CCS FINAL REPORT

IMPACT OF OIL SHOCK ON A NET IMPORTER-INDIA AND A NET EXPORTER VENEZUELA

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TABLE OF CONTENTS

Contents

EXECUTIVE SUMMARY

Oil and gas are considered as engines of growth for an economy. The importance of oil has moved in tandem with the significant economic advances made in the 20th century which spilled over the 21st century. According to estimates, the industrial production grew by 50 times in the last century and 80 percent of this advancement happened in the second half of the century post the Second World War.[1] In the post Second World War period, oil constituted 60-70 percent of the energy mix and currently it accounts for 40 percent of the world energy mix.[2] The reasons for this being the sufficiency, accessibility, fungibility as a trade instrument, versatility and ease of transportation.[3]

For a developing country like India that imports nearly 86 percent of its domestic oil requirement, it is highly likely that any external oil shocks will translate into severe economic crisis leading to crippling of foreign trade, decline of GDP, burgeoning of fiscal deficit and rise of external debt. In the past, there are several instances where external oil crisis impacted the economic stability of the nation. Some of them being the Arab uprising between 1973-74, Iranian revolution between1979-1980 and the Kuwait war in 1990-91. These three external shocks had massive impacts on the Indian economy since India was heavily dependent on oil imports and oil pricing followed was APM (Administered Price Mechanism) and was subsidised by the Government with the OMC's (Oil Marketing Companies) and upstream oil refining companies sharing the under recoveries to a large extent. Post the 1991, Balance of Payment crisis, triggered by several external stimulus one of them being the Kuwait war leading to shortage of oil supply and rise in oil prices, several changes were made in the pricing of crude oil and petroleum derivatives and several reforms were made to prevent such a crisis in future.

Venezuela is among the top 10 oil producing countries and is known to have largest proven resource of crude oil. But the state of the Venezuelan economy does not reflect this position as the country is facing very high inflation, depleting foreign exchange reserves, high external debt, high fiscal deficit and shortage of essential goods including food items. The study done as part of the CCS project has examined how the positive and negative oil shocks have impacted the country and how it has managed its revenues during oil boom and slump.

The case of Venezuela is that of gross mismanagement of national resources at the expense of development by regimes that had short sighted political motives. The underlying reason for the current state of affairs of the nation is the high welfare spending undertaken by the government that has socialist ideologies. High socialist spending by the government, highly subsidized domestic oil, and oil largesse extended to neighboring regions in order to wield power and influence over the region has resulted in the bleeding of the national oil

[1] http://www.opec.org/opec_web/en/900.htm
[2] http://www.opec.org/opec_web/en/900.htm
[3] http://www.opec.org/opec_web/en/900.htm

company PDVSA. The government's efforts at nationalization, price controls etc. has resulted in an unfriendly business atmosphere leading to large Multi-National Companies shutting shops and leaving the company.

OBJECTIVE OF THE PROJECT

As part of this project we plan to study how oil importing and oil exporting countries are impacted by oil shocks. We will take the case of Venezuela for understanding the dynamics of a net exporting country and India to understand the impact on a net importing country.

INTRODUCTION

India is projected to become the seventh largest consumer of energy within a decade. At current levels of consumption, India's indigenous oil reserves are not expected to last beyond 2014-16. Current demand for oil is around 96 million tonnes out of which nearly two thirds (67 percent) is met through imports and the remaining through domestic production[4]. India's oil import dependency has increased from 37 percent in 1989-1990 to nearly 68% percent in 1999-2000 and this is expected to increase in future.[5] Most of the developing countries in Asia are dependent on oil imports, oil constitutes a major part of their import bill and hence a marginal hike in international oil price can have a significant bearing on the country's forex reserves and subsequent macroeconomic instability. Extensive studies have been conducted by researchers on the causes of oil shocks and its impacts and it is estimated that oil shocks impact macroeconomic parameters like GDP, investment, interest rates, exchange rates and unemployment. (Rafiq, Salim, & Bloch, 2009).[6]

Till 1999, India did not have an energy security policy to curb the effects of oil shock crisis and it is neither a member of any international organization like the IEA (which was formed after the 1973 oil shock crisis to protect member nations from future disruptions in the energy market). India's hydrocarbon demand is expected to grow at 6 percent annually and with the current rates of import dependency, there is a strong need for a policy formulation where India is able to meet its short term and long term energy needs are secured.7 A tentative step in this direction was the launch of the "Hydrocarbon Vision 2020" and the New Exploration Licensing Policy (NELP) in 1997 in as a measure to encourage investment in domestic oil exploration and production.8 Most of the research on impact oil shocks on the Indian economy has found that oil price shocks have a positive effect on domestic inflation and a negative relation to the economic growth and industrial production. Studies conducted by Gupta (2008) on oil vulnerability across countries have identified India to be one of the most vulnerable countries. Certain oil shocks that have global impact are listed below.

International experience of crude oil shocks

Start		End		Reason	Price of Crude oil(US dollars per barrel)	Crude oil Supply loss (mbpd)*
Month	Year	Month	Year			
November	1956	March	1957	Suez crisis	15.9	2
June	1957	August	1957	Six day war	15.5	2
October	1973	March	1974	Arab Israel War and Arab Oil embargo	35.5	4.3
November	1978	April	1979	Iranian Revolution	74.7	5.6

[4] http://www.idsa-india.org/an-may011.html
[5] http://www.idsa-india.org/an-may011.html
[6] https://ideas.repec.org/a/eee/jrpoli/v34y2009i3p121-132.html(The abstract was analysed)
[7] http://www.idsa-india.org/an-may011.html
[8] http://www.idsa-india.org/an-may011.html

October	1980	January	1981	Iran-Iraq War	96.7	4.1
August	1990	January	1991	Iraqi invasion of Kuwait	37.7	4.2
June	2001	July	2001	Iraqi Oil export suspension	31.7	2.1
December	2002	March	2003	Venezuelan Strike	34.0	2.6
March	2003	December	2003	Iraq War	36.0	2.3
September	2005			Hurricane Katrina	64.1	1.5
July	2011			Libya Collective Action	113.6	1.6

Source IEA 2012[1], mbpd: million barrels per day

As can be seen from the table above, the impact of oil shocks have reduced over time. The more evident losses have been due to physical disruptions of supply and not owing to market control of oil producers.9 Integration of oil markets and fungibility of crude oil as an internationally traded commodity implies that shortages of oil supply get replaced by alternate sources of energy but their impact is reflected in the form of price spikes.

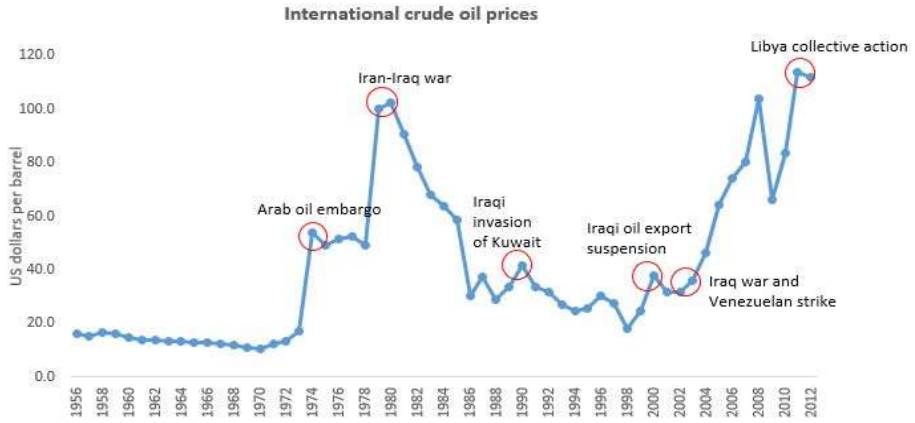


Figure 1 Source: BP energy_Statistical review of world energy 2013 workbook[10]

[9] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf

[10]https://www.google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0CCcQFjACahUKEwjmr9Kc8dDHAhXDv44KHclfDJI&url=http%3A%2F%2Fwww.bp.com%2Fcontent%2Fdam%2Fbp%2Fexcel%2FEnergy-Economics%2Fstatistical_review_of_world_energy_2013_workbook.xlsx&ei=XQHjVaaNHcP_ugTCv7CQCQ&usg=AFQjCNGM5kkuU2vi9JRlgbniPF2Bi-zHtQ&sig2=au2FftsnJZtc6LcBJ3LTpg

METHODOLOGY

Literature review:

Some empirical studies conducted on impact of oil price shocks[11]

Author/Year	Research Question	Findings
Bhattacharya and Bhattacharya (2001)	To examine the effect of oil price shocks on the prices of other commodities and the lags for the rise in oil prices to impact the prices of dependent industries.[12]	A 20 percentage point shock in oil prices lead to a 1.3 percentage point increase in inflation in other commodities at its peak, which typically occur five to seven months the shock.[13]
Kumar(2005)	Impact of oil price shock on the growth of the industrial production in Indian economy	A 100 percent rise in oil prices lowers growth of industrial production by 1 percent. Oil prices affects macroeconomic activities[14]
Bhattacharya and Kar (2005)	Impact of oil price shock on domestic economy in the short and long run	Oil price shock is stagflationary. For 100 percent increase in international price of oil, growth rate falls by 3 percent and inflation rises by 18 percent in the short run. The impact on growth does not become weaker in the long run.[15]
Rafiq, Salim, R., and Bloch, H. (2009)[16]	Impact of crude oil price volatility on economic activities: An empirical investigation in the Thai economy	A study conducted on impact of oil price volatility on the economy was done using a VAR (Vector Auto Regression) for a time period of 1993- to 2006. They key macroeconomic parameters affected are unemployment and investment.
Anmol Soni (March 2014), TERI working papers[17]	Global Oil Markets and India's Vulnerability to Oil shocks	Analyses the various factors that determine a country's dependence and vulnerability to oil shocks- some of these being share of oil in the energy basket, significance of crude oil and petroleum products in trade balance and trade patterns. Extent of a country's vulnerability is directly related to import dependence on oil.

[11] http://www.nipfp.org.in/media/medialibrary/2013/04/wp_2012_99.pdf

[12] http://www.jstor.org/stable/4411508?&seq=2#page_scan_tab_contents(accessed from JSTOR account)

[13] http://www.jstor.org/stable/4411508?&seq=2#page_scan_tab_contents(accessed from JSTOR account)

[14]http://www.researchgate.net/publication/41938593_The_Macroeconomic_Effects_of_Oil_Price_Shocks_Empirical_Evidence_for_India

[15] https://www.imf.org/external/np/res/seminars/2005/macro/pdf/bhatta.pdf, taken from the article http://www.nipfp.org.in/media/medialibrary/2013/04/wp_2012_99.pdf

[16] https://ideas.repec.org/a/eee/jrpoli/v34y2009i3p121-132.html(The abstract was analysed)

[17] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf

Shebonti Ray Dadwal, Research Fellow, IDSA[18]	The Current Oil 'Crisis': Implications for India	In comparison with the 1973 oil shocks, an oil shock in the current scenario cannot put the global economy under a tight distress as the amount of energy and fuel diversification done by industrialized nations is high. But for a developing country like India, the implications can be severe. Hence, there is a pressing need for fuel diversification.
Bacon and Kojima (2008)[19]	Vulnerability to oil price increases, *as a joint service to World Bank and International Finance Corporation*	Conducted a decomposition analysis and concluded that India's vulnerability to oil prices have increased from 1.8 in 1996 to 2.6 in 2001 and from 2001 till 2006, it has increased to 4.4.
Bhattacharya and Batra (2009)	To estimate formula based automatic adjustment of fuel prices on inflation and output growth in India	Change in international prices and domestic fuel price change in India do not move in a synchronous fashion. When domestic prices are allowed to reflect changes in international oil prices the contribution of *the latter to domestic inflation increases to about 39% by the sixth month*. The response of IIP to fuel prices is evident in the form of a negative trend over the short run.[20]
IMF (2011)	Nil	If global oil prices average US$ 150/barrel in 2011, it would lower real GDP growth in advanced economies and in Asian economies by 0.75 percent
Aparna[21]	To study the impact of oil prices on Indian economy by considering GDP(Gross Domestic Product), IIP(Index of Industrial Production) and WPI (Whole sale Price Index)	There is a significant relationship between change in manufacturing IIP, GDP growth rates, WPI changes and crude oil price change.[22]
Rachit Satsangi Vidit Sangar	ANALYSIS OF INDIA'S CURRENT ACCOUNT (1991-2013)[23]	From simple regression analysis of India's Current Account Deficit(dependent variable) with oil import bill(independent variable) for a time period from 1991-2013, shows a negative correlation with an R^2 of 86.8% and a correlation coefficient of -0.932.[24]

[18] http://www.idsa-india.org/an-may011.html

[19] http://siteresources.worldbank.org/INTOGMC/Resources/eid1_oil_price_vulnerability.pdf

[20] http://www.indiaenvironmentportal.org.in/files/Fuel%20Pricing%20Policy%20Reform%20in%20India.pdf

[21] http://www.nmims.edu/NMIMSmanagementreview/pdf/Oct-Nov-13-Jan-14/Research-Note-Impact-Oil-Price-Indian-Economy.pdf

[22] http://www.nmims.edu/NMIMSmanagementreview/pdf/Oct-Nov-13-Jan-14/Research-Note-Impact-Oil-Price-Indian-Economy.pdf

[23]http://korea.ssrn.com/delivery.php?ID=514112092086124112007004124089009026105010042041037058069126097123092101109105111102054126001035046017049092099080086084087076062087048093049112021112120003115000123014084043093064106084124075026108105066066021099027008030096095097090022126094112085093&EXT=pdf

[24] ANALYSIS OF INDIA'S CURRENT ACCOUNT (1991-2013) by Rachit Satsangi and Vidit Sangar. Link for abstract- http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2355738

Dr. Mehernosh B. Mehta Prof. Hatim F. Kayumi[25]	Effect Of India's Current Account Deficit On External Debts And Foreign Exchange Rates	From simple regression analysis of India's current account deficit (independent variable) with external deficit (dependent variable) shows that they are negatively correlated with a correlation coefficient of -0.9424 which means that they are highly negatively correlated.[26]

Various databases used

Name of the resource	Data obtained	Time period
UNCTAD	Country overview	
India stats	International Brent crude prices	1990-2015
	Import and export of crude oil and petroleum products by India	1998-2013
	Demand of Petroleum Products	2016-2022
	Unemployment rates	2004,2010
	Under recovery	2004-2014
	Oil security by Government	2009-2014
	Subsidy as a percentage of GDP	2009-2013
	Company wise subsidy on PDS Kerosene and LPG	2011-2014
	Retail prices of Kerosene, Petrol, Diesel and LPG	1990-2014
	GDP component wise	1950-2014
	Ratio of revenue and fiscal deficit to GDP	2002-2014
	Sales of petroleum products	1990-2003
IMF databases	Balance of payments	2005-2014
	Economic Indicators	2011-2015
	Export and import partners	2012-2015
	Fiscal overview	2010-2012
OECD	Input output tables	Early 2000's Mid 2000's Mid 1990's
UNESCAP	Energy intensity	1980-2012
RBI database	Forex reserves	1980-2014
	Current Account deficit	1980-2014
	Balance of Payments-(major components of Balance sheet)	1980-2014
	Exchange rates	1980-2014
	Components of fiscal expenditure	1970-2014
TERI	Graph on oil intensity	1980-2014
BP	Statistical review of world energy 2013 workbook	1980-2014

[25] http://www.iosrjournals.org/iosr-jef/papers/icsc/volume-1/7.pdf
[26] http://www.iosrjournals.org/iosr-jef/papers/icsc/volume-1/7.pdf

NET IMPORTER – SCENARIO OF INDIA

Pricing Mechanism for Oil in India

Till 1974-Market determined pricing mechanism

1974-1998-Administered price mechanism

1998-2006-Import Parity Price mechanism

2006-Present-Trade parity price mechanism

Administered Price mechanism[27]:

Under the APM, prices of commodities in the hydrocarbon sector are controlled at four stages namely production, refining, distribution and marketing on the basis of compensating the under recoveries and allowing a predetermined return on investments.

