

CHAPTER 1

Introduction and Overview

The objective of the study is to examine, identify, and quantify the factors behind Africa's high prices for road transport. Such prices are a major obstacle to economic growth in the region, as shown in several studies. For example, Amjadi and Yeats (1995) concluded that transport costs in Africa were a higher trade barrier than were import tariffs and trade restrictions. Other analyses by the World Bank (2007a) demonstrated that Africa's transport prices were high compared to the value of the goods transported and that transport predictability and reliability were low by international standards. This study's findings should help policy makers take actions that will reduce transport costs to domestic and international trade.

Past Research on Transport Prices and Costs

A few empirical studies, including trucking surveys carried out since the mid-1990s, demonstrated that transport prices were high in Africa compared with other regions. One study (Rizet and Hine 1993) estimated that road transport in three Francophone African countries (Cameroon, Côte d'Ivoire, and Mali) was up to six times more expensive than in Pakistan and about 40 percent more expensive than in France (where labor rates are much higher). Another study comparing seven countries in three continents demonstrated that for distances up to 300 kilometers,

the unit costs of road transport in Africa were 40–100 percent more than rates in South east Asia (Rizet and Gwet 1998). Transport prices for most African landlocked countries range from 15 to 20 percent of import costs (MacKellar et al. 2002)—a figure three to four times more than in most developed countries.

Key factors that raise costs include low productivity of the trucking industry in Africa, notably because of infrastructure constraints (Pedersen 2001); low levels of competition between service providers (Rizet and Hine 1993); and weak infrastructure (Limao and Venables 2001). Limao and Venables also suggested that weak infrastructure accounted for most of Africa's poor trade performance. From a cross-country regression, they concluded that trade was highly sensitive to transport costs. For example, a 10 percent drop in transport costs increases trade by 25 percent.

In the past, it was presumed that large investments in improving road infrastructure would reduce transport prices. Since the 1970s, the World Bank has actively supported improvements to the transport corridors in Africa, including much support focused almost exclusively on improving infrastructure (see annex 1). Although such improvements facilitated road transport and reduced costs for the trucks carrying cargo on the corridors, no clear impact on the transport prices was evident. Furthermore, the end users of road transport services did not seem to fully benefit from the lower transport costs and better service quality resulting from improved infrastructure.

A review of the African corridor projects by the World Bank's Independent Evaluation Group (IEG)¹ found that most projects covered only a single transport mode or agency and focused on the development or rehabilitation of physical facilities. These Bank projects did not establish the prerequisites for future operations, such as regional agreements on corridor operations and streamlining and harmonization of regulation affecting transport. Neither the IEG review nor other studies attempted to explain why the reduction in operating costs did not result in lower transport prices.

Scope and Methodology of This Study

Scope. The study focuses on four key international corridors in Africa's subregions that connect ports of entry and exit to the hinterland (see map 1). In these corridors, the study analyzes transport costs and prices by grouping a number of factors into three main categories: (i) infrastructure, namely road network quality and coverage; (ii) factor costs, such as

fuel, labor, and equipment; and (iii) market economics, including regulation, companies' organization, and transport and trade procedures.

The four corridors selected for the study² cover 13 countries in Africa's four subregions carrying more than 70 percent of the international trade of the seven landlocked countries in the study.³ The 13 countries served are as follows:

- **West Africa:** Ghana, Niger, Burkina Faso, Togo
- **Central Africa:** Cameroon, Chad, the Central African Republic
- **East Africa:** Kenya, Uganda, Rwanda
- **Southern Africa:** South Africa, Zimbabwe, Zambia

The transport corridors are reviewed by the following characteristics:

- geography (entry ports and landlocked areas served)
- corridor institutional structure and the degree of competition between corridors and transport modes
- shipping connections
- regulatory regime and market structure

Methodology. Since much past research has been inconclusive, this study attempts to expand both the breadth and depth of the research and can claim to be original in several areas. Primarily, this is the first comprehensive and practical effort in the past 15 years to measure and quantify the high transport costs and prices in Africa using clear empirical evidence. This is also the first attempt of its kind in Africa and worldwide to disaggregate input factors into three tiers of costs and prices: (i) transport prices or tariffs incurred by end users, (ii) transport costs incurred by commercial transport providers, and (iii) vehicle operating costs (VOCs). Logistics costs are not formally assessed here but only used to complement the analysis, as there is no agreed definition of logistics costs. However, in the context of this study, the term *logistics* may be defined as the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished goods, and related information from point of origin to point of consumption. In other words, logistics costs encompass a much wider range of activities than do transport costs and include transaction costs (related to transport and trade processing of permits, customs, and standards), financial costs (such as inventory, storage, and security), and nonfinancial costs (such as insurance). Finally, this is the first study that clearly recognizes the regional

diversity of Africa's transportation market and attempts to measure with the same yardstick the costs, prices, and performance of the transportation industry across the four subregions.

