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CHHATRAPATI SHAHU INSTITUTE OF BUSINESS EDUCATION & RESEARCH

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Editorial Note

The world is passing through a turbulent economic times. The growth rates of the countries world over are not as per the expected speed. The increased rate of population growth is making the policy making all the more difficult. The problems are compounded with the increased level of social disturbances within and among the nations. At this juncture it becomes necessary to go to the root cause of these economic and social disturbances. Accordingly in the present issue of the journal the article on global financial crisis and its impact on India is selected for publication. The article not only identifies the reasons for the crisis but also brings of the implications for developing economies such as India. The use of statistical and econometric techniques for highlighting the implications is the strong point in the research article. The new research scholars can understand the global crisis scenario based on the review published. At the same time the art of using the advanced techniques for data analysis can also be understood.

In these difficult times man has to be mentally strong at individual and organizational level to effectively overcome the situations. Accordingly the value systems and ethics become significant for all. In the present issue the research article addressing these two important issues is also covered.

As a case study the organization which has successfully implemented the turnaround strategy in the situation of global crisis is presented. The backdrop of the case and the strategy adopted by the company is discussed in detail. The published case will be useful to all the management students and for companies to understand the ways and means to overcome a crisis situation.

The book review too is on an important concept of strategic management. It mentions the features of each chapter for the learners and reviews the contribution made by the authors to simplify the concept. In view of the important management issues covered in the research articles and the case study along with the book review, it is expected that the current issue of the journal will definitely be an asset to the researchers and managers in different organizations.

Dr. T. V. G. Sarma
Editor

Impact of Global Financial Crisis on the Indian Economy: An Econometric Analysis

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Abstract : Globalization is intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa. The economies must realise that benefits and shocks are part and parcel of the interconnectivity of economies. They need to look at pros and cons and then only can go for it. The economies should take as much advantage possible, through trade or foreign capital, and try to be resilient to shocks arising from globalization. Emerging economies have obstacles in their growth path, and same is the case with India.

The study brings forth the events that caused the global financial crisis and euro zone crisis and their impact on the Indian economy. For comparing the behaviour of macroeconomic variables of India before, during and after the crises, the data has been taken for analysis from 1996Q1 to 2011Q4. To look at forecast of variables, Gauss-Seidel method was applied through Vector Autoregressive framework. Most of the macroeconomic variables are more volatile during the post crises period and a result of this, the model did not have that good fit especially during the post crisis period. Applied econometric methodology of modern time series is utilised to ensure rigorous analysis.

Key Words: Liberalisation, Globalisation

1.0 Introduction

Globalization has been both boon and bane for Indian economy. When the fundamentals of economy were strong, foreign investments from the rest of the world flew in, and when the economy's performance was poor, there was reversal of capital. The external shocks had cut down the economy's growth. The macro economic variables show lot of fluctuations since the recent global economic crises. The government said that the economy was not affected from the global financial crisis and had appreciated its good policies. Then what prevented them from steering the economy out of euro zone debt crisis?

The US government after the great depression had formed set organizations in order to help those who find it difficult to find home loans. These organizations would help in meeting the demands of the borrowers as well as lenders. Any mortgage defaults would be repaid by them, on behalf of the defaulters. The Federal National Mortgage Association bought mortgages insured by Federal Housing Administration and issued long term bonds to investors and others. The Federal Housing Enterprise Safety and Soundness Act was passed in 1992, which helped low income people in owning a house. Innovations in financial securities helped transferring the risk to others. The housing had boomed and high lending rates attracted lenders. At that point of time, it was possible for anyone to take loans without distinction. The Clinton and Bush administration had encouraged home ownership for all, which in turn increased subprime lending. Here the situation was willingness to supply loans and not demand driven borrowing. After the NASDAQ index crash, the interest rates were reduced to encourage investments in 2000-01. After four years, the rates were raised which made the home loan borrowers to default payment. The risk taken by the insurance companies was tail risk, and the possibility of the event happening is very less. But the unexpected had happened and many households defaulted payments, and the insurance companies went bankrupt. What was supposed to be a small problem in financial sector had turned out to be global crisis. Some call it the global financial crisis, and others call it as the great recession. The crisis of such magnitude was first one in the modern financially sophisticated world. The direct effects of the crisis were seen with countries which had connection with the dangerous assets, and other countries had indirect impact either through reduction in trade or capital flows. The US government had taken steps to bail out banks, and also to regulate financial markets.

The problem with the Euro zone was with Greece, Portugal, Italy and Spain. These economies were performing their worst since the recession. The former Greek Prime Minister Andreas Papandreou had spent lavishly, for which his son George Papandreou, the next Minister had to clean up. After the recession, the economy continued to shrink, which made the rating agencies reduce their rankings. The budget deficit to the percentage of GDP was 12.7% in 2009. The economy had received €110bn bailout on May 2010, but the problem was not solved. They were ready to sign up for second bailout in exchange for reforms, which made the public angry, as the government takes austerity measures. In the name of austerity, taxes are increased and wages are cut. The IMF and European Union wants the economy to follow austerity measures and reduce budget deficit and public debt and maintain at levels as specified by the Union, to continue to be part of the euro zone. Greece could not cut spending and the Union was planning for Greece's exit from the zone. The problems mentioned were not only of Greece's but also of the other three other economies, which are next to Greece to exit from the zone. The Portugal had budget deficit was 9.4% of GDP in 2009, and the publc was 85% of GDP. The household debts were to the level of 100% of GDP. The Italian economy had public debt of 115%, and the Prime Minister was more problematic than the economy. He was involved in scandals and refused to introduce reforms in the economy. The unemployed Spaniards are to the extent of 19% in 2009, and increased to 23% in 2011. The growth rates continuously fell since recession. The housing boom had helped the construction workers, and after the burst they became jobless. Germany and France economies were also having their own problems, but they performed better than other economies. Germany had huge surpluses in current account. They did not spend their monies but had invested in US subprime assets and Greek government bonds. The IMF, German chancellor Angela Merkel and French president Nicholas Sarkozy helped the economies which are affected from huge debt levels, by bailing out them. If the economies do not cut spending or continue to maintain their debt levels and go against the rules given by European Union, they may have to leave the zone. The citizens of these economies are already outraged by the recent situations and if the country will have to leave the zone, they may not be able form a proper government for themselves.

Until recently India was a silent spectator to the happenings around the world. India had started its growth engine two decades back, by introducing reforms. The economy had gone through lot of fluctuations within 20 years. The average growth of the economy was around 9% for five years prior to the global financial crisis. As the crisis spread to India, the growth started to fall down and had deteriorated much worse with the start of the euro zone crisis. Much of the contribution towards growth was from services sector (60%) and was followed by industries (20%) and agriculture (20%). The economy's inflation generally was due to rise in global oil prices, as much of India's oil consumption was imported. The BSE sensitive index which had reached 19000 points in 2007-08 crashed down with the crisis. Then in the next year with economy's recovery the index plunged to 20000 points, and that too had tumbled down with the Euro zone crisis. Indian economy after globalization policies had opened up itself to other economies, which helped the economy through trade and finance. The trade since 1990s had increased and along with it, the deficit too was rising. After the crises the trade flows between the economy and OECD had declined. The economy was increasing its trade relationships with developing nations. Foreign capital into India had provided financial backup for the economy. The foreign investments had increased a lot and during both the crises there was huge volatility in investments. The growth of net invisibles had reduced. The exchange rate had continuously depreciated from 1990s and with the euro zone crisis; the rupee per dollar value had depreciated to 54. The economy had seen huge variations since start of the reforms.