The national oil exploration and producing companies like ONGC and OIL are compensated for their operating expenses and allowed for a 15% post-tax return on the capital employed. ONGC and OIL sell crude to oil refiners at a rate of $7-8per barrel against the prevailing international price of $17-18 per barrel.[28]

APM is operated through an oil industry pool account where the inflows and outflows of the pool account expected to be kept in balance. Temporary price adjustments are made to compensate for the international price variations, currency fluctuations and statutory levies to balance the oil pool account. To maintain prices of kerosene, LPG, Naphtha and furnace oil at lower value since these are fuels for mass consumption and are used directly in fertiliser production, the prices of gasoline, naphtha and furnace oil was kept disproportionately higher.

The disadvantages of this system was that since the price fixation was done on a cost plus margins does not encourage efficiency in operations and since all investments are reimbursed and compensated for there is no incentive for the oil refining companies to make profitable investments.

Scenario from 1998-2006

In 197, the Government of India decided to dismantle the administered price mechanism for fixing domestic prices and adopted the import price parity mechanism for fixing domestic prices of oil (petrol, diesel, kerosene and LPG). This was effective from 1/4/2002[29]. The OMC(Oil marketing companies were to fix the retail prices of petrol and diesel in line with the international oil price changes), however this was not applied to kerosene and LPG and Government continued to subsidize prices of LPG and Kerosene since they were fuels of mass

[27] http://www.business-standard.com/article/specials/administered-price-mechanism-in-oil-sector-bane-or-boon-197052001002_1.html
[28] http://www.business-standard.com/article/specials/administered-price-mechanism-in-oil-sector-bane-or-boon-197052001002_1.html
[29] Report on Committee on Pricing and Taxation of Petroleum products

consumption. It was agreed that two third of the losses made by OMC on subsidies given to Kerosene and LPG would be shared equally by the upstream companies namely (ONGC/GAIL/OIL) and the oil Marketing companies and the remaining one third would be balanced by the surpluses generated by the OMC's on petrol and diesel sales. Since late 2003 till 2006, the prices of international crude oil faced heavy fluctuations and reached a peak of ($63.23/bbl for the Indian basket of crude on 1.2.2006). The impact of this heavy fluctuation in prices was two fold[30]Large amounts of subsidy burdens for kerosene and LPG to the order of INR 15,000 crore and INR 11,000 crore respectively.[31] Thus, Government took control of price setting for petrol and diesel and restricted pass through of international oil prices to domestic consumers.

Trade parity price mechanism, 2006-Present[32]

Trade parity principle for setting prices for petrol and diesel was adopted where a weighted average of the import and the export parity would be taken in the ratio of 80:20.This principle of trade parity will apply to both refinery gate price and the retail prices of petrol and diesel. The trade parity prices determined will operate as an indicative ceiling price. A comparison of diesel prices with the different methods of price setting has been shown *(Appendix 4).*

Patterns of Vulnerability to oil shocks

Analysing the impact of oil shocks on developed economies, Schubert and Turnovsky (2011) have found that vulnerability of these economies to oil shocks has declined in recent years and the prime reason for this is a reduction in oil intensity of GDP. On the other hand for a developing, oil importing country like India, macroeconomic variables like capital, GDP, debt, interest are impacted adversely in the short term and in the medium to long term, some of these variables return to their original, pre-shock levels.[33] In 2008, Bacon and Kojima conducted a decomposition analysis on the change in vulnerability of countries to oil price shocks and have segregated the total impact of oil shocks into production effects and consumption effects. They concluded that vulnerability to oil prices differs with respect to countries and supply side effects have a greater role in impacting volatility. Similarly, in 2008, Killian in his study on oil shocks using parameters of real economic activity found that changes in production have transitory effects on oil prices whereas changes in aggregate demand or real economic activity have sustained impacts.[34]

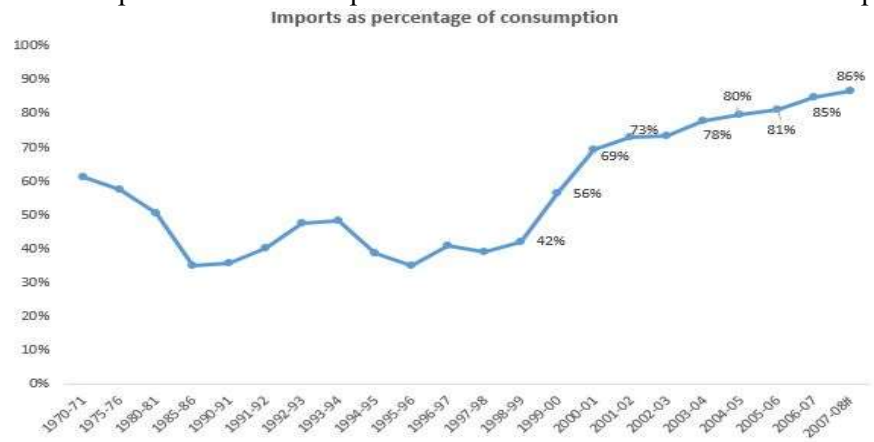
[30] Report on Committee on Pricing and Taxation of Petroleum products
[31] Report on Committee on Pricing and Taxation of Petroleum products
[32] Report on Committee on Pricing and Taxation of Petroleum products
[33] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[34] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf

Factors- affecting vulnerability to oil shocks in Indian context[35]

Vulnerability to oil supply and price shocks is dependent on oil intensity of GDP, oil intensity of energy consumption, domestic production of crude oil and oil import dependence and availability of oil in the international markets.

Dependence on oil imports

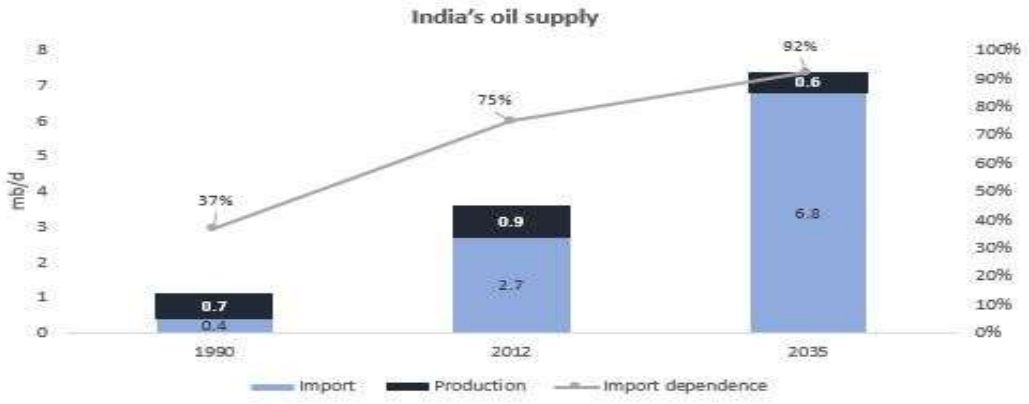
India's dependence on oil imports has increased since 1990 and it is expected to exceed 90% by 2031-32.[36]



More than two thirds of the crude oil imported is from Middle East and more than 80% are from OPEC countries.[37]According to TERI estimates, the total consumption of oil is expected to increase to 392 million tonnes of oil equivalent (mtoe)

Figure 2 Source: Data for graph are taken from Indiastat.

in 2021-22 and 836 mtoe in 2031-32.[38] Simultaneously, the consumption is expected to increase to 223 mtoe in 2021-22 and further to 457 mtoe in 2031-32.[39] (Summarised in table below). The rising dependence on imports can impact foreign exchange reserves and impose a significant burden on it and hence affect the trade balance of the country. The high dependence on imports is owing to low oil reserves available and low domestic oil production.



[35] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[36] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[37] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[38] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[39] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf

Figure 3 Sources: IEA, 2011a; IEA, 2012a; IEA database[40]

	2021/2022		2031/2032	
	Reference	Alternative	Reference	Alternative
at USD 100/bbl	131.2	106.8	304.3	278.6
at USD 125/bbl	164.0	133.6	380.4	348.3
at USD 150/bbl	196.9	160.3	456.4	417.9

Source: Author's calculations based on demand projections in (TERI, 2009a)[41]

Energy intensity of the country

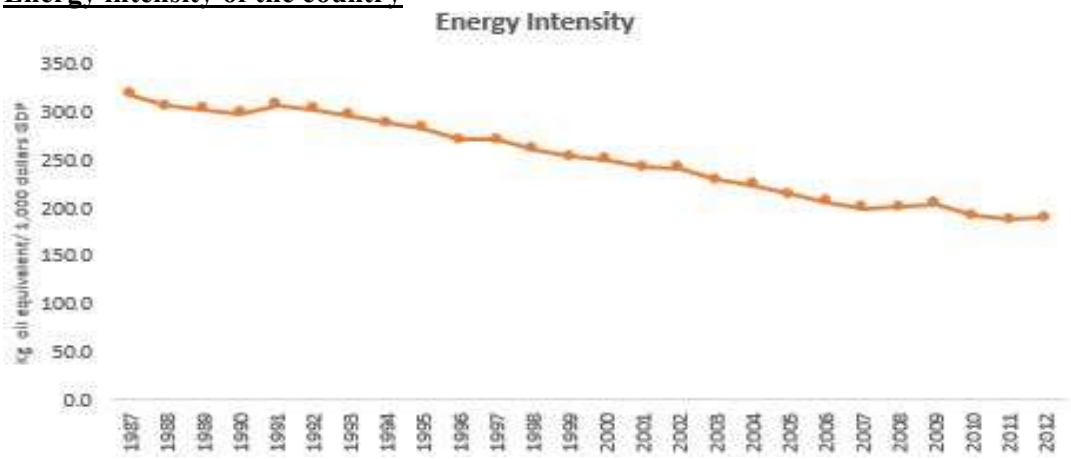


Figure 4 Source of data for graph: UNESCAP database

Energy intensity of the country is determined as the ratio of primary energy per 1000 dollars of GDP. Energy intensity of GDP is determined as the share of level of industrialization, share of different sectors in the economy, efficiency of energy consumption and lifestyle patterns. Hence, the share of industry in the total output (GDP) determines the total demand for energy. The share of industry in the total output has been 19-21% on an average.[42] The declining trend of energy intensity also indicates that the pace of growth in energy consumption has been slower than the economic growth of the country.

[40] https://www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf
[41] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[42] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf

Oil intensity[43]

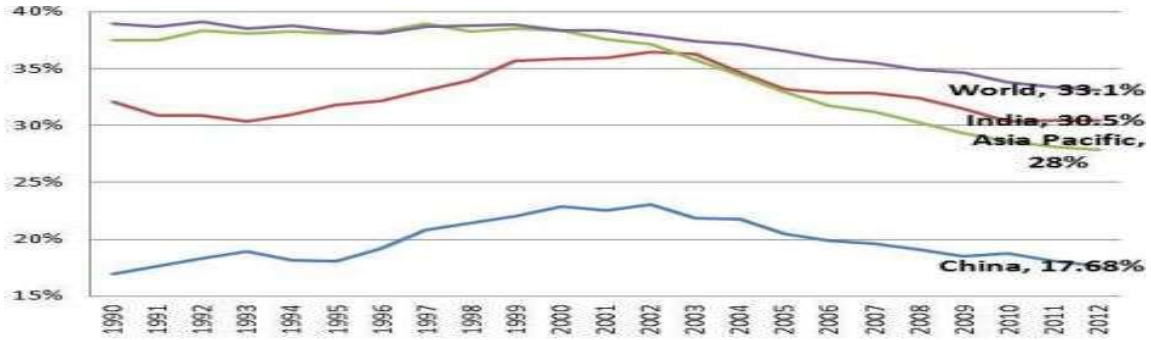


Figure 5Source of graph (BP, 2012), taken from the link[44]

It is important to look at the oil intensity of the economy since the extent of share of oil in the energy basket of an economy will determine the level of impact in case of oil shocks. The graph below describes the extent of oil consumed as a percentage of total primary energy consumed on an annual basis. It can be noted that for India, the share of oil has remained largely between 25 percent and 35 percent and has always been below the global average of 99% but it is nevertheless above the Asia Pacific average of 28%.[45] The oil intensity has witnessed spikes in the year 2001 and 2003 owing to suspension of exports from Iraq and the subsequent Iraq war respectively. As the national policy is focussing more on increasing the energy efficiency and use of more renewable sources of energy, the energy intensity is expected to decline, however, the oil intensity is expected to increase(as per TERI projections).[46] The share of oil in the entire energy basket is expected to become 39% in 2031/32 as per TERI projections.[47]

Fuel diversity[48]

It is important to look at the different sectors of industry that are dependent on the imported crude oil. As per IAEA estimates, transport accounts for nearly 50 percent of the oil consumption.[49] This indicates a relative lack of diversification in the fuel basket increases the vulnerability of a particular sector to oil shocks. There has been small shifts towards electric and hybrid cars but predominant source of fuel for the transport sector. is petroleum products namely diesel and petrol. [50]

[43] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[44] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[45] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
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[48] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf
[49] https://www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf
[50] https://www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf

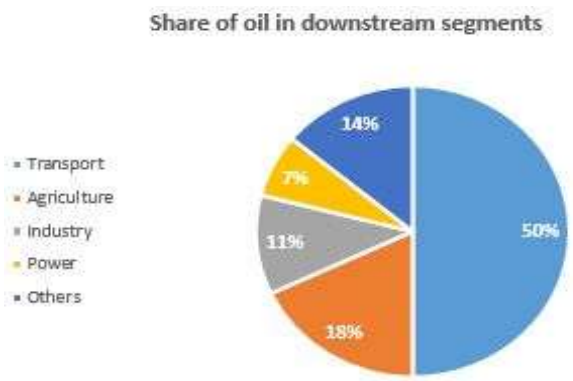


Figure 6 Source: Data for the pie chart (above) is taken from IEA database.[51]

Availability of foreign exchange reserves[52]

Availability of foreign reserves is a key factor determining the extent of vulnerability that a country faces to oil shocks. As can be seen from the graph below, an increase in oil prices can lead to a rise in demand for forex reserves given the fact that the dependence on oil imports is high. Since the balance of payments crisis in 1990, the demand for forex reserves has increased many folds. Crude oil import constitutes a significant proportion of the import bill for India and this has been increasing since 2001 expect for a slight dip between the years 2009-10 owing to global recession when the aggregate demand for crude oil declined in the country.

