AN ANALYSIS OF PETROLEUM PRICING IN INDIA

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Abstract

Price of petrol was not fixed or controlled in the pre independence period and in the first post independence decade. During 1990s, the Administered price mechanism came into existence. For socio economic reasons, price of a few petroleum products like kerosene and LPG were subsidized, and some of the other petroleum products were priced above the cost of production. In the beginning of the financial year 2002, government dismantled Administered price mechanism. Though the import dependency of petroleum products decreased in early 70s, increase in overall domestic demand has resulted in petroleum products becoming once again import dependent. The crude oil price mechanism synchronized with pricing of petrol in the domestic market. Pricing of petrol in India is analyzed and compared globally. Petrol continues to be dearer commodity in the Indian market and the rising prices have a big negative impact on the economy.

Key words:

Administered pricing mechanism, import parity, inflation adjusted price, tax and non tax components, value at risk.

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Introduction

Before Indian independence, petroleum products pricing was not controlled by any authority. During World War II, oil companies maintained pricing pools for their products. In 1948, Burmah Shell was considered as the price leader and other oil companies followed the pricing policy of Shell. In 1961, the first systematic attempt was made to control oil prices. In 1974, government appointed the oil price committee.

Review of literature

A review of all available related studies is quite indispensable to understand the basic concepts and theories pertaining to a particular problem. In fact, a research gain a deep and perfect perception only from the experience gained in reviewing the publication closely related to the topic of interest. Hence a genuine attempt is made to review few of the outstanding studies related to the present topic.

*Fred Weston et.al f*ocused on the world oil industry since the relevant markets are global. Mergers and acquisitions (M&As) in the petroleum industry reflect the accelerating rate of M&A activity worldwide. The basic change forces are: technological advances, globalization, deregulation, industry dynamics, pressure for economies, and favorable economic environments. The change forces have blurred the boundaries of industries and have multiplied the forms and sources of competition. M&As and restructuring have had positive influences in the performance of the economy. Since the 1980s, real GDP growth in the U.S. has been strong with only short interruptions. During the past 2 decades, almost 2 million new jobs per year have been created. Patterns in the oil industry have mirrored these changes in the economy as a whole, emphasizing technological improvements and cost reductions. Instabilities of prices and other increased risks in the oil industry have triggered M&As and restructuring. Financial analysis of the BP acquisition of Amoco demonstrates that even if a fraction of the estimated cost savings are achieved, market values will be increased. If five major mergers are completed, the HHI for the world oil industry will rise from a very low 389 to 581, still well below the 1,000 critical levels specified by the regulatory authorities. Analysis suggests that the BP Amoco acquisition will have positive economic effects on the economy of Alaska.

Javier Ordonez et.al examined the impact of real oil price shocks on labor market flows in the U.S. They used smooth transition regression (STR) models to investigate to what extent oil prices can be considered as a driving force of labor market fluctuations. Then they developed and calibrate a modified version of Pissarides' (2000) model with energy costs.They found that (i) these shocks are an important driving force of job market flows; (ii) the job finding probability is the main transmission mechanism of such shocks; and (iii) they bring a new amplification mechanism for the volatility and should thus be seen as complementary of labor productivity shocks. Overall the study concluded that shocks in oil prices cannot be neglected in explaining cyclical labor adjustments in the U.S.

Rumi Masih et.al tested the relationship between oil price movements and economic activity by using modern time series techniques in a co integrating framework. The study expanded the standard error correction model by examining the dynamics of out of sample causality through the generalized variance decomposition and impulse response function techniques. The evidence from persistence profiles also gives important guidelines based on how fast the entire system adjusts back to equilibrium. In addition, the study found the co integrating relationship to be stable and also found that the linear error correction model to be more favorable than an asymmetric 2 period Markov switching model.

Methodology:

Petrol is an important component in both micro economic and macro economic activity. Pricing of petrol is being analyzed for the Indian economy. Time period taken for the analysis is from Independence to the present day. Data is collected from secondary sources from journals, reports and conference proceedings. Simple mathematical tools are taken for analyses. Conclusions are based on the available data. An important limitation is that the data analysis does not involve higher end econometric tools, and so predictions on future petrol pricing are not attempted in this paper.

Early pricing policy

The salient features of the Administered Pricing Mechanism which continued till late 90's were as under:-

1) The pricing of petroleum products for the refining and marketing units was based on the retention concept where under oil refineries, oil marketing companies and the pipelines were compensated operating costs and return @ 12% post tax net worth.