2.0 Impact of Crisis on Indian Economy

India had no choice from escaping from the recent crises which have shaken the world. The economy was not directly related to these shocks, but indirect impact was huge. Regarding the euro zone debt crisis, India was no way directly related to the debt problems of those economies. Here too the indirect impact was huge. India's openness to the rest of the world can be seen during both the crises.

The Indian banks had little exposure to the dangerous assets of the US financial markets, and so the direct effect of the crisis on India was very little. There were indirect effects of the crisis on the economy. The policies taken by the then governor Y.V. Reddy had helped Indian economy to go in line with his guidelines and kept the crisis at bay. The indirect effects of crisis on India were through the transmission channels. The transmission channels which had troubled the economy are 1) Trade, 2) Financial, 3) Commodity and, 4) Confidence channels.

Prior to the crisis, India was going through down turn phase of business cycle in the year 2007. The winter (Rabi) crop was less and manufacturing productivity was less due to high productivity in previous years and was more of cyclical shift. There were inflationary situations in the economy and it was mainly due to high oil prices around the world. India imports 70% of its oil consumption and so the inflationary pressures in the economy were high. The crisis had its immediate effect on capital flows. The 'FDI' was not much affected but the FII was taken away with in short span. Due to fall in confidence levels, it reflected the foreign investment inflows. The trade growth rate had shrunk by 12.3%. As the global exports reduced by 22%, India's export declined by 8%. The foreign exchange reserves were reduced and the exchange rate was in 2008-09 $45.99 per dollar as compared to $40.26 per$ during 2007-08. The stock market had lost 10,000 points.

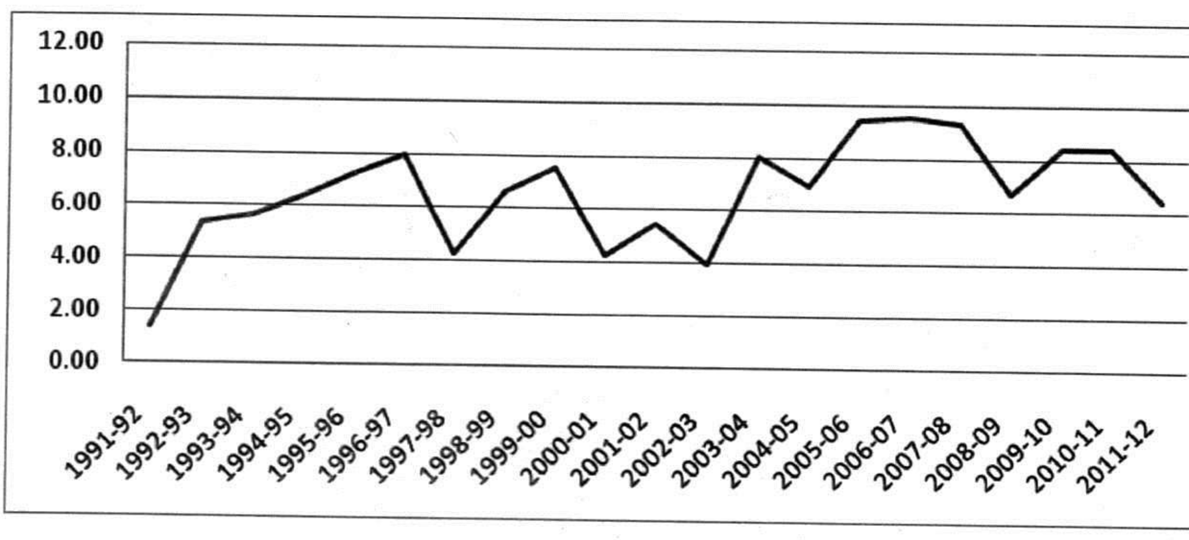
India was no way related to the debt problems arising in the Euro zone economies, but here too the indirect impact of debt crisis was huge. The foreign trade was seriously affected. The economy's trade towards Europe had been declining drastically. The foreign capital was being reversed as investors were concerned about slowdown of economies around the world.

Chart Explaining the Transmission Channels of Global Shocks

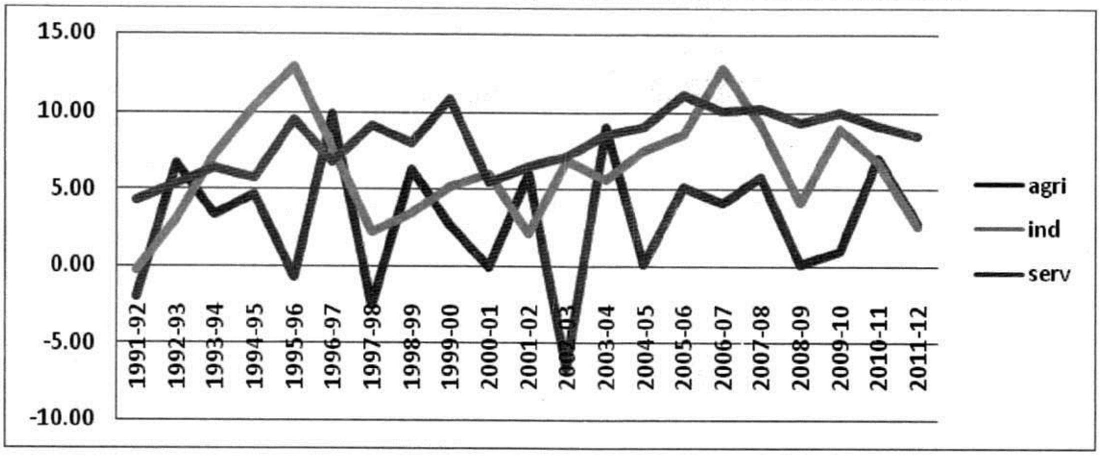
To understand the impact of US subprime and euro zone debt crises on India, we need to look at the macroeconomic variables. Looking at variables only at the time of crisis will not give the exact picture of volatility. It would be better to look at the past performances of the variables and compare it with present performance. So we look at the performance of economic variables from 1990-91 to 2011-12. The study is divided into three parts. The first part explains the nature of variable during 1990-91 and 2000-01, which is after reforms. The time period from 2001-02 to 20007-08 is second part, which explains the performance of the variable after the new economic reforms were introduced. The third part looks at the variables during the two major crises. Any other major fluctuation in the behaviour of the variable is also explained. The variables under study are GDP, inflation, BSE sensitive index, trade, foreign investments and invisibles.

The GDP growth rate since 1990-91 was on a rise and had reached 7.59% in 2000-01. All the three sectors contributed towards the growth; however the contribution of agriculture sector started to fall behind industrial sector from 2004-05. During 1990-91, contribution of agriculture sector (average 20%) was around 30% during 1990-91, and by 2011-12 it has fallen down to 14.01%. The growth rate of this sector (average 3%) was not so good when compared to other sectors. The services sectors' share (average 57%) in the GDP was on a continuous rise, but the growth rate started to fall from 9% in 2007-08 to 7% in 2008-09 due to the crisis. The contribution of industrial sector towards GDP (average 20%) was maintained throughout the period from 1990-2012. The growth rate (average 6.5%) shows volatility in the production, and before the 2008 crisis there was a fall, and the crisis has deepened the fall. There was recovery after the crisis which did not stand for long, but immediately started to fall with the start of Euro zone crisis, and reached 2.5% in 2011-12. The average GDP growth rate was above 8.5% for five years, prior to the crisis. The economy's growth rate was affected during both the crises, showing that the country is very much open to the rest of the world (US and Europe). The services and the industry sector were affected, but not the agriculture sector.

