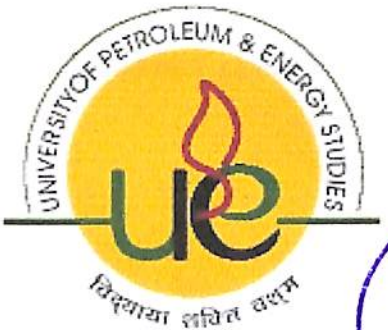
"EFFECT OF CRUDE OIL PRICES ON INDIAN ECONOMY"

Final year project report submitted in partial fulfilment of the requirement for the award of the degree of

MASTER OF BUSINESS ADMINISTRATION

IN

ENERGY TRADING



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DECLARTION

I, **MUDIT NAUTIYAL** Roll No. R590212018, Batch 2012-14, MBA (ENERGY TRADING) of the UNIVERSITY OF PETROLEUM AND ENERGY STUDIES (UPES), Dehradun hereby declare that the dissertation report entitled

"EFFECT OF CRUDE OIL PRICES ON INDIAN ECONOMY"

Is an original work and the same has not been submitted to any other institute for the award of any other degree.

(MUDIT NAUTIYAL)

BONAFIDE CERTIFICATE

This is to certify that the dissertation report on **"EFFECT OF CRUDE OIL PRICESON INDIAN ECONOMY"** has been completed and submitted to University of Petroleum and Energy Studies, Dehradun by **Mr. MUDIT NAUTIYAL** in partial fulfilment of the requirement for the award of degree of **MASTER OF BUSSINESS ADMINISTRATION (ENERGY TRADING),** 2012-2014 is a bonafide work carried out by him under my supervision and guidance.

To the best of my knowledge and belief the work has been based on investigation made, data collected and analyzed by him and this work has not been submitted anywhere else for any other university or institution for the award of any degree/diploma.

Date: 21/4/14.

(SONAL GUPTA)

ASSISTANT PROFESSOR

Acknowledgement

This Dissertation got materialized and happened with the help of valuable contribution and efforts provided by many people in my organization. I would like to name a few of them, but there are likely to be many more persons who have unknowingly and inadvertently not been mentioned here. Apologies, for all those I have failed to mention, but your inputs have been recognized and incorporated in the research work that has been carried out.

First of all I would like to thank Prof. Sonal Gupta and Prof. S.K. Pokhriyal for providing me the opportunity to work for the project.

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It is due to the fruitful discussions with above mentioned officials which has enabled us in finalizing the shape and complete this project in due time.

Last but not the least; I would like to thank my parents for their kind support which helped me a lot in completing the project.

ABSTRACT

The report aims at providing an insight about the Indian economy, fundamentals of crude oil and the effect of crude oil prices on Indian economy. As India is the third largest importer of crude oil, any change in the price of crude oil is likely to affect the Indian economy.

India imports 80% of its crude oil supply from various countries like Saudi Arabia, Iraq, and Nigeria etc. and any fluctuation in the price of crude oil could directly affect the nation thus it becomes very important understand the relation between the crude oil prices and the economic indicators.

The report thus measures the correlation between the price of Indian crude basket and economic indicators like Gross Domestic Product, Inflation rates, Forex reserve, Balance of Trade, Index of Industrial Production and the exchange rates.

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1-INTRODUCTION

Indian economy ranks 10th largest by nominal GDP and 3rd largest by purchasing power parity PPP.India is also the member of group of G20 countries as well as the member of BRICS (Brazil,Russia,India,China,South Africa). In terms of per capita income India is ranked at 141st place and in terms of GDP (PPP) it is placed at 130th position of all countries according to International Monetary Fund. India is ranked as 19th-largest exporter and the 10th-largest importer in the world. A decrease in growth of India from 6.2% to 5.0% in a period of one year in 2012-13 was seen. Moody's has predicted the Indian growth rate of India for 2014-15 at 5.5% .Indian rupee hit an all-time low on 28 august 2013 at 68.80 against dollar. With a view to stop this degrading value of rupee government started taking steps against outward country of capital from, Indian growth rate just reduced to half within the period of ten years. There was only a marginal growth rate in GDP from 4.7% to 4.8 % in March 2013 as compared to previous quarter. Indian government has made a prediction of growth rate between 6.1%–6.7percent for the year 2013–14, on the other hand the RBI expects the same to be at 5.7%. Besides this, India suffered a very high fiscal deficit of US$ 88 billion (4.8% of GDP) in the year 2012–13. The economy based on the ideas of capitalism and socialism, created interventionist and import-substituting economy that resulted in failure after post war period. The model based on socialism and capitalism created inefficiencies and corruption, that ultimately resulted in failure.

In 1991, India adopted the policy of liberalization, globalization and privatization and liberalised its economy to international trade under the guidance of Former Finance minister Manmohan Singh under the P.M, P.V.Narasimha Rao, from 1991 to 1996, which abolished Licence Raj, a mechanism that results in strict government control while opening up a new industry. After these much required changes focus was given towards creation of national infrastructure such as the Golden Quadrilateral project by former Prime Minister Atal Bihari Vajpayee, the country's economic growth progressed at a rapid pace, resulting in huge improvement of country's per-capita income. Maharashtra, especially south western Maharashtra contributed the most towards the GDP among all states. Mumbai (Maharashtra) is known as the trade and commerce capital of India.

Government aims to cut the fiscal deficit to US$ 70 billion or 3.7% of GDP by 2013–14.

1.1SECTORS OF INDIAN ECONOMY

1. 1.1 Industry

The industry contributes 26% towards GDP and employs around 22% of country's workforce. According to the world fact book India is ranked at 11th place in terms of factory output. New policies of 1991 under the guidance of Manmohan Singh resulted in a change in industrial sectors a result of globalisation, liberalization and privatization that omitted restrictions of import, allowed foreign participation, liberalised FDI regime, significantly upgrade the then present infrastructure , improved infrastructure and led to an expansion in the production of FMCG's .After liberalization competition between domestic and foreign companies increased that led to creation of new jobs and advancement in technology

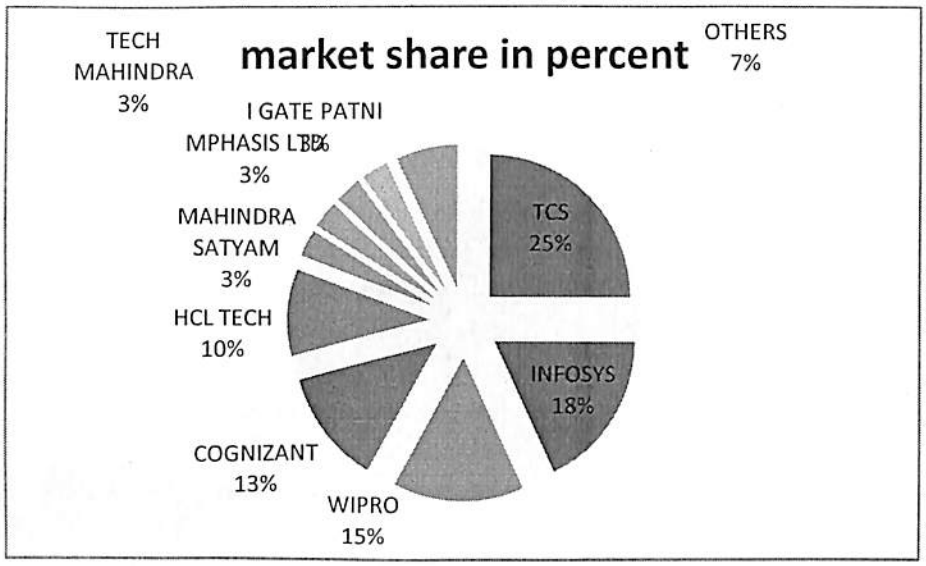
1.1.2 Textile

After agriculture it is the next largest source of employment and gives 20% of manufacturing o/p, and employs 2crore. After removal of number of limitations cash inflow in this sector has increased. By 2012, this will increase to 38 billion and will create 17 million additional jobs. Despite this the requirement of Indian textiles is decreasing. Ludhiana known as the Manchester of India produces 90% of woollens. Tripura has grown his reputation as leading source of knitted garments, hosiery, casual wear and sportswear. Textile Development Cluster has been created to improve and create the infrastructure in city, the Municipal Council along with, Laxmi Co-operative Industrial Estate, Ichalkaranji Co-operative Industrial Estate, and DKTE Textile Parvati Industrial Estate and Engineering Institute have joined hands together to form Special Purpose Vehicle (SPV) company viz. Ichalkaranji Textile Development Cluster Limited (ITDC).

1.1.3 Services

India is ranked at number 13th in services output. The services sector is growing at the rate of 27% and provides employment to 27% of the work force and is rapidly rising growing at rate increasing from 15% in 1950 to 57% in 2012.7.5%. Market is divided among some big names like Infosys, Wipro, Mahindra Satyam and several others. business process outsourcing and Information technology and are the rapidly growing sectors, with the combined growth rate of 33.6% between 1997 and 1998 and 2002–03 and presenting 25% of the India's total exports in 2007–08. This growth in the IT sector is attributed to increased specialisation, highly skilled, educated and fluent English-speaking workers and their availability at low cost. The supply side, matched with the demand side due to rapidly increasing demand from foreign consumers interested in making use of India's IT service, or on the other hand by the clients that looking to outsource their operations. In India's GDP the share of the Indian IT firms has increased from 4.8% in 2005–06 to 7% in 2008.In 2009 7 Indian firms were ranked among the top 15 outsourcing firms in the world.

Chart 1- Market share of different IT sector companies in India



Source: Investor club

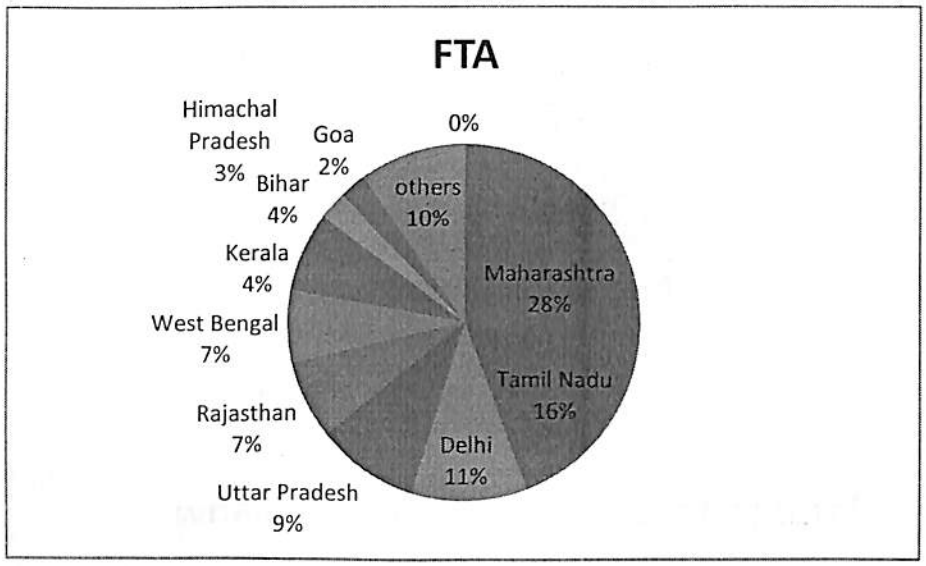
1.1.4 Retail

Retail industry accounts for 14–15% of its GDP and can be said as one of the pillars of our economy It is having valuation of around US$ 450 billion and is among top 5 retail markets in the world. It is the most rapidly rising retail market in the world and benefits around 1.2 billion people .India's retailing industry essentially consists of the local owner manned general stores ,mom and pop store, hand cart and pavement vendors ,convenience stores, etc. Organized supermarket's share was only 8 % in 2008.Regulation and government policies have deterred most of the foreign investment however in 2012 government permitted 100% FDI in single brand retail and 51% FDI in multi brand retail .Moreover, over thirty regulations such as "anti-hoarding measures" and "signboard licences" may have to be complied before a store can open doors. Taxes are charged even on the movement of goods within the states.

1.1.5 Tourism

Tourism in India is highly emerging but relatively undeveloped sector creating around 6.23% of national GDP and providing employment to 8.78% of total employed population. Major tourist arrivals are from USA and UK. Beautiful natural landscape, rich history and diversity in terms of culture and landscape makes it a perfect tourist destination and thus appeals a large number of tourists towards itself .It presents cultural tourism along with medical, business and sports tourism and rich heritage. It is the most rapidly rising medical tourism destination of the world.

Chart 2- top ten states in terms of foreign tourist arrival



Source: Tourism journal India

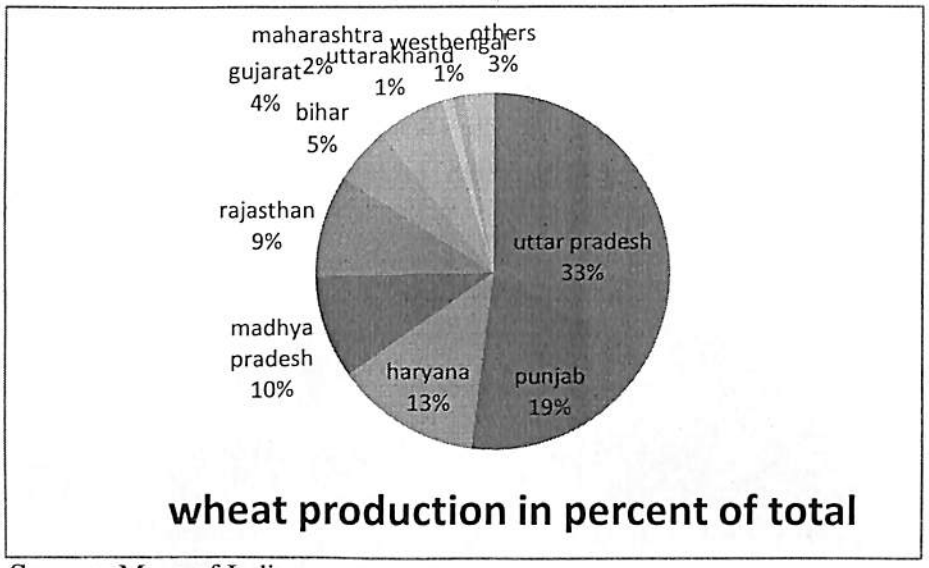
1.1.6 Mining

It is one of the main asset of India's is rich in minerals and produces about 79 different minerals like uranium, thorium and fuels) in 2009–10, minerals include silica, manganese ,bauxite, mica , gypsum, limestone, asbestos, fluorite, gypsum, ochre and gems like topaz, diamonds etc.

