

ROAD TRANSPORT OF GOODS IN INDONESIA: INFRASTRUCTURE, REGULATORY AND BRIBERY COSTS

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ABSTRACT

Indonesia's logistics costs have been identified as the weak link in the country's price competitiveness. Part of this problem is attributed to the cost of domestic transportation. This article attempts to quantify the components of domestic transportation of goods overland, especially those due to infrastructure, regulatory barriers, and illegal charges. The study focuses on Sulawesi and covers six routes connecting major cities on the island, as well as three other comparator routes in Sumatra, Java, and West Nusa Tenggara. This report finds that while a big portion of the cost comes from Indonesia's topography (and lack of infrastructural development to tackle these topography, such as the building of highways), some 10% of transportation cost is due to regulatory and illegal charges.

Keywords: *Road transportation, road transportation regulations, transportation charges*

INTRODUCTION

Although perceptions of the Indonesian business climate are improving on most fronts, perceptions of infrastructure and transportation have worsened. In some export sectors, more than 40% of the total pre-shipment and inland transportation costs are incurred within Indonesia before international shipment (Carana, 2004). This greatly harms Indonesia's international trade competitiveness and contributes to a high-cost economy. Indonesia's poor infrastructure is impeding the domestic trucking industry and limiting the ability of small business owners to access profitable markets. The poor quality of district roads is an impediment to trading across districts and to integrating poor and remote areas with larger markets. At the district level, only 49% of district roads are in reasonable condition (World Bank, 2007c). The costs and time required for small- and medium-sized enterprises or small farmers to reach markets significantly reduces their profits. Approximately 70% of freight in Indonesia is transported by trucks, and therefore the road system is critical. Unfortunately, the majority of the trucks on the road in Indonesia are old and poorly maintained.

Dangerous and costly practices such as overloading are common throughout Indonesia. Although weigh stations are required by law, truck drivers simply bypass them by paying a non-compliance fee to the local officials manning the weigh stations. This results in widespread overloading, endangering safety and damaging the roads even further. In addition to infrastructure costs, business owners and truck drivers must pay for licenses, permits and on-the-road charges. These costs, both legal and illegal, impose significant constraints on local producers' ability to trade. Corruption in the form of illegal bribes and fees is endemic in the road transportation sector in Indonesia. These fees result in increased prices for consumers. A recent report on Aceh (Olken and Barron, 2007) found that trucks traveling the route from Banda Aceh to Medan spent about USD 40 per trip, or about 13% of the total cost of a trip, on bribes, extortion, and protection payments. This study took a similar approach to the study by Olken and Barron, but examined nine trucking routes throughout the country. Using this larger sample size we confirm that their findings are not unique to Aceh, with the same costly and corrupt practices seen along roads throughout Indonesia. This domestic transportation survey, carried out in partnership between The Asia Foundation and the University of Indonesia's Economic Research Center (LPEM-FEUI) – examined transportation cost along nine routes in Indonesia.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Truck Survey

The aim of the truck survey was to obtain information on the direct costs paid by truck drivers during a trip. During the trip, a surveyor rode with each truck and obtained information on truck specifications, drivers' payment mechanisms, goods transported, expenses during the trip, legal and illegal payments, the quality of the roads, weigh stations along the route, traffic violations

and payments to police officers. Data was collected through direct observations along the selected routes, in which the surveyors filled our forms to record all payments made during the trip. These observations were complemented with driver and trucking firm interviews to obtain information on costs not paid on the road.

Table 1: Profile of a Typical Trucking Firm and Truck on Surveyed Routes

Firm Profile	
Ownership	Single Owner- Operated
Company Status	Sole Proprietorship
Fleet Size	Average of 4 Trucks
Truck Profile	
Average Age of Trucks	10 years
Type	Open-Box, allows overloading
Make	Mitsubishi
Commodities	Various

Source: primary data, processed

In 27% of the trucks surveyed, surveyors were also equipped with a global positioning system (GPS) device to record the trip (Table 2). The GPS units recorded information related to the topography of the route, the speed of the truck and the locations of legal and illegal payments. This data included distance traveled, travel time, altitude, bends, and slope, and the precise location of all stops and charges. This information was then used to calculate transportation costs related to infrastructure and to map the locations where charges occurred.

Table 2: Number of Observations, by Route

No	Routes	Number of Trips	GPS-equipped Trips	Firm Interviews
1	Bulukumba - Makassar	35	10	22
2	Pare Pare - Makassar	35	12	15
3	Palopo - Pare Pare	35	17	8
4	Mamuju - Pare Pare	35	15	17
5	Marisa - Gorontalo	36	6	25
6	Kotamobagu - Manado	34	4	13
7	Sumbawa Besar - Mataram	35	17	9
8	Malang - Surabaya	35	12	35
9	Rantau Parapat - Medan	35	12	35
		315	105	179

Source: primary data, processed

HDM-4 Model

The GPS data on road topography, such as the number of rises, falls and turns, was entered into a World Bank-developed infrastructure model, the Road User Costs Knowledge system, a part of the Highway Development and Management Model (HDM-4). This study uses a subset of HDM-4 Version 1.10 called the Road User Costs Knowledge System (RUCKS),

which models road user costs based on data on road characteristics, vehicle fleet data, and financial unit costs. The RUCKS model estimates nine components of vehicle operating cost. These are: 1) Fuel consumption, 2) Lubricant consumption, 3) Tire wear consumption, 4) Crew time, 5) Maintenance parts, 6) Maintenance labor requirements, 7) Depreciation, 8) Interest, and 9) Overhead costs. The RUCKS input variables that affect the cost of operating a vehicle on a given route can be divided into three broad groups:

1. *Road characteristics*: the relevant topographic and road surface characteristics of the route, e.g., vertical and horizontal alignments, road width, and surface profile irregularity or 'roughness';
2. *Vehicle characteristics*: the physical and operating characteristics of the vehicle, e.g., the weight, and number of hours and kilometers operated per year;
3. *Regional financial unit costs*: the financial or economic unit costs of a truck's operation in the region, e.g., the region-wide fuel prices, relative prices of new vehicles, parts and labor.

Data from the truck and the firm surveys were used as inputs for the RUCKS model. In addition, some information, especially regarding the quality of the road, was obtained from a 1999 survey conducted by the Ministry of Public Works and BPS-Statistics Indonesia.

