This chapter presents the findings obtained from the data gathered in the trucking survey relating to prices and profitability. The main findings from the study indicated that transport prices in Sub-Saharan Africa differ widely depending mainly on market regulation and structure. In a strongly regulated and noncompetitive environment, prices and profits are especially high, trucking along many international corridors being a strong seller’s market and a profitable industry for most companies in Africa.

**Heterogeneity of Transport Prices in Africa**

Transport prices differ widely in Africa. In Southern Africa they are, on average, two to three times lower than in Central Africa. Some subregions such as Central Africa are characterized by a large spread in transport prices, explained by the fact that some large trucking companies subcontract to truckers at a much lower price, and others operate in a complete informal market with low prices and extremely low transport quality.

*Transport prices and time.* These vary greatly between subregions. Central Africa is the most expensive, West and East Africa have similar prices, and Southern Africa is the cheapest. Transport time is also a good indicator of quality of service. There are discrepancies in transport times.
from cargo arrival at the port to the hinterland destination; the highest delivery speeds are in West and Southern Africa whereas the lowest reported speed is in Central Africa (see table 4.1).

**Price factors.** Data from the trucking survey provide clues about the importance of cartels as a preeminent price factor in Africa, but there are other important factors in international transport. The findings also signal that transport practices, prices, and costs mainly are route specific.

The Importance of Rail Competition for Road Freight Prices

On the main international corridors, an absence of rail services creates opportunities for the trucking industry to inflate its prices. That is why intermodal competition on these corridors is critical. Increased competition from rail services benefits transport users primarily through comparable or lower transport costs.¹ Actual or potential competition from road operators drastically limits the railways’ pricing power,² even in the situations where railways enjoy commanding market shares (World Bank 2006).

Figure 4.1 compares rail and road prices in East and Central Africa. In East Africa, road prices are established by trucking companies and take

<table>
<thead>
<tr>
<th>Gateway</th>
<th>Destination</th>
<th>Distance (km)</th>
<th>Transit time from ship arrival to final destination</th>
<th>Transport price (in US$ per ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lomé</td>
<td>Ouagadougou</td>
<td>1,050</td>
<td>6–8 days</td>
<td>60–70</td>
</tr>
<tr>
<td>Cotonou</td>
<td>Niamey</td>
<td>1,000</td>
<td>6–8 days</td>
<td>65–95</td>
</tr>
<tr>
<td>Central Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Douala</td>
<td>N’Djaména</td>
<td>1,830</td>
<td>12–15 days</td>
<td>200–210</td>
</tr>
<tr>
<td>Douala</td>
<td>Bangui</td>
<td>1,450</td>
<td>8–10 days</td>
<td>200–210</td>
</tr>
<tr>
<td>East Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mombasa</td>
<td>Kampala</td>
<td>1,145</td>
<td>5–6 days</td>
<td>90</td>
</tr>
<tr>
<td>Mombasa</td>
<td>Kigali</td>
<td>1,700</td>
<td>8–10 days</td>
<td>100–110</td>
</tr>
<tr>
<td>Southern Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durban</td>
<td>Lusaka</td>
<td>2,300</td>
<td>8–9 days</td>
<td>90–130</td>
</tr>
<tr>
<td>Durban</td>
<td>Ndola</td>
<td>2,700</td>
<td>9–10 days</td>
<td>130–170</td>
</tr>
</tbody>
</table>

**Source:** Surveys of trucking companies and international logistics operators.

**Note:** Because of traffic imbalance, export prices are at most equal to import prices. However, in most cases, export prices are lower than import prices because to avoid coming back empty, truckers prefer to give discounts to get backload.
into account rail prices. Therefore, competition between rail and road transportation does exist.\textsuperscript{3}

Similarly, in Central Africa, rail prices are comparable to road prices. As in East Africa, trucking companies surveyed acknowledged that rail competition plays a role in the setting prices, especially for heavy and bulk commodities.\textsuperscript{4}

**Profitability Determinants**

Trucking is a profitable industry for most companies in Africa, especially along the main international corridors (see table 4.2). Managers of trucking companies acknowledge, for example, that paying back costs of a new or less than three-year-old truck takes less than three years. In the many African countries where transport demand, as a result of economic growth, is booming, truckers can rapidly recover costs. Road transport has turned to a strong sellers’ market almost everywhere in Africa.

*Profits are a function of market size and the number of market participants.* In Africa, because of the thinness of some markets, the cartels are easier to form than in Asia or Europe. However, this does not necessarily induce the existence of cartels, as we demonstrated in the case of Rwanda.

