
Indian Economic Story Post 1990-91 And the Three Twins: A Comparative Analysis

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Abstract: The Post Independent India has largely experienced negative GDP growth in 1958, 1966, 1973, 1980's, 2020-21. The post crisis years after 2008-09 though did not experience negative GDP growth but were very challenging. The years 1991, 2014-15 and 2020-21 have experienced twin deficit crisis, twin balance sheet syndrome and twin economic shocks (Demand & supply) respectively. The author has considered these years as three twins. The Researcher has tried to study the different macroeconomic variables to understand the nature and characteristics of these three twins, their commonality and differences. The researcher has considered Macroeconomic Stability Index to have a comparative analysis of three phases experiencing these three twins.

Keywords: GDP Growth, Twin deficit, Twin Balance sheet crisis, Twin economic Shocks

INTRODUCTION

The Indian economic growth post 1990-91 is fascinating. Faced with the challenges in 1990, the economy showed certain signs of growth but the growth rate was not even. Santosh Mehrotra has stated that the growth rate between 1992/3 and 1996/7 (8th Five Year Plan) actually averaged 6.7 per cent per annum, while the population growth rate over 1991-2002 had declined to 1.81 per cent per annum. In the first decade of the new century, India's GDP growth rate picked up even more, so that over the 10th Five Year Plan period (2002/3-2006/7), the GDP growth rate was 7.7 per cent per annum on average. (Utsav Kumar, Arvind Subramanian 2011) in their research paper have emphasized growth across almost all states in 2001-09 as compared to 1993-2001. During 2008-09, states with the highest growth during 2001-07 suffered the most due to their openness. Demography alone cannot be considered for future economic growth. The Economy in a span of 30 years (1990-2000) faced three strokes one in 1990, the second after 2013-14 and the third during 2020-21. The most important point here is that the economy absorbed these shocks and has recovered causing only temporary disturbances.

There is a huge research gap as only few researchers have tried to study the three strokes on comparative basis. The researcher has tried to analyse the reasons, similarities and the points of differences between these three shocks. This will help in better analysis of important economic variables impacted by these shocks. At the same time, this will also help the future research in working on a more comprehensive vulnerable index or macroeconomic stability index.

LITERATURE REVIEW

Arvind Virmani (2005) has studied India's growth since independence. In his paper, he has taken rainfall index, break points in GDP growth. The researcher has focused on all the three sectors of the economy to assess economic growth. The rate of agriculture as well as the effect of rainfall on it remained unchanged during the entire period of over 50 years. Manufacturing growth however started reviving in 1980-81 and was soon followed by services. In contrast to the previous authors who have divided the phases from 1947 to 1979-80 as Hindu rate of growth and from 1980 till date as Bharatiya Rate of growth, he termed it as the Indian Version of socialism and Experiments with market reform respectively. Arvind Panagariya (2004) in his research paper studied the India's growth during 1980 and 1990. The researcher has also studied the economic reforms measures post 1991 focusing on deregulation of industry, external trade etc. He has also explained the reasons behind India lagging behind China. The various economic variables taken are average annual growth rates, five yearly variance of growth rates, fiscal indicators, merchandise non oil exports and imports as percentage of GDP, composition of GDP etc. The major findings of the paper state that growth during the 1980's was higher than the preceding decades but fragile. The fragile but faster growth during the 1980's was due to the reforms in 1980's and rolling out of various government schemes and programmes. Thus fiscal expansion was the major reason behind growth in the 1980's. The large fiscal expansion was financed by borrowings from abroad and domestic market. These factors were the major reasons behind macroeconomic crisis in 1991. Cerra, Saxena (2002) paper focused on the reasons behind 1991 currency crisis in India. The authors have taken error