Growth Rate of GDP

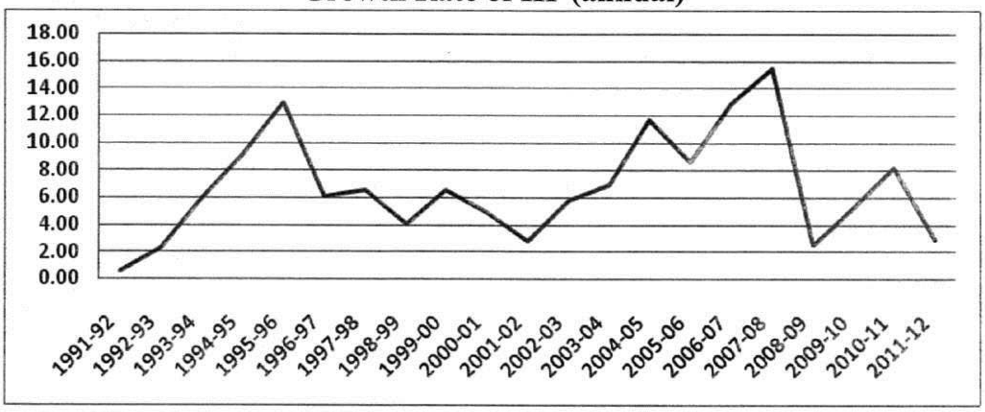


Growth Rates of Agriculture, Industrial and Services Sectors

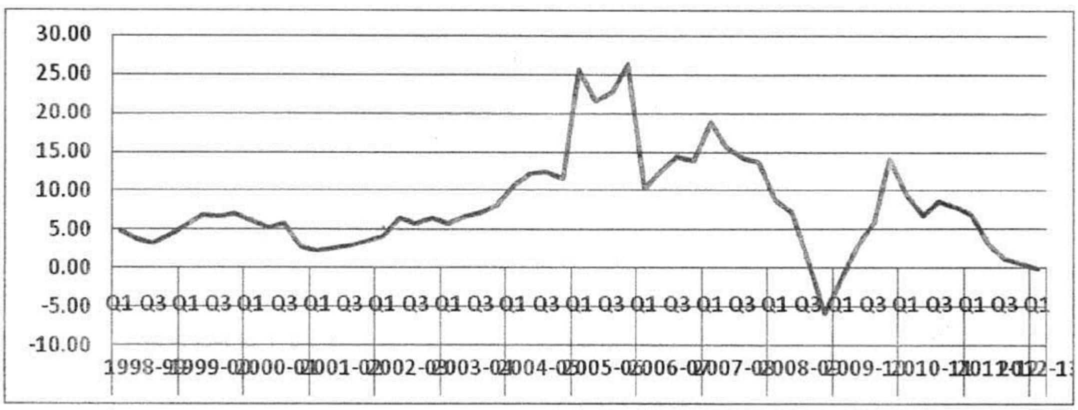


We can observe that there were lots of fluctuations in the economy's growth path. The fluctuations did not totally arise out of external factors. Sometimes it was the poor industrial performance or high fiscal deficits, Inflation was the biggest concern. The economy is almost dependent on services sector, leaving the agriculture sector on its own, and the industrial performance was poor in the recent past, with huge volatility. India was supposed to act as shock absorbers of crises along with China. The average high growth prior to the crisis could not be continued after. India must also give preference to agriculture sector. If the contribution of sectors towards is balanced, then problem relating to single sector will not affect the entire economy, as happened during the crises. The economy after the euro crisis was unable to reach the growth rates.

Growth Rate of IIP (annual)



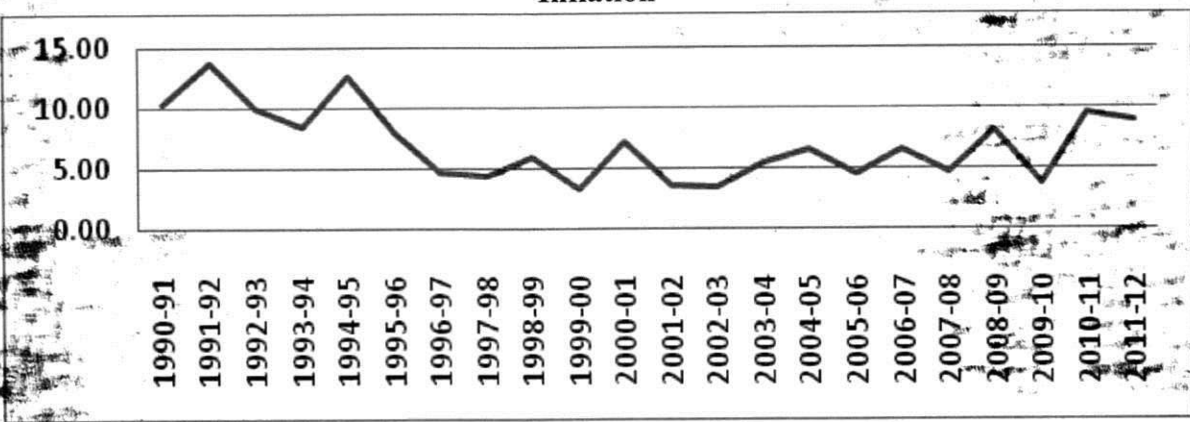
Quarterly Growth Rates of Index of Industrial Production



The annual growth rate of IIP (Industrial Sector Production) on an average was above 6% since 1990-91 to 2000-01, and it was 8.6% in 2005-06. The sector was performing very well, but from Q3 of 2007-08, started to show deceleration. This is prior to the US crisis and after the crisis had started, the quarterly growth rates were negative (-5.5% in Q4 of 2008-09). Then the growth had recovered in Q4 of 2010-11 to 8%. In Q2 of 2011-12, the growth rate was just above 3%. The fall in these rates can be attributed to the two crises. With the fall in growth rates, other sectors which are dependent on industries also were not doing well.

The industrial sector had achieved tremendous growth a year prior to the crisis. And in the next year, the growth started to fall, which was considered to be cyclical behavior of the sector. The economy would have recovered immediately from the slowdown, but was affected by the global financial crisis. The crisis had affected the industry so badly that it had negative growth. The government could not have helped the sector preventing from the crisis. it was not able to perform as it used to do before. The weak fundamentals of the economy were preventing the sector from receiving foreign capital.

