

**Macroeconomic Instability in India:
A Comparative Study of Economic Recession in
the 1960s and 1990s**

**Thesis submitted to the
University of North Bengal
for the Award of Doctor of Philosophy in
ECONOMICS**

**by
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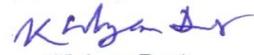
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June 2015

DECLARATION

I declare that the thesis entitled "**Macroeconomic Instability in India: A Comparative Study of Economic Recession in the 1960s and 1990s**" has been prepared by me under the guidance of Prof. Jeta Sankrityayana, Department of Economics, University of North Bengal. No part of this thesis has formed the basis for the award of any degree or fellowship previously.

Date: 15.06.2015


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CERTIFICATE
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After completing his research under my supervision, Sri KALYAN DAS is submitting this Ph. D. thesis to the University of North Bengal for adjudication.

I certify hereby that this is an independent and original work prepared by him while attached to this Department. It has not been submitted to any other University/Institution in fulfillment of the requirements for award of the Ph. D. degree.

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ABSTRACT

This research intends to be a study in the field of applied macro-econometric research as it has been a country-specific research on macroeconomic instability analysis, particularly in the context of the Indian economy. Though its broad contour is macroeconomics, it has been both either in the part of growth studies or in business cycle studies. However, the main tenet of this research catered around the theme of instability and growth right across the research, which has long been at the core of economic analysis not only in the theoretical works but also in the outpouring of empirical literatures. Whatever may be the sources of origin of instability are broadly clubbed either in the exogenous premise or endogenous domain. However, decoupling their mutual influence has always been a challenging task even before the best empirics.

Measuring and quantifying the theme of instability is not always an easy task. In quest of this, methodological revolution seems to have gone from metaphorical ideas of equilibrium-disequilibrium to recent co-integration and error correction conception of time-series econometrics. Macroeconomic imbalances may emanate from both exogenous shocks such as ban of economic sanctions or natural events and distortions on account of unsustainable domestic policies. This research kept going in detail in quest of the analysis of macroeconomics of imbalances and adjustment, which considered necessary to correct both the internal and external dimension. The basic problem of this research hinges on to trace out the moving short-run disequilibrium dynamics of the Indian economy towards steady-state long-run equilibrium growth path, explaining the details of adjustment.

Over the past few decades, India has gone through several economic and institutional changes, including its fiscal policy framework, monetary policy framework, exchange rate regime, financial regulatory framework and trade policy structure. Its macroeconomic policy context including the role of the public sector, the pervasive influence of legislation, and degrees of government controls have changed over time. Relative priorities in setting economic strategies have varied in contents across sectors and policy areas, and pace of policy changes also varied as surfaced extraneous economic and political shocks from time to time. And the nature of the shocks, their origin, degrees of gravity, and government responses to them varied with different intensities, which motivate the present research to enquire into the questions for associated recessions in the 1960s and 1990s, particularly to present a comparative instability perspective in the

India's changing macroeconomic policy context additive to presence of exogenous supply shocks.

This research is computationally demanding as to how its lurched out growth process took shape and how its transient staying varied in response to policy changes in the face of economic and political shocks over the studied sample period from 1950-51 to 2002-03. This research evaluates various macroeconomic policy options from the point of view of macroeconomic stability and growth in the Indian economy. It has been about India's changing macroeconomic policy contexts, which were adopted to maintain economic stability in the wake of international price, interest rate, and demand shocks or domestic crises in the forms of investment booms and related budgetary problems. Its main purpose is to analyse the underlying economic relationships to draw upon the cause and effect relationships behind these policies to generate instability ideas.

The thesis takes shaped in nine separate chapters. Chapter 1 has been to set out the tone of this research in its preliminary effort while chapter 2 surveys literatures to explore thematic stylised facts of instability, measurement and underlying methodologies. Chapter 3 has been to collect instability information across development planning, budgetary exercises with historical factual information. Chapter 4 has been to provide India's changing macroeconomic policy trends. Chapter 5 has been to build theoretical framework in order to slate theoretical channels of instability and chapter 6 has been with methodological framework to provide methodological linkage in quantifying instability issues and their relationships. Chapter 7 deals phase analysis of Indian instability stages informing policy analysis and economic shocks and macroeconomic instability dips in the 1960s and 1990s. Chapter 8 examines the instability channels econometrically with causation and long-run growth and stability implications in the context of India's changing policy posture. Chapter 9 provides comparative perspective of instability episodes with analysis of comparative devaluation on India's macroeconomic growth with overall long-run policy assessment and concludes the research leaving future agenda for further research.

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Date:

Kalyan Das

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An Overview

1.1 INSTABILITY EPISODES IN THE 1960S & 1990S IN THE INDIAN ECONOMY: SOME DATA PRELIMINARIES

In particular macroeconomic episodes, short-term movements are often quite different from measured longer term. One striking aspect of macroeconomic instability is that it is a phenomenon when constituent elements may well show similar patterns consistent to output and thereby reflects their mutual interdependence. During this situation, the downturns of any economy show the tangible signs of over-all economic activity began its rapid deceleration and the considerable fall in many economic aggregates in sectors that experience economic contraction over a given span of time. This situation is consequent to either supply shocks or policies of contractionary effects on aggregate demand, particularly when neighbourhood timing entails war conflicting or poor harvesting or international oil price hiking situation or compounding of them. It can arguably be said that GDP series alone may not be a reasonable basis for determining instability situation. In addition to output dimension, there are also other important dimensions to aggregate economic activity which need to be considered. The analysis of macroeconomic instability episodes gives very valuable insights into the conduct of policy then.

Due to cascading effects of instability situation, macroeconomic variables of different sectors affect each other which yield to include a wide variety of economic disorders, reflect in the changes of a list of macroeconomic aggregates, including production, consumption, capital formation, savings, price levels, terms of trade, and the others. The tendency of candidate macroeconomic variables to move together with GDP with limited and partly systematic timing differences constitutes a defining characteristic of macroeconomic instability. In such a context, this section has made an attempt in preliminary effort to present the Indian economy at level values by integrating the basic time-series on national and related sectoral aggregates in a comprehensive and consistent set of macroeconomic framework over a number of decades. The resulting identification of empirical patterns and regularities should help the present research to depict the growth of both the real and financial sectors of the Indian economy, and also its

**TABLE 1.1: KEY NATIONAL ACCOUNTS AGGREGATES FOR THE INDIAN ECONOMY (1950-51 TO 2003-04)
AT LEVEL VALUES**

(Rupees, crore)

Year	Y	YZ	CG	CGZ	IGZ	SGZ	XZ	MZ	YFCZ	YFC	CP	GNP/Y
1950	148503	9934	9067	592	276	182	736	710	9547	140466	128612	0.9962694
1951	152979	10566	9161	621	321	266	845	1037	10080	143745	136787	0.9977383
1952	156960	10366	9172	643	274	160	714	702	9941	147824	142307	0.9982161
1953	166625	11282	9287	679	311	143	643	652	10824	156822	150862	0.9986077
1954	174745	10678	9341	708	477	168	704	749	10168	163479	155811	0.9979799
1955	180530	10873	9600	759	522	190	757	839	10332	167667	157301	0.9992688
1956	190578	12951	10268	837	691	251	767	1174	12334	177211	164259	0.9989243
1957	189960	13349	11563	978	859	266	799	1304	12610	175068	161014	0.9983575
1958	203958	14874	11973	1049	844	251	720	1104	14106	188354	175796	0.9978966
1959	209408	15675	12188	1105	932	262	779	1010	14816	192476	177795	0.9963755
1960	220560	17167	12846	1206	1178	454	784	1236	16220	206103	187909	0.9958877
1961	228921	18196	13757	1336	1187	526	802	1100	17116	212499	191112	0.9947056
1962	235834	19566	16693	1620	1490	602	835	1209	18302	216994	193602	0.9940933
1963	250208	22482	20822	2088	1733	751	985	1363	20916	227980	200804	0.9963927
1964	268821	26220	21482	2240	2007	865	1015	1526	24436	245270	212800	0.9933115
1965	262029	27668	23458	2570	2282	863	932	1464	25586	236306	212988	0.9927031
1966	261586	31305	23725	2808	2209	728	1325	2115	29123	238710	215756	0.9928742
1967	281971	36649	24180	3126	2415	735	1508	2201	34225	258137	227962	0.9918644
1968	291759	38823	25473	3428	2259	933	1597	1897	36092	264873	233950	0.9925075
1969	310847	42750	27888	3847	2361	1115	1625	1747	39691	282134	242640	0.9924625
1970	326925	45677	30453	4289	2919	1343	1771	1816	42222	296278	250880	0.9928271
1971	332516	48392	33663	4982	3415	1379	1785	2175	44923	299269	255761	0.9922238
1972	330594	53947	33761	5283	3875	1442	2225	2049	49415	298316	257475	0.9922443
1973	341050	65613	33372	5765	4904	1931	2830	3176	60560	311894	263793	0.9943
1974	345101	77479	31862	6995	5753	2835	3835	4779	71283	315514	263594	0.9970878
1975	376731	83269	35170	8265	7806	3520	4812	5664	75709	343924	278563	0.9980065
1976	383163	89739	37873	9192	8822	4378	6139	5614	81381	348223	284118	0.9981914
1977	410873	101597	39011	9780	8101	4375	6640	6517	92881	374235	307285	0.9981235
1978	434437	110133	41862	10852	10165	5009	7115	7423	99823	394828	326066	0.9988652
1979	411663	120841	44482	12481	12137	5226	8340	10094	108927	374291	318753	1.0008478
1980	439201	143764	46581	14492	12105	4929	9029	13596	130178	401128	347443	1.0019171
1981	467139	168600	48675	17075	16986	7570	10256	14809	152056	425073	362552	1.0002034
1982	484217	188262	53280	20135	20139	8172	11563	15736	169525	438079	366178	0.9968981
1983	518491	219496	55605	23216	21265	7168	13139	17675	198630	471742	394599	0.9952767
1984	539874	245515	59620	26631	25600	6956	15846	19484	222705	492077	405973	0.9946821
1985	570267	277991	66255	31734	29990	8946	14951	21754	249547	513990	422916	0.9948638
1986	597850	311177	72802	37507	34772	8543	16543	22359	278258	536257	436262	0.9929146
1987	623371	354343	78698	43990	33757	7879	20281	25259	315993	556778	451215	0.9913872
1988	684832	421567	82775	50673	40136	8770	25913	32010	378491	615098	479378	0.9884775
1989	728952	486179	86659	57909	46405	8179	34609	40212	438020	656331	503167	0.9887194
1990	771295	568674	89601	66030	53099	6279	40635	48698	510954	692871	525641	0.9880707
1991	778289	653117	89008	74285	57633	12868	56254	56249	589086	701863	536980	0.9862262
1992	819318	748367	91795	83957	63997	11865	67312	73000	673221	737792	550828	0.9860652
1993	859220	859220	97725	97725	70834	5445	86147	85999	781345	781345	574772	0.9859407
1994	923349	1012770	98935	108639	88206	16845	101607	104710	917058	838031	601481	0.985688
1995	993946	1188012	106881	128816	90977	24065	130733	144953	1073271	899563	638938	0.9873212
1996	1067445	1368208	111640	145725	96187	22917	144854	161022	1243546	970083	689566	0.9899545
1997	1115248	1522547	123978	172189	100653	20255	165203	184333	1390148	1016595	707285	0.9904515
1998	1182021	1740985	139963	214033	114545	-17169	195280	224745	1598127	1082748	752440	0.9898699
1999	1266284	1936831	158432	251108	134484	-20049	227697	265702	1761838	1148368	797653	0.9911694
2000	1316201	2089499	159194	264237	131505	-48371	290185	306085	1902998	1198592	819637	0.991186
2001	1384011	2282143	164037	284308	133003	-62704	307577	321799	2090957	1267833	866736	0.9942168
2002	1447595	2469564	169069	308827	140386	-45730	375873	385271	2249493	1318321	897243	0.9920489
2003	1567399	2772194	NA	NA	NA	NA	NA	NA	2523872	1426701	NA	0.9904434

Source: Government of India, *Economic Survey*, various issues

Notes: (i) 'NA' means not available

(ii) XZ and MZ for the period 1950-51 to 1992-93 not estimated at 1993-94 prices as NAS has not provided

Notations:

Y	GDP at 1993-94 prices (real)
YZ	GDP at current market prices (nominal)
CG	final consumption expenditure of the government sector at 1993-94 prices
CGZ	final consumption expenditure of the government sector at current prices
IGZ	gross domestic capital formation of the government sector at current prices
SGZ	savings of the government sector at current prices
XZ	Exports of goods and services at current prices
MZ	Imports of goods and services at current prices
YFCZ	GDP at factor cost at current prices
YFC	GDP at factor cost at 1993-94 prices
CP	final consumption expenditure of the private sector at 1993-94 prices
GNP	GNP at 1993-94 prices

structural changes over the entire sample period, in general, and between the pre-and post-liberalisation phases, in particular as first approximation. It facilitates translation of certain important theoretical constructs on structural adjustment problems into various policy relevant solutions and inter-relationships.