Figure 7 Source of data used in the graph is RBI Handbook of statistics

[51] https://www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf

[52] has been small shifts towards electric and hybrid cars but predominant source of fuel for the transport sector. is petroleum products namely diesel and petrol.

Oil shock impact

Channels of impact

The three major channels through which the international oil prices affect the macro economy are[53]

- Import channel
- Price channel
- Fiscal channel

Import channel[54]:

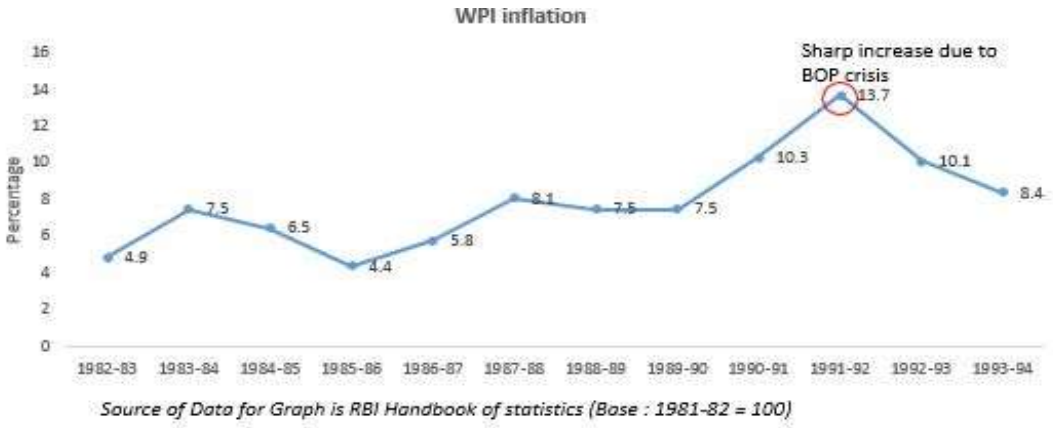
A rise in international oil prices will result in higher import bill for oil for India since it is a net oil importing country. Assuming that the price elasticity of demand for oil is low, the trade balance will worsen with the rise in international oil prices. Rise in oil prices can also lead to inflation indicating that the growth in real GDP can be lower. The reason why rise in oil prices lead to inflation is that oil is a major input to the economy and it is used extensively in the manufacturing, transportation and construction sector. The price of oil is directly coupled to the cost of manufacturing various products and significant number of industries are dependent on oil as a major source of input. Hence an increase in cost of manufacturing results in rise in final price of end products leading to inflation. This would mean a slowdown in economic growth which would subsequently reduce the demand for imports which in turn would partially mitigate the demand for imports of oil.

Price channel:

In India, a large proportion of the international oil price rise effects are absorbed by the Government (and shared with public sector oil exploring and producing and oil marketing companies. The reason being that for a developing country like India, allowing complete pass through of oil price rise can lead to higher cost of production of oil dependent industries and the prices of final goods produced by downstream products of oil like diesel, petrol, kerosene etc./*Share of industry sectors dependent on oil is given in Figure 6 /*. Using an input-output system, to model the pass through effects of rise in international oil prices, it was estimated (Jha and Mundle(1987)) that if the administered prices of crude oil, gas and petroleum products increases by 7 percent, the overall WPI increases by 1 percent(elasticity being 0.14). [55]In 2011, RBI estimated that in case of **complete pass through of international oil price rise** to domestic prices of oil, for every 10 percent increase in global crude oil prices, the **WPI inflation can increase by 1 percent** and in the short term and in

[53] http://www.nipfp.org.in/media/medialibrary/2013/04/wp_2012_99.pdf
[54] http://www.nipfp.org.in/media/medialibrary/2013/04/wp_2012_99.pdf
[55]http://www.epw.in/system/files/pdf/1987_22/33/special_articles_inflationary_implications_of_resource_mobilisation_through_administered_price_in.pdf

the long term it can **increase by 2 percent** points as higher input costs translates to higher output prices across the downstream sectors.[56]



Fiscal channel:

In the absence of a complete pass through mechanism, the rise in oil prices can lead to a rise in subsidy and in turn the revenue expenditure of the government. On the other hand, rise in oil prices can also generate substantial tax revenues both for centre and state since the price rise is correlated to an increase in *ad valorem* tax collections oil and petroleum products. Hence, the net impact on the fiscal expenditure would have to be calculated as the revenue receipts via tax collections minus the expenditure on subsidy.

(Flow chart in Appendix)

Oil shock on key macroeconomic variables

Impacts of oil shocks can be significant for an oil importing country like India with a high oil dependence of nearly 75%[57]. An analysis conducted by Hamilton for the US economy cannot be conducted for the Indian economy since, the complete pass through of oil shock does not happen owing to Government intervention and government control of prices of refined petroleum products. Hence, a study of the macroeconomic parameters over the duration of an oil shock will help us understand the impact of oil shock and India's vulnerability to an oil shock. Based on existing literature survey, the major economic parameters that get affected are

- GDP growth rate
- Import bill
- Fiscal balances

[56] http://www.nipfp.org.in/media/medialibrary/2013/04/wp_2012_99.pdf
[57] https://www.iea.org/publications/freepublications/publication/India_study_FINAL_WEB.pdf

GDP growth rates

As can be seen from the graph below, **high prices of crude oil have led to lower GDP growth rates**. High prices of crude oil in the global market have impacted the current account balance, the overall inflation rates, the fiscal balances and ultimately the national income. Thus rise in oil prices have a strong correlation with the GDP slow down. The 1973,1978 and 1990 oil crisis on account of external oil shocks have resulted in lower GDP growth rates since oil is a major input to the economy especially in the manufacturing sector and a spike in oil prices can significantly increase the cost of manufacturing which in turn makes exports less competitive thus reducing GDP.

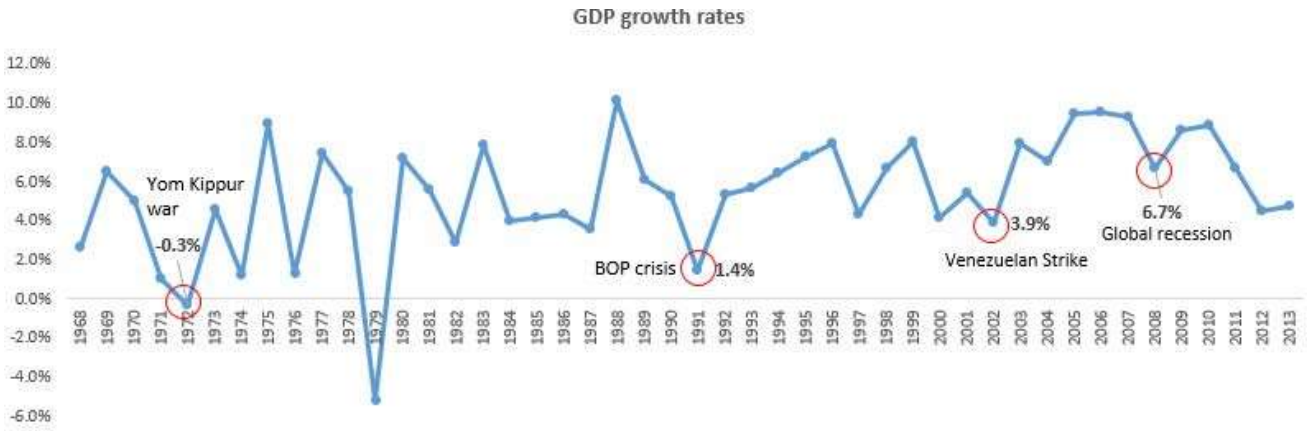
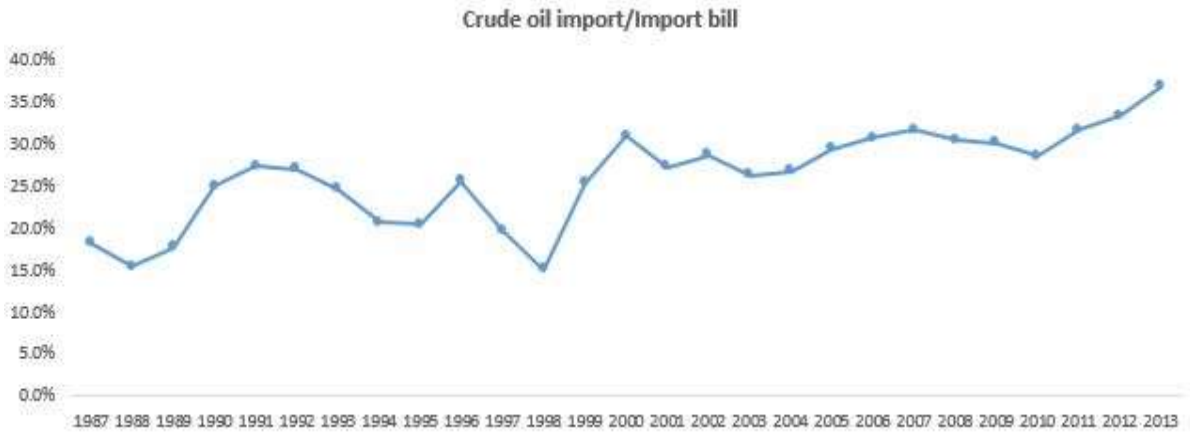


Figure 9 Source for data used in graph is RBI Handbook of statistics

Import bill and current account balance

Crude oil imports accounts for 36% of India's import bill and since this ratio has been increasing continuously on account of increase in volume imports as well as rise in prices of oil. The import dependence for meeting oil demands (domestic consumption) is expected to rise to nearly 92% by 2031/32.[58] Hence any rise in oil prices can impact the current account deficit as well.



[58] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf

Figure 10 Source for data used in graph is RBI Handbook of statistics

The share of exports of petroleum products increased since from a meagre 1% in 1970 to 18% in 2011.[59] Hence, spikes in oil prices will affect the debit and the credit side of the current account balance of the nation. It is evident from the graph for CAD that as the proportion of import of crude oil increased from 2003, the CAD has declined and gone negative.

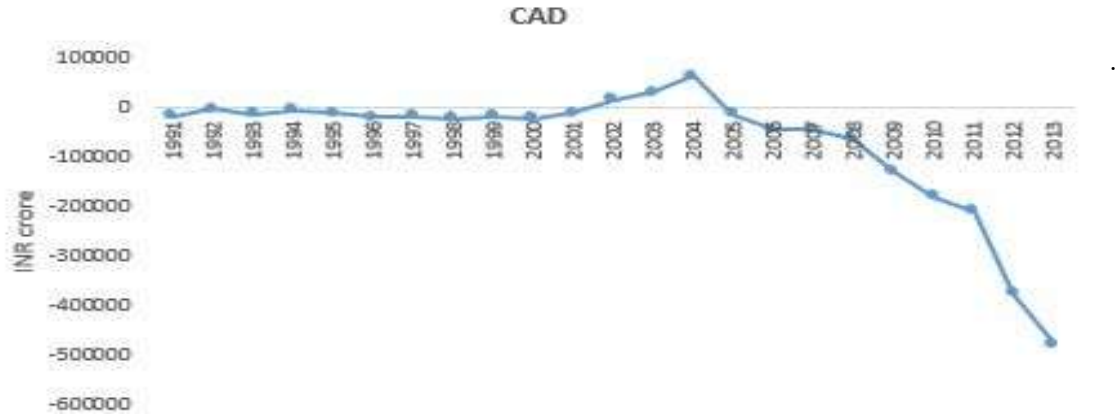
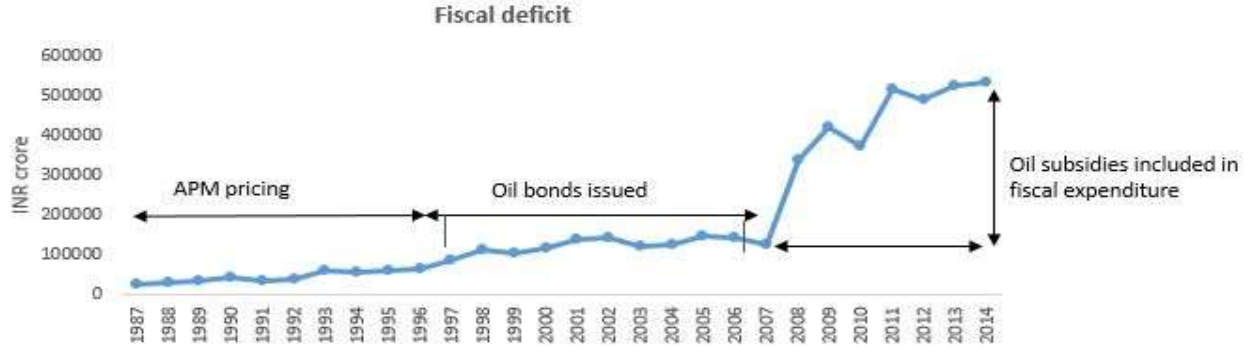


Figure 11 Source for data used in graph is RBI Handbook of statistics

Fiscal balance: Impact of subsidies

Volatility of crude oil prices will get reflected in the fiscal and revenue balances of the government since the petroleum prices are controlled by the government and heavy amount of subsidies are provided.

