

Summary Report

IRADe-PR-54(2017)



CONVERGING THE DIVERGENCE BETWEEN DIESEL AND PETROL PRICES

A CASE FOR RATIONALISATION OF THE CENTRAL EXCISE DUTY



An initiative supported by



Integrated Research
and Action for Development



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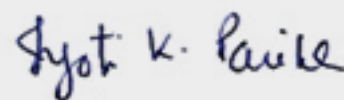
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Preface

Integrated Research and Action for Development (IRADe) is always willing to take up the challenge of addressing policy issues, especially relating to energy, environment or climate change. In 2013, we took up the issue of diesel subsidy, with support from the Shakti Sustainable Energy Foundation and the Ministry of Finance. We allayed the concern that eliminating the diesel subsidy in existence at the time and a rise in diesel prices would lead to a secular rise in inflation. We showed that in sectors such as agriculture, public and private transport, and household consumer expenditure, diesel users will be able to adjust to an incremental elimination of the diesel subsidy without facing significant hardship. We also established that continuation of the diesel subsidy and absorbing this subsidy in the national budget will penalize all, including non-users of diesel, through higher inflation that will persist on account of the growing fiscal deficit. Therefore, even from the perspective of curbing inflation, subsidizing diesel was not the right response. Soon after the launch of our report and as global oil prices dropped, the Government announced an end to the administered pricing of diesel with a phased, incremental removal of the subsidy.

However, even today, the differential between petrol and diesel prices remains. Given that petroleum products are heavily taxed at both the central and state level and these can significantly influence consumer behaviour, their pricing is of foremost importance. Over time, the differentials have come down; however, the differentials persist in every state and should be questioned. In this report, we analyze the impact of a revenue-neutral rationalization of the central excise duty applicable on diesel and petrol, on private and public transportation, truck freight, agriculture and state finances, and find that a rationalization of the excise tax to further reduce petrol and diesel price differential does not pose a major cost hurdle to diesel users, but can lead to the elimination of perverse incentives that currently exist in the economy. We believe this report presents a persuasive case for the Indian Government to further rationalize the pricing of petroleum products, in particular to eliminate the gap between the price of diesel and petrol, through revisions in the structure of central and state tax levies. Our analysis is the first step using only energy economics. If we also include environmental concerns, the case will be even stronger. The World Health Organisation has declared diesel exhaust as carcinogenic.

During the preparation of the report, we interacted with various stakeholders. We hope that the report addresses the concerns of all stakeholders. We also hope that the readers will find insights presented useful.



Professor Jyoti Parikh, PhD
Executive Director, IRADe

Acknowledgements

We extend our gratitude to Petroleum Planning & Analysis cell (PPAC) and Society of Indian Automobile Manufacturers (SIAM) for their support in providing data for this research project. We immeasurably thank Dr. Basudev Mohanty for his extensive review of the report which helped in making the report meaningful to the policy makers. With deepest gratitude, we thank Dr Kirit Parikh, Chairman, IRADe who tirelessly guided and mentored in carrying out this project successfully.

We appreciate the generous support of Shakti Sustainable Energy Foundation to make this research possible. In addition, our heartfelt thanks to Mr. Krishan Dhawan (Chief Executive Officer, Shakti Sustainable Energy Foundation), Mr Kunal Sharma, Senior Programme Manager (Climate Policy, Shakti Sustainable Energy Foundation) and Ms Arshpreet Kalsi, Program Assistant (Climate Policy, Shakti Sustainable Energy Foundation) for their detailed feedback on the research work at various stages.

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1

Objective

Historically, the Indian Government has controlled the prices of a number of petroleum products. The most important of these products being diesel, petrol, liquefied petroleum gas (LPG) and kerosene. Consumers are charged a low price and the difference in the sales realisation of the Oil Marketing Companies (OMCs) and their cost of supply, called under recoveries, were financed by contributions from the Government, upstream oil companies and OMCs. The under recoveries were large as the Government fixed sale prices quite low compared to cost of supply.

Following the Report of the Expert Group on Viable and Sustainable System of Pricing of Petroleum Products (Parikh et al, 2010)¹, petrol price was freed and made market determined. Diesel price was however not liberalised due to concern for inflation caused by the increase in its price.

Following this, IRADe did a study (Parikh et al, 2012)² supported by Shakti Sustainable Energy Foundation and Ministry of Finance, which established that while an increase in diesel prices to eliminate the diesel subsidy would lead to a slight uptick in inflation in the short run, over the medium term the rate of inflation would be much lower and the GDP much higher. Also, the impact on consumers of higher diesel price due to removal of the subsidy would be less than half a percent of their level of consumption. Subsequently, the diesel subsidy was eliminated with the price being gradually increased by INR 0.5/litre every month from 2013.

At present diesel price is market determined and the sale price reflects the cost of supply. However, there is still a significant difference between price of diesel and that of petrol, due to differential rates of excise tax imposed by Central Government, which is further accentuated by differences in the VAT rates imposed on diesel and petrol by states.

The difference in the price of diesel and petrol, due to lower taxation of diesel, encourages use of diesel vehicles, which are more polluting compared to petrol vehicles, and provides no incentive for its reduced consumption. It influences decisions of people to buy large diesel cars and has led to a huge increase in the number of diesel vehicles. A large percentage of Passenger Vehicles (PVs) are diesel fuelled as diesel remains a cheaper fuel. In India, the ratio of petrol to diesel cars has steadily improved as the difference in the price of petrol and diesel has narrowed subsequent to the removal of the diesel subsidy. The share of diesel cars in total car sales has fallen from 52 % in July 2012 to 26 % in July 2016³. Given that diesel

1 Parikh Kirit S., A. I. (2010). *Report of the Expert Group on Viable and Sustainable System of Pricing of Petroleum Products*. New Delhi: Government of India

2 Parikh, K., Parikh, J., Ghosh, P., Panda, R. R., & Kaur, A. (2012). *Taming Diesel Subsidy to Curtail Inflation and Foster Economic Growth*.

3 <http://economictimes.indiatimes.com/industry/auto/news/passenger-vehicle/cars/diesel-car-sales-pie-halves-to-26-in-four-years/articleshow/53056370.cms>

passenger vehicles cost more than petrol ones, the preference for diesel vehicles could decrease further if the gap between petrol and diesel price was to close further through a rationalisation of excise rates.

When fuel oil price was market determined but diesel price wasn't, we had an anomalous situation where diesel was used in place of fuel oil because of the former's lower cost. However, fuel oil is the lower-priced fuel internationally.

The grades of diesel available in India yield much higher particulate matter and other carcinogenic pollutants compared to petrol leading to health and environmental issues. As diesel vehicles have proliferated, the incidence of asthma and other lung diseases directly linked to air pollution has shot up. Thus, rationalising diesel and petrol prices will reduce the use of diesel.

Lower use of diesel will also reduce the cost of refining. Diesel constitutes such a large fraction of India's consumption of petroleum products that refineries have to use hydro cracking to increase production of needed amount of diesel, increasing the cost of refining. There are then both economic and environmental reasons to rationalise tax rates so that these distortions are reduced. Figure 1 shows sector wise sale of diesel as of 2012-13.

