash flow. Comparing Abidjan and Bamako highlighted a curious situation, which was emphasized in our commentary and which it is useful to explain here.

It may seem odd that a vehicle which generates half the revenue generated by another, similar vehicle can produce such a high income for its driver. A comparison of the situation in Bamako, the one we are referring to, with that of a driver in Abidjan whose vehicle generates revenue on the same scale will solve the paradox.

| EXPENSES | BAMAKO | ABIDJAN | DIFF. | REVENUE | BAMAKO | ABIDJAN | DIFF. |
|-------------------------|---------|-----------|---------|---------------|---------------|-----------|----------|
| Fuel | 223 080 | 336 000 | 112 920 | Fare revenue | 901 680 | 1 757 700 | 856 020 |
| Fees to terminal | 4 600 | 75 600 | 71 000 | Misc. revenue | 23 000 | | -23000 |
| Inspection fees | 11 500 | 42 000 | 30 500 | | | | 0 |
| Custodial/washing | 7 000 | 14 000 | 7 000 | | | | 0 |
| Minor repairs | 6 500 | | -6 500 | | | | 0 |
| Co-driver | 30 000 | 84 000 | 54 000 | | | | 0 |
| Ticket collector salary | 52 000 | 84 000 | 32 000 | | | | 0 |
| Owner's share | 455 000 | 980 000 | 525 000 | | | | 0 |
| Total | 789 680 | 1 615 600 | 825 920 | Total | 924 680 | 1 757 700 | 833 020 |
| | | | | | Bonus | 135 000 | 142 100 |
| | | | | | Fixed salary | 35 000 | 35 000 |
| | | | | | Actual income | 170 000 | 1 77 100 |

This comparison of monthly accounts denominated in CFA francs shows clearly that while the revenue generated by an 18-seat minibus in Abidjan is CFAF 833,020 higher than what the same class of vehicle generates in Bamako, total running costs in Abidjan are again higher than the Bamako figure, exceeding it by CFAF 825,920, and wiping out Abidjan's revenue advantage almost entirely. Furthermore, while the ratio between the two revenue figures is 1.9:1, the ratio between the two total cost figures is 2.04 :1. In other words, the Bamako driver does well for himself simply because the situation enables him to adjust costs to revenue in absolute terms, and even to gain an advantage in relative terms.

We decided to treat the average income of the driver of an 18-seat minibus in Bamako as lower than that assigned as part of our findings interpretation process. We settled on CFAF 140,000, half way between the revenue of the driver of a *duruni* and the figure selected initially. This makes it possible to incorporate this drop in operator salary into calculation of the discretionary cash flow. This revision results in the following key changes:

- Discretionary cash flow generated by 18-seat vehicle: US\$5,510 instead of the previous US\$4,958.

- Vehicle payback period: 1.18 years instead of 1.3 years.
- Disposable cash flow assuming conventional bank financing: US\$3,497.
- Disposable cash flow assuming operator personal contribution equivalent to annual discretionary cash flow plus proceeds of sale of old vehicle: US\$448, or a payback period of 64 years.

Strictly speaking, these difference in results would not change our initial conclusions.

ANNEX 3
SHORT FINANCIAL GLOSSARY

Working capital: Funding requirements associated with the operating cycle. Taken as the difference between current assets and current liabilities.

In French: *Besoins en fonds de roulement d'exploitation (BFRE)*

Payback period: Time required for the cash flows (or revenue) generated by an investment to allow recovery of the cost of the investment.

In French: *Délai de récupération*

EBITDA: Earnings before interest, taxes, depreciation, and amortization.

En French: *Excédent brut d'exploitation (EBE)*

Operating cash flow: The cash flow generated by operating activities. It is calculated by deducting changing working capital needs from earnings before interest, taxes, depreciation, and amortization.

In French: *Excédent de trésorerie d'exploitation (ETE)*

Discretionary cash flow: Current cash flow which the operator may use as he sees fit. It is calculated by subtracting his basic household expenses from the surplus operating cash flow. It has also been calculated (at a lower figure) by deducting the driver's salary from the surplus operating cash flow.

In French: *Flux discrétionnaire*

Diposable cash flow after financing: Discretionary cash flow less interest costs.

In French : *Flux disponible après financement*

Rate of return on investment: Current revenue or discretionary cash flow produced by the capital employed, before or after financing. It is the counterpart concept to payback period.

In French: *Taux de rendement*

Rate of return: Differentiated, in theory, from the preceding term (for which it often serves as a synonym) by including as part of revenue any gains accruing during the period on which the calculation is based.

In French: *Taux de rentabilité*

Internal rate of return (IRR): Unlike the two preceding items, this is a discount rate. It is the discount rate that equates the present value of future net revenue streams generated by an investment to the cost of that investment. This definition is expressed by the following equation:

$$-I + \sum_{t=1}^n F_t / (1+k)^t = 0$$

where :

I = the investment

F_t = cash flow at point in time t

K = the discount rate

t = point in time

In French: *Taux de rentabilité interne (TRI)*