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DIESEL SUBSIDY WITHDRAWAL: IMPACT ON CURRENT ACCOUNT AND FISCAL DEFICITS

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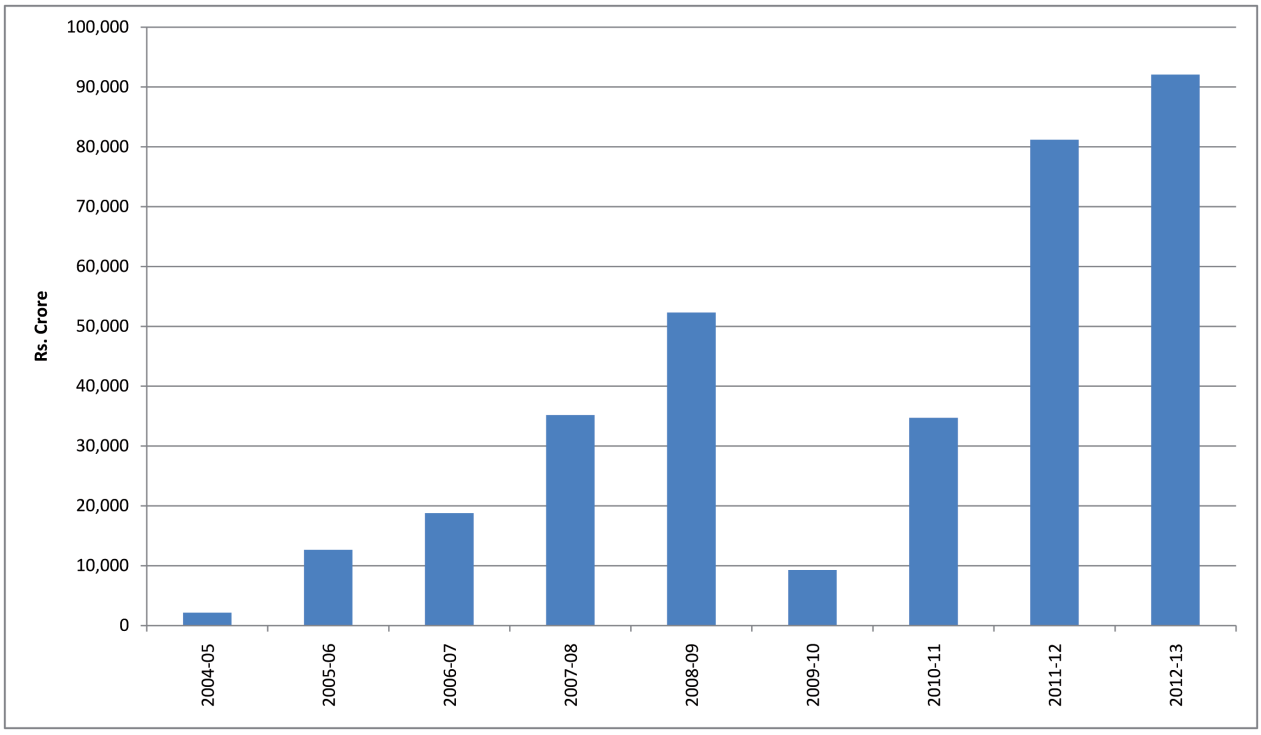
The large subsidy on diesel has become controversial in view of the large current account and fiscal deficits. The consequent depreciation of the rupee—along with the additional fiscal burden of the food security bill—will make it absolutely necessary to phase out the diesel subsidy of about Rs 13 per litre. Our research shows that doing so over the next one year will reduce current account deficit by $8 billion and the fiscal deficit by about $15 billion in every subsequent year. The possible immediate spurt in inflation can be avoided by increasing diesel price gradually by about Rs 1 per month.

INTRODUCTION

For quite some time, the government has subsidised diesel prices because of various political considerations and arguments that it might help control inflation by reducing the cost of transportation by trucks and buses. But it is doubtful that the diesel subsidy is serving its intended purpose. The increased budget deficit because of the subsidy is fuelling inflation indirectly while the lower price of diesel has led to a significant misuse of the subsidy, with most new car buyers switching to diesel cars, especially since June

Total under recoveries on diesel



Source: PETSTAT, Ministry of Petroleum and Natural Gas, Government of India

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2010 when petrol prices were decontrolled leading to a sharp rise in the difference between diesel and petrol prices (now Rs 24 per litre). In response, the share of diesel-driven passenger vehicles rose from 37% in 2008-09 to 44% in 2011-12 (April to October) and private cars and SUVs now use almost 20% of the diesel sold.

The increasingly large subsidy on the price of diesel (see figure) has become a controversial issue, especially in view of the large fiscal and current account deficits and the consequent sharp depreciation of the rupee (India imports most of its crude oil, which accounted for over 30% of India's total merchandise imports in 2012–13). The food security bill will add considerably to the government's subsidy burden, which makes it mandatory to control other subsidies. Thus, a substantial increase in the price of diesel is inevitable if we are not to destroy our public finances.

Thus, either a large one-time increase or a monthly increase (of about a rupee, instead of the current 45 paise) in the price of diesel is inevitable and is reportedly being considered by the government. The current subsidy on diesel is about Rs 13 per litre. In this study, we empirically estimate the demand function for diesel in India and use it to show that eliminating this subsidy over the next one year or so will reduce *per year* the current account deficit by $8 billion and the fiscal deficit by $15 billion. Further, while a one-time increase in the price of diesel could risk re-igniting inflationary pressures, a gradual increase in diesel price by about 90 paisa to one rupee per month will not materially increase inflation while yielding the same benefits in the reduction of current account and fiscal deficits, albeit more gradually.

METHODOLOGY AND DATA SOURCES

The Demand Model

We follow the traditional demand function for petroleum products, where demand for diesel is simply a function of the real prices of diesel and the real national income, which can be well proxied by real GDP at factor cost. We considered the possibility that other variables (such as the number of vehicles of various kinds used in India) may influence petrol and diesel demand. However, different types of vehicles consume different amounts of fuel, and consistent time series data on the number vehicles of various types is not available, except for a few years. Moreover, the number of various vehicles etc. in use is itself determined by the level of economic activity. For this reason, we felt that the real GDP, which is perhaps the single best measure of the level of economic activity in the country, is a good explanatory variable to use instead of the number of vehicles, etc. We also considered the possibility of including the price of substitutes, such as price of petrol. However, we found it to be insignificant, probably because a vehicle designed to run on diesel cannot be run on petrol irrespective of its price. Thus, the demand function for diesel is estimated with the real GDP and real price of diesel as explanatory variables.

We tried the linear and log-linear versions and found that the log-linear model worked best and satisfied all the diagnostic tests, such as the acceptability of functional form, normality of error term, heteroscedasticity, etc. Thus, we used the following log-linear model to estimate the demand for diesel:

$$LogD_{diesel} = \alpha + \beta LogP_{diesel} + \gamma\, LogY + u \qquad (1)$$

where D_{diesel} and P_{diesel} are the demand and real price of diesel; Y is the real national income proxied here by the real GDP at factor cost; α, β, γ are the parameters to be estimated and u is the error term.

It is expected that an increase in price of diesel, P_{diesel}, would reduce demand for diesel ($\beta < 0$) whereas an increase in real GDP, Y, would imply greater industrial production and increased transportation of goods and people, leading to increasing demand for diesel ($\gamma > 0$). The magnitude of the income and price elasticities determines the changes in demand in response to changes in its price and the real GDP. Thus, these elasticities are empirically estimated below.

Econometric Methodology

All variables were found to be integrated of order one or I(1). Thus, a co-integration estimation procedure

is needed. In this study, we estimate the long run demand for diesel in India using the auto-regressive distributed lag (ARDL) cointegration procedure proposed by Pesaran et al (2001). The procedure is generally recognised for giving reliable estimations of the long run relation.

Data Sources

The present study is based on yearly data for the 1970–2011 period. The data for India's diesel consumption (in million tonnes) was collected from the Ministry of Petroleum and Natural Gas (MoPNG), Government of India. The real GDP at factor cost (in 2004–05 prices) is used as a proxy for real national income. The data are collected from the Handbook of Statistics on Indian Economy (Reserve Bank of India 2012). For diesel price, we used the data on their retail prices in Delhi[1] collected from the MoPNG. We have used the diesel price in Delhi as a proxy for diesel prices in India because while prices may vary somewhat between states due to differences in local taxes and transportation costs, they are highly correlated with each other. Also, data was not available for all states for the whole sample period. We then converted the nominal price into real price by dividing it with the wholesale price index (WPI).

RESULTS OF EMPIRICAL ESTIMATION

We estimated the demand for diesel in India using equation (1) by employing the ARDL co-integration methodology. The results for the long-run demand function are given below:

$$LogD_{diesel} = -11.89 - 0.56\ LogP_{diesel} + 1.02LogY \quad (2)$$
$$(6.87)^{**}\ (3.61)^{**}\qquad (8.62)^{*}$$

*F-Test for Co-integration = 11.73****

R^2*=.99, DW = 1.50, Serial Correlation* $[\chi^2(1)] = 2.16$*; Functional Form* $[\chi^2(1)] = 0.02$ *Normality test* $[\chi^2(2)] = 1.77$*; heteroscedasticity* $[\chi^2(1)] = 0.31$

Note: Numbers in parenthesis below equation (3) denote the t-statistics of the respective coefficients. Asterisks * and ** denote significance at the 5 per cent and 1 per cent significance levels respectively.

The F-test confirms the long-run relationship between diesel price and real income on diesel consumption in India. Further, diagnostic tests show that serial correlation in the error term is not significant, functional form and normality of error term are not rejected, and that there is no heteroscedasticity in the model. These tests corroborate the validity of the estimated demand function for diesel. We also carried out the Cusum and Cusum Square tests in which both the test statistics remained within the bounds of 5% level of significance, suggesting that the estimated coefficients are stable.

The estimation results for demand for diesel in equation (2) show that, as expected, the price elasticity is negative and significant at 1% level while the income elasticity is positive and significant at 1% level. The income elasticity is +1.02 and the price elasticity for diesel is -0.56, meaning a 1% increase in the price of diesel leads to a decrease in diesel demand by 0.56%. Thus, the demand for diesel is quite sensitive to its price in the long run. Further, the demand for diesel is quite responsive to changes in real GDP as the coefficient is greater than 1. This could be capturing effects such as an increasing number of motor vehicles for personal travel and increased transportation of goods and services as the real GDP increases.

IMPACT OF DIESEL SUBSIDY WITHDRAWAL

Our estimations above of the long-run demand function for diesel found a price elasticity of 0.56. This suggests that reducing subsidy on the price of diesel will reduce the demand for diesel significantly. Even if we consider phasing out of this subsidy—so that the price of diesel rises by about Rs 13 or about 25% per litre—given the price elasticity of -0.56

[1]We can express the price of diesel and petrol in metric tonnes by multiplying by a constant factor (number of litres per metric tonne), but it will make absolutely no difference to the estimates of the equation which work in percentage terms because the log-linear form is used. We used the price of diesel and petrol per litre because it is better known and understood by most people.

(equation 2), the demand would decline by about 14 % or about 10 million metric tons on an expected demand of about 72 million tons over the next year. This is a substantial decrease in the demand of diesel, and worth about $8 billion at the approximate price of about $800 per ton. Thus, increasing the price of diesel would reduce India's current account deficit by about $8 billion in *each subsequent year*. This is a substantial amount considering that it is the total expected current account deficit of about $70 billion in 2013-14 that is creating so much pressure on the rupee exchange rate.

A price increase of Rs 13 per litre on the remaining compressed consumption of about 62 million metric tons (or about 70 billion litres) of diesel will earn the government a revenue of Rs 91,000 crore (Rs 910 billion or about $15 billion) in *each subsequent year*, which is nearly sufficient to meet the entire cost of the food security bill! That is quite amazing considering how many concerns were raised against the food security bill and how few against the diesel subsidy. It also illustrates the need for careful economic analysis of such issues.

A diesel price increase of Rs 13 per litre will also reduce the fiscal deficit for 2012-13 of about Rs 5000 billion by about 18%, and thus reduce inflationary pressures over the next year or so. On the other hand, a one-shot increase in diesel prices would add to inflationary pressure immediately; since diesel has a weight of about 5% in the WPI, a one-time increase of 25% in diesel prices would cause inflation to increase by almost 1.25%. The two opposing pressures on inflation can be expected to cancel out over about 1-2 years. Thus, it turns out that the long-held argument that diesel subsidy controls inflation is only true for the immediate short run, but not if we consider a longer period of one or two years.

CONCLUSIONS

Our empirical estimation of the demand function of diesel has shown that diesel has a price elasticity of 0.56, meaning a 1% increase in price would reduce diesel demand by 0.56%. Our calculations show that this implies that withdrawal of current subsidy of Rs 13 on every litre of diesel will reduce diesel demand by 10 million metric tons and a reduce the current account deficit by $ 8 billion (about 11.5% of expected deficit of $70 billion IN 2013-14) in each subsequent year. It will also reduce the fiscal deficit by 91,000 crore ($15 billion) every year which is sufficient to meet the entire cost of the food security bill.

However, a substantial one-time increase in the price of diesel could re-ignite inflationary pressures; since diesel has a weight of about 5% in the WPI, a one-time increase of 25% in the price of diesel would cause inflation to increase by about 1.25%. That might cause the RBI to further postpone the much needed reduction in the interest rates that could provide our beleaguered economy a lifeline. On the other hand, a smaller monthly increase in diesel price of about 90 paisa to one rupee per month is unlikely to materially increase the inflation rate while providing the same benefits to the current account and fiscal deficits—albeit with some lag. Such a policy will provide significant relief to current account and budget deficits without adding significantly to inflationary pressure in the economy. Another possible option would be to raise the diesel price by about Rs 3 to 5 per litre immediately along with a monthly increase of Rs 1 per litre until the subsidy is eliminated so the benefits of reduction in current account and fiscal deficits can be obtained a bit sooner. These are the only viable policy options in the present scenario. Any further postponement of the diesel price increase would destabilise the country's fiscal balance severely and have very negative consequence for the country, including a rating downgrade that will dry up foreign investments.

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