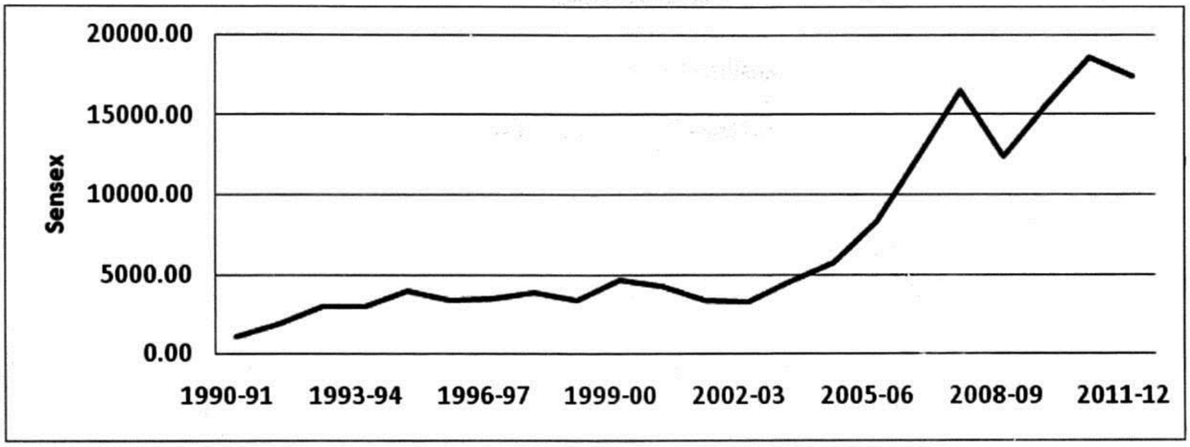
Inflation



The government is very much particular about the inflation rates and aimed at price stability. The average inflation was around 10% during 1990-91 and 1994-95, due to balance of payments crisis. Then it had decreased to 4.5% in 1996-97 and reached 7% in 2000-01 (due to high petroleum prices), and had fallen down in the next year to 3.6%. In 2004-05 there were global oil price rise situations, and along with it the reserves on a rise, and the rainfall was also deficit. All these circumstances had lead to inflation. Later on inflation started to increase gradually and in 2008-09 it was 8%. This rise in inflation beyond the previous years was due to rise in oil prices. Recovery from the global crisis reduced inflation for a year and again rose to 9.5% during 2010-11. India being importing 70% of its oil consumption, the rise in oil price led to further inflationary pressures. Later on it had reduced to 7%, but even this value is huge for the economy.

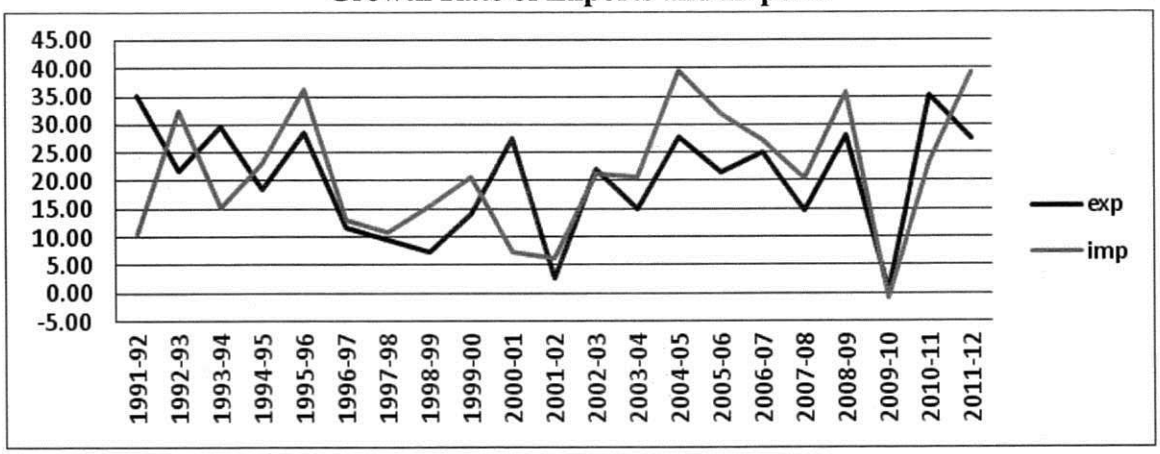
The inflation in the economy was always due to rise in the global oil prices. The economies always aimed at price stability. The government was taking sufficient measures, but was unable to tame inflation. The Reserve Bank of India was not able to cut interest rates in December 2012, even after the euro crisis was due to inflation in the economy. If such high inflation continues to exist, the high interest rates will temper the investments in industries. The government must reduce its oil consumption for a while, till the inflation moderates. The inflationary pressures had seriously standard of living in India, and it is difficult for poor informal workers whose wages cannot catch up with the rising inflation. Inflation had also affected the rupee, which depreciated drastically.

Movements of BSE Sensex (Annual Average)

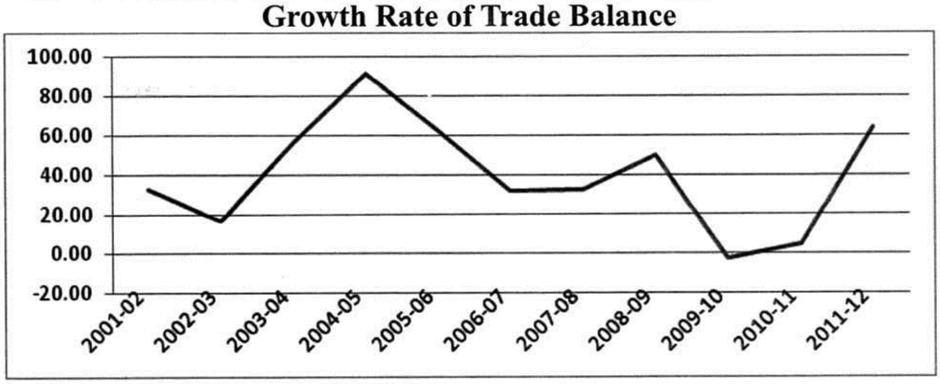


The burgeoning growth of the financial markets shows that the economy was following the advanced economies. The trade volume of stock markets is high. Any minor economic problem in any part of the economy seems to have affected the economy. The index shows that the economy was performing very well until the US crisis. The index was almost going with the advanced economies, implying that the economy is tracking not only the happenings within the economy, but also the outside world. The BSE sensex (annual average) since 1990-91 to 2000-01 had risen from 1049 points to 4269 points, and it had doubled in the next five years. The annual average of index had reached 16,568 points during 2007-08. The crisis in the US had affected the stock market and the index fell to 12,365 points in the next year. Recovery from the crisis increased the index immediately and during 2010-11 reached 18,605 points. Later on the index started falling mainly due to the ongoing Euro zone crisis and the annual average for 2011-12 was 17,422 points.