2) The ex-storage ceiling selling prices were uniform at all the refineries.

3) For consumers, the selling price of a product was arrived at by adding the applicable freight from the oil refinery to the Depot and from Depot to the Retail Outlets or direct consumers. Dealers commission wherever applicable was also added.

4) The prices of certain petroleum products like kerosene, LPG (domestic) and feed stocks for fertilizer units were subsidized for socio economic reasons. Similarly, fuels like petrol, ATF, LPG for industrial use were priced above the cost of production to discourage their inessential use.

5) The prices of petroleum products were reviewed and revised from time to time to see that oil pool accounts were balanced.

Effective from 1.4.1998, the APM was dismantled for the upstream and refining sector and a partial deregulation took place for the marketing sector. Subsequently, effective 1.4.2002, the Government announced complete dismantling of APM.

Import dependency on Petroleum Products

Till late sixties, bulk of the crude that was needed for our requirements was being imported into the country from West Asia. But after Mumbai High was discovered our dependence in terms of crude imports and crude throughput at the refineries started decreasing. Import

dependency decreased from 65.7% in 1973-74 to 18.5% in 1984-85. But, thereafter, it started showing an upward trend touching 36.2% in 1990-91 and to 69.2% in 2000-01. Today about 70% of the crude we need is being imported and the indigenous share amounts to just 30% of our requirements. Based on the relative growth in demand and production, it is estimated that oil dependence will be as high as 85 per cent in 2020.

Prior to 1981, crude oil prices were fixed on various considerations like import parity, long run marginal cost etc. In 1981, Government revised crude oil pricing departing from OPC concepts. Thereafter, the prices of indigenous crude oil were unchanged till 1992 when the Cabinet Committee on infrastructure reviewed the crude pricing and observed that due to non-remunerative price of indigenous crude oil, ONGC and OIL, the two public sector undertakings under the administrative control of the Ministry of Petroleum and Natural Gas engaged in exploration and production of oil and gas, were unable to generate resources for developing more oil fields and exploration in new areas. The Cabinet Committee recommended that the domestic well head price of crude oil should be so determined as to compensate ONGC and OIL for the cost of production and reasonable return on investment. Thus under APM, the prices of indigenous crude oil were based on cost plus return of 15% post tax on capital employed.

Components determining price of crude:

The various components that are considered while determining the pricing of crude oil in terms of the Memorandum of Understanding signed by OIL are as under;-

1. Monthly average of high – low Free on Board (FOB) price of Nigerian Bonny Light as per PLATTS Oil gram
2. Difference in quality between Bonny Light and OIL's crude oil (termed as Gross Product Worth) determined on the basis of product yield and prices on 4 cut basis. The 4 cuts are:-

   a) LPG cut (Propane and Butane derived from Saudi Aramco Contract price Ex. Arab Gulf) up to C4.

   b) Naphtha (C5-175) FOB, Singapore.

c) Gas Oil 0.5% "S" (C-175 – 350) FOB, Singapore and

d) Fuel oil 180 CST 2% and LSWR (in equal proportion) (C 350+) FOB, Singapore.

3. Base, Sediment and Water
4. RBI reference rate for conversion to India Rupees.

Crude oil Pricing mechanism:

In general, crude oil is sold through a variety of contract arrangements and in spot transactions. Oil is also traded on futures markets but not generally to supply physical volumes of oil, more as a mechanism to distribute risk. These mechanisms play an important role in providing pricing information to markets.

In fact, the pricing of crude oils has become increasingly transparent from the 1990s onwards through the use of marker crudes such as:

- West Texas Intermediate (WTI – USA)
- Brent (Europe, Africa and Asia)
- Dubai and Oman (Middle East)
- Dubai, Tapis and Dated Brent (in Asia-Pacific)

The main criteria for a marker crude is for it to be sold in sufficient volumes to provide liquidity (many buyers and sellers) in the physical market as well as having similar physical qualities of alternative crude.