1.1.7 Agriculture

Agriculture is the main pillar of Indian economy and ranks 2nd in the world in terms of farm output. Agriculture along with sectors like fishing, logging and forestry contributed 17% of total GDP in 2012and employed 51% of the total workforce, despite a disappointing decrease in GDP agriculture still the largest economic sector and contributes heavily towards social and economic welfare of the nation. Per unit area of crop yield has rapidly increased for almost all crops ranging from wheat to cotton since 1950, due to government policies and plans assisting farmers like providing them easy loans latest of agro machinery, irrigation, subsidies since the Green Revolution in India. However, comparisons with the international average crop yields are not satisfying as India produces only 30% to 50% of highest crop yields in the world. Indian states Uttar Pradesh, Punjab, Haryana, Bihar, West Bengal, Gujarat, Madhya Pradesh, Andhra Pradesh, and Maharashtra are main contributors.

Chart3 - percentage share of states in terms of wheat production



Source: Maps of India

1.1.8 Banking and finance

It is a combination of organized and unorganized sector that comprises of foreign banks, private banks, public banks, commercial banks, cooperative banks together known as the scheduled banks which are organized, on the other hand the organized sector that includes money lenders and financial assistance providing private companies. In rural areas the unorganized class of banks are still preferred over organized one due to easy loan process over the organized banks for special purposes like ceremonies and short time loans.

14 banks were nationalised by Prime Minister Indira Gandhi in 1969, followed by six others in 1980, and made it compulsory for banks to provide 40% of their net credit earnings to priority sectors like small businesses, agriculture, retail trade, small-scale industry etc. to ensure that the banks are achieving their socio developmental target. Since 1969, the number of bank branches has moved up from 8,260 to 72,170 in 2007 and number of person per bank ratio has decreased from 63,800 to 15,000 during the same period. Highest rise is shown in total deposit sum from ₹59.1 billion (US$990 million) in 1970–71 to ₹38309.22 billion (US$640 billion) in 2008–09. Despite an increase of rural branches, from 1,860 in1969 to 30,590 in 2007, only 32,270 out of 500,000 villages are under scheduled banks.

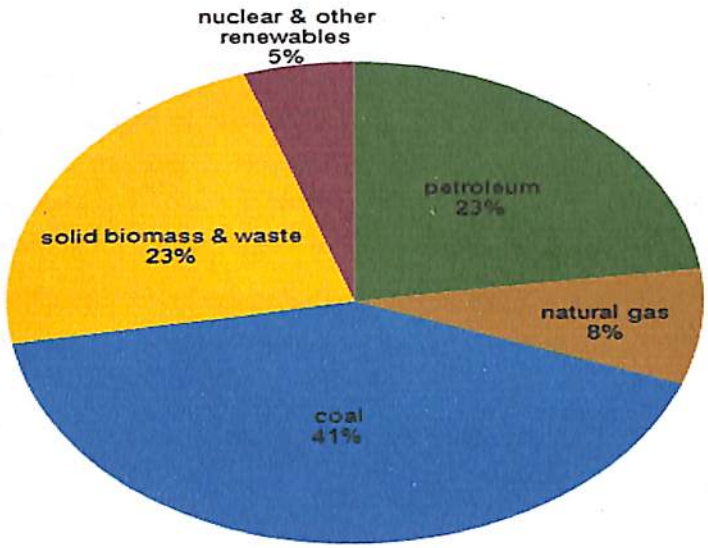
India's total saving is around 32% of GDP that is invested in assets like lands, gold, houses etc. 75% of total assets are held by the public sector banks like SBI, PNB etc. On the other hand private and foreign banks hold 18.2% and 6.5% respectively.

1.1.9 Energy and power

India is the 4th largest importer of coal and3rdlargest crude-oil by latest 2014 the world. Coal and oil together are responsible for 66% of total energy consumption.

Chart 4

Total energy consumption in India, 2011



Source: U.S. Energy Information Administration, International Energy Statistics

India's oil reserves meet only 20% of the country's demand rest of 80% is imported from countries like Saudi Arabia, Nigeria, and Iran etc. India's total proven oil reserves are of around 5.5 million barrels and is ranked at 19th place, while gas reserves stood at 43,800 million cubic feet and is ranked at 23rd place. Major Oil and natural gas fields are at Mumbai High, KG (Krishna Godavari Basin) and the Cauvery Delta, and in the states of Assam, Gujarat and Rajasthan. India is the 4thlargest oil consumer after U.S, China and Japan and imported ₹726386 crore (US$120 billion) worth of oil in 2011-12, which has increased our current account deficit. The petroleum industry is ruled by public sector companies like Oil and Natural Gas Corporation (ONGC), Hindustan Petroleum Corporation Limited (HPCL),Indian Oil Corporation Limited (IOCL) and Bharat Petroleum Corporation Limited (BPCL). On the other hand private companies include companies like Reliance Industries Limited (RIL) that has world's largest refining capacity of 60 mmtpa.

Power generation capacity (installed) of India is around 233.929 GWs until 2011 1)

- ✓ thermal=68.31%,
- ✓ hydro= 17.05%
- ✓ renewable energy =12.59%
- ✓ nuclear power2.04%

India has 106 billion metric ton of coal reserves located mainly in Bihar, Jharkhand, Chhattisgarh and West Bengal. India is also having abundance of some other sources of energy like wind, solar and biofuels like jatropha (it is plant that is used to produce jatropha oil). India has received a huge boost in the field of nuclear energy due to recent discoveries made in Tummalapalle belt which could be under top 20 reserves (846,477 metric tons) of the world and could account for 25% of worlds total thorium reserve and can give a serious boost to India's nuclear power programme.

1.1.10 Infrastructure

India has 4.3 million k.m of road network which is world's third largest and 60% of total freight and 87% of passengers are carried with the help of this road network on the other hand India is ranked at 4th place in terms of railway net work with total length of 114,500 km. India has about thirteen major number ports handling around 850 MT.

Number of telephone subscribers in India is 926.53 million and about 66 % are in urban areas of the country however the number of internet user is only 13.3 million but is growing with the new in 3G and WiMAX services.

1.2 CHALLENGES BEFORE INDIAN ECONOMY

- **Population explosion:** Ever rising population is seemingly acting as the barrier to the development of the Indian economy. According to 2011 census population in India is rising at the rate of a 2.11% per annum and could soon over take China in terms of total population. Huge population along with lack of natural resources like oil and gas has laid a burden over the government to import more and more that lead to fiscal deficit.

- **Poverty:** According National Planning Commission, 36o millions of population is living below the poverty line in India. Situation is like poor are getting poorer and rich are getting richer. Government is unable to provide basic amenities like food, shelter and sanitation etc.

- **Unemployment:** With the increase in population unemployment is increased as the number of new jobs can't match the number new persons looking for job. Government has started various employment schemes like MANREGA, NAREGA, and Jawaharlal Rozgar Yojna to provide employment to the people but these steps seems to be insufficient due to increase in population, corruption and lack of awareness.

- **Rural Urban Divide:** around 70 % of total population still live in villages that are very far from the development phase as compared to the cities. Lacks of basic facilities like metalled road, schools, electricity, and clean drinking water have degraded the growth of these areas.

1.2.1 Overcoming the challenges.

- Encouraging persons towards benefits of family planning and providing special benefits to the follower of these schemes.
- Efficient use of passed budget towards the welfare of general public in both rural and urban areas without any corruption.

- Introduction of new policies and reforms not only in the time of election but over the total span of government and implementing them strictly.
- Educating the population by opening new schools with all the necessary facilities for all around development of student, creating new jobs every year.

1.3 INDICATORS OF ECONOMY

Economic indicators are the perimeters that check the well-being of an economy. They are used to analysis of the performance of an economy over the period of time and can also be used to predict future performance and thus taking necessary step. Example of indicators is GDP, inflation rate, unemployment rate, industrial production index, repo rate etc.

Usefulness of these indicators is only when they are measured correctly or properly. You cannot rely only on one indicator to predict the future the more indicators you considered more successful would be your forecast. However despite using number of indicators results may vary due to non-measurable effects like emotions, motivation, new government policies etc. Indicators are just like the signs along the road that can only guide you all the successful investors use many of indicators to analyse and look for patterns using historic data. Different types of indicators are released at different time some monthly, some weekly some quarterly or some yearly.

1.3.1 Classification of economic indicators

Economic indicators can be classified into three types as-:

1) **Leading indicators**
2) **Lagging indicators**
3) **Coincident indicators**

1.3.2 Leading indicators

Leading indicators are the short term indicators and hence are used for short term analysis they usually changes before the change in economy. For example stock market returns, they begin to decline or increase just before the economy does the same. Building permits, index of consumer expectation are some other type of leading indicators that are used for analysis and prediction of a economy.

1.3.3 Lagging indicators

As the name suggest these indicators changes after the economy changes or occur as a result of economic changes. The lag may be of few quarters. The unemployment rate is the example of lagging indicator as it can be caused due to economic meltdown. It increases or decreases after 2 or 3 quarters of economic boom or economic meltdown respectively. Other examples of lagging indicators are Bollinger bands, profit earned by a business in a

1.3.4 Coincident indicators

These indicators neither lag nor lead but changes with the economy thus provides information about the current state of the economy .some examples of coincident indicators are GDP, industrial production, per capita income and retail etc.

1.3.5 by direction

Indicators are also divided according to their movement with respect to the movement of the economy and they can be-

1) **Procyclical indicators**
2) **Countercyclical indicators**
3) **A cyclical indicators**

Procyclical indicators

They move in the direction of the economy thus at the time of economic boom they increase and at the time of economic meltdown they decrease. Example of procyclical indicator is GDP as it moves in the direction of economy.

Countercyclical indicators

These are just opposite of procyclical indicators and move in opposite direction of economy. Example of countercyclical indicator is unemployment rate.

A cyclical indicator

These are third type of direction indicator and are having little or low correlation with the economic movement.

1.4-SOME IMPORTANT FACTORS DETERMINING INDIAN ECONOMY

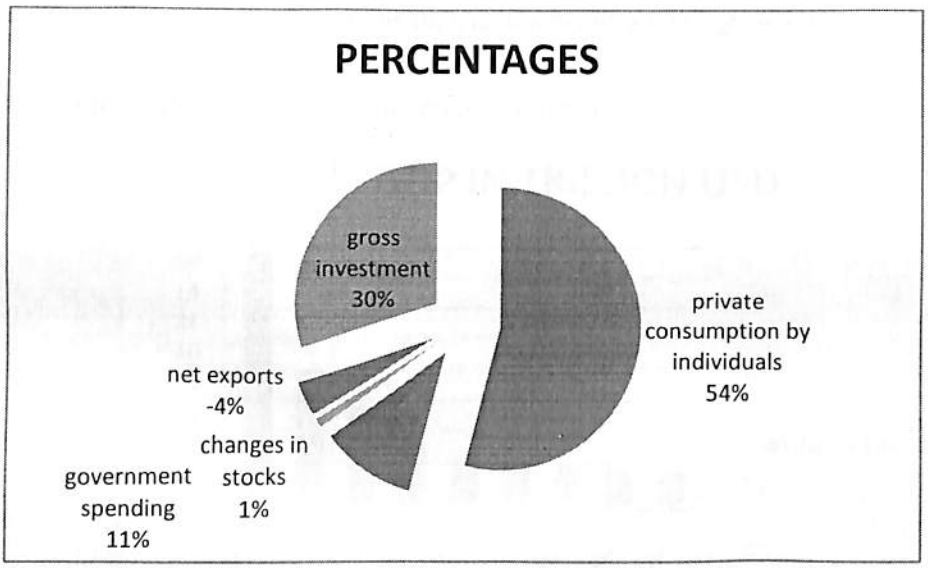
1.4.1 Gross domestic product

The total value of all goods and services produced within a country at a specific time is known as GDP (Gross Domestic Product) and is calculated yearly

GDP = C + G + I + NX

"**C**" is spending by consumer
"**G**" all the spending by the government
"**I**" all the spending made in business
"**NX**" net export

Chart 5- Percentagewise composition of Indian GDP



Source: Indian statistics

The GDP is one of the most important indicators of the economy it is a type of coincident indicator and helps in the measurement of wellbeing of a country's economy. It gives us the total amount of all services and goods generated in the country in terms of dollar and as it is a pro cyclic indicator, thus moves in the direction of economy. It represents the total dollar value of all goods and services produced over a specific time period - you can think of it as the size of the economy. Generally GDP is measured in terms of comparison from previous year and hence labelled as the GDP growth rate. Measurement of GDP is a quite complex

process but in simple terms we can say it can be done either by calculating all possible total expenditure or calculating all total earnings.

