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RESEARCHREPORT

The Impacts of India's Diesel Price Reforms on the Trucking Industry

Integrated Research and Action for Development, New Delhi

June 2013





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List of Acronyms

AIMTC	All India Motor Transport Congress
AITD	Asian Institute of Transport Development
BTKM	billion tonne-kilometre
CIRT	Central Institute of Road Transport
FY	fiscal year
GDP	Gross Domestic Product
Gol	Government of India
IIM-C	Indian Institute of Management, Calcutta (now Kolkata)
IRADe	Integrated Research and Action for Development
Km	kilometre
m ³	cubic metres
NCR	National Capital Region
TCIL	Transport Corporation of India



1.0 Introduction and Background

In the fiscal year (FY) 2011-12, under-recoveries¹ of Indian oil marketing companies for diesel rose to an all-time high of INR81,192 crore (USD\$15 billion) (Government of India [GoI], 2012d). Diesel constitutes 38 per cent of all petroleum products consumed in India. Almost 65 per cent of diesel is used in transportation activities that contribute to 6.6 per cent of GDP (Anand, 2012).

While a reduction in diesel under-recoveries will have significant fiscal and economic benefits to the economy as a whole, rising diesel prices will negatively affect industry and diesel-intensive sectors. Integrated Research and Action for Development's (IRADe) earlier study, titled *Taming Diesel Subsidy to Curtail Inflation and Foster Economic Growth* (2012), established that, while certain sectors would not be significantly affected, farmers and truck operators would be vulnerable to diesel price increase. The present study undertaken by IRADe analyzes the vulnerability of the trucking industry to diesel price increase. The study addresses two important questions:

1. What factors make the trucking industry vulnerable to diesel price increase?
2. What coping mechanisms could reduce the vulnerability of the trucking industry to diesel price increase?

To begin with, it is important to understand the structure of the trucking industry in India and identify its stakeholders.

1.1 Importance of the Road Transport Sector in India

Road transport has emerged as the dominant segment in India's transportation sector, with a 4.7 per cent share of GDP, as compared to the railways' mere 1.0 per cent share as of FY2009-10. The increase in the transportation sector's share of GDP since FY1999-2000 can be entirely attributed to road transport, with a marginal decline in the share of the railways and with the share of other modes remaining largely unchanged (GoI, 2012c).

According to the Total Transport System Study conducted by RITES Limited for the Planning Commission of India (RITES, 2011), highways accounted for 50.1 per cent of total freight traffic during FY2007-08 (in billions of tonne-kilometres [btkm]), followed by 36.1 per cent by the railways, 7.5 per cent by pipelines, 6.1 per cent by coastal shipping, 0.2 per cent by inland water transport and 0.02 per cent by airways. Road freight volumes are increasing at a compound annual growth rate of 9.8 per cent (Transport Corporation of India Limited and Indian Institute of Management, Kolkata, 2012). The vehicle fleet (all types of road transport, including on-road and off-road vehicles) also grew at a compound annual growth rate of about 10.76 per cent in FY2011-12. The population of goods vehicles increased from 82,000 to 6.0 million during the same period at a compound annual growth rate of around 7.7 per cent. However, the share of goods vehicles among all types of vehicles decreased from about 27 per cent to 5.3 per cent over the same period, indicating higher growth in numbers of other vehicles such as two-wheelers and cars (GoI, 2012a).

1.2 The Nature of the Trucking Industry

The trucking industry deploys mainly two- and three-axle rigid trucks with a relatively low cubic capacity of 30 cubic metres (m³). About 75 per cent of trucks on the Indian roads are two-axle with a capacity of nine tonnes. On the contrary, the main "workhorse" of the European road sector is an articulated five-axle vehicle with a 13.6-metre trailer, offering 82 m³ of space and having a maximum gross weight of 40 tonnes (McKinnon, 2012).

¹ Under-recovery is essentially the difference between a desired price (based on international prices and other cost elements) and the actual (depot) price charged to dealers



About 40 per cent of Indian trucks on the road are less than six years old, while 34 per cent are more than 10 years old. The average truck is operational for about 20 years, after which it is scrapped. A truck that is less than six years old can typically cover about 8,000 kilometres (km) per month, while a vehicle that is more than 10 years old can only cover only about 2,000–4,000 km per month due to low mileage (Gol, 2011, p. 21).

In comparison with other countries, Indian freight rates (prices) are among the lowest in the world (World Bank, 2005).

TABLE 1. TRUCKLOAD FREIGHT RATES CHARGED IN VARIOUS COUNTRIES (C. 2002)

COUNTRY	AVERAGE COST PER TONNE KM (US\$)
Pakistan	0.015–0.021
India	0.019–0.027
Brazil	0.025–0.048
United States	0.025–0.050
Australia	0.036
China	0.040–0.060

Source: World Bank (2005)

A joint study by the Transport Corporation of India Limited (TCIL) and the Indian Institute of Management, Calcutta (IIM-C) in 2012 shows the average freight rates for a 15-tonne truck between the four metros, Chennai, New Delhi, Kolkata and Mumbai (see Table 2). The average freight rate is INR1.39 (USD\$0.028) per tonne km.

TABLE 2. COMPARISON OF FREIGHT RATES AMONG FOUR METROS FOR A 15-TONNE TRUCK

DISTANCE			FREIGHT RATE		
FROM	TO	KILOMETRES	RS.	RS./KM	RS./TONNE KM
New Delhi	Mumbai	1,385	23,250	16.79	1.12
New Delhi	Chennai	2,300	48,000	20.87	1.39
New Delhi	Kolkata	1,471	33,000	22.43	1.50
Mumbai	Chennai	1,382	32,250	23.34	1.56
Mumbai	Kolkata	1,990	45,000	22.61	1.51
Chennai	Kolkata	1,700	33,000	19.41	1.29
			Average	20.91	1.39

Source: TCIL-IIM-C (2012)

Freight rates depend on the type of commodity being carried, weight of the commodity, source and destination of the journey, time of the year and demand and supply of trucks. Freight rates are seasonal in nature, and vary with the gap between requirements and availability of trucks. The Indian trucks usually go overloaded in one direction and return with an empty haul. Hence, freight rates also depend on the possibility of a quick turnaround with a return load from the point destination. The trucking industry in India is almost entirely in the private domain and is dominated by small road transport operators. Although there are a large number of truck owners, in only about 2 to 3 per cent of the cases



do the customers directly access the truck owners and book their goods. The freight charges are usually decided by cargo operators who tend to cartelize and decide on the freight rates. This process is not regulated.

The Indian trucking industry is extremely competitive, with low profit margins or even losses. The profitability of the trucking operations is affected by other non-economic qualitative factors:

1. Road conditions and vehicle damage are important factors. Overloading is a rule rather than an exception in order to maximize profitability leading to faster aging of vehicles and frequent breakdown. This is further exacerbated by poor road conditions.
2. Extortions by law enforcement agencies at every stage, starting from vehicle registration, licensing, toll points, and check posts, often lead to unnecessary delays and impediments to the efficiency of operations.

In the context of Indian roadways, these two factors often turn out to be decisive.