Price of Crude Oil:

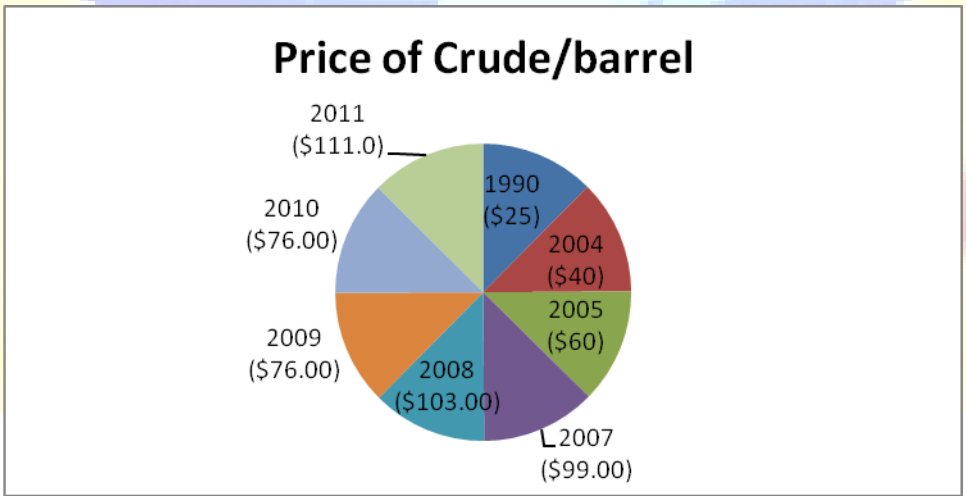
From the mid-1980s to September 2003, the inflation adjusted price of a barrel of crude oil on NYMEX was generally under $25/barrel. Then, during 2004, the price rose above $40, and then $50. A series of events led the price to exceed $60 by August 11, 2005, and then briefly exceed $75 in the middle of 2006. Prices then dropped back to $60/barrel by the early part of 2007

before rising steeply again to $92/barrel by October 2007, and $99.29/barrel for December futures in New York on November 21, 2007. Throughout the first half of 2008, oil regularly reached record high prices. On February 29, 2008, oil prices peaked at $103.05 per barrel, and reached $110.20 on March 12, 2008, the sixth record in seven trading days. Prices on June 27, 2008, touched $141.71/barrel, for August delivery in the New York Mercantile Exchange (after the recent $140.56/barrel), amid Libya's threat to cut output, and OPEC's president predicted prices may reach $170 by the Northern summer. The most recent price per barrel maximum of $147.02 was reached on July 11, 2008.After falling below $100 in the late summer of 2008, prices rose again in late September. On September 22, oil rose over $25 to $130 before settling again to $120.92, marking a record one-day gain of $16.37. Electronic crude oil trading was temporarily halted by NYMEX when the daily price rise limit of $10 was reached, but the limit was reset seconds later and trading resumed. By October 16, prices had fallen again to below $70, and on November 6 oil closed below $60

World Crude Oil Prices

Year	Price of Crude /barrel
1980-1990s	$25
2004	$ 40, then to $ 50
2005	$ 60, then to $ 75
2007	$ 99.29
2008	$ 103.5 then to $ 141.71 then to $ 147.02
2009	$ 76.180
2010	$ 90.610
2011	$ 111.870

Source:**http://www.tititudorancea.com/z/world_crude_oil_prices_graphs_history.htm**



United States crude oil prices averaged $31 a barrel in 2003 due to political instability within various oil producing nations. It raised 19% from the average in 2002. The 2003 invasion of Iraq marked a significant event for oil markets because Iraq contains a large amount of global oil

reserves. The conflict coincided with an increase in global demand for petroleum, but it also reduced Iraq's current oil production and has been blamed for increasing oil prices. In mid 2006, crude oil was traded for over USD 79 per barrel (bbl) setting an all-time record. The run-up is attributed to a 1.9 increase in gasoline consumption, geopolitical tensions resulting from North Korea's missile launch. The ongoing Iraq war, as well as Israel and Lebanon going to war are also causative factors. The higher price of oil substantially cut growth of world oil demand in 2006, including a reduction in oil demand of the OECD.

Political turmoil in Egypt, Libya, Yemen, and Bahrain drove oil prices to $95/barrel in late February 2011. Shortages of oil could result if Iran closes the Strait of Hormuz, through which one-fifth of exported oil travels, as a result of sanctions due to the country's nuclear policies. The price of oil has stayed near $100 throughout January because of concerns over supplies, and the European debt situation. The average price of gas was $3.38 on January 20, up 17 cents from a month earlier.

Comparison between Price of Petrol in India and other countries

In 2010, one liter of Petrol cost in India Rs 56/- and in 2012, it is Rs 72.90. By comparison, in Sri Lanka, one liter of Petrol was costing $ 1.01 (Rs 46.4) in 2010, and in 2012, it costs $1.25 (Rs 61.70). In US, one liter of Petrol was costing $ 0.64 (Rs 30/-) in 2010, and in 2012, it costs $1.07 (Rs 53.7/-).