After the first significant oil shock in the 1970s, the Administered price mechanism was introduced and the prices of petroleum products were set and controlled by the government. The first attempt to **dismantle APM** was introduced in 1997-2002, however the prices of refined petroleum were not completely deregulated and an ad-hoc policy was followed owing to rise in global crude oil prices. The fiscal subsidies were reduced and **oil bonds** were introduced to meet the growing under recoveries. From 2008-09, it was decided that oil bonds



[59] http://www.teriin.org/projects/nfa/pdf/working-paper-No18-Oil-volatility.pdf

based subsidies would be terminated and the burden of subsidy would be met through **budgetary allocation**. **Cash subsidies** are provided by the government to OMC's to help them recover a part of their under recoveries.[60] Since,

Figure 12 Source for data used in graph is RBI Handbook of statistics

2007, government's share of under recoveries has increased and oil subsidies form a significant proportion of the total budget expenditure. Hence any shock in oil prices can result in increase in fiscal deficit. As can be seen from the graph below, the proportion of fiscal deficit has increased from 2007 till 2014 mainly due to an increase in subsidies that were provided.

The graph below shows subsidy as a percentage of total fiscal expenditure. APM was dismantled from 1997 and a part of the under recovery was borne by the Government in the form of oil bonds that were given to OMC's and upstream oil companies. Post 2007, the subsidy as a percentage of fiscal expenditure increased considerably since the mechanism of compensation through oil bonds was replaced with cash assistance provided by the Central government.

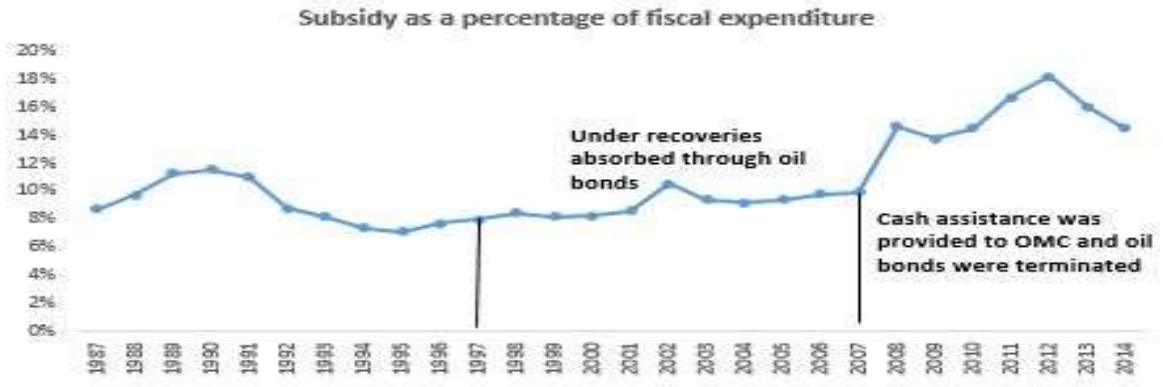


Figure 13 Source for data used in graph is RBI Handbook of statistics

The effect of under recovery sharing by different member is shown in the graph below. In 2004, no assistance was provided by Government and the entire amount of under recovery was borne by the upstream and oil marketing companies. Specific subsidies for different petroleum products is shown in *Appendix, Section 4*

[60] https://www.dnb.co.in/IndiasEnergySector2012/OilPrice.asp

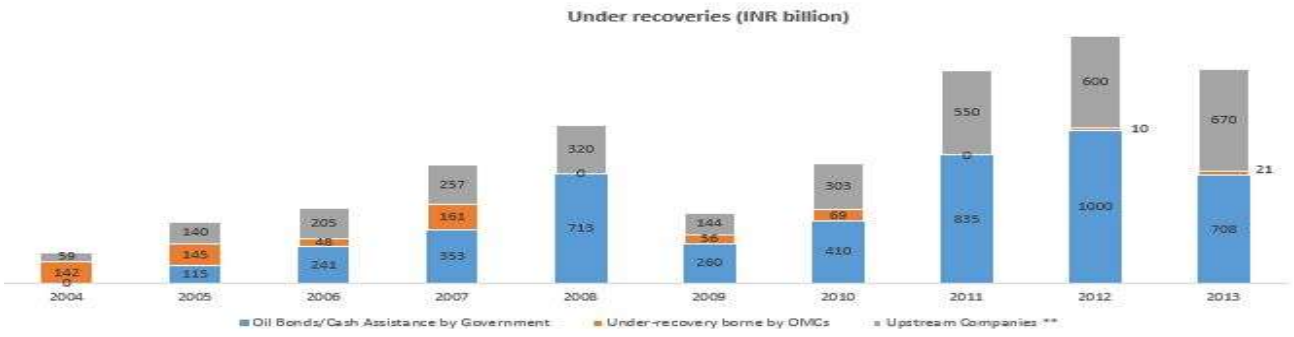


Figure 14 Source for data used in graph is Indiastat

Economic crisis of 1991

The year 1990-91 is considered as the most difficult year from India's balance of payments point of view. Several economists and their studies have projected an impending macroeconomic crisis of such a magnitude from the onset of the seventh planning commission which is in the mid 1980's. Official documents such as RBI's *Annual report & Report on Currency and Finance* had pointed out the likelihood of balance of payment crisis and the Economic Advisory Council's Report (1989)[61] provided details about the severity of the situation. Wadhwa (1990) had pointed out that – The economic advisory Council's Report in 1989 declared – " *By 1988-89, the balance of payments was under severe pressure and there was significant loss of foreign exchange reserves… sources of balance of payments pressure were from the trade account and invisibles and capital account*[62]*. A*ccording to Virmani (2001), the rising fiscal deficit and increasing over valuation and inadequate exchange rate adjustment also contributed to the rising imbalance.[63] The crisis resulted in a drastic fall in foreign exchange reserves to around $1 billion, a **downgrading of India's sovereign credit rating**, termination of foreign lending/assistance, **high inflation(approximately 12 percent**), large fiscal **deficit(approximately 10 percent)** and **current account deficit (3 percent)** and increasing external debt.[64]

India's Balance of Payments from 1990-1992

Parameters	1989-90	1990-91	1991-92
Merchandise			
A) Exports f.o.b.	28229	33153	44923
B) Imports c.i.f.	40642	50086	51417
I. Trade Balance (A-B)	-12413	-16934	- 6494
II. Invisibles Net	1026	- 433	4259
III. Current Account (I+II)	- 11387	-17367	-2235

[61] For instance, Economic Survey & RBI's Annual Report during 1986 – 87 to 1990 – 91.
[62] Wadhwa Charan (1990) – "Economic Advisory Council's Report on Economy – An Appraisal" – Economic & Political Weekly, Vol. XXV, No. 9 March 3, 1990, p. 447. loc.cit
[63] Virmani Arvind (2001) –" India's 1990-91 Crisis : Reforms, Myths and Paradoxes" - Planning Commission – Working Paper, No. 4 / 2001, PC – December 2001, p. 3
[64] Joshi Vijay & Little I. M. D. (1993) – "Macro – Economic Stabilisation in India, 1991 – 1993 and Beyond" – Economic & Political Weekly, Vol. XXVIII, No. 49, Dec.4, 1993, p. 2659.

IV. Capital Account (A to F)	11617	12895	9509
A)Foreign Investment net	683	184	340
B)External assistance, net	3090	3965	7395
C)Commercial Borrowings, net	2958	4034	3807
D) Rupee Debt service	-	-2140	-2785
E) NRI Deposits	4000	2756	1008
D) Other capital	886	4096	-256
V. Overall Balance (III + IV)	- 230	- 4471	7274
VI. Monetary Movements (VII + VIII + IX)	230	4471	-7274
VII. Reserves (increase - / decrease +)	1230	2293	-9351
VIII. IMF net	-1460	2178	2077
IX .SDR Allocation	0	0	0

Source: RBI Hand Book Statistics

As evident from the BOP, the trade deficit worsened from INR -12413 crore to INR-16934 crore and the invisibles decreased drastically from INR 1026 crore to INR -433 crore from 1989 till 1990. Hence, the Current Account deficit decreased from INR- 11387 crore to INR -17367 crore during the same period.

Major Macroeconomic parameters

Parameter	**Unit**	**1989-90**	**1990-91**	**1991-92**
Current Account Deficit (CAD) as a percentage of GDP	Percentage	2.3	3.1	0.3
Fiscal Deficit (As a percentage of GDP)	Percentage	7.33	7.85	5.56
Import Cover(in months)	Months	1.9	2.5	5.3
Short term debt (As a percentage of total debt)	Percentage	9.9	10.3	8.2
Debt-stock to GDP ratio	Percentage	-	28.7	38.7
Debt – Service Ratio	Percentage	-	35.3	30.2
Inflation (Annual Average)	Percentage	7.45	10.25	13.75
GDP Growth Rate	Percentage	6.7	5.6	1.4
Industrial Growth rate	Percentage	8.6	8.2	0.6

Source: RBI Hand Book Statistics

From the above table it is evident that

1. The CAD/GDP ratio in 1990-91 was 3.1 percent which was clearly unsustainable.[65]
2. The average inflation rate was higher than 7 percent in 1989-90 which increased to 10 percent the subsequent year and then touched nearly 14 percent in 1991.[66]

[65] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[66] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

3. The BOP crisis impacted the **Industrial sector** as well. The mean industrial growth **was 8 percent** in the second half of 1980's and it reduced to **0.5 percent in 1991**. This impact is evident from the GDP growth rate which was a **mere1.4 percent** in 1991.[67]
4. In 1989 and 1990, fiscal deficit was greater than 7 percent and the foreign exchange reserves were just sufficient to **meet the import requirements** for two and a half months.[68]
5. External debt was also high with parameters like GDP ratio and Debt service ratio being to the order of 39 and 30 respectively in 1991.[69]

Borrowings from IMF

Between July and September, 1990, India made significant borrowings from IMF resources to the extent of INR 1177 crores. Further borrowings of INR 1450 crore under the **First Credit Tranche (FCT)** and INR 1884 crore under modified **Compensatory and Contingency Financing Facility (CCFF**) were done in January 1991.[70] In July and September 1991, further borrowings were done amounting to INR 2217 crore and in October 1991, another loan of INR 5700 crore was approved by the IMF. Thus, all together between July 1990 and December 1991, a total of INR 7033 crore was taken from IMF.[71]

Period / Month	Facility	INR Crore
July – Sept. 1990	RT	1177
January 1991	FCT	1450
January 1991	CCFF	1884
July – Sept. 1990	CCFF	2217
November 1991	UCT	305
Total		7033

Source: Government of India – Economic Survey 1992 – 93

Adapted from the article (http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf)

Causes of the crisis

The major reasons for India's Balance of Payments crisis can be summarised as follows:

External reasons

Break-up of Soviet Bloc

[67] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[68] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[69] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[70] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[71] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

A substantial portion of India's trade with the Soviet Bloc was directed towards import of capital goods and defence equipment were financed by long term credits. Hence, rupee trade with the Soviet Bloc was an important element of India's trade in 1980's.[72] However, the political unrest in the former USSR translated into cancellation of several rupee payment agreements in 1990-91. For example, the rupee payment agreement with former GDR ended in December 1990 with German unification. There was also a decline in exports to Eastern European countries during the same period. In 1980, the exports to Eastern European countries constituted 22.1 percent of total exports and 19.3 percent in 1989. However in 1990 and 1991, it declined to 17.9 percent and 10.9 percent respectively.[73]

Iraq-Kuwait War

Crude oil prices rose sharply between July 1990 and October 1990 from a value of $15 per barrel to $ 35 per barrel on account of the Gulf war crisis which was triggered by **the invasion of Kuwait by Iraq**. The impact of this oil shock was significant particularly for India since Iraq and Kuwait constituted the major sources of oil supply and the ongoing war forced India to buy crude oil from the **spot markets.** These spot market purchases were short term but these had to be backed by long term contracts at higher prices to ensure uninterrupted supply. Hence, the **oil import bill increased by around 60 percent in 1990-91** and remained 40 percent higher than the 1989-90 level[74]. As pointed out in Economic Survey 1991-92- "*Beginning in September 1990, the sharp rise in imports of oil and petroleum products resulted in the immediate loss of forex reserves*."[75] The POL imports were INR 499 crore ($ 287 million) in per month between June-August 1990 and this increased to INR 1221 crore ($ 671 million) in the next six months.[76] This sharp rise in POL imports resulted in a rise **in trade deficit from a value of INR 619 crore** ($356 million) per month between June-August 1990 to INR 1229 crore ($ 677 million) in the next six months.[77] Apart from this, India's domestic oil production of oil declined owing to **civil disturbances in Assam** resulting in further dependence on oil imports. Due to the ongoing war, remittances of Indian migrants from the Gulf region declined and exports to these countries also dipped owing to the UN trade embargo. The resulting **loss from the export ban** was calculated as **INR 500 crore** ($280 million).[78]

Declining growth in trading partners

During 1988-91, the world growth declined from an average of 4.5 percent in 1988 to 2.25 percent in 1991 and particularly for the US, it declined from 3.9 percent in 1988 to 0.8 percent in 1990 to -1 percent in 1991.