Figure 1 shows the interrelationships between various factors driving operator profitability.

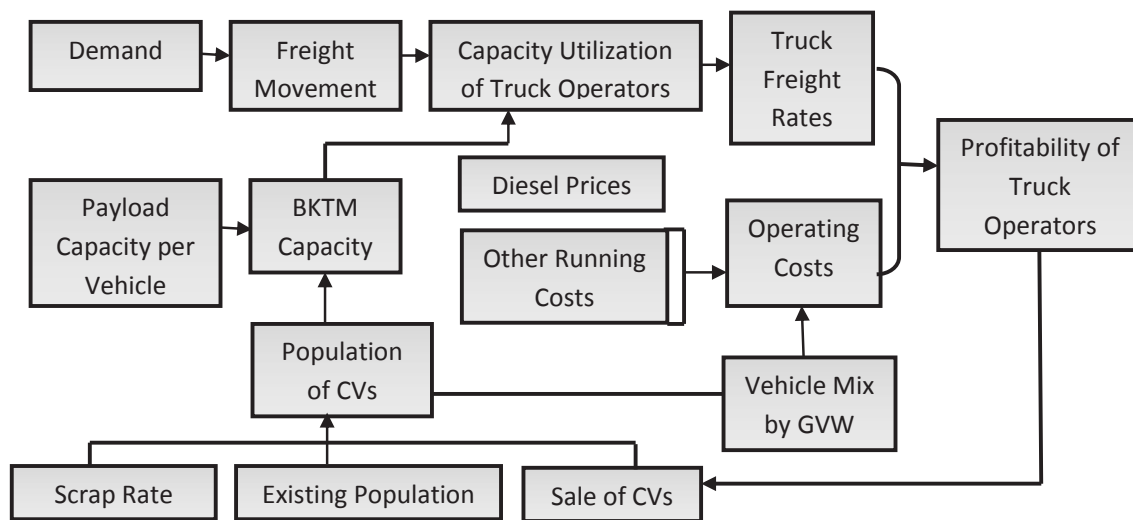


FIGURE 1. INTERRELATIONSHIPS BETWEEN FACTORS DRIVING TRUCK OPERATORS' PROFITABILITY

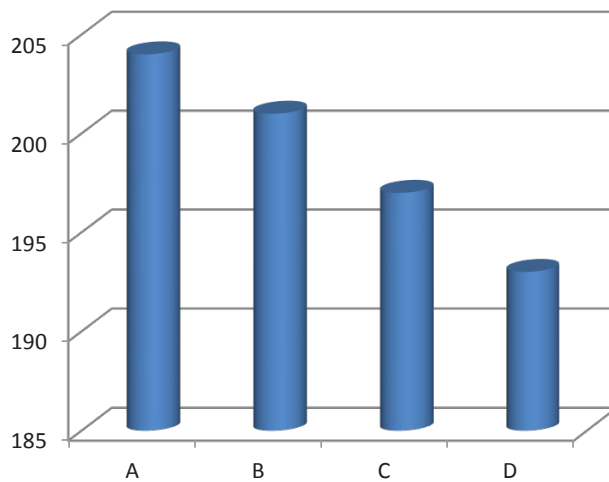
Source: Sriramanet, Venkatesh, Karne & Mohite (2006)

Note: CV: commercial vehicle; GVW: gross vehicle weight

The figure depicts that truck operators' profitability depends mainly on truck freight rates and operating costs. Truck freight rates are in turn governed by demand for trucking, which decides the number of freight trips and capacity utilization of trucks by operators. For example, if the demand is not robust, entire fleet capacity may not be used or fewer numbers of trips will be made per month. In such cases, freight rates fall as operators try to avoid keeping trucks idle. Capacity utilization of trucks also depends on factors like payload capacity and BTKM capacity of vehicles. Truck operators' associations cannot generally intervene in freight rate fixation, but they guard the interests of truckers, advise the government of their hardships and request solutions to the predicaments of truckers.



In order to maximize profitability, truck operators unfortunately overload their vehicles in general to increase revenue. They also maintain a suitable mix of vehicles with different payload capacities,² based on freight availability, the type of freight carried, the types of long-term contracts with customers and use of tractor-trailers. The increasing use of tractor-trailers reduces the freight expenditure, as shown in Figure 2.



Tractor-Trailer Use

- A-Present scenario with 10% tractor-trailer use
- B-Possible scenario with 20% tractor-trailer use
- C-Possible scenario with 30% tractor-trailer use
- D-Possible scenario with 40% tractor-trailer use

FIGURE 2. IMPACT OF TRACTOR-TRAILERS ON ROAD TRANSPORT

Source: GOI (2012b)

In recent years, freight movement by road has not kept up with total vehicle capacity, which has led to lower capacity utilization. For example, in recent years the average trucking fleet capacity utilization has decreased from nearly 64 per cent in FY1993-94 to 57 per cent in FY2001-02 (GoI, 2012c).

² The payload capacity is the maximum amount of additional load you can put on an equipped vehicle without exceeding any of the manufacturer's ratings.



2.0 Identifying Stakeholders in the Trucking Industry

The Indian trucking industry is deregulated and fragmented, with more than 80 per cent of the industry belonging to the unorganized sector consisting of small operators with up to five vehicles. The organized sector, consisting of large operators with fleets of more than 100 trucks, constitutes a small part of the industry (TCI-IIMC, 2012). The industry is primarily composed of (a) transporters, (b) truck operators and (c) brokers/agents. Transporters are the primary interface with consignors. They take on all the responsibilities of shipment, including loss of cargo and damage claims. Transporters may also have their own fleets of trucks. However, in the absence or availability of their own fleet, they often rely on small operators of trucks to carry their consignments. This situation has created brokers or agents who match demand for truck with the fragmented supply available in the market.