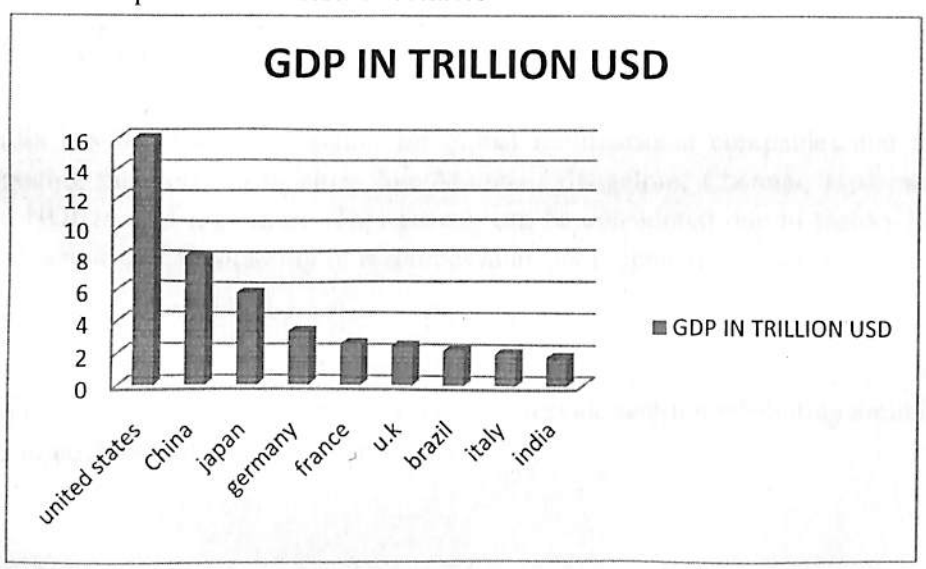
The I in the formula of GDP is calculated by summing all the salaries paid to the employees by all types of firms less the taxes and subsidies; this is known as income method. The other method is the expenditure method in which all the expenditure in terms of consumption, investments, net exports etc. is measured.

1.4.2 Indian GDP

As per the latest reports of 2013 India is ranked at 10th place in terms of total GDP after Italy and may soon replace it as well. At present India's GDP is around GDP $ 1.87 trillion. From past twenty tears there is a growth Indian GDP but last few years have proved difficult as India has been unable to sustain the same growth rate. Current growth rate of Indian GDP is around 4.5 %.

With the population of more than a billion India is ranked second in terms of population after China. Although from past few years India has not been able to sustain the same growth as compared to china but it still has managed a healthy GDP growth rate.

Chart 6- GDP comparison of different countries



Source: index mundi

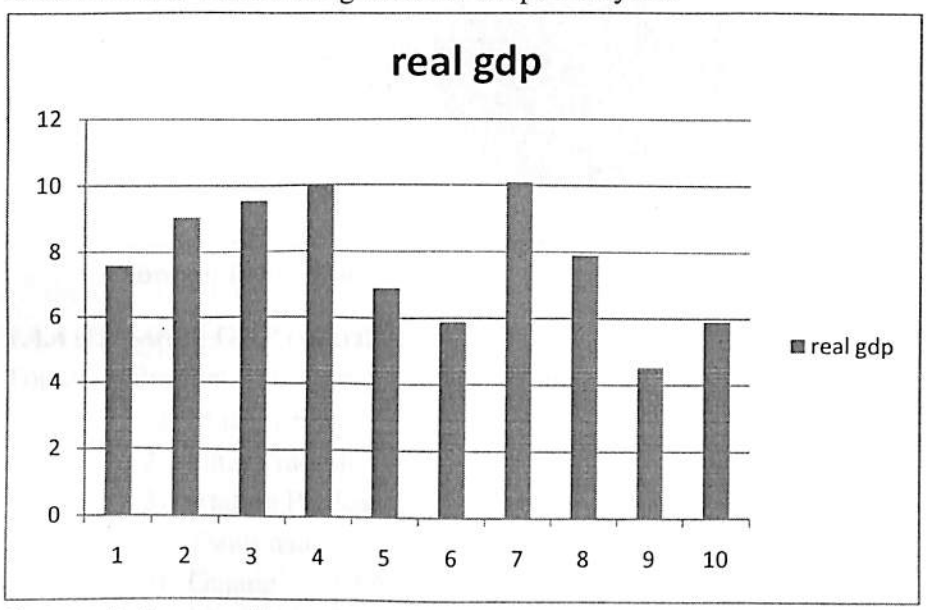
According to some experts India can take 3rd position in terms of GDP thereby replacing countries like Italy, Brazil, U.K, France, Germany and Japan.

India which was once considered as an undeveloped country is now moving slowly but steadily towards becoming a developed country in near future. Since independence numerous

steps have been taken by the economic experts to attain a perfect economic model in front of the world.

Due to this all around development India's reputation has been strengthen all around the globe and is considered as a force to reckon with in terms of economic development.

Chart 7- India's real GDP growth for the past 10 years



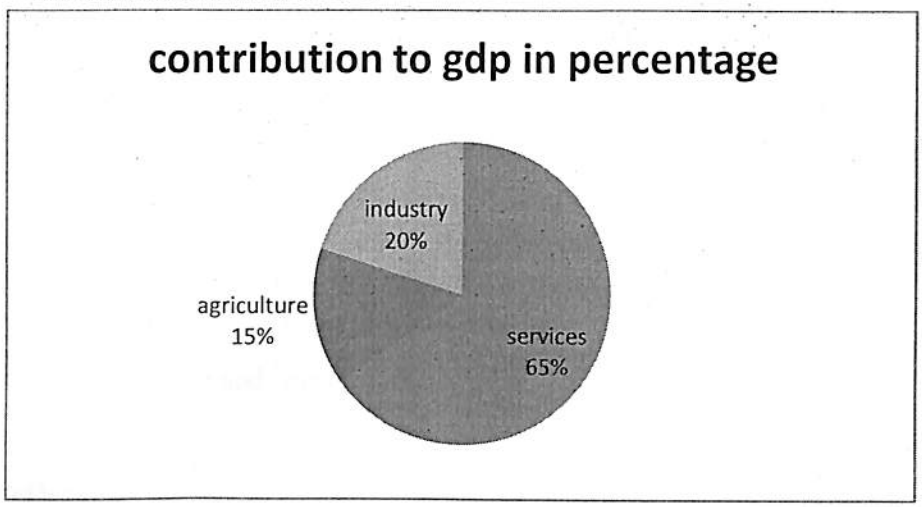
Source- Index mundi

Today India has become an attraction for global multinational companies and they have started opening their offices in cities like Mumbai, Bangalore, Chennai, Hyderabad, New Delhi and NOIDA and may more. This growth can be considered due to factors like cheap and skilled labour cost, availability of resources land, geographical location etc.

1.4.3 Sector wise contribution of Indian GDP

Today India's GDP is around 1.8 trillion USD with service sector contributing around 65%, industry around 20% and agriculture at

Chart 8-contribution to GDP



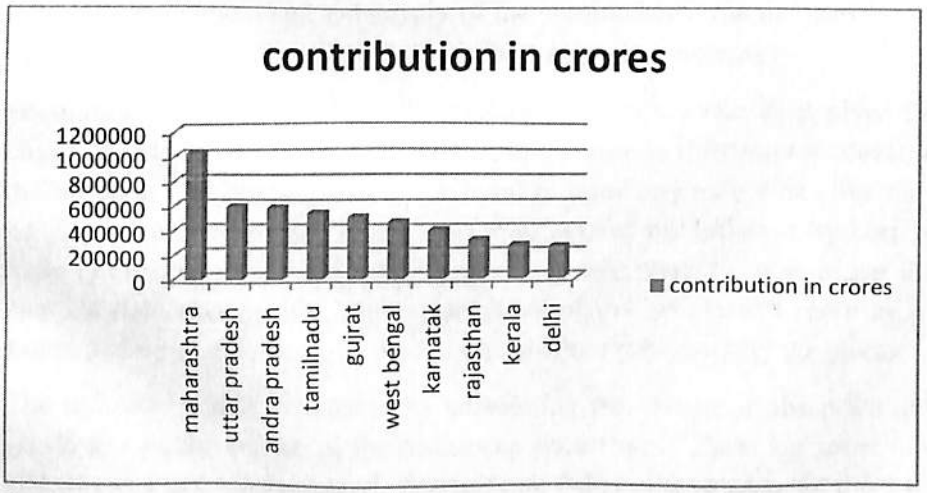
Source: Indian statistics

1.4.4 state-wide GDP contribution

Top ten states that contribute towards GDP are

1) Maharashtra
2) Uttar Pradesh
3) Andhra Pradesh
4) Tamil nadu
5) Gujarat
6) West Bengal
7) Karnataka
8) Rajasthan
9) Kerala
10) Delhi

Chart 9: contribution to GDP by different states



Source:

1.5 INFLATION

Inflation can be termed as a condition when aggregate demand leads the aggregate supply, this lead to increase in the overall prices of goods and commodities and reduces the purchasing power.

As the inflation occurs the average price of goods and services get increased and you cannot buy the same amount with the same money thus our purchasing power get reduced. Inflation is generally measured using inflation rate which is the change in price of commodity over a period of time or known as CPI (consumer price index).

Inflation has both positive and negative effects on an economy -:

Negative effects-:

1) Value of money decreases
2) Uncertainty on part of investors
3) Rise in price of goods and services

Positive effect-:

1) If you are a debtor then the inflation can be beneficial to you.
2) As inflation occurs central banks increase the interest rate that causes decrease in money circulation in the economy and thus controlling the recession.

We generally believe that inflation is caused due increase in money supply over the economic growth but the reason is not the same. The inflation is however caused due the general gap between the demand and the supply of the commodity if the demand overtakes the supply of the commodity the price of that particular commodity increases.

Economist today favour the slow increase in inflation rate as it gives the labour market a chance to adjust accordingly which a rapid increase in inflation rate doesn't provide .Keeping the inflation rate low is given in the hand of monetary authorities like the central banks that adjusts the money supply in the market to control the inflation by keeping the interest rate high. On keeping the interest rate high the people started saving rather than purchasing this cause a reduction in the purchasing power of the people and serve as a cooling effect on prices and ultimately bring down the demand and subsequently the prices.

The inflation rate is calculated by calculating the change in the price index of a basket of goods and hence known as the consumer price index. These are some most common goods and services that are used by the consumers. Other type is the retail price index and is used in U.K it contains broader basket of goods

Example-:

For example in 2012 the price of a certain commodity was $ 100 and in 2013 it becomes $ 105 then inflation is 5%.

$$\frac{(105-100).}{(100)}100 = 5\%$$

1.5.1Price indices used to calculate inflation-:

Producer price indices (PPIs):-

PPI calculates the changes in price received by the producers for their production. It is different from the CPI in the matter that it includes the subsidies, taxes and profits paid by the producer to differ from paid by the customer. Time gap is present between a change in PPI generally the CPI follows the PPI. Producer price index may pass to the customers as it depends on the raw material cost. In India we use WPI (whole sale price Index).

Commodity price indices:-

It measures the cost of a commodity and compares its variation over the year.

Core price indices: -

As the price of food and oil changes very rapidly it is very much impossible to discover the trend for long run when these to commodities are used to calculate the inflation. Therefore some agencies give only core price indices and it does not include commodities like oil and food. Thus we can say it is CPI minus the price of food and oil.

Other measures are:-

GDP deflator

It is price of all goods and services that are used to measure the GDP of a country.

Regional inflation

When CPI is calculated region wise it is simply known as the regional inflation of that particular area.

Historical inflation

This method was used before the 20th century and is based on the known cost of goods rather than calculated or collected.

Asset price inflation

The asset price inflation measures the increase in the price of an asset like real estate, stock or any other financial asset over the period of time. although their not any accepted index to calculate asset price inflation central bank has suggested one as it would enable the banks to adjust the interest rates for avoiding any financial crash in the market due to change in the price of these assets. and lowering them when these asset prices fall, central banks might be more successful in avoiding bubbles and crashes in asset prices.

1.5.2 effects of inflation

General

As the price of the commodities increases during the inflation the purchasing power of the consumer decreases and he cannot purchase the same amount with that same price. The inflation may be a loss to some and a gain to other. For example inflation may beneficial to those who own assets like property, land, houses and loss to those who wants to purchase these assets, one thing to be noted is that whether the salary or the income of the person is rising in the same proportion to that of the rate of inflation if yes then there is no such negative impact of inflation on him otherwise the impact would be negative. Inflation is very much harmful to those who have fixed salary.

Debtors who have taken the debt with a fixed rate will reap the benefits as inflation occurs as the real rate of interest will decrease on increase in the value of inflation rate **(R= N-I).** However the banks adjust to this condition by using the inflation risk premium to nullify the effect of inflation on bank loans.

Negative

Increase in inflation rates create an uncertainty or inefficiency in the market as it becomes very difficult for the companies to think and plan their budget for a longer period of time as in that phase the price of commodities, services and raw material may change many time. Companies try to compensate the higher cost of raw material by charging higher amount for the same commodity from the consumer. Unpredictability over the value of money causes a person or a company to think twice before making an investment or opening any new business there by decreasing the chances of people getting employed if new business had been opened. It levies many hidden taxes on the tax payers and causes a sudden rise in the taxation.

This causes a shift in the purchasing power from those who have fixed income like the pensioners to those who have variable income and thus causes huge negative impacts on those pensioners. This shift can also be measured in international level where trading partners have agreed a fixed price therefore any change in the exchange rate may be beneficial to one but not to the other partner.

Cost-push inflation

according to as the inflation occurs the employee or the workers working in variable wages demands more to adjust to these price changes and get new improved wages, due to this their purchasing power is improved and they can pay more for the same commodity thus again causing the price of that commodity to increase this is known as the cost push inflation.