Fixed costs are abnormally high for Africa along the Douala–Bangui and the Ngaoundéré–Moundou corridors due to the extremely low yearly vehicle mileage (used as a proxy to measure efficiency of trucking service provision)—not because truckers use new trucks.

Standard deviation measures are especially high for prices. As noted above, this can be explained by the strategy of some large trucking...
Table 4.2  International Transport Prices, Costs, and Profit Margins (from Gateway to Destination)

<table>
<thead>
<tr>
<th>Route gateway–destination&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Price&lt;sup&gt;d&lt;/sup&gt; (US$ per km)</th>
<th>Variable cost (US$ per km)</th>
<th>Fixed cost (US$ per km)</th>
<th>Profit margin&lt;sup&gt;inh,c&lt;/sup&gt; (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Burkina and Ghana)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tema/Accra–Ouagadougou (Ghana)</td>
<td>3.53&lt;sup&gt;g&lt;/sup&gt;</td>
<td>1.54</td>
<td>0.66</td>
<td>80</td>
</tr>
<tr>
<td>Tema/Accra–Bamako (Mali)</td>
<td>3.93</td>
<td>1.67</td>
<td>0.62</td>
<td>80</td>
</tr>
<tr>
<td>Central Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Cameroon and Chad)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Douala–N’Djaména (Chad)</td>
<td>3.19</td>
<td>1.31</td>
<td>0.57</td>
<td>73</td>
</tr>
<tr>
<td>Douala–Bangui (Central African Republic)</td>
<td>3.78</td>
<td>1.21</td>
<td>1.08</td>
<td>83</td>
</tr>
<tr>
<td>Ngaoundéré–N’Djaména (Chad)</td>
<td>5.37</td>
<td>1.83</td>
<td>0.73</td>
<td>118</td>
</tr>
<tr>
<td>Ngaoundéré–Moundou (Chad)</td>
<td>9.71</td>
<td>2.49</td>
<td>1.55</td>
<td>163</td>
</tr>
<tr>
<td>East Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Kenya and Uganda)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mombasa–Kampala&lt;sup&gt;b&lt;/sup&gt; (Uganda)</td>
<td>2.22</td>
<td>0.98&lt;sup&gt;h&lt;/sup&gt;</td>
<td>0.35</td>
<td>86</td>
</tr>
<tr>
<td>Mombasa–Nairobi&lt;sup&gt;c&lt;/sup&gt; (Kenya)</td>
<td>2.26</td>
<td>0.83</td>
<td>0.53</td>
<td>66</td>
</tr>
<tr>
<td>Southern Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Zambia)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lusaka–Johannesburg&lt;sup&gt;d&lt;/sup&gt; (South Africa)</td>
<td>2.32</td>
<td>1.54</td>
<td>0.34</td>
<td>18</td>
</tr>
<tr>
<td>Lusaka–Dar-es-Salaam&lt;sup&gt;e&lt;/sup&gt; (Tanzania)</td>
<td>2.55</td>
<td>1.34</td>
<td>0.44</td>
<td>62</td>
</tr>
</tbody>
</table>

Source: Trucking survey data and own calculations. Exchange rates come from International Monetary Fund-International Financial Statistics.

Note: Prices are in US$ per kilometer because most companies have the same truck capacity and similar (over)loading practices on a corridor. Moreover, because of questions in reporting overloading, prices in US$ per kilometer are probably much more reliable than prices per ton-kilometer. Prices and costs were obtained from reported truckload (approximately 30 metric tons). Values include trucking services (three or more trucks) and truckers (one or two trucks). Standard deviation is in parentheses.

a. Destination country is in parentheses.
b. First segment of the northern corridor
c. Second segment of the northern corridor
d. First segment of the north-south corridor
e. Second segment of the north-south corridor
f. Some indicative prices are set by ministries of transportation in Africa but are not used. Prices set by freight allocation bureaus in Central Africa may be more respected.
g. Prices from the trucking survey are similar to the ones given by the Conseil Burkinabe des Chargeurs (see table below). Depending on the tonnage (official or real), prices per ton-kilometers may be more or less higher.
h. Data should be taken cautiously since some companies may omit some costs or, conversely, double count some costs.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Official data from Burkina Faso shippers' council</th>
<th>Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FCFA</td>
<td>US$</td>
</tr>
<tr>
<td>Ton</td>
<td>26,000–30,000</td>
<td>52–60</td>
</tr>
<tr>
<td>Container</td>
<td>1,300,000–1,400,000</td>
<td>2,600–2,800</td>
</tr>
</tbody>
</table>

Note: Exchange rate US$/FCFA = 0.002.

i. Data are consistent with Oyer (2007), who found US$1.10 per kilometer for Kenyan routes, without including overheads and management costs or border-crossing and bribes costs.
companies, especially in a regulated environment, to subcontract freight to truckers at lower prices. Consequently, some small subcontractors and truckers charge a low price and can hardly be profitable whereas some well-known trucking companies benefit from the regulated price and consequently reap large profits. Subcontracting also explains why old and new trucks travel along the same corridor. In most cases, new fleets indicate abnormally high markups, whereas old trucks belong to the subcontractors of a well-known trucking company.