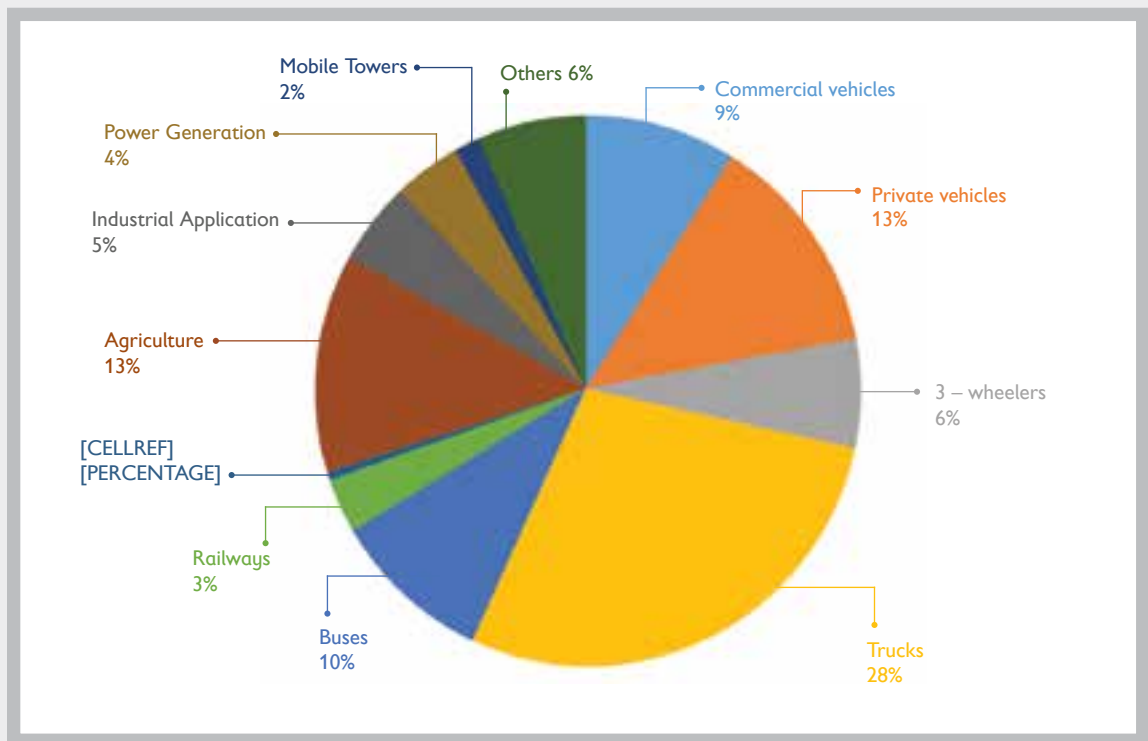


Figure 1: End-use analysis of HSD sales

Source: PPAC (Ready Reckoner - Snapshot of India's Oil & Gas data November, 2016)

A key objective of this study is to analyse the impacts on various stakeholders if the price distortions were to be eliminated through revenue neutral policy level interventions. The impact of rationalizing diesel price on the following stakeholders has been assessed:

- Central and State Government finances
- Truckers and consumers
- Farmers
- Car manufacturers, and
- Bus operators and passengers.

2

Sources of Distortion

While the dealer price of diesel and petrol differs by less than a rupee per litre, the sale price to the consumers differs by a much larger extent due to different rates of excise imposed by Central Government and the rates of value added tax (VAT) or sales tax (ST) by the State Governments. Figure 2 below shows the price build up in Delhi in December 2016 for petrol and diesel.

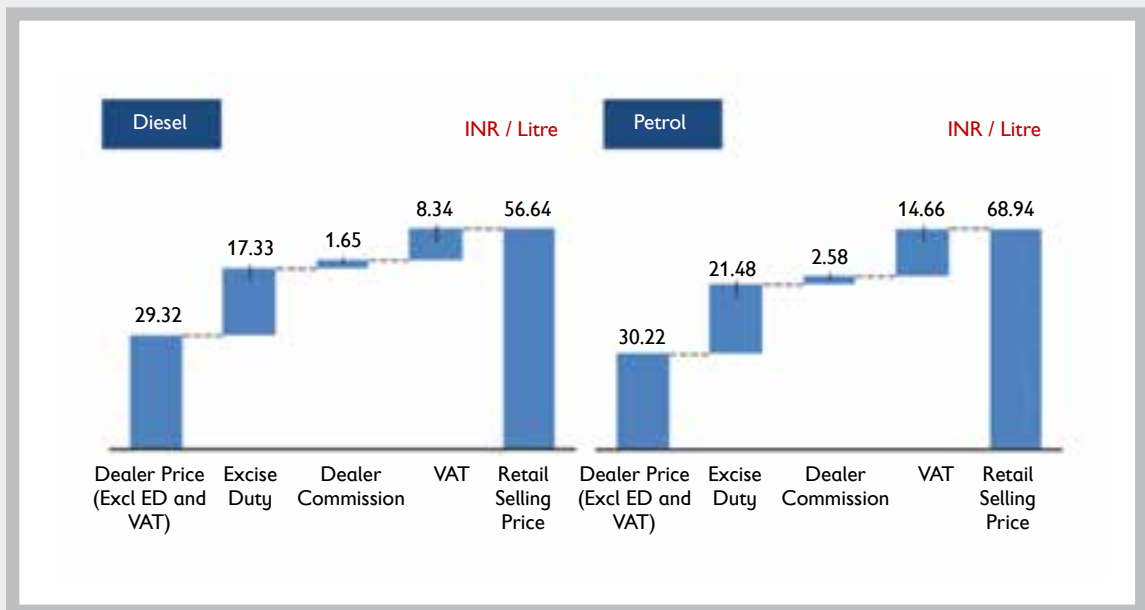


Figure 2: Price Build Up of Diesel and Petrol in Delhi

Source: IOCL (Price as of 17 Dec 2016)

The excise duties are specific in that the duty level is specified in INR and the VAT rates are Ad valorem and are specified as a percent of the price. The excise rate is INR 17.33 on diesel and INR 21.48 on petrol. The VAT rates vary from state to state. In most states the VAT rate for petrol is much higher than VAT rate on diesel. Madhya Pradesh charges the highest rate of tax on both petrol and diesel (40.34 % and 31.16 %) respectively. There is only one state, Goa, where the VAT rate on petrol is less than that on diesel. On the other hand, Gujarat and Orissa are the only states where petrol and diesel VAT rates are equalized. Figure 3 shows the VAT rates in different states.

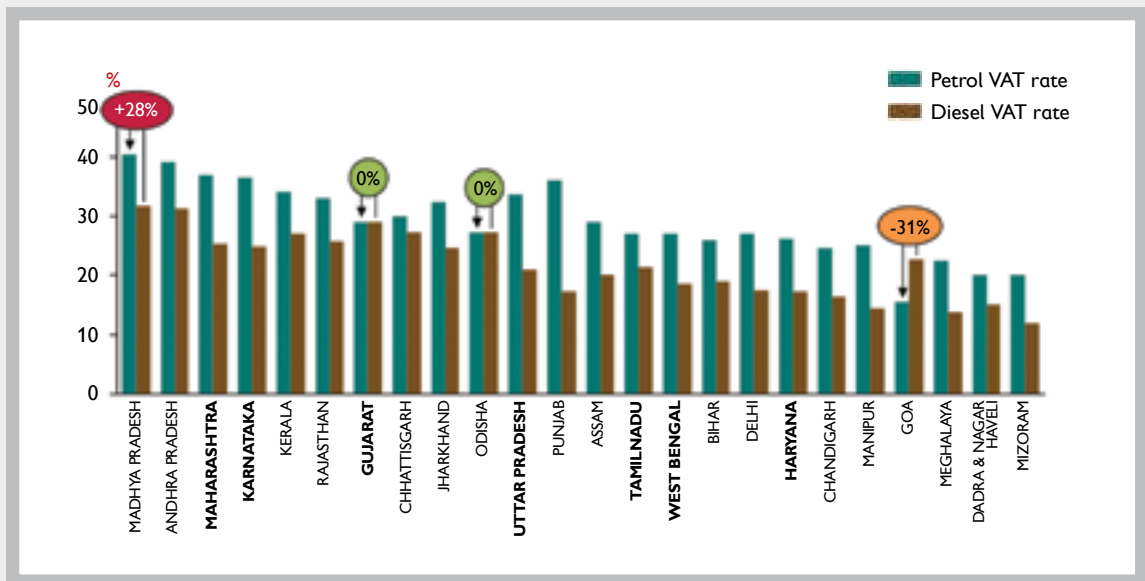


Figure 3: State Wise VAT Rates Diesel and Petrol (effective 1st September 2016)

To remove the distortion in relative prices the difference in excise and VAT rates must be eliminated.