Compared to India, petrol is cheaper in Saudi Arabia, Bahrain, Kuwait, Iran, (all these are oil producing exporting countries), US, Pakistan, Sri Lanka, China, South Africa, Canada Bangladesh, Vietnam and Australia.

Compared to India, petrol is dearer in UK, Ireland, Hungary, France, Finland, Turkey, Japan and Denmark to mention a few.

Impact of high price of Petrol on the Indian economy:

A rise in global oil prices by $ 10 per barrel would reduce India's economic growth by 0.2 percentage points and also affect the country's current account deficit, Goldman Sach said. "A VAR (value-at-risk) analysis suggests that a $ 10 increase in oil would reduce GDP growth by 0.2 percentage point," Goldman Sachs said in its latest edition of 'Asia Economics Analyst'.

The International Energy Agency (IEA) reported that sustained $10/ bbl increase in the price of oil would lower world GDP by at least 0.5 per cent in a year. Further, this study states that developing countries in particular would be hit since, on average, they use twice as much oil to produce an unit of output as compared to developed countries.

Several studies have examined the above issue for developed economies, but far less work of this sort exists for developing countries particularly ones experiencing high growth rates and high oil consumption. The findings of the first reveal that a 10 per cent hike in the international price of oil would lead to a 2 per cent increase in overall domestic prices. The second finds that a 100 per cent rise in the price index of oil imports would lead to a 15 per cent increase in the rate of domestic inflation, and a 3 per cent fall in industrial production.

In the context of high interest on automobile loans by commercial banks, the automobile sale is decreasing in the context of petroleum price increase. A reduction in growth hits the automobile industry hard, as they are banking on an expansion in value to $216 billion by 2016, according to the Ministry of Heavy Industries Auto Policy 2006-20016. This is in addition to creating 2.5 million new jobs and exporting several million vehicles to other countries, targets which will be jeopardised by a growth slowdown. Furthermore, crude oil price rises mean making tyres is more expensive as the fuel features heavily in the process, which raises costs for the automobile industry.

Centre for Science and Environment, the New Delhi-based NGO said Thursday's petrol price hike will further push demand for diesel vehicles which, in turn, will have an adverse effect on air quality and health of citizens in urban areas, according to an IANS report. Oil marketing companies effected yet another hike in petrol prices by more than Rs.3 per litre - barely three

months after the last raise. Diesel cars comprise 36 percent of new car sales in India and the figure is expected to touch 50 percent very soon, noted the report.

With the average price of unleaded petrol soaring to 137.44p per litre, Charging Solutions says motorists are looking to electric cars as a viable solution to the hike in motoring bills**.** Vehicle manufacturers have an eye on both the environmental impact of motoring as well as the increased costs and are launching an unprecedented number of new pure electric and plug-in vehicles into the UK market in the next year. Of course, these vehicles need charging points and we've seen a corresponding increase in the interest in our products in recent months. The automotive industry is already responding to this demand, with 29 pure electric and plug-in new cars hitting the roads in 2012/2013. The market for both electric vehicles and charging points, in the UK, Ireland and across Europe, is huge. A recent study revealed that more than half of new car buyers would consider choosing an electric car in the next two years, and the increase petrol prices can only boost this figure.

Results

Price of petrol is higher in India when compared to many western and eastern countries. The other petroleum products like LPG and Kerosene are subsidized and the resultant loss is added to the price of petrol. Higher tax structure imposed on petrol is one other important reason for petrol prices being high in India.

For example:

The price of crude oil as on August 24, 2011 is $85.50 for a barrel 0f 158.76 liters. If we take $1.00 = Rs 45, then cost of 1 liter petrol works out to 85.50/158.76X Rs 45.00 = Rs 24.23 per liter.

Cost of petrol is determined by the following factors in India.

Serial No.	Components	Cost in INR
1.	Base Price	24.23
2.	Excise Duty	14.35
3.	Education Cess	0.43
4.	Dealer's Commission	1.05
5.	Cost of Refining	0.52
6.	Capital cost of Refinery absorbed	6.00
7.	VAT	5.50
8.	Custom Duty on Crude Oil	1.10
9.	Custom Duty on Petrol	1.54
10.	Transportation charges	6.00
	TOTAL	60.72

If you exclude the non tax part from the total cost, cost per liter comes to (Base Price + Cost of Refining + Capital cost of Refinery absorbed + Transportation charges) = Rs (24.23 + 0.52 +6.00 + 6.00) = Rs **36.**

Considering that the current price of crude oil is $107 per barrel, Cost of per barrel in RS will be 107*45.40 ($1 = Rs45.40) = 4858.One barrel consists of approximately 160 liters. So Price of crude oil per liter will be 4858/160 = Rs.30.36.

It is true that these 4 products, namely petrol, diesel, kerosene and LPG are given on subsidy and the company does suffer a loss on them. But these companies produce other products and by products of the refining process such benzene and toluene etc, which makes huge profits for them. Hence, the company on the overall is not at a loss but make profits.

Discussion

a) Petrol cannot be considered as a rich man's product. Most of the lower middle income people in India own two wheelers, which can be run only on petrol. (There are only very

few hybrid two wheeler engines that can be run on petro/diesel/electricity) Hence price hike in petrol affects the poorer sections as much as the creamy layer of the society.

b) Diesel is subsidized on the count that it is used for public transport vehicles and Lorries carrying necessary goods. This argument is debatable since diesel is used not only by public transporters, but is used by cars, SUVs and luxury buses, thanks to continuous R & D by automobile manufacturers. This is evident from the fact that the number of diesel driven vehicles is on the rise compared to the petrol driven vehicles.

Subsidizing LPG has resulted in domestic LPG cylinders being used as auto fuel and in black marketing and unfair trade practices by the sellers. Instead, the government can follow dual pricing for LPG cylinders, thereby reducing the expenditure on subsidy.

Conclusion

Increase in price of petrol has affected the middle income and higher middle income population in India. Now car ownership is not restricted to the affluent but also to the middle class. Highly congested public transport system coupled with structural social adjustments to modern living has led to greater use of cars. The two wheeler economy (Motor bikes, scooters and the mopeds) are all petrol driven and mostly used by the lower income people and the kirana shop keepers. Governments unfortunately think of petrol as a rich man's commodity and so price rise is not taken seriously. In truth, petrol is consumed by the rich and the poor in the society and so government should make efforts to bring stability in the price of petrol, if not to bring down the price. Tax content works out to near 50 % of the market price of petrol. It is essential to abolish taxes on petrol, so that inflation is kept under control.

Recommendation

Instead of subsidizing a few petroleum products on the one hand and levying high taxes on petrol on the other hand, the government can adapt a price policy whereby all the petroleum products are on 'open market/access' system.

References:

1. "Oil reaches new record above $99". BBC. November 21, 2007. Retrieved 2007-11-29.
2. "Oil prices pushed to fresh high". BBC News. 2008-02-29. Retrieved 2009-12-31.
3. David Goldman (March 12, 2008). "Oil crosses record $110, despite supply rise". CNN Money. Retrieved 2008-03-12.
4. John Wilen (March 10, 3:50 pm). "Gas Prices Near Records, Following Oil". Associated Press. Archived from the original on 2008-03-13. Retrieved 2008-03-10.
5. "Oil sets fresh record above $109". BBC News. March 11, 2008. Retrieved 2008-03-11.
6. "Oil Is Little Changed After Falling as Investors Sell Contracts". Bloomberg.com. June 27, 2008.
7. "Oil Rises to Record Above $141 as Investors Buy Commodities". Bloomberg.com. June 27, 2008.
8. "Oil hits new high on Iran fears". BBC.com. 2008-07-11. Retrieved 2009-12-31.
9. Oil spikes $25 a barrel on anxiety over US bailout
10. Rooney, Ben (November 7, 2008). "Oil holds slim gains". *CNN*. Retrieved April 21, 2010.
11. Oil price rise to impact India's GDP growth: Goldman Sachs, Economic Times, 24/04/2011 *J. Fred Weston, Brian A. Johnson* and *Juan A. Siu "Journal of Energy Finance & Development"*, 1999, vol. 4, issue 2, pages 149-183
12. Javier Ordóñez , Hector Sala, José I. Silva "Oil Price Shocks and Labor Market Fluctuations", IZA DP No. 5096, July 2010
13. *Rumi Masih, Sanjay Peters* and *Lurion De Mello* Oil price volatility and stock price fluctuations in an emerging market: Evidence from South Korea, *Energy Economics*, 2011, vol. 33, issue 5, pages 975-986
14. *David J. Ramberg and John E. Parsons* "Oil Price Shocks and Labor Market Fluctuations. The Weak Tie Between Natural Gas and Oil Prices" *The Energy Journal*, 2012, vol. Volume 33, issue Number 2