BEHAVIOUR OF KEY EXPLANATORY VARIABLES

Combing the following Tables 1, 2 & 3 which, in fact, yield the following plots from 1.1 to 1.9 with an analysis of the behaviour of the key explanatory variables allows this sub-section to understand the two specific episodes of instability in the 1960s and 1990s in India, which represent a significant departure from the overall trends have generated a considerable discussion on the underlying causes. While no detailed econometric analysis is undertaken in this sub-section, a few observations, based on the empirical patterns and regularities, detected the Indian macroeconomic instability sub-periods in the statistical time-series contained in the following Tables and Figures.

This first substantive part of this research deals with macroeconomic time-series at level values to derive instability stages of the Indian economy and to estimate local trends and timing measures. In this sense, the rules of thumb in this sub-section are restricted to those years where inter-year declines in the real GDP as an indicator of imminent recession. Real GDP is the most comprehensive and largely widely used measure of total output or income. However, GDP is a very complex measure of total economic activity. The following figures portray the movements of some of the important macroeconomic indices for India over the studied period from 1950-51 to 2003 – 04.

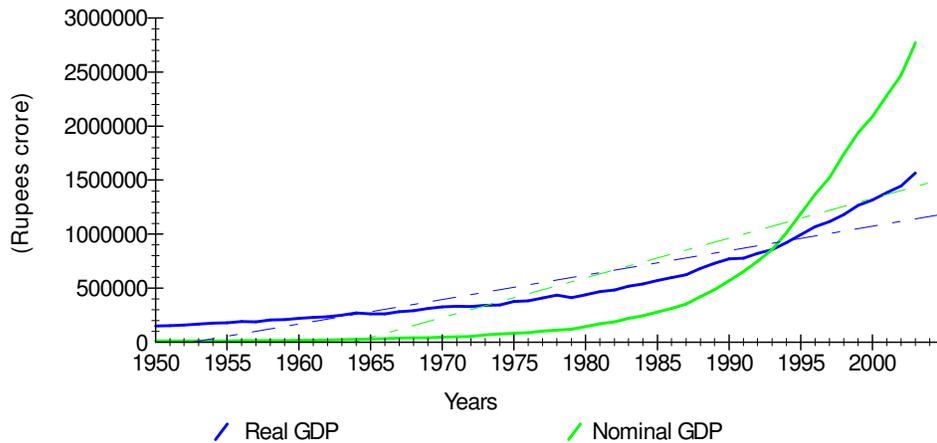


Figure 1.1: GDP at 1993-94 prices & GDP at current market prices (Rs. crore)

Source: Table 1.1, CSO, *National Accounts Statistics, Economic Survey*, various issues; EPWRF [2004]

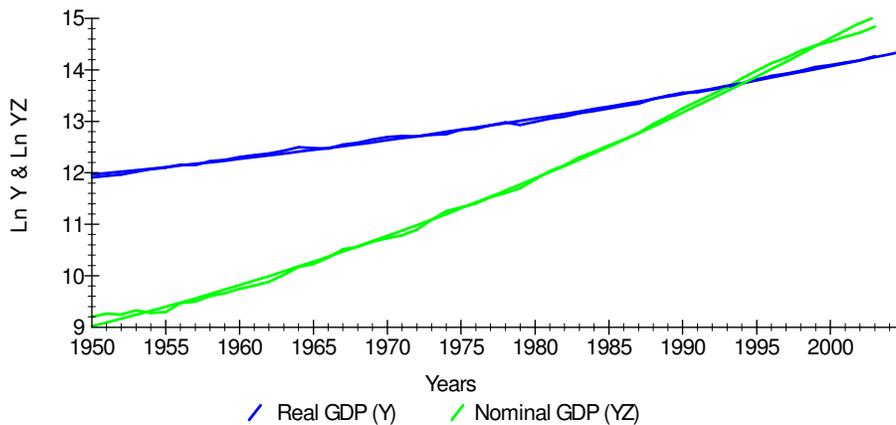


Figure 1.2: Annual GDP at constant 1993-94 prices (Y) and Annual GDP at current market prices (YZ) at logarithmic scale

Source: Table 1.1, CSO, *National Accounts Statistics, Economic Survey*, various issues; EPWRF [2004]

The figures presented above are almost self explanatory. One of the important aspects clearly reflected is the fact that the range in nominal GDP fluctuation in India has been much more than that of real GDP. This indicates that nominal GDP is much more volatile and price level variations tend to dominate, though by varying intervals. Figure 1.2 shows the dynamics

of real GDP and nominal GDP at natural logarithmic transformed scale and how actually they zigzagged around the smoothed long-run trend line between positive and negative readings. During the mid-1960s and early 1990s, the Indian GDP can be found to have moved to low at level values, which are more likely related to some diverse economic shocks or policy failure. There observed structural changes in the fitted trend function. There observed differences in trend patterns in the pre-90s and the post-90s. And the data during the mid-60s, early and late 70s, and early 90s show different kind of disparity as Indian GDP drifted variously to low levels and tilted with respect to prior time-periods. The study needs to explore the timing of structural break in the relationship between macroeconomic variables. The figure 1.1 indicates that there is a distinct structural break in the Indian economy in the mid 1960s and the early 1990s. The comparability aspects prompt the present study to present comparative retrospect of two-regime's instability in the 1960s and the 1990s. The changes considered are of three kinds: a change in intercept (for example, exogenous shocks), a change in slope (productivity slowdown) or both. It is important to note that some kind of big shocks that have permanent effects on the level of the series can cause the structural changes to the trend function. The estimated trend function show a kink at the time of structural break and the trend function is simply the fitted values from a least-square regression in the outlier version. The outlier model preferred as it translates into a non-linear trend function showing a gradual adjustment to the new path following the structural break. This study needs an examination of the comparative changes that have occurred distinguishing the mid-60s and the early-90s. This research needs to understand the implications with respect to the transition effect. The dating of these breaks in trend function are associated with the major events like wars with China in 1962, with Pakistan in 1965 and in 1971; droughts (poor harvesting) of 1965-66, 1966-67, 1972-73, 1973-74, 1979-80 and 1987-88; and, international oil price jump in 1973-74, 1979-80, and the Gulf War driven oil price hike in 1990. For which, as might be expected to have mirrored the behaviour of relevant candidate variables such as revenue receipts fell, government real consumption expenditure rose partly as a result of increased defence expenditure of wars and increased expenditures on subsidies due to droughts and the large fall in real public investment and thereby fiscal deficits increased and worsened the public finance position, and imports bill risen in the oil crises years.

The above Table 1.1 shows that government final consumption expenditure had increased ceaselessly from 1950-51 onwards; declined though marginally, since late 1980s to mid 1990s and again increased, which may be partly as a result of the fiscal austerity measures adopted. The rapid increase in interest payments on the growth of internal debt with the advent of liberalisation might have made public sector savings fell to a very low level, implying that a reduction in government current expenditures may no longer be a sufficient condition for fiscal stabilisation. And private final consumption expenditure continues to decline monotonically. This decline in the consumption propensity has been mirrored by a rise in the private savings in the post-90s.

Table 1.2: Gross Domestic Capital Formation & Gross Domestic Savings & their Components at Level values (*Rupees crore*)

Year	IGZ	IHZ	ICZ	IPZ	GDIUZ	Errors & Omissions	G DIAZ	SGZ	SHZ	SCZ	SPZ	GDSZ	NFCIZ (-)/ OF(+)	NFIFAZ
1950	276	550	218	768	1044	-178	866	182	612	93	705	887	-21	-41
1951	321	569	256	825	1146	22	1168	266	583	136	719	985	183	-35
1952	274	565	78	643	917	-90	827	160	637	64	701	861	-34	-25
1953	311	513	9	522	833	42	875	143	655	90	745	888	-13	-19
1954	477	437	149	586	1063	-42	1021	168	719	118	837	1005	16	-29
1955	522	617	222	839	1361	48	1409	190	1046	134	1180	1370	39	-10
1956	691	845	345	1190	1881	63	1944	251	1178	155	1333	1584	360	-17
1957	859	706	394	1100	1959	-102	1857	266	997	121	1118	1384	473	-20
1958	844	654	242	896	1740	43	1783	251	1016	140	1156	1407	376	-35
1959	932	868	303	1171	2103	-124	1979	262	1301	185	1486	1748	231	-57
1960	1178	798	540	1338	2516	-46	2470	454	1254	281	1535	1989	481	-72
1961	1187	792	744	1536	2723	-251	2472	526	1281	320	1601	2127	345	-98
1962	1490	1034	539	1573	3063	-144	2919	602	1533	344	1877	2479	440	-108
1963	1733	875	869	1744	3477	-274	3203	751	1618	394	2012	2763	440	-112
1964	2007	1161	906	2067	4074	-345	3729	865	1875	389	2264	3129	600	-145
1965	2282	1530	705	2235	4517	-48	4469	863	2602	405	3007	3870	599	-164
1966	2209	2359	625	2984	5193	105	5298	728	3223	424	3647	4375	923	-230
1967	2415	2345	820	3165	5580	-388	5192	735	3210	410	3620	4355	837	-258
1968	2259	2554	769	3323	5582	-445	5137	933	3349	439	3788	4721	416	-255
1969	2361	3521	675	4196	6557	-212	6345	1115	4440	549	4989	6104	241	-271
1970	2919	3263	1045	4308	7227	-184	7043	1343	4634	672	5306	6649	394	-284
1971	3415	3664	1204	4868	8283	-438	7845	1379	5219	769	5988	7367	478	-291
1972	3875	3496	1350	4846	8721	-552	8169	1442	5624	806	6430	7872	297	-302
1973	4904	4373	1651	6024	10928	463	11391	1931	7985	1083	9068	10999	392	-325
1974	5753	5706	2733	8439	14192	-1159	13033	2835	8080	1465	9545	12380	653	-291
1975	7806	5825	2169	7994	15800	-1571	14229	3520	9743	1083	10826	14346	-117	-255
1976	8822	6997	1325	8322	17144	-1045	16099	4378	11849	1181	13030	17408	-1309	-233
1977	8101	8501	2377	10878	18979	-302	18677	4375	14354	1413	15767	20142	-1465	-233
1978	10165	10357	2288	12645	22810	994	23804	5009	17015	1652	18667	23676	128	-156
1979	12137	10609	3078	13687	25824	-930	24894	5226	16690	2398	19088	24314	580	153
1980	12105	11258	3505	14763	26868	2362	29230	4929	19868	2339	22207	27136	2094	345
1981	16986	11611	9186	20797	37783	-3817	33966	7570	21225	2560	23785	31355	2611	40
1982	20139	10477	10170	20647	40786	-3852	36934	8172	23216	2980	26196	34368	2566	-634
1983	21265	14871	7060	21931	43196	-2092	41104	7168	28165	3254	31419	38587	2517	-944
1984	25600	17188	10238	27426	53026	-3671	49355	6956	35067	4040	39107	46063	3292	-1424
1985	29990	21257	14556	35813	65803	-5402	60401	8946	39795	5426	45221	54167	6234	-1429
1986	34772	21736	15695	37431	72203	-6897	65306	8543	45072	5336	50408	58951	6355	-1805
1987	33757	32337	12263	44600	78357	1376	79733	7879	59157	5932	65089	72908	6825	-2619
1988	40136	43474	16266	59740	99876	341	100217	8770	70657	8486	79143	87913	12304	-4496
1989	46405	48957	19673	68630	115035	4223	119258	8179	86955	11845	98800	106979	12279	-5731
1990	53099	60257	23498	83755	136854	12682	149536	6279	109897	15164	125061	131340	18196	-7545
1991	57633	48635	36992	85627	143260	4025	147285	12868	110736	20304	131040	143908	3377	-10077
1992	63997	65706	48316	114022	178019	-1297	176722	11865	131073	19968	151041	162906	13816	-11645
1993	70834	63572	48213	111785	182619	15793	198412	5445	158310	29866	188176	193621	4791	-12080
1994	88206	78625	69953	148578	236784	26572	263356	16845	199358	35260	234618	251463	11893	-13083
1995	90977	110421	113781	224202	315179	4348	319527	24065	216140	58542	274682	298747	20780	-13484

Year	IGZ	IHZ	ICZ	IPZ	GDIUZ	Errors & Omissions	GDIAZ	SGZ	SHZ	SCZ	SPZ	GDSZ	NFCIZ (-)/ OF(+)	NFIFAZ
1996	96187	91591	110084	201675	297862	37137	334999	22917	233252	61092	294344	317261	17738	-13082
1997	100653	121660	121399	243059	343712	30768	374480	20255	268437	63486	331923	352178	22302	-13205
1998	114545	146456	111208	257664	372209	20812	393021	-17169	326802	65026	391828	374659	18362	-14968
1999	134484	198658	125120	323778	458262	32407	490669	-20049	404401	84329	488730	468681	21988	-15431
2000	131505	235494	105709	341203	472708	36125	508833	-48371	458215	86142	544357	495986	12847	-17285
2001	133003	264736	111321	376057	509060	18857	527917	-62704	519040	78849	597889	535185	-7268	-12086
2002	140386	304851	118579	423430	563816	11217	575033	-45730	559258	84169	643427	597697	-22664	-19221
2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-25932

Source: CSO, *National Accounts Statistics*, EPWRF [2004]