Hoarding

Sometime people by fear of expected rise in price of goods tends to purchase them in a lot thus creating a shortage of those goods in market ultimately leading to increase in their price

Social unrest and revolts

Inflation can cause a civil unrest in the society leading to the demonstrations against the government damage to the public properties and sometimes to life. Tunisian and Egyptian revolution can be thought of the result of the food inflation that disabled the lower sections of the society to purchase common food items this lead to a mass protest against the government of Zine El Abidine Ben Ali in Tunisia and Hosni Mubarak of Egypt and both of them had to lost their position within 18 months. This protest was suddenly spread to the other parts of North Africa

Hyperinflation

When inflation becomes out of control leading to a rapid rise in the prices of goods and commodity such that their prices no longer can be controlled by the government is known as hyperinflation. This causes abandoning of that country's currency..

Allocative efficiency

any alteration in demand and supply of a good causes the buyer to reallocate its resources however when there is a constant movement in the prices of the commodity it becomes impossible for the buyer to differentiate whether the price change is due to inflation or due the genuine relative price and he becomes unable to relocate his resources.

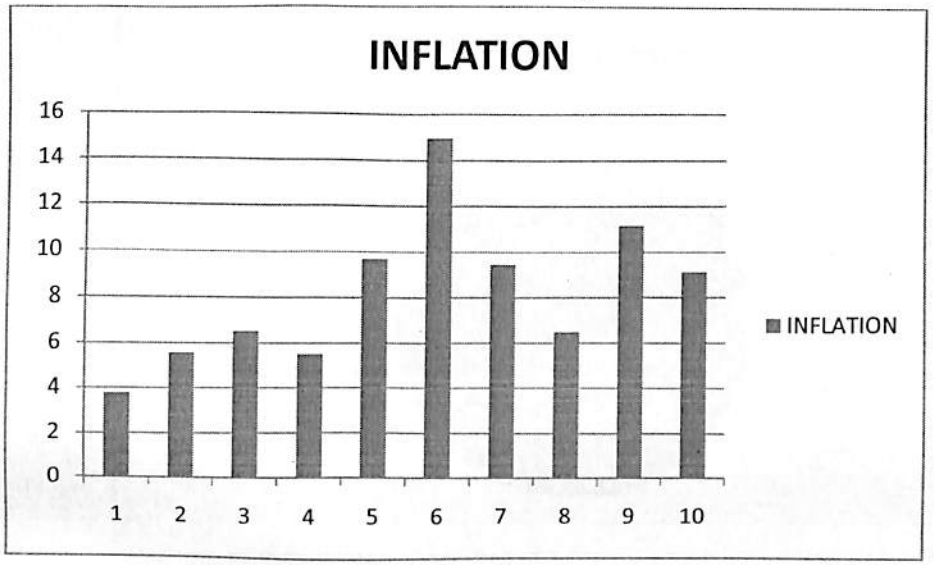
Shoe leather cost

As inflation increases people are induced to put their money in bank so as to get more interest rate. However they need cash for their day to day need and hence have to make bank trips more often than usual hence in order to withdraw money from the bank thus proverbially causing wear and tear to their shoe soles and hence known as shoe leather

Menu cost

So as to keep pace with the inflation a hotel or a firm has to increase the prices of their items or goods leading to print menus more than often hence adding extra menu cost that overtakes the rise of prices due to inflation.

Chart 10-India's inflation rate over the last 10 years



Source: Index Mundi

1.5.3 inflation in India

Rate of inflation for the year 2012 in India was 8.9 % as statistics ministry of India. This was just a bit low from the previous year when it was 9.6% for June 2011. The inflation in India is measured using the WPI that is the whole sale price index.

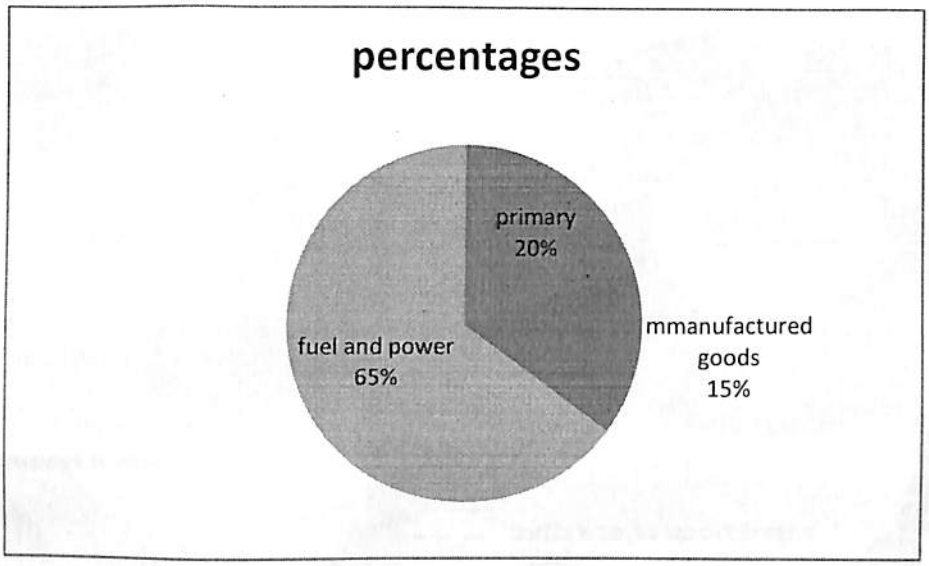
Some other countries uses CPI as the measure of inflation but the main problem with CPI is the lag , as CPI is measured monthly with a lag therefore it becomes useless if you want to change according to CPI. Thus we use whole sale price index as it is a coincident indicator and does not offer any lag.

Annual inflation rate in India for November 2013 was 11.24% which is higher than what was in November 2012 i.e. The inflation rate for the rural area was 10.53% and for the urban area was 11.74 % .thus we can see the inflation rate in rural area was less than that in the urban area.

The WPI represents the index on the basis of price of whole sale goods. This basket in India is comprised of

1) Primary article (20.1%)
2) Fuel and power (14.9%)
3) Manufactured products (65%)

Chart11-WPI basket combination of India



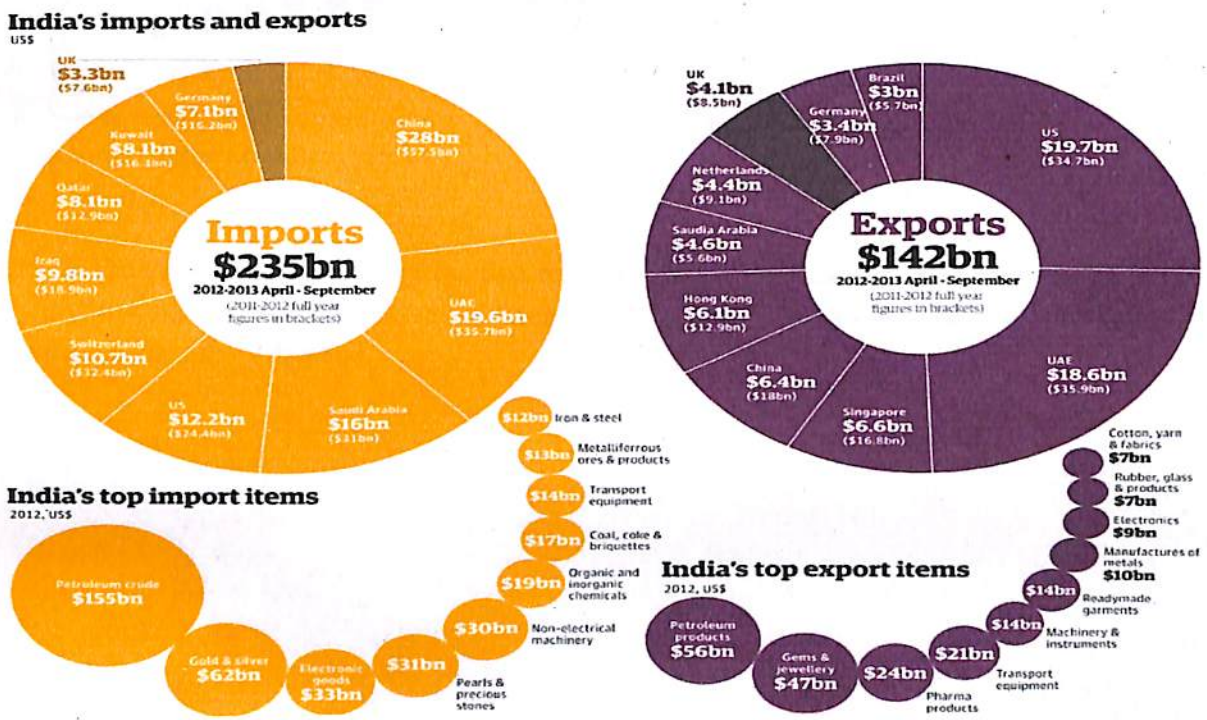
Source: Wikipedia

In primary section food articles are 14.3% in manufactured goods main are chemicals and chemical products 12%, alloys 10.8% , tools 8.9% , textile 7.3% and transport material 5.2%

1.6-BALANCE OF TRADE

Balance of trade is defined as the difference between imports and exports of the country it is the main part of country's balance of payments in help plus the made abroad by domestic firms on other side credit part consists of exports spending from outside companies in domestic market. Any country is said to be in trade deficit if its imports are more than exports and in trade surplus if its exports are more than the import. Here purchase and the term sale are changed with import and export respectively. Hence balance of trade can be said as the difference between purchases and sales of a country. Balance of trade is favourable if exports leads import and unfavourable if import leads exports.

Chart 12- India's export and Import

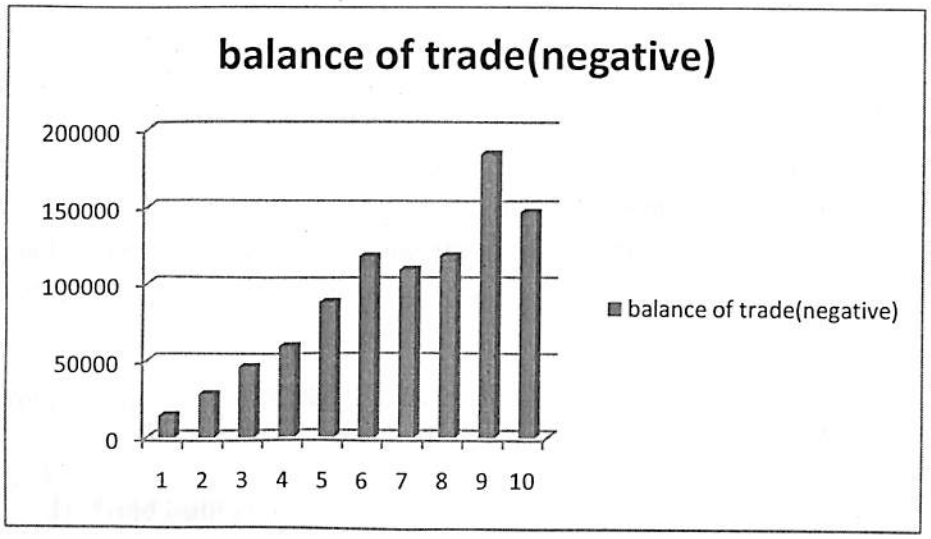


Source: The guardian.com

From the above diagram we can notice that India imports mostly from China, UAE and Saud Arabia together these three countries exports than 50 billion USD. Major items to be imported consist of crude oil and gold.

On the other hand India exports mostly to US19.7 billion USD and UAE 18.6 billion USD. Major items that are exported are petroleum products and gems and jewellery together these two create an export of more than 100 billion USD.

Chart 13- Balance of Trade of India since 2004



Source: Index Mundi

the above graph shows that for the past ten year increase in trade deficit of India this majorly contributed by the large amount of crude oil that India imports every year to meet its ever increasing energy demand.

1.7-FOREX RESERVE

Forex reserve for a country is equal to the sum of foreign exchange reserve, reserves of gold, SDR and IMF reserve here SDR stands for special drawing rights and IMF for international monetary fund.

The Foreign Exchange reserve of a country comes under the financial part of the balance of payment as the assets and if these are high the country can invest more in the international market. Thus the foreign exchange reserves determine the investment capacity of a country in foreign market.

What comes under FOREX reserve?

1) **Gold bullions**
2) **Loans**
3) **Foreign currency**
4) **Deposits that are transferable**
5) **Derivatives such as forward and future contracts**

1.7.1 purpose

A foreign reserve allows the central banks to purchase its own currency, thus by doing that the central bank can control the value of its currency. For example If value of Chinese Yuan depreciates in the international market china will buy more and more Chinese Yuan from the market from its foreign reserve so that it will create a demand of Chinese Yuan in the international market and hence will appreciate the value o Chinese Yuan.

Secondly if a country is under substantial amount of foreign debt then having a good amount of foreign currency reserve can ease it to pay all those debts.

Who decide the FOREX reserves?

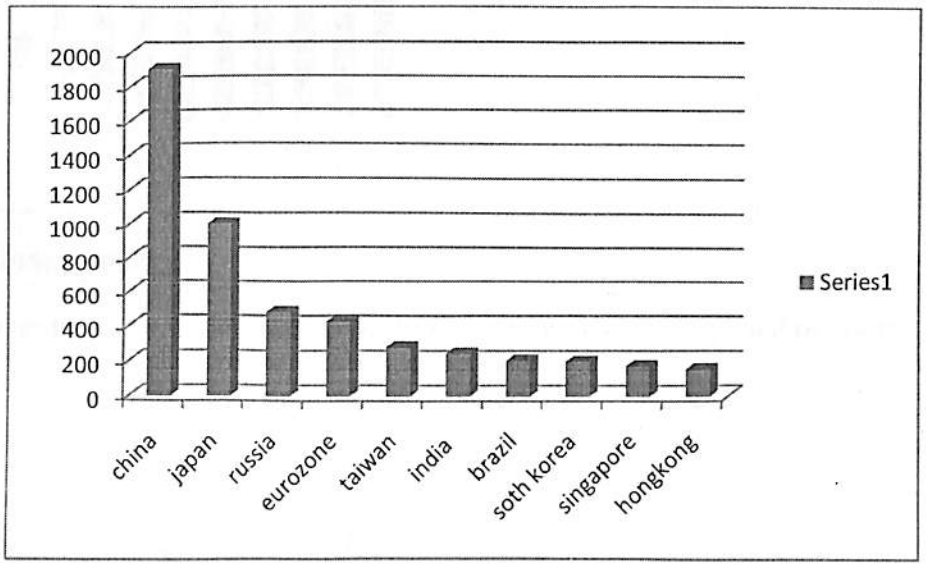
Forex reserve maintenance and expenditure is totally in the hands of the central banks and these central banks use it as a tool to control the value of country's currency. In India RBI (Reserve Bank of India) maintains the reserve of such foreign exchange and decides the monetary policy based on these reserves.

1.7.2 Problems

Inflation may erode the value of your Forex reserve, as Forex reserve are fixed and no interest rate is give on that therefore over the period of time its value decreases.

Secondly sometimes due to negative movement of the value or price of currency country can make a huge loss however, if the movement is on the positive side profit can be made by the countries.

Chart 14- Countries ranking in terms of Forex reserve



Source: Market oracle.uk

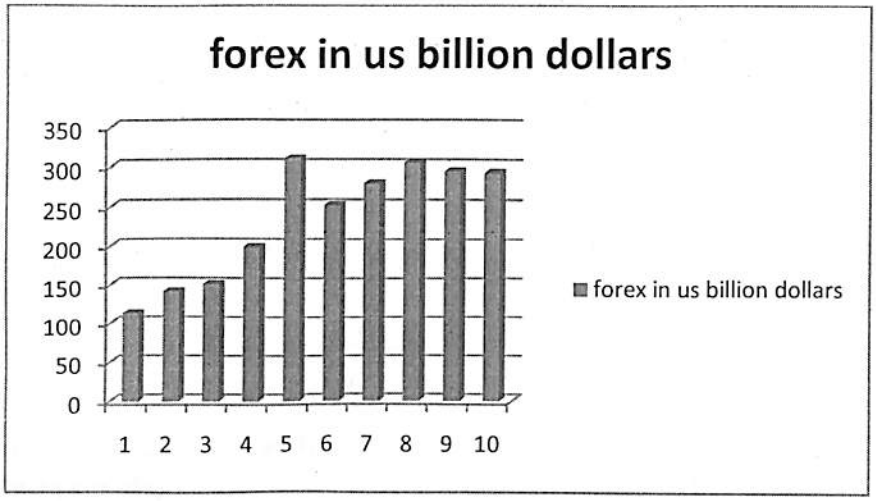
Above graph shows amount of Forex reserve held by some countries with India ranked at 5the place.

1.7.3 Indian foreign exchange reserve

Within one month (Feb 2014- march 2014) Forex reserve of India has increased to 16598.20 INR billion from 16565.50 INR billion. From the year 1990 the Forex reserve has increased from 5208.98 INR billion to 16565.50 in March 2014. In India this Forex reserve is maintained by RBI. CAD lays a negative effect on the Forex reserve of the country as the imports increased over the exports the amount of Forex reserve get depleted as the international payments are made in terms of USD by the country causing a decrease in Forex reserve of the country.

Another factor is slowing of the decrease in the exports the currently is unable to earn Forex and hence it has a negative effect.

Chart 15- India's Forex reserve for the past 10 years



Source: Index mundi

Above diagram shows the movement of the Forex reserve over the period of last ten years.

1.8 CRUDE OIL

Crude is just undistilled or unrefined petroleum made up of various hydrocarbons and can be refined to give useful products like gasoline, natural gas diesel etc. it is t as the fuel thick and black in colour and has taken millions of years to attain such form it is made up hydrogen and carbon and when burnt produces huge amount of energy that is why used worldwide.

It is the combination of two words Petra means rock and oleum means oil. Crude oil is formed due to anaerobic decomposition of dead and decaying plants and animals over large period of time. The plants and animals are generally the microorganism like phytoplankton and zooplanktons.

Petroleum is recovered by rigorous drilling of probable oil fields using drilling rig. The well head cost may reach up to 40 million USD for deep water reservoirs.

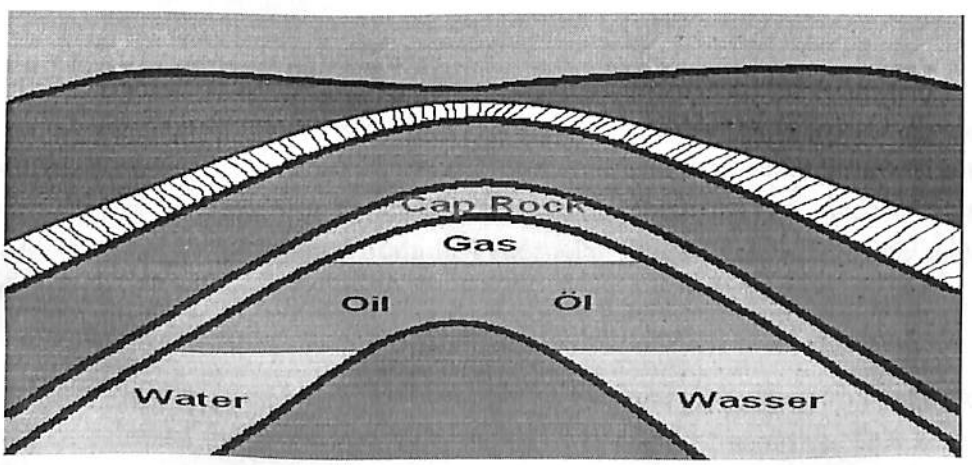
petroleum can used as fuel or in making many chemical compounds that are of daily use , however despite having such a huge advantage it has a major drawback as it causes environmental pollution and degrades the life in surrounding. It releases toxic hydrocarbons in the air that may cause lung cancer, acid rain etc. or when mixed with water as in cases of oil spills destroy the aquatic life.

1.8.1resorvoir

The condition necessary the formations of crude oil are:-

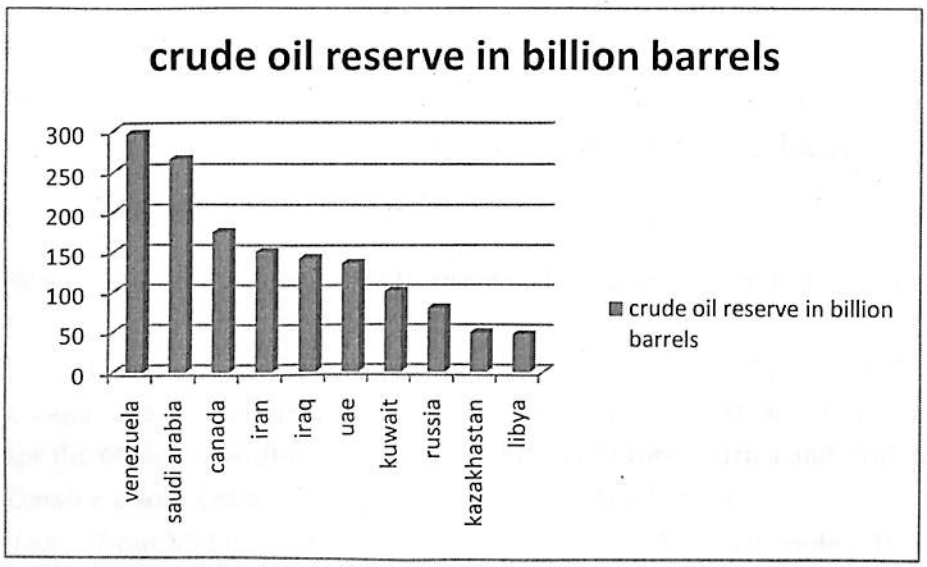
1) source rock
2) cap rock
3) dead and decayed plants and animals

Fig 16- Oil trap formation



Source: Wikimedia

Chart 17- Crude reserves of different Countries



Source: EIA.

Crude oil producing reactions are categorized by the first order reaction it breaks hydrocarbon into oil and gas.

Wells when drilled sometimes the oil and gas comes out of its natural pressure however with time this pressure is reduced at the reserve start to become depleted. Hence new techniques like EOR enhance oil recovery is used to recover oil Wells. From above graph we can see that Venezuela is at the top in terms of oil reserves at around 290 billion barrels, this is mainly distributed in the oriental basin of Venezuela and near the Orinoco river belt second is Saudi Arabia at267 billion barrels of oil reserve mainly at Ghawar oil field.

1.8.2 Unconventional oil reservoirs

The oil that comes out in the surface is the part of the partially non biodegraded Oil that still remains inside the surface and are known as oil. These oil sands can be found in all of the Canada and Venezuela in Venezuela it is known as tar oil. In Canada it is found mainly in Alberta while in the oriental basin in Venezuela. Venezuela has the world's largest tar sands reservoirs.

Shale on the other hand is the sedimentary rocks having deposits of oil called kerogen. These can be released in the through the process of hydraulic fracturing. This kerogen is used or producing crude using high pressure and temperature process. This method has been used since very long time to convert kerogen to crude. Bakken shale in U.S is one of the largest source of the shale gas beside this China) is also having huge shale gas reserves. These reserves are measured in TCF (trillion cubic feet).

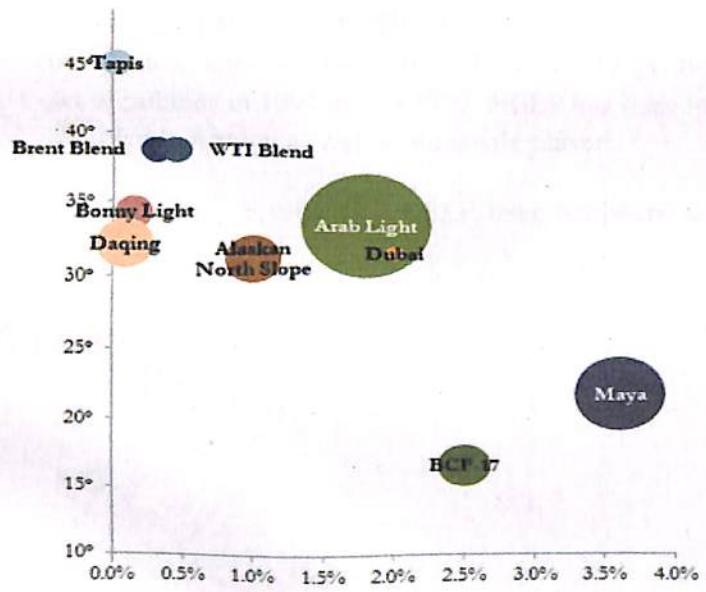
1.8.3 classification

The oil is classified according to the quality, location, viscosity, gravity and atomic number. It is sour if it contain sulphur more than 0.5% otherwise it is sweet if it contains sulphur less than 0.5%. Sweet is preferred more than sour.

The cost for transport depends on the geographical location or we can say the distance between the two places, type of ship hired, number of days for which the ship is hired.

Some of the common reference crudes are:

- West Texas Intermediate (WTI), supreme in quality, sweet, light oil delivered at Cushing, Oklahoma for North American oil.
- Brent Blend is a combination of 15 different types of crude oil found in the North Sea in Europe. The delivery point is at Sullom Voe terminal at Shetland. it forms as a benchmark for the crude oil originating from countries in Europe, Africa and Middle East.
- Oman is a sour crude oil originating from the Middle East.
- Tapis (from Malaysia, used as a reference for light Far East crude oil)
- Minas is a benchmark crude oil for Indonesia.
- There is a declining trend in the production of the above mentioned crude oils with the passage of time.
- **Chart 18** Types of crude



1.9 CRUDE OIL IN INDIA

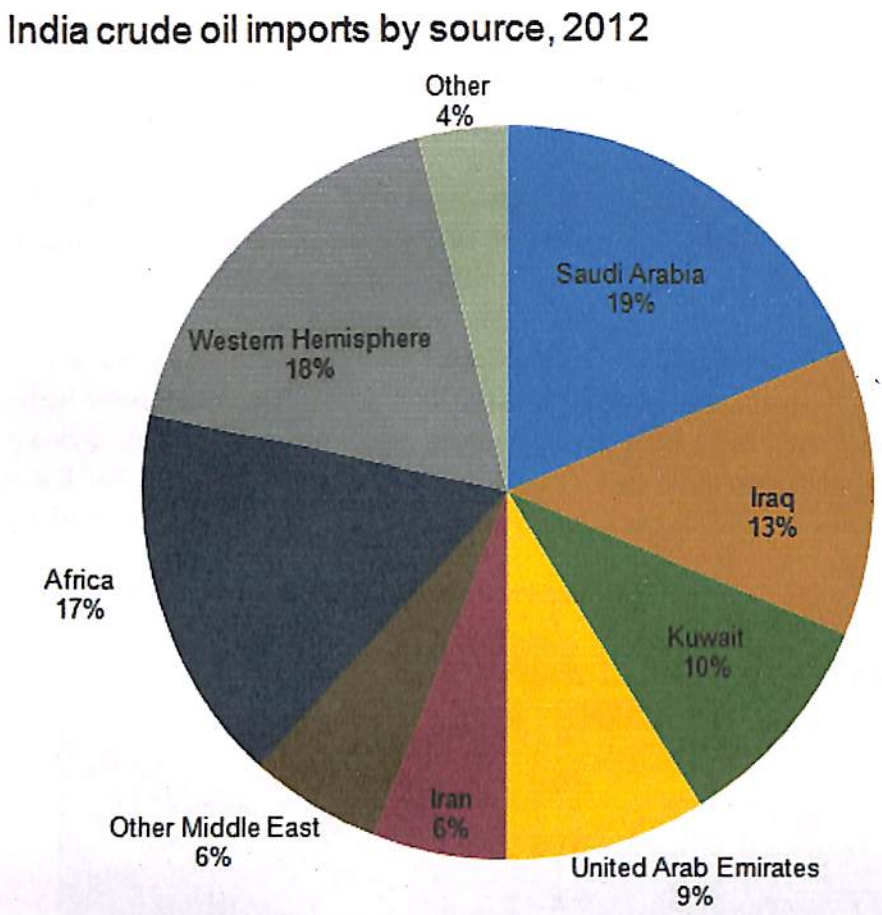
The India had about 125 mt of reserves of oil in April 2010 or 5620000000 bbl by estimation of the EIS for 2009, Most reserves of crude oil from the India are located on the West Coast (Mumbai High) and in the regions of the North - East of the country, although considerable undeveloped reserves are also located in the Bay off the coast of Bengal and in the State of Rajasthan. The combination of oil consumption and left fairly unwavering production levels the India depends heavily on imports to meet the consumption needs. In 2010, the India produced an average of approximately 33.690.000 tonnes of crude on April 2010 [17] or 877 000 barrels per day according to the EIA's 2009 estimates. In 2006, the India consumed 2.63 MB / j about (418 000 m3 / d) oil. EIA believes that the India recorded a growth of demand for oil by 100,000 barrels / day (16,000 m3 / d) in 2006. From 2013 the India produces 30% of the resources of the India mainly in Rajasthan.

1.9.1 sector organization

Oil sector is mainly ruled by the public sector companies but number of private players is also increasing. Government has taken serious steps to change policies that have increased the participation of foreign companies in India.Upstreamm sector is mainly dominated by CGSB, and is responsible for 75 % of oil production. As India is very much deficient in oil and gas Government has introduced many policies that could help India to decrease its oil dependence NELP is the result of these policies. This has increased the number of foreign companies participating. Despite only very less of oil fields are held by the foreign companies. After nationalization of the oil and gas resources in 1970 government started new set of policies in 1991 and in 1999 NELP has been introduced under which blocks have been awarded to foreign as well as domestic players.

Currently only 9 rounds of NELP have happened under which more than 200 PSC's have been assigned.

Chart 19- Indian crude oil import



Source: U.S. Energy Information Administration, International Energy Statistics, Lloyd's List Intelligence.

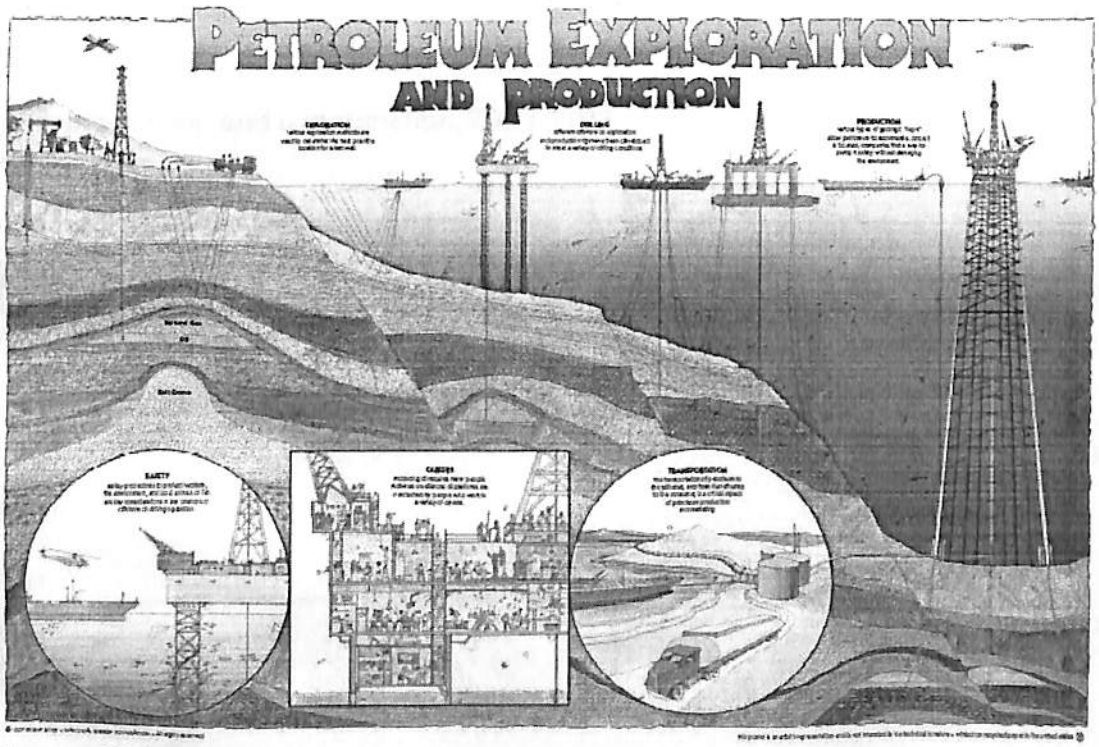
1.9.2 exploration and production

According to the *Oil & Gas Journal*, India had 5.5 billion barrels of proved oil reserves at the end of 2012. About 53 percent of reserves are from onshore resources, while 47 percent are offshore reserves. Most reserves are found in the western part of India, particularly western offshore, Gujarat, and Rajasthan. The Assam-Arakan basin in the northeast part of the country is also an important oil-producing region and contains more than 10 percent of the country's reserves.

Historically, ONGC dominated the upstream oil sector and relied on production from Mumbai High oilfield and its associated fields in western offshore. However, domestic crude production has stagnated and grown at an annual rate of one percent since 1990. In recent years, major discoveries in Barmer basin in Rajasthan and the offshore Krishna-Godavari basin by smaller companies such as Gujarat State Petroleum Corp and Andhra Pradesh Gas Infrastructure Corp. hold some potential to diversify the country's production.

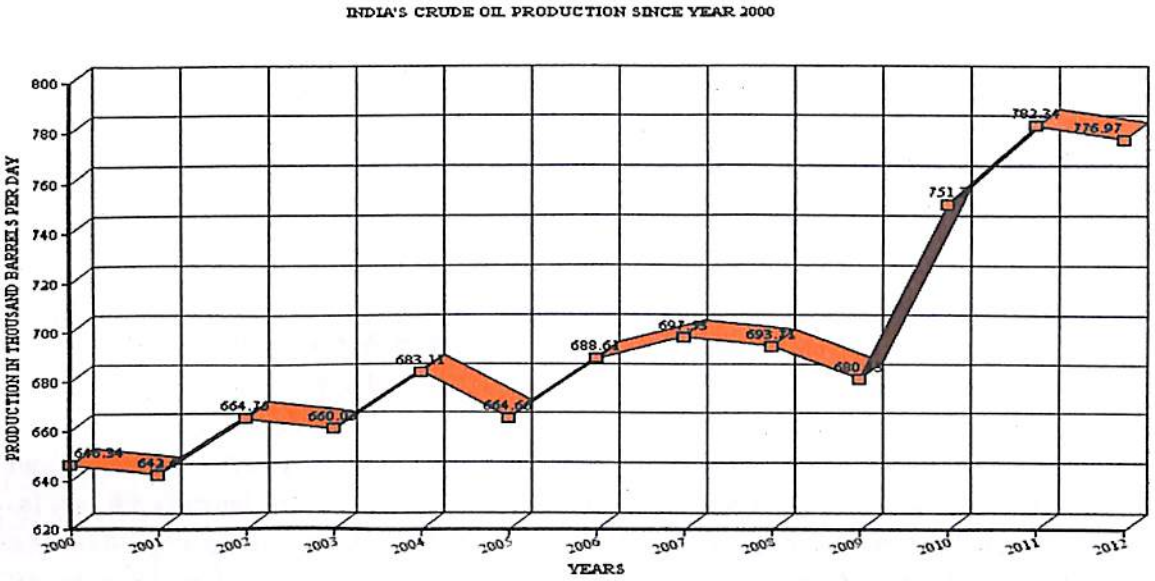
India's relatively small land-based resource endowment means companies require more upstream technical expertise to tap into offshore reserves. Foreign companies historically took the lead in exploring new offshore opportunities. For example, Cairn India brought on line the largest field, Mangala, of the RJ-ON-90/1 block in Barmer basin in 2009, with a production capacity of 130,000 barrels per day (bbl/d). However, foreign investment in India has waned in recent years, both because of increased competition from domestic Indian companies and India's complex exploration and production laws. Cairn Energy has sought to sell off its stake in Mangala, and several major oil companies, including ExxonMobil, Chevron, and BP, did not participate in the most recent NELP auction.

Fig20- Petroleum Exploration and Development



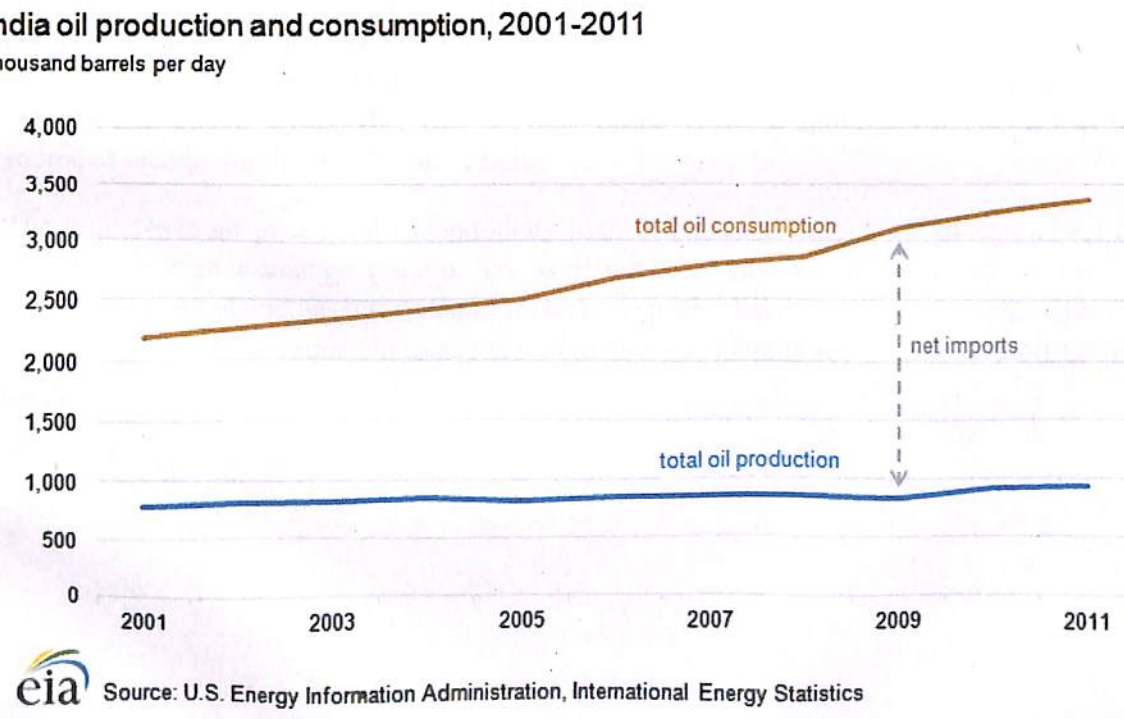
Source: National energy foundation

Chart 21 year wise production of crude oil in India



Source: Index mundi

Chart 22



1.9.3 Refining and downstream sector

Government of India has asked companies to take their steps and invest in the refining sector of India this decision with the passage of time is seemingly becoming fruitful as India is

know the net exporter of refined petro products government has removed most of the duties and many reforms have taken place to improve the refining sector more and more. With the refining capacity of more than 220 MMTPA India has now become a leading exporter of petro product. India now only purchases LPG products and kerosene.

India is now in third position in terms of refining capacity in Asia. The Jamnagar refinery refineries have capacity of around 60 MMTPA making it world's largest refinery. This constitutes around 30% of India's total reefing capacity

1.9.4 Role of crude oil in Indian economy

The rapid Industrialization along with increase in the population has put a lot of pressure over India's energy demand. Today India has only 0.5% of reserves and 15% of population this has put a lot of pressure on the country. at the present moment India's imports 80% of crude oil and the demand for natural gas is increasing at the rate of 68% per annum and crude at around 4% per annum.Its been a long time since India has made a huge discovery in oil and gas reserves and no other reserve has been able to replace depleting Mumbai high.

The fortunate thing for India is that it is a large country and around 40% of the area is still unexplored. The usage of crude is around 0.1 tonne p.a on per capita basis.

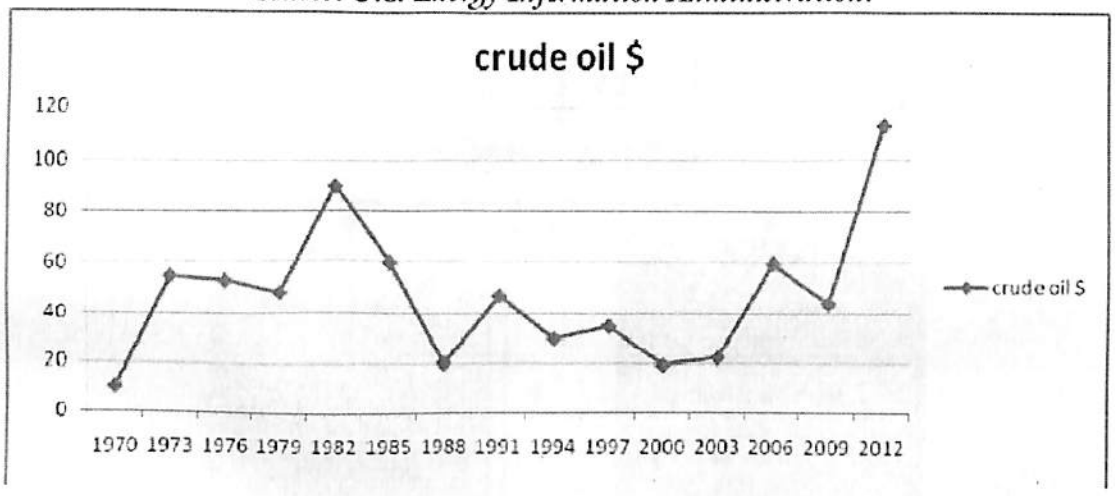
Prediction is that India will still depend on coal as prime source of energy and will find it to be difficult to replace it soon in near future. India has got 18 refineries and is exporter as it produce more than it require and government is working really hard to develop it as the refining hub of the world. This will not only create valuable earnings but also act as the source of income for the population of India.

The high crude oil prices and exceptionally high demand has caused an adverse affect on countries foreign exchange reserve. To overcome this government has made efforts to develop its own oil and gas reserves and several companies have been invited to participate in an unbiased bidding completion to acquire a possible asset.Uptill now 9 rounds of NELP has happened and many companies have participated.

2-LITERATURE REVIEW

Crude oil is one of the highest demanded commodities in the entire world so fluctuations in crude oil price can make serious impact on the growth of any economy. The objective of this paper is to assess the impact of crude oil price fluctuations on economy through the different macro-economic indicators. This paper employs correlation matrix and regression model to articulate the relationship between the different macro-economic components of Indian economy. In an empirical dataset covering twenty years, we detect that these variables are highly sensitive to the fluctuation of crude oil prices.

Source: U.S. Energy Information Administration.



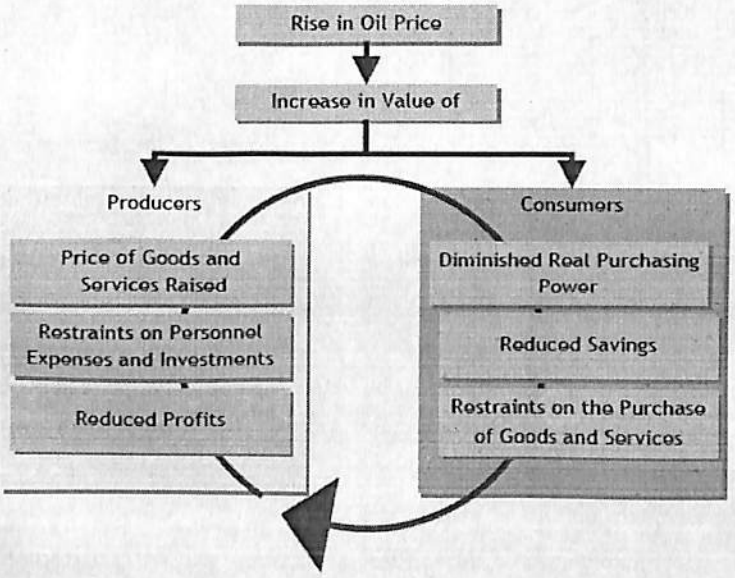
India needs to sustain an 8% plus economic growth rate, over the next two decades, if it is to eradicate poverty and meet its human development goals. With high economic growth rates and over 15 percent of the world's population, India is a note worthy consumer of energy resources. Despite the global financial crisis, India's energy demand continues to rise. Oil is the second largest source of energy after coal. In 2010, India (31, 82,000bbl/per day) is the fourth largest oil consuming country in the world after America (1, 91, 50,000bbl/per day), China (94, 00,000bbl/per day) and Japan (44, 52,000bbl/per day). With close to 70% of its oil requirements imported from more than 8 countries, India is a net importer of oil. The rest 30% is provided by the domestic oil production

.

Since the domestic output has failed to keep pace with demand and more than half of India's total export earnings went into buying petroleum, particularly, crude imports in 2011-12, thereby seriously impacting the country's overall economy, according to a paper released by apex industry body ASSOCHAM.

Traditionally, crude oil prices have been more volatile than many other commodity or asset prices since World War II which affect the domestic oil prices as well. During the study period domestic price of oil is controlled through regulatory price mechanism by the government in India, which absorbs the direct shock of crude oil price increase. But, it affects the economy by increasing the subsidy bill of the government, which may lead the financial deficit. Therefore, the provision of plausible explanations for the relationship between oil price movement and macro-economic performance has occupied the attention of economists over the last four decades. In this paper researcher has tried to find out substantial relation of crude oil price movement with macro-economic factors of Indian economy.

Fig. 2 Path of Impact of Rising Oil Prices on Economies of Importing Nations



Hamilton's 1983 showed in his work that oil prices increased and thereby reduced US output growth between 1948 and 1980. Hamilton's results have been confirmed and extended by a number of other researchers.

- Mork, Olsen and Mysen (1994) confirmed the asymmetry in effects for other OECD countries. In comparison with the other countries, oil price increases seem to slow down

economic growth in the U.S. to a great extent, even if this country is less dependent on imported oil than countries like Germany, France, and Japan.

- Barsky and Kilian (2002) have reported that an oil price shock is inflationary for the price of gross output. There is evidence of sharp changes in the CPI inflation rate following major oil price changes.

- Jin (2008), sharp increase in the international oil price and violent fluctuation of the exchange rate are generally regarded as factors discouraging economic growth. He submitted that oil price increase, all other things being equal, should be considered positive in oil exporting countries and negative in oil importing countries.

- Olomola and Adejumo (2006) examined the effects of oil price shocks on output, inflation, real exchange rate and money supply in Nigeria with in a VAR framework. They found no substantial role of oil price shocks in explaining movements in output and inflation, but on the long run money supply and real exchange rate are significantly affected following a shock to oil prices.

3-OBJECTIVES AND THE NEED OF STUDY

The research was carried out to assess the impact of crude oil in Indian economy. With the rapid volatility in crude prices economy is liable to suffer therefore it was very important to know what are the various factors that may change with the prices of crude oil.

From the above the following are the objectives of the research.

Objectives of the Research:

1. To study the Indian economy
2. To study the factors that can be affected by crude oil prices.
3. To analyse the impact of crude oil prices on these factors.

4-RESEARCH METHODOLOGY

The research methodology adopted for the research is Exploratory and analytical in nature.

Exploratory Research: Exploratory Research Method describes the research of statistics. It is logical and primarily focuses on numeric data.

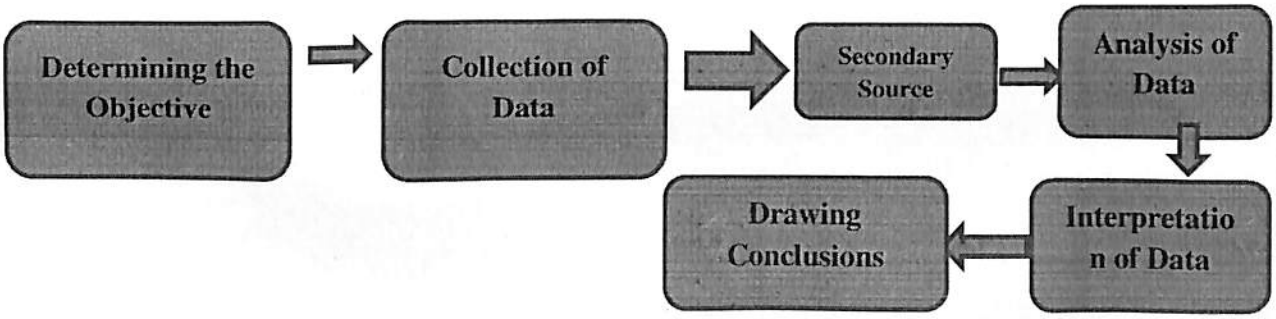
Analytical Research: The research also uses analytical research by the use of various regression tools to understand the impact of various factors affecting the crude oil prices.

DATA COLLECTION

For the completion of the research, the data would be collected majorly through the secondary sources like journals, research papers, and internet.

RESEARCH DESIGN

The following research design would be adopted for the research:



5-ANALYISIS

The analysis would be carried out in the following steps:-

1) Effect of crude oil prices on GDP

2) Effect of crude oil prices on Inflation rates

3) Effect of crude oil prices on Index of Industrial production

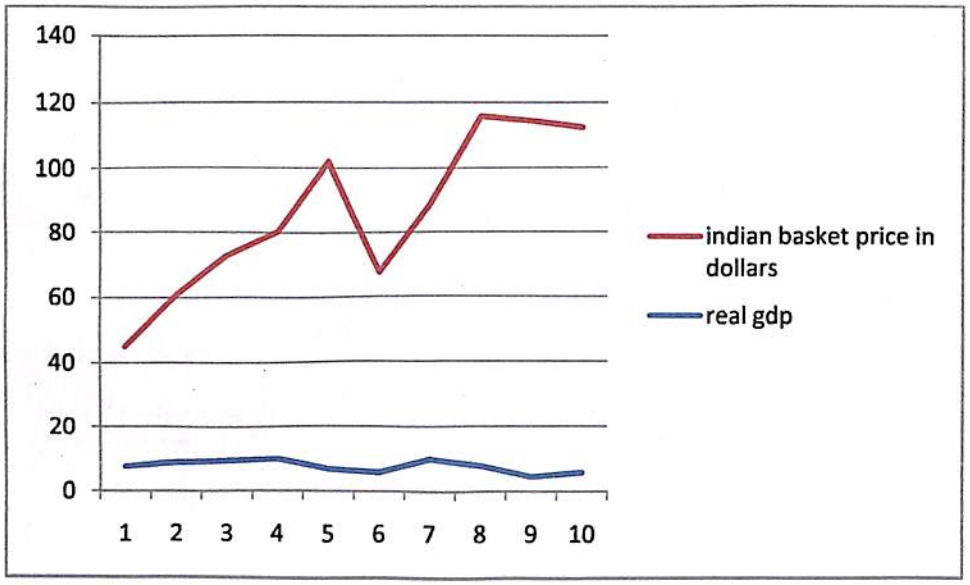
4) Effect of crude oil prices on Forex reserves

5) Effect of crude oil prices on balance of trade.

6) Effect of crude oil price on Foreign exchange

5.1 EFFECT OF CRUDE OIL PRICES ON GDP

Chart 23- graph between crude oil prices and GDP



Source: Index Mundi

Above graph dhows the movement of GDP with the crude oil prices

From linear regression using ms excel we get equation of type

Y= MX + C

Y= dependent variable (GDP)

X= independent variable (crude price)

C= slope

M= intercept

Hence we get

M=-0.03477

C=10.45459

Hence Y= -0.03477X + 10.45459

r=0.460556040671624

r square=0.212111866599123

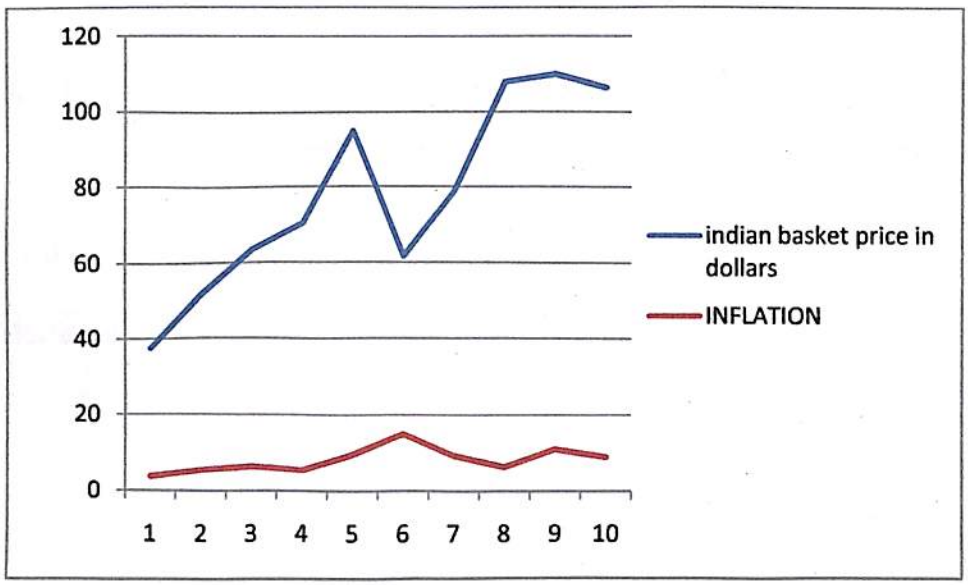
as per above analysis the correlation comes out as 0.46055 which shows a weak correlation between crude oil prices and the GDP or we can say Crude oil prices as such does not affect GDP.

Value of coefficient of determination comes out to be 0.2121; this means only 21% of variation in GDP can be explained by the above variables.