Growth Rate of Exports and Imports



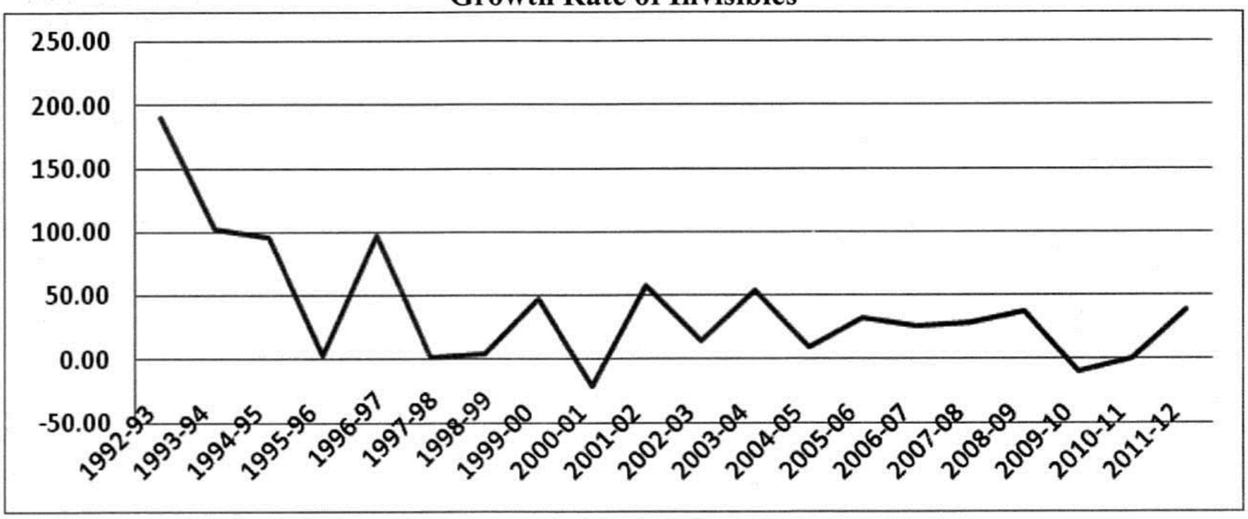
Growth Rate of Trade Balance



Since 1990-91 to 1994-95 there were fluctuations in the trade, and in 2005-06 fell drastically till1999-00. After recovering to previous levels, again in 2001-02, the trade fell. Followed by which there were maximum imports in 2004-05 and later on the trade started to fall in 200-08. India's connection with the external economy can be seen during the crises, which was severely affected during 2000-08, and since the start of the crisis, both imports and exports fell drastically. The growth was above 20% since 1990-91 to 2008-09. The growth rate of exports fell to 0.57% and that of imports fell to negative 0.78%. The fall in the trade can be attributed to reduction in global demand. The growth rate of imports was has turned negative, which was due to depreciation of the Rupee that made it difficult to import. There was also rise in oil prices. Much of the economy's oil consumption comes from abroad. The economy had recovered immediately and so the trade grew strongly after the crisis, until the recent Euro zone crisis. The trade deficit during 1991-92 was up Rs.106bn. The increase in deficit was around 90%, and had later on reduced until recently where the deficit had increased to Rs.5336bn during US crisis, and to Rs.8866bn with the start of the Euro crisis. In 2011-12, the increase in trade deficit was 64%.

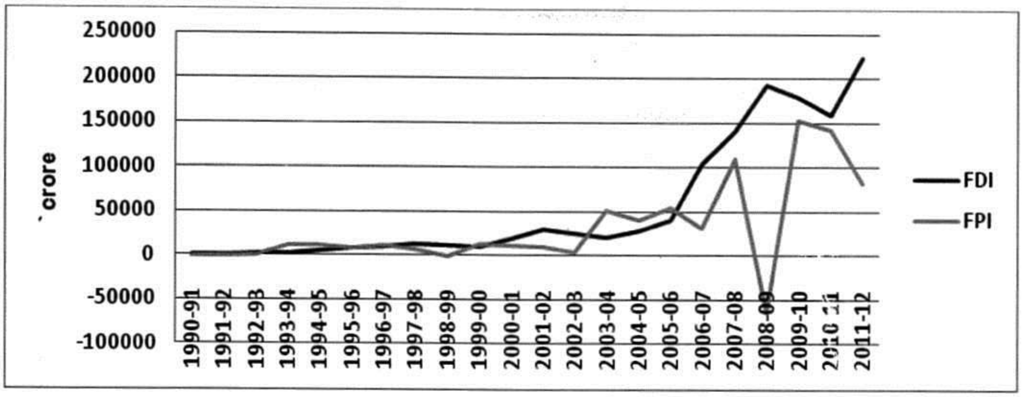
The current account was always negative. The gap between had increased with the start of the US crisis. With the Euro crisis, the gap had further increased. There always deficit in the current account since 1990-91. The current account deficit was 3.5% of GDP in 2011-12. There was fall in capital account during the crises as the investors immediately took off money from the economy. The economic fundamentals were not so strong with the start of both the crises, which made the investors worried. The gap between current and capital account had been increasing, and in 2011-12, the capital account was standing at RS.3190bn, the current account was negative Rs.3760bn.

Growth Rate of Invisibles



During 1991-92 the net invisibles were negative due to the balance of payments crisis, and in the next year, it was positive. Invisibles account gives transactions involving trade in services, income from and to non-resident members. From 1990s to 2000, the net invisibles growth was decelerating. In 2009-10, the net invisibles showed negative growth (9.43%). Then later on the growth picked up and reached 39%, and the net invisibles were Rs.5362bn. the growth rate of net invisibles is downward sloping. But the negative current account is being nullified by the net invisibles. The government must make note of this and encourage growth of invisibles.

Foreign Direct and Portfolio Investments



From 2000-01 the economy had received tremendous amounts of capital flows. This is due to the economy performing very well, and it had raised confidence in foreign investors with its fundamentals. Since the US crisis started, the foreign capital started to fall. The foreign portfolio and foreign direct investments were to the level of Rs.109741 crore and RS.140212 crore in the year 2007-08. The immediate year saw negative FPI due to the US crisis. As the economy immediately recovered from the crisis, the FPI had increased to Rs.153516 crore. In the year 2011-12 the FPI was reduced due to the Euro crisis as well as weak fundamentals of the economy.

The exchange rate of rupee per dollar during 1990-91 to 2000-01 was continuously depreciating and it was Rs.45 per dollar. It had fluctuated to 47 and had come back to 45 in 2006-07. In the year 2007-08 the currency had appreciated to Rs.40, and in the immediate year, it depreciated to Rs.45. This has seriously affected the foreign trade of the economy. The currency had depreciated to Rs.45 in 2010-11, due to ongoing Euro zone crisis. According to theory, the exports should rise while there is depreciation of a currency, but that was not the case because, the decrease in income levels around the world with the two crises had reduced their demand. Rupee depreciation had also bothered students studying abroad, and importers who emptied their pockets importing goods. The economy imports much of its oil consumption and had to import inflation along with oil, with the rupee depreciation.

The foreign exchange reserves since 1990-91 were reducing till 1995-96. After which reserves were accumulated by the economy and they were Rs.12379bn during2007-08. The foreign currency assets and gold reserves were Rs.11960bn and Rs.401bn respectively in the same year. With the US crisis, the reserves were depleted. The currency depreciation and increased import bill reduced the reserves. With rise in oil prices the economy had to shell out its foreign exchange reserves. After the crisis the gold reserves accumulation was continuously on a rise, as it would be better to preserve gold rather than dollar.

3.0 Empirical Analysis

The structural approach to simultaneous equations modelling uses economic theory to describe the relationships between several variables of interest. The resulting model is then estimated, and used to test the empirical relevance of the theory. Along with that, we can also look at the responses of particular variable while a shock is given to other variable. The model helps us in explaining variance decomposition. Later with the equations estimated in VAR are used for forecasting the variable. The major macro-economic variables taken in the study track the major economic movements both internal and external, and this is helpful in understanding of the economy as a whole. The study of variables from 1996-97 to 2011-12 explains the movement of variable under different circumstances.