Notations:

IGZ	Gross domestic capital formation of the government sector at current prices
IHZ	Investment of the household sector at current prices
ICZ	Investment of the private corporate sector at current prices
IPZ	Gross domestic capital formation of the private sector at current prices
GDIUZ	Unadjusted gross domestic capital formation at current prices
GDIAZ	Adjusted gross domestic capital formation at current prices
SGZ	Gross savings of the government sector at current prices
SHZ	Gross savings of the private household sector at current prices
SCZ	Gross savings of the private corporate sector at current prices
SPZ	Gross savings of the private sector at current prices
GDSZ	Gross domestic savings at current prices
NFCIZ (-) / OF (+)	Net foreign capital inflow (-) and outflow (+)

Notes: GDSZ not estimated at 1993-94 prices as given by the CSO

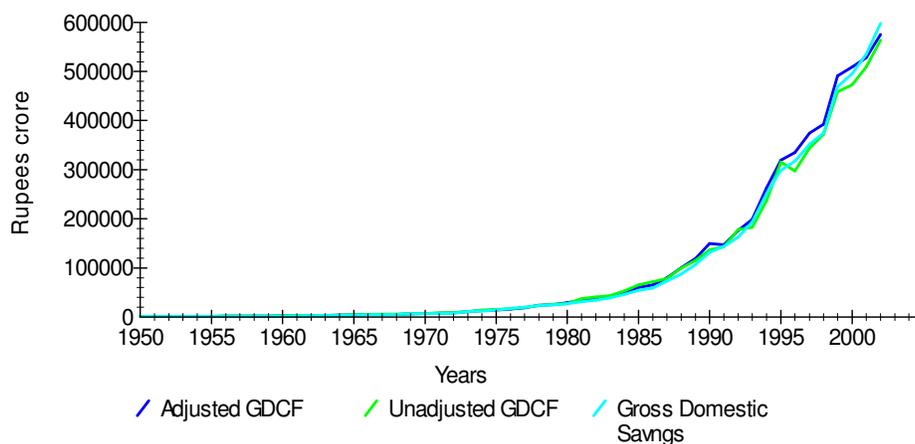


Figure 1.3: Gross Domestic Savings, Adjusted & Unadjusted Gross Domestic Capital Formation (Rupees crore)

Source: Table 1.2, CSO, *National Accounts Statistics*, *Economic Survey*, various issues; EPWRF [2004]

There has been overall similarity between savings and investment patterns. No significant differences can be observed across decades in terms of the degree of reliance on net foreign capital inflows (foreign savings) for domestic capital formation. The difference between

investment and savings rate for each year represent net foreign capital inflow, which has varied in the narrow range through the period under study. Domestic investment seems to have predominantly been financed by domestic savings as there has not been any noticeable increase in the share of net foreign capital inflow in the domestic capital formation, reflecting the restrictive capital account regime, though changed marginally even after the 1991 policy reforms. There has been an increase of gross domestic savings in the post – 90s may be the impacts of financial liberalisation measures and to mirror this increase, there has been a distinct fall in overall final consumption expenditure may be the prime reason for the fall in absorption might have led demand recessions in the mid-90s.

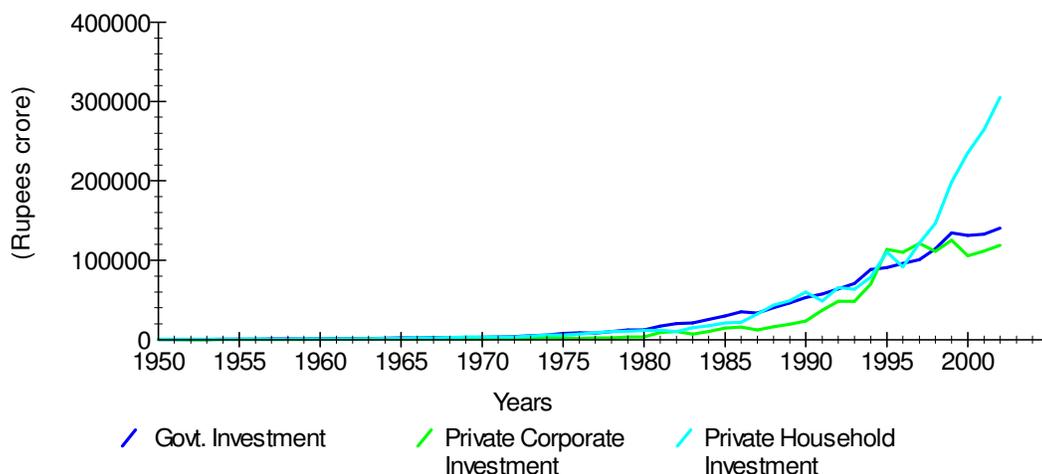


Figure 1.4: Components of Gross Domestic Capital Formation (unadjusted) (Rupees crore)

Source: Table 1.2, CSO, *National Accounts Statistics, Economic Survey*, various issues; EPWRF [2004]

With overall gross domestic capital formation, any variation in investment of the government sector is mirrored by investment of the private sector implying that an over-prediction in one sector implied an under-prediction in the other, and vice-versa. The figure shows that apart from a brief zone of instability during the 1960s when estimated government investment lay far below its fitted minimum bound and many similar things also happen during the 1990s as estimated government investment lay far below any other extreme outliers in either series. The Figure 1.4 indicates that government investment expenditure after peaking during 1981-86, fluctuating around a declining trend. There has also been a marginal increase in the share of private investment.

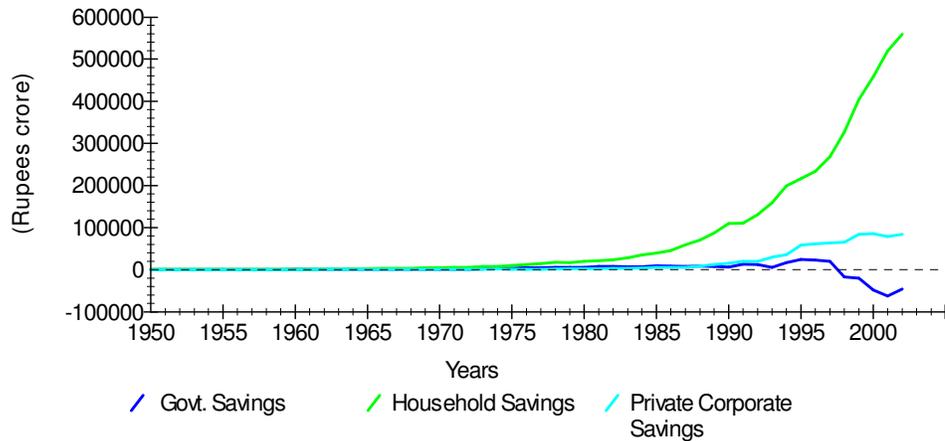


Figure 1.5: Components of Gross Domestic Savings (Rupees crore)

Source: Table 1.2, CSO, *National Accounts Statistics, Economic Survey*, various issues; EPWRF [2004]

Gross domestic savings being largely dominated by private savings, despite the rapid growth of corporate savings over the years, household savings continue to dominate total private savings, with public saving declining persistently from the mid-1980s.

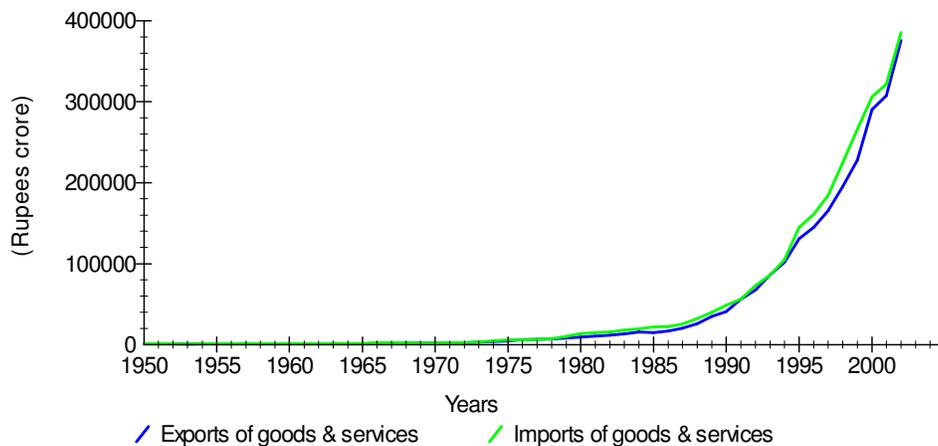


Figure 1.6: Exports & Imports at current market prices

Source: Table 1.1, CSO, *National Accounts Statistics, Economic Survey*, various issues; EPWRF [2004]

Promoting exports has always been a challenging task to developing nations, particularly those affected severely by a balance of payments crisis, ever inflating the size of the external debt. India has definitely been a case in point on that count. Indian imports have generally outpaced exports, leaving significant current account imbalance and thereby balance of payment crisis. One of the important aspects clearly reflected is the fact that the range in GDP fluctuation in

India has been much more than that of exports. The share of export has also surged may be as an outcome of external sector liberalisation. The economic openness that got initiated during 1980s and intensified during 1990s, affected the purchasing power infusion or leakages of Indian economy through the net trade flows, net foreign factor income inflows and the net capital account inflows. However their position is judged in terms of external debt service and foreign exchange reserves.

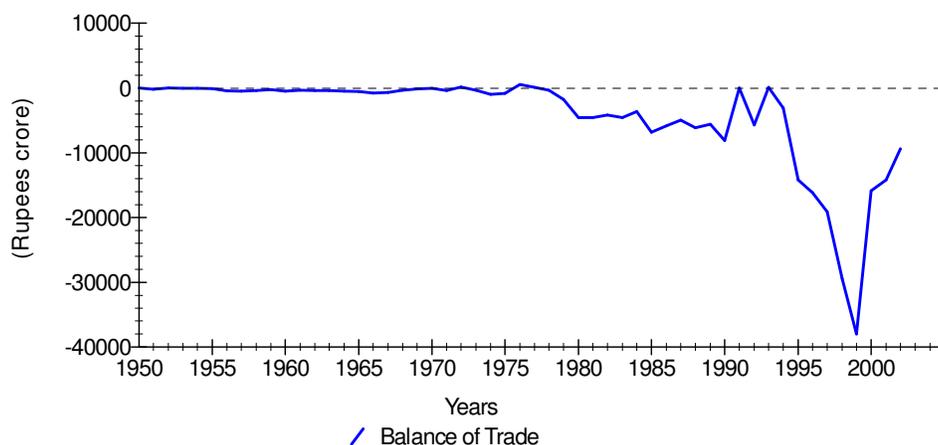


Figure 1.7: Behaviour of Balance of Trade at current market prices (Rupees crore), 1950-2003

Source: Table 1.1, CSO, *National Accounts Statistics, Economic Survey*, various issues; EPWRF [2004]

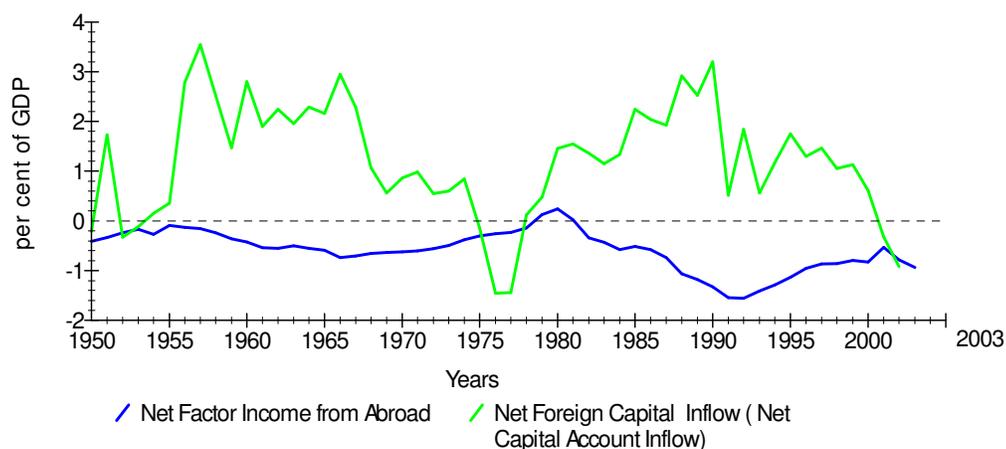


Figure 1.8: Behaviour of Net Factor Income from Abroad & Net Foreign Capital Inflow As percentage of GDP at current market prices

Source: Table 1.2, CSO, *National Accounts Statistics, Economic Survey*, various issues; EPWRF [2004]