correction models and constructed the equilibrium real exchange rate developed by Gonzalo and Granger. They have found overvaluation as well as current account deficits behind sharp exchange rate depreciation. In the second half of 1980, there was a policy shift from import substitution to export led growth backed by liberalizing imports for exporters. Import and industrial licensing requirements were eased and tariffs replaced some quantitative restrictions. The fiscal position due to increase in expenditures led to widening of current account deficits. The increase in current account deficits was increasingly financed by borrowing on concessional terms and remittances of non residential workers which means greater dependence on higher cost short maturity financing. Besides, Middle East crisis and political uncertainty at the domestic level also added to the worries of External sector. A. Kolte, Biagio Simonetti (2018) in their research paper have highlighted political uncertainty, economic structure, decrease in exports due to USSR disintegration, gulf crisis to be the major reasons behind economic crisis of 1991. Prabhakar Pudari (2017) in his research paper focused on the reasons behind twin balance sheet syndrome and its impact on the Indian economy. The researcher has emphasized on the overleveraged companies and bad loans of the banks to be major reasons behind twin balance sheet syndrome. The impact of this was largely felt on capital markets largely public sector banks so much so that private sector bank HDFC was valued as much as 24 public sector banks put together. Nonperforming assets of the banks increased. Nanwani, Mase (2019-20) in their research paper have undertaken comparative trend analysis of stressed, restructured and non performing assets of public, private and foreign banks during the 2006-07 to 2017-18. Huge lending to the companies during good times was the major reason. The banks extrapolate past growth and performance to the future in terms of lending to the companies. After financial crisis of 2008-09, many projects become unviable and the companies started defaulting. Arvind Subramanian, Josh Felman (2019) have examined the pattern of growth in the 2010. They have stressed on both structural and cyclical factors. The export growth slowed post 2008-09 and investment fall due to twin balance sheet crisis. The twin balance sheet crisis encompassed banks and infrastructure companies. The infrastructure projects started during 2000's began failing post global financial crisis. However the economy continued to grow despite demonetisation and GST due to large fall in international crude oil prices backed by government spending and NBFC credit lending. The lending by NBFC to real estate projects was not sustainable. As a result the twin balance sheet crisis converted into four balance sheet problem i.e. the original two sectors plus NBFC's and real estate companies. Economic Survey (2016-17) has explained the reasons behind twin balance sheet crisis in India. The non performing assets of the banks had soared to such an extent that provisionings of the banks were greater than operating earnings. Generally Nonperforming assets increase when there is an economic crisis triggering widespread bankruptcies but in contrast there was no such economic crisis in India. The origins of the crisis deep rooted in the mid 2000. India's GDP growth had surged to 9-10% per annum. Even corporate profitability was amongst the highest in the world encouraging labour hiring aggressively. During 2004-05 and 2008-09, the amount of non food bank credit doubled. At the same time, there were large inflows of funding from overseas as well. All this led to an increase in the debt of non financial corporations. But after the global financial crisis, the game completely changes with domestic interests rates increasing and exchange rate depreciating (Rs.60-70/\$) adding to larger financing costs of the firms borrowed from abroad. Economic Survey (2020-21) has explained twin economic shocks in the form of demand and supply shocks during pandemic. This is not only pertaining to India but economies all across the world. Increased uncertainty, lower confidence, loss of incomes, weaker growth prospects, fear of contagion, curtailment of spending options, led to the first order demand shock. The supply chain disruptions caused by the closure of economic activity and restricted movement of labour led to the first order supply shocks. The first order supply shocks resulting in wage and income loss could impact aggregate demand and decrease productive capacity leading to supply shocks. All these created hysteresis effects i.e. when households demand less, firms get reduced revenues which feeds into reduced activity by firms and thus reduced household income. Mustapha Kamel Nabli (2004) in his paper explores the relationship between economic reforms and economic growth of the MENA countries (Middle East and North African Region). The Researcher has considered Growth measurement factor to be based on Macroeconomic stability, External stability, physical infrastructure, human capital, structural reforms and investment. The findings of the study suggest that economic reforms, human capital and physical infrastructure together explain the improvement in the economic situation.

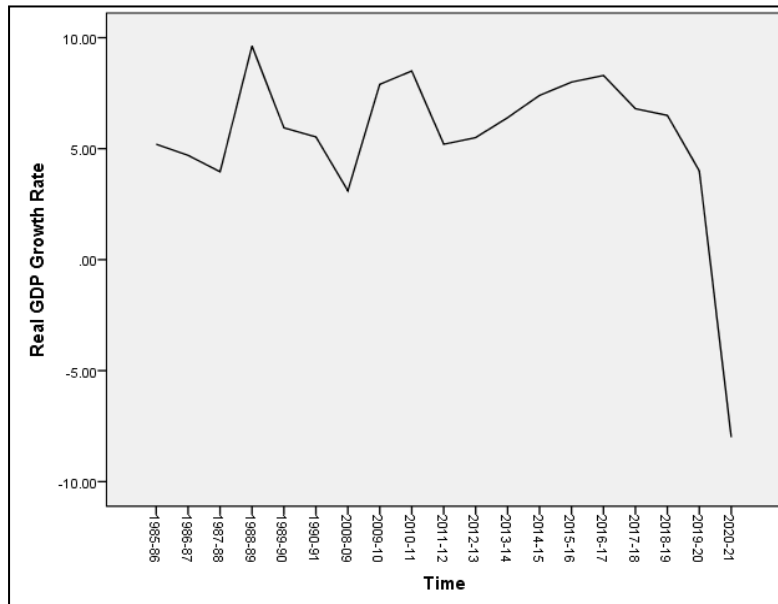
Data Analysis and Interpretation

The Researcher has considered the Macroeconomic Vulnerability Index based on seven sub indices to have a comparative analysis of all three phases when the economy faced Twin deficit, Twin balance sheet and Twin economic shocks. The seven sub indices are Global Index (output growth of the world economy), Domestic Growth, Inflation, External Vulnerability Index, Fiscal Index, Corporate Index and Household Index (Retail NPA). The researcher in order to assess these phases has modified and added variable to this index based on literature review and specific requirement for the study. Thus the researcher's version of Macroeconomic Vulnerability Index consists of following variables: Real GDP Growth Rate, WPI Inflation, Fiscal Deficit,

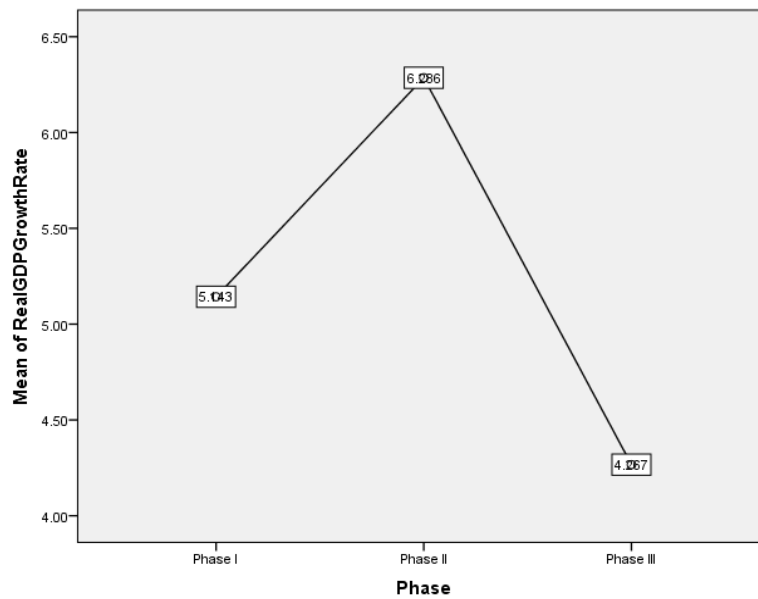
Current account balance, Forex Reserves, Credit Growth, Gross Capital formation, Real Exchange Rate, Gross NPA's.