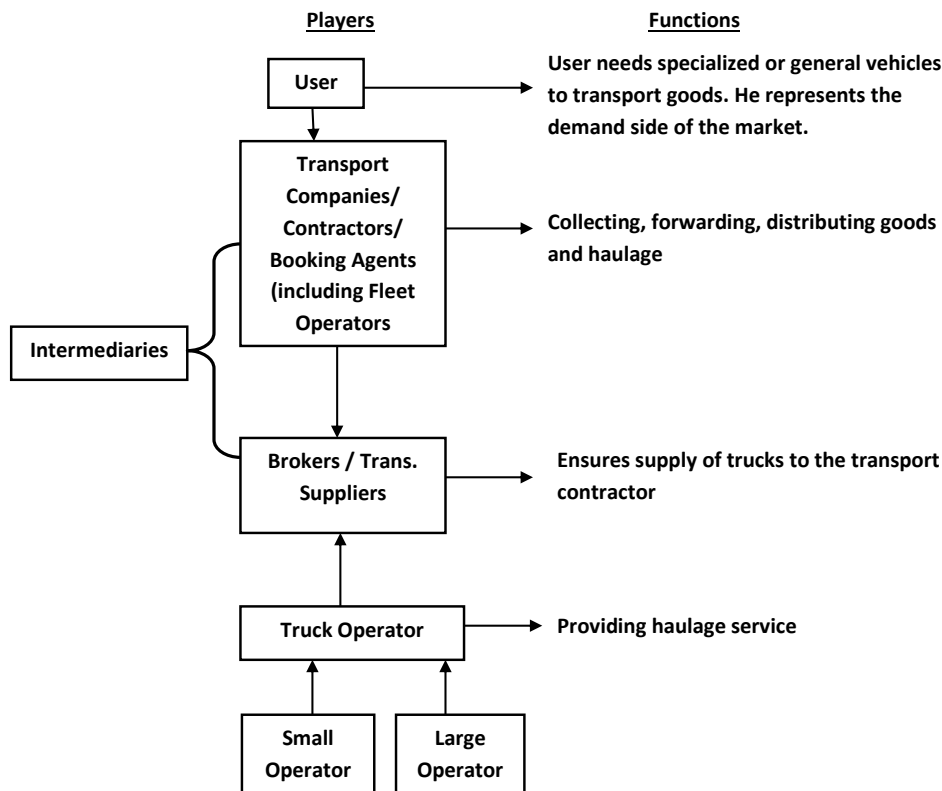


FIGURE 3. MARKET PLAYERS AND THEIR FUNCTIONS

Source: Sriraman et al. (2006)

There are no statistics available on the number of transport operators, contractors and brokers at the national level, though it is believed that their number is quite high and that they play a dominant role in the trucking industry.

A study by the Central Institute of Road Transport (CIRT) (1998) clearly indicates a large number of small operators in the business, with 77 per cent of truck operators owning five or less trucks and a further 10 per cent owning between six and ten trucks.



A 2010 CRISIL study estimates a similar ownership pattern with 70 to 75 per cent of operators owning up to five trucks, 10 to 15 per cent of operators owning from six to 20 trucks, and the remaining nine to 11 per cent owning more than 20 trucks.

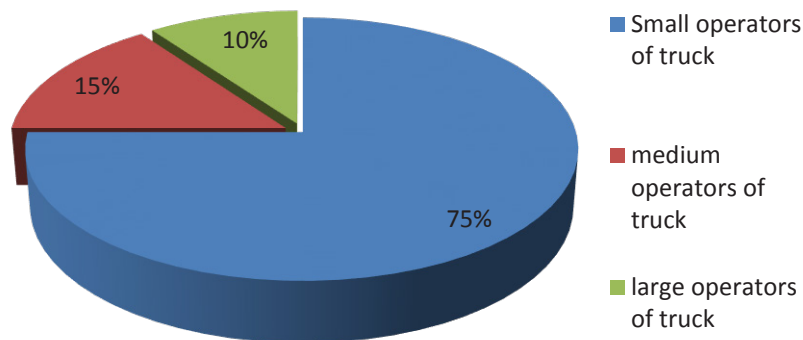


FIGURE 4. TRUCK OWNERSHIP PATTERN IN INDIA

Source: CRISIL (2010)

Operating costs of trucks can be divided into fixed and variable costs. Fixed costs include the equated monthly instalment of the loan taken to purchase the truck, the broker's commission, road tax and permits, the drivers' and cleaners' salaries, loading and unloading charges, maintenance costs and wayside expenses (includes bribery). Variable costs comprise the cost of fuel and the annual cost of tires. Fuel costs are one of the most important factors influencing the profitability of truck operators. According to TCIL-IIMC (2012), fuel costs account for 55 per cent of the total operating costs.

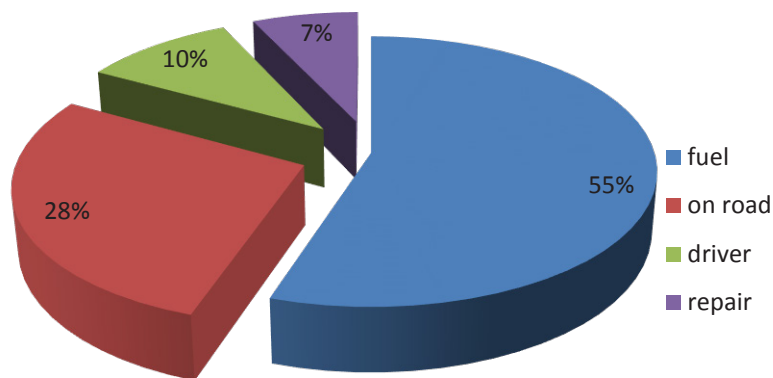


FIGURE 5. DIVISION OF OPERATING COSTS OF A TRUCK OPERATOR

Source: TCI-IIMC (2012)



3.0 Methodology

Some studies have looked at problems and inefficiencies in India's trucking industry, notably the National Council of Applied Economic research (1979), CIRT (1998) and Sriraman et al. (2006), which undertook surveys of truckers and brokers to understand the general problems the trucking industry faces. The World Bank (2005) has also undertaken consultations to understand road transport efficiency in India.

This study undertook stakeholder consultations with the specific objective of understanding the vulnerability of the trucking industry to diesel price increases and the coping mechanisms that could be used to reduce this vulnerability. IRADe identified and consulted the following stakeholders.

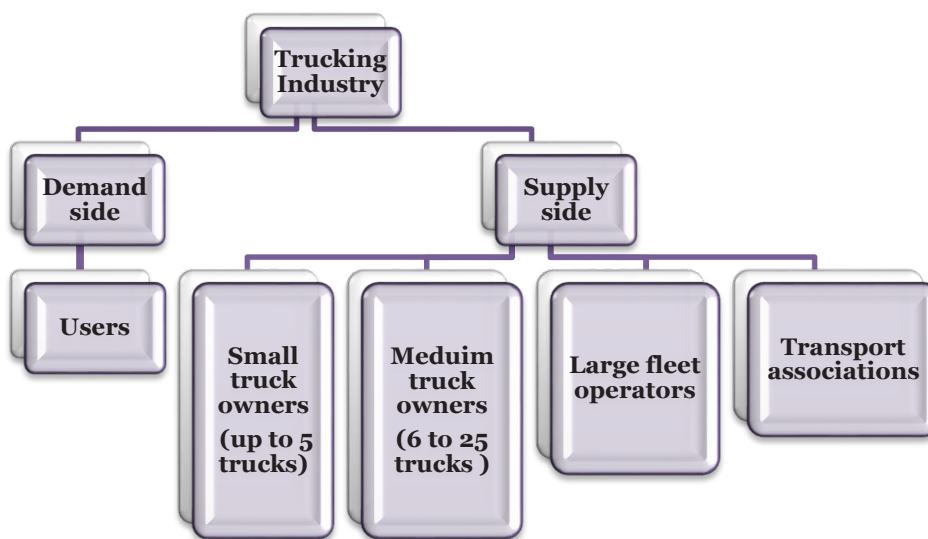


FIGURE 6. IDENTIFICATION OF STAKEHOLDERS IN TRUCKING INDUSTRY

1. **Small truck owners** own between one and five trucks. Sometimes trucks are owned jointly between 2-3 persons.
2. **Medium truck owners** own up to 25 trucks.
3. **Large fleet operators** own a fleet of between 26 and 2,000 trucks.
4. **All India Motor Transport Congress (AIMTC):** The secretary of AIMTC and other members were consulted to understand problems of trucking industry and their role in providing coping mechanisms.
5. **Industry experts:** The Asian Institute of Transport Development (AITD), New Delhi and the CIRT, Pune, were consulted to understand the macro view for an in-depth analysis of trucking industry.
6. **Concerned state ministries:** In Assam, the Minister of Industry and Commerce and the Minister of Public Works were contacted for their views on the issues of diesel price increase and road quality.

Location of the study: Consultations were mainly carried out in New Delhi since it is a major traffic hub in North India. Traffic handled in New Delhi gets distributed and assigned to different locations in adjacent states, the National



Capital Region (NCR³). Its hierarchical status in traffic concentration is 16th in the case of originating traffic, 11th in terminating traffic and 14th in total originating and terminating traffic in India (RITES, 2011). Thus, being the capital city and an important transport hub in North India, New Delhi provides an illustrative picture.

Large and medium operators of trucks from Sanjay Gandhi Transport Nagar, the largest hub of trucks in New Delhi and Mangolpuri industrial Area in New Delhi were interviewed to understand their vulnerability to diesel price increases. In addition, two focus group discussions were held with small transporters in the Okhla Industrial Area in New Delhi, which is a hub of small truck operators.

In the northeastern state of Assam, a survey was carried out in the city of Guwahati to find out the views of truck operators, All India Motor Transport Congress (AIMTC) and concerned ministries on issues relating to the trucking industry in the remote areas and, in particular, diesel price increases. Assam is an illustrative case of northeastern states, as it is an entry gate for other northeastern states that depend heavily on road transport, not just for growth, but also for survival. It is important to know the perspectives of truck operators in this region.

A small survey was carried out in the city of Jodhpur, a city near the western borders of India in the state of Rajasthan. It is located in the desert and the freight, as well as passenger movement, is difficult in the area. It is also an illustrative case of tier two cities in India and was chosen to understand the perspective of truck operators in this region.

Main questions discussed: Truck operators were consulted on their general business patterns, their fuel consumption patterns, the impact of diesel price increases on their business and their views on various possible coping mechanisms to deal with increases in the diesel price.

³ The National Capital Region (NCR) in India is a metropolitan area that encompasses all of New Delhi as well as urban areas surrounding it in the neighbouring states of Haryana, Uttar Pradesh and Rajasthan. With a total area of about 33,578 km² (12,965 sq mi), it is the world's second largest urban agglomeration by population behind Tokyo and the largest by area.



4.0 Analysis of Consultations

4.1 Truck Ownership Pattern

The survey, which was conducted randomly across all ownership sizes, confirmed that the trucking industry is fragmented and the majority are small truck operators. Out of the total truck operators consulted, 80 per cent were small operators owning up to five trucks, 15 per cent were medium operators owning between 20 and 30 trucks, and only 5 per cent were large operators with fleets of 100 or more. It should be noted that large operators of trucks do not necessarily own the entire fleet they operate. They maintain informal contracts with individual truck owners who provide trucks as, and when, necessary.

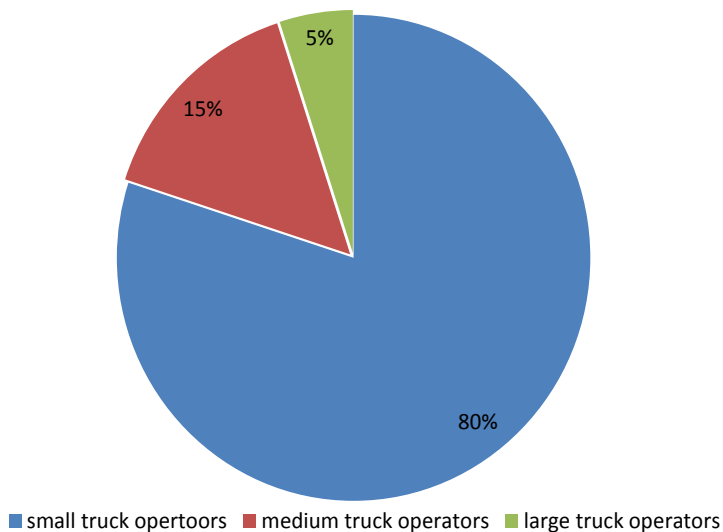


FIGURE 7. TRUCK OWNERSHIP PATTERNS ACCORDING TO IRADe SURVEY

The skewed truck ownership pattern in India is a root cause of many problems related to the trucking industry. Consultations with CIRT and the Asian Institute of Transport Development (AITD) revealed that the following factors influence the truck ownership pattern.

1. Motor Vehicles Act - There are virtually no entry barriers to the industry. The Motor Vehicles Act 1988 places no prerequisites on new entrants and does not include minimum requirements for education, training or finance to enter the trucking business. Permits are liberally issued, virtually on request. According to CIRT (1998), 67 per cent of the truck operators are new entrants in the business or inexperienced operators. Only a minority are in the family business of trucking (28 per cent) or have earlier employment of some sort in the trucking business (9 per cent). Of the truck owners surveyed, 56 per cent were in business for between one and 10 years; 30 per cent, between 11 to 20 years; and only 15 per cent, for over 20 years.

2. Faulty financing - The majority of truck owners have entered the business because they consider it to be lucrative, with readily available financing. In the trucking industry, each truck is financed based on its own expected revenue stream and not on the basis of the number of trucks owned by the firm. In the late 1970s, the Government of India delinked financing from risk and directed the nationalized banks to include trucking as a priority sector for lending.



Truck operators owning fewer than 10 trucks can obtain financing at a reasonable rate of interest, generally for the purchase of a chassis. Consultations revealed that, in FY2012-13 banks charged a rate of interest between 14 and 15 per cent. Also, banks follow a flexible approach towards margin requirements. The easy availability of finance to small truck operators has created a disincentive to build large fleets. But a large fleet is required to achieve economies of scale and to consolidate the industry.

Discussions with select players in the trucking industry, however, reveal that some small operators find it difficult to access funds for the acquisition of vehicles. In fact, the high cost of financing coupled with a lack of working capital does create impediments for the truck operators who wish to expand their fleet. Hence, financing could be better targeted to truck operators for upgrading their truck fleet with efficient trucks.

4.2 Operating Costs and Business Model

Labour cost is found to be a small part of the operating costs. Most operators of trucks usually pay a salary to their drivers. In addition, a driver is given a certain amount at the beginning of the journey to manage fuel expenses, roadside expenses, toll charges (and bribes).

To reduce costs and the risk of differential pricing between states, truck operators prefer to fill the required diesel in states with a lower fuel price. For example, New Delhi truck operators fill their tanks with diesel in Haryana, a neighbouring state, where the fuel prices are low compared to New Delhi. On the return journey, they fill their tank wherever diesel prices are the lowest. The freight rates are usually decided taking into account price differentials across the route in case of interstate journey, so as to hedge against the price differences across states.