Even though prices are relatively low in West Africa on the main international corridors compared with those in Central Africa, this does not prevent the trucking business from being profitable. Truckers keep production costs low through the combination of low capital costs (purchase of secondhand trucks) and minimal maintenance expenditures while maximizing revenues through overloading.

Success can rapidly turn into failure in the African transport industry and vice versa. If all the right conditions are attained (a “good” manager who gets access to the load, “good” drivers who find loads by themselves while limiting negative impacts to the truck, and a “good” truck that is reliable and cheap to maintain), then profitability can be high as the return on investment may average three years. Truckers who are unable to attain such conditions will not be profitable.

The various pricing strategies are all the more interesting, standard deviation being much lower for variable transport costs. In other words, most companies bear more or less similar variable costs, which by far are the most important determinants of transport costs.

**Transport prices determinants.** Table 4.3 confirms most of the findings from descriptive statistics. However, there is a very strong disconnect between costs and prices, especially for Central Africa, where neither variable nor fixed costs explain the high transport prices in the subregion. In fact, for Central Africa, the usual prices determinants are not statistically significant if we accept (i) that overloading induces higher transport prices and (ii) that there is a tariff premium for international corridors compared with national corridors. More surprisingly, higher transport prices are reported for roads in better condition. For example, roads along the Ngaoundéré–Moundou corridor are in very good condition and have high prices. This is most likely due to informal market-sharing agreements (see the section on market regulation).

Similarly, in West Africa, it is difficult to explain how transport prices are not closely correlated with transport costs, which are closely related to road conditions and variable costs. High fixed costs may explain high transport prices, which probably are related to the fact that some operators
work with foreign companies that have special niches of the market enabling them to charge higher prices. This hypothesis is corroborated by the fact that larger fleet sizes charge higher prices. Foreign or large shippers require a large fleet to gain access to local companies. Furthermore, as in Central Africa, overloading induces higher transport prices. However, contrary to Central Africa, international corridors seem to be cheaper than national corridors. This is probably related to the fact that in the trucking survey samples, national corridors are mainly operated by the Ghanaian fleet, which is in better condition than the Burkina Faso fleet that operates internationally. In any case, cheaper international corridors demonstrate that transport prices are probably much more reasonable in West Africa than in Central Africa.

The northern corridor in East Africa presents a different story, one of the main determinants of transport prices being road condition. To corroborate donors’ investment policies along the northern corridor, we can demonstrate that on roads in poor condition, transport companies charge much higher prices. As in West Africa, the extent of fixed costs explains...
transport prices, which demonstrates that many operators have a good sense of their fixed costs (contrary to the situation in Central Africa). Similar to the other subregions, overloading induces higher transport prices. Finally, like in West Africa, international corridors seem to be cheaper than national corridors, which means that companies operating in the subregion charge a premium price. The main reasons for this premium are explained in the following sections. In any event, international transport in the northern corridor seems to be much more costly than national Kenyan transport.

**Profitability determinants.** Trucking along international corridors is usually a profitable industry for most companies in Africa. There is a strong disconnect between costs and prices, but profits are relatively well explained by costs level (see table 4.4). Consequently, since price settings are more or less exogenous, the most profitable companies in Africa are the ones able to operate on routes with abnormal prices or with a certain degree of cost efficiency. That is why, in East Africa, trucks operating on roads in good condition are profitable (probably because of the fact that