I. Sequence Plots of Macroeconomic Variables in all the three Phases

a) Real GDP Growth Rate



Graph no.1

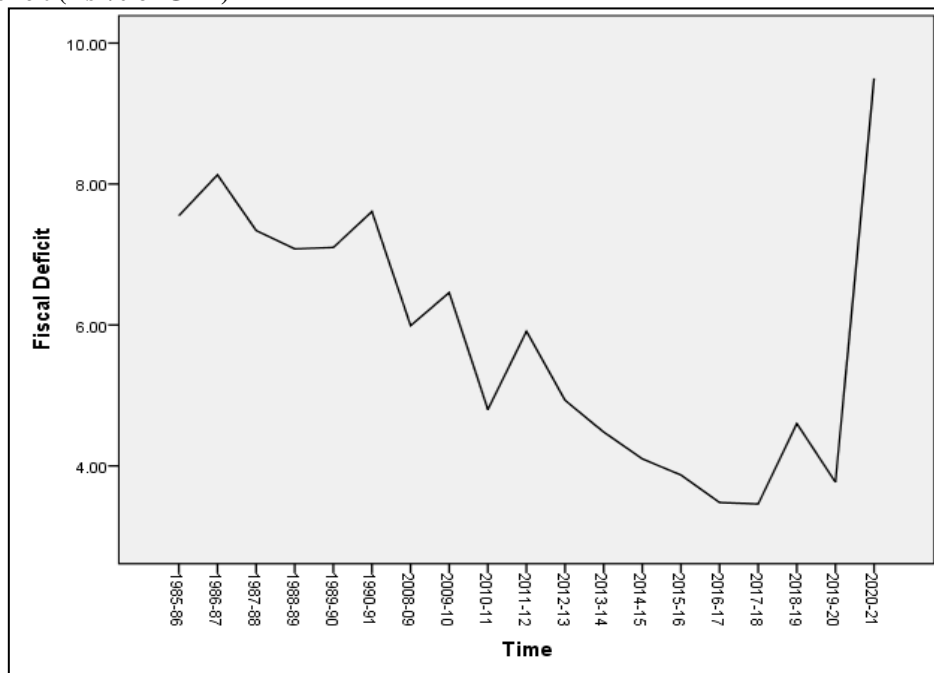


Graph no. 2

Interpretation

The Graph depicts the real GDP growth rate in all the three phases. Out of all the three phases, the real GDP Growth rate has largely contracted during the third phase. In the first and third phase, the contraction is more apparent as compared to the second phase of the crisis. Thus it can be said that during the second phase of Twin balance sheet syndrome, real GDP growth rate was intact.

b) Fiscal Deficit (As % of GDP)