Firm Survey

In addition to the truck survey, another survey was conducted with trucking firm managers or owners. The aim was to collect information on indirect costs and overheads, including regular payments for protection, the competitive environment, and costs relating to business regulations and licensing. They were asked for information relating to the company's finances, labor costs, maintenance costs, costs related to permits and taxes, illegal payments, and competition. To ensure information from firm managers/owners corresponded to information provided by truck drivers, the sample of firms was drawn from the trucks that were already surveyed. The final number of firms surveyed is less than that of the trucks because most firms owned more than one truck. In addition to this standard firm survey, an in-depth interview questionnaire with a smaller set of trucking firms was also conducted to capture an overview of legal and illegal payments, as well as local competition in the trucking sector. The interviews were conducted with three firms in the starting cities of each of the surveyed routes.

Regulatory Mapping

A mapping of the regulatory environment was also conducted at both the national and local levels. This was to understand the main regulations governing the trucking sector and to understand the impediments that these regulations may create for the sector. A research team in Jakarta collected national level laws and regulations, while field surveyors collected local regulations that affect the trucking business, directly or indirectly. The areas of regulation covered include general business regulations, technical regulations, entry regulations, and license tariffs regulations. The levels of regulations collected include national laws, government regulations, ministerial decrees, and local regulations. Interviews were conducted with officials from the Ministry

of Transportation to clarify the policy position of the government towards the trucking industry. Additionally, interviews with the National Road Transport Association (Organda) and the Indonesian Forwarders Association (Gafeksi/INFA) were conducted in Jakarta to obtain a picture of the national-level issues faced by the sector.

Legal Context for Transportation Charges

Regulations governing road transportation can be divided into two types: regulations related to the operations of trucking firms, vehicles, and road use and physical infrastructure-related regulations. The two sets of regulations are linked at the national level through safety and technical standards, which aim to maintain road safety and the quality of public roads. Key regulations and actors are described in Table 3.

Table 3: Key Regulations on Overland Transportation of Goods in Indonesia

Laws and Regulations	Ministry responsible	Relevant content
<i>Road transport</i>		
Law no. 14 Year 1992 on Road Traffic and Transportation	Transportation	Definition of motorized vehicle for public use; definition of road networks for use by public transportation vehicles
Government Regulation no. 41 Year 1993 on Road Transportation	Transportation	Road transportation management, including permits; types of trucks and goods
Government Regulation no. 44 Year 1993 on Vehicles and Drivers	Transportation	Vehicle registration
Minister of Transportation Decree no. 69 Year 1993 on Road Transportation of Goods	Transportation	Transportation company permit; operational area of trucks
<i>Infrastructure</i>		
Law no. 38 Year 2004 on Roads	Public Works	Road operation (regulation, maintenance, development and supervision of roads) and its authority
Government Regulation no. 34 Year 2006 on Roads	Public Works	Road maintenance and supervision
Minister of Transportation Decree no. 65 Year 1993 on Road Facilities	Transportation	The operation of weigh stations
Minister of Transportation Decree no. 13 Year 2001 on Road Classifications in Sulawesi	Transportation	Maximum axle load and dimensions of trucks allowed on different classes of roads; available classes of roads in Sulawesi

The Legal Framework of the Road Transport Sector

All aspects of the construction and classification of road infrastructure fall under the jurisdiction of the Ministry of Public Works. This includes regulations and standards related to road construction, upgrading, and maintenance. The most important infrastructure-related laws are the 2004 Law on Roads and the 2006 implementing regulation. The 2004 law classifies roads by their road network systems, functions, class, and levels of authority. Traffic codes, road access, and safety standards are set and monitored by the Ministry of Transportation. These include not only road management, but also permitting and licensing requirements related to transportation. The key regulations are the 1992 national law on road traffic and transportation and its 1993 implementing regulation. Road transportation of goods is also specifically governed by the Ministry of Transportation. Although the national regulatory framework on road transportation is complex, there are no regulatory barriers to entry into the sector. Apart from technical and traffic regulations, the general trucking industry is not directly regulated by the national government. There is no entry regulation for trucking firms or for specific routes. The only permit that a general trucking firm needs to obtain is the transportation business permit, issued by district/city governments. This permit itself does not serve as an entry

barrier into the sector, but rather as a registration of the company. Other types of companies that operate trucks to support their core business do not even need to obtain this permit.

Areas of operation for trucks and trucking firms are not restricted by the national government. The national government specifically states that the “operational area for the transportation of good is not limited by administrative jurisdictions and/or national boundaries.” Route permits, which act as an entry regulation for specific routes, by law should only be issued for passenger transportation, though some districts and provinces still require them of trucking companies.

Local Interpretation of National Regulations

A key characteristic of the Indonesian legal environment is the discrepancy between national and local regulatory practices. Despite the nationally set standards on road transportation and road quality, local governments in Indonesia pass regulations that contradict or disregard national regulations. A decade ago, in response to high local permitting costs, the Government of Indonesia issued a law that limited many local taxes and user charges at the provincial and district/city levels. Although this law was proven to have a positive impact on business climate by reducing prices and regulatory burden (Usman et al., 1999), it was overturned in 2000 when local governments succeeded in reaffirming their authority to manage taxes and permits at the local level.

Despite the negative impact on the free flow of goods, some local governments still issue permits and licenses and impose user charges on the movement of goods. As mentioned earlier, trucking firms have few permitting obligations according to national law. They only need to obtain the transportation business permit, issued by district/city governments, and the vehicle safety inspection certificate (*KIR*). However, in practice, local governments may impose a number of types of permits, which are described in Box 1.

Box 1 – Types of Permits that May Be Required by Local Governments

1. Truck-related permits

Loading and Unloading Permit

Trucking firms/owners may need to get this permit from district/city governments in order to be able to load and unload goods.

a. Parking user charge

This permit may also be required by some district/city governments, based on the parking location, whether at a specific truck parking lot or on a public street.

2. Road-related permits

Route Permit

a. Route permits for trucks, although not specified by the national government, are sometimes issued by the district/city and provincial governments. This type of permit also goes by some other names. In Makassar, South Sulawesi, the city government issues an operational permit; in Pohuwato and Gorontalo, it is called a goods-transporting vehicle permission

or letter. The validity of the permits varies for every 3, 6, or 12 months. Provincial governments in Sulawesi also issue the route permit or some variant of it.

b. Road Use Permit

Road use permits are issued at the district/city level. The idea of this permit is that all trucks which pass through a district/city must pay the local government to use their roads.

c. Border Crossing Permit This permit may be required to cross district or provincial borders. Similar to the road use permit, this permit is not common and is rarely used by the local government.

3. Commodity permits

Commodity permits are sometimes required for transporting some commodities, especially natural resource based products, such as forestry products. These permits are governed by specific sectoral ministries, such as the Ministry of Agriculture or the Ministry of Forestry. Commodity permits vary across regions and across commodities. Among the districts and cities passed by the selected routes of this study, the city of Palopo stands out as one district that enforces the inspection of commodities, and imposes a high fee for this inspection.

4. Business permits

In addition to the above operational permits, trucking firms also have to obtain general business permits, which are issued by the district/city governments.

a. Trade permit

This is one of the most common permits in use across Indonesia. Originally the permit was supposed to serve as an entry permit into the trading sector. However, its issuance has lost its original purpose as ministerial decrees governing its administration have been vague on whether it is the trade sector or trading activities that it is supposed to control.

b. Business registration

Business registration is required of all companies, after they have received the trading permit

c. Other permits

Depending on the type of company, trucking firms, especially the bigger ones, may need to get other business permits, such as the nuisance permit or warehouse registration.

Source: firm and truck surveys

Route permits are inconsistently applied and legally unnecessary for trucks. Although national regulations on road transportation already specify that route permits are only required for passenger transportation vehicles, approximately 37% of districts/cities on the surveyed routes required a route permit for trucks. Table 4 below lists the names of districts/cities and provinces, from whom trucking firms obtain the route permits. Some firms also obtain route permits for districts outside of the

surveyed routes. Most of the districts/cities that issue route permits are in Sulawesi and all Sulawesi provinces also issue route permits. In the three routes outside Sulawesi, only a few districts issue route permits and no provincial governments issue provincial route permits. The number of trucking firms, within each route, that bothered to obtain the permits is not particularly high, an average of 19% for district permits and 54% for provincial permits. However, the issuance of the route permits violates government regulations on road transport since they restrict the movement of goods across the country.

Table 4: Districts/Cities and Provinces that Issue Route Permits

No	Router	District/city permit	Number of firms having route permit (for each district)	% of firms having route permit (for each district)	Provincial permit	Number of firms having route permit (for each prov)	% of firms having route permit (for each prov)	Number of respondents (firm survey)
1	Bulukumba - Makassar	Bulukumba	1	5%	South Sulawesi	14	64%	22
2	Pare Pare - Makassar	Barru	2	13%	South Sulawesi	8	53%	15
		Pare-Pare	2	7%				
		Pinrang	1	13%				
		Pangkajene Kep.	2	13%				
		Maros	2	13%				
		Makassar	2	13%				
3	Palopo - Pare Pare	Unspecified districts	2	25%	South Sulawesi	3	38%	8
4	Mamuju - Pare Pare	Mamuju	15	88%	West Sulawesi	17	100%	17
					South Sulawesi	17	100%	
5	Marisa - Gorontalo	Boalemo	9	36%	Gorontalo	2	8%	25
		Bone Bolango	1	4%	Central Sulawesi	4	16%	
		Gorontalo, district	12	48%	North Sulawesi	1	4%	
		Gorontalo, city	1	4%				
		Pohuwato	9	36%				
		Kota Wanya	1	4%				
6	Kotamobagu - Manado	Bitung	1	8%	North Sulawesi	13	100%	13
		Minahasa	4	31%				
		South Minahasa	5	38%				
		North Minahasa	2	15%				
		Kotamobagu	1	8%				
7	Sumbawa Besar - Mataram							9
8	Malang - Surabaya	City entry permit, unspecified	4	11%				35
9	Rantau Parapat - Medan	Labuhan Batu	1	3%				35
		Tapanuli Tengah	1	3%				
	Total/Avg	23 districts	81	19%	5 province	79	54%	179

Source: primary data, processed

Weigh Station Regulations

The standards and operations of weigh stations are governed by the Ministry of Transportation. The Ministry of Transportation is responsible for maintaining road quality by ensuring that trucks are not overweight and tests the specifications of new vehicles, including their maximum weight. This serves as the basis for the weight limits of each type of vehicles. The trucks' weight limitation is checked at weigh stations. Weigh stations are operated by provincial governments. Prior to decentralization in 2000, the weigh stations were operated by the provincial branches of the central Ministry of Transportation. Decentralization transferred this authority to the provincial governments. Under the current decentralized administration, provincial governments have the authority to determine the location of weigh bridges and operate them, whilst the national government sets guidelines on technical standards and the standards for the location of weigh bridges.

Only half of all weigh stations are operational and few are effectively enforced. According to a Ministry of Transportation study (Government of Indonesia, 2001), 83 of 175 weigh bridges in the country are not working. Equipment frequently malfunctions and is not replaced and the interaction between truck drivers and local departments of transportation officials at these stations provides an

opportunity for corruption and bribery. The central government is currently attempting to address these problems by gradually reducing the tolerance limit for overweight vehicles.

International Comparisons

The regulatory framework for road transportation is far simpler in other countries. In Indonesia, local regulations differ from national regulations, leading to confusion and excess charges for route permits and internal border crossings. This is counter to the direction the rest of the world is heading. Many countries and federations are moving towards a free-trade zone in terms of trade and transport, reducing regulatory burdens on industries and the flow of goods. For example, the European Union (EU) has made great strides in creating free movement across borders and unifying trade regulations. Transport policy was one of the first European Community policies incorporated in the Treaty of Rome in 1957, which formed the basis for the European Union. Since then, constant efforts have been aimed at facilitating the free movement of persons and goods across member states.

The transport market for goods and passengers was liberalized in Europe in 1998. Since then, operators that are recognized and hold what is known as a 'Community license' can supply international transport services throughout the European Union. The EU is also working on a harmonization of road transport taxes and charges. Currently a common rule exists for annual taxes for heavy goods vehicles over 12 metric tons and there is a minimum rate for fuel taxes, aimed at reducing differences between EU countries. Other countries in Asia are making steps toward a harmonized system with clear regulations related to permits and road charges. For example, in China there are generally no checkpoints at provincial boundaries, and national law prohibits the stopping of vehicles by any institution other than traffic police. In Pakistan, route permits are issued by provinces, but there are no cross-border permit fees. Indonesia could also move towards a simpler regulatory system, thereby reducing the burden of licenses and illegal charges that falls on the trucking industry and local firms.

METHODS

This study aims to compile direct and indirect costs of transporting goods across districts, in particular those relating to road infrastructure, regulatory and licensing costs and illegal charges. In particular, the study aims to: a) Analyze and review the regulatory framework governing the road transportation sector at the national, provincial, and district/city levels; b) Estimate the quality and key characteristics of road infrastructure along the selected routes; and c) Disaggregate total transportation costs along selected routes. In order to obtain data on infrastructure and regulatory costs, two types of surveys were used. The first is the truck survey, which was used to interview truck drivers. The second is the firm survey, which was used to interview truck owners or trucking firm managers.

Selected Routes

The study focuses on six routes in Sulawesi with three other routes in East Java, West Nusa Tenggara and North Sumatra serving as comparisons. The sample routes were all roads that connect large cities or towns in their respective provinces. The nine routes chosen for this study are:

- South Sulawesi: Bulukumba to Makassar
- South Sulawesi: Parepare to Makassar
- South Sulawesi: Palopo to Parepare
- South/West Sulawesi: Mamuju to Parepare
- Gorontalo: Marisa to Gorontalo
- North Sulawesi: Kotamobagu to Manado
- West Nusa Tenggara: Sumbawa Besar to Mataram
- East Java: Malang to Surabaya
- North Sumatra: Rantau Parapat to Medan

Listing and Sampling

Before the survey was conducted, for each selected route the survey team had to list the population of trucks and draw a sample. The main concern was finding the best way to accurately inventorize the population of trucks serving the selected routes. The population was defined as “all the trucks serving the selected routes”. Trucks refer to vehicles with a minimum of six tires. The ownership types of the trucks were not limited and included trucks managed by large firms and owner-operators. The survey team attempted to construct an inventory of the truck population serving each route from all the truck parking lots, both public and company owned, in the starting city of the selected routes. From this list the surveyors were supposed to choose three public parking lots randomly and two company-owned lots. They would then determine the sample size from each lot proportional to the total number of trucks parked in the sampled parking lots, for a total number of sampled trucks of 35 on each route. Listing was conducted between two to three days in each location.

However, during the listing and sampling, a number of difficulties arose. First, some trucks were not parked at the designated parking lots as owners preferred to park their trucks closer to their shops or homes. In some of the cities, there was no public truck parking. Second, some of the selected routes were part of longer routes and trucks would only pass the start cities of the survey without stopping. Therefore, it was difficult to list truck population based on trucks parked at parking lots. In practice therefore, enumerators attempted to construct the best list that they could of trucks serving the route using whatever sources of information that were available. In cases where listing yielded more than the sample size of 35 trucks, the sample was chosen randomly out of the list. In cases where the initial listing provided less than 35 trucks, surveyors would enlarge the listing area to include nearby districts or sub-districts where drivers also park their trucks.

RESULTS AND DISCUSSION

The main findings of this study can be organized into four separate areas. First, we discuss the overall operating costs of trucks in Indonesia and how these costs depend on road topography and infrastructure quality. Second we look at two specific types of payments on the road: local user-charges and weigh bridge charges. The third sub-section describes security payments made to the police and to *preman*, both on the road and routinely by truck owners. Finally, we detail the licensing costs paid by truck owners.

Vehicle operating costs were estimated using data from three different sources: the RUCKS model, the results of the firm survey, and the results of the truck survey. The vehicle operating costs in Indonesia are higher than the average for other Asian countries. Table 5 below shows the vehicle operating costs on all the routes surveyed. This calculation assumes a standardized truck across all routes so that the differences in costs across different routes result only from differences in the topography and quality of the road. The average vehicle operating cost is IDR 3,093 per kilometer, or approximately USD 34 cents per kilometer. This is higher than an estimated Asian average, which is about USD 22 cents per kilometer.

Table 5: Vehicle Operating Costs

	Bulukumba - Makassar	Pare Pare - Makassar	Palopo - Pare Pare	Mamuju - Pare Pare	Marisa - Gorontalo	Kotamobagu - Manado	Sumbawa - Mataram	Malang - Surabaya	Rantau Parapat - Medan	Average
Vehicle Operating Costs (IDR/km)	3,084	3,117	3,121	3,083	2,958	2,950	3,467	2,823	3,236	3,093

Source: primary data, processed by RUCKS

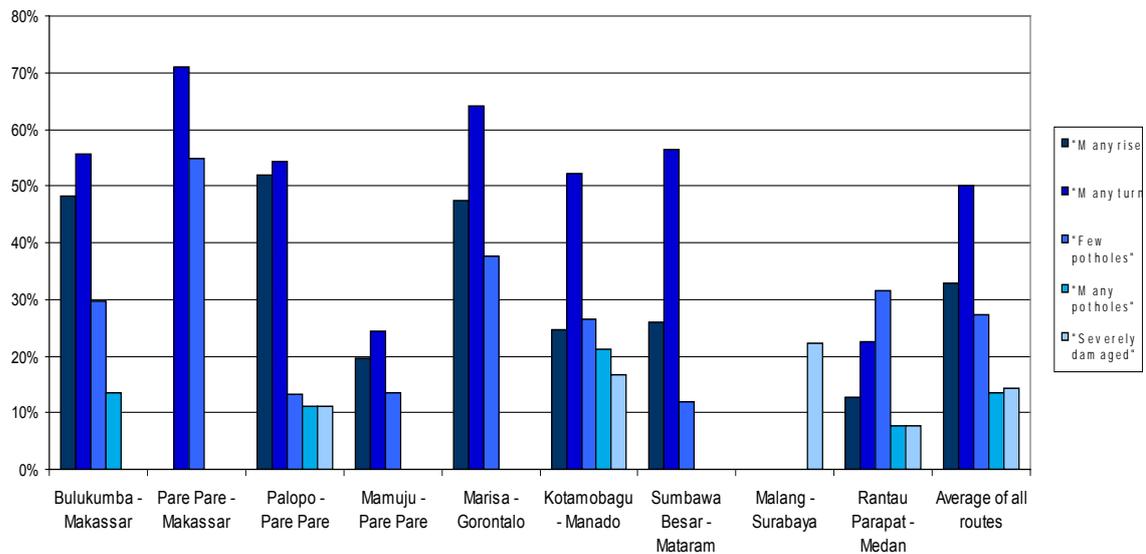
Vehicle operating costs vary around the country. Operating costs vary by route and were highest along the Rantau Parapat – Medan route, in Sumatra, and along the Sumbawa-Mataram route, in West Nusa Tenggara. Operating costs were lowest along the East Java route from Malang to Surabaya. In the Sumbawa route the higher costs seem to be driven by geography, especially the degree of rise and fall in the road (in meter per kilometer; see Table 7). The main costs faced by trucking firms are fuel, depreciation, and interest payments. The RUCKS model shows that the major cost items for firms serving the surveyed routes are fuel (28% of total cost), depreciation (27%), and maintenance parts (18%) (see Table 6). The results from the firm survey confirm the findings on fuel (39%), but the survey also indicates that a significant portion of costs go to labor, for a total of 14% for both driver's and mechanic's wages.

Table 6: Breakdown of Vehicle Operating Costs, RUCKS and Firm Survey Results

The surveyed routes were mostly winding and undulating with relatively few portions of the national roads in bad condition. The routes were divided into segments, taking into account major natural breaks along the road. Drivers were then asked whether they think each segment had “many turns,” “many climbs,” “few potholes,” “many potholes,” or “severely damaged.” Drivers indicated that more segments were hilly, with many turns and climbs, than were characterized by frequent pot holes or severe road damage (Figure 1). This suggests that on the surveyed routes it is difficult

topography, as opposed to road quality, that is the primary obstacle for the transportation of goods.

Figure 1 : Quality of Infrastructure



Source: primary data, processed

Vehicle operating costs, including maintenance costs and fuel costs, are affected by topography. The rise and fall of the road appears to have a strong effect on vehicle operating costs. As seen in the table below, the highest rise and fall rates (vertical meter per kilometer distance) were found on the Sumbawa-Mataram route, which is also the most costly route (Table 6). A simulation that reduces the rise and fall on this route to the average of other routes would lower operating cost by 13%.

Table 6: Operating Costs and Road Attributes

	Bulukumba - Makassar	Parepare - Makassar	Palopo - Parepare	Mamuju - Parepare	Marisa - Gorontalo	Kotamobagu - Manado	Sumbawa - Mataram	Malang - Surabaya	Rantau Parapat - Medan	Average
Vehicle Operating Costs (IDR/km)	3,084	3,117	3,121	3,083	2,958	2,950	3,467	2,823	3,236	3,093
Road attributes										
Rise & Fall (m/km)	10	5	8	9	12	11	32	15	3	12
Number of Rise & Fall per Km (#)	2	1	2	2	2	2	1	1	1	2
Horizontal Curvature (deg/km)	315	292	303	393	435	313	322	217	210	311
Altitude (m)	22	12	28	40	67	68	32	196	27	55
Roughness (IRI, m/km)	6	7	7	6	5	5	6	3	7	6

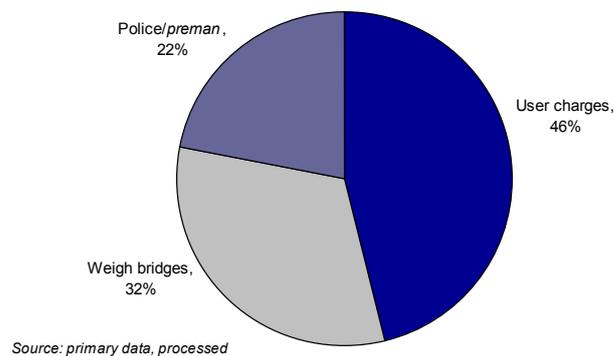
Source: primary data, processed by RUCKS

Roughness also has a clear impact on operating costs. The roughest roads on the surveyed routes were found along the Rantau Parapat-Medan route in Sumatra, which also demonstrates high overall operating costs. Keeping all other factors constant and reducing the roughness index for this route to the average of all other routes reduces overall operating costs by 8%.

Drivers are liable to different kinds of payments on the road, which include legal and illegal local user charges, payments at weigh stations, and payments to police (Figure 2). The typical total

cost of these charges is around IDR 80,100 per trip for the surveyed routes, which is about 12% of the drivers' lump sum payment. The typical time spent in paying these charges is 19 minutes for each truck. This represents about 6% of the overall trip duration. These charges are important to drivers because 84% of the drivers on the surveyed routes make these payments out of a cash advance provided by their employers; on-the-road charges therefore reduce their take-home wage. In fact, the overall amount of road charges is nearly equivalent to the driver's and his assistant's wages. This section will discuss the payments drivers have to make at weigh stations and to local government staff in the form of user charges.

Figure 2 : Components of on-the-Road Payments



There is substantial variation across routes in the amount of on-road payments. The highest overall charges occur along the Palopo-Pare Pare route. This is due to a very high commodity inspection user charge near Palopo. The Sumbawa Besar-Mataram route also reports a high user charge caused by the ferry crossing between the islands of Sumbawa and Lombok. Payments at weigh bridges are highest on two of the non-Sulawesi routes, the Sumbawa Besar-Mataram and the Rantau Parapat-Medan routes.

Table 7: Weigh Stations and Local User Charges

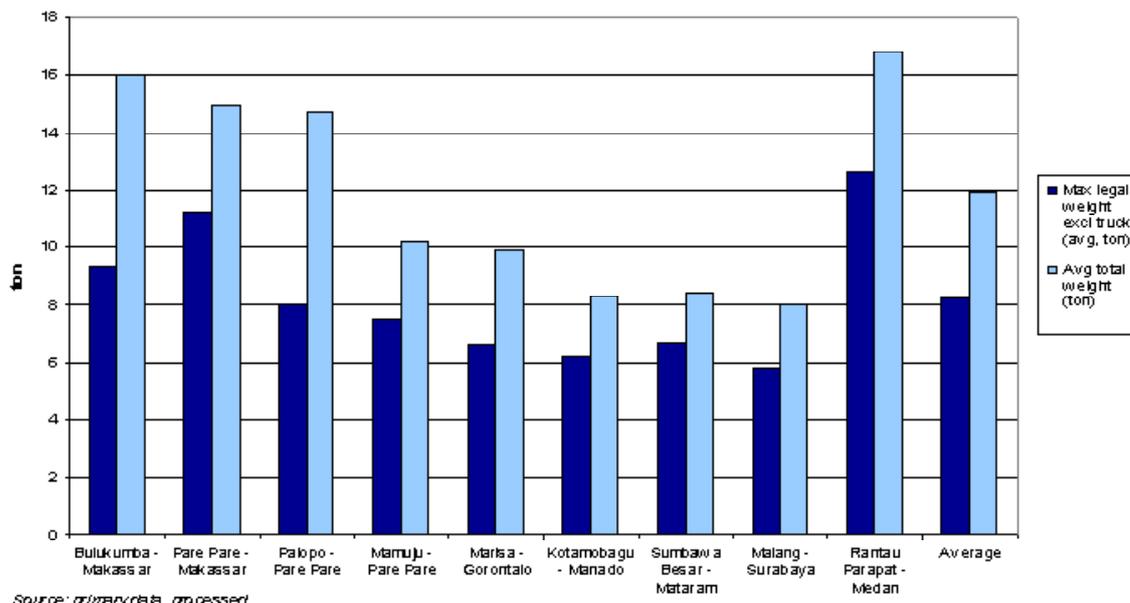
No	Routes	WEIGH STATIONS			LOCAL USER CHARGES		
		Avg number of stops	Avg time for all weigh bridges (in min)	Avg payment for all weigh bridges (IDR)	Avg number of stops	Avg time for all user-charge stops (in min)	Avg payment for all user charges (IDR)
1	Bulukumba - Makassar	2	2	11.857	6	6	34.265
2	Pare Pare - Makassar	2	3	26.529	2	1	3.222
3	Palopo - Pare Pare	2	8	23.000	6	15	142.167
4	Mamuju - Pare Pare	1	3	13543	3	4	6.909
5	Marisa - Gorontalo	2	6	14.056	1	3	5.000
6	Kotamobagu - Manado	3	4	14.176	2	4	5.455
7	Sumbawa Besar - Mataram	2	7	70.029	3	6	122.970
8	Malang - Surabaya	1	2	8.943	1	2	6.000
9	Rantau Parapat - Medan	3	16	47.857	2	10	7.000
Average		2	6	25.554	3	6	36,999

Source: primary data, processed

User charges make up 46% of on-the-road payments. User charges are charges issued by local governments for transporting goods along the surveyed routes. They may be collected by different government departments based on commodity. For example, the local forestry department may ask any truck driver carrying forest products to pay a fee. In other cases, user charges are collected for road use. The implementation and collection of user charges is problematic because the majority of respondents in the truck survey did not fully understand which ones were legal and which were not. They often accepted the need to pay user charges without questioning whether or not the charge was legitimate.

Trucks along most routes in Indonesia are typically overloaded because regulations on weigh stations are not enforced. In the long run, this situation endangers safety and damages the roads, causing further infrastructure damage. Current policies fail to stop this and simply extract a small fee for non-compliance.

Figure 3: Legal and Actual Truck Weights, by Routes



This survey reveals that on the surveyed routes, on average 52% of trucks are overweight by an average of 45% over the payload weight limit (Table 8). The average load weight was about 4 metric tons over the maximum legal load (see Figure 3). Most trucks are the open-box type because this allows the owner or driver to increase payload beyond the maximum capacity, which both owners and drivers claim is necessary in order to make a profit.

Table 8: Weight and Overloading of Trucks

No	Routes	WEIGH STATIONS			LOCAL USER CHARGES		
		Max legal weight excl truck (avg. ton)	Amount overweight, excl. truck (avg. ton)	% Overweight (avg)	Number of trips	Number of trucks overweight	% of trucks overweight
1	Bulukumba - Makassar	9	7	72%	26	12	46%
2	Pare Pare - Makassar	11	4	33%	33	13	39%
3	Palopo - Pare Pare	8	7	84%	35	30	86%
4	Mamuju - Pare Pare	7	3	37%	30	12	40%
5	Marisa - Gorontalo	7	3	50%	36	7	19%
6	Kotamobagu - Manado	6	2	32%	30	16	53%
7	Sumbawa Besar - Mataram	7	2	26%	35	18	51%
8	Malang - Surabaya	6	2	37%	35	28	80%
9	Rantau Parapat - Medan	13	4	33%	33	17	52%
Average		8	4	45%	293	153	52%

Source: primary data, processed

Overweight trucks do substantial damage to roads. Studies on the correlation between truck weight and road damage show that effects are exponential. “An increase in axle weight generally causes a more than proportional increase in pavement damage. The relationship appears to approximate an exponential function, and various studies have assumed the power of the exponent to be about 4 as a rule. Estimates of the exponent’s power vary substantially, however.” (Luskin and Walton 2001: 12) Thus, the failure to enforce weight limits in Indonesia may cost more in terms of road damage than the benefits gained by truck companies and corrupt weigh station officials.

Safety risks and road damage are further exacerbated because trucks are modified after the vehicle specification process is completed. All trucks must go through the vehicle safety inspection (*Uji KIR*), administered by the local departments of transportation, which tests the proper functioning of such items as the brakes, lights, and tires. However, after the truck inspection process is complete, many truck owners modify the trucks so they can carry goods above and beyond the weight limits. They accomplish this by extending the railings and the chassis, and using stronger, non-standard tires, without necessarily adding new parts. The one part that is not easily modifiable is the axle. This means that the axles are under severe pressure and often break.

In Indonesia only a handful of trucks are weighed and fined at weigh stations. Only 53% of 175 weigh bridges in the country are actually functioning (Government of Indonesia, 2001). Furthermore, as Table 10 indicates, enforcement at weigh stations is a significant problem. Although trucks enter weigh stations, they are not likely to be properly weighed, fined, or asked to reduce their loads. Most of the trucks simply pass through the weigh stations and make unofficial payments to the officials. In general, only 53% of trucks are weighed. Half of these are overweight, but only one in five are fined. Fines are also quite low, amounting to only IDR 12,829 on average, or about USD 1.50.

Although only half of the trucks were weighed, a higher proportion made “extra payments” to avoid compliance. Even though only half of all trucks were weighed, a higher percentage, 84%, of them made extra payments anyway. Most trucks simply passed through the weigh stations and make an average payment of about IDR 9,600 to the officials, whether or not the weigh bridges were working or the trucks were weighed.

Weigh stations appear to work in a small number of locations. Table 10 also shows that at some weigh stations, such as Paku and Badas, a high proportion of trucks were weighed and fined. This suggests that in these locations the equipment is working and that officials are actually implementing the weight regulations. However, even in these locations, the number of trucks that made extra payments is still high. Thus, the existence of weigh stations seems to offer an interface for bribery, while failing to protect road transportation standards.

Even where the weigh stations are working, the penalty for overweight trucks does not deter overloading. The average fine and extra payments paid are relatively small. This points to a larger problem of enforcing penalties for overloading. Fines commensurate with the likely road damage and the threat to public safety caused, would be extremely high, further encouraging bribery and evasion. However, simply prohibiting passage for trucks not in compliance of the weight limits is also difficult to enforce. Unloading extra goods is nearly impossible since most weigh stations are not equipped with storage facilities for unloaded cargo and there is no assurance of security. The government is, however, trying a new pilot project of reducing overweight tolerance and of forcing overloaded trucks return to their points of origin

Payments to Police and *Preman*

Drivers and firms also make payments to the police and to local *preman* for security reasons. Some *preman* organizations were originally set up by military officers in the Indonesian army (*TNI*). Fees paid to police and *preman* organizations are either paid as road charges or they are paid up-front as routine payments. However, routine security payments made by trucking firms tend to occur more often in Sumatra and Java.

On-the-road payments to police and *preman* are more common in Sulawesi relative to non-Sulawesi routes. Although there are reports of police and *preman* payments along all routes, the incidence of bribery is quite low outside Sulawesi (see Table 9). Within Sulawesi, payments are more frequent in South Sulawesi than in Gorontalo and North Sulawesi.

Table 9: Road Payments to Police and *Preman*

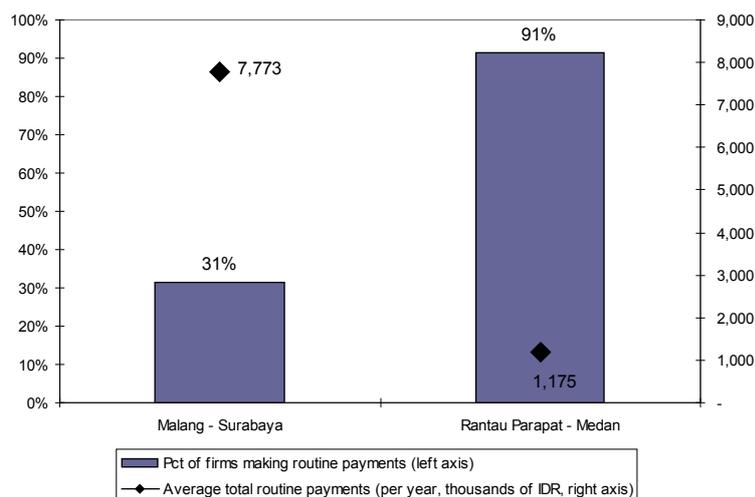
No	Routes	Avg number of stops	Avg time for all police, preman, and other stops (in min)	Avg payment for all police, preman and other stops (IDR)
1	Bulukumba - Makassar	4	3	12.364
2	Pare Pare - Makassar	8	17	55.381
3	Palopo - Pare Pare	6	8	20.143
4	Mamuju - Pare Pare	10	22	33.171
5	Marisa - Gorontalo	1	3	5.818
6	Kotamobagu - Manado	3	5	15.074
7	Sumbawa Besar - Mataram	1	1	2.333
8	Malang - Surabaya	1	1	5.000
9	Rantau Parapat - Medan	1	6	8.750
	Average per route	4	7	17.582

In Sulawesi, illegal payments are largely made to the police, and charges vary by route. In most cases, the illegal payments in Sulawesi are made to the local police officers rather than to *preman*. The highest amount of total payment is on the Pare Pare-Makassar route, followed by the Mamuju-Pare Pare route. In a few cases, such as near a bridge construction site in North Sulawesi, a group of local *preman* would also demand payments from passing trucks.

As an alternative to on-the-road payments, trucking firms sometimes make regular payments to the police (or a proxy organization), the army, or to a *preman* organization. In North Sumatra and East Java it is more common for firms to make monthly up-front payments to avoid operational problems, rather have drivers pay on the road. In East Java, these payments are made particularly to the military, while in North Sumatra they are made to police organizations or to *preman* organizations who work with the police. These police and army organizations often extort trucking firms in exchange for security and the assurance that drivers from firms that have paid will not be regularly charged on the road by the police. Trucking firms also make regular payments not only to avoid being stopped, but also to avoid heavy fines.

The total amount of these illegal payments is small. The average total routine illegal payment made by firms serving the surveyed routes is 0.6% of their monthly costs. The total of these payments adds up to an average cost of IDR 3,022,724 per year, or approximately USD 336, for firms serving the surveyed routes. This average, however, hides the large difference between the average amount paid in North Sumatra, about IDR 1.2 million, and the average amount paid in East Java of almost IDR 8 million per year (see Figure). Although the average amount of payment is higher in East Java, only 31% of firms make routine security payments there. In North Sumatra, over 90% of firms pay routine security payments.

Figure 4: Frequency and Amount of Security Payments on Non-Sulawesi Routes



Source: primary data, processed

Payments to police, the army, and *preman* organizations are mostly illegal, damaging perceptions of the rule of law and the overall business climate. *Preman* organizations are able to operate on the

roads and exert a large amount of influence, thus reflecting very poorly on the legal system. Because police officers also extort illegal charges from truck drivers, often in conjunction with *preman*, this damages any sense of trust in the police force. This kind of extortion also harms the overall business climate because corruption leads to uncertainty for firms carrying their goods along Indonesian roads.

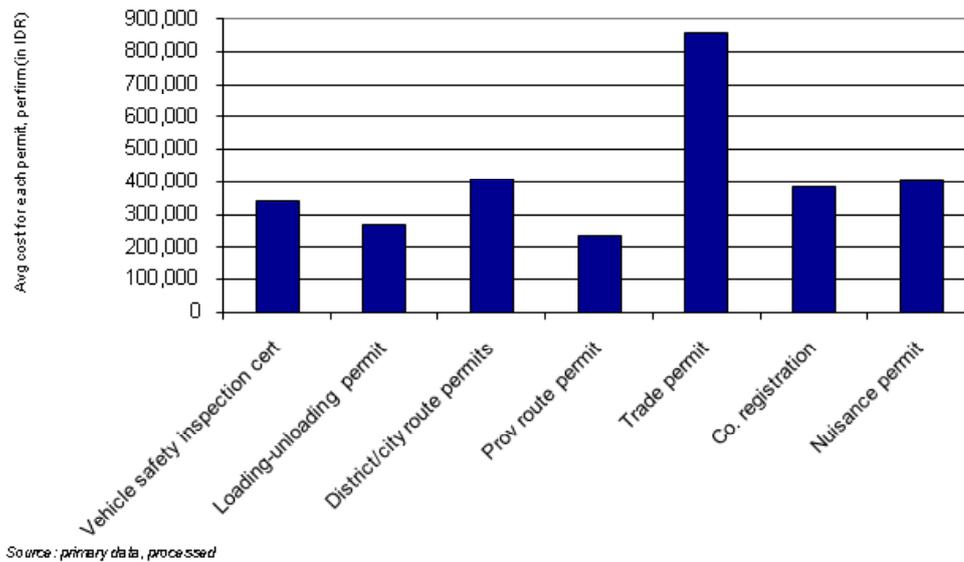
Licensing Costs

Provincial and district governments impose a plethora of regulations which contravene national principles of the free movement of goods and reduce the efficiency of domestic trade. As mentioned previously, according to the national regulations, the only permits that public trucking firms are required to have are the transportation company permit and the vehicle safety inspection certificate. However, local governments still impose a number of other permits, especially those that govern access to, or use of, roads and therefore impede the movement of goods across districts. In addition, trucking firms also must obtain general business permits and vehicle-related permits, such as the vehicle safety inspection and loading and unloading permits.

Regional differences exist in the types of permits obtained by firms and issued by local governments. Not all permits are required by all local governments or obtained by all trucking firms. In some routes in Sulawesi, firm owners did not report having general business permits, although they are required by law. This is because their companies are often small and may not be registered as business entities. On the other hand, the route permits, both district/city and provincial, are not issued by local and provincial governments outside Sulawesi. The only permit that is consistently issued by local governments and obtained by firms is the vehicle safety inspection certificate.

The costs of permits vary according to their types and jurisdictions. Figure 5 shows the average payment for several key licenses. These licenses represent the most common permits that trucking firms are required to have. The most expensive permit for companies serving the surveyed routes is the trade permit, which, together with company registration and the nuisance permit, is considered as a general business permit. The fees for these permits also vary across districts and cities since local governments have the power to set fees for permits.

Figure 5: Average Licensing Costs, for Each Permit



However, permits and licenses do not represent a significant cost for firms. Licensing costs do not make up a high percentage of costs or revenue. Business permits are usually valid for as long as five years, while route permits may be valid for as little as six months. On average, company permits and licenses amount to 0.67% of the monthly cost for trucking firms serving the surveyed routes.

The in-depth interviews with businesses also confirm the perception that licensing costs are not a burden to firms. Because general business permits are one-time payments for a period of five years, these are not considered a significant burden. The vehicle safety inspection certification is considered as a 'normal' cost, but the route permits are considered a burden if the validity period is too long. This is because transportation of goods along certain routes/roads is seasonal and so trucks may only use a one-year route permit for a few months. Thus, drivers and firms prefer shorter-duration and less expensive route permits, usable only when there is a demand for trucking services to a particular region.

While licenses do not present a significant financial burden, they still impede domestic trade and are often redundant and unnecessary. Licensing costs remain problematic for two main reasons. First, local permits and user-charges that impede the transport of goods contradict national policy and regulations, which maintain the principle of the free trade of goods within the country. Second, security payments, made by firms, and road payments, made by drivers to police or *preman* organizations, contribute to the diminishing overall perception of Indonesia's business climate. Future efforts to eliminate these payments need to be framed not only around the economic costs, but also around their legality and their impact on the corrupt behavior of local bureaucracies and the trucking industry itself.

Summary of Costs

Table 10 summarizes the different transportation costs covered in this section.

In general, on-the-road charges including user charges, weigh bridges and charges by the police, make up more than 10% of vehicle operating costs, while routine and licensing payments are less of a concern for trucking firms.

Table 10: Summary Table of Road Transportation Costs

No	Routes	Vehicle operating cost (avg. IDR/truck/month)	Legal and illegal road charges (avg. IDR/truck/month)	Regular security payments (avg. IDR/truck/month)	License payments for each route (avg. IDR/truck/month)	Total costs (IDR/truck/month)
1	Bulukumba - Makassar	4,537,824	593,517		35,276	5,166,616
2	Pare Pare - Makassar	4,535,007	705,407		52,630	5,293,044
3	Palopo - Pare Pare	5,042,319	1,207,160		38,315	6,287,795
4	Mamuji - Pare Pare	3,828,752	241,305		44,094	4,114,152
5	Marisa - Gorontalo	4,847,034	259,620	7,862	143,289	5,257,804
6	Kotamobagu - Manado	3,938,183	302,772		21,668	4,262,623
7	Sumbawa Besar - Mataram	2,345,286	733,974		19,136	3,098,396
8	Malang - Surabaya	5,819,368	377,101	151,665	70,058	6,418,193
9	Rantau Parapat - Medan	5,563,304	365,741	20,903	125,121	6,075,069
	Average	4,495,231	5,31,844	60,143	61,065	5,108,188

Source: primary data, processed

CONCLUSIONS

The high cost of domestic transportation is a key impediment to growth in Indonesia and significantly hinder Indonesia's trade competitiveness worldwide. Indonesia's topography and the poor quality of road infrastructure significantly increase vehicle operating costs in the trucking sector. Maintenance costs and fuel costs, in particular, are affected by geography and the quality of infrastructure.

Local governments also raise costs by issuing permits and licenses and imposing user charges that act as barriers to the domestic road transportation of goods. These practices are illegal in Indonesia because they are inconsistent with the national regulatory framework and serve no public welfare function. Instead, they are used simply as a way to boost local government revenue and add to the burden of transporting goods.

Weigh station regulations should serve the public interest but are routinely ignored. Overloading is very common in Indonesia and causes exponential road degradation, further increasing infrastructure-related operating costs. Overweight trucks also pose a major safety hazard, particularly because many truck operators modify their trucks so that they can carry larger loads, making the axle vulnerable to failure. Police and preman exacerbate the problem, increasing insecurity in the road transportation sector. Trucking firms in some areas make routine payments to preman organizations to ensure the secure passage of their vehicles. Payments to police, the army and preman organizations are mostly illegal, damaging perceptions of the rule of law and the overall business climate.

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