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[72] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[73] . Ibid, p. 4. http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[74] Ibid, p. 5. http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[75] http://indiabudget.nic.in/es1991-92_A/0%20Economic%20Survey%201991-92%20Index.pdf, taken from the article http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[76] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[77] Government of India (1992) – Economic Survey 1991 – 92 – Ministry of Finance, Economic Division, New Delhi, p. 6.
[78] Ibid, p. 6. http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

US was India's single largest export destination and this decline in growth translated into a slowdown in India's export growth to 4 percent in 1990-91.[79]

Internal reasons

Loss of Investor confidence

The **widening current account deficits** and reserve loses contributed to **low investor confidence** which in turn resulted in reduction of capital account. This eventually resulted in **downgrading of India's credit rating**. For example, in March 1991, the International Credit Rating Agencies (Standard & Poor's and Moody's) reduced India's long term foreign debt rating to the bottom of investment grade and further in May(Standard & Poor) and June(Moody) 1991, the credit rating was given below investment grade.[80] Due to the downgrading of investor confidence, commercial bank financing became hard to obtain and creditors were not willing to roll over maturing loans resulting in cash outflows on short term external debt.[81]

Fiscal Indiscipline

The Economic Survey 1991-92 has pointed out that during the 1980's most of the important indicators of fiscal imbalance were on the higher side. These parameters were budgetary deficit, revenue deficit, monetized deficit and gross fiscal deficit. The gross fiscal deficit was 8 percent of GDP in 1985-86 compared to 6 percent in the beginning of 1980's and 4 percent in 1970's.[82]The report also mentions that there was "*excessive deficit financing"* defined as Net RBI credit to government that resulted in inflation. [83] According to Joshi and Little (1993), the **marked deterioration in the public finances** in the second half of 1980s was the **prime reason** for **persistent current account deficits** and inflationary pressures by the end of 1980's.[84] A study conducted by Pagaria (2004) mentioned that combined fiscal deficits at both central and state levels that averaged at 8 percent in the first half of 1980's increased to nearly 10 percent by the second half.[85] Similar large deficits of this propensity led to a build-up of a high amount of debt with interest payments amounting for a substantial proportion of government revenues. This eventually increased the Current Account Deficits which kept

[79] Cerra Valerie & Saxena Sweta Chaman - (2002) – "What caused the 1991 currency crises in India ?" - IMF Staff Papers, Vol. 49, No. 3, September 2002, p. 403.
[80] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[81] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[82] Government of India (1992) – Economic Survey 1991 – 92 – Ministry of Finance, Economic Division, New Delhi, Chapter 2, pp. 2 – 3.
[83] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[84] Joshi Vijay & Little I. M. D. (1993) – "Macro – Economic Stabilisation in India, 1991 – 1993 and Beyond – Economic & Political Weekly, Vol. XXVIII, No. 49, Dec.4, 1993, p. 2659.
[85] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

increasing steadily until it reached 3.5 percent of GDP and 43.8 percent of exports in 1990-91.[86] The inevitable result of these cumulative effects was the financial crisis of the 1991.

Rise in External Debt[87]

In the context of rising Current Account Deficit in the late 1980's was the method by which external debt was financed. Analysing the components of external debt, we can arrive at some noteworthy conclusions. The **grant component** in the overall assistance showed a steady decline from a value of 21 percent in the later half of 1970's to 16 percent in the earlier half of 1980's to 11 percent from 1985-1991.[88] There was a marked reduction in the flows of concessional assistance to India, from the World Bank Group. In 1980's disbursements on concessional terms accounted for 89 percent of assistance to India from multilateral sources and it was 35 percent in 1990.[89] This decline in concessional assistance resulted in an **increase in average cost of external borrowing.** The average **maturity period of loans** decreased from 40.8 years to 29.1 years during 1980 to 1990[90]. During this period, the average maturity period for External Commercial Borrowings (ECB's) was five years and for NRI deposits it was one year.[91] The external debt was channelled for financing the government's deficit and most of the external debt was taken from private sources like external commercial borrowings (ECB's) and NRI deposits which were much costlier.[92] Two main indicators of a rising BOP crisis with respect to India's external debt were the **short term debt to total debt ratio** and the **short term debt to foreign currency ratio**. The short term debt to total debt ratio increased from 6.1 percent in March 1989 to 10.2 percent in March 1991 and the short term debt to foreign currency ration increased from 0.9 percent in March 1989 to 3.8 in March 1991. The condition of external debt was also worsening since it increased from INR 194.7 crore in 1980-81 to INR 1229.5 crore in 1990-91.[93] Total debt expressed as a percentage of GDP was 13.7 percent in 1980-81 which increased to 21.4 percent in 1990-91.[94] Another important parameter to note was the **debt service as a percentage of exports** which increased from 9.3 percent in 1980 to 26.8 percent in 1990 as a result of the rise in external borrowings.[95] Thus, the BOP crisis was a result of these cumulative effects of servicing the current account deficit from external borrowings.

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[86] Pangariya Arvind (2004) – "India in the 1980s and 1990s: A Triumph of Reforms" – IMF Working Paper, No. 4 / 43, March 2004, p. 22.
[87] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[88] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[89] Jalan Bimal (1992) – "Balance of Payments 1956 to 1991" in Jalan Bimal (Ed) – The Indian Economy Problems and Prospects – New Delhi, Penguin Books India, p. 188.
[90] Ibid, p. 188 in http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[91] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[92] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[93] Government of India (1993) – Economic Survey 1992 – 93, Ministry of Finance, Economic Division, New Delhi, p. 116.
[94] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[95] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

Overvaluation of Exchange rate[96]

According to Joshi & Little (1993), "From 1982-1985, the escalating Current Account Deficit was the result of complete stagnation of exports which was mainly on account of inappropriate exchange policy. The real exchange rate was allowed to appreciate by 15 percent from 1979-81 and it remained the same for the next four years".[97] Similar studies conducted by Virmani (2001) proved that the **most evident indicator of overvaluation of rupee was the depleting foreign exchange reserves**. The average reserve usage increased from 0.1 percent of GDP in the initial half of 1980's and to an average of 0.3 percent of GDP in the second half. This served as an evidence for overvaluation of rupee. The external shocks resulted in the deterioration of both the current account and the 'normal capital flows in 1990-91. The difference between CAD and the normal capital flows increased to 1.5 percent in 1990-91. Hence, this resulted in a severe overvaluation of the rupee.[98]

Policy reforms

Fiscal reforms[99]

A major effort on the part of the government was to restore fiscal discipline. The reason being that greater the fiscal deficit, larger is the government borrowing from RBI. Greater the amount of borrowing, higher is the amount of money supply, and higher is the rate of inflation. Worsening of Fiscal deficit is directly linked to Balance of Payments crisis. Expansion in money supply and increase in aggregate demand results in higher import demand. On the contrary, high domestic inflation results in costs of production and reduces the competitiveness of exports resulting in trade deficit. A decrease in exports and increase in imports tantamount to decrease in fiscal revenue and GDP and thereby an increase in fiscal deficit. Fiscal deficit leads to external borrowings and an increase in debt leading to higher costs of debt servicing leading to lowering of sovereign credit rating, finally leading to capital flight with investors taking their cash out of the economy. The Budget for 1991-92 envisaged a reduction in fiscal deficit by *nearly two percentage points of GDP from 8.4 percent in 199-91 to 6.5 percent in 1991-92.*[100]The initiatives for rectifying the fiscal imbalances are listed down as follows:

- Abolition of sugar subsidy[101]

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[96] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[97] Joshi Vijay & Little I. M. D. (1993) – "Macro – Economic Stabilisation in India, 1991 – 1993 and Beyond"– Economic & Political Weekly, Vol. XXVIII, No. 49, Dec.4, 1993, p. 2659.
[98] Virmani Arvind (2001) – "India's 1990-91 Crisis: Reforms, Myths and Paradoxes" - Planning Commission – Working Paper, No. 4 / 2001, PC December 2001, p. 25.
[99] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[100] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[101] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

- Termination of Cash Compensation support for exports[102]
- Reduction in fertilizer subsidy[103]
- Disinvestment of a part of the government's equity holdings in public sector holdings.[104]
- Reform the current Tax collection mechanism and inculcating major recommendations of Tax reforms committee headed by Raja Chelliah to increase tax collections.[105]

Monetary and Financial sector reforms[106]

Prior to the reforms introduced in 1991, government borrowing was done at administered rates and the rates for commercial sector was at a higher rates. The reform mandated that market related rates must apply to government borrowings as well and a suitable example to this was the 364 days treasury bills.[107] The lending rates were standardized to two schemes- the first one being the general rates and the second one being the concessional rates for weaker sections of the society.

Monetary policy reforms looked at **reduction in statutory liquidity ratio (SLR) and the Cash Reserve Ratio (CRR)** in tandem with the recommendations **of Narasimham Committee Report, 1991.** It was decided to reduce **SLR from 38.5 percent to 25 percent** in a span of three years and **CRR to 10 percent** in a time span of four years.[108]

Reforms in the banking sector included measures like inducing greater competition among public sector and foreign sector banks, elimination of administrative constraints, liberalizing branch licensing policy for rationalizing and new accounting norms regarding provisions for bad debt and asset classification in line with the Narasimham Committee.

Reforms in the capital market included abolition of Office of the **Controller of Capital Issues and Capital Issues (Control) Act**, **1947**.[109] Henceforth companies did not require a government approval for approaching the capital market and companies issuing securities were given freedom to fix the issue price and premium and were also permitted to approach international capital market after the issue of **Global Depository Receipts (GDR) and American Depository Receipts (ADR)**.[110] In line with the suggestions of the Narasimham Committee, SEBI was given statutory recognition.

[102] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[103] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[104] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[105] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[106] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[107] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[108] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[109] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[110] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

Industrial Policy Reforms[111]

The New Industrial Policy was introduced on 24 July 1991. The salient elements of the policy are listed below.

- **Abolition of Industrial licensing[112]**: 80 percent of the industry was taken out of the ambit of licensing framework. With the exception of 18 industries where strategic or environmental concerns are very important, the mandate of licensing requirement was removed.
- **Repealing of the Monopolies and Restrictive Trade Practices Act (MRTP)[113]:** Following the removal of this Act, large companies did not require prior approval for diversification or capacity expansion.
- **Greater participation by private sector[114]:** Private companies were allowed to invest in core and basic industries which were earlier reserved exclusively for the private sector. Previously, 17 industries were reserved for public sector and these were reduced to 8 industries.

Trade Policy reforms

Main features of the trade policy reforms are listed below

Free Imports and Exports

In July-August 1991, a freely tradable import license named "Exim Scrip" was introduced and for most exports a standardized rate of 30 percent of Exim Scrips was made applicable[115]. With the introduction of Exim Scrips, the existing system of **Cash Compensatory System (CCS)** was **abolished**. Later, in March 1992, Exim Scrips was replaced with **Liberalized Exchange Rate Management System (LERMS).[116] Special Import License (SIL)** was provided for star exporters and a trade policy in April, 1993 removed 146 items from the negative list of exports. Further reforms in subsequent years were carried out- for instance in April 1994, the scope of SIL was expanded to include second hand capital goods and 78 consumer goods were included in the freely importable category following the import policy of April 1995.[117]

Reforms in Tariff structure:[118]

Import tariffs were reduced from 300 percent in the pre-reform period to 150 percent and further reduced in a phased manner in the subsequent budgets. Quantitative restrictions were removed from imports and in 2001- quantitative imports on all imports were removed.[119]

Trading Houses and Concessions[120]:

[111] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[112] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[113] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[114] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[115] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[116] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[117] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[118] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[119] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[120] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

Government allowed to set up trading houses with 51 percent foreign equity and these trading houses were given the permit for self –certification that allowed duty free imports for exports.[121] Under the Exim policy several concessions were introduced to liberalize imports and encourage exports- for instance, the customs duty was reduced to 10 percent and reduction in duty rates for critical inputs for information and technology sector.[122]

Encouraging Foreign Investment[123]

In 1991, Government introduced a specified list of technology intensive sectors where automatic permission was granted for **Foreign Direct Investment (FDI)** to the extent of 51 percent of foreign equity. A **Foreign Investment Promotion Board (FIPB)** was set up to discuss with international firms and approve direct foreign investment in certain areas of priority. Measures were introduced to promote **Foreign Institutional Investment (FII).**

Standardization of Exchange Rate Policy[124]

At the onset of the 1991 crisis, one of the measures taken to mitigate the impact of BOP crisis was the devaluation of rupee. To bridge the gap between the real and the nominal exchange rates that incurred due to rising inflation and to make exports competitive, in July 1991, the rup**ee was devalued by around 20 percent** against a number of other foreign currencies namely the US dollar, the French Franc, the Japanese Yen, the British Pound and the Deutschmark.[125] The system **of Liberalized Exchange Rate Management System (LERMS)** was introduced in 1992 to introduce **partial convertibility of rupee** where in 40 percent of foreign exchange earnings were mandated to be surrendered to the official exchange rate and 60 percent to be converted at market rate.[126] For the import of essential items like fertilizers, life -saving drugs, crude oil and petroleum products the foreign exchange rate at the official rate was used and for all other items, foreign exchange at market rate was used. The idea behind this **dual exchange system** was to attain self-reliance through boosting exports. In March 1993, based on recommendations from High Level Committee on BOP crisis, chaired by C. Rangarajan, the dual exchange rate policy was removed and the 60:40 ratio was replaced with complete convertibility of 100 percent.

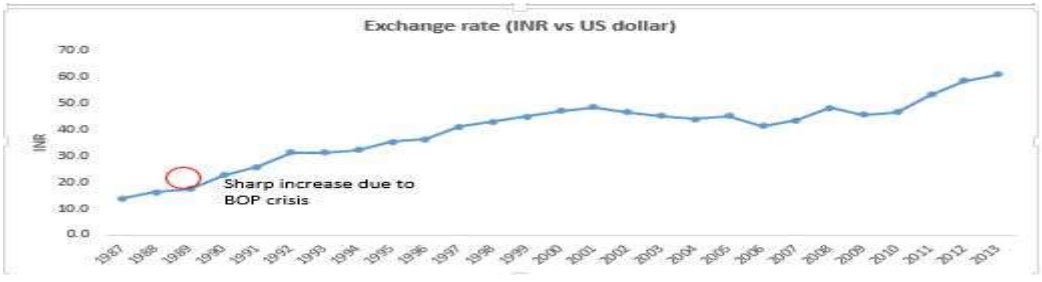

Figure 15 Source of Data for graph is RBI Handbook of statistics

[121] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[122] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[123] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[124] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[125] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[126] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf

Capital Account Convertibility[127]

Report of the **Committee on Capital Account Convertibility (CAC)** submitted by Chairman- S.S Tarapore defined CAC as "*the freedom to convert local financial assets into foreign financial assets and vice-versa at market rates."*[128]The Committee had maintained that CAD should not exceed 1.6 percent of GDP and the total fiscal deficit of the Centre and States should be approximately 3.5 percent of GDP.[129] Three preconditions introduced for achieving CAC were strengthening of financial sector, mandated inflation and fiscal consolidation.