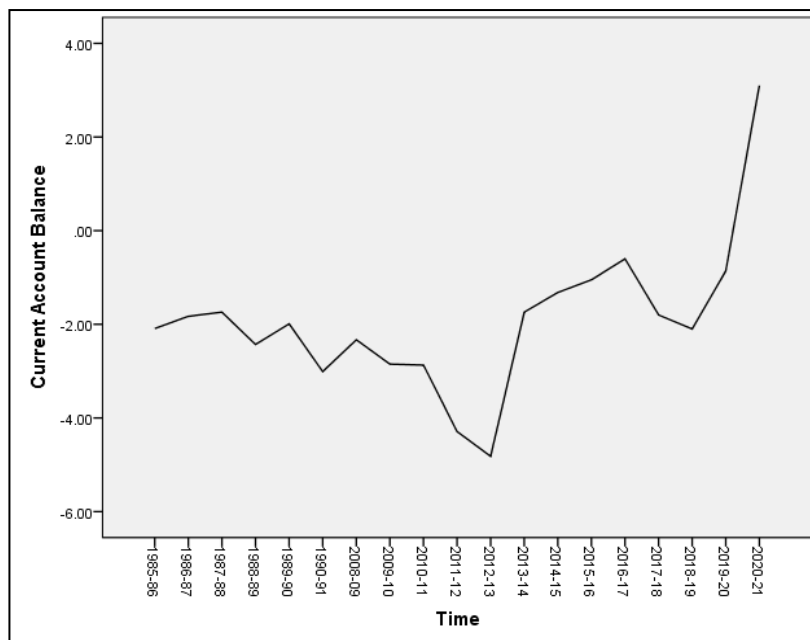


Graph no.3

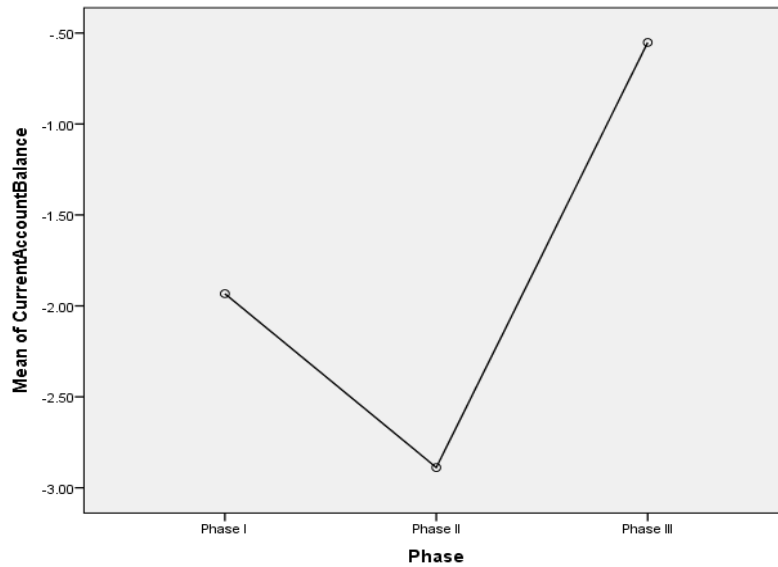
Interpretation

The fiscal deficit during the first and third phase was at its high level while during the second phase, it was moderately low during the second phase. However it touched its unprecedented level during the third phase. The main reason was low tax collections due to lockdown and larger government expenditure in order to revive the demand.

c) Current Account Balance (as % of GDP)



Graph no.4

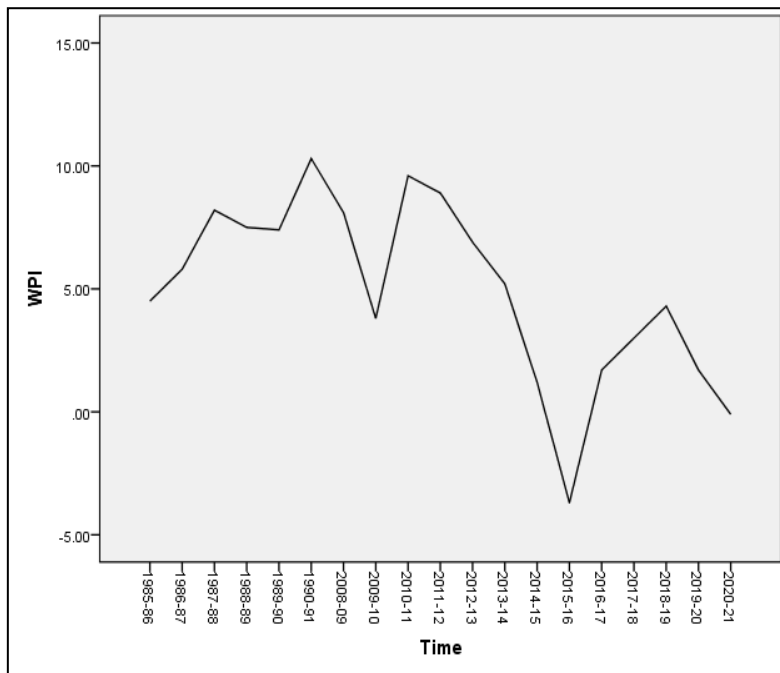


Graph no.5

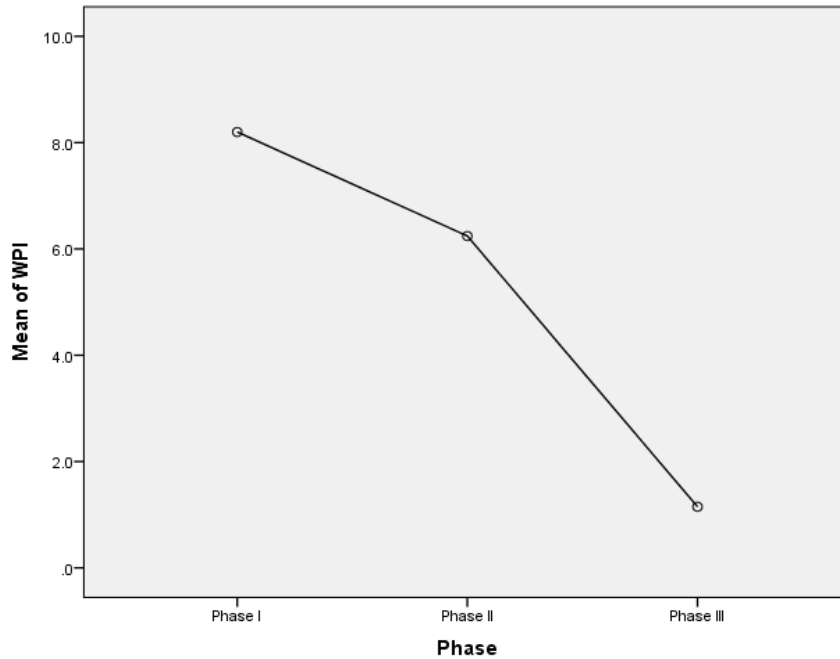
Interpretation

The current account balance was in deficit during the first two phases but it was in surplus during the third phase. Thus the current account balance remained in different state during these three phases. The means of current account balance shows larger deficit during the second phase i.e. twin balance sheet syndrome.