TABLE 1.3: Gross domestic product by economic activity at 1993-94 prices

Year	YA	YM	YC	YINFS
1950	81069	12491	5722	5102
1951	82278	12886	6113	5328
1952	84873	13334	5670	5473
1953	91409	14366	5845	5690
1954	94096	15373	6568	5996
1955	93283	16577	7812	6444
1956	98354	17821	8710	6977
1957	93936	18508	7645	7484
1958	103401	19425	8543	8088
1959	102360	20744	9129	8671
1960	109254	22465	10558	9281
1961	109346	24383	10929	10007
1962	107171	26158	11336	10849
1963	109678	28632	12720	11726
1964	119795	30612	13742	12392
1965	106567	30897	14659	13151
1966	105051	31140	15864	13688
1967	120673	31260	17005	14646
1968	120482	32992	17600	15607
1969	128226	36531	18147	16584
1970	137320	37389	18107	17260
1971	134742	38611	18186	17985
1972	127980	40125	18613	19194
1973	137197	41910	17404	19910
1974	135107	43132	16850	21644
1975	152522	44041	19252	23709
1976	143709	47903	21135	25615
1977	158132	50885	23274	26387
1978	161773	57170	22755	28455
1979	141107	55328	21554	29785
1980	159293	55436	24395	31737
1981	167723	59881	25731	33811
1982	166577	63859	23924	35097
1983	182498	70306	25216	36777
1984	185186	74923	26089	39693
1985	186570	77871	27566	42679
1986	185363	83290	28225	45773
1987	182899	89374	29843	49064
1988	211184	97263	31941	52013
1989	214315	108703	34188	56112
1990	223114	115282	38218	59097
1991	219660	111075	39005	63482
1992	232386	115669	40363	66852
1993	241967	125493	40593	70115
1994	254090	140491	42830	76924
1995	251892	161424	45496	84495
1996	276091	177013	46452	100824
1997	269384	179689	51208	98204
1998	286094	184579	54389	105871
1999	286983	191926	58740	116009
2000	286666	206189	62651	127961
2001	305263	213681	64562	137469
2002	289386	227035	69273	151022
2003	315635	243605	73558	*NONE*

Source: CSO, *National Accounts Statistics*, EPWRF [2004]

Notes: GDP in infrastructure (YINFS) is total GDP in electricity, gas and water supply, and transport, storage and communications at 1993-94 prices

Notations:

YA real GDP from agriculture at 1993-94 prices
YM real GDP from manufacturing at 1993-94 prices
YC real GDP from construction at 1993-94 prices
YINFS real GDP from infrastructure at 1993-94 prices

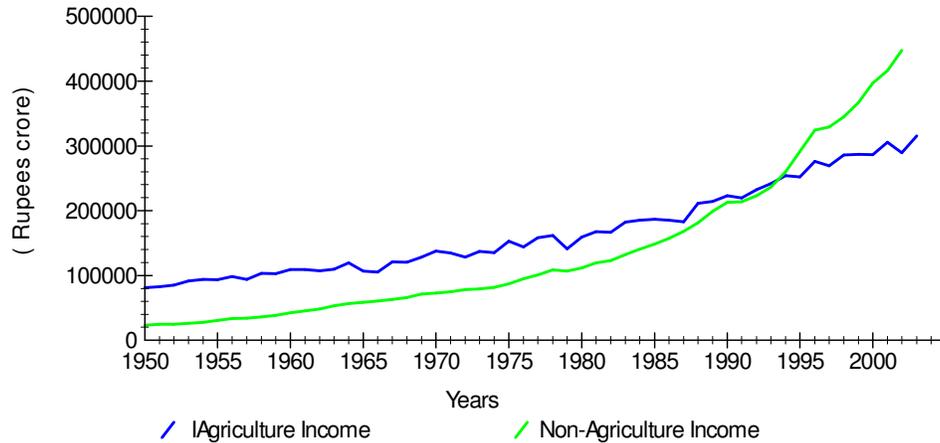


Figure 1.9: GDP by Economic- Activity at constant 1993-94 prices (Rupees crore)

Note: Non-Agriculture Income means the sum of GDP derived from construction, manufacturing and infrastructure

Source: Table 1.3, CSO, *National Accounts Statistics, Economic Survey*, various issues; EPWRF [2004]

It is important to note that controls were relaxed to a lesser extent since 1980s and problem with the 1990s seem to be the removal of restrictions which existed earlier on repatriation of profits and other incomes earned in India and on royalty payments. The above Figure 1.8 and GNP-GDP ratio (see Table 1.1) show the net flow of factor income from abroad. In the Indian economy, except for three years around 1979-81, GNP always remained lower than GDP (as the GNP – GDP ratio remained less than unity), thus net factor income outflows. The extent to which the economic openness of India in respect of net trade flows, net foreign capital inflows and net factor income from abroad affected the Indian macroeconomic growth process needs to incorporate other explanatory factors such as exchange rate, interest rate, and external debt service scenario.

In the above figure 1.9, presence of volatility in the agriculture sector can easily be seen compared to the non-agriculture sector. It is because agriculture sector depends predominantly on the rainfall. The agricultural output declined significantly during the crises years with poor rainfall, causing a fall in the overall GDP also. Poor harvests tended to adversely affect the demand for manufactured goods from small farmers, depressing the wages of industrial workers and leading to recessions resulting from the propagation of these shocks within an increasingly independent economic system.

However, such shifts are generally poorly understood unless being converted to growth changes. When differenced to show changes rather than levels, even comprehensive series such as real GDP are very volatile, often swinging up and down strongly from year to year. The discussion moves from levels to growth rates of the selected macroeconomic time-series in the rest of this ensuing research to measure the Indian macroeconomic instability sub-periods and to consider their relative durability and the role of policy volatility. The series have been smoothed out particularly to reduce volatility and to show the local trends and to avoid false signals of macroeconomic instability. To take into account the magnitudes of instability movements, leading, coincidence and lagging aspects of candidate variables have also got paid commendable attention. Vertical shaded regions and lines are drawn to trace the movements and co-movements of the constituent macroeconomic variables particularly to understand how they have been in tandem with in the instability zones in the following discussion. This research has also filtered out sub-periods that produce false signals of instability and necessarily considered the sub-periods that include constraints that led the consecutive GDP declined sufficiently large to get a valid signal of recessionary episodes. Instability indicators consistently leads growth cycle turning points and focuses mainly on growth cycles based on the deviation of indicators from trend. However, this sub-section may imply the need for making a more in-depth analysis for a comparative evaluation of the empirical results of instability episodes for different sub-periods over the studied period in the Indian economy. In tune with the different policy scenarios in different sub-periods, an attempt has been made to evaluate the inter-temporal differences in the degree of relationship of the variables.

1.2 PROBLEM STATEMENT

Macroeconomic imbalances arising from both exogenous shocks such as economic sanctions or natural events and distortions on account of unsustainable domestic policies repeatedly confront developing economies with the need to restore internal and external balance. The research problem provides the basis for the analysis of macroeconomics of imbalance and adjustment. The term ‘adjustment’ in recent years refers essentially to the policy changes considered necessary to correct both the internal and external dimension. The problem hinges

on to trace out the moving short-run disequilibrium dynamics of an economy towards steady-state long-run equilibrium growth path, explaining the details of adjustment.

Indian economy over a given span of time has gone by fits and starts like any dynamic open economy. Over the past few decades, India has gone through several economic and institutional changes, including in its fiscal policy framework, monetary policy framework, exchange rate regime, financial regulatory framework and trade policy structure. Its macroeconomic policy context including the role of the public sector, the pervasive influence of legislation, and degrees of government controls have changed over time. Relative priorities in setting economic strategies have varied in contents across sectors and policy areas, and pace of policy changes also varied as surfaced extraneous economic and political shocks from time to time. And the nature of the shocks, their origin, degrees of gravity, and government responses to them varied with different intensities.

India's post-independence macroeconomic staying displays alternating periods of relative stability and instability. Its macroeconomic growth prospects was accentuated gloomy (or patchy or disastrous) for some sub-periods, moderately good or in between (or period of adjustment to economic difficulties for resumption of growth), and successful for several others. India's macroeconomic growths were fragile and unsustainable in the 1960s and 1990s as it had plunged into deep economic crises (see Table 1.1). Thus it is computationally demanding how the Indian stop and go growth track and its underlying adjustment dynamics are realised. How India's complex disequilibrium dynamic lurched out growth process took shape and how its transient staying varied in response to policy changes in the face of various economic and political shocks that provides an interesting background to assess the success and failures of policies pursued from the point of view of stabilisation and growth. This research evaluates various macroeconomic policy options from the point of view of macroeconomic stability and growth in the Indian economy. It has been about India's changing macroeconomic policy contexts, which were adopted to maintain economic stability in the wake of international price, interest rate, and demand shocks or domestic crises in the forms of investment booms and related budgetary problems. Its main purpose is to analyse the underlying economic relationships to draw upon the cause and effect relationships behind these policies to generate ideas, which characterise the Indian economy in question for associated recessions in the 1960s

and 1990s, particularly to present a comparative perspective as to whether both the controlled and deregulated policy regimes behaved alike.

Macroeconomics study covers economy's sector - wise and economic activity - wise details and is the study of the behaviour of very large economic aggregates and their relationships and determinants such as gross national and domestic product, national investment and savings, imports and exports, and the balance of overseas payments, etc. It is concerned with both real and nominal values of these aggregates and thereby with changes in price levels (inflation, or rarely deflation). And macroeconomic policies refer to those that are intended to influence the values of such macro aggregates over time.

Comprehensive systematic research studies on disequilibrium analysis focussing the Indian twin instability episodes of the 1960s and 1990s in the long-run approach have so far been few and far between; may be because of dearth of time-series data of sufficient length. If there be, the existing studies are partial in period, policy and sector coverage. Moreover, most of the existing studies found inadequate as barely consider the issue of presence of unit-roots in variables. Thus it is demanding to fill this gap by placing this topic in this ensuing research.

The most important feature of this research is emphasis on policy analysis. Under the new policy regime, policy evaluation can no longer be based on rule of thumb or casual empiricisms. Market driven liberalisation and globalisation have insisted on greater space involving dynamics of behavioural patterns and adjustment processes that need to be mapped in a systematic and coherent way. However, policy issues are not always easy to quantify particularly when entails fuzziness what are often seen in some areas of socioeconomic policies, leaving to depend on intuitive plausible linkages, and thereby such policy analysis has been beyond the purview of this research. Thus the major problem that concerned the present research is the historical sources of instability. The explicit focus has been on the empirical assessments, which are analytically relevant to macroeconomic policies and the underlying macroeconomic adjustments in the Indian economy so that such judgements can be made with some measure of confidence. Quite naturally, references to actual policies would be made by illustrating specific points relating to instability linkages.

The constituent elements of gdp due to economic shocks change in magnitude and direction. Though these changes are mostly gradual, they are often seen to shift in values and

parameters of economic variables. Because of the complicated character of disequilibrium processes, the movements of the main macroeconomic aggregates can only be understood when they are to some extent broken-down or decomposed into constituent co-movements so that macroeconomic cause and effect relationships can be analysed. To that end, one of the most important functional breakdowns is in between public, private, and external sectors; the sub-classification of the private sector again into private corporate and household sectors. Others include agriculture, industry and services; some further breakdown of industry into different sub-sectors like capital goods and consumer goods; the subdivision of goods and services into traded and non-traded categories; of savings into financial and physical, and so on. The present research has made an attempt to evaluate macroeconomic changes in India in the long-term rather than on the long-run deterministic trends towards growth, applying economic relationships on the short-period disequilibrium tendencies within this process of change.

No single computable macro-econometric model used, but the framework of the open-economy standard dynamic adjustment specification model has been followed to ensure consistency while generalising the study results. It requires separate understanding of some knowledge of certain other elements like the magnitudes of critical parameters including the familiar propensities and elasticities associated that govern the different linkages and adjustments evaluating the strength of different adjustments and the extent of their relevance and the effects of length and variability of lags of key policy variables on target variables as the resultant behaviour may be the function of past levels of policy actions. That resulting integrated analytical framework helps to detect the following set of questions in some depth and detail, including (i) what the possible policy variables and exogenous variables can be, (ii) the kind of underlying instability linkages that exist between different economic phenomena and thus the critical equilibrating variables, (iii) the nature of equilibrium and the underpinning adjustments that have occurred in response to policy induced or purely exogenous changes, detecting whether variables are short-run or medium-run or long-run in nature, (iv) how correctly the formulation of macroeconomic policies been consistent with the accepted socio-economic objectives to the particular period or to the particular sector or set of activities, in economic development process. Only when all these interactions are well understood, it then specifies an analytical basis, which in turn helps to identify the nature of long-term dynamic equilibrium, if any, in the absence of instability-causing or disequilibrating factors and the

short-run dynamic adjustments that came about to translate the implied interrelationships into various policy relevant solutions in the face of internal and external shocks as surfaced in the Indian economy over the studied sample period.

Though the analytical approach of this research being mathematical, it tries to capture all the complexity of economic reality, in which economic theory provides guidelines as far as the instability aspects are concerned. This study often possess the underpinnings of paradigms that manifest themselves in differences in the underlying assumptions, specification of equations, direction of causality and the manner in which the economic discussion is closed. These identities, however, by themselves are an empty box, which need to be supplemented by economic relations that got to be carried out by explaining how some of the variables responded to changes in other variables. These behavioural relationships can then be combined with the identities in order to form a schematic quantitative representation of economic process involving the accounts, or variables, which define the Indian economy in question.

Thus the problems faced this present research are relating with its designing in terms of model specification, variables selection, equation specification, parameters estimation, optimum lag length determination for presenting a comparative perspective of recessionary episodes in the 1960s and the 1990s in the Indian economy.