After few years, another committee under the Chairmanship of S.S. Tarapore produced another report on Fuller Capital Account Convertibility (FCAC) on 31st July 2006.[130] The Committee provided a five year period towards fuller convertibility in three phases.

Current scenario of declining oil prices**[131]

On 14 July, 2015, Iran reached an agreement with the Global on its Nuclear Programme and this historic deal is likely to be positive news for India and Indian companies. It is expected that India's finances will strengthen and the volatility of the rupee will decrease owing to tightening of monetary policies in US.

According to Ashutosh R Shyam, the following would be the key impacts of the deal on Global Oil Prices.

1. Lifting of the embargo on oil trade with Iran will lead to higher supply of oil resulting in lower import prices for import dependent countries like India.
2. Experts estimate that Brent Crude prices will drop to about $40 per barrel with the result of the predicted over supply. This over supply will result in incremental supplies by 0.5-0.8 million barrels per day.

Specific Impact on Indian Government and Oil Companies[132]:

1. Lower International Brent crude prices will result in lower imports and government subsidy bill. For every dollar drop in oil prices reduces Government's subsidy burden by $1 billion (INR 6,300 crore).
2. Positive effects for Indian oil refiners as it could lead to drop in working capital.

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[127] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[128] https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/72250.pdf, taken from the article, http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[129] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[130] http://shodhganga.inflibnet.ac.in/bitstream/10603/27125/15/15_chapter%206.pdf
[131] http://articles.economictimes.indiatimes.com/2015-07-15/news/64449880_1_halkbank-oil-imports-crude-prices
[132] http://articles.economictimes.indiatimes.com/2015-07-15/news/64449880_1_halkbank-oil-imports-crude-prices
*Director of CRISIL Research, Rahul Prithiani
**Adapted from an economic times article published on 15 July 2015, written by Rachita Prasad, Sanjeev Choudhary and Ram Sahgal and Ashutosh R Shyama. Link for the article-http://articles.economictimes.indiatimes.com/2015-07-15/news/64449880_1_halkbank-oil-imports-crude-prices

3. According to CRISIL estimates, lifting of Iranian oil embargo will result in a price cut of $ 3/barrel and reduction in under recovery by INR 3600 crore and increase in upstream realisations by INR 1200 crore.*
4. Credit period provided is 90 days against other Gulf countries that provide 30 days of credit. This additional 60 days of credit can improve the GRM (Gross Refining Margins) as much as $1/bbl.*

NET IMPORTER – SCENARIO OF VENEZUELA

A Brief History

Venezuela is among the top 10 oil producing and exporting nations of the world and a founder member of the Organization for Petroleum Exporting Countries (OPEC). The development of oil drilling and refining industry of Venezuela began around 1910. Export of oil figured in the economy of the country by the end of 1918 and by 1928, Venezuela was the world's leading oil exporter. As per OPEC's Annual Statistical Bulletin, Venezuela has the world's largest proven oil reserves at 296.5 billion barrels.[133]

Today Venezuelan economy is highly dependent on oil with oil comprising of 95% of export earnings, 40 % of government revenues and about 11% of GDP[134]. Hence sharp decrease in oil price leads to economic contraction and high oil prices have encouraged the socialist government to increase welfare expenditure. In 2014 Venezuela recorded a GDP of $510[135] billion with an estimated 4%[1] contraction.

Dutch Disease

Dutch disease is a term coined in the 1977 to refer to the distortion that occurs to an economy due to excessive dependence on commodity exports. When there are substantial export earnings from one commodity or sector it results in sudden inflow of foreign currency. This leads to increased demand of local currency making the local currency stronger. A strong local currency would make the other sectors less competitive in the international market. There is an appreciation of the real exchange rate and imports become more economically viable than domestic production.

In the period of the oil boom that began at the end of 2003, the Venezuelan government under President Chavez deliberately maintained an overvalued exchange rate. This persistent overvaluation distorted the country's trading sector. Exports of fuel increased substantially but by 2008, exports of all other commodities collapsed. Imports swamped the country, killing domestic production and making the economy heavily dependent on oil. For Venezuela, in nominal terms exports have grown 410 % since 1998 and imports have grown 130%.[136]But in real terms, exports have actually gone down by 40% whereas imports have almost doubled.[137]

The graph below shows the trend of exports and imports across the period from 2000 – 2012. It is very clear that export as % of GDP is showing a declining trend whereas import is showing an increasing trend.

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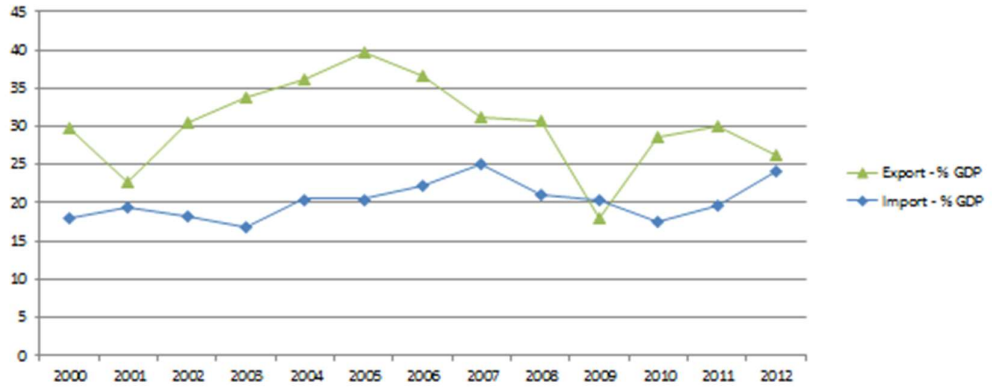
[133] https://en.wikipedia.org/wiki/Oil_reserves_in_Venezuela

[134] CIA Fact Book - https://www.cia.gov/library/publications/the-world-factbook/geos/print/country/countrypdf_ve.pdf

[135] World Bank - http://www.worldbank.org/en/country/venezuela

[136] http://www.americasquarterly.org/node/2436

[137] http://www.americasquarterly.org/node/2436



Source of Data– The GlobalEconomy.com, World Bank

Oil Subsidies and its Effect on PDVSA

Oil subsidy in Venezuela happens mainly through two channels – retail oil subsidy for domestic market and oil supplied to other Latin American and Caribbean nations at concessional rates.

Retail Oil Subsidy

Venezuela has the lowest retail oil price in the world at $0.02/litre[138] or $0.06/gallon which has been frozen for the past 17 years. The retail price of oil does not even cover the breakeven cost of supply which is about 1.62 per gallon or 0.58 per litre.[139] And this subsidy costs is borne by PDVSA, the national oil company. Comparable oil producing countries like Russia and Indonesia have retail prices at $2.03 and $2.61 per gallon[140].

A simple calculation gives an estimate of the loss incurred by PDVSA on account of this highly subsidized gasoline. As per a report in forbes.com[141], Venezuela domestic consumption of oil is around 800,000 bpd or 290 million barrels per year. This includes the oil that is smuggled out of the country to take advantage of the steep price difference. The loss incurred is in two parts – as subsidy from supply cost and foregone income from lost profit. Cost incurred by PDVSA to supply refined gasoline is $1.62/gallon or $70/barrel. This means a loss of $1.55/gallon or approximately $15 billion per year. Taking Indonesia as a comparison, and applying the retail price of Indonesia ($2.61) as a benchmark, the loss due to forgone profits would amount another $10 billion per year making a total loss of $25 billion. PDVSA also needs to import around 80,000 bpd of refined products as the refining capacity of Venezuela is not sufficient to meet domestic demand. These imports are

[138] http://www.globalpetrolprices.com/Venezuela/gasoline_prices/
[139] http://www.forbes.com/sites/christopherhelman/2014/02/20/cheap-gasoline-why-venezuela-is-doomed-to-collapse/2/
[140] http://www.globalpetrolprices.com/Venezuela/gasoline_prices/
[141] http://www.forbes.com/sites/christopherhelman/2014/02/20/cheap-gasoline-why-venezuela-is-doomed-to-collapse/2/

done at higher market prices but retailed at subsidized rates. With all of this put together PDVSA incurs a loss of $50 billion[142] per year on account of retail subsidy.

The other major implication of low gasoline price is that the domestic consumption increases and reduces the quantity of oil available for export at market prices. This low gasoline price has made oil smuggling a thriving business. Citizens buy gasoline at domestic rates and sell it across the borders for a profit. According to Rafeal Ramirez, President of PDVSA around 100,000[143] barrels per day of gasoline is estimated to be smuggled from the country.

Petro Caribe

In addition to the heavy subsidy given to the Venezuelan's, the country has energy agreements with other Latin American countries for concessional supply of oil called the Petro Caribe. Petro Caribe is an oil alliance of many Caribbean states with Venezuela to purchase oil on preferential terms of payment. This was launched in June 2005 by the then President Hugo Chavez. Under terms of Petro Caribe, the member countries purchase oil from Venezuela and pay only a portion of the bill upfront within a period of 90 days. The amount to be paid upfront depends on the market price of oil, with more lenient upfront payment if the oil prices are high. The rest of the bill is treated as a loan for a period of 23 to 25 years with an interest rate of 1 – 2 %. Between 2011 and 2013, Venezuela's loss due to these deferred payments is estimated to be $2.3 billion[144] each year. Through Petro Caribe, PDVSA supplies heavily subsidized oil to member countries and not all repayments are done in cash. The Dominican Republic pays back Venezuela with 'black beans' and Cuba returns via services like health professionals and athletic trainers. But with the economy weakening, the shipments through these arrangements are coming down.[145]

Petro Caribe is more of a political instrument designed by the Chavez regime to gain influence over the Latin American region. This again exemplifies gross mismanagement of national resources by the government for political advantage.

The scheme affects the economy of Venezuela in multiple ways. Till 2013, Venezuela had shipped 232 million[146] barrels of oil through Petro Caribe. The deferred payment arrangement of this scheme impacts the foreign exchange reserves and in turn impacts imports. Depleting foreign exchange reserves has adversely impacted many industries as they are unable to procure dollars required to source their imports.

Petro Caribe commitment reduces the quantity of oil available for sale in international markets. Out of the estimated production of 2.5 million bpd, 200,000[147] bpd is allocated for Petro Caribe with 100,000 bpd shipped

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[142] http://www.forbes.com/sites/christopherhelman/2014/02/20/cheap-gasoline-why-venezuela-is-doomed-to-collapse/2/

[143] http://www.bnamericas.com/news/petrochemicals/venezuela-fuel-prices-to-rise-as-subsidies-sting-pdvsa

[144] http://www.economist.com/news/americas/21621845-venezuelas-financing-programme-leaves-many-caribbean-countries-vulnerable-single-point

[145] http://www.forbes.com/sites/christopherhelman/2014/02/20/cheap-gasoline-why-venezuela-is-doomed-to-collapse/2/

[146] http://www.csmonitor.com/World/Americas/2013/1115/Venezuela-s-regional-energy-program-Petrocaribe-wobbles

[147] http://www.ft.com/cms/s/0/0cc530b6-9b2f-11e4-882d-00144feabdc0.html#axzz3k8kGlRYy

to Cuba. Venezuela has oil-for-service arrangement with Cuba where Cuba provides health care services for Venezuelans in exchange for oil. Petro Caribe subsidized oil program has a negative impact on PDVSA's cash flow. The dollars lost as forgone income to Petro Caribe by Venezuela is estimated to be $44 billion[148].

The cost of these subsidies is absorbed by PDVSA through heavy borrowing which currently stands at $43 billion[2]. China is the biggest creditor of Venezuela and has advanced $50 billion in loans.

Oil for Cash Agreement with China – Venezuela entered into an oil-for-cash agreement with China in 2007 during the President ship of Hugo Chavez. As per the agreement, China would lend money to Venezuela at the rate of 6% per annum and it would be repaid by Venezuela in oil at market rates. This would mean that more oil would get shipped when the price of oil is low. Though this does not result in any dollar loss to Venezuela as the oil sold is pegged at market rates, this would definitely create cash flow problems for Venezuela as a committed volume of oil has to be shipped to China to service the debt thus reducing the oil available for export to other countries for cash. The agreement with China acts like a pre-paid oil account. Under the initial agreement Venezuela was expected to ship a minimum of 330,000 bpd of oil but in November 2014, this requirement was removed[149].With the amendment, Venezuela can ship a lower quantity thereby increasing the tenure of repayment. This is expected to improve Venezuela's cash flow as more oil would be available for sale to rest of the world. Since 2007, China has extended $50 billion[150] of loans to Venezuela under the oil-for-cash agreement of which $20 billion has been repaid.

China sees Venezuela as a strategic economic and political partner. China's main interest in Venezuela is the natural resources available in the country and the large reserves of oil which is essential for the growing Chinese economy. China's desire to be less dependent on the Middle East for oil requirements has led to the fast developing economy develop stronger ties with resource rich Venezuela. Venezuela's agenda to diversify its oil exports and reduce its dependency on US made it congenial for China. China is increasing its stake in Venezuela by entering into refinery infrastructure projects[151].

Venezuela's refining infrastructure is not sufficiently developed to process crude oil and hence Venezuelan government purchased a major US refiner CITGO. Some US refiners have made huge investments in the equipment and machinery for refining Venezuela's heavy crude and in return they procure crude from Venezuela at discounted rates. For example, West Texas Intermediate procures Venezuelan crude at 25% discount.[152]

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[148] http://www.ft.com/cms/s/0/0cc530b6-9b2f-11e4-882d-00144feabdc0.html#axzz3k8kGlRYy

[149] http://www.eluniversal.com/economia/141126/venezuela-china-amend-loans-agreement-repaid-with-oil

[150] http://www.wsj.com/articles/china-loosens-debt-terms-for-venezuela-1416858616

[151] http://thediplomat.com/2014/06/why-china-should-worry-about-venezuela/

[152] Google Books - Imported Oil and US National Security

Socialist Expenditure and Socialist Governance

President Hugo Chavez (1999 – 2013) and his successor Mudaro promoted what is known as the 21st Century Socialism. The major expenditure of the government was aimed towards poverty alleviation through consumption. Hence the oil revenues were spent in socialist expenditures without any allocation for a stabilization fund as was done by other oil economies.