d) Wholesale Price Index



Graph no.6

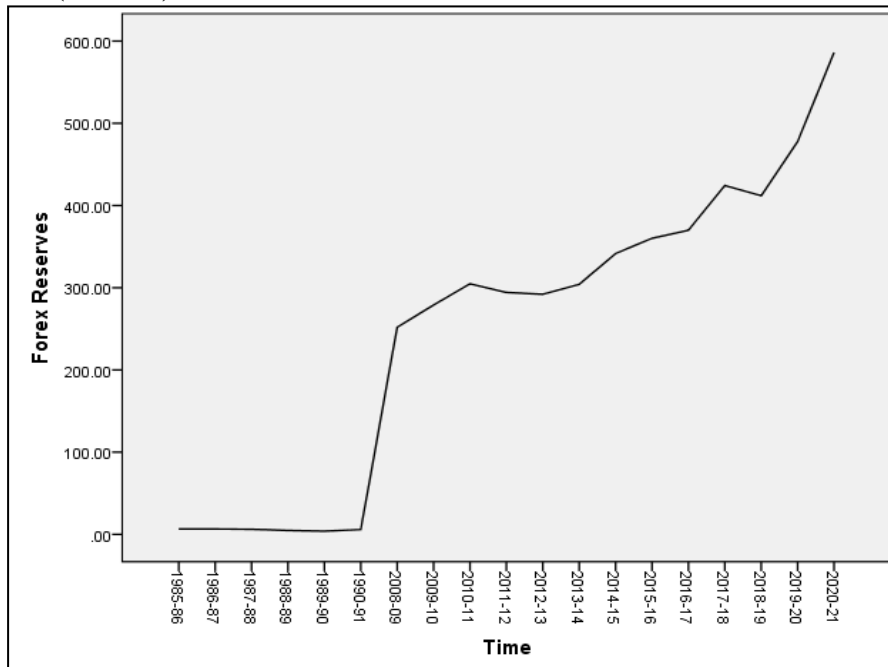


Graph no.7

Interpretation

The WPI during the first phase was high but during the peak of the second phase it was very low which increased gradually during the third phase but it remained at controlled level as compared to the first phase. The means of WPI during the third phase i.e. twin economic shocks touched its lowest level. This may be due to low aggregate demand during the third phase.

e) Forex Reserves (bn. US \$)

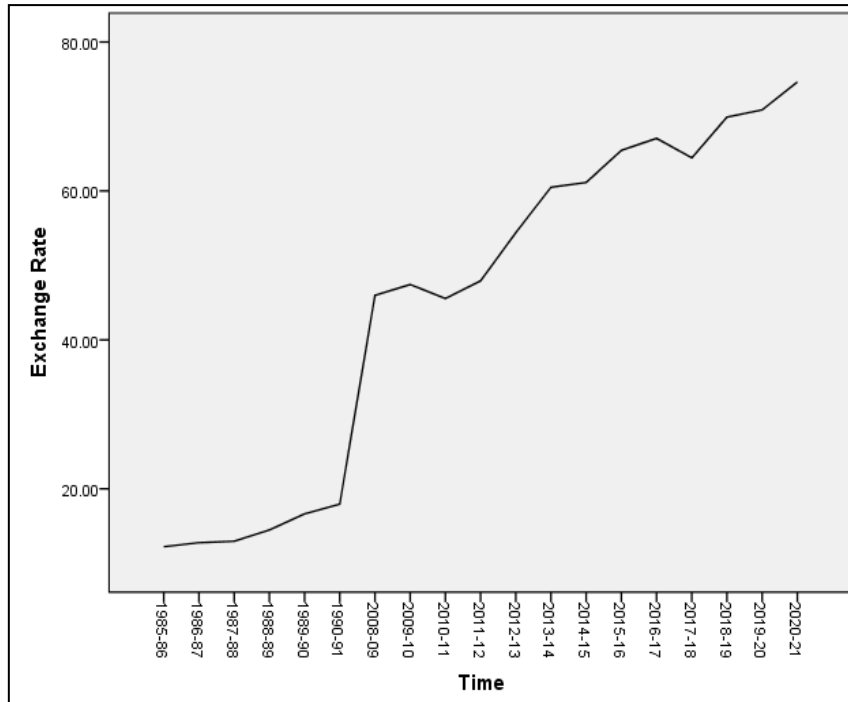


Graph no.8

Interpretation

The forex reserves though during the first phase was at very low level and this low level was one of the immediate cause of the crisis during the first phase but after 1991 due to liberal exchange rate regime, the forex reserves of the country reached at a very high level which can be seen during second and third phase.