3.1 Unit Root Tests

Economic variables show some trend and pattern in them, and time series regression needs the variable to be stationary. Testing of stationary is to check that mean and variance are constant over time. Stationary is checked initially at level I (0), if not stationary, we go for first difference and later for second difference, if not stationary. The procedure is stopped if the variable is found stationary.

Unit Root Tests and Trend and Intercept (1996Q1 to 2011Q4)

Variable	Level	Inference	1st Difference	Inference
LNGDP	-6.47	Stationary at I (0)	-	-
FD	-7.64	Stationary at I (0)	-	-
LNM3	-1.43	Non-stationary	-7.57	Stationary I (1)
LNCMR	-3.38	Non-stationary	-9.30	Stationary I (1)
LNINF	-3.72	Non-stationary	-6.77	Stationary I (1)
LNBSE	-2	Non-stationary	-5.75	Stationary I (1)
FI	-6.03	Stationary at I (0)	-	-
LNTB	-4.58	Stationary at I (0)	-	-
LNRES	0.44	Non-stationary	-5.62	Stationary I (1)
LNEXR	-2.16	Non-stationary	-5.45	Stationary I (1)

According to Augmented Dickey-Fuller Test, here it accepts four variables LNGDP, FD, FI and LNTB stationary at level. The test accepts six variables LNM3, LNCMR, LNINF, LNBSE, LNRES and LNEXR as stationary at their first difference.

3.2 Vector Autoregresssion Model

Estimating VAR model requires a good understanding of the variables, and need to be ordered properly. Here GDP affects all other variables, so the ordering starts with GDP followed by other variables. The last variable is exchange rate as it is least affects other variables. After ordering of variables and running the model, we look at goodness of fit.

The VAR model gives inter dynamics among various endogenous economic variables, along with their lags. The Akaike Information Criteria indicates to take 4 lags, which helps us to look at effects of variables and their lags on other variables. First we need to check for stationarity of time series variables through unit root tests.

3.3 Dynamics of Interdependence

Here GDP depends on its previous three quarters, which was happening in the five years prior to the crisis and also in other situations; the GDP looked back at its growth and took forward step. The GDP is also affected by the behaviour of previous quarters of trade balance.

Fiscal deficit depends on past three quarters of the GDP, BSE and reserves and past one quarter on itself, call money rates and foreign investments. If all these are doing well, then the fiscal deficit would be less. Broad money supply depends on itself, fiscal deficit, call money rates and trade balance. Inflation depends on most of the variables, like money supply has immediate effects on inflation. If the trade deficit increases the inflation also would rise. BSE sensex is mostly affected GDP, inflation and foreign investments. This can be seen in any economy, where the stock market is the first one to get affected by change in major macro economic variables. Foreign investments look at trade balance, reserves and exchange rate, which are the main factors determining capital flow from abroad. if all these are favourable, they would be ready to pour in monies into the economy. Trade depends on previous two quarters of itself and reserves. If the reserves are less the economy would not be in position to pay for its imports. Reserves are affected by past three quarters of foreign investments and exchange rate. When foreign investments are more, the economy receives huge foreign currencies and thereby it will add to reserves. Exchange rate depends on past two quarters of broad money supply, inflation and foreign investments. If the money supply rises, it automatically depreciates the

Dynamics of Interdependence

	LN GDP	FD	DLN M3	DLN CMR	DLN INF	DLN BSE	FI	LN TB	DLN RES	DLN EXR
LN GDP	12 3	3				1 2				
FD		1	3	1	3			2	2	
DLN M3					1					2
DLN CMR		1	2 3					1		
DLN INF						2				2
DLN BSE	1 2 3	3			2					
FI		1	1	1	2	2			3	2
LNTB	1 2 3		1 2 3	23	1 2		2	1 2		
DLN RES	2	3					2	2		
DLN EXR		2			3		2		3	

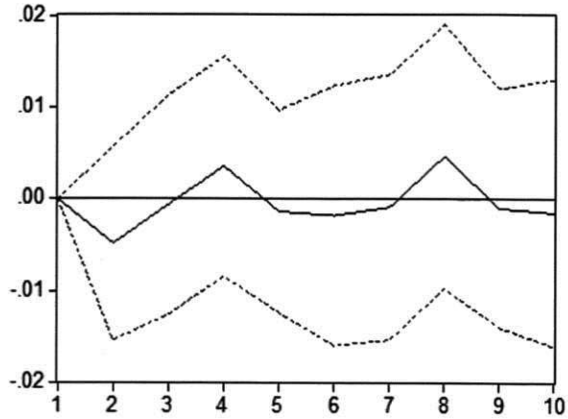
currency compared to other currencies, and same way inflation does affect exchange rate.

3.4 Impulse Response Functions

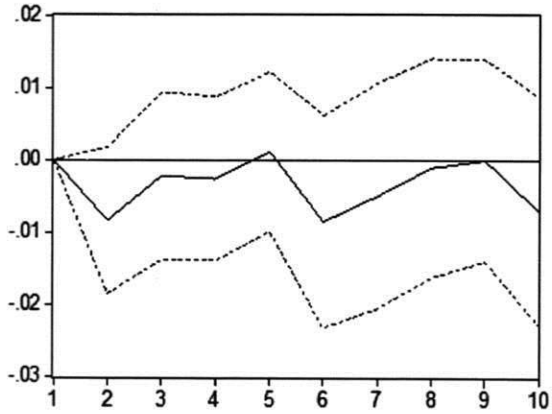
Here we can have a look at impact of a standard deviation shock of a variable on other variables. The shocks affects the error terms of variables. All the variables are showing the impact on GDP almost exactly, except money supply which took time to increase the growth. Here we can also understand at which quarters, the variable is affecting GDP. The main variable is GDP, and we are looking at shocks given to other variables and its impact on GDP. When a positive shock is given to fiscal deficit, it immediately affects the GDP and it takes two quarters for GDP to come back, which can also be seen during the crisis, when the fiscal deficit rose to 6%, the GDP also had fallen down. When positive shock is given to inflation, the GDP reduces. This can be observed many times when the economy had inflation; it was followed by fall in 2000-01 and 2004-05. The inflation was more than the previous years, and so the GDP had fallen. Increase in growth due to increase in money supply is taking time as given here. The GDP is rising when a positive is given to BSE sensex and continue to maintain the same later on. The foreign investment increases the GDP immediately. When foreign capital comes in, the production levels go up. Increase in trade balance (deficit) impacts GDP immediately and the economy recovers immediately from it. As the foreign currency reserves reduce, the GDP is affected. There were cases with the economy where it growth was affected when reserves reduced, and this fall is immediate and later on recovers to normality. GDP is affected by rupee depreciation, and this situation can be observed in the present situation of the economy, where the growth had fallen due to fall in value of rupee.