LOCATION OF THE PROBLEM AGAINST THEORETICAL & POLICY FRAMEWORKS

The situation of macroeconomic malice arises whenever disequilibria persist between aggregate domestic demand and aggregate domestic supply, and macroeconomic adjustment comprising stabilisation and structural reform policies in terms of reducing absorption as well as improving the balance of payments (BOP) are needed in order to correct the deteriorating situation. Such a situation can sustain as long as foreign resources are available despite at severe economic costs, such as rising external debt, high inflation and stagnant growth.

The purpose of this research is to discuss some salient economic relationships, which characterize the Indian economy's instability episodes from a macroeconomic viewpoint. The research has not attempted which theory of macroeconomics is more appropriate in the Indian context because such an attempt has fallen outside the scope of this research. Rather, the explicit focus of this research is only on the empirical judgments, which are analytically

relevant that can be made with some measure of confidence illustrating a particular period or phase of its development or the particular sector or the set of activities that are due to either demand-constrained or supply-constrained management policies; and, what linkages exist and types of adjustments they permit. The analytical focus has been on issues, which are relevant in the context of macroeconomic policies having aggregative consequences and not distributional. Discussions of macroeconomic policy have got to be carried out on empirically observed interrelationships between different quantifiable economic phenomena with historical antecedents. It has assessed the consequences of changes in the exogenous and policy variables on the endogenous variables in the Indian economy. The theoretical merged approach that followed in this study has seldom made differences that exist within each fold in the alternative theoretical paradigms of the classical and Keynesian formats in order to ensure analytical clarity and smoothness in the discussion.

Fiscal, monetary and exchange rate policies are generally thought of as demand management policies. The theoretical basis underscores as to whether these policies are counter-cyclical or pro-cyclical; expansionary or contractionary, in mediating the Indian underlying macroeconomic growth process and to neutralize perverse exogenous shocks in particular from the perspective of growth and stability. The purview of focusing supply side policies like license, quota, rationing, administered prices, buffer stock, food management, etc. in the wake of various exogenous supply shocks like poor agriculture due to bad weather or oil price hike is limited because that are short-run, anticipatory and erratic in nature. However, short-run stabilization policies may have consequence of distributional shifts in production, consumption and income processes. Macroeconomic evaluation in the ambit of control, instrument (policy), target, and objective variables in feedback approach is not always easy particularly when objectives are open ended or implied in intermediate target or the targets are policy mix issue.

This research has drawn attention from the literatures on political business cycle / political budget cycles [PBCs] as found having widespread macroeconomic instability implications within many recent studies. However, instead of electoral cycles studied in most PBC literatures, this study focuses particularly on the macroeconomic impact of the cyclic mobilisation of budgetary support for the Five-Year Plans by the Government of India over the time-horizon of this study since dates back from the First Five-Year Plan with interim plan

holidays as public capital formation is believed retaining plausible historic policy information in mediating macroeconomic growth process for the long-run and for how transmitted themselves in jeopardy disequilibrium. The problem theoretically also provides a basis for analysis of interrelationship between public and private investment.

The methodological approach of this research has been in positive mode as is interested in pursuing a more limited objective: to ascertain empirically the route of transmission channels of macroeconomic instability in the Indian economy, with emphasis on the role of policy in mediating the postulated relationships, incorporating historical experiences. This research examines how policies had direct bearing upon the short-run, medium-run and long-run macroeconomic impacts in delineating the links between translation of certain important theoretical constructs on macroeconomic adjustment problems into various policy relevant solutions and interrelationships as surfaced exogenous shocks from time to time by understanding the effects of policy-relevant variables such as interest rates, exchange rates, capital inflows, amongst others, on key macroeconomic outcomes such as inflation, international reserves, savings, investment, fiscal deficits, BoP, income distribution and, above all, economic growth.

The inclusion of unit roots, co-integration technique, error correction method and causality run in this study has important implications as they can jointly verify the underlying theoretical support for specific instability linkages and can specify the nature of equilibrium. Prior verifying the underlying theory, standard diagnostic tests like endogeneity, exogeneity, parameters estimation carried out to minimising the risk of uncovering spurious relations to rule out the possibility of estimates to be biased, unreliable and simultaneity. This research would confirm whether disequilibrium macro-dynamics are asymptotic stable or, cyclic unstable in the short-run and the steady-state long-run equilibrium (static in nature) growth path; however, not India's long-run trend or potential growth path but what actual adjusted moving path followed from its disequilibrium positions by abstracting the fact from the policy analysis in historical perspective. Thus this research applies a short-run analysis with long-run approach to macroeconomic instability. To examine the link between instability macro-indicators and candidate macro-policy variables, this research needs to have an analytical framework which appropriately captures the channel-wise causality at the aggregate as well as sectoral levels to determine whether unilateral or bilateral in an empirical testable manner

satisfying the essence from both theoretical and empirical points of view. In this way, the theoretical framework to the problem of this research has several important features.

1.3 LISTED OBJECTIVES OF THE STUDY

Following are the broad objectives of this research:

1. to study the causes and consequences of the two major episodes preceding the recessions that occurred in the Indian economy during the 1960s and 1990s to put them in comparative perspective
2. to examine the Indian varied macroeconomic policy appropriateness concerning the roles of fiscal, monetary, exchange rate and trade policies and their policy mix for stabilisation and growth in pursuit of planned economic development, and the nature of the extraneous and endogenous shocks that disrupted long-term growth process necessitating occasional policy shifts for short-term economic management
3. to examine the nature of the relationship between deficits, seignorage and debt in the inflationary process examining whether the fiscal stance reflected has been consistent with the monetary stance of trying to reduce inflation and interest rate in consonance with endogenously determined exchange rate following the advent of financial reforms
4. to study the nature and consequences of devaluation doses adopted in 1966 and 1991 particularly to understand their successes expected to secure a substantial improvement in the current account deficits and thereby accelerating Indian macroeconomic growth
5. to study the issues of the optimal sequencing of reforms, in general, and the manner in which the real and financial sectors can be expected to interact with and respond to the domestic and external shocks
6. to predict the effects of policy-relevant variables such as interest rates, exchange rates, capital inflows, amongst others, on key macroeconomic outcomes such as inflation, international reserves, savings, investment, fiscal deficits, BOP, income

distribution and, above all, economic growth over the entire sample period, in general, and between the pre- and post- liberalisation phases, in particular

7. To study the sustainability of India's fiscal deficits by analysing how caters around the split between fiscal stance in terms of its borrowing strategy as well as the monetary stance in terms of monetisation strategy either to ensure the avoidance of high interest rate - inflation trap or the subsequent spectrum of an economic slowdown across the sub-periods
8. to examine how the widening in the fiscal deficits has spilled over into BOP crisis over the entire sample period, in general, and between the pre- and post- nineties, in particular
9. to examine variations in trends and shares of sectoral components in the patterns of macroeconomic growth by observing the role of sectoral savings and capital formation in determining the overall growth process of the Indian economy
10. To examine whether an increase in the fiscal deficits financed by government borrowing necessarily raises the real rate of interest and thereby crowding out of private investment particularly after the deregulated interest rate regime since 1991 to obtain a comparable macroeconomic performance between the pre-nineties and post-nineties
11. to evaluate the impacts of India's external sector reforms with exchange rate management in the 1990s whether to be a powerful instrument (policy variable) of adjustment in the current account deficit putting the BOP on a sustainable path
12. To examine the successes with the implementation of external sector reforms in terms of surging foreign capital inflows to transform them into opportunities to stabilize the Indian economy additive to tuning of efficient domestic monetary and fiscal policy and not fiscal profligacy with the financial repression approach in the pre-nineties vis-à-vis financial deepening growth strategy of post-nineties

1.4. RESEARCH QUESTIONS

PRINCIPAL RESEARCH QUESTIONS:

This study during its overall course raises the following research questions examined:

1. Were the macroeconomic crises precipitated both episodes of recession in the Indian economy during the 1960s and 1990s qualitatively similar or had they resulted from similar failures in macroeconomic management?
2. Has macroeconomic policy coordination been pro-cyclical or counter-cyclical in the face of internal and exogenous shocks to ensure sustainable economic growth without rising inflation or increased current account deficit or growth spurt to be fragile and volatile considering short-term factors and long-run policy effects?
3. Had the devaluations in the 1960s and 1990s with the transition of exchange rate from par value system to market determined regime through the liberalization of India's external sector reforms followed by BOP crises been adequate and mutually compatible to bring about significant gains putting the BoP on a sustainable path by exports promotions and imports restrictions recognizing that domestic macroeconomic policies and structural factors were in order and not in misalignments?
4. Were slowdown economic growth both in the 1960s and 1990s due to enduring problem of the fiscal deficit particularly due to the problem of debt sustainability or rather debt crises along with confronting inflation spiralling?
5. Has started substantial fiscal consolidation in 1991 achieved significantly to improve the worsened fiscal deficits and debt situations due to unfavourable interest rate dynamics resulting in deteriorating primary deficits in order to reduce the ratio of public debt to national income so as to avoid macroeconomic instability?

OTHER RESEARCH QUESTIONS:

1. Have the effects of public investment been either crowding - in (promoting) or crowding - out (displacing) private investment in the Indian economy?
2. Does the economic analysis of twin-deficits adequately capture the crowding-out or crowding-in effects of private sector investments during different macroeconomic sub-periods?

3. How have sectoral savings and investment behaviour, their fluctuations, volatility, divergence and disjunction been important in explaining the Indian macroeconomic growth process to capture short-run and long-run policy effects?
4. Has the policy reforms of the financial markets initiated in India been effective in improving the efficiency of macroeconomic management?
5. Have the inflows of FDI resulting from external sector liberalisation initiated in 1991 been proved completely crisis preventive with no sign of external instability or rather been adequate to stabilise the Indian economy? Has the increased inflow of purely 'financial capital', either through domestic capital issues or through foreign institutional investment [FII], have resulted any impact on real output and real capital formation, or its nature being purely speculative?
6. Did India's external sector reforms in the 1990s following the BOP crisis with further reduction of tariff protection and liberalization of capital flows enhance the efficiency of the economy along with reform of domestic policies in stimulating investment and growth?
7. Has sectoral instability led macroeconomic instability? Are macroeconomic aggregates pro-cyclical in nature? Is gdp more volatile than exports?
8. Has there been an indication of existence of political business cycle in the Indian economy?

1.5. LIST OF RESEARCH HYPOTHESES

Based on the Indian varied macroeconomic experiences in the changing policy context and previously reviewed literatures, the present research validates the following falsifiable hypotheses:

1. The macroeconomic crises imminent both episodes of recessions in the 1960s and 1990s were qualitatively similar in terms of their origin, nature, degree of seriousness and macroeconomic policies responded to them.
2. The macroeconomic policies pursued to maintain economic stability in the wake of domestic and external shocks have been successful to adjust the period of difficulties

and the resumption of growth and to stabilise the Indian economy with a reasonable steady-state equilibrium solution.

3. The expenditure switching policies contingent on nominal devaluations adopted in 1966 and 1991 are contractionary to protract recessions. The exchange rate adjustments either through explicit devaluation or managed currency float were by themselves adequate to bring about substantial increased export earnings. Devaluation in the pre- and post-reform periods has had significant impact on either exports or imports and created additional capacity in the context of debt repayment burden.
4. There exist causations between Indian deficit measures (such as fiscal deficit, current account deficit and trade deficit) and policy variables (like sectoral consumption, savings and investment; money supply, interest rate, exchange rate) and macroeconomic outcomes (for example, growth rate, inflation rate, and foreign exchange reserves) and the nature of the relationships are either long-run equilibrium or short-run disequilibrium in nature.
5. Savings, investment and their sectoral behaviour are co-integrated and thereby the channels of transmission mechanism in the conduct of macroeconomic policies are in consonance with the evidence of stable macroeconomic growth process and disequilibrium in the pre- and post liberalization are due to exogenous impacts.
6. Money supply, prices, output, interest rate and exchange rate are co-integrated. Both interest rate and exchange rate were weakly exogenous in the pre-liberalisation era and are related endogenously in the post liberalization period in the Indian economy confirming the belief that the financial markets are getting increasingly integrated with domestic monetary policy in the post-reform period.
7. Deteriorating fiscal deficit or unsustainable fiscal situation combined with domestic creeping inflation and unfavourable interest rate structure are likely to worsen the debt problem which has been a fundamental grave threat to slowing Indian economic growth for unbroken period of 53 years since 1950-51.
8. There exist two-way causality between gross fiscal deficit and the real interest rate and the likely crowding out of private investment would have been avoided by an accommodating monetary policy or consistent increase in capital inflows.