3

Analytical Approach

The approach used by IRADe in this study is to adjust excise duty rates in such a manner that the resulting revenue from diesel and petrol excise will be the same as revenue obtained before the adjustment in excise rates. We call this a revenue neutral manner. A change in the excise rate, leads to a change in the sale price. Thus, the demand for the product also changes. In ensuring revenue neutrality, we have accounted for the changes in demand due to change in sale prices. For this, the price elasticity's of demand were considered as -0.56 and -0.85 for diesel and petrol, respectively, as estimated econometrically by Agrawal (2012)⁴.

Thus, this scenario where central excise duty is equalized (CEDE) across diesel and petrol is called scenario 'CEDE'. The excise rate on diesel is INR 17.33/litre and on petrol is INR 21.44/litre. When they are equalized, the excise on diesel will increase and that on petrol will decrease. This, in return, will increase the revenue as diesel consumption is four times that of petrol. However, the higher sale price will reduce the consumption of diesel and increase the consumption of petrol. We adjust iteratively the excise rates, till the revenue after accounting for the impact on levels of consumption equals current revenue. The excise rate becomes INR 18.3 for both diesel and petrol and the retail selling price of diesel will change from INR 56.64 to INR 57.85 and that of petrol from INR 68.94 to INR 64.92, in Delhi. The

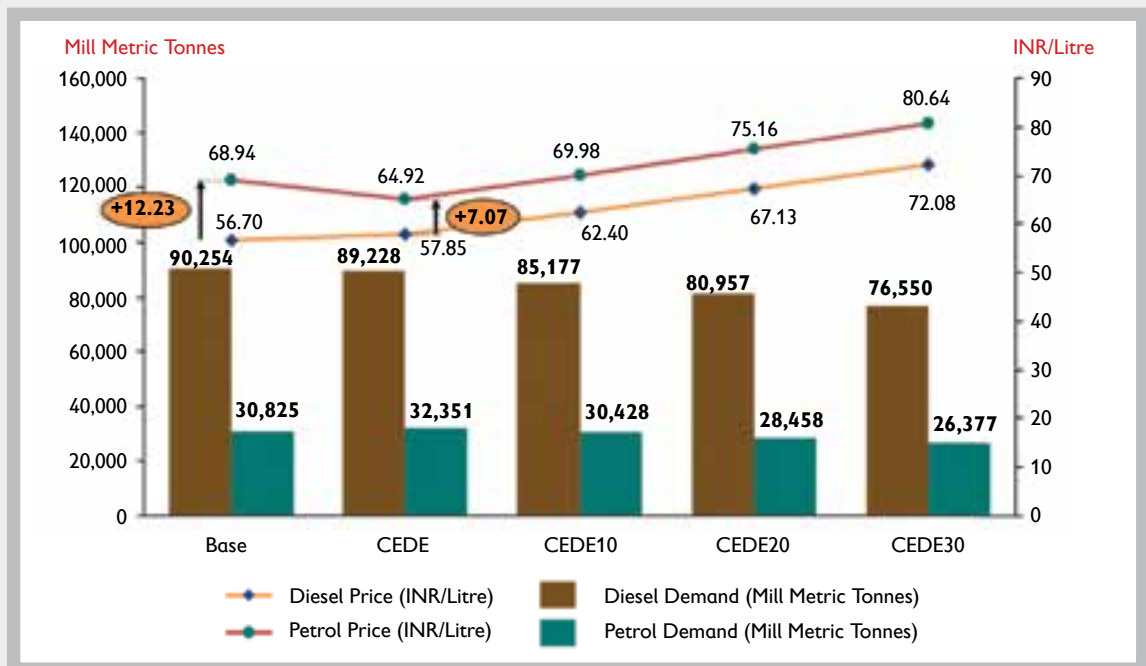


Figure 4: Impact of price rise on retail prices and demand with Excise duty adjustment

⁴ Agrawal, P. (2012). India's Petroleum Demand: Empirical Estimations and Projections for the Future.

diesel price increases by 2 % and that of petrol decreases by 6 %. Thus, the ratio of petrol to diesel price changes from 1.22 to 1.12. The differences in diesel and petrol prices remain, as we have considered only equalisation of excise duty which is the instrument available to Central Government. The difference is due to the difference in refining costs and different rates of dealer commissions but also largely due to differential VAT rates imposed by the states.

We also consider three other scenarios where the international crude oil price increases by 10 %, 20 % and 30 %, and where we equalize excise rates in revenue neutral ways, designated as CEDE10, CEDE20 and CEDE30 respectively. Figure 4 shows the impact on retail price in Delhi under these scenarios. The price of diesel increases correspondingly by 10 %, 18 %, and 27 % respectively, and there is a corresponding decrease in demand for diesel and petrol due to the increase in the price of both these fuels.

If states were also to equalize VAT rates for diesel and petrol, the percentage increase in diesel price is shown in Figure 5.

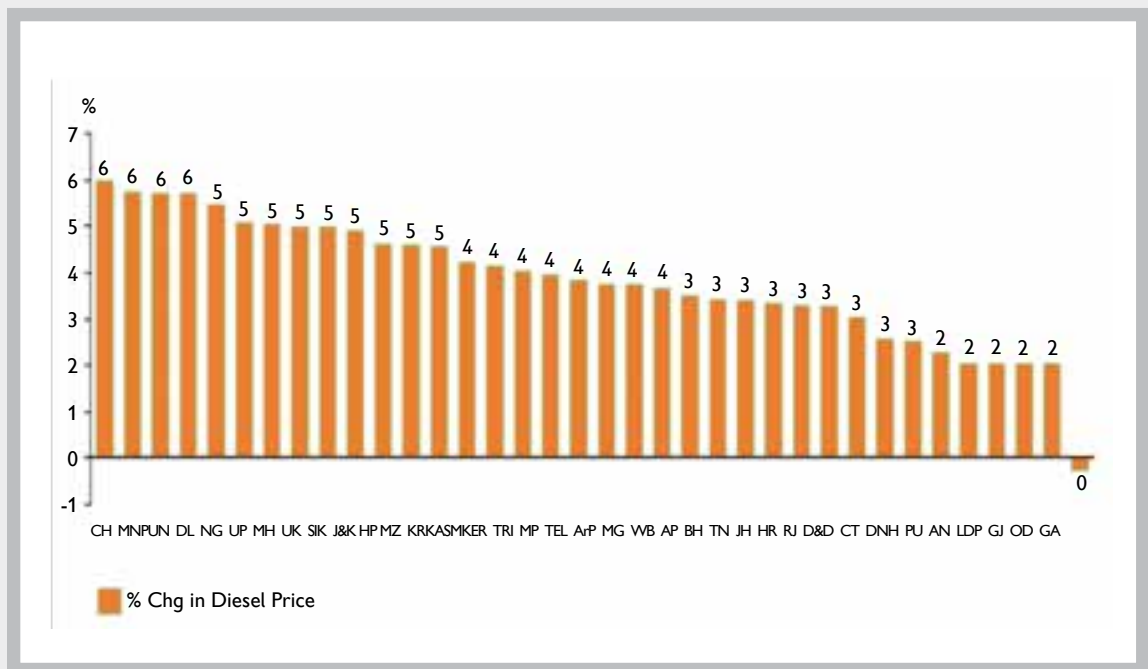


Figure 5: Percentage Increase in Diesel Price when along with Excise Duty, VAT Rates are also Equalized

Having considered only price rise scenarios, a fall in prices will increase the demand for petrol and diesel and the Central Government’s revenue will go up as the excise is specific. For revenue neutrality, the rates of excise duties should be lowered and the excise inclusive price would be somewhat lower. Figure 4 show that when we compare scenarios CEDE 10 and CEDE 20, a 10 % increase in price inflates the retail price of diesel by 7.5 % and of Petrol by 7.4 %. For a 10 % fall in prices, a similar reduction in retail prices can be expected.