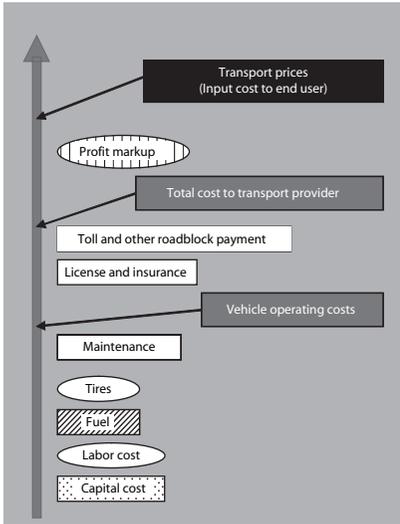
The study was carried out in three phases. Phase I comprised a large trucking survey aimed at understanding the operations of truck services. The survey was carried out in 7 countries, but with traffic implication of 13 countries under the four subregional corridors and conducted interviews of approximately 20 trucking companies and 60 owner-operators (see annex 3). Phase II comprised field visits to validate the preliminary findings derived from the trucking survey. Because the survey responses could not provide a full picture of country-specific constraints on road transport services, field visits were carried out⁴ to supplement preliminary findings and collect qualitative information. This phase also attempted to identify policies that could help lower the cost and price of transport services. Phase III comprised quantitative analysis of the trucking survey, combined with the qualitative information from the field visits. A stakeholder's feedback workshop was organized to discuss the results of the study and the design of various policy recommendations in each of the four subregions.

Much can be done to help Africa reduce the burden of high transport prices. However, a clear diagnostic framework is missing, without which it is not possible to formulate appropriate policies and actions. This study aims to provide the needed diagnostic framework.

For the discrepancy between costs and prices to be analyzed, the distinction between the three tiers of cost factors needs to be clarified. This distinction is useful because transport prices may or may not reflect transport costs, and major parts of transport costs are basically based on VOCs. Also, VOCs are a good reflection of the quality of road infrastructure and the types of vehicles on the roads. A definition of the three tiers of cost factors is given in figure 1.1.

Analysis of the Transport Environment

With its low wage levels, Africa's transport costs and prices should be much lower—probably the lowest in the world—since the trucking industry is a labor-intensive activity. Paradoxically, Africa's high transport prices (especially in Central Africa) are accompanied by poor service quality, on average below other regions in the world. This is mainly a result of high profit markups. On the other hand, transport costs (costs to transport service providers) are not excessively high in Africa, compared with developed and most developing countries.

Figure 1.1 Various Definitions Related to Transport

1. Transport prices are the rates charged by a transport company or a freight forwarder to the shipper or importer. Normally transport prices = TC's + operator's overhead and profit margin.
2. Transport costs (TC's) = VOCs + other indirect costs, such as license, insurance, road toll, and roadblocks payment.
3. Vehicle operating costs (VOCs) include various direct costs to operate a given vehicle, notably maintenance, tires, fuel, labor, and capital costs.

Source: Study team.

Logistics, regulation, competition. Among the logistics costs faced by the trucking industry are market entry barriers such as access restrictions, technical regulations, customs regulations, and cartels.⁵ In Africa, the overall political economy of freight logistics exacerbates problems in trade and transport facilitation that are found worldwide. Logistics are fertile ground for rent-seeking activities such as corruption, protectionism, and inefficient trucking services, which in turn become a barrier to entry of modern operators. All these factors increase fragmentation and inhibit the emergence of the seamless supply chains needed by importers and exporters. Countries become trapped in vicious circles where inefficient regimes sustain low-quality services (including transport and customs broking) and high transport prices.

Of the market entry barriers, freight-sharing schemes probably are most costly. The current system favors the use of large fleets, which consist mostly of old trucks in poor condition. Furthermore, it fosters corruption because the only way for a transport provider to increase its volume of cargo is to bribe the freight bureaus, the government entities charged with allocating freight among the various transport providers. Freight-sharing schemes also are the reason why direct contracting—a negotiated arrangement between shipper and transporter that is one of the best signs of better logistics—is almost nonexistent in Central Africa and is marginal

in West Africa. The freight allocation system is entrenched in these sub-regions, and several attempts to abolish it have not been successful.

In West and Central Africa, large markups by providers in transport cartels⁶ are the main determinant of high transport prices. Cartels create a large gap between costs and prices and provide low quality. Operators in such markets achieve high profits despite low yearly utilization of their vehicle fleets and many nontariff barriers. Under such conditions, it would be expected that new operators would enter the market aggressively, but this does not happen. In fact, there is an oversupply of trucking capacity because outsiders find it hard to break into a market dominated by cartels and market access rules. In East Africa the trucking environment is more competitive and the market more mature. Major corridors in Southern Africa are the most advanced in terms of prices and efficiency of services, mainly because of a deregulated transport market.

Financing costs and import duties. Although the cost of financing is generally an issue for most sectors in Sub-Saharan Africa, neither the cost of financing trucks nor the level of custom duties (10 percent import tariff for large, new trucks) explains why truckers operate old fleets. Rather, old fleets persist in Central and West Africa because the regulatory systems in practice set a cap on truckers' revenues, deterring investment in new, high-cost trucks.

Truck overloading. In some subregions, excess transport capacity resulting from the freight allocation and queuing systems results in low levels of truck utilization and high transport prices. The two main strategies that operators undertake to mitigate low truck utilization are using secondhand trucks and overloading the trucks. Overloading is known to be a critical factor in damage to road structure and is therefore an important issue in many countries worldwide. Interventions in Africa by the World Bank and other donors to control overloading generally have not been successful. The reason, as determined by this study, is that most stakeholders in the trucking business have a vested interest in operating with overloads.

The impact of road conditions. In Sub-Saharan Africa, poor roads are perceived as being the main cause of high variable operating costs, since they increase fuel consumption, increase maintenance costs by damaging the vehicles, reduce the life of tires, reduce vehicle utilization because of lower speeds, and reduce the life of trucks. Results from the study suggest that poor road conditions along the selected Sub-Saharan Africa corridors do not add much to operating costs of trucks. The surveys and data simulations using the Highway Development and Maintenance Model 4

(HDM-4) the standard model for analyzing road investments, indicate a mixed result. In Central and West Africa, where traffic is low and the truck fleets are old, as long as international corridor routes are paved and in reasonable condition, further improvement of road conditions do not result in significant reduction of transport costs. However, in some East African corridors with higher traffic levels and newer fleets, improving road condition or increasing road capacity has a greater impact on reducing transport costs.

Different types of transport companies coexist on the same corridors. However, in general, the cost structure in Sub-Saharan Africa, even in the more modern and better-organized companies is, in general, different from developed countries: in Africa, trucking companies' variable costs are high while fixed costs are often low. Central and West Africa are the extreme cases with the variable costs to fixed costs ratios of 70/30, while in East Africa the ratio is 60/40. In contrast, in a developed system such as France, the variable to fixed costs ratio is 45/55. In all African corridors, fuel and lubricants are the main variable costs, accounting for at least 40 percent of total VOCS. Tires are another important cost factor, whereas bribes do not seem to play a major role as has been generally perceived on most African corridors.

Policy Recommendations

Policy recommendations need to distinguish between regulated and more mature market environments. In a competitive environment with high traffic volumes, measures to improve road conditions and limit fuel prices are likely to yield significant results. Furthermore, in such environments, measures aimed at reducing delays at the border or at weighbridges would also be useful as they would help increase truck utilization.

In regulated environments such as West and Central Africa, regulatory constraints (formal and informal) must be dismantled because they are the root cause of limited competition, poor service, and high transport prices. International experience has shown that deregulating the trucking industry is effective in generating more competition, lowering transport prices, and improving the quality of service in most cases (see table 2.1 in chapter 2).

West and Central Africa. In these subregions, the most effective measures to reduce transport costs are likely to be a decrease of fuel costs, an improvement of road condition, and, to a lesser extent, a reduction of border-crossing delays. Despite the perceived effects of informal payments,

Table 1.1 Measures and Outcomes in West and Central Africa

<i>Measures</i>	<i>Decrease in transport costs (%)</i>	<i>Increase in sales (%)</i>	<i>Decrease in transport price (%)</i>
Rehabilitation of corridor from fair to good	-5	NS	+/- 0
20% reduction of border crossing time	-1	+2 to +3	+/- 0
20% reduction of fuel price	-9	NS	+/- 0
20% reduction of informal payment	-1	NS	+/- 0

Source: Study team estimation based on trucking survey data.

NS = Not significant.

reducing them by 20 percent would have a marginal impact on transport costs. The analysis shows that improving road conditions from fair to good and reducing fuel prices by 20 percent could lead to reductions in transport costs by 5 percent and 9 percent, respectively (table 1.1).

However, such substantial reductions in transport costs would not lead to any reduction in transport prices because of the strongly regulated transport market in these regions. Therefore, any intervention should aim first at reforming cartels.

Breaking the regulatory status quo in many countries is difficult because of a coalition of interest groups against change. The corridors under review often are the main, and sometimes the only, transport mode for international and domestic trade. Therefore, truckers have strong leverage with high-level authorities who can block trade. Furthermore, some of these authorities own or indirectly control trucks or trucking companies and therefore benefit from the status quo and current market-sharing schemes.

Deregulating the trucking industry in West and Central Africa is less a technical than a political and social issue. The main concern is that under a liberalized, competitive market, the demand could be served efficiently by a much smaller number of trucks. This would lead to a drop in trucking employment and profits, since some companies (or owner-operators) would disappear and other would shrink. Participants in the stakeholders' workshops in Ouagadougou and Bangui emphasized the importance of mitigating the social impact of a more efficient but smaller trucking industry. There is a chance that the coalition of interest groups opposing change in the transport market in most of West and Central African countries might accept reforms as long as compensation schemes are introduced with the purpose of paying, at least partly, the social costs of such reforms.

East and Southern Africa. In these subregions, thanks to the competitive markets, and in contrast to the results in West and Central Africa, measures that would reduce transport costs would also lower transport prices. In East Africa, the most effective measures would be improving the condition of the corridor road and lowering fuel prices. Reducing the time of crossing the border would also have a positive although less significant impact. Reducing informal payments would have a minimal impact on costs, and no impact on transport prices.

In Southern Africa, reduction in border crossing time has the biggest impact on prices. This is mainly because the current delays in this corridor (especially at Beit Bridge and Chirundu) are at least twice as long (four days compared to a maximum of two) as at the Malaba border post in East Africa, and because of the more modern, pricier trucks used in Southern Africa. Creation of a one-stop border post would be the ideal solution for this corridor. The second most effective measure is a reduction in fuel prices, which has an impact similar to that in the East Africa corridor. Improvement in road conditions has a lower impact in Southern Africa because the road is in fair or good condition along the whole corridor. As in East Africa, reducing informal payments would have no large effect on the price of trucking services (see tables 1.2 and 1.3).

The study, therefore, concludes that the northern corridor in East Africa would be the only one where improving the physical condition of road would both (i) be economically justified, because it would substantially lower transport costs, and (ii) result in a decrease in transport prices. This conclusion also applies to the north-south corridor in Southern Africa subregion, but to a lesser extent. On the contrary, in West and

Table 1.2 Measures and Outcomes in East Africa

<i>Measures</i>	<i>Decrease in transport costs (%)</i>	<i>Increase in sales (%)</i>	<i>Decrease in transport price (%)</i>
Rehabilitation of corridor from fair to good	-15	NS	-7/-10
20% reduction of border-crossing time	-1/-2	+2/+3	-2/-3
20% reduction of fuel price	-12	NS	-6/-8
20% reduction of informal payment	-0.3	NS	+/-0

Source: Study team estimation based on trucking survey data.

NS = Not significant.

Table 1.3 Measures and Outcomes in Southern Africa

<i>Measures</i>	<i>Decrease in transport costs (%)</i>	<i>Increase in sales (%)</i>	<i>Decrease in transport price (%)</i>
Rehabilitation of corridor from fair to good	-3/-5	NS	-2/-3
20% reduction of border-crossing time	-3/-4	+18	-10/-15
20% reduction of fuel price	-10	NS	-5/-7
20% reduction of informal payment	-1	NS	+/-0

Source: Study team estimation based on trucking survey data.

NS = Not significant.

Central Africa, traffic levels are low and rehabilitation and upgrading cannot yet be economically justified for many sections of road. This is because cartels have steered the economic benefits of investment to a limited number of interest groups.

From recommendations to action. The measures listed above were tested by simulation analysis, and their importance confirmed in stakeholders' workshops in all four subregions. Converting the recommended measures into actionable policies should be done in the context of individual corridor and country conditions. Furthermore, policies should be examined in detailed, customized studies; such examination is outside the scope of this study. The following fiscal and other incentives are illustrative of measures that could be considered:

- *Create a more balanced tax structure.* This would lower the price of fuel, shifting more of the tax burden to vehicle registration in those cases where fuel tax revenues largely exceed reasonable road user charges. Tax balance would be especially helpful in inland countries where high domestic fuel prices hinder trade and negatively affect the competitiveness of trucking industries.
- *Change truck import duties to encourage the import of newer trucks or penalize the import of older trucks.* This can be done either by adjusting the current setting of import duties, which is proportional to the price of trucks, to a lump sum import duty or by progressive increase of import duties with the age of truck imported. This would encourage the modernization of the trucking fleet (in a competitive environment).
- *Find ways to provide direct monetary compensation to those truckers who would become redundant when a more efficient trucking market was established following deregulation.*

Role for the World Bank and development partners. Given the findings presented in this report, development partners, including the World Bank, should be encouraged to revise their development strategies. Transport services have been neglected for years under the assumption that reductions in VOC would automatically translate into lower transport costs, then transport prices. However, rent-seeking behaviors and poor governance of the trucking industry are central to many of the issues of low-income African countries. The list below suggests areas in which the donor community could help governments improve the efficiency of the transport market and eventually reduce transport prices.

- *Support transport market deregulation.* Support from development partners in this area would make the biggest impact in reducing transport prices in many countries in Africa. Successful institutional change such as breaking trucking cartels requires patience, continued policy dialogue, and strong support from development partners. Some partners might be inclined to drop their support if changes do not happen rapidly, but they should be aware that such actions could negatively affect several corridor projects.
- *Support the collection of trucking industry data.* Reliable data on the trucking fleet and operations are essential for analysis and policy formulation. Trucking surveys should be carried out periodically, probably every three to five years, as cost permits.
- *Support a review of the effect of fiscal policies on transport services,* especially in those countries where lowering the tax on fuel could be a useful instrument to reduce trade costs and to improve the competitiveness of the local trucking industry.
- *Support the use of country-specific trucking data in the economic analysis and design of road maintenance strategies.* Such analysis is, in most countries, done with the HDM-4 model, although country-specific trucking data are sparse. As a result, generic data with many assumptions are used in such model simulations. Data from trucking surveys could greatly improve the quality of the analysis and lead to more realistic results. One example is the need to introduce in the models the actual purchase price of the trucks, which in West and Central Africa often are bought secondhand, instead of using the price of new trucks. Using actual data would lead to different results, in particular reducing the possibility of overinvestment due to overestimation of investment benefit. If the investment analysis were done properly with realistic data, higher traffic levels might be needed to justify road improvements in some cases.

Following this introductory chapter, the study is organized as follows: Chapter 2 compares trucking in Africa with other regions. Chapter 3 reviews typical characteristics of the four study corridors, including an analysis of each corridor's transport market structure. Chapter 4 assesses the main determinants of transport prices and profitability, and chapter 5 demonstrates the impact of cartels on transport prices and service quality. Chapter 6 disentangles the main determinants of transport costs, and chapter 7 assesses the impact of road conditions on transport costs. Chapter 8 discusses perceptions about the trucking market, and chapter 9 analyzes the main measures aimed at lowering transport prices. Chapter 10 reviews the implications of the study for economic and fiscal analysis and for monitoring of the trucking industry. Chapter 11 presents conclusions and recommendations for ways international development agencies can support policies and for measures that could reduce transport prices.

Notes

1. World Bank (1994). This report covered 42 completed projects in 13 countries, including 7 landlocked countries (Rwanda, Burundi, Malawi, Zambia, the Central African Republic, Burkina Faso, and Mali) and six littoral countries (Kenya, Tanzania, Cameroon, Benin, Côte d'Ivoire, and Senegal).
2. **West Africa:** Cotonou–Ouagadougou, Cotonou–Niamey, Tema–Ouagadougou, Lomé–Ouagadougou, Lomé–Niamey; **Central Africa:** Douala–Bangui, Douala–N'Djaména; **East Africa:** Mombasa–Kampala–Kigali; **Southern Africa:** Durban–Lusaka–Ndola.
3. Burkina Faso, Niger, the Central African Republic, Chad, Uganda, Rwanda, and Zambia.
4. The following field visits were carried out in June 2007: Burkina Faso/Niger/Benin, Cameroon/Central African Republic, Zambia/South Africa, Kenya/Rwanda.
5. In Africa, because of the thinness of some markets, cartels form more easily than in Asia or Europe. However, market thinness does not necessarily induce the existence of cartels, as the case of Rwanda demonstrates.
6. Cartels are composed of independent organizations or companies formed to limit competition by controlling the production and distribution of a product or service. Cartels can set monopoly prices, which induce abnormal markup.