9. The twin-deficit perspective of fiscal adjustment has become a pertinent issue in India to recognise that fiscal deficit can affect external balance. Fiscal deficit causes current account deficit to increase.
10. Changes in the savings rate are captured primarily in investment levels or in the external balance. The interrelationships between sectoral savings and investment are the key determinants in the context of the Indian underlying short-run and long-run macroeconomic growth prospects with policy impacts.
11. Misallocation of resources across sectors has been the main challenges for sluggish economic growth. Domestic macroeconomic policies directed towards the generation and absorption of domestic savings into productive investment through an appropriate envelope of pricing and interest controls continues to play an important role in macroeconomic management in India.
12. The movements in the debt-gdp ratio and its cumulative departure away from its target have been due to continued primary deficits and the sign reversal in the growth – interest rate differential because of financial repression in the pre-nineties vis-à-vis financial deepening growth strategy of post-nineties.
13. Structural and trade policy reforms instead of being directed towards the promotion of FDI and FII inflows needs to be devoted to pay significant attention towards the tuning of monetary and fiscal policy to achieve efficient economic growth additive to moderate rates of inflation.
14. Consumption and investment are pro-cyclical. Investment and external balances are more volatile than output. Periodic trade-offs between economic growth and inflation in India have been mirrored with pro-cyclic trade-offs between the rates of economic growth and the BoP situation.

1.6. DATA SOURCES & METHODOLOGY OF RESEARCH

Following enumeration of databases used in this research, the rest of the sub-section is organised by explaining the concepts of unit root and co-integration, their testing, and their relation to postulate the theoretical and methodological perspective of linkage in order to

contextualise the present research. As stated earlier, the major objective of this present research has been to compare the Indian twin-recessions in the 1960s and 1990s along with offering other interim growth phases tracing out the actually adjusted moving path involving disequilibrium dynamics in the short-run towards long-run equilibrium growth path by abstracting the policy analysis with historical antecedents for which the studied sample period has been from 1950-51 to 2003-04.

Dataset

An array of integrated macro-economic time-series dataset obtained from standard official sources utilising rigorous time-series analysis [TSA] would explain the Indian lurched out growth process and its trading out-of-path determinacy equilibrium situation in the policy context. The integrated time-series aggregates that link macroeconomic identities of five accounts comprise: (1) the national accounts, (2) the government sector, (3) the non-financial private sector, (4) the balance of payments sector (external sector), and (5) the monetary system. These individual basic time-series depicts the growth of both the real and financial sectors of the Indian economy and also its structural changes, over the entire sample period, in general, and between the pre- and post-liberalisation phases, in particular. Moreover, the detection of certain empirical patterns and (ir) regularities should facilitate translation of certain important theoretical constructs on structural adjustment problems into various policy relevant solutions and interrelationships. Most of the data series utilised in this research have directly been obtained or compiled from the following specialised statistical publications: (i) national accounts statistics of the Central Statistical Organisation (CSO); (ii) balance of payments accounts of the Reserve Bank of India (RBI) and monetary accounts of the Currency and Finance (CF) of the RBI; (iii) fiscal accounts pertaining to budget financing operations of the Ministry of Finance (MoE), Government of India (GoI). However, the choice of data series for compilation and construction of some variables used in the empirical investigation went by in accordance with the need. It is important to note that the data-series used in this research revised based on 1993-94 base-year series (prices), fallen in the post-reform period, leading to conceptual and methodological improvements. Though base changed and methodological revisions adopted, every effort has been made to make the present dataset comparable particularly to preserve continuity with the earlier time-series data. However, there may be few problems involved in data gathering process in estimating wide variety of macroeconomic

time-series due to conflicting methodologies in different accounting. However, efforts have been made to compute residuals to absorb automatically the measurement errors and methodological inconsistencies in the accounts in order to keep inter-sectoral consistency, leaving their corresponding 'discrepancies' or 'errors or omissions' to lay within the ranges, thereby testified the overall robustness of the data set of the underlying methodology. The list of time-series includes the macroeconomic variables economy - wide, sector-wise and economic activity-wise at current and constant prices both. It covers macroeconomic statistics related with components of GDP expenditure, components of national disposable income, absorption and reserves, sources and disposition of government sector income and private sector income, financing current account deficits, financing public sector investment, gross fiscal deficit, interest payments and the primary deficit, exchange rates, exports and imports of goods and services, interest rates, debt-income ratio, inflation, growth, etc.

NATURE OF THE RESEARCH

This research is based on realization of a time-series process characterized by the presence of a unit root and a possibly non-zero drift, in which the analytical approach is generalized to allow the changes in the structure occurring what the dataset reveals that may be due to both the changes in endogenous and exogenous factors (a one-time change at a particular point of time, may however, appear overly restrictive). The structural changes to the trend function occur due to some kind of endogenous or exogenous shocks (infrequent events) that may have permanent effects on the level of the series. Thus, it is important to take into consideration the way how these shocks affect the level of the variables, i.e., the way how the transition to a new trend path occurs [Perron, P, 1993]. Thus it is essential to understand the macroeconomic different policy implications with respect to transition effects. This research allows describing different growth path followed stemmed from either sudden changes or without, revealing changes in both the intercept and slope of the trend function or any, along with short-run and long-run macro-policy impacts.

RATIONALE BEHIND METHODOLOGIES ADOPTED

To avoid excessive length, this section has been selective in choice of methodologies applied. The methodology adopted for this research seems to require an explanation as to why and how the Indian economy had to adjust its macro-dynamics to the desired level and how it followed.

The issue of lagged functional relationships among macroeconomic variables is also another important problem in adjustment to desired level. An important issue in this research is the need to integrate short-run dynamics with long-run equilibria, as the Indian economy deviates from its long-run growth path. Thus this research involves a methodological problem of isolating (or identifying) the separate effects of these two sources. The traditional approach to study short-run disequilibria is the partial adjustment approach, criticised as was based on some optimisation rule and then the adjustment equation tagged on to it and barely incorporate the optimisation rule the situation of being in disequilibrium; moreover, they are criticised as being ad hoc. Despite there have been many attempts along these lines they failed to result in any tractable equations due to the existing methodological conflicts between the equilibrium framework of the theory and the disequilibrium environment from which data gathered, which is resolved by extending the equilibrium specifications including disequilibrium adjustment mechanisms as is captured by the concept 'co-integration' [Rao, B B, 1997].

CORRELOGRAM & UNIT ROOT TESTS FOR CO-INTEGRATION

A time-series is said to be weakly stationary when its mean, variance and auto-covariance are all time-invariant i.e., independent of time and these kind of series are denoted by $I(0)$, which means integrated of order zero and there would be no problem for ordinary least square (OLS) to be using. But, if a time series requires first order differencing to be stationary, then it is said to be $I(1)$, which means integrated of order one. The mean, variance and auto-covariance of $I(1)$ series are time-variant i.e., they vary with time. These $I(1)$ series are also called non-stationary as having the presence of unit roots [Gujarati, D N, 1995]. Visual inspection of time-series plots of macroeconomic aggregates are performed to suggest whether exhibiting linearly trended or not. When variables are found whether trended or not is much less clear appeared to have a non-constant mean that they are not stationary at levels. Given that the variables, plots of their first difference, in contrast, neither exhibit evidence of changing means nor of changing variances. This is consistent with the variables being integrated of order one i.e., the variables are said to be non-stationary or having presence of unit root. Such a view is supported by one simple test of stationarity is based on the graphical evidence of autocorrelation function, which is popularly known as 'correlogram'. A time-series graphically may appear as non-stationary if correlogram starts at a very high value and tapers off very gradually with the increase of lag-length or the estimated autocorrelations only slowly at their level values and that for their first

differences damp very quickly and then appear to fluctuate in a non-systematic manner way around close to zero and the tentative conclusion that the variables are non-stationary and contain drift components generating stochastic process. The methods of Box –Pierce Q – statistic and Ljung Box (LB) statistic are also useful in this context by concluding that if a stochastic process is purely random, its autocorrelation at any lag greater than zero is greater than zero for seemingly non-stationary variable.

However, the use of graphical and correlogram evidence may be unreliable to make inference about the presence of unit roots. However, as far as formal testing methods for unit root is concerned, focus is placed on the use of the Dickey Fuller (DF) / Augmented Dickey – Fuller (ADF) sequential search procedure, which has been used in this research testing for unit roots of adopted macroeconomic time-series. In view of the size-power trade-off, it has selected the order of the ADF regression through a two-step procedure. First, the length of the lag is chosen using the appropriate model selection criteria of maximising the Akaike Information Criterion (AIC) and Schwarz Bayesian criterion (SBC). As different model selection criterion can lead to different models and, in particular when there is a conflict among the two criteria, the SBC dominates over AIC since SBC leads to a parsimonious model [Rath, D P, 1999]. At the second stage, ADF test is carried out with this optimal order of augmentation. Using this procedure, the order of integration of each series has been carried out using ADF/ Phillips – Perron test statistics.

ERROR CORRECTION MODEL (ECM) & CO-INTEGRATION

The concept of co-integration analyses the existence of equilibrium relationships between two or more non-stationary macroeconomic time-series variables. If, two non-stationary time-series are individually integrated at the same order then the two time-series are said to be cointegrated and two variables would share a long-run equilibrium (stable) relation. Again, if two non-stationary time-series are individually integrated at the same order and in addition to, there is linear relationship between these two variables, then also the two time-series are said to be cointegrated and would share a long-run equilibrium (stable) relation and the residual (or error term) or the difference between the fitted linear combination of these two variables would become stationary or $I(0)$ and they do not drift too far apart from each other over time. This is another way of saying that for the non-stationary series (or, for unit-root test), the hypothesis

tested is that the 'error' term (the difference between the fitted linear combination of two variables) is not $I(1)$. On the other hand, If two non-stationary variables are not cointegrated when the residual (the difference between the fitted linear combination of two variables) becomes non-stationary or $I(1)$ and they can drift apart from each other more and more as time goes on [Doganlar, M. 1999]. Just by seeing if two time-series individually integrated at the same order then, it can best be said the two series are co-integrated. By asking the question of whether two non-stationary time-series are cointegrated means whether there is any long-run relationship between their trends. In the case of two non-stationary time-series, the differencing operation eliminates the trend or long-term movements in the series and running regression considering these difference series one on the other would not make any sense if long-run relationship does not exist. One important drawback of the procedure of differencing is that it results in a loss of valuable contents of 'long-run information' in the data. And the concept of co-integrated series has been one solution to this problem.

Two time-series variables may reflect common trend present in them and not the true degree of association between them. To avoid such a spurious association, the common practice is to regress time-series variables introducing, 't', the trend variable, having removed the trend effect. To understand common trends, it needs to distinguish between 'deterministic' and 'stochastic' trends. It also needs to understand the distinction between trend stationary process (TSP) and difference stationary process (DSP). Alternatively speaking, the explicit introduction of the trend variable in the regression has the effect of de-trending i.e., removing the influence of trend from time-series variables. However, the standard practice in time-series econometrics which may be acceptable is that if the trend variable is deterministic (i.e., perfectly predictable and not variable) and not stochastic. If a time-series is found non-stationary (or, having presence of unit-root), then the time-series is called would exhibit a stochastic trend. On the other hand, if it does not have a unit root would exhibit a deterministic trend. Thus de-trending (by running a regression on time) assumes the presence of a deterministic trend, and differencing assumes the presence of a stochastic trend. The concept of co-integration refers to the idea of 'common stochastic trends'. But this is not only the kind of common trend as 'common deterministic trends' may also be the case. In practice, a time-series variable may have both 'deterministic' and 'stochastic' components. If the presence of 'deterministic trend components' is ignored that may lead to some misleading inferences on co-

integration. This research while undertook the issues of co-integration assumes that there are no deterministic elements in the Indian macroeconomic time-series datasets.

An extension and a more generalised version of the partial adjustment model is the ECM (error correction model), which also incorporates past period's disequilibrium [Maddala, G S, 2001]. In the short-run, there may be disequilibrium in an economy and ECM is used to correct for disequilibrium in every period particularly to tie the short-run behaviour to its long-run value. The analysis of short-run dynamics is often done by first eliminating trends in the variables, usually by differencing in ECM mechanisms. This procedure, however, remains far from being adequate to throw light about potential valuable information about long-run relationships about which economic theories have a lot to deal. The theory of co-integration was developed in Granger (1981) and was elaborated in Engle and Granger (1987) addresses this issue of integrating short-run dynamics with long-run equilibria and is discussed in detail in the following research methodology chapter in this research. Based on the conceptual analogy between cointegration and the economic concept of equilibrium, Engle and Granger propose a consecutive two-stage approach to modeling economic relationships entailing non-stationary variables, subject to the variables are integrated of the same order. The first stage captures modeling the long-run or cointegrating the relationship. The short-run dynamic disequilibrium relationship among the variables is estimated at the second stage. The second stage disequilibrium relationship can best be represented with an error correction mechanism. It proves that if the variables of same order are cointegrated i.e., if there exists an equilibrium relationship, then the short-run disequilibrium relationship between them can be captured by the ECM. This mechanism is referred to as the Granger representation theorem. There are number of reasons as is why the ECM is generally much more preferred over the other formulations: first, the ECM has a first-differenced dependent variable and not a typical trending variable; second, it provides the model is correctly specified and the disequilibrium error of the specification would also be stationary, which can therefore be estimated by standard classical estimation methods such as OLS; third, an ECM involves parameterisation that clearly distinguishes between long- and short-run effects and this separation between long-and short-run parameters in an ECM makes possible to assess for either the validity of the long-run implications of theory or of incorporating them into the estimation process.