High government interference in the economy in the form of price controls, import barriers and nationalization of corporations has led to a flight of capital as companies do not find the environment conducive for conduct of business. The FDI inflow to the country is around $7.0 billion[153] Venezuela is ranked 176th (only above Cuba and North Korea) in the Index of Economic Freedom 2015 and categorized as a repressed economy[154].

Oil revenues finance 95% of Venezuelan government expenditure.[155] The government has built mechanisms for off-budget money transfers from PDVSA like National Development Fund FONDEN and Fund for the Economic and Social Development FONDESPA which were designed to put the oil resources of the country to the service of the country and reduce economic inequalities. National Development Fund (FONDEN) was established through the reform of Central Bank Law of 2005. This fund amassed $110 billion[156] in oil revenues from PDVSA and the Central Bank of Venezuela. This resource siphoning is crippling the capacity of PDVSA for capital investment required for the development of the industry. Hence Venezuela is left with exporting primary, upstream petroleum products that have lower value rather than downstream processed petroleum products. The insufficient refining capacity of Venezuela is resulting in the import of refined petroleum products needed for the domestic market. Reducing investment in the oil sector is also leading to reduction in production in spite of the country having the largest known oil reserves in the world. Investment by PDVSA is less than 1% of its revenues where as it is between 2% and 3% for other big oil companies. Of the planned expenditure of 18.36 billion USD, PDVSA invested only about 12 billion.[157]

The production data over the years shows that the level of production is stagnating at levels below 2,500 billion barrels per day despite Venezuela known to have the largest proven resources of crude oil.

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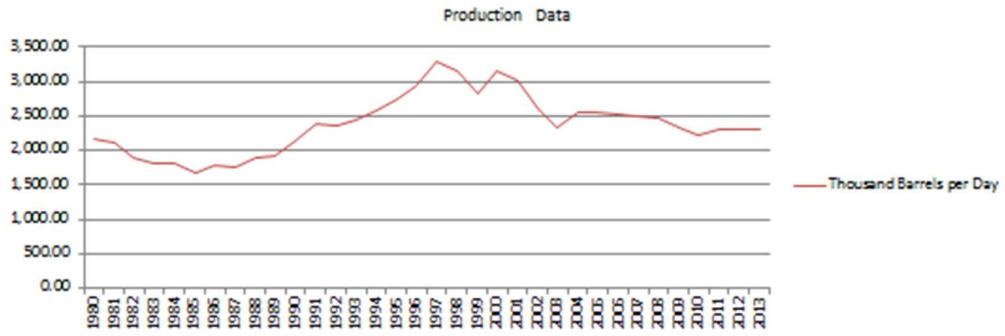
153 http://www.heritage.org/index/ranking

154 http://www.heritage.org/index/ranking

155 http://www.latimes.com/world/mexico-americas/la-fg-venezuela-president-economy-20150105-story.html

156 http://www.eluniversal.com/economia/140125/venezuela-has-failed-to-put-aside-money-from-oil-revenue-surplus

157 http://www.eluniversal.com/economia/120123/venezuelas-declining-oil-production-mirrors-low-investment



There were attempts towards diversifying the economy and the setting up of stabilization funds (**FIEM** – Fund for Macroeconomic Stabilization) from the oil revenues. But FIEM soon became dysfunctional as it became more discretionary.

High public expenditure and socialist economic policies have resulted in high inflation which is hovering above 60%.[158]

Windfall oil revenues were used by President Hugo Chavez to consolidate his political base through high welfare expenditure, to increase Venezuelan influence across Latin America and Caribbean through initiatives like Petro Caribe and other joint regional initiatives[159] and building up the military capability of the country. The social spending aimed at developing a voter base has gone into education, healthcare and subsidy on food and energy. Social spending in 1998 was $7.5 billion, and went up to $25.1 billion in 2006 excluding the social expenditure routed through PDVSA[160].

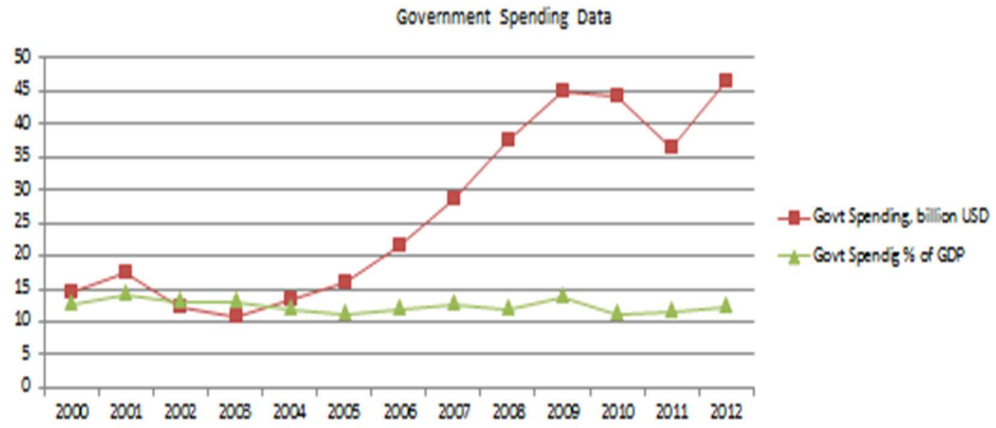
Venezuelan government used the windfall revenues received from high international oil prices from 2004 to 2007 to implement a slew of social programs and services known as 'misiones' in the fields of education, health, nutrition, environment, sports, culture, housing and other specific targeted programs for street children and adolescents. Such social spending has shown effect in the form of declining poverty rates and improved ranking in the United Nations Development Programme's human development index from 68/177 in 2002 to 58/182 in 2007[161].Similarly, adult literacy rate also improved during this period from 93.1% to 95.7%[162]. But as with any populist social spending measures undertaken by governments there is no consensus on the effectiveness of these programs as to whether they are just alleviating the conditions of poverty or addressing the root cause of the problem. But lack of investment in the oil sector and siphoning of profits from the oil sector into extravagant socialist projects have hampered the development of the industry. This is evident from

[158] http://www.bloomberg.com/news/articles/2015-07-15/venezuela-s-772-inflation-means-default-may-come-a-lot-sooner
[159] The Venezuelan Economy in the Chavez Years(Mark Weisbrot, Luis Sandoval, 2008)
[160] Imported Oil and US National Security (Keith Crane, Andreas Goldthau, Michael Oman,Thomas Light, Stuart Johnson)
[161] Venezuela: Issues in the 111th Congress, Congressional Research Service, Mark P Sullivan
[162] Venezuela: Issues in the 111th Congress, Congressional Research Service, Mark P Sullivan

the almost stagnant or declining production levels as is evident from the production level data presented earlier.

A study done to understand the income redistribution in Venezuela makes it clear that most income re-distribution in Venezuela takes place through social spending. The study finds that per capita government expenditure and per capita social expenditure has remained stable through the period from 1979 to 2003, with exceptions around the time of oil booms. Government expenditure as a percentage of GDP remained at 22% from 1970 to 2000 with two spikes in between coinciding with oil booms[163].The real social expenditure per head over the thirty year period is found to be more stable than the GDP per capita and total expenditure per capita. The study concludes that social expenditure in Venezuela is remarkably stable in the long run though there are noticeable changes in the short term due to its dependence on GDP. But the fiscal priority on social spending has sustained social expenditure per head even during unfavourable shocks[164]. This stable social spending could indicate two consequences. One, that the social expenditure must have occurred at the expense of other infrastructure investments and second that the quality of the social services provided might be compromised. In fact several studies have indicated that lately, the quality of education and health care related services in Venezuela has eroded which corroborates the conclusions from the study. Venezuela has maintained social expenditure by securing loans and cleaving off profits from PDVSA at the expense of oil industry development. Further the income tax revenue received by the government mainly comprises of tax on the oil industry and royalties on oil production.

The graph below plots absolute government expenditure in dollar terms and as percentage of GDP. We ca see that the social spending as percentage of GDP remains more or less constant in the range of 11 – 13% and government expenditure in dollar terms has been on an increasing trend since 2005 except for a dip in 2011.

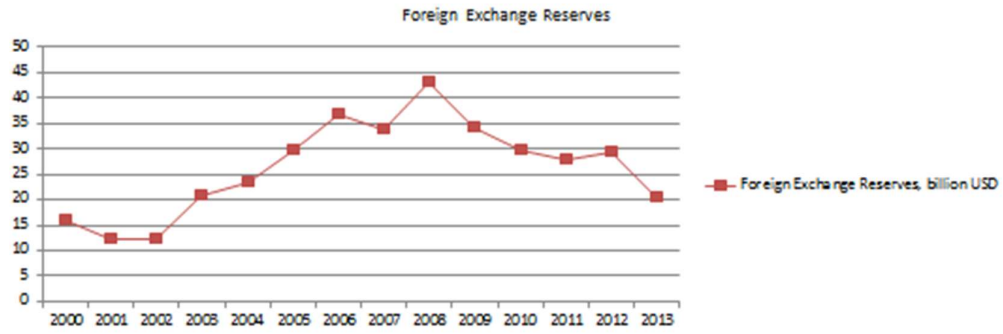


Source – The GlobalEconomy, World Bank

[163] Venezuela Before Chavez: Anatomy of an Economic Collapse

[164] Venezuela Before Chavez: Anatomy of an Economic Collapse

The government's agenda of maintaining social spending during times of crisis and to manage deficits due to drop in oil prices through its substantial foreign reserves have led to substantial decline in foreign reserves. Foreign currency reserve which was at $42 billion at the end of 2008 has come down to $18 billion by 2014[165]. The graph plotted below shows the declining trend of the foreign exchange reserves.



Budget Deficits and Public Debt

The budget deficit has been steadily increasing from 2009 and recorded at 11.5% of GDP in 2013.[166] Government debt to GDP is also on a steady increasing trend from 2009 reaching 50% of GDP[167]. The high debt to GDP ratio reflects on the poor fiscal management by the government.

According to an IMF blog, the fiscal position of Venezuela will be worse off than other oil exporting nations in the current oil price slump. This is attributed to the fact that the public sector derives a large share of its revenue from oil exports and the domestic price of gasoline is expected to remain at the current low rates with no revenue possibility from domestic sales. The case of Venezuela is different from other Latin America countries like Mexico, Ecuador, Trinidad and Tobago, Colombia and Bolivia. Unlike Venezuela these states have taken measures like curbing public spending, increasing domestic gasoline rates or insurance to hedge against oil price fluctuations. The Bolivian government has set up significant deposit buffers and net international reserves for it to tide over the down times[168].

Nationalization of Oil Companies and PDVSA

Venezuela had already taken the path towards nationalization of the oil industry as early as in 1972. On Jan 1st 1976 the country officially nationalized the oil industry and established PDVSA. The drive replaced all foreign oil companies operating in Venezuela with Venezuelan companies.

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[165] http://www.bloomberg.com/news/articles/2015-05-15/venezuela-s-foreign-reserves-just-slumped-to-its-lowest-since-2003

[166] http://www.tradingeconomics.com/venezuela/government-budget

[167] http://www.tradingeconomics.com/venezuela/government-debt-to-gdp

[168] IMF blog on fiscal impact of lower oil prices on Latin America and Caribbean

PDVSA is the state owned oil and natural gas company, and it provides substantial resources to the government of Venezuela for social development projects.

The populist economic policies of the Chavez government had adverse impact on the profitability of PDVSA and in Dec 2002, the management of PDVSA called for a strike to topple the government. But the attempt at this coup failed and the government retaliated by dismissing around 12,000 employees including key managerial and technical staff. They were replaced with a team loyal to the Chavez government. This significantly impacted the performance of PDVSA. Oil production and exports steadily declined from 3.46 mbd in 2000 to 2.67 mbd in 2007[169]. Oil exports fell sharply from 2.96 mbd to 1.93 mbd over the same time frame owing to increase in domestic consumption and smuggling.[170] Widespread corruption at PDVSA and Oil and Energy ministry is also adding to the woes of PDVSA[171] .

The table below shows the social development contributions made by PDVSA in the 6 years from 2007 – 2012[172]

PDVSA ($m)	2007	2008	2009	2010	2011	2012
Income Tax	5057	4267	3308	3858	2007	7279
Royalties	21981	23371	12884	13904	17671	17730
Social Development Expenses	14102	14733	3514	7018	30079	17336
Total	41140	42371	19706	24780	49757	42345

Stabilization fund and fiscal management - Comparison with Norway, Indonesia or Russia

A stabilization fund is a mechanism set by government or central bank to protect the economy from sudden and large influx of revenue. When an economy is primarily dependent on export revenue from a particular sector, it gets exposed to the risk of price fluctuations of the commodity. In order to insulate the economy from the resulting revenue fluctuation, governments institute funds to which excess revenue is invested when there is surplus revenue above normal revenue. This basically acts like a rainy day fund for periods when the price of the commodity slumps. Most of the oil producing countries who are exposed to the above said risk have instituted such funds. For example, Norway has Petroleum Fund of Norway, Russia has Stabilization Fund of Russian Federation, Iran has Central Bank of Iran's Oil Stabilization fund etc. Such a fund would absorb excess liquidity there by helping to reduce inflationary pressures.

The fund is operated with clearly defined policies for investment and expenditure. For example Russia has the policy of ploughing the revenues when the price of oil exceeds a set cut off limit. This would also bring in fiscal discipline as the government would not be tempted to spend wind fall revenues with short term goals or

[169] Imported Oil and US National Security (Keith Crane, Andreas Goldthau, Michael Oman,Thomas Light, Stuart Johnson)
[170] Imported Oil and US National Security (Keith Crane, Andreas Goldthau, Michael Oman,Thomas Light, Stuart Johnson)
[171] Imported Oil and US National Security (Keith Crane, Andreas Goldthau, Michael Oman,Thomas Light, Stuart Johnson)
[172] http://www.economist.com/blogs/americasview/2014/03/oil-fund-venezuela, PDVSA Annual Reports

other political motive. Russia used the fund to cover budget deficits as well as to pre pay foreign debt when the balance exceeds 500 billion rubles.[173]

Venezuela on the other hand does not have an effective stabilization fund and most of the revenue from oil boom was squandered away in highly socialistic projects. The result has been that Venezuela is very badly impacted during times of oil slump with wide fiscal deficit and depleting foreign exchange reserve. The excess liquidity entering the economy through windfall oil revenues have fueled inflation which is currently reported at 60%[174].