Operators of trucks with a national permit charged freight rates on a per-tonne basis, whereas small truck operators within New Delhi charged a lump sum amount on the basis of the load.

Toll charges make up a significant part of the operating costs, in addition to fuel costs, for operators with a national permit. For operators working only within New Delhi and nearby areas of the NCR, toll charges form a relatively low component of total costs, but the cost of bribes is high.

Also, operators within New Delhi and the NCR often resort to overloading their vehicles to increase profitability, whereas operators with national permits face a higher risk of being fined for overloaded vehicles and it increases the total cost significantly if the driver is caught and fined on state borders.

Large and medium operators of trucks maintain long-term contracts with big companies and transport goods like iron, industrial goods, consumer goods, food grains, milk, etc. A competitive bidding process is used to award the contracts where the bidder with the lowest freight charges wins the contract. However, it cannot really be said that long-term contracts necessarily protect the operators from the risks of a fuel price hike. As the contracts are large (for example, consignments of over 1,000 tonnes) and freight is charged per tonne, the additional fuel cost due to fuel price hikes turns out to be relatively small compared to the total fuel cost per trip. Thus, operators generally tend to absorb the increased cost of fuel rather than passing it on to customers immediately to maintain their competitive advantage.

Small operators tend to depend on brokers for obtaining business (both for onward and return journeys) or they work with large operators of trucks who call them as the need arises. Some small operators also pass on business information among themselves to save on the broker's commission.



There is a fixed cost incurred in bringing the truck on road (insurance, permits etc.) and monthly instalments to repay the loan. So, even if the truck is not moving, the trucker incurs a loss of INR1, 000-1,500 every day. Hence, it is necessary to keep the trucks on road for as many days as possible even if the trucker has to settle down for low freight rates.

—A small operator of trucks with a national permit

4.3 Fuel Economy in Trucking

The consultations revealed that new trucks with a carrying capacity between 15 and 21 tonnes give a mileage of 3.5 to 4 km/litre and small trucks with a 2.5 tonne capacity give a mileage of 8 km/litre. After five to eight years, the mileage for large trucks reduces to 2 to 2.5 km/litre. The truck operators usually take a loan for three to five years to purchase a truck (a truck of 21 tonnes costs around INR2 million [USD\$36,511] and a loan can be raised for up to 70 per cent of the price). Once the loan has been repaid, truck operators tend to use the truck for two to three more years and then sell it in the second-hand truck market. As a result, truck operators are concerned about the mileage of new trucks during the loan period, but are often satisfied with a low average once the loan has been repaid.

4.4 The Factors Responsible for High Diesel Consumption and Wastage

Empty trucking leads to fuel wastage for small truck operators operating within New Delhi and nearby areas and cities more generally. Truckers operating on long routes cannot afford empty trucking. They wait in the city until they get a load for the return trip. This leads to an idle truck and an increase in the number of days for the trip. But it does not lead to fuel wastage.

India's poor road quality affects mileage and results in higher diesel consumption. The national highways and other roads are improving, but are still in poor condition in many locations. Deloitte estimates (2012) suggest that good quality roads consist of less than 10 per cent of the total road network. Many of the large stretches of the national highways also have only two lanes, reducing their capacity to handle large traffic loads (Deloitte, 2012).

A study conducted by TCIL (2010) confirms that poor road maintenance leads to slow speeds, equipment breakdowns and accidents. The study shows that national highways constitute only two per cent of the total road network but carry 40 per cent of the traffic. Access to highways is also not controlled, with humans, animals and all types of vehicles sharing the highways, resulting in slow speeds, uncertain journey times and accidents.

The time spent waiting at tollgates is another cause of fuel wastage for operators working on long routes. One trucker operating on the New Delhi-Mumbai route reported that up to 50 litres of diesel can go to waste while waiting at tollgates. TCIL (2010) gives summary statistics based on data collected for 30 trips on the New Delhi-Bangalore route (Table 3).



TABLE 3. SUMMARY STATISTICS OF TRIPS ON THE NEW DELHI- BANGALORE ROUTE

PARAMETER	UNIT	MINIMUM	MAXIMUM	AVERAGE
Distance	Km	2,060	2,322	2,155.83
Journey Time	Hours	80	166	102.18
Average Speed	Km/hr	12.98	29.03	21.73
Mileage	Km/litre	3	4.11	3.6
Loading Documentation Time	Hours	1	5.5	3.06
No. of Stops	--	18	38	25.30
Stoppage Delay	Hours	2.75	8.78	5.16
Stoppage Delay per Km	Hours/km	0.0013	0.0042	0.0024

Source: TCIL (2010)

Waiting at tollgates accounts for almost 50 per cent of stoppage delays on an average trip and toll fees and sales tax contribute to 15 per cent of trip expenses. Each year, fuel worth between INR100 and 150 billion (USD\$1.48 to \$2.77 billion) is wasted on highways and check posts (TCIL, 2010).

Overloading also reduces efficiency in the long run and leads to higher diesel consumption. Overloading is possible only in open body trucks normally used by small truckers. Small truckers claim that low freight rates force them to overload their vehicles in order to maintain profit margins, and that the profit gained through overloading more than compensates for the additional maintenance required for the truck. This view is short-sighted on the part of the truckers because it ruins their vehicles in the long run, but can be attributed to their inability to change freight rates, low fuel efficiency or road delays that push up costs and lower profit margins in general.

4.5 Impact of Diesel Price Increase

There was a mixed response to the questions related to the impact of the diesel price increase of INR5 per litre in September 2012. According to one medium-sized truck operator operating on the New Delhi-Mumbai route, the on-road price increase was in fact INR6.5 per litre and the cost of the trip increased by INR6,000 for a 21-tonne truck. However, freight rates were not revised. According to another truck operator operating on the same New Delhi-Mumbai route who had fixed contracts with Kaira District Co-operative Milk Producers' Union Limited, freight rates were increased by 5 per cent and contracts were revised, but his profit margins were reduced. For large or medium operators operating on the New Delhi-Himachal Pradesh route, freight rates did not increase at all. Similarly, freight rates did not increase for small truckers operating in the New Delhi-NCR. According to them, freight rates have not changed much since FY2009-10 and get revised only once every two or three years. All truck operators noted that freight rates are linked to demand for trucking in the region rather than cost considerations.

According to AITD, truck operators, whether large or small, are "price takers" in the industry. Due to tough competition and fragmentation, truck operators cannot dictate freight rates, nor can they unite to ask for a freight rate increase. Freight rates are mostly decided by brokers who balance the demand and supply for trucking. Due to higher supply, demand for trucking becomes the deciding factor for freight rates. Hence, supply-side shocks and fuel cost increases are often not reflected in the freight rates.



As a result of the diesel price increase in September 2012, which was not reflected in the revised freight rates, all truck operators reported reduced profits and, in some cases, losses. Some reported that old trucks have become unviable for use due to the increased cost of fuel and they have scrapped or sold old trucks to maintain the cash flow. Due to a slowing economy and low demand for trucking in general, truck operators also struggled to reduce the days a truck remains idle or to reduce return trips with empty loads.

The main reasons cited for not being able to pass on costs to the consumer were:

1. Stiff competition resulting in price wars and under-pricing practices.
2. Low bargaining capacity of truck operators in deciding prices and the broker's upper hand in the negotiations. One truck operator pointed out that small and medium truckers do not have the necessary funds and education for obtaining long-term contracts from big firms. They do not possess the knowledge required for making quotations, and thus depend on brokers. Brokers decide the freight rates and charge high commissions.
3. A very few truck operators have long-term contracts with firms that allow for a revision of fuel costs. Most contracts are oral and informal. Where contracts are revised regularly, they involve a competitive bidding process each time. Hence, the truck operator has no guarantee that he will get the next contract with the same firm and has to resort to under-pricing in order to win the bid.

4.6 Possible Impact of Future Diesel Price Increases

Truck operators strongly resented the decision taken by the cabinet committee on political affairs on January 16, 2013, to allow oil-marketing companies to increase the diesel price by INR0.45 per month until the under-recoveries are eliminated. According to truck operators, any steep hike of diesel price, though detrimental, is better than a gradual price increase. A steep hike in fuel costs allows truck operators to negotiate for higher freight rates, which are otherwise governed mostly by demand factors. Small increases in diesel prices cannot be translated into higher freight rates because most customers are reluctant to increase freight rates or revise contracts in such cases and the losses have to be borne by the truck operators.

Adulteration of Kerosene in Diesel

Studies have shown that kerosene is principally used to adulterate diesel on account of the price differences between the two fuels (Bhatia, 1988; World Bank, 2000). According to Badami (2005), this adulteration has been principally fuelled by the fact that subsidized kerosene is much cheaper than diesel and ineffective enforcement means kerosene subsidies are not well targeted and the fuel is widely accessible. The retail prices of diesel have increased by several manifolds, resulting in a greater price differential and increased adulteration. The opportunity for adulteration occurs at three points along the supply chain: (i) refinery/wholesale outlets or storage facilities, (ii) retail outlets or (iii) by consumers. Adulteration of diesel has a number of effects, including wear and tear to the engine, leakage and increased exhaust emissions (Goyal, Ghatge, Nema & Tamhane, 2006), but the calorie content of kerosene is 2-3 per cent higher than the calorie content of diesel, thus it does not affect fuel efficiency of diesel.



BOX 1. A VIEW OF THE TRUCKING INDUSTRY FROM THE NORTHEASTERN INDIAN STATE, ASSAM

Most states in the northeast do not have rail services to carry essential commodities; they therefore heavily depend on road transportation for food, fuel and other essentials. In Assam, various local trucking and transportation companies across the state have been affected by the increases in diesel prices since September 2012.

With the surge in development projects in the northeast over the last decade, several local companies have been established in the state to cater to the market's trucking and transportation demands.

A study carried out in Guwahati, the gateway city to the northeast, and some other towns in Assam showed that small trucking companies had grown significantly since 2000. Several company representatives pointed out that, with the surge in development projects, including major hydro power projects in Assam and the neighbouring state of Arunachal Pradesh, a lucrative and profit-earning market had developed. The company officials also pointed out that it is profitable to supply materials for organizations such as the National Hydroelectric Power Corporation and the Food Corporation of India, as they are very prompt in their payments; however, the terms and conditions of contracts are fixed for one year and there is no provision for amending the terms. Company representatives noted that with the hikes in diesel price they had faced a drastic reduction in their profit share per trip, which led to problems in clearing bank dues and paying the monthly loan instalments.

According to the All India Motor Transport Congress (AIMTC), recent hikes in the diesel price have caused the prices of essential commodities to increase, exacerbating the negative impacts in the northeastern region, in particular for Mizoram, Nagaland and Manipur. In 2012 the AIMTC state president, Mathura Das, submitted a memorandum to the prime minister seeking his intervention in the diesel price increases, and requesting assistance for trucking and transport companies in Assam and the other northeastern states.

The Assam government acknowledges the difficulties the trucking companies face, and has consulted the central government regarding the request for assistance for the trucking companies. The Assam Minister of Industry and Commerce, Sri Pradyut Bardoloi, said that transportation and trucking face major problems in the state regarding the road conditions, connectivity and the law and order problems in certain parts of the state. The Public Works Department authorities acknowledged the issues of poor infrastructure, such as roads and bridges, affecting the connectivity and added that steps are being planned accordingly.

Several representatives of trucking companies also pointed out large-scale anomalies in the transport subsidy scheme that provides a subsidy of over 50 per cent, for movement of goods within the northeastern region.

4.7 Supporting Measures to Reduce Vulnerability

Fuel price increases affect the profit margins of large, medium and small truck operators. The government needs to look at alternative measures it can take to reduce truck operators' vulnerability to increasing diesel prices. Some possible support measures, and their pros and cons, were discussed during the consultations

4.7.1 Fixing Minimum Freight Rates

Fixing minimum freight rates is the most plausible solution, and is prioritized equally by the truck operators' union; large, medium and small truck operators; and researchers at AITD and CIRT. Due to strong competition in the industry, under-pricing is very common. The government can alleviate the problem by regulating the minimum freight rates, fixed on a per-tonne and per-km basis.

However, there are some problems in implementing minimum freight rates in the trucking industry. Freight rates are mostly a function of demand due to the excessive supply of trucks. Fixing minimum rates can further reduce demand during periods of recession. Also, due to the diverse nature of goods carried, fixing one rate is difficult and



less effective, and fixing separate rates for each type of good is cumbersome. Similarly, the quality of roads differs between states, and between hilly areas and plains. Therefore, fixing a per-km rate could have a negative impact for trucks with a national permit. Also, fixed rates that may be higher than market prices would further increase supply, and thereby increase idle time.

Despite these negative impacts, truck operators consider that either fixing minimum freight rates or at least issuing guidelines for fixing freight rates are effective measures to reduce their vulnerability to increasing diesel prices and help in maintaining profit margins.

In addition, brokers, who play a large role in fixing freight rates need to be brought under the purview of legislation. Currently, brokers are required to register under the Carriage by Road Act 2007, but in practice, most brokers do not register themselves. If brokers are registered, an explicit agreement between brokers and truck operators could be developed that would help to standardize the freight rates and reduce the power of brokers.

4.7.2 Uniform Diesel Price Across States

The second most popular support measure discussed was the possibility of keeping the price of diesel uniform across all states. Currently, truck drivers operating on long routes are directed to fill tanks in a state where diesel is cheapest. For truckers from New Delhi, diesel is cheaper in the adjoining state of Haryana, and therefore, most truckers fill diesel there at the beginning of the trip. This requires higher requirement of working capital at the beginning of the trip. If diesel prices were uniform across states, truck drivers could fill diesel anywhere on the trip. For example, a truck operating on the New Delhi-Mumbai route can fill-up once in New Delhi for the outward journey and refill for the return journey after receiving freight charges in Mumbai. In such cases, the requirement of working capital for one trip is significantly reduced and truck operators can operate more than one truck with the same working capital. Hence, all the truck operators would like to see the price of diesel become uniform across the states.

However, this is not a viable option within India's federal structure and may lead to new market distortions. While oil-marketing companies have a uniform base price for diesel in all states, state taxes on diesel differ and are an important revenue stream for state governments. States such as Gujarat and Maharashtra levy higher taxes on diesel and will be reluctant to forego the higher revenue they earn from diesel sales. Conversely, states like Haryana face pressure from farmers' lobbies to keep diesel prices low and will be reluctant to increase taxes on diesel. Central government can only advise and not compel states to raise or lower their taxes.

4.7.3 Reducing Waiting Times at Tollgates

The third solution raised during consultations is to reduce waiting at tollgates for trucks operating on long routes. Operators complained that this increases fuel consumption, leading to higher total expenses and longer periods per trip.

TCIL-IIM-C (2012) found that toll delays are major impediments to smooth trucking operations and the toll expenses involved therewith increase the total cost of operations significantly. Although, the costs of delay are not significant for individual trips (INR122.79/hour), the study estimates that the total annual cost of delay to the Indian economy is in the order of INR270 billion (USD\$5.5 billion) per year. In addition, the study estimates that the total cost of additional fuel consumption due to the delays and slow vehicle speeds is in the order of INR600 billion or USD\$12 billion per annum.



During the consultation, truck operators and AIMTC committee members suggested that, for trucks with a national permit, collection of toll tax on a monthly basis would reduce the waiting at tollgates. But its feasibility from an administrative point of view needs to be considered in more detail.

BOX 2. RECOMMENDATIONS OF THE SUB-GROUP ON POLICY ISSUES, MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

Excerpt from the Sub-Group’s report (GOI, 2011, p. 7):

a) Integrate tax administration with inter-state road freight and passenger movement through an online communication network system at the national, regional and local levels. This will help move towards border-less and paper-less movement of freight traffic across borders aided by IT in a time bound manner. This will greatly reduce transaction cost and the logistics cost of domestic trade.

b) Presently checking/verification work is being done manually at check posts. However, electronic surveillance and computerization present vast opportunities for outsourcing.

c) Adopt concept of ‘Green Channel’. Currently “Green Channel” is being implemented in Gujarat and needs to be replicated. Freight with single destination accounts for a large proportion of consignment and is likely to go up with containerization. Such cargo by road could be accorded ‘Green Channel’ treatment provided papers are prepared in advance and sent to the check post. Initially high value freight and sensitive commodities could be covered under “Green Channel”. Implementation of this proposal will also need some modifications to existing truck fleet, which can be locked/sealed and certified for the journey to their destination; introduction of smart cards for vehicles registered (“Vahan”) and driving license (“Sarathi”) will be a pre-requisite. Similarly, development of National Registers for vehicles and the traders, who are frequent users of check posts, will also be required.

d) Adopt ‘Single Window Clearance System’ for all authorized charges/clearances both at origin and at check posts. Most of the States are collecting various taxes at border check posts. Owing to non-integration of the various offices (Motor Vehicles, Excise and Taxation, Forests, Sales Tax, etc.) dealing with taxes and checking of goods in many States, goods vehicles are detained at several places en route. In addition, manual processing of tax papers at inter-State check posts, leads to delays and hampers smooth traffic flow. Single window integrated border check posts would help in drastic reduction of waiting time and smooth flow of traffic at State borders.

4.7.4 Improve the Fuel Efficiency of the Truck

The low mileage of trucks (3–4 km/litre) increases the total cost per trip. According to TCIL-IIM-C (2012), the average trip expenses were INR1.09/tonne-km for a mileage of 4.15 km/litre, and give an average contribution margin of 36.95 per cent. The maximum mileage that was achieved on 30 round-trips on the New Delhi-Bangalore route was 4.30 km/litre. A sensitivity analysis was carried out to check the impact of increasing mileage to 4.30, 5 and 5.5 km/litre on the average trip expenses and contribution margin. The results are shown in Table 3 and Figure 8.

TABLE 4. THE EFFECT OF MILEAGE ON AVERAGE TRIP EXPENSES

MILEAGE (KM/LITRE)	AVERAGE TRIP EXPENSES (RS. TONNE-KM)	AVERAGE CONTRIBUTION MARGIN (%)
4.15	1.09	36.95
4.30	1.07	39.90
5	0.98	52.92
5.5	0.92	61.31

Source: TCIL- IIM-C (2012)

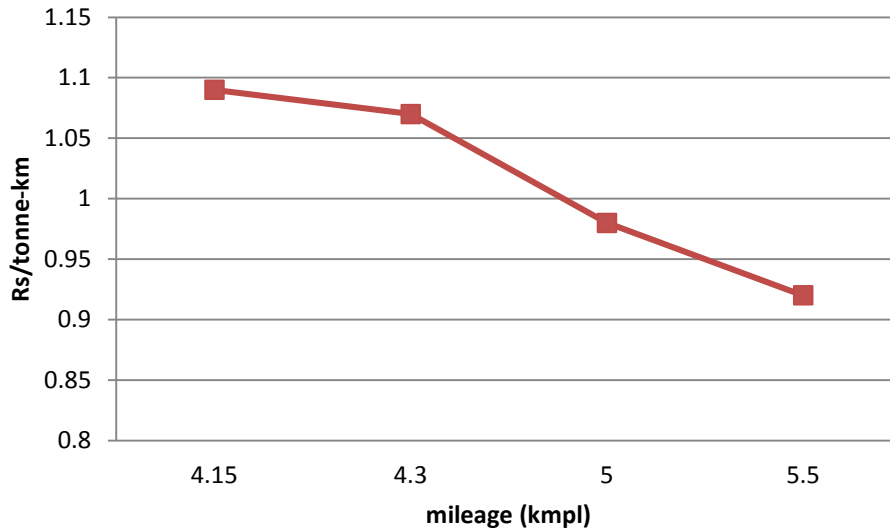


FIGURE 8. THE EFFECT OF MILEAGE ON AVERAGE TRIP EXPENSES

Source: TCIL- IIM-C (2012)

Many truck operators were not keeping their vehicles properly maintained in order to increase mileage and reduce trip expenses. The TCIL-IIM-C (2012) notes that, if mileage of vehicles were at the desired levels, savings to the economy would be in the order of INR240 billion (USD\$4.8 billion) per year.

However, improving the mileage of trucks is a complex issue. Mileage is low due to various reasons, such as lack of good quality roads, slow speeds of vehicles, stoppages at tollgates and lack of training for drivers regarding proper usage and maintenance of trucks. Lack of technology and manufacturing standards is another barrier in the Indian trucking industry. Truck manufacturing companies only make the chassis of the vehicle. The body is built by unorganized roadside vendors. It is difficult to impose any standardization on the multitude of independent vendors that build truck bodies.

Indian producers of trucks are not improving the mileage of their trucks. And imported trucks like Volvo, Mercedes which are better in mileage are unaffordable as there is very high excise duty levied on them.

—A medium truck operator from Mongolpuri industrial area, New Delhi

In addition to the options outlined above, there is a need to make several structural changes in the trucking industry that will reduce the vulnerability of truck operators to diesel price shocks in the long run.

4.7.5 Incorporate Flexibility in Long-Term Contracts to Adjust to Changes in Fuel Costs

One cargo company involved in the retail haulage business claimed to include a revision clause in their contracts. However, most of the large, medium or small operators of trucks involved in bulk haulage do not have a clause in their contracts allowing revision of freight rates due to fuel cost increase.



4.7.6 Facilitate Arrangements to Reduce Empty Trucking and Idle Trucking

“Moving truck is better than standing truck”

—A large transporter and AIMTC committee member from Sanjay Gandhi Transport Nagar, New Delhi

Currently, brokers play a large role in obtaining contracts or business for truck operators. The power intermediaries exert over the industry is not matched by the capital employed by them. Due to information asymmetry in the trucking industry, producers do not determine the price line. Small operators of trucks do not have access to information on shipment of consignments and cannot afford to obtain such access. Hence, they depend on brokers.

Information technology can bridge this information gap on demand and supply and reduce the role of brokers in obtaining business as well as deciding freight rates. Sriraman et al. (2006) notes one such intervention by the Transport Exchange of India. It is a private initiative that acts as a modern intermediary between consignors of goods and road transporters who register themselves with the Transport Exchange and inform the exchange of their availability and trucking capacity. The Transport Exchange maintains real-time data of such truckers and customers online and co-ordinates them at a nominal charge. Given the high level of illiteracy among truckers, the Transport Exchange requires truckers to only make a phone call to register and save truckers from the hassle of dealing with online data. The subgroup on policy issues under the Ministry of Road Transport and Highways also recognized the need for modern intermediaries and recommended a government initiative to establish hubs to bridge information asymmetry in the trucking industry.

4.7.7 Introduce Training for Truck Operators and Revise Financing Conditions

Currently, there is hardly any training required to enter the trucking business. Also, finance for the purchase of new trucks is easily available through non-banking financial institutions like Shriram Transport Finance Limited (current leaders in truck financing) and Tata Capital. Nationalized banks also lend to small operators of trucks on a priority basis. This situation has led to the decoupling of the risk from returns for financial institutions on the one hand and easy entry and exit in the business for truck operators on the other hand. There is an urgent need to assign prerequisites like a minimum asset base to access financing and minimum education and training to enter the trucking business. There should also be guidelines for financiers to assess the revenue generation and loan repayment capacity of truck operators. This will help reduce the rate of interest for existing players and act as an effective entry barrier for new entrants in the business.



BOX 3. RECOMMENDATIONS OF THE MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

A study by the working group on roads for the National Transport Development Policy Committee for Ministry of Road Transport and Highways (GOI, 2012b) identifies a list of strategies that can be followed to bring about improvements in the trucking industry. These include:

- Improve the operating efficiency of trucks on highways.
- Incentivize scrapping of old vehicles.
- Have a provision for real-time traffic information in vehicles.
- Introduce electronic toll collection on all major highways/expressways.
- Initiate public transportation information systems in major cities.
- Introduce adaptive traffic signals, congestion charges and parking guidance.
- Install weigh-in-motion of goods carriage vehicles on roads.
- Focus on improving fuel economy of heavy commercial vehicles.
- Introduce uniform fuel quality and uniform emission standards throughout the country.
- Make retirement compulsory for vehicles that do not obtain a roadworthiness certificate.
- Develop a highway data system to monitor details of vehicles and road design.
- Road pricing and rate of user fee should be fixed purely on the basis of additional benefits accruing to users on account of facility upgrades, as compared to the facility existing (not on the basis of entire existing facility).
- Consider undertaking a sound cost allocation study of providing and maintaining roads in the context of their use by cars, buses and trucks.
- Review reduction in the rate of tolling after recovery of capital cost for publicly funded projects or after expiry of the concession period for private investment projects.
- Review the feasibility of tolling two-lane national highway sections from the perspective of benefits accruing to road users in terms of savings in vehicle operating costs.



5.0 Conclusion and Recommendations

There is an urgent need to phase-out the subsidy on diesel from both the fiscal and environmental points of view. The Government of India has decided to allow oil-marketing companies to increase the diesel price by INR0.45 per month until it is equal to the market rate (*Times of India*, 2013). The government has already given directives to sell diesel at market prices to bulk consumers such as the Indian Railways and State Transport Corporations. In the retail sector, farmers and truckers stand out as the sectors most vulnerable to diesel price increases.

The study has considered existing literature available on the trucking industry and various reports by the government. The secondary data has been verified through a sample survey of large, medium and small truck operators in New Delhi, Assam and Jodhpur. Consultations have been undertaken directly with truck operators to seek answers to their specific issues related to increasing diesel prices. The study aims to identify support measures the government can implement to reduce the vulnerability of truck operators to higher diesel prices. In turn, views of truck operators have also been verified by consultations with the Central Institute of Road Transport and the Asian Institute of Transport Development, who are engaged in research on road transport.

The study concludes that the vulnerability of the trucking industry to diesel prices arises due to the inherent structural and regulatory issues of the industry that urgently need to be rectified.

Due to the lack of training stipulations, easy registration and easy financing, there are virtually no entry and exit barriers in the trucking industry. Hence, most of the truck operators enter the business with no prior knowledge of trucking and have a very small asset base. The result is that 80 per cent of truck operators are small truckers who own less than five trucks. Such small operators cannot reap the benefits of economies of scale and cannot afford to obtain the necessary business information, and are thereby dependent on brokers.

Due to oversupply of trucks and fierce competition, freight rates are mostly determined by demand for trucking, and thus, increased fuel costs have little influence on them. But fuel costs being around 56 per cent of the total operating costs make truck operators vulnerable to increased diesel prices.

Most trucks are financed by borrowing, which requires them to be in use in order to pay monthly loan instalments. This in itself should not be a problem, but coupling it with the low bargaining capacity of small truckers, lack of prior business knowledge and lack of access to information about business opportunities leads to heavy dependence on brokers, the problem of trucks returning empty and idle trucking.

There are many regulatory issues in the trucking industry as well. Both central and state governments look at trucking as a source of revenue and have not paid adequate attention to its problems. There is an urgent need to find a solution to unviable freight rates and setting a minimum for the industry. Tolls should be collected once, toll plazas need to be modernized and easy movement of freight across states should be made possible to reduce fuel wastage and low mileage arising from toll stoppages. If the toll stoppages are minimized, more trips are possible in a month and this can significantly alter the business. There is a need for one single regulator for the trucking industry who will look at both regulatory issues and training requirements of both truck operators and truck drivers.

The study thus makes the following recommendations, which can be implemented in the short term to give immediate relief to the truck operators against rising diesel prices:



1. Fix minimum freight rates.
2. Reduce waiting time at tollgates.

Recommendations that are directed towards long-term structural changes required in the trucking industry include:

3. Improve mileage of the trucks.
4. Incorporate flexibility in long-term contracts to adjust to changes in fuel costs.
5. Introduce training for truck operators and examine truck financing.
6. Set up computerized exchange networks for matching loads to trucks.



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