Multiple R	0.365398
R square	0.133515
Adjusted R square	0.025205
Std. deviation	3.270817
observations	10

5.2EFFECT OF CRUDE OIL PRICE ON INFLATION RATE

Chart 24- graph between crude oil prices and inflation rate



Source: Index Mundi

Above graph dhows the movement of Inflation rate with the crude oil prices

From linear regression using ms excel we get equation of type

Y= MX + C

Y= dependent variable (GDP)

X= independent variable (crude price)

C= slope

M= intercept

Hence we get

M=0.047285

C=4.530943

Hence Y=0.047285X + 4.530943

R=0.365398

R square=0.133515

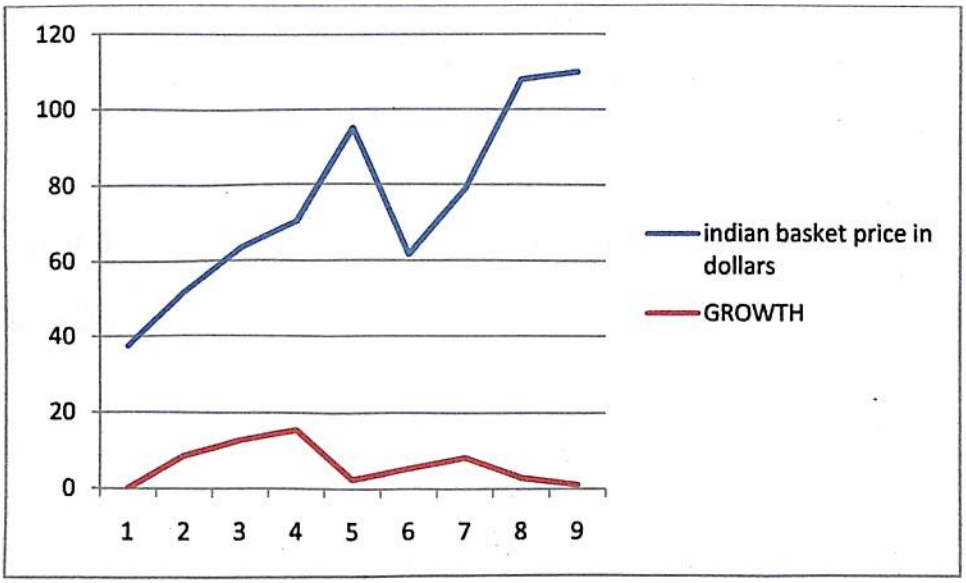
As per above analysis the correlation comes out as 0.365398which shows a weak correlation between crude oil prices and the inflation rates or we can say Crude oil prices as such does not affect inflation rates.

Value of coefficient of determination comes out to be0.133515; this means only 13% of variation in GDP can be explained by the above variables.

Multiple R	0.365398
R square	0.133515
Adjusted R square	0.025205
Std. deviation	3.270817
observations	10

5.3EFFECT OF CRUDE OIL PRICES ON INDEX OF INDUSTRIAL PRODUCTION

Chart 25- graph between crude oil prices and IIP



Above graph dhows the movement of IIP with the crude oil prices

From linear regression using ms excel we get equation of type

Y= MX + C

Y= dependent variable (GDP)

X= independent variable (crude price)

C= slope

M= intercept

Hence we get

M=0.912557

C=73.54562

Hence **Y=0.912557X+ 73.54562**

R= 0.859607

R square=0.738923

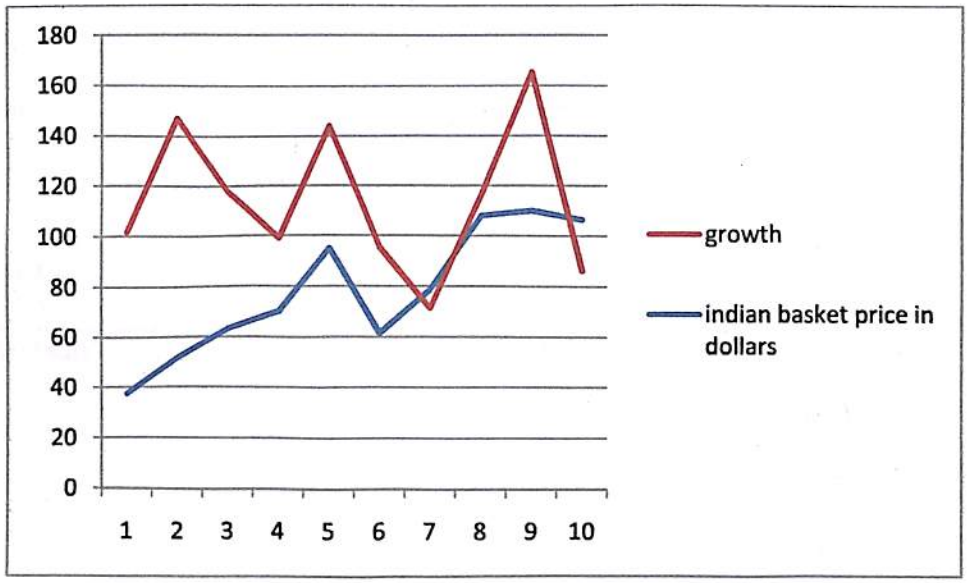
As per above analysis the correlation comes out as 0.859607which shows a strong correlation between crude oil prices and the IIP or we can say Crude oil prices does affect IIP.

Value of coefficient of determination comes out to be 0.133515; this means only 13% of variation in GDP can be explained by the above variables.

Multiple R	0.859607
R square	0.738923
Adjusted R square	0.701627
Std. deviation	14.51657
observations	9

5.4EFFECT OF CRUDE OIL PRICES ON BALANCE OF TRADE

Chart 26- graph between crude oil prices and Balance of Trade



Above graph shows the relationship between crude oil price and the balance of trade for the past ten years.

From linear regression using ms excel we get equation of type

Y= MX + C

Y= dependent variable (GDP)

X= independent variable (crude price)

C= slope

M= intercept

Hence we get

M=1797.993

C=-49271.5

Hence **Y=1797.993X - 49271.5**

R= 0.845888

R square=0.715527

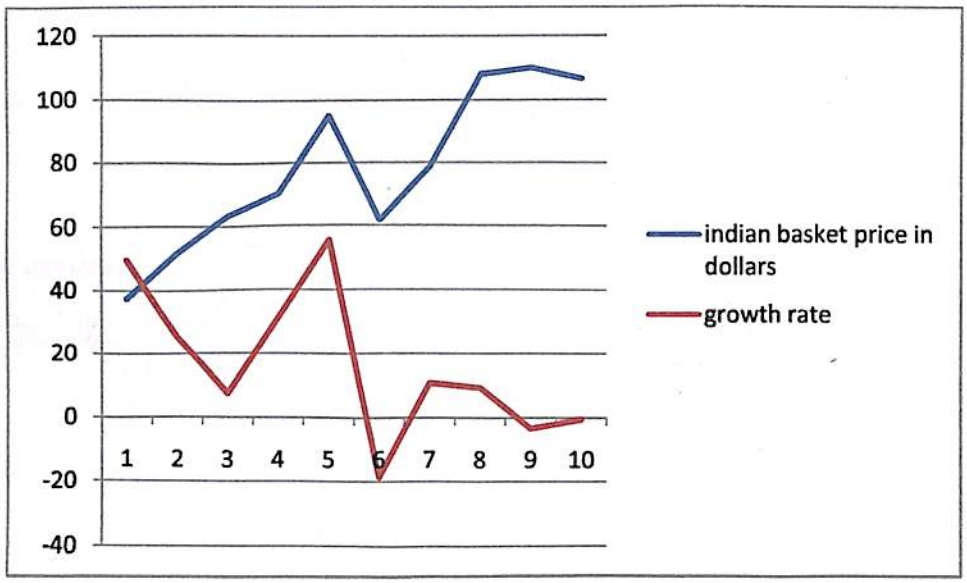
As per above analysis the correlation comes out as 0.845888which shows a strong correlation between crude oil prices and the BOT or we can say Crude oil prices as such does affect BOT.

Value of coefficient of determination comes out to be0.715527; this means 71% of variation in GDP can be explained by the above variables.

Multiple R	0.845888
R square	0.715527
Adjusted R square	0.679967
Std. deviation	30783.12
observations	10

5.5 EFFECT OF CRUDE OIL PRICES ON FOREX

Chart 27- graph between crude oil prices and Forex



Above graph shows the relationship between crude oil price and the balance of trade for the past ten years.

From linear regression using Ms excel we get equation of type

Y= MX + C

Y= dependent variable (GDP)

X= independent variable (crude price)

C= slope

M= intercept

Hence we get

M=2.639312

C=27.20939

Hence **Y= 2.639312X +27.20939**

R= 0.894116

R square=0.799443

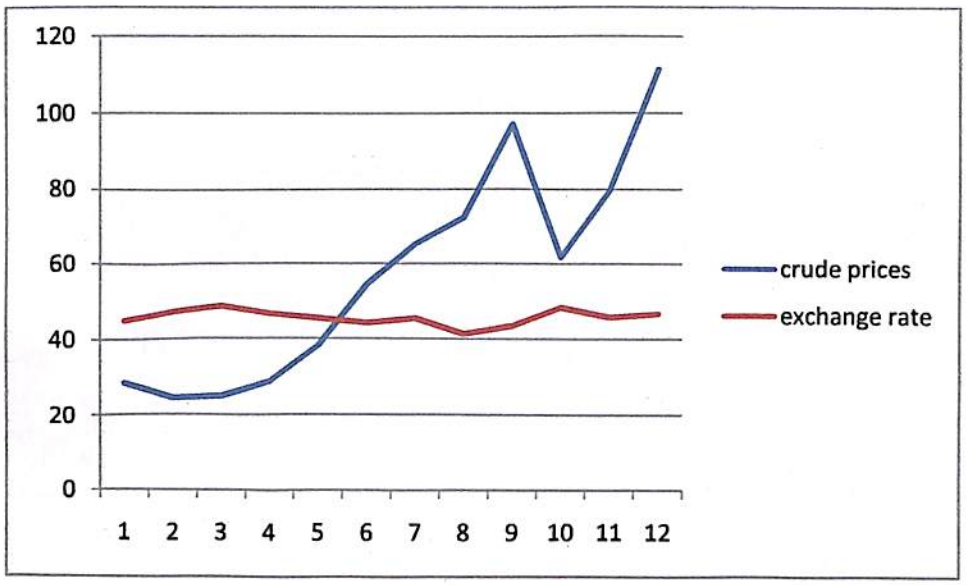
As per above analysis the correlation comes out as 0.894116which shows a strong correlation between crude oil prices and the FOREX reserve or we can say Crude oil prices does affect FOREX reserve.

Value of coefficient of determination comes out to be0.799443; this means 79% of variation in GDP can be explained by the above variables.

Multiple R	0.894116
R square	0.799443
Adjusted R square	0.774374
Std. deviation	35.89485
observations	10

5.6 EFFECT OF CRUDE OIL PRICES ON EXCHANGE RATE

Chart 28- graph between crude oil prices and Foreign exchange



Source: Index Mundi

The graph shows movement of the exchange rate with the crude oil prices

From linear regression using Ms excel we get equation of type

Y= MX + C

Y= dependent variable (GDP)

X= independent variable (crude price)

C= slope

M= intercept

Hence we get

M=-0.02434

C=47.02141

Hence Y=-0.02434X+ 47.02141

R= 0.343939

R square=0.118294

As per above analysis the correlation comes out as 0.343939 which shows a weak correlation between crude oil prices and the exchange rates or we can say Crude oil prices as such does not affect exchange rates.

Value of coefficient of determination comes out to be0.118294; this means 11% of variation in GDP can be explained by the above variables.

Multiple R	0.343939
R square	0.118294
Adjusted R square	0.030123
Std. deviation	2.041827
observations	10

6 CONCLUSION

Increasing population has played a significant role in shaping countries energy demand. India as we know is not abundant in crude oil reserves and heavily imports crude oil from different countries. So any fluctuation in the price of crude oil may affect the Indian economy.

With the help of correlation and regression analysis we have come out with the result that the factors like inflation rate, GDP and exchange rate does not depend on the crude oil prices on the other hand crude oil prices have affected the Balance Of Trade, Forex reserve and IIP.

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APPENDICES

1) TABLE REPRSENTING PRICE OF INDIAN CRUDE BASKET AND REAL GDP

YEARS	REAL GDP	PRICE OF INDIAN CRUDE BASKET
2004	7.59	37.5
2005	9.04	51.78
2006	9.53	63.29
2007	10	70.26
2008	6.9	95.08
2009	5.88	61.6
2010	10.09	78.74
2011	7.9	108.01
2012	4.5	109.96
2013	5.9	106.49

2) TABLE REPRSENTING PRICE OF INDIAN CRUDE BASKET AND REAL GDP

YEAR	INFLATION	Indian basket price in dollars
2004	3.78	37.5
2005	5.57	51.78
2006	6.53	63.29
2007	5.51	70.26
2008	9.7	95.08
2009	14.97	61.6
2010	9.47	78.74
2011	6.49	108.01
2012	11.17	109.96
2013	9.13	106.49

3) TABLE REPRSENTING PRICE OF INDIAN CRUDE BASKET AND IIP

YEAR	INDIAN CRUDE OIL BASKET PRICE IN DOLLARS	INDUSTRIAL PRODUCTION
2004	37.5	100
2005	51.78	108.6
2006	63.29	122.6
2007	70.26	141.7
2008	95.08	145.2
2009	61.6	152.9
2010	78.74	165.5
2011	108.01	170.3
2012	109.96	172.2

4) TABLE REPRSENTING PRICE OF INDIAN CRUDE BASKET AND BALANCE OF TRADE

INDIAN BASKET PRICE IN DOLLARS	BALANCE OF TRADE(NEGATIVE)
37.5	14306.56
51.78	27981.49
63.29	46075.2
70.26	59321.19
95.08	88521.82
61.6	118400.95
78.74	109621.45
108.01	118632.95
109.96	184557.74
106.49	147172.11

5) TABLE REPRSENTING PRICE OF INDIAN CRUDE BASKET AND FOREX RESERVE

YEAR	INDIAN CRUDE OIL BASKET PRICE IN DOLLARS	FOREX IN US BILLION DOLLARS
2004	37.5	112.96
2005	51.78	141.51
2006	63.29	151.62
2007	70.26	199.18
2008	95.08	309.72
2009	61.6	251.99
2010	78.74	279.06
2011	108.01	304.82
2012	109.96	294.4
2013	106.49	292.65

6) TABLE REPRSENTING PRICE OF INDIAN CRUDE BASKET AND EXCHANGE RATE

crude prices	exchange rate
28.5	44.95
24.44	47.19
25.02	48.6
28.83	46.56
38.27	45.33
54.52	44.11
65.14	45.33
72.39	41.29
97.26	43.42
61.67	48.35
79.5	45.74
111.26	46.67