In middle of 1999, Venezuela set up the Investment Fund for Macroeconomic Stabilization (FIEM) under Jorge Giordani the then Planning Minister. By December 2001 the fund had $7.1 billion.[175] But by 2003 post the PDVSA strike, the government withdrew money from the fund to cover budget deficits leaving just USD 700 million in the account. Further, government failed to contribute to the fund making it dysfunctional[176].

Foreign Exchange Rate System

Venezuela has a complicated foreign exchange system and it has experimented with single and multiple rate systems. Currently it follows a multiple rate system with 4 rates including the black market rate. There are 3 official rates where a dollar trades for 6.3, 12 and 172 bolivars[177]. The first two rates of 6.3 and 12 bolivars is for imports of priority goods authorized by the government like food, medicine and car parts. The third rate of 172 bolivars is for all other categories that do not fall under the first 2 preferential categories[178]. There is also a limit on the amount of foreign exchange that could be bought by an individual. Such controls have given way to a thriving currency black market where a dollar trades for 190 bolivars[179].This system of preferential access and rates leads to scams and corruption when people try to profit through arbitrage.

An interesting effect of the above system is illustrated by the fact that a washing machine in Venezuela sells at $8600 at the official rate[180].The reason being that the washing machine company is not able to buy dollars at the first two preferential rates and have to shell more bolivars per dollar increasing their cost.

[173] https://en.wikipedia.org/wiki/Stabilization_Fund_of_the_Russian_Federation60%
[174] http://www.bloomberg.com/news/articles/2015-07-15/venezuela-s-772-inflation-means-default-may-come-a-lot-sooner
[175] http://www.eluniversal.com/economia/140125/venezuela-has-failed-to-put-aside-money-from-oil-revenue-surplus
[176] http://www.eluniversal.com/economia/140125/venezuela-has-failed-to-put-aside-money-from-oil-revenue-surplus
[177] http://www.bloomberg.com/news/articles/2015-02-19/venezuela-the-country-with-four-exchange-rates
[178] http://www.bloomberg.com/news/articles/2015-02-19/venezuela-the-country-with-four-exchange-rates
[179] http://www.bloomberg.com/news/articles/2015-02-19/venezuela-the-country-with-four-exchange-rates
[180] http://www.forbes.com/sites/christopherhelman/2014/02/20/cheap-gasoline-why-venezuela-is-doomed-to-collapse/2/

APPENDIX

Section 1

Import Parity Price (IPP) – IPP represents the price that importers would pay in case of actual import of product at the respective Indian ports and includes the elements of Free on Board (FOB) price + Ocean Freight + Insurance + Custom Duties + Port Dues, etc.[181]

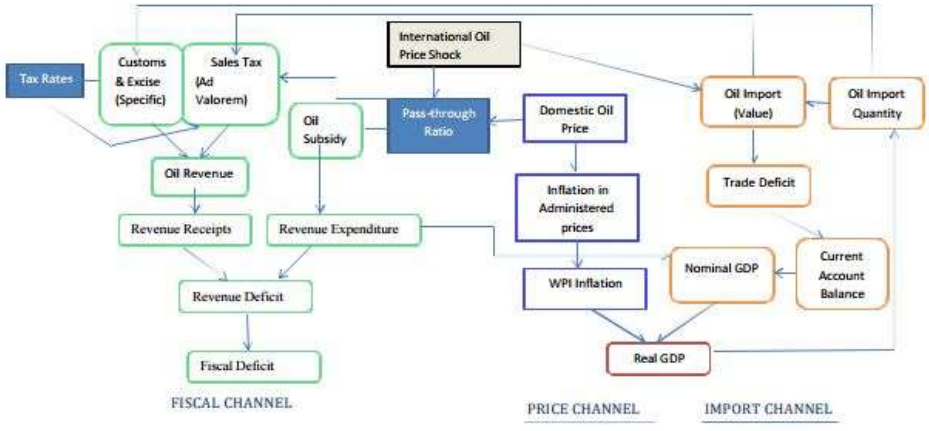
Export Parity Price (EPP) – EPP represents the price which oil companies would realize on export of petroleum products. This includes FOB price + Advance License benefit or ALB for duty free import of crude oil pursuant to export of refined products. Consequent to abolition of Customs Duty of Crude oil effective 25.06.2011, the ALB is currently zero.[182]

Trade Parity Price (TPP) - TPP consists of 80% of Import Parity Price and 20% of Export Parity Price[183]

Refinery Gate price (RGP) is the price at which product is transferred/sold from refinery to marketing division of Oil Marketing Companies (OMCs).[184]

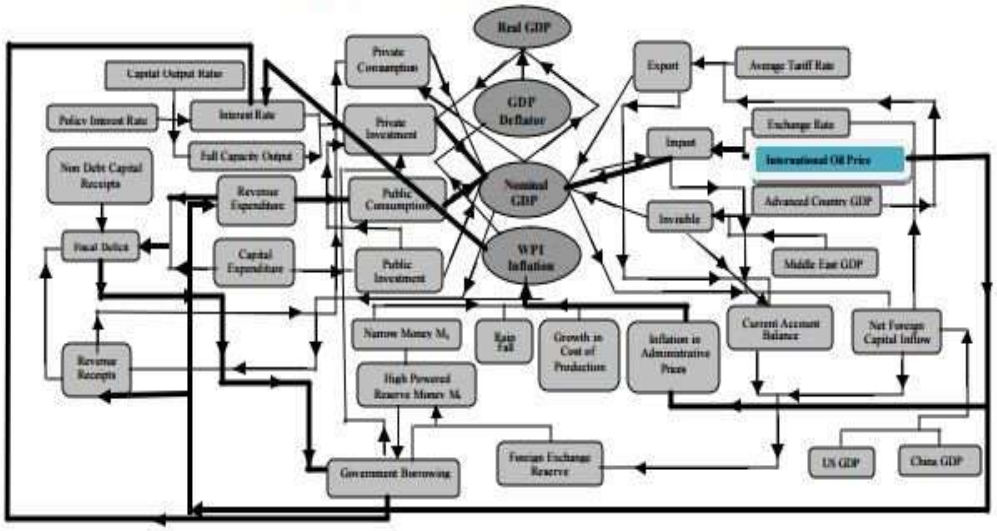
Section 2

Flow chart describing the impact of oil shock on Indian economy through different channels and the model specified to explain the impact on different macroeconomic variables:[185]



[181] http://www.arthapedia.in/index.php?title=Parity_Pricing_of_petroleum_products_in_India
[182] http://www.arthapedia.in/index.php?title=Parity_Pricing_of_petroleum_products_in_India
[183] http://www.arthapedia.in/index.php?title=Parity_Pricing_of_petroleum_products_in_India
[184] http://www.arthapedia.in/index.php?title=Parity_Pricing_of_petroleum_products_in_India
[185] http://www.nipfp.org.in/media/medialibrary/2013/04/wp_2012_99.pdf

Figure 3: Flow Chart of the Model



Note: Thick lines specify the oil price impact transmission path.

Section 3

Comparison of diesel prices through different pricing mechanisms[186]

[2] A comparative picture of the refinery gate price of diesel (HSD) under alternative pricing models based on the international prices ruling during April-September 2005 is as follows:

Pricing model	Rs/Litre
Cost plus (APM) (HPCL Refinery, Mumbai)	Rs. 19.27
Import parity (using existing tariff of 10% on products)	Rs. 20.48
Export party	Rs.18.77
Proposed trade parity (80% import parity + 20% export parity) using reduced (7.5%) customs duty on products	Rs.19.77

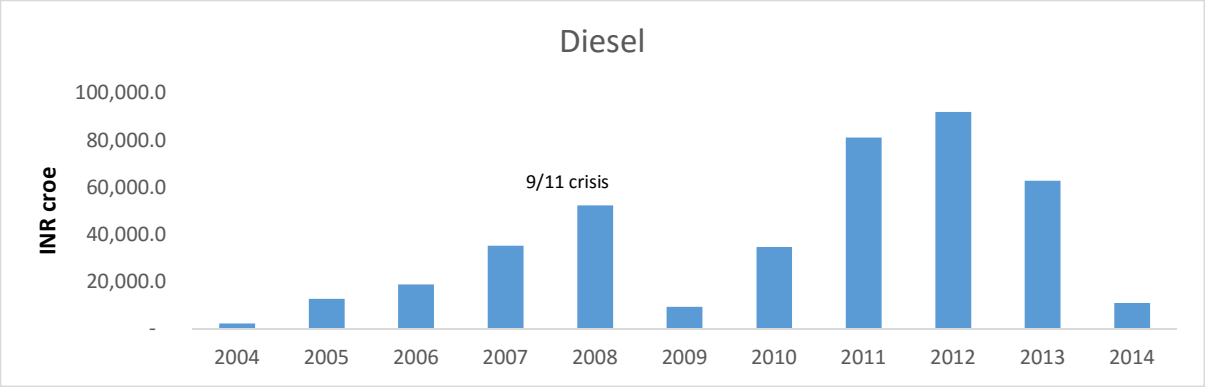
It may be noted that the proposed trade parity price is marginally higher than the cost plus price under the APM model. However, the APM model uses a cost build-up based on return on capital on the depreciated cost of assets. If, in fact, the replacement cost of assets had been used in the APM model, the price would be higher, and in line with the trade parity price.

[186] Report on Committee on Pricing and Taxation of Petroleum products

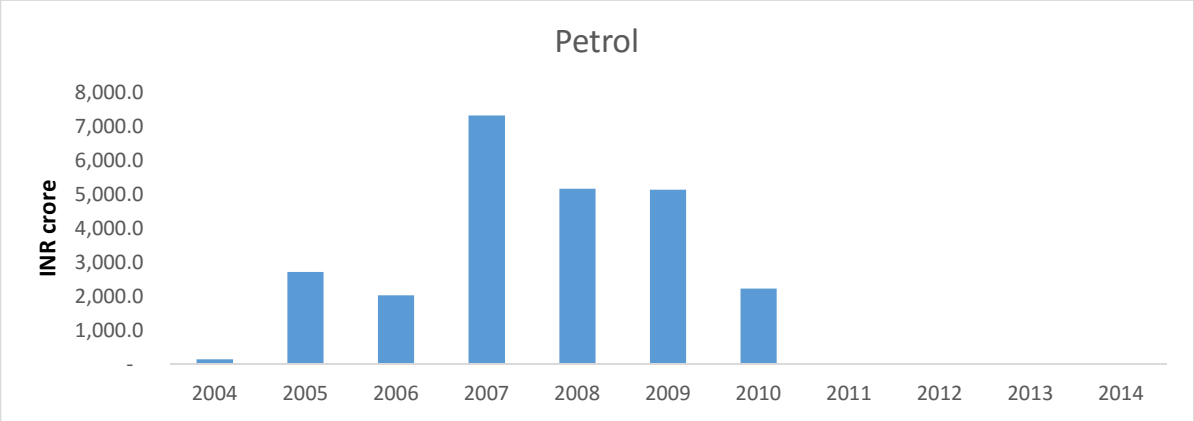
Section 4

Under recoveries for different petroleum products[187]

Under recovery for Diesel

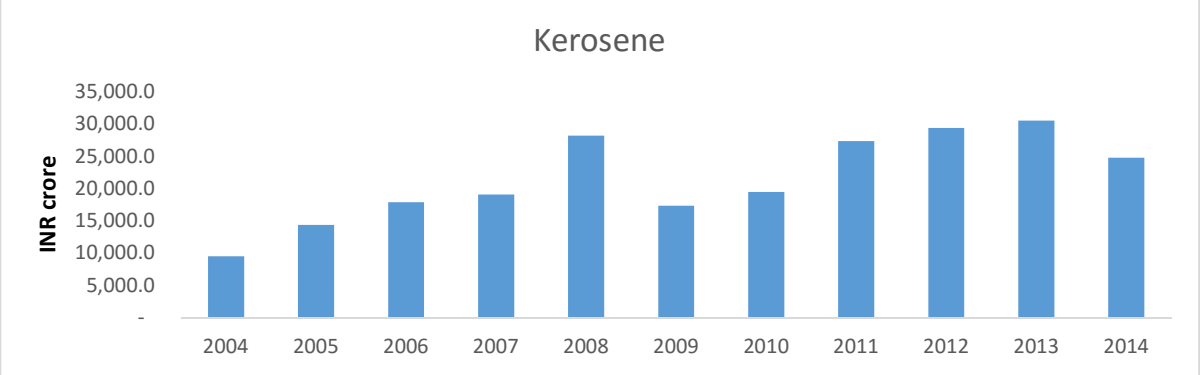


Under recovery for Petrol[188]

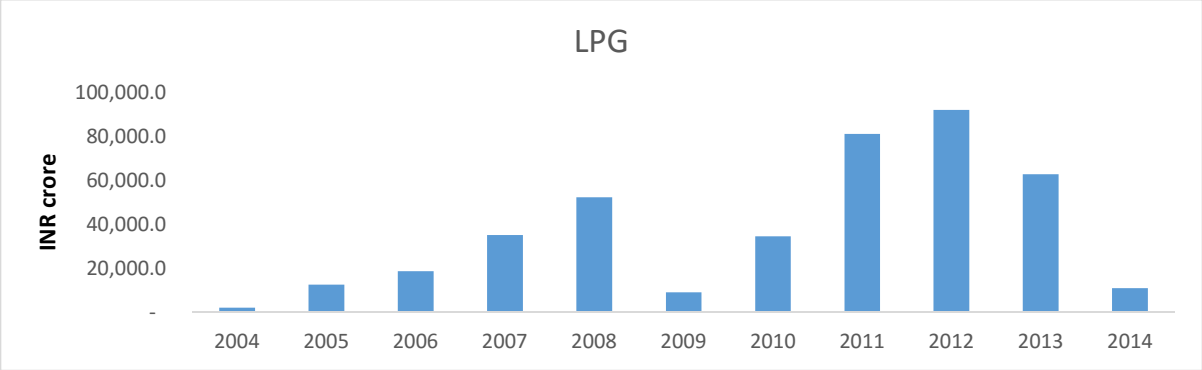


[187] India statistics
[188] India Statistics

Under recovery for Kerosene[189]



Under recovery for LPG[190]



Section 5

Data collection.xlsx

Data Bases

Section 6

Front cover is taken from the link

http://www.shutterstock.com/video/clip-2293949-stock-footage-oil-pours-out-of-yellow-oil-barrel.html

[189] India Statistics
[190] India statistics