<table>
<thead>
<tr>
<th>Dependent variable: margins</th>
<th>West Africa</th>
<th>Central Africa</th>
<th>East Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable costs</td>
<td>–0.59</td>
<td>–0.78**</td>
<td>–1.00**</td>
</tr>
<tr>
<td></td>
<td>(0.41)</td>
<td>(0.20)</td>
<td>(0.39)</td>
</tr>
<tr>
<td>Fixed costs</td>
<td>–0.28</td>
<td>–0.36**</td>
<td>1.75*</td>
</tr>
<tr>
<td></td>
<td>(0.31)</td>
<td>(0.08)</td>
<td>(0.93)</td>
</tr>
<tr>
<td>Yearly mileage</td>
<td>20.63**</td>
<td>0.59</td>
<td>4.56</td>
</tr>
<tr>
<td></td>
<td>(9.77)</td>
<td>(3.81)</td>
<td>(3.24)</td>
</tr>
<tr>
<td>Average load</td>
<td>0.03**</td>
<td>0.06**</td>
<td>0.04**</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Road condition</td>
<td>–2.41</td>
<td>3.38**</td>
<td>–21.24**</td>
</tr>
<tr>
<td></td>
<td>(2.83)</td>
<td>(0.58)</td>
<td>(4.66)</td>
</tr>
<tr>
<td>Fleet size</td>
<td>3.3E–02**</td>
<td>–3.3E–03</td>
<td>–4.6E–03*</td>
</tr>
<tr>
<td></td>
<td>(1.1E–02)</td>
<td>(3.0E–03)</td>
<td>(2.8E–03)</td>
</tr>
<tr>
<td>National</td>
<td>1.84**</td>
<td>–0.28</td>
<td>–2.44**</td>
</tr>
<tr>
<td></td>
<td>0.78</td>
<td>0.21</td>
<td>0.50</td>
</tr>
<tr>
<td>Constant</td>
<td>0.74</td>
<td>–1.30**</td>
<td>17.81**</td>
</tr>
<tr>
<td></td>
<td>(2.48)</td>
<td>(0.48)</td>
<td>(4.02)</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.29</td>
<td>0.50</td>
<td>0.42</td>
</tr>
<tr>
<td>Observations</td>
<td>73</td>
<td>120</td>
<td>56</td>
</tr>
<tr>
<td>Routes</td>
<td>4</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

**Source:** Task team estimation based on the trucking survey data.

**Note:** ** implies significance at the 5 percent level and * at the 10 percent level. Standard deviation is shown in parentheses.
on roads in good condition, operators charge similar rates). Profitability is even more pronounced for international corridors. In Central Africa, higher fixed and variable costs result in lower margins. For all the subregions, overloading creates higher profits, which explains why this practice is so widespread. In Central Africa, as for prices, higher profits are reported for roads in better condition. Once again, this is probably because of informal market-sharing agreements. Finally, companies operating on national corridors in West Africa are more profitable than subregional corridors, which reiterates the fact that transport prices may not be so high for Burkina Faso companies when their costs are taken into account.

In a competitive environment like the international corridors in Southern Africa, margins are set at 10–15 percent, which means that any savings in transport costs can have a positive impact on trucking profitability and transport prices.

Prices are inflated through the whole logistics chain. In a regulated environment, even though profits from freight forwarders may be lower, transport remains largely profitable. Any overhead or abnormal payment is automatically included in the price for the end user. Integrated services—which include shipping lines activities, port operations, logistics platforms operations, freight forwarding, and sometimes rail concessions—usually give a better quality of service but considerably inflate prices on several segments of transport, such as port operations or logistics platforms. These integrated global operators frequently prevent other operators from increasing their market share and use their market power to keep prices at high levels.

Notes

1. One fundamental aspect of road-rail competition that affects tariff differences between these two modes relates to government’s existing policies toward road users. Although it is not the intent of this work to address legislation, we note that long-standing policies to provide road infrastructure to users at less than full recovery costs create serious competition imbalances in the transport sector. Road infrastructure is usually financed through the government’s general budget, implying significant cross-subsidies from nonroad to road users, leaving only a fraction of total costs to be financed by road users. This may not have mattered in the past as railways were owned and operated by governments (that is, total subsidies for road and rail were roughly the same). However, the introduction of private operators, which are expected to fully cover their infrastructure maintenance and rehabilitation
costs through users’ fees, should alter significantly governments’ thinking in this area.

2. The impact of road-rail competition appears, nevertheless, to differ noticeably from one corridor to another as the spread between average road and rail prices varied in 2003 from 44 percent (Sitarail) to 213 percent (TRC) (World Bank 2006).

3. The governments of Kenya and Uganda concluded and support a joint rail concession between Mombasa and Kampala.

4. There is a strong correlation between average freight hauling distance and rail market share: the longer the route, the stronger a rail operator’s market share (World Bank 2006).

5. This dualism is common to many industries and is based on a product differentiation strategy. Probably standard deviation is high because both trucking companies and truckers were interviewed and have different pricing strategies.