f) Exchange Rate

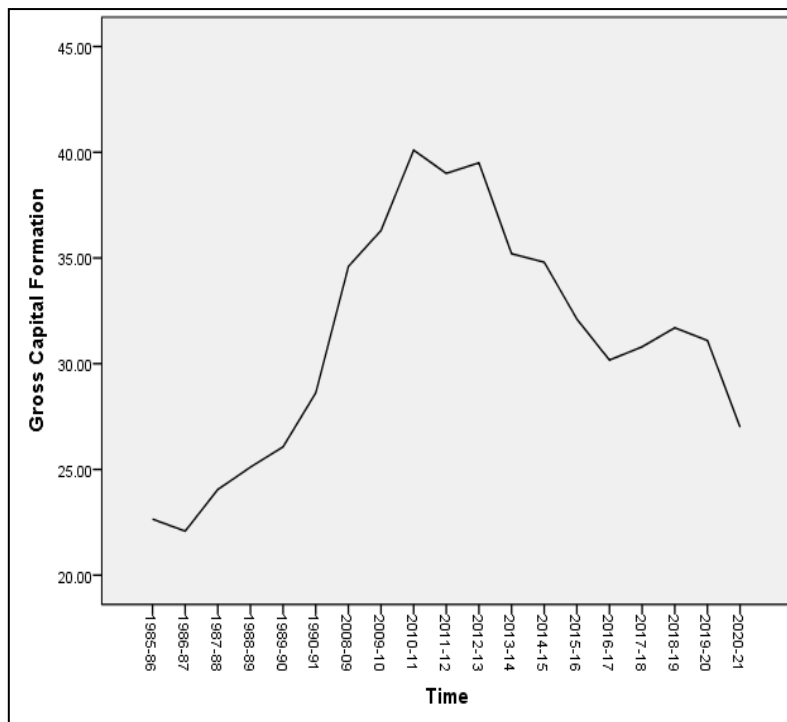


Graph no.9

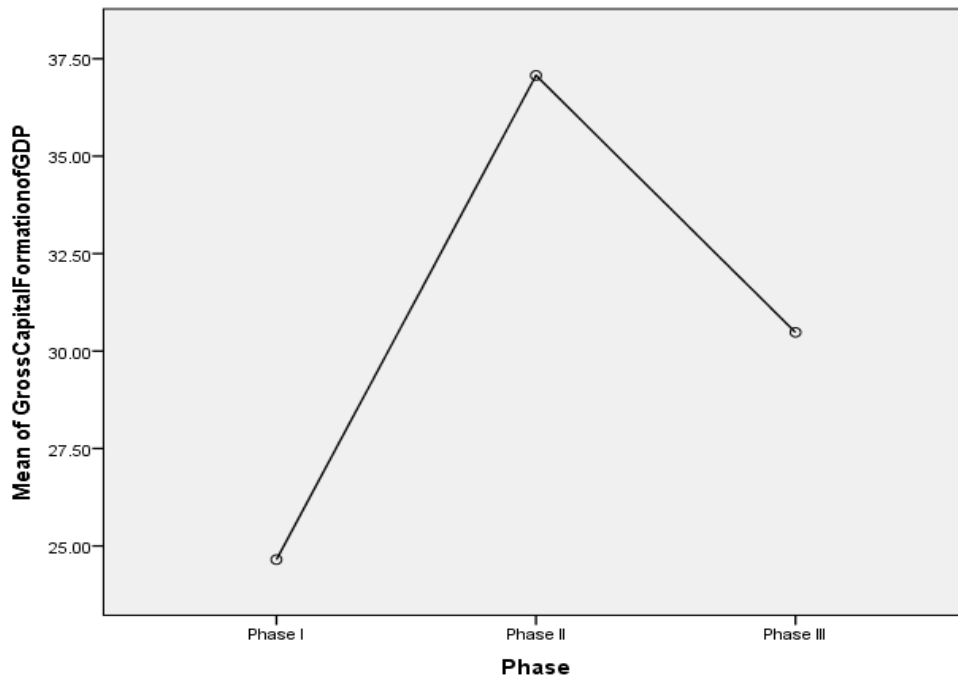
Interpretation

The exchange rate remained at low level during the first phase but depreciated largely due after 1990-91. This may be on account liberalization of exchange rate after 1991 and devaluation of Indian rupee. During the second and third phase, the exchange rate continued to depreciate steadily.

g) Gross Capital Formation (as % of GDP)



Graph no.10

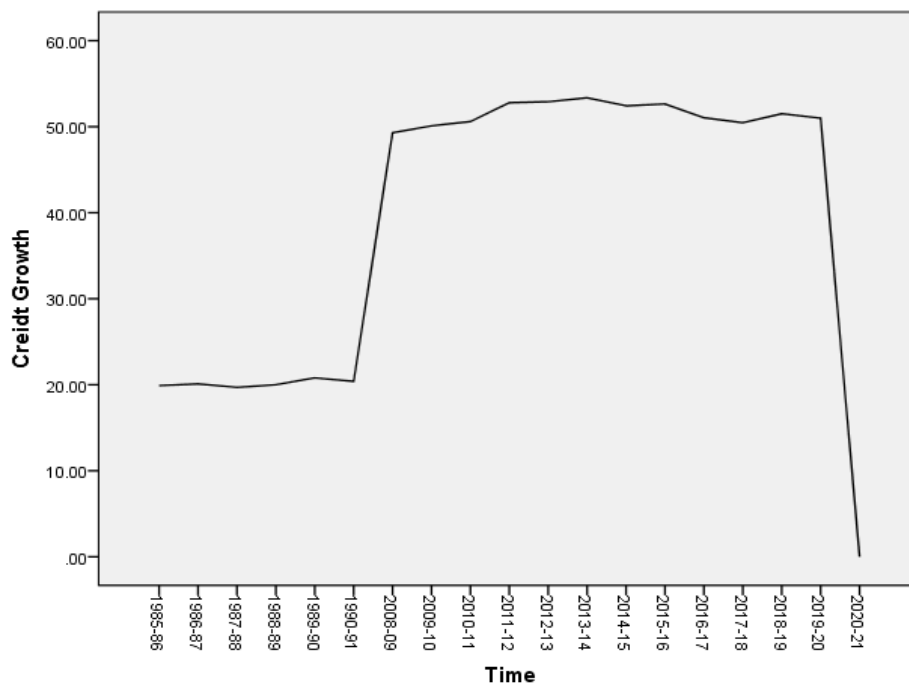


Graph no.11

Interpretation

The gross capital formation increases at a decent rate during the first phase. Most of this was due to investment by the government. From 2010-11, it continued to fall due to global financial crisis and the impact of it on Indian businesses. Thus GCF remained a measure of concern during the second and third phase. However the means of GCF continued to be high during the second phase which gradually declined during the third phase.