Figures Explaining Impulse Response Functions

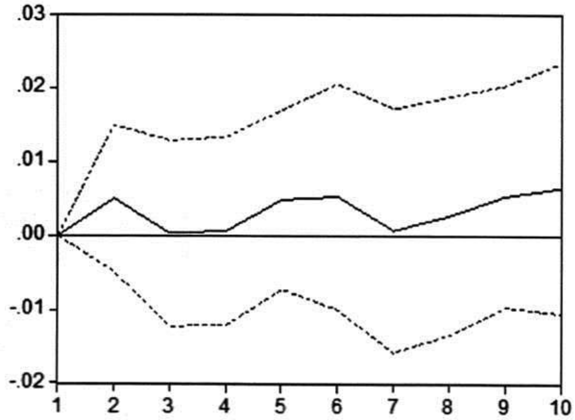
Response of LNGDP to Cholesky
One S.D. FD Innovation



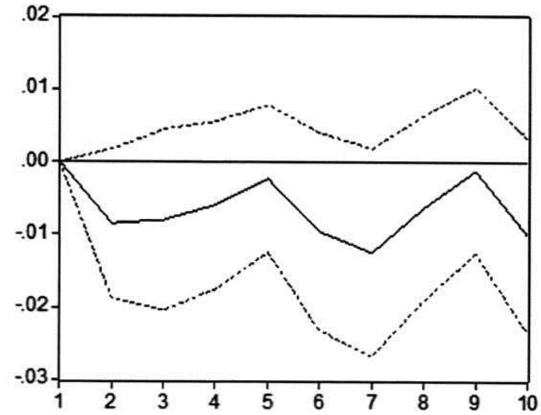
Response of LNGDP to Cholesky
One S.D. DLNM3 Innovation



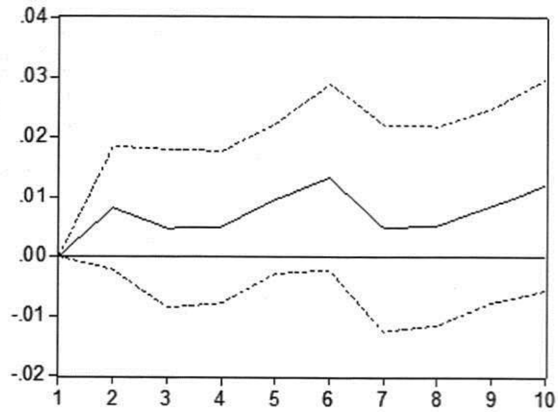
Response of LNGDP to Cholesky
One S.D. DLNCMR Innovation



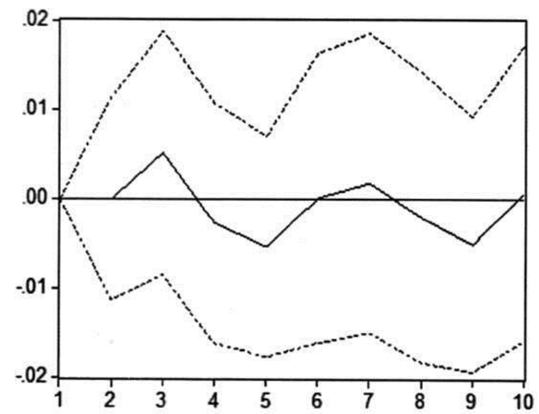
Response of LNGDP to Cholesky
One S.D. DLNINF Innovation

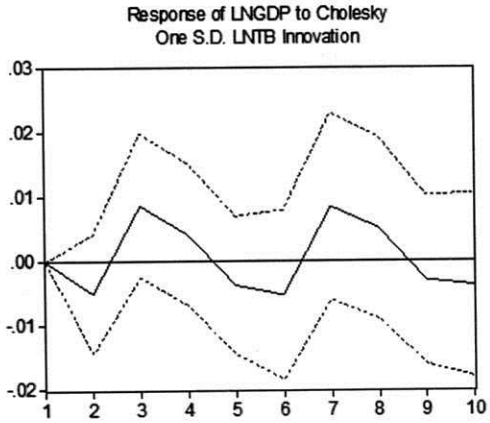


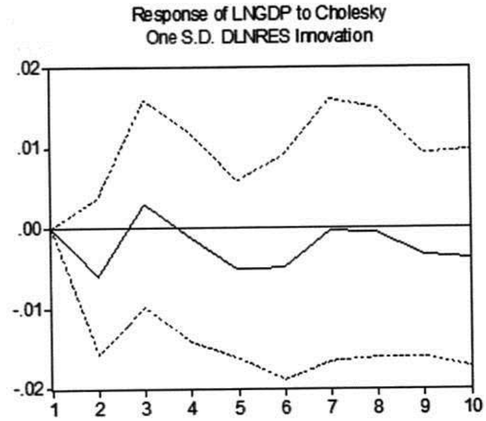
Response of LNGDP to Cholesky
One S.D. DLNBSE Innovation

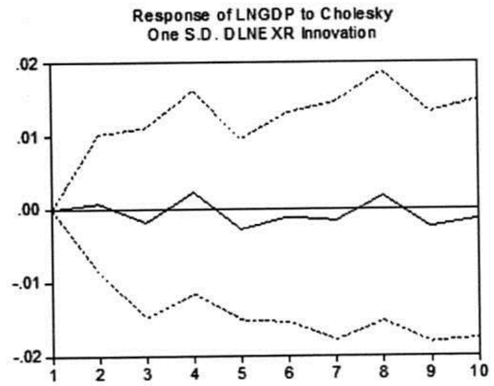


Response of LNGDP to Cholesky
One S.D. FI Innovation









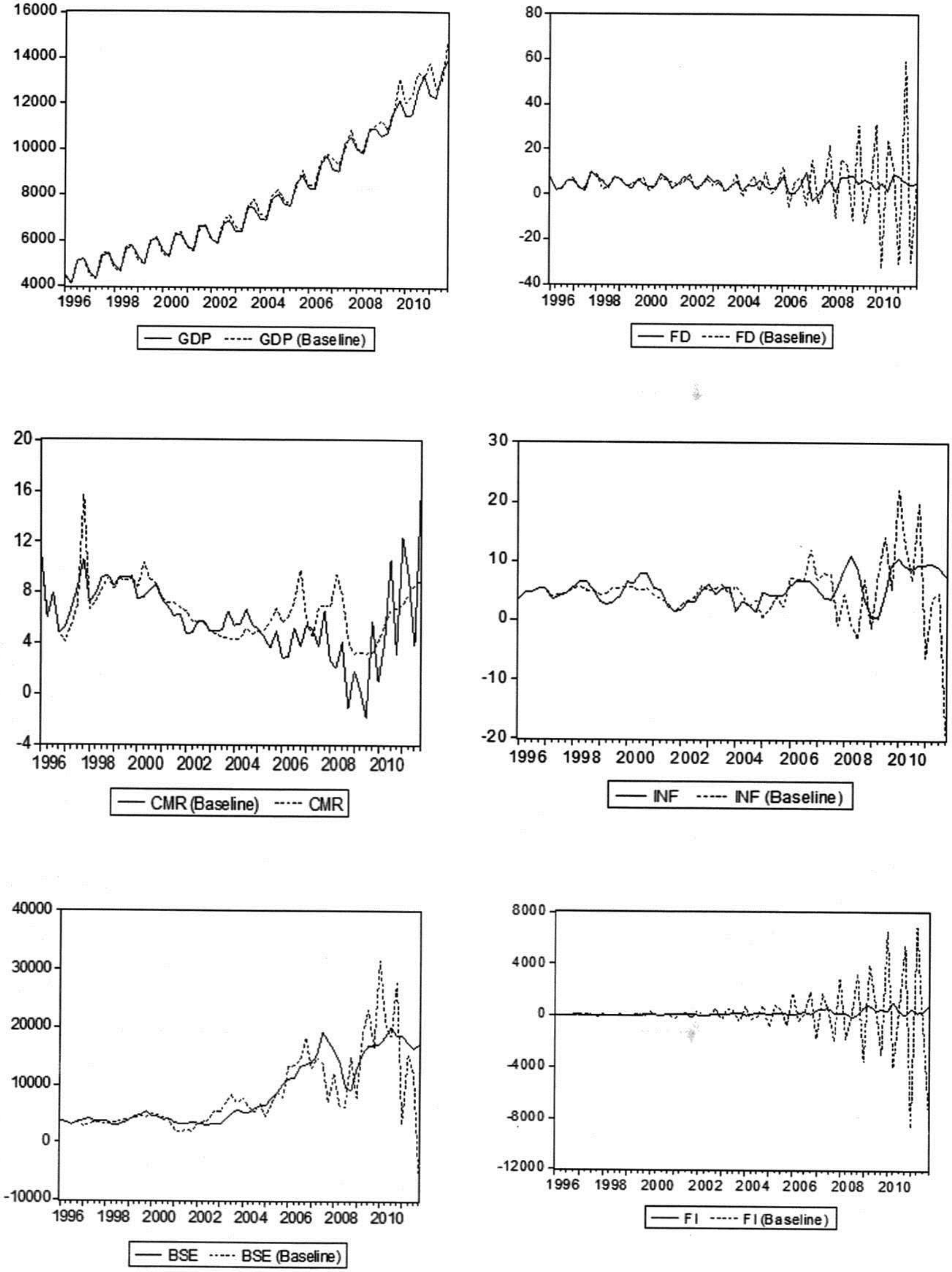
3.5 Variance Decomposition

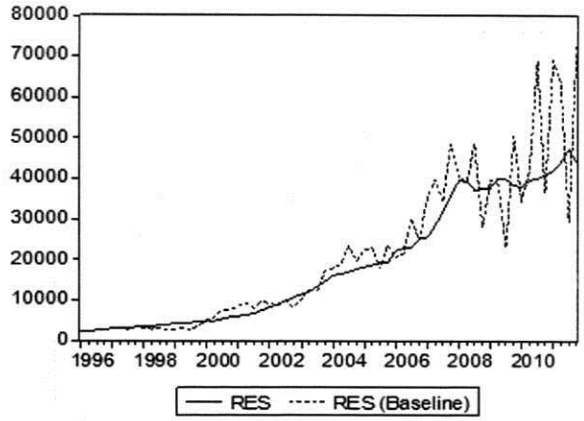
This analysis determines how much of forecast error variance of each of the variable would be explained by the exogenous shocks to the other variables. Around 70% of changes in GDP is explained by itself and the rest by changes in broad money supply, inflation. After some time the error variance explanation by GDP reduces and other factors would affect the GDP. The changes in fiscal deficit is explained by itself totally, but later is explained by increase changes in other factors almost equally. The error variance of broad money supply is explained by itself by 70%, after a while is explained by improvement in GDP. At first, the error variance of inflation is explained by itself, but after which, is explained by changes broad money supply. 70% of variations in BSE sensex is by itself and later is explained by variances in reserves, money supply, GDP. Around 80% of change in foreign investments is explained by itself, and later on the variations are explained by changes in reserves and exchange rate. An increase in trade balance is explained by itself and also by changes in GDP.

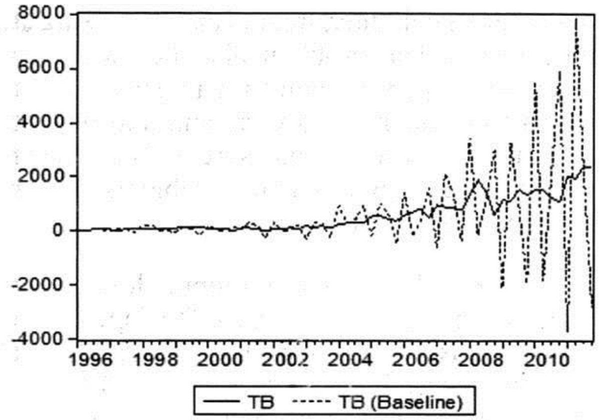
3.6 Forecast of variables

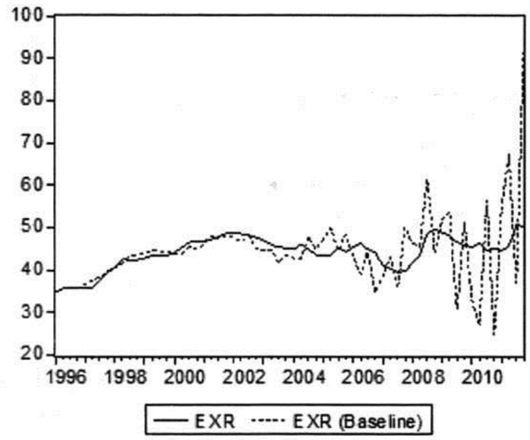
The equations observed in the VAR method are taken for forecasting. This VAR model gives baseline scenario and predicts the variables. Each variable is forecasted taking into account, the other variables. Here we cannot go for alternative scenarios, because the baseline scenario is not predicted properly. During the last five years of sample, the difference between the actual and estimated is more. The forecast of the variable is able to predict almost correctly. But from 2006 onwards we are unable to predict the behaviour of variables. During crisis period (2008-12), the model finds it difficult to forecast the variable. The reason is that during crisis we cannot predict the behaviour of a variable. Generally if a model is unable to forecast a variable, it means that there are other variables that are affecting it. Here we have taken major macroeconomic variables of the economy, which are the main determinants of an economy's movements. So the other variables that are affecting the variable are economic, but are objective. The expectations of individuals, institutions play very much important role in the economy. This cannot be quantified, and it becomes difficult to tell how expectations play their role in the economy.

Figures Forecasted Variables









We are able to predict the gross domestic product, and it explains the behaviour of the variable exactly, because the growth is also affected by the variables other than the ones taken into consideration like gross fixed capital formation and other domestic factors. But during crises we are unable to predict the growth behaviour totally. The fiscal deficit is forecasted correctly till crisis, and later was not able to estimate. The model was able to forecast broad money supply because; there are other variables that affect it, which are internal. Inflation is very dependent on the world oil prices, and the behaviour of the prices were could not be tracked. The BSE sensex depends on most of the variables under study, but the model was not able to predict the sensex as there was huge volatility in expectations of institutions. Foreign investments were highly volatile during the crisis period. There were reverse capital flows during this period, and so the behaviour could not be tracked. Foreign exchange reserves were depleted during the crisis and gold was accumulated after that. Trade with the start of the US crisis was reduced. The rupee depreciation was also responsible for this. There were many other factors for volatility in trade. The variables interdependent very much, and during both the crises each variable had huge fluctuations and so it was difficult to predict the variables taking into account of other variables.

4.0 CONCLUSIONS

The global financial crisis, it all started with fall of Lehman brothers. The events causing for the fall are many. What was said to be a small problem in financial sector turned into huge crisis around the world. The spreading of the crisis to other economies was result of globalisation. The crisis was all over the world, because US was the epicentre of the crisis, and the economic and political power lies within it.

Now-a-days, the economy's policies are resulting in over spending, over saving and over production. The Greek government had over spent in the past and is suffering in the present. The debt levels of the economy along with

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