For considering the impact of diesel price rationalization, no changes in state level VAT rates were considered as they vary from state to state and, in time, a uniform goods and services tax (GST) may be imposed by all states, though at present petroleum products are exempted from GST. Therefore, we have mostly examined the impact on various stakeholders of the excise equalisation scenario CEDE.

4

Impact on Stakeholders

4.1. Revenue Collection of State Governments

Excise duty collections from high speed diesel (HSD) and petrol or motor spirit (MS) sales constitute a high share, ranging from 84 %-87 % of the overall excise tax collections, which is about 20 % of total tax revenue of the Central Government. Any change in excise duty rates will affect the price on which state VAT/ST is levied and impact state VAT collections. As VAT/ST is a state subject, this analysis focuses on the potential impact on state finances of changes in the rates of petrol and diesel excise duty. Apart from equalisation of Central excise duties on petrol and diesel in a revenue neutral way, considering no fuel price change, three scenarios of petrol and diesel price change due to (international) price change in crude oil are considered, viz, (i) 10 % price increase, (ii) 20 % price increase; and (iii) 30 % price increase, with the price prevailing at Delhi on 17 December 2016 taken as the base price.

To study the impact of product price changes and consequent changes in excise duty, long run price elasticity, estimated by Agrawal (2012)⁵ individually for petrol and diesel using data for 1970–71 and 2010–11 has been utilised. Iteration with different excise duty rates and re-estimated demand (based on price elasticity) has been carried out to satisfy the dual objective of price rationalization and revenue neutrality from Central excise tax. The impact of excise duty equalisation on revenue collection by states is shown in figure 6. Revenue collection depends on states relative VAT rates, the lower price elasticity of diesel compared to petrol and sale of diesel and petrol in the states. Since for most states diesel sales

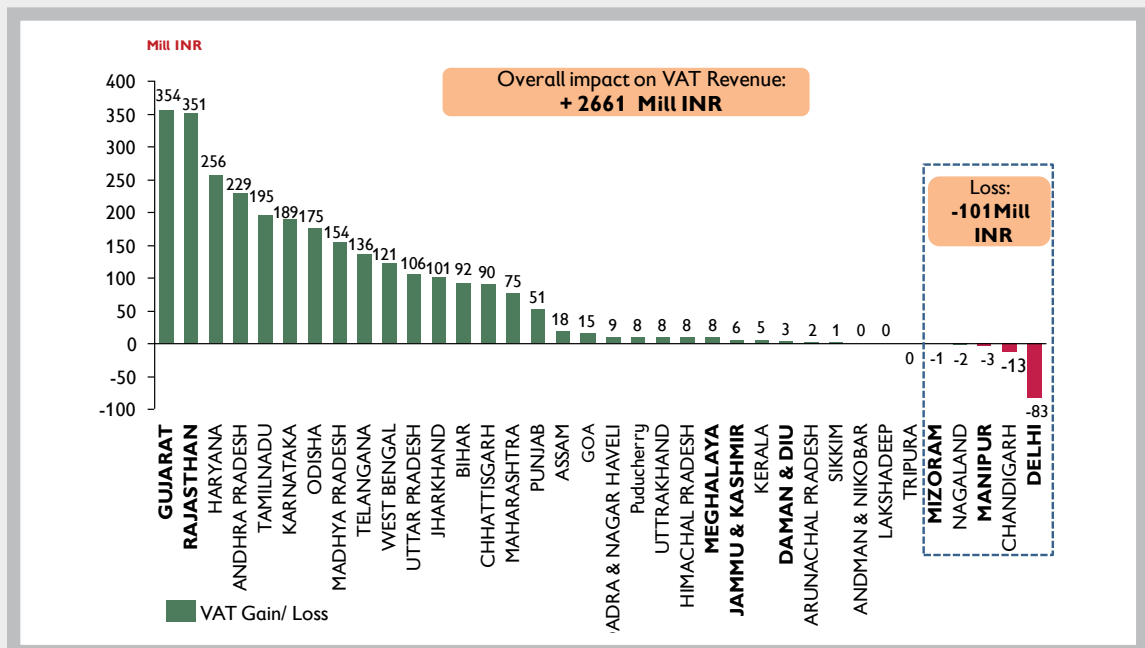


Figure 6: State wise VAT revenue gain/ loss (When Excise Duties Equalised)

5 Agrawal, P. (2012). India's Petroleum Demand: Empirical Estimations and Projections for the Future.

are higher than petrol the revenue collection increases. Only for few states the revenue falls. Chandigarh and Delhi have much larger sale of diesel and they also see drop in their revenue.

Additionally, we investigate the impact from the application of a single revenue neutral VAT/ST rate for both diesel and petrol, specific for each state. On determining such tax rates, it is found that on rationalisation of excise duty and VAT/ST rates on diesel and petrol, the price gap between the two fuels is just 4 %, constant across all states.

The following conclusions are drawn based on the assessment:

- Barring a few north-eastern states and Union Territories, where the sale of petrol is more than that of diesel, all states enjoy revenue gain due to the impact of such excise tax adjustments by the Centre.
- Given that the central excise tax is a specific tax, an increase in international crude oil prices reduces the demand for diesel and petrol and if the excise taxes on the two fuels are kept unchanged the Central Government would suffer excise revenue loss ranging from 4 % (for a 10 % increase in price) to 11 % (for a 30 % increase in price). However, the revenue loss would hold true under the current excise duty regime as well.
- On determining a single revenue neutral VAT/ST rate for both diesel and petrol (specific for each state), it is found that on total rationalisation of diesel and petrol prices, the price gap between the two fuels is just 4 %; constant across all states.
- Based on the results, whereby most states would benefit from a revenue gain, it is recommended that the Central Government should rationalize diesel and petrol excise duties, compensating the few revenue losing states through a fiscal package equivalent to their revenue loss.

4.2. Truckers and Consumers

Road transport is an important sector of the Indian economy, contributing about 5 % to the annual GDP. Trucking industry forms the backbone of this sector, accounting for 28 % of total diesel consumption by the sector. Specifically fuel costs constitute 55 % of an average truck’s total trip expenses when considered without overheads and about 50 % when considered with overheads, see Figure 7.

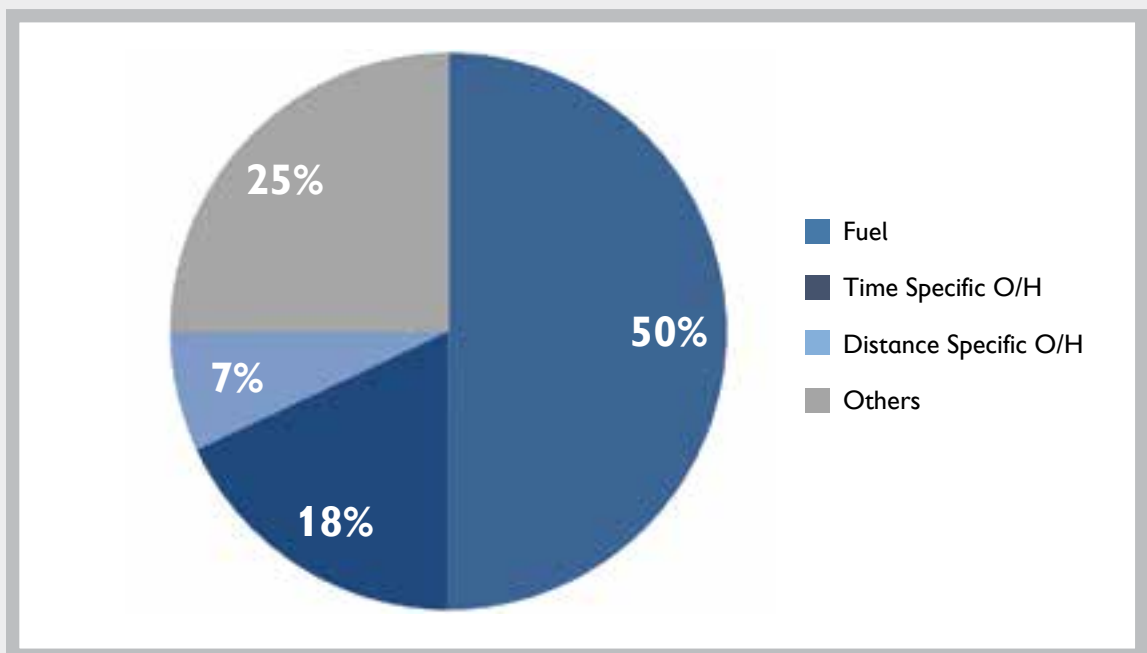


Figure 7: Composition of Trip Expenses Including Overheads

The elasticity of Road Freight Index (RFI), (an index of weighted average freight rates compiled across various routes by Transport Corporation of India), with respect to diesel price is estimated by IRADe to be 0.49. Thus, with an increase in price of diesel of 2 % when excise duties are rationalised, the impact on freight rate will be just 1 %. The elasticity was estimated based on regression analysis by IRADe.

This 1 % increase in the freight rate is negligible compared to the many sources of inefficiencies in the trucking operations with much larger impact. Thus, this small increase should not raise much of opposition from the truckers particularly if other measures are taken to reduce trucking costs. The introduction of the Goods and Services Tax (GST) is likely to reduce trucking cost by a significantly larger amount as waiting at Octroi and city toll gates has been eliminated, leading to savings in fuel cost and increase in fleet utilisation.

Diesel price increase is passed on to freight rates with a lag. It is observed that only the medium-term freight rates respond to changing fuel prices. Statistically, it can be observed that at annual level there is a positive relationship between diesel prices and freight rates. However, given the fragmented and competitive nature of the Indian trucking industry, in the short run, demand and supply (rather diesel prices) determine the freight rates. Stakeholder consultations with various players of the trucking industry reveal that apart from diesel prices other factors like non-existence of entry barriers, operating non-fuel costs, mileage of trucks, on road delays (especially at tolls), etc, are the major areas, which can be targeted for cost reductions to improve the trucking industry's resilience to withstand fuel cost increase due to a possible rationalisation of prices without impacting freight rates.

While we conclude that rationalisation of the excise duty will only have a minor impact on truck freight rates, we identify three areas in which the following recommendations can prove effective for the trucking Industry as a whole to markedly reduce costs: (i) fuel efficiency improvement, (ii) operational efficiency improvement, and (iii) market entry regulations for new operators:

1. Improvement in mileage of the trucks by improving road quality, better tyre quality and maintenance and appropriate air pressure in tyres. .
2. Provide truck financing to switch over to more fuel efficient trucks.
3. Reduction in waiting time at toll gates at least for trucks with national permits using electronic billing. The enforcement of GST has already reduced waiting time at octroi and entry tax points.
4. Set up computerized exchange networks for matching loads to trucks to reduce empty trips or waiting time.
5. Incorporation of flexibility in long-term contracts to adjust to changes in fuel costs.
6. It is expected that implementation of the above recommendations shall not only be beneficial for trucking industry and its clients but also for the economy as whole on the account of higher efficiency of diesel use and minimal impact on freight rates.

With some of these measures implemented the impact of diesel price increase, on trucker's incomes, should be minimal.

Impact on Consumers

Truck transport cost increase results in higher goods distribution cost and thus consumer prices may increase. In an earlier study (Parikh et al, 2012), IRADe had assessed the impact of a 10 % increase in diesel price on consumers of different expenditure classes. It was shown that even for the poorest deciles consumer in rural and urban areas; the increase in expenditure would be less than 0.5 % of their total household expenditure. With at most 6 % increase in diesel price, when both Centre and States equalize

taxes on diesel and petrol, the impact would be no more than 0.3 % of the total household expenditure of the consumer.

4.3 Farmers

Farm mechanization has been increasing in the country and farm implements and machines that use diesel are being used for a variety of agricultural work like sowing, levelling, threshing, harvesting, irrigation, etc. Implements basically comprise of pumps, threshers, harvesters, and tractors being major one.

At the state level, in terms of overall share of diesel used in agriculture with respect to total diesel consumed, Maharashtra and Odisha have lowest share with 5.52 % and 6.14 % respectively, while Bihar and Punjab are the leading states with 26.14 % and 33.29 % shares respectively, as per PPAC report 2013. In terms of actual quantity of diesel consumed per hectare of gross sown area, as presented in figure 8, the lowest consumption is in Maharashtra and Assam with 23.86 and 25.08 lt./ha per year, while it is highest in Punjab and Haryana with 169.0 and 197.4 lt/ha per year. The primary reason for higher consumption in these two states is paddy and wheat farming using extensive farm machines like tractors and harvesters and a low diesel price, which is lowest in the country.

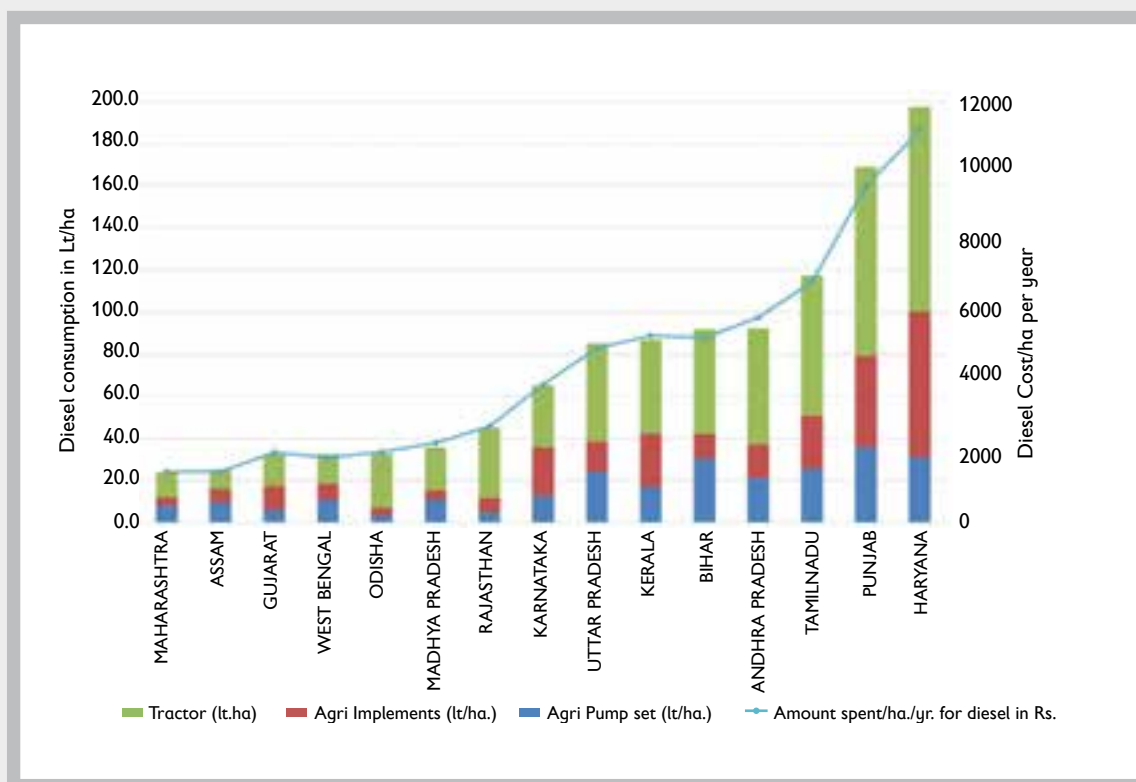


Figure 8: Diesel Consumption and cost per ha of Gross Sown Area for agricultural implements in selected states

In Bihar, where 90 % of the pumps use diesel, the use per hectare is 92 litres per year and in value terms INR 5271/ha. In Rupee value terms also, Maharashtra and Assam have lowest per hectare diesel consumption with INR 1445/ha and INR 1454/ha per year while it is highest in Punjab and Haryana with INR 9574/ha and INR 11179/ha per year of gross sown area.

Under the base case when excise duty is equalised but the cost price of diesel and petrol remain the same, the overall impact on total value of diesel consumption in rupee terms is 2 % across all the states

assuming that the use of diesel by farmers remain at the same level as before. The decrease in net value add in agriculture is very nominal at around 0.04%. Even when the world oil price increases by 10%, 20% and 30%, the decrease in value added will be only 0.20%, 0.31% and 0.40% respectively in India. The effective change is only 0.40% on the agriculture output prices even when the international price of oil increases by 30%.

The Commission for Agriculture Costs and Prices of the Ministry of Agriculture already takes into account the input incurred for various crops, state wise and the same would be reflected in the Minimum Support Prices (MSP) set by it. Of course, farmers that use unusually large amount of diesel, such as a farmer who relies exclusively on diesel for irrigation where most farmers have electric pumps, would not get adequately compensated. However, with electricity for all and improving electricity supply to rural areas and also for agriculture purposes, the dependence on diesel is likely to come down even further and diesel price rise impact would still be much lower. Consequently, diesel price rationalisation will support efforts to move to electric pump sets as well as solar pumps.

4.4. Diesel Car Manufacturers

The initial cost of a diesel car is more than that of a petrol car, but a diesel car gives higher mileage per litre of fuel. Because of the large difference in diesel and petrol prices that prevailed till 2014, the sale and manufacture of diesel cars increased rapidly in the country. Nowadays many car models come with both diesel and petrol engines. Petrol cars were preferred for a long time but today diesel cars have become less noisy and give cut-throat competition to their petrol siblings. Any change in the relative price of petrol and diesel will affect consumer choice and change the ratio of petrol and diesel car sales. Post the elimination of the diesel subsidy, the relative share of sales of diesel cars has been declining and would decrease further when the gap between petrol and diesel price closes.

We consider that within a class of cars, the economics of the car play a decisive role in consumer choice. Thus, we compare the economics of owning a diesel or a petrol version of the same model of different cars, to study whether buying a diesel car is economic enough for a consumer in diesel price rationalisation scenario. We calculated the ratios of the present discounted values (PDV) of the cost of owning and operating diesel to petrol cars. Thus, the initial cost difference, the difference in annual maintenance costs and the cost of fuel are considered assuming different annual usage levels and discount rates. The comparison was carried out for cars in three segments: hatchback, sedan and sports utility vehicles (SUV), where ever the same model was available in diesel and petrol version. We use two different discount rates, three different annual kilometre use rates and two sets of prices before and after excise duty equalisation. Thus, a total of twelve scenarios were considered.

The analysis showed the following:

- As expected, as one travels more kilometres per year the savings in operating cost due to higher mileage of diesel car and lower cost of diesel compensates for the higher initial cost of a diesel car, and the ratio of PDV of costs of owning and operating diesel car compared to that of a petrol car tends to be lower.
- With a higher discount rate, the benefit in terms of PDV of lower operating cost is lower and the model which was economically attractive at lower discount rate is attractive only when the kilometres driven are more.
- At current prices of diesel and petrol, among hatchbacks Maruti Swift diesel always gets selected though Maruti Celerio diesel is not economical even at a low discount rate and 20,000 km per year use, if the life of the car is 10 years or less. Only with a life of 15 years, it becomes economical when annual use is 15,000 km, which is unrealistic as the car's performance at this rate of usage for 15

- years is likely to degrade. With price reforms Maruti Celerio diesel does not get selected under any set of assumptions.
- Hyundai Xcent sedan fares much better and at current fuel prices, the diesel version is selected with a low discount rate of 5 %, life of 6 years and annual use of 12,600 km. However, with fuel price rationalization, it gets selected only when discount rate is 5 %, life is 10 years and annual use is 20,000 km or when life is 15 years and annual use exceeds 15,000 km.
 - The only SUV for which both diesel and petrol versions are available is the Hyundai Creta. The diesel model is not selected in any of the twelve scenarios. If people are buying it, it must be for other than economic reasons or their use may be much in excess of 20,000 km per year.
 - Our analysis indicates that the rationalisation of excise duty will not change the economics from the consumer's perspective in the selection of a diesel or petrol car. The current pricing of car manufacturers, particularly sedans and SUVs, already make the diesel models an economically unattractive choice. In the case of hatchback car, the sales of diesel vehicles would be only marginally affected by a rationalisation of excise duty.
 - Also as sales of diesel cars go down that of petrol cars will increase and total car sales will be affected little, if at all, from the car manufacturers perspective.

In any case diesel cars face some further problems and may be on the way out⁶. The cost of controlling effectively carcinogenic emissions from diesel cars will make them even more expensive. Diesel car emissions are estimated to cause thousands of additional deaths.⁷

- In India, the courts have banned diesel vehicles that are over 10-year-old being operated in Delhi-National Capital Region (NCR). This precedent may spread further across the country, limiting the market for diesel vehicles anyway⁸.
- The World Health Organisation has declared diesel exhaust a carcinogenic, a cause of lung cancer in the same category as asbestos and mustard gas⁹.
- As we move to BS VI, petrol remains a much cleaner fuel in terms of emissions. BS VI diesel will need catalytic converters, maintenance of which in Indian conditions will be sub optimal¹⁰.
- The growing concern about air pollution in our cities poses another challenge to diesel cars as they emit more carcinogenic emissions. The confidence in car manufacturers' ability to control emissions and comply with emission norms like BS VI has fallen significantly after Volkswagen, a leading German automaker, admitted to having falsified emission data of its diesel vehicles in the USA¹¹.

4.5. Impact on Bus Operators and Passengers

Since in most large cities buses are now required to run on natural gas, the impact of diesel price increase will be felt by intercity travellers mainly using service provided by State Road Transport Undertakings (SRTUs). During 2014-15, the SRTUs carried more than 25,000 million passengers, approximately 70 million passengers per day- a figure, more than three times that of the Indian Railways¹². The sector's

6 https://www.theguardian.com/environment/2017/aug/07/death-diesel-why-no-reverse-gear?CMP=share_btn_tw

7 Anenberg et al, 2017, "Impacts and mitigation of excess diesel-related NOx emissions in 11 major vehicle markets", *Nature*, 545, 467-471, (25 May 2017)

8 <http://www.financialexpress.com/economy/diesel-vehicles-ban-ngt-relief-for-owners-of-10-year-old-clunkers/323828/>

9 <https://www.theguardian.com/cities/2017/apr/13/death-of-diesel-wonder-fuel-new-asbestos>

10 <http://auto.economicstimes.indiatimes.com/autologue/impact-of-bharat-stage-vi-norms-on-indian-auto-auto-component-industry/1543>

11 <http://www.bbc.com/news/business-34324772>

12 Review of the Performance of State Road Transport Undertakings (Passenger Services) -(2014-15)

dependency on diesel constitutes around 9.55 % (PPAC Nielsen report 2013)¹³ of the total diesel sales of the country and the sector is almost completely dependent on diesel as its only source of fuel. Hence, any change in price of diesel will directly affect the physical and financial performance of the SRTUs.

In 2014-15, the SRTUs earned INR 51,034 crores and incurred a total cost of INR 61,843 crores of which 40 % was staff cost and 31 % fuel cost, which resulted a net loss of INR 10,810 crores. A zone wise analysis reflects that South and West Zones hold a larger share in the total revenue than the East and North Zones, while the latter two have larger percentage losses. Average profitability ratio for East, North, South and West are (-) 91 %, (-) 65 %, (-) 10 % and (-) 12 % respectively

Based on six years' data (2009-2015) on physical and financial parameters of 49 SRTUs revenue, costs and profitability for the year 2015-16 were projected for (i) diesel base price before excise equalisation and (ii) diesel scenario price after excise equalisation.

Diesel price was partially deregulated in 2010 and fully deregulated in 2014. In order to assess the impact of diesel price deregulation on the SRTU, profitability comparison of the years 2011-12 and 2013-14 was done. During that period, the behaviour of the SRTUs to adjust to a diesel price rise gives an understanding of the policy options they have adopted. We selected 11 SRTUs in 9 states (Andhra Pradesh SRTC, Bangalore Metropolitan TC, BEST Undertaking, Calcutta STC, Gujarat SRTC, Haryana ST, Karnataka SRTC, Maharashtra SRTC, Odisha SRTC, Rajasthan SRTC, Uttar Pradesh SRTC) for the comparative analysis, considering appropriate mix of all zones within India and a mix of profit and loss-making states. Analysis shows that all SRTUs suffered losses but with varying levels of impact during the period 2011-14. Now if we analyse the year 2014-15, the SRTUs started adjusting their losses. Except BEST Undertaking and Haryana SRTU, all among the selected SRTUs have been able to reduce their losses by a significant amount while Uttar Pradesh SRTU and Odisha SRTU could even manage to make profit. This indicates that most of the SRTUs over the years adjusted their financial and physical parameters to counter the price rise in diesel. But few like BEST Undertaking, Haryana SRTU, continue to increase their losses.

The impact of diesel price rationalization analysis shows that the percentage change in the fuel cost results due to the revenue neutral diesel price rise results in an increase of at most 1.13 % in total cost over the base price scenario across all SRTUs for the period 2015-16. Our analysis shows that Odisha SRTU have the highest impact on Total Cost i.e. 1.13 %, while all others have less than 1 % increase. Maharashtra's BEST Undertaking and Calcutta SRTU have the least impact.

SRTUs have been able to absorb/adjust to much larger price increases in the recent past compared (diesel price deregulation period 2011-12 to 2013-14) to what is proposed under duty rationalisation. They should be able to absorb this even without any other measures. However, they need to reduce the burden of losses. Three alternatives (i.e. ticket rate, vehicle productivity and the ratio of bus in service to total stock of buses) were considered in this analysis. In the first case, the rise in prices were passed on to the passengers, in the second case the improvement in vehicle productivity was considered and in the third case the higher Bus Utilisation Rate (Ratio of Bus in Service to Total Stock of Buses) was stipulated, keeping the other two variables steady. Figure 9 shows the hike in ticket rate, vehicle productivity, and bus utilisation rate required to absorb the higher cost of fuel.

Figure 9 shows that all selected SRTUs (except Haryana SRTC) need to increase the ticket rate to mitigate the increase in total cost. Uttar Pradesh SRTC shows the highest increase in ticket rate (0.03 INR). If the State Government decides not to transfer the price burden to the passengers, the SRTUs can ease off the burden by adjusting vehicle productivity or bus utilisation rate. Among all the selected SRTUs, Uttar Pradesh SRTC shows requires the highest increase of 9 kms/bus/day an improvement of less than

13 Nielsen, (n.d.). All India Study on Sectoral Demand of Diesel & Petrol. Petroleum Planning and Analysis Cell

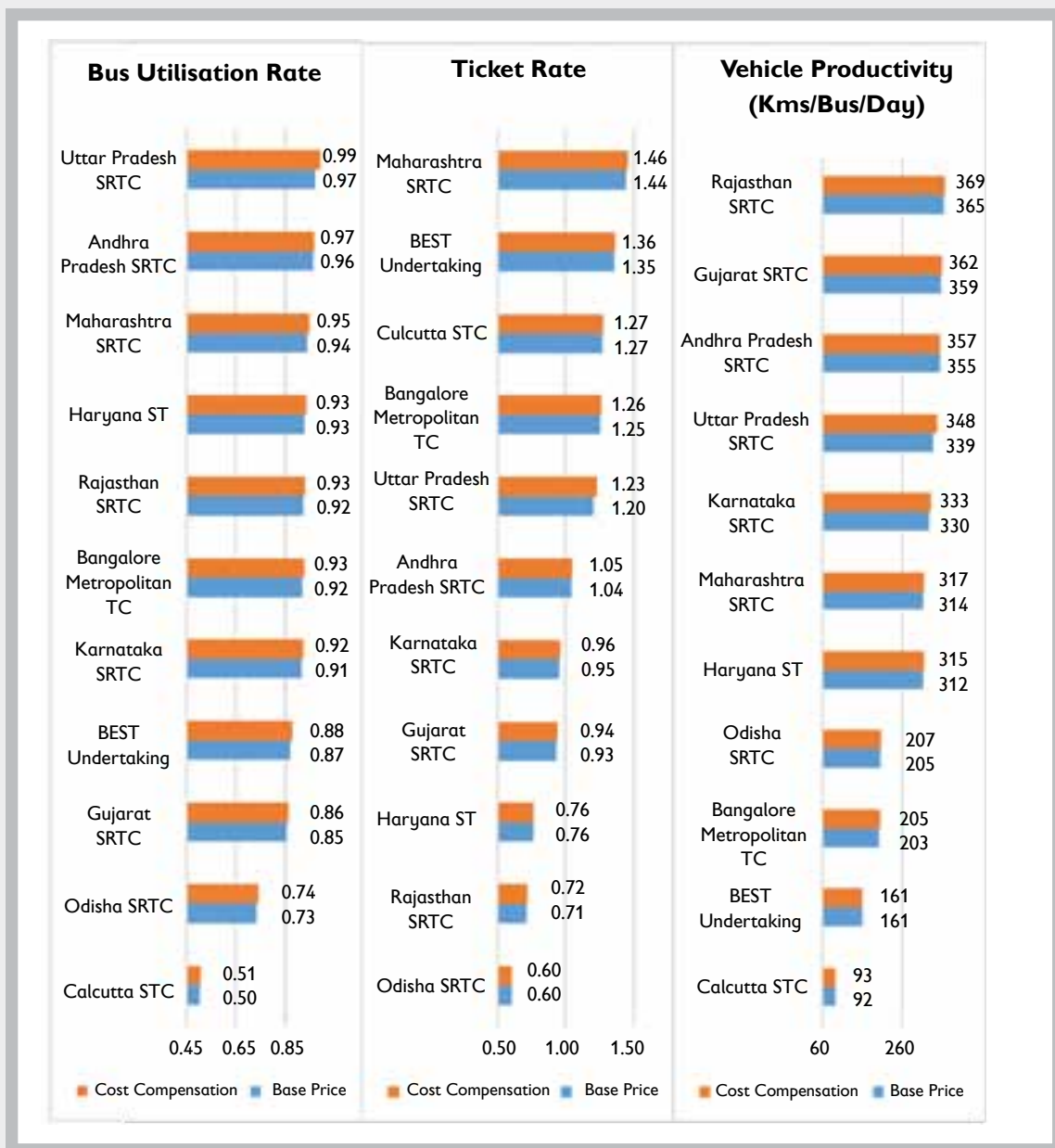


Figure 9: Hike in Ticket Rate, Vehicle Productivity, Bus Utilisation Rate

3 % in vehicle productivity when the ticket rate and bus utilisation rate were kept steady. Its required increase in bus utilisation rate is also highest, which reaches from 0.97 to 0.99.

It is seen that SRTUs need to improve their operational efficiency marginally and they need not pass on the cost to the passengers. In any case even if they were to pass on the cost increase to passengers the impact on ticket price is very small.

4.6. Other Sectors

Other significant consumers of diesel are railways and diesel generator (DG) sets used by industrial and other non-industrial users. Nielsen report (2013)¹⁴ shows that the total diesel consumption in the

14 Nielsen, (n.d.). All India Study on Sectoral Demand of Diesel & Petrol. Petroleum Planning and Analysis Cell

country, railways account for only 3.24 % and DG sets consume around 10.5 % of which industrial generators consume 4 % and non-industrial consumers use 6.5 %.

The railways share of diesel consumption is small when compared to the total diesel consumption in the country. Diesel use as a percentage of railway's energy use in 2015-16 was 65.5 % and was 67.6 % in 2011-12. It is coming down slowly and is likely to get reduced further because of the electrification drive as track electrification is increasing. The percentage of route kilometres electrified was 31 % in 2011-12 and has increased to 35 % at the end of 2015-16. Running track kilometres electrified increased from 43 % to 47 % over this period. The impact of diesel and petrol price rationalisation on the railways would have to be contained by rapid expansion of electrification as railways plan to do (Indian Railways, 2016)¹⁵.

In the case of DG sets which has a significant share of 10.5 %. The use of diesel generation is largely due to poor quality of electricity supply. The power shortage was around 9 % and peak shortage was 18 % around 2010-13, (Nielson, 2013). The power situation has improved substantially and the shortages have disappeared in 2016-17 at the all India level, (CEA, 2017)¹⁶. Thus, use of diesel generation by industry and household can be expected to come down.

15 http://www.indianrailways.gov.in/railwayboard/view_section.jsp?lang=0&id=0,1,304,366,554,1817

16 http://www.cea.nic.in/reports/monthly/executivesummary/2017/exe_summary-03.pdf

5

Price Differences in Other Countries

The difference in tax on diesel and petrol vary from country to country. In USA, UK, South Africa, Australia and Russian Federation, the price difference is small and comparable to what India would have once the excise duty and VAT rates are equalised. However, in France, Germany, South Korea and Japan the differences are bigger but it is changing¹⁷. One may raise the question- “why should India worry about it?” The growing concern on cancer causing emissions by diesel vehicles has the EU considering tougher environmental norms with the mayors of Paris, Madrid, Athens and Mexico announcing their intentions to ban diesel vehicles by 2025 from their cities. India should at least be neutral between diesel and petrol vehicles. While imposing differential pollution tax would be the correct measure to take, the first step should be a neutral pricing policy.

¹⁷ https://www.theguardian.com/environment/2017/aug/07/death-diesel-why-no-reverse-gear?CMP=share_btn_tw

6

Conclusions and Recommendations

On the basis of the various aspects of this analysis, the following can be recommended:

1. The Central Government should adjust the relative excise rates on diesel and petrol to reduce the price difference between the two. This can be done in a way that protects the revenue from the excise on these two products or even slightly increases it. The impact of excise rate equalisation between diesel and petrol that preserves the Government's revenue will increase the price of diesel by just 2 %, while resulting in a 6 % reduction in the price of petrol.
2. The adverse impact of excise rate equalisation on various stake holders is small. Therefore, the rationalization of the excise tax to further reduce petrol and diesel price differential does not pose a major cost hurdle to diesel users, rather it can lead to the elimination of some perverse incentives that currently exist in the economy related to the use of diesel. Specifically, the World Health Organisation has declared diesel exhaust¹⁸ carcinogenic, a cause of lung cancer in the same category as asbestos and mustard gas.
3. Additionally, we find that there are complementary measures that can be taken to ease adjustment to the minor increase in diesel prices that is anticipated.
 - a. Excise rate equalisation will increase state revenues for most states. A small loss in revenue is likely for Mizoram, Nagaland, Manipur, Chandigarh and Delhi, which could be compensated.
 - b. Truckers cost will increase only marginally, but the introduction of GST has already reduced their operating costs. Establishment of websites to facilitate load for return journey can further reduce trucking costs. Also facilitating finance for changing to more fuel-efficient trucks would save fuel and costs.
 - c. Even if the State road transport undertakings fully pass on the cost of diesel price increase, the increase in ticket rate would be small. However, they need not pass this on as significant scope exists for them to increase their efficiency.
 - d. Some models of diesel cars will continue to remain economically attractive to consumers. However, car manufacturers will have to reduce the cost of their other diesel models to make them attractive to consumers.
 - e. Farmer's use of diesel is compensated in the MSP fixed by the commission and agricultural costs and prices (CACP). However, farmers who rely on diesel for irrigation when most farmers in the state use electricity for it, may not get adequately compensated. The State Governments should provide them some support till the time rural electrification is complete, which is to be realized by May 2018.

18 <https://www.theguardian.com/cities/2017/apr/13/death-of-diesel-wonder-fuel-new-asbestos>

4. The gains of removing distortion in the use of diesel and petrol, particularly in driving greater efficiency and the environmental benefits, make a strong case for rationalising prices. There is growing concern about air pollution in our cities and diesel vehicles emit more carcinogenic emissions compared to their petrol counterparts. Further, there has been a global decline in the confidence of car manufacturer's ability to control emissions and comply with emission norms like BS VI.
5. If the state were also to equalise their VAT rates along with excise rates by the Centre, the combined impact on the change in diesel prices varies from 6 % to 2 % across states. The current mix of different ad valorem VAT rates used by different states make the sale price of diesel and petrol around two times the cost of supply net of excise duty and VAT. Thus making it difficult to arrive at an acceptable goods and services tax (GST) rate that protects states revenues. This is why diesel and petrol are kept out of GST. Hopefully, once confidence in the GST regime is built up, mechanisms can be found to get an agreement from states about bringing them under GST.



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