h) Credit Growth of SCB (as % of GDP)

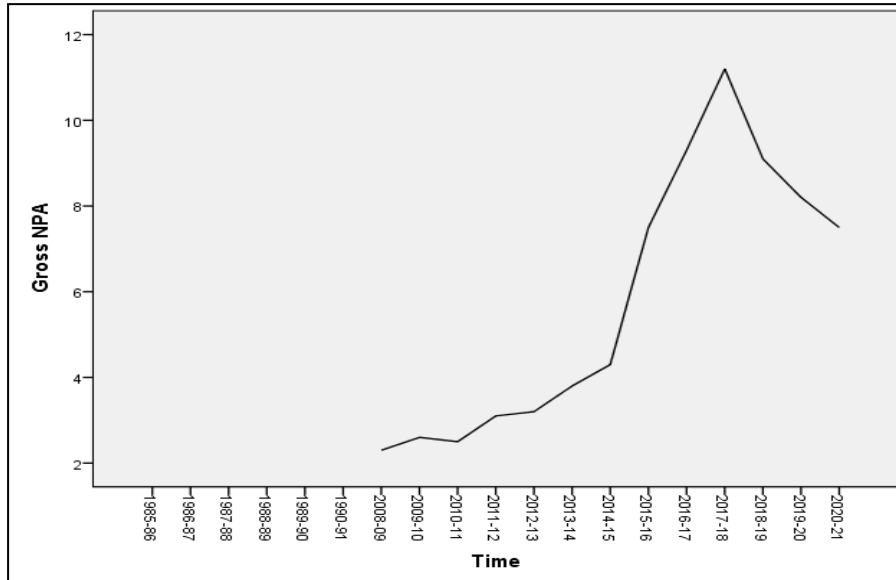


Graph no.12

Interpretation

The credit growth of Scheduled commercial bank remained subdued during all the three phases. It means that during all the three phases credit demand was very low which can point towards low investors and business confidence level. This can also be conservative approach of the SCB due to larger loan defaults.

Gross NPA (as % of Gross Advances)



Graph no. 13

Interpretation

The gross NPA's of the banks increased from the start of the second phase till 2016-17 after which it started decreasing. The decrease in gross NPA is on account of various measures by the Government and RBI related to loan recovery, resolution of bad assets etc., setting of IBC etc.

II: One way Anova Test

Table 1:

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Real GDP Growth Rate	Between Groups	14.082	2	7.041	.485	0.625
	Within Groups	232.499	16	14.531		
	Total	246.580	18			
Fiscal Deficit	Between Groups	25.149	2	12.574	6.092	.011
	Within Groups	33.026	16	2.064		
	Total	58.174	18			
Current Account Balance	Between Groups	18.211	2	9.105	5.105	.019
	Within Groups	28.536	16	1.783		
	Total	46.746	18			
WPI	Between Groups	131.004	2	65.502	9.219	.002
	Within Groups	113.680	16	7.105		
	Total	244.684	18			
Forex Reserves	Between Groups	585621.769	2	292810.884	118.471	.000
	Within Groups	39545.367	16	2471.585		
	Total	625167.135	18			
Exchange Rate	Between Groups	9286.906	2	4643.453	197.524	.000
	Within Groups	376.133	16	23.508		
	Total	9663.039	18			
Gross Capital Formation	Between Groups	492.832	2	246.416	49.364	.000
	Within Groups	79.870	16	4.992		
	Total	572.702	18			
Credit Growth	Between Groups	3335.544	2	1667.772	12.051	.001
	Within Groups	2214.371	16	138.398		

	Total	5549.915	18			
Gross NPA	Between Groups	104.442	1	104.442	88.180	.000
	Within Groups	13.029	11	1.184		
	Total	117.471	12			

Interpretation

The one way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of the two or more independent (unrelated groups). The F value in one way Anova is a tool which answers the question, “Is the variance between the means of two populations significantly different”? The P Value is a probability while F ratio is a test statistic calculated as Variance of the group means/Mean of the within group variances. Reject the null hypothesis, if the P value is less than the level of significance (α). In the above table, it is found that the value of P in case of Gross NPA, Credit Growth, Gross Capital formation, Exchange rate, forex reserves, WPI, Current account deficit, Fiscal deficit are less than the level of significance (.05). Hence the null hypothesis is rejected and hence it is concluded that the means of Gross NPA, Credit Growth, Gross Capital formation, Exchange rate, forex reserves, WPI, Current account deficit, Fiscal deficit are significantly different in all the three phases.

III: Post Hoc Tests

The Tukey Test also called Tukey’s Honest Significant Difference test, is a post-hoc test based on the studentized range distribution. An ANOVA test can tell us if our results are significant overall, but it won’t tell us exactly where those differences lie. After we have run an ANOVA and found significant results, then we can run Tukey’s HSD to find out which specific groups’s means (compared with each other) are different. The test compares all possible pairs of means. Thus based on the results of Post Hoc test, the results are significant in case of fiscal deficit of phase I and phase II and Phase I and Phase III. The current account balance is significant in case of phase II and phase III. In case of WPI, the results are significant in case of phase I and phase III and phase II and phase III. As far as forex reserves, exchange rate, Gross capital formation is concerned, the results are significant amongst all the three phases.

Table 2:

Dependent Variable	(I) Phase	(J) Phase	Sig.	Interpretation
Real GDP Growth Rate	1.00	2.00	.974	Insignificant
		3.00	.762	Insignificant
	2.00	3.00	.616	Insignificant
Fiscal Deficit	1.00	2.00	.033	Significant
		3.00	.013	Significant
	2.00	3.00	.836	Insignificant
Current Account Balance	1.00	2.00	.617	Insignificant
		3.00	.118	Insignificant
	2.00	3.00	.016	Significant
WPI	1.00	2.00	.766	Insignificant
		3.00	.003	Significant
	2.00	3.00	.009	Significant
Forex Reserves	1.00	2.00	.000	Significant
		3.00	.000	Significant
	2.00	3.00	.000	Significant
Exchange Rate	1.00	2.00	.000	Significant
		3.00	.000	Significant
	2.00	3.00	.000	Significant
Gross Capital Formation	1.00	2.00	.000	Significant
		3.00	.001	Significant
	2.00	3.00	.000	Significant
Credit Growth	1.00	2.00	.001	Significant
		3.00	.011	Significant
	2.00	3.00	.387	Insignificant

*. The mean difference is significant at the 0.05 level.

FINDINGS AND CONCLUSIONS

Based on the results of the study, the results are significant in case of fiscal deficit of phase I and phase II & Phase I and Phase III. This means that the means of fiscal deficits are significantly different during these three phases. The current account balance is significant in case of phase II and phase III. In case of WPI, the results are significant in case of phase I and phase III and phase II and phase III. As far as forex reserves, exchange rate, Gross capital formation is concerned, the results are significant amongst all the three phases. There does not lie any significant difference amongst means of real GDP growth rate during these three phases.

Concluding we can say that all the variables do not show a similar pattern during the three phases. Credit growth of Scheduled commercial banks (as % of GDP) subdued during all the three phases. Fiscal deficit was at its high during the first and third phase. Current Account Deficit remained at its critical level during first and second phase. Gross capital formation was low during second and third phase.

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Phase I (First Twin): Twin Deficit Crisis

	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
Real GDP Growth Rate	5.2	4.7	3.96	9.62	5.94	5.53	1.05
Fiscal Deficit (% of GDP)	7.55	8.13	7.34	7.08	7.10	7.61	5.39
Current Account Balance	-2.09	-1.83	-1.74	-2.43	-1.99	-3.01	-0.44
WPI	4.5	5.8	8.2	7.5	7.4	10.3	13.7
Forex Reserves (bn.\$)	6.52	6.57	6.22	4.8	3.96	5.83	9.22
Exchange Rate (\$/Rs.)	12.23	12.77	12.96	14.48	16.64	17.94	24.47
Gross Capital Formation (% of GDP)	22.65	22.08	24.05	25.11	26.07	28.62	23.97
Credit Growth of SCB (% of GDP)	19.90	20.10	19.70	20.00	20.80	20.40	19.20

Source: RBI, World Bank and OECD

Phase II (Second Twin): Twin Balance sheet Syndrome

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Real GDP Growth Rate	3.1	7.9	8.5	5.2	5.5	6.4	7.4
Fiscal Deficit (% of GDP)	5.99	6.46	4.80	5.91	4.93	4.48	4.10
Current Account Balance	-2.33	-2.85	-2.87	-4.29	-4.82	-1.74	-1.32
WPI	8.1	3.8	9.6	8.9	6.9	5.2	1.2
Forex Reserves	251.9	279.05	304.8	294.3	292.04	304.22	341.63
Exchange Rate (\$/Rs.)	45.99	47.44	45.56	47.92	54.40	60.50	61.14
Gross Capital Formation(% of GDP)	34.6	36.3	40.1	39.0	39.5	35.2	34.8
Gross NPA (as % of Gross Advances)	2.3	2.6	2.5	3.1	3.2	3.8	4.3
Credit Growth of SCB (as % of GDP)	49.30	50.10	50.60	52.79	52.90	53.36	52.43

Source: RBI, World Bank and OECD

Phase III (Third Twin): The Twin Economic Shocks (Demand & Supply Shocks)

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Real GDP Growth Rate	8.0	8.3	6.8	6.5	4.0	-8.0
Gross Fiscal Deficit (% of GDP)	3.87	3.48	3.46	4.6	3.77	9.5
Current Account Balance	-1.05	-0.6	-1.8	-2.1	-0.86	3.1
WPI	-3.7	1.7	3.0	4.3	1.7	-0.1
Forex Reserves (Bn.\$)	360.17	370	424.4	411.9	477.80	586.1
Exchange Rate (\$/Rs.)	65.46	67.07	64.45	69.92	70.89	74.64
Gross Capital Formation (%of GDP)	32.11	30.17	30.8	31.7	31.1	27.0%
Gross NPA (% of Gross Advances)	7.5	9.3	11.2	9.1	8.2%	7.5%
Credit Growth of SCB (% of GDP)	52.64	51.04	50.46	51.51	50.99	NA

Source: RBI, World Bank and OECD

The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of two or more independent (unrelated) groups (although you tend to only see it used when there are a minimum of three, rather than two groups).

If you determine from your ANOVA: Single Factor test that you have a significant F-statistic, you will need to conduct follow up testing to determine which groups significantly differ on the variable of interest.