The extended equation is then estimated from which estimates of the long-run or equilibrium parameters are derived by imposing equilibrium conditions, which are then used to test the underlying theory. The short-run or the dynamic disequilibrium relationships are estimated utilising the estimates of the long-run parameters of cointegration techniques within the error correction framework. In other words, cointegration facilitates utilisation of the estimated long-run parameters into the estimation of the short-run disequilibrium relationships, as there is a trade-off. Finally, the robustness of the estimated dynamic disequilibrium relationships is determined by subjecting them to the post-regression standard diagnostic test statistics. And thus the traditional approach can be criticised as it neglects the problems caused by the presence of the unit root variables while the main advantage of co-integration is that it being capable directly to test or falsify the underlying theory. The merit of co-integration techniques is that it can accommodate the relationship being investigated within a reasonable complex dynamic specification, including lagged dependent and independent variables so that a parsimonious specification of the model can be captured [Hendry, Pagan and Sargan 1985]. The other important advantage is that it yields equations with first-differenced and stationary dependent variables unlike simple first-differenced equations and makes use of long-run information in the data appropriately [Wickens and Breusch 1988].

Thus, it is advisable for the theoretical framework of this present research to apply essentially estimation methods of cointegrating regressions and joint estimation of both the long and short-run specifications that are computationally demanding. It has thus necessarily paid particularly more attention to the time-series underlying theoretical insights to test for unit roots, estimate cointegrating regressions and error correction specifications. Together unit roots, co-integration, cointegrating regression and causality tests have important implications for the specification and estimations of dynamic macroeconomic study.

With regard to co-integration, this research has used the Johansen procedure for identifying the number of cointegrating relationships between a set of policy variables studied, and estimating the parameters of the potential long-run relationships. This research has also compared these estimates with those from the approach suggested by Engle and Granger (1987) – residual based co-integration test is the application of ADF test on residuals of the co-integrating regression. Consideration of the short-run dynamics is undertaken on the presence of co-integration that analyses the short-run dynamics with long-run equilibrium approach. Failure to

find a co-integrating vector in ADF test means that the error correction procedure cannot be carried out and interpretation of coefficients would be wrong because it is a spurious regression.

It is argued in Enders (1995) that Engle and Granger methodology has been having important shortcomings. Choice of the dependent variable can generate reverse results. It is practically possible to obtain that one equilibrium regression indicates the variables are co-integrated, but the reverse regression may indicate that the variables are not co-integrated. Another demerit of the Engle-Granger approach is that the test can result into bias with small samples. However, the methodology developed by Johansen (1988) and Johansen and Juselius (1990) have made an attempt to overcome this problem.

NON-STATIONARY & VECTOR AUTO REGRESSIVE (VAR) MODEL

It is important to note that the rank in the long-run impact matrix determines the number of co-integrating vectors in the VAR (vector auto-regression). If the rank is zero then there is no co-integrating vector [Johansen, 1988; Johansen and Juselius, 1990]. This method uses maximum likelihood procedures to determine the number of co-integrating vectors among a vector of time-series. There are two types of likelihood ratio tests in order to determine the value of rank in the long-run impact matrix. These tests are maximum eigen-value (λ_{\max}) and trace (λ_{trace}). If all the variables are found non-stationary, the next step is to determine the appropriate lag length in the VAR. Akaike's information criterion (AIC) and Schwarz' Bayesian information criterion (SBIC) are specified the lag structures of the equations in the VARs. The estimated lag lengths are used if the residuals are white noise. The lag-lengths are increased until the serial correlation in the residuals is removed. The residuals are tested for serial correlation by using the Breusch –Godfrey (BG) test.

The present study used VAR models separately for the pre-reform and the post-reform period to test for block exogeneity for lead values of exchange rates in both these periods. Block exogeneity test was proposed by Sims (1980) as a multivariate approach of the Granger's causality test, and tests in a way whether omitting a particular variable from a system leads to any loss of information by restricting or dropping from the VAR. This test is popularly known as Granger Block Non-causality in VAR framework [Ray P, Hoshi H and Sagar, M 1998].

However, VAR models do not explicitly give an empirical description of the economy; they can be used to investigate interactions among several macroeconomic variables in their impulse response function. Again, using VAR model for non-stationary data could result in unstable econometric relationships as it is estimated using either first differenced variable or by including deterministic trend terms into the model [Gill, D B S and Kumar K, 1998]. Again scope of using VAR model in this research has been limited because of the degrees of freedom problem.

CAUSALITY

It is assumed that macroeconomic outcomes depend on past macroeconomic policies or exogenous supply shocks. Running Granger-causality test has been useful to examine the direction of causality whether unidirectional or bidirectional or instantaneous among the policy variables, instability indicators and macroeconomic outcomes in the Indian economy. The statistical inference in many empirical works has been made under the assumption that both the instability indicators and variables contain deterministic trends. But recent studies raised questions against these assumptions because the trend components of several time-series might contain stochastic elements [Nelson and Plosser (1982); Stock and Watson (1988)]. They showed that how a misspecification of trend components may lead for incorrect tests of hypotheses. This research has utilized some of these recent techniques in order to investigate the nature of trends in the macroeconomic time-series to examine whether the long-run movements in macroeconomic instability indicators are related to the long-run movements in the candidate macroeconomic policy variables. It is shown that when macroeconomic variables are measured in terms of rate of growth they do not include deterministic trends but instead share a common stochastic trend. This implies that these variables are cointegrated in the sense of Engle and Granger [Apte, P G, 1997]. However, the presence of the common stochastic trend in the rates of change in macro variables seems to be constant with Granger-causality, running from the reverse, but not vice-versa as suggested by Mehra (1977) and Gordon (1988).

METHODOLOGY OF ADEQUACY TESTING

Both the numerical tools and statistical methods have been used to analyse this study. Some preliminary algebraic numerical tools like rates, proportion, and percentage, log-transformation have been applied in data compilation. Diagnostic or specification tests are essentially used as a

means of predicting strong evidence of model inadequacy or failure. For example, in the case of linear regression estimation based on ordinary least square method with classical assumptions, a battery of diagnostic tests could be used before predicting to be the best linear unbiased estimator (BLUE). The misspecification testing plays a crucial role in the specified and estimated model evaluation stage of applied macro-econometric studies. These diagnostic tests include testing for residual serial correlation, heteroscedasticity, weak exogeneity of the regressors, functional form misspecification and parameter stability.

The short-run disequilibrium dynamics and long-run growth approach of this research suggest using together with the unit root tests, co-integrating regression, ECM, co-integration tests and causality test.

1.7 PROPOSED CHAPTERISATION

The thesis is structured in the following ten separate chapters and each of them starts with a comprehensive introduction and ends with summary and conclusions and intends to be adequately interconnected.

CHAPTER 1 is essentially introductory that outlines its various sub-sections to profile the historical and development background, dealing with statements of problem issues and their locations against theoretical, policy, empirical, methodological, and analytical frameworks to set out the tone to place the present research in the correct perspective, particularly to unfold a comparative recessionary study between the 1960s and the 1990s in the Indian economy.

CHAPTER 2 is a broad and fairly comprehensive survey of the entire field of Indian macroeconomic instability literature. It also provides a precise survey of theoretical and applied macro-econometric literatures with reference to selected developing and developed countries regarding disequilibrium dynamic analysis to macroeconomic management problems, gaining the chronological development of the conceptual framework since the first metaphorical instability character capturing wide spectrum of emerging macroeconomic instability issues, policy debate and the consensus from the disequilibrium perspective. This is followed by four surveys of particular areas: literatures on structural adjustment, fiscal

adjustment, external sector adjustment, and political economy of adjustment. Bringing out explicitly these different perspectives, it purports to throw light on the relevance of instability issues.

CHAPTER 3 is an account of India's macroeconomic history at the backdrop of development planning discourse, supplementing successive budgetary exercises together with a sketch of macroeconomic events and changing political economy over the entire period to understand the Indian macroeconomic management records utilising Indian annual macroeconomic time-series datasets to figure out the simple dynamics of the Indian macroeconomic adjustment and instability approximation by emphasising the need for and to provide the shifts in policy reliance in the face of the challenges of those eventful times which policy makers had to contend within guiding the course of the economy with factual antecedents briefly focussing the trials and tribulations with a view to explore comparative macroeconomic scenarios as would greatly enhance to analyse the ensuing study. It has also made an attempt to review the chronological development of the concept of dynamic disequilibrium and recession since the first writings on macroeconomic character, themes, events and facts in a historical perspective over the entire sample period from 1950-51 to 2003-04. It in a sub-section has also made an attempt to discuss PBC approach for studying dynamic disequilibrium problem and macroeconomic management and their potential applications to India.

CHAPTER 4 outlines an historical account of the evolution of macroeconomic policy trends prevailing in India since independence to understand the changes in emphasis placed on different elements of the overall policy regime over time intending to highlight the features of the policy regime that could be argued to have had an impact on Indian macroeconomic growth and adjustment process and the mechanism by which they did so. It also gives some relevant history and describes the changing role of the public sector pertinent to understanding the responses of the economy to the instruments of economic policy. The main policy areas such as fiscal, monetary, external sector, foreign trade and payments, exchange rate, capital management, financial sector, and investment are presented separately in different sub-sections in order to set the stage for rest of the analysis of this research.

CHAPTER 5 deals with the theoretical framework revolved around the problems of macroeconomic management covering both the aggregate demand- and supply-sides to scrutinise short-run and long-run policy implications on the role of real and financial factors in economic development. This framework facilitates to understand theoretically the channels of instability influences and their transmission mechanisms by translating certain important theoretical constructs on macroeconomic adjustment problems into various policy relevant solutions and interrelationships for the formulations of issues in the role and conduct of macroeconomic stabilisation policy with particular emphasis is placed in order to set the stage for the empirical analysis in this ensuing research.

CHAPTER 6 provides a simple exposition of time-series econometrics tools like unit root tests using the Dickey-Fuller (DF) and the Augmented Dickey-Fuller (ADF) tests, error correction method (ECM), co-integrating regressions, co-integration tests, causality tests, and exogeneity tests as research methodologies in regard to minimising the risk of uncovering spurious relations, to suggest which set of variables should enter either into disequilibrium short-run or stable long-run (dynamic or static) economic relationships ascertained stationarity of data whether with same order or not and their direction, to spotting complex simultaneous links establishing the degree of endogeneity or exogeneity of the interdependence of series behaviour to rule out the possibility of the bias and give more consistent results and ensure the smooth running of recursive estimation whereby findings would remain robust in the process of specification or diagnostic search.

CHAPTER 7 in phase analysis approach tracks stages of Indian macroeconomic instability experiences and evaluates each sub-episodic stage on comparative basis in the context of policy analysis and presence of exogenous shocks, explaining antecedents, consequences and policy responses of each sub-periodic crises. It also extends the analysis to an instability indicator approach based on volatility and correlation matrix observing trade-offs among sectoral macroeconomic basic time-series on national accounts with related aggregates, in contributing policy information and related shocks, particularly to make decadal comparison of

macroeconomic instability dips in order to set the stage for the further econometrics analysis in this ensuing research.

CHAPTER 8 examines the empirical validity of macroeconomic instability extensively by undertaking rigorous econometric investigations together with unit root tests, co-integrating regression, co-integration tests within error correction framework and causality run on Indian annual macroeconomic time-series in multivariate framework with full sample and non-overlapping sub-samples. This would, in turn, help to assess how policies had direct bearing upon the short-run, medium-run and long-run macroeconomic impacts in mediating the underlying macroeconomic growth implications in delineating macroeconomic adjustment problems into various policy relevant solutions and implied interrelationships in the face of internal and external shocks as surfaced in the Indian economy from time to time linking the translation of certain important theoretical constructs on by understanding the effects of policy-relevant variables such as interest rates, exchange rates, capital inflows, amongst others, on key macroeconomic outcomes such as inflation, international reserves, savings, investment, fiscal deficits, BoP, income distribution and, above all, economic growth, particularly in order to facilitate the presentation of the comparative perspective of macroeconomic recessions of the 1960s and the 1990s in the Indian economy.

CHAPTER 9 summarizes the key findings and draws upon policy lessons to provide a comparative picture of macroeconomic instability scenes along with growth phases that have occurred in the real and financial sectors of the Indian economy over the entire sample period, in general and between the pre-and post-1990s, in particular with more focus on twin recessionary sub-periods in the 1960s and 1990s with emphasis on the response to the key policy shifts in the wake of economic and political shocks particularly to account the differences in contemporary macroeconomic management and policy issues. It discusses the policy environment and recessionary situation in India during the post-reforms period in the 1990s, particularly in the aftermath of the Asian economic crisis (1997). While analysing thoroughly macroeconomic instability, recession and their possible causes during this period, differences, if any, in management approach have carefully been noted.

CHAPTER 10 has made an attempt to synthesise and present the summary of the thesis, and to trace the inferences, conclusions and recommendations from the analysis as well. These seem to prove useful to both practitioners and scholars of Indian development and macroeconomic management as well as to policy planners and professional organisations. It has also made an attempt to venture avenues for further future research so as to make it more compact linked to the existing theories and methodologies emphasising more on the tool of analysis that can revitalise the subject in the context of planning, policy analysis and forecasting before drawn concluding remarks.

The table of contents seem to have been exhaustive and would help to quickly locate where a topic of interest related with this research is discussed. For its own sake, chapter numbers are pre-fixed to the section and sub-section numbers. For example, 1.2.3 means that it is subsection 3 of section 2 of chapter 1. Similarly, all the tables and figures have been with the relevant chapter number. For example, Table 1.2 is Table 2 in chapter 1. Similarly, all the tables and figures start with the respective chapter number. However, chapter numbers are not pre-fixed to equations as none of the chapters refer to the equation in another chapter. The reference and bibliography section has been thorough but by no means exhaustive, as it is impossible to list every citation. Nonetheless an attempt has been made to include all the important concepts and contributions relating to this research.

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Macroeconomic Instability: Review of Literature

2.1 INTRODUCTION & THE LITERATURE REVIEW APPROACH

The theme of 'economic instability / stability' (rarely) has long been at the centre stage of interest in macroeconomic research. There are several reasons as to why this subject is of current interest. First, it is essential to assess the impacts of macroeconomic adjustment in India as the issue of adjustment has become a global phenomenon throughout the developing world since the outbreak of the debt crisis in 1982. Second, Post-independence India witnesses the dynamics of macroeconomic policy efforts in a gradualistic approach. Third, to inform policy stabilisation and reliance, it is important to examine the role of economic policies in mediating the real and financial factors in determining the growth process. Fourth, Indian macroeconomic time-series database is considered relatively good by developing country standards, and data being available on a comparable basis for a period of time and is adequate for systemic econometric investigation.

Reckoning country specific economic instability analysis in the process of economic growth has long been an important area of active research to macroeconomic theoreticians, empirics, forecasters, researchers, policy makers, market participants, and business analysts across countries and times, and growing concerns continue to do till date. The concept of macroeconomic instability, which implicitly or explicitly constitutes the core of economic analysis, has undergone considerable changes in the economic discourse over the past decades. Generally speaking, there are three broad periods identified in terms of the changes in perception in economic thinking during the post world war II: the first phase, during the 1950s and 1960s - the era of Keynesian supremacy; the second phase, from about the early 1970s of neoclassical resurgence; and the third phase, since about the mid-1980s - the emergence of the new growth economics and the outpouring of empirical macro-econometrics literatures.

Importance added of being an attractive area of research particularly following the economic turmoil in once high performing South East Asian economies and others resulted from financial liberalisation and deregulation. This chapter is prepared in a manner to obtain

preliminary a relevant comprehensive account of the theoretical, analytical and methodological framework to explore the underlying stylized facts of economic instability and their routes of transmission mechanisms in the policy context particularly to outline how the evolution of changing perceptions with substantial methodological contents kept centring on the theme of instability in the intellectual climate of economics profession in theoretical and empirical works across countries and times before sets out its own empirical probe.

It intends to be a comprehensive Indian case study of the subject, rather than a study of India *per se*. It has drawn the interpretation of instability particularly in the context of the Indian economy but interpreted in the wider context of literatures drawn from other developing countries. It combines quantitative approaches with qualitative analysis as included the related economic, social, political, and institutional aspects while examining the role of macroeconomic policies in mediating macroeconomic growth process.

2.2 THEMATIC GROUPING

This chapter seeks to revitalise the literatures on macroeconomics in general and macroeconomic instability in particular. This chapter is organised as follows. Section 2.2.1 gives a brief description of theoretical overview. Section 2.2.2 reviews current empiricisms built up from the major pillar works over the past decades to provide an array of instability issues drawn upon from real country experiences as attempts to grouping them thematically into subsequent four sub-sections, namely, 2.2.2.A- literatures on structural adjustment; 2.2.2.B - literatures on fiscal adjustment; 2.2.2.C-literatures on external sector adjustment, and 2.2.2.D-literatures on the political economy of adjustment. The thematic grouping of literatures is intended to capture the shifts in thinking, the debates and the consensus. Section 2.3 has made an effort to consolidate all sub-sections. Section 2.4 identifies some areas to place the present research in correct perspective.

2.2.1 THEORETICAL OVERVIEW

The concept of macroeconomic instability in development thinking evolved around general overproduction of commodities and scarcity of capital of the early classical; circulating capital in the wage-fund theory [Bernhard, 1943]; laws of capitalist motion in the Marxian sense [Eagly, 1972]; effective demand management problem in savings-investment disjunction,

under-consumption (thriftiness) and volatility of private capital sector investment in Keynesian view of effective demand problem [Keynes, 1936, 1937]; the role of savings and investment rates and thereby policies in the formal growth literatures [Harrod, 1939, 1948; Domar, 1947; Fry, 1994]; economic fluctuations due to unexpected monetary shocks and the monetary equilibrium business cycles and swing of the pendulum from capital accumulation (capital fundamentalism) to policy reforms aiming at achieving efficiency in resource allocation through market oriented policy reforms with the neoclassical resurgence; government stabilisation policy could amplify business cycle [Lucas, 1981]; real variables (like productivity, technology, output, employment) are the main sources of fluctuations of real business cycles (RBC) theory [Kydland and Prescott, 1982]; wage price stickiness causing slowing down equilibrium dynamics and result into instability of the new Keynesian menu cost literatures, wage contract theory, and disequilibrium literatures based on microeconomics foundation to macroeconomic analysis [Patinkin, 1956; Solow and Stiglitz, 1968; Barro and Grossman, 1971]; financial repression and financial deepening-economic growth hypothesis and macroeconomic instability issues [Goldsmith, 1969; Mckinnon, 1973 and Shaw, 1973]; export led growth hypothesis and instability issues [Sharma and Dhakal, 1994]; investment led growth hypothesis and instability issues [Krugman, 1994]; multi-country cross-sectional endogenous new growth empirics [Romer, 1986; Lucas, 1988; Barro and Sala-I-Martin, 1991, 1992, 1995; and Jones, 1998]; political business / budget cycle [Cf. Nordhaus, 1975]. Thus, to account for the reasons underlying macroeconomic instability, one must look into historical, political and psychological characteristics of an economy.

Generally speaking, the path determinacy methodological thinking about modelling economic phenomena to understand the path to be followed by an economy when its steady state is subject to some kind of disturbances and to explain how an economy moves towards its long-run equilibrium after passing through the disequilibrium adjustments evolves around equilibrium framework to partial adjustment to general equilibrium to disequilibrium framework to dynamic stochastic general equilibrium model to inter-temporal general equilibrium analysis resembling with the role of traverse and hysteresis were introduced to measure economic fluctuations and business cycles and close interpretation with recent 1990s concept of error correction methods to measure the degree of disequilibrium eliminating in each period [Singh 2000].

2.2.2 EMPIRICAL OVERVIEW

2.2.2.A STRUCTURALIST LITERATURES

Structuralist thinking though was most prominent in the 1950s and 1960s has still been influential in India. The essential feature of structuralism involves ‘rigidities’. Structuralist approaches to macroeconomic imbalances take the explanation of short-run movements in prices and incomes as the basic problem in which long-term growth plays a crucial role. These approaches serve well not only to deduce the most desirable thrusts of economic policy through macroeconomic modelling but also to explore the development strategy, studying economic relationships and their key orders of magnitudes by analysing what went wrong with an economy, enlightening the then prevailing macroeconomic situation with economic history, exploring constraints (or rigidities) on growth. The structuralist literatures extending familiar optimisation problems incorporating the two extensions - specifying standard objective function within the context of economic stabilisation problems and endogenous to the time horizon of the optimisation process describe solutions algorithm to present practical convenience for applied policy work.

The discourse of structuralism recognising a variety of issues as sources of instability that constrained the Indian macroeconomic growth process at different times can be clubbed into two sub-classes, namely closed macroeconomic themes and open macroeconomic issues. The former focuses on demand-side policy constraints for India like fiscal and monetary policy along with supply side exogenous shocks in the domestic saving-investment process and its relation to income distribution and government activity, planning or the dynamics of the agricultural sector and its interaction with the rest of the economy or inter-sectoral linkages or sectoral imbalances in the growth process, problems of effective demand and the dynamics of inflation. On the other hand, the latter to imply India’s development problems involves a variety of important issues relating to India’s industrialisation and the reliance on foreign aid; the trade policy debates of import substitution and export pessimisms – the protectionist phase up to the mid-sixties supplemented by an elaborate system of industrial controls caused various types of inter-sectoral inefficiencies and the trade and foreign investment problems with the increasing liberalisation in recent years; foreign exchange constraints and BoP disequilibria; the role of stabilisation policies such as exchange rate, fiscal and monetary policies in BoP

adjustments and their general macroeconomic implications; and trade deficits and the effects of foreign capital inflows [Bagchi, A K 1999; Dutt, A K, 1999].

The first and most important structuralist view that was prevalent in India in the 1950s was that India was operating under a trade or foreign exchange constraint and not a savings constraint as a large element of foreign aid for a decade was felt indispensable as India was to adopt public sector led highly import intensive capital goods industrialisation Mahalanobisian development strategy [Little 1960; Bhagwati and Desai, 1970]. The stagnation of the Indian economy after the mid-1960s has stimulated the constraints like imbalances between agriculture-industry linkage and the problem of effective demand [Chakravarty 1974, 1979; Raj 1976; Mitra 1977; Bagchi 1970; Nayyar 1978, 1988]; fiscal constraint caused by claims by various lobbies of different pressure groups on government resources [Bardhan 1984]; infrastructural bottleneck[Patnaik 1987]; deceleration of industrial growth [Srinivasan & Narayana 1977; Shetty 1978; Patnaik & Rao 1977]; the import of food was prevented in the wake of refusal to renew food aid (US PL 480) [Ahluwalia, 1985]. Indian economy had to adjust not only to international shocks like international price hike in 1972-73 and in 1979 but even to major domestic shocks stemming from harvest failures and industrial recession [Prasad, 1990; Mukherjee, 1988]. The macroeconomic constraints to growth in India in the late 1980s incorporate inappropriate domestic policies, fiscal constraint, external debt trap, and problems of savings, inflation and current account deficit [Ahluwalia, 1986; Taylor, 1988]. Several rigidities are implicit in the empirical findings of the impacts of devaluation of the Indian rupee on imports, exports, inflation, fiscal deficit, external debt, foreign exchange problems [Raipuria, 1999; Trivedi, 1992; Pradhan, 1996; Tarapore, 1995; Mustafa and Rahman, 1997].

High inflation rate, misallocation of investment across sectors with higher variance in relative prices, and the efficiency of investment may cause instability via detrimental effect on economic growth [Fischer 1993; Bleaney 1996; Elbadawi, Schmidt and Hebbel 1998]. A joint study has reported that dealing with production, capital formation, price behaviour, public finance, money and banking, trade and BOP, private consumption and private savings are related with combined effects of fiscal, monetary and exchange rate policies; and, policy co-ordination is more effective in raising growth with moderate inflation [Pandit and Krishnamurty, 2004]. To explain why observed a decline in savings and investment rates particularly following the structural adjustment reforms initiated in 1991, while structuralist

critique subscribed that as an inevitable outcome of market-oriented reforms [Patnaik & Chandrashekhar 1995], then the other contrasting argument emphasised instead on the underlying data generation process in the nature of the estimation procedure[Athukorala & Sen, 1995]. Moreover, the thesis whether LDC growth is export-induced or investment- led may involve the problem of identification as both is mutually interdependent and can in no way be substitutable.

Macroeconomic imbalances arising from both exogenous shocks and inappropriate domestic policies repeatedly confront India like developing economy with the need to restore domestic and external balance [Branson,1991; Mallick 1999; Rao 1999]. Influential studies in the Indian context are Rao et al. (1997, 1999, 2000); Dua and Banerji (2001); Chitre (1982); Joshi, and Little (1998). They have either been to detect important patterns or regularities of the Indian macroeconomic databases or dating growth cycles listing business cycle indicators or explaining sub-periodic experiences. However, these studies remain far from being significant in terms of time-period and sectoral coverage and using sophisticated macroeconomic tools.

2.2.2.B LITERATURES ON FISCAL ADJUSTMENT

It is widely believed that fiscal stability is a key determinant of macroeconomic stability and growth, and its sustainability aspects are linked in terms of debt burden, inflation, interest rate and balance of payments. Thus on the fiscal front, it is essential to evaluate various fiscal policy options as above a certain fiscal deficit to GDP ratio is necessarily bad for the health of an economy and bringing down this ratio is expected to lower inflation and interest rates and strengthen the sustainability of fiscal balance in the long-run. Fiscal adjustment is needed not only to overcome an imminent crisis but also to avoid the long-run sustained growth in jeopardy.

There are three following means through which a deficit can be financed such as domestic borrowing, external borrowing, and printing money. Over reliance on any one of them can cause macroeconomic imbalances. A high dependence on domestic borrowing may result high real interest rates and consequently falling private investment. Similarly, over reliance on foreign borrowing can create appreciation of the real exchange rates, widening current account deficits and thereby unsustainable external indebtedness and dwindling foreign exchange

reserves. Over dependence on money creation likewise can prompt higher inflation in an economy. Thus, the manner by which a given public debt is financed determines the extent to which the deficit can be reconciled with broader macroeconomic objectives.

Broadly speaking, the efforts to regain control on macroeconomic situation through fiscal adjustment has been a global phenