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Crude Oil Import in India - A Comparative Study Between Pre and Post Reform Period

KEYWORDS

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ABSTRACT In 2009, India imported 2.56 million barrels of oil per day making it one of largest buyers of crude oil in the world (Crude oil industry <http://www.oil-price.net>). The petroleum industry in India mostly consists of public sector companies such as Oil and Natural Gas Corporation (ONGC), Hindustan Petroleum Corporation Limited (HPCL) and Indian Oil Corporation Limited (IOCL). There are some major private Indian companies in oil sector such as Reliance Industries Limited (RIL) which operates largest oil refining complex (oil and gas <http://oil-price.net>). The development of the Indian petroleum industry began on a very slow note. It started mainly in the northeastern part of India especially in the place called Digboi in the state of Assam. Until the 1970's, the production of petroleum and the exploration of new locations for extraction of petroleum were mainly restricted to the northeastern state in India. However, an important advancement in the Indian petroleum industry came with the passing of Industrial Policy Resolution in 1956, which focused on the growth and promotion of industries in India. Another major incident was the discovery of Bombay High, which changed the scenario of the Indian petroleum industry drastically. The Indian petroleum industry was sponsored completely by the government, and all its related activity was entirely with the government. The petroleum industry has the most significant role to play in changing the Indian economy from an agrarian economy to an industrial economy.

The adoption of liberalization and privatization in July 1991 changed the situation again. The government started allowing the Indian petroleum industry to go into private hands and also entered into government and private joint ventures. The government also eased the stringent regulation process on the petroleum sector. This gave a tremendous boost to this industry. The industry began to grow at a tremendous pace. The production of petroleum and petroleum products also showed a significant rise. Along with liberalization and privatization, the overall economy of India grew. Also, the demand for petroleum products increased at an annual rate of about 5.5%. The demand for petroleum and petroleum products still continues to grow, and there is great potential for investors to invest in India in the sector and gain valuable returns while meeting the increasing demand for the petroleum products. In this backdrop, the present study attempted to analyse Crude oil import in India - a comparative study between pre and post reform period.

To conclude, The import of oil was Rs. 179.8 crore in 1971-1972 at current prices. Whereas the import of oil at constant prices was Rs. 1882.956 crore in the same year. It reveals that the real value of the import of oil was higher. Both the import of oil at current prices and also at constant prices had been fluctuated. The fluctuation in the current price was observed during 1976-1977, 1982-1983 and in 1984-1985, 1985-1986, 1986-1987, 1987-1988 and 1989-1990. The fluctuation at constant prices was also observed in many of the years. Hence the import of oil in India was not stable. At the end of the pre-reform period, the import of oil at current prices was Rs. 3767.5 crore and at constant prices was Rs. 7926.415 crore. Till the year 1999-2000, the import of oil at constant prices was higher than the import of oil at current prices. From the year 2000-2001 onwards, the import of oil at current prices was higher than at constant prices.

The t value of crude oil import at current prices and constant prices were statistically significant at one percent level. It implied that the crude oil import differed significantly between pre and post reform period. The value of t pertaining to total oil import was statistically significant at one percent level. It showed that the total oil import had differed significantly between pre and post reform period. The oil import in the post-reform period was significantly higher than in the pre-reform period.

1 INTRODUCTION

The economy of India is the eleventh largest economy in the world by nominal GDP and the fourth largest by purchasing power parity (PPP). Following strong economic reforms from the socialist inspired economy of a post-independence Indian nation, the country began to develop a fast-paced economic growth, as free market activities initiated in 1990 for international competition and foreign investment. India is an emerging economic power with a very large pool of human and natural resources, and a growing large pool of skilled professionals. Economists predict that by 2020, India will be among the leading economies of the world.

Since independence, India's balance of payments on its current account has been negative. Since liberalisation in the 1990s (precipitated by a balance of payment crisis), India's exports have been consistently rising, covering 80.3 percent of its imports in 2002-03, up from 66.2 percent in 1990-91. India's growing oil import bill is seen as the main driver behind the large current account deficit (Asok Agilandam, 2005)

India's oil reserves, found in Bombay High, parts of Gujarat, Rajasthan and Eastern Assam, meet 25 percent of the country's domestic oil demand (Arthur and Benjamin Wheeler 1931). India's total proven oil reserves stand at 11 billion barrels, of which Bombay High is believed to hold 6.1 billion barrels and Mangala Area in Rajasthan, an additional 3.6 billion barrels (wikipedia, 2008). In 2007-08, India imported 120.1 million Tonnes of crude oil, more than 3/4th of the domestic demand, at a cost of \$61.72 billion (Raghavendra D. Rao (2002)).

In 2009, India imported 2.56 million barrels of oil per day, making it one of largest buyers of crude oil in the world. (Crude oil industry <http://www.oil-price.net>) The petroleum industry in India mostly consists of public sector companies such as Oil and Natural Gas Corporation (ONGC), Hindustan Petroleum Corporation Limited (HPCL) and Indian Oil Corporation Limited (IOCL). There are some major private Indian companies in oil sector such as Reliance Industries Limited (RIL) which operates largest oil refining complex. (oil and gas <http://oil-price.net>). The development of the Indian petro-

leum industry began on a very slow note. It started mainly in the northeastern part of India especially in the place called Digboi in the state of Assam. Until the 1970's, the production of petroleum and the exploration of new locations for extraction of petroleum were mainly restricted to the northeastern state in India.

However, an important advancement in the Indian petroleum industry came with the passing of Industrial Policy Resolution in 1956, which focused on the growth and promotion of industries in India. Another major incident was the discovery of Bombay High, which changed the scenario of the Indian petroleum industry drastically. The Indian petroleum industry was sponsored completely by the government, and all its related activity was entirely with the government. The petroleum industry has the most significant role to play in changing the Indian economy from an agrarian economy to an industrial economy.

The adoption of liberalization and privatization in July 1991 changed the situation again. The government started allowing the Indian petroleum industry to go into private hands and also entered into government and private joint ventures. The government also eased the stringent regulation process on the petroleum sector. This gave a tremendous boost to this industry. The industry began to grow at a tremendous pace. The production of petroleum and petroleum products also showed a significant rise. Along with liberalization and privatization, the overall economy of India grew. Also, the demand for petroleum products increased at an annual rate of about 5.5%. The demand for petroleum and petroleum products still continues to grow, and there is great potential for investors to invest in India in the sector and gain valuable returns while meeting the increasing demand for the petroleum products. In this backdrop, the present study attempted to analyse Crude oil import in India - a comparative study between pre and post reform period

II OBJECTIVES AND HYPOTHESES

The specific objectives of the study are:

- To analyse the trends in the import of oil in the pre reform and post reform period in India.
- To analyse the trends in the import of non oil in the pre and post reform period in India
- To compare the crude oil import between pre and post reform period

The hypothesis tested in the study are:

There is no significant difference in the crude oil import between pre and post reform period.

III. METHODOLOGY

RATIONALE FOR SELECTING THE RESEARCH PROBLEM

Any massive increase or decrease in crude oil has its impact on the condition of stock markets throughout the world. The stock exchanges of every country keep a close eye on any up and downward movement of the crude oil price. India fulfills its major crude oil requirements by importing it from oil producing nations. India meets more than 80% of its requirement by importing process. Therefore, any upward and downward movements of prices are closely tracked in the domestic marketplace. Many times it has been recorded that prices of essential products like crude oil also acts as a prime driver in becoming reason of up and down movement of price.

Any fluctuation in crude oil affects the other industrial segments also. Higher crude oil price implies to the higher price of energy, which in turn negatively affects other trading practices that are directly or indirectly depends on it. Crude Oil has been traded in throughout the world and there prices are behaving like any other commodity as swinging more during shortage and excessiveness. Moreover, the crude oil import

and petroleum product production had been liberalized after the economic reforms of 1991.

In this backdrop, the previous studies attempted to analyse the trends in petroleum and crude oil production and import in India and also at world level. But the present study concentrated to compare the crude oil import between pre and post reform period. It would reveal the impact of the economic reform on oil sector in India.

DATA BASE AND PERIOD OF THE STUDY

Several empirical studies on the crude oil import were conducted. But the time period covered by dependent and independent variables of these studies had varied. Thus the present investigation covered a period of 1971-2009 and the data used in the study were secondary in nature. The period of the study was divided in to pre economic reform period (1971-71 to 1990-1991) and post economic reform period (1991-1992 to 2008-2009). The annual time series data for the variable import of oil, import of non- oil and total import were collected from various records of hand book of Indian Economy and Economic Survey.

It was a long period data to trace out the impact of economic reforms on the import of crude oil and petroleum products in India. It would help to find out the speed of adjustment of the national economy.

STATISTICAL TOOLS

1. 't' test

To compare the import of crude oil between pre and post reform period, t test was used along with simple percentages. The formula for calculating the t test is as under.

$$t = \frac{\bar{X}1i - \bar{X}2i}{\text{Standard Error}}$$

X_{1i} = Mean of the variables under the study in the pre reform period

X_{2i} = Mean of the variables under the study in the post reform period.

IV. RESULTS AND DISCUSSION

The import of oil in India is discussed under the following heads.

Import of oil in the pre reform period

Import of oil in the post reform period

Import of non oil in the pre reform period

Import of non oil in the post reform period

Import of oil and non oil import in the pre reform period

Import of oil and non oil import in the post reform period

IMPORT OF OIL IN THE PRE REFORM PERIOD

The import of oil in the pre reform period consists of the period between 1970-1991. The table -1 shows the import of oil in the pre reform period.

**TABLE-1
IMPORT OF OIL IN THE PRE REFORM PERIOD**

(Rs.crore)

Year	Import of oil at current prices	Import of oil at constant prices
1971-72	179.8	1882.956
1972-73	259.8	2465.538
1973-74	265.9	2152.768

1974-75	719	5002.8
1975-76	1457	10404.72
1976-77	1411.7	9495.819
1977-78	1574.3	9971.494
1978-79	1806.4	11231.7
1979-80	2038.2	11009.67
1980-81	4034.7	19543.91
1981-82	6654.9	29081.59
1982-83	5786.2	23295.45
1983-84	5816.2	21591.48
1984-85	4673.1	16059.39
1985-86	4549.8	14575.14
1986-87	4078	12222.13
1987-88	2199.5	6020.564
1988-89	3118.1	7878.339
1989-90	3009	7004.204
1990-91	3767.5	7926.415

Source: Hand Book of Indian Economy, Reserve Bank of India, Bombay

The import of oil was Rs. 179.8 crore in 1971-1972 at current prices. Whereas the import of oil at constant prices was Rs.1882.956 crore in the same year. It reveals that the real value of the import of oil was higher. Both the import of oil at current prices and also at constant prices had been fluctuated. The fluctuation in the current price was observed during 1976-1977, 1982-1983 and in 1984-1985, 1985-1986, 1986-1987, 1987-1988 and 1989-1990. The fluctuation at constant prices was also observed in many of the years. Hence the import of oil in India was not stable. At the end of the pre reform period, the import of oil at current prices was Rs.3767.5 crore and at constant prices was Rs.7926.415 crore.

IMPORT OF OIL IN THE POST REFORM PERIOD

The import of oil in the post reform period is shown in table -2.

TABLE-2
IMPORT OF OIL IN THE POST REFORM PERIOD
(Rs.crore)

Year	Import of Oil at current prices	Import of oil at constant prices
1991-92	6028.1	11150.58
1992-93	5324.8	9047.832
1993-94	6100	9424.071
1994-95	5753.5	8096.821
1995-96	5927.8	7644.297
1996-97	7525.8	9004.252
1997-98	10036.2	11262.71
1998-99	8164	8478.864
1999-2000	6398.6	6398.598
2000-2001	12611.4	12213.63

2001-2002	15650.1	14716.64
2002-2003	14000.3	12680.83
2003-2004	17639.5	15447.48
2004-2005	20569.5	17074.66
2005-2006	29844.1	23786.11
2006-2007	43963.1	33397.86
2007-2008	56945.25	41246.7
2008-2009	79715	53960.75

Source: Hand Book of Indian Economy, Reserve Bank of India, Bombay

The import of oil at current prices was amounted to Rs.6028.1 crore in 1991-1992. It had increased to 10036.2 crore in 1997-1998. In 1998-1999, the import of oil had declined to Rs.8164 crore. Again, the import of oil at current prices had declined to Rs.6398.6 crore in 1999-2000. But in the year 2000-2001, the import of oil had suddenly doubled. The import of oil at constant prices had also increased in the study period with fluctuations. It reached Rs. 53960.75 crore at constant prices in 2008-2009.

Till the year 1999-2000, the import of oil at constant prices was higher than the import of oil at current prices. From the year 2000-2001 onwards, the import of oil at current prices was higher than at constant prices.

IMPORT OF NON-OIL IN THE PRE REFORM PERIOD

The table -3 shows the import of non oil in the pre reform period.

TABLE-3
IMPORT OF NON-OIL IN THE PRE REFORM PERIOD
(Rs.crore)

Year	Import of nonoil at current prices	Import of nonoil at constant prices
1971-1972	1982.5	20761.74
1972-1973	2181.7	20704.64
1973-1974	2167.2	17545.99
1974-1975	3073.6	21386.1
1975-1976	4233.6	30232.96
1976-1977	4652	31291.74
1977-1978	4077.4	25825.93
1978-1979	5205.4	32365.75
1979-1980	6240.5	33709.07
1980-1981	7255.9	35147.26
1981-1982	9211.6	40254.25
1982-1983	9386.7	37791.19
1983-1984	8970.4	33300.82
1984-1985	10637.8	36557.43
1985-1986	9862.5	31594.21
1986-1987	11988.9	35931.79
1987-1988	13527.2	37027.22

1988-1989	14037.6	35468.07
1989-1990	16488.2	38380.43
1990-1991	17451.7	36716.5

Source: Hand Book of Indian Economy, Reserve Bank of India, Bombay

The highest value of import of non oil at current prices was observed in the year 1990-1991. It was amounted to Rs.17451.7 crore. The least value of import of non oil was observed in 1971-1972. It was amounted to Rs.1982.5 crore. On other-hand, the import of oil at constant prices had increased from Rs.20761.74 crore in 1971-1972 to Rs.36716.5 crore in 1990-1991. From 1972-1973 onwards, it had fluctuated and reached the maximum level of Rs.40254.25 crore in 1981-1982. It was also observed that, in the pre reform period, the import of nonoil at constant prices was higher than at current prices. It revealed that the real value of the import of non oil had increased in the pre reform period.

IMPORT OF NON OIL IN THE POST REFORM PERIOD

The table -4 shows the import of non oil in the post reform period.

TABLE - 4
IMPORT OF NON OIL IN THE POST REFORM PERIOD.

(Rs.crore)

Year	Import of non-oil at current prices	Import of non-oil at constant prices
1991-1992	18044.4	20704.64
1992-1993	14085.7	17545.99
1993-1994	15781.6	21386.1
1994-1995	17552.7	30232.96
1995-1996	22726.5	31291.74
1996-1997	29149.5	25825.93
1997-1998	29096.2	32365.75
1998-1999	33320.5	33709.07
1999-2000	35990.1	35147.26
2000-2001	37059.3	40254.25
2001-2002	34886.4	37791.19
2002-2003	37413	33300.82
2003-2004	43772.6	36557.43
2004-2005	57579.6	31594.21
2005-2006	81673.3	35931.79
2006-2007	105202.6	37027.22
2007-2008	128790	35468.07
2008-2009	171939	38380.43

Source: Hand Book of Indian Economy, Reserve Bank of India, Bombay

The table -4 reveals that the import of nonoil at both current and at constant prices had fluctuated in the post reform period. The non oil import at current prices had increased from Rs.18044.4 crore in 1991-1992 to Rs.171939 crore in 2008-2009.

The export of non oil at constant prices had also shown an increasing trend. It was amounted to Rs.38380.43 crore in 2008-2009. In the initial reform period, the import of non-oil at constant prices was higher than at current prices. From 2002-2003 onwards, the import of oil at current prices was higher than at constant prices.

IMPORT OF OIL AND NON-OIL IN THE PRE REFORM PERIOD

The table -5 shows the import of oil and non oil in the pre reform period.

Table-5

IMPORT OF OIL AND NON-OIL IN THE PRE REFORM PERIOD

(Rs.crore)

Year	Import of oil and non oil at current prices	Import of oil and non oil at constant prices
1971-72	2162.3	22644.69
1972-73	2441.5	23170.18
1973-74	2433.1	19698.76
1974-75	3792.6	26388.9
1975-76	5690.6	40637.68
1976-77	6063.7	40787.56
1977-78	5651.7	35797.43
1978-79	7011.8	43597.44
1979-80	8278.7	44718.73
1980-81	11290.6	54691.17
1981-82	15866.5	69335.84
1982-83	15172.9	61086.64
1983-84	14786.6	54892.31
1984-85	15310.9	52616.82
1985-86	14412.3	46169.36
1986-87	16066.9	48153.92
1987-88	15726.7	43047.79
1988-89	17155.7	43346.4
1989-90	19497.2	45384.63
1990-91	21219.2	44642.92

Source: Hand Book of Indian Economy, Reserve Bank of India, Bombay

The table -5 shows that the import of oil and non oil at current prices was Rs.2162.3 crore in 1970-1971. It crossed Rs. 10000 crore in 1980-1981. The import of oil and non oil at current prices had reached its maximum level at the end of the pre reform period (Rs. 21219.2 crore). At constant prices, there was fluctuation in the import of oil and non oil. The import of both oil and non oil was observed to be Rs. 69335.84 crore in 1981-1982. It was the highest amount in the pre reform period. From 1983-1984 onwards, there was a decline in the import of oil and non oil. Finally, at the end of the pre reform period, it reached Rs. 44642.92 crore. The import of oil and non oil at constant prices was higher than at current prices. It reveals that the real value of the import had improved in the pre reform period.

IMPORT OF OIL AND NON-OIL IN THE POST REFORM PERIOD

The import of oil and non oil at both current and constant prices in post reform period is shown in table -6.

TABLE-6
IMPORT OF OIL AND NON-OIL IN THE POST REFORM PERIOD

(Rs. Crore)

Year	Import of oil and non-oil at current prices	Import of oil and nonoil at constant prices
1991-92	24072.5	44528.5
1992-93	19410.5	32982.07
1993-94	21881.6	33805.53
1994-95	23306.2	32798.49
1995-96	28654.4	36951.78
1996-97	36675.3	43880.21
1997-98	39132.4	43914.73
1998-99	41484.5	43084.45
1999-2000	42388.7	42388.68
2000-2001	49670.7	48104.06
2001-2002	50536.5	47522.22
2002-2003	51413.3	46567.81
2003-2004	61412.1	53780.57
2004-2005	78149.1	64871.25
2005-2006	111517.4	88880.73
2006-2007	149165.7	113318.1
2007-2008	185735.2	134532.1
2008-2009	251654	170349.8

Source: Hand Book of Indian Economy, Reserve Bank of India, Bombay

The table -6 reveals that the total import of both oil and non oil at current prices had shown an increasing trend with fluctuations. In 1991-1992, it was observed to be Rs.24072.5 crore at current prices. In 1992-1993, it had declined to Rs.19410.5 crore. But from 1992-1993 onwards, the oil and non oil export at current prices had increased continuously. It reached its maximum level of Rs.251654 crore in 2008-2009.

The import of oil and non oil at constant prices followed a fluctuating trend. It reached its maximum level in 2008-2009. It was amounted to Rs.170349.8 crore in 2008-2009. The import of oil and non oil at constant prices was observed to be greater than at current prices in the initial post reform period. But from 2000-2001 onwards, the import of oil and non oil at current prices was higher than at constant prices. It revealed a declining real value at the post reform period.

3. COMPARISON OF CRUDE OIL IMPORT BETWEEN THE PRE AND POST REFORM PERIOD

An attempt was made to compare the crude oil import be-

tween the pre and post reform period. To compare the import of crude oil between pre and post reform period, t test was used.

The results of t test are shown in table -7.

TABLE - 7
COMPARISON OF CRUDE OIL IMPORT BETWEEN THE PRE AND POST REFORM PERIOD – T TEST

Variable	T value	Level of significance
Crude oil import at current prices	-3.591	Significant at 1% level
Crude oil import at constant prices	-3.405	Significant at 1% level
Non oil import at current prices	-1.617	In Significant
Non oil import at constant prices	-1.572	In Significant
Oil and non oil import at current prices	-4.347	Significant at 1% level
Oil and non oil import at constant prices	-4.123	Significant at 1% level

Source: Estimated

The table -7 shows that the t value of crude oil import at current prices and constant prices were statistically significant at one percent level. It implied that the crude oil import differed significantly between pre and post reform period. The value of t pertaining to total oil import was statistically significant at one percent level. It showed that the total oil import had differed significantly between pre and post reform period. The oil import in the post reform period was significantly higher than in the pre reform period.

CONCLUSION

To conclude, The import of oil was Rs. 179.8 crore in 1971-1972 at current prices. Whereas the import of oil at constant prices was Rs.1882.956 crore in the same year. It reveals that the real value of the import of oil was higher. Both the import of oil at current prices and also at constant prices had been fluctuated. The fluctuation in the current price was observed during 1976-1977, 1982-1983 and in 1984-1985, 1985-1986, 1986-1987, 1987-1988 and 1989-1990. The fluctuation at constant prices was also observed in many of the years. Hence the import of oil in India was not stable. At the end of the pre reform period, the import of oil at current prices was Rs.3767.5 crore and at constant prices was Rs.7926.415 crore. Till the year 1999-2000, the import of oil at constant prices was higher than the import of oil at current prices. From the year 2000-2001 onwards, the import of oil at current prices was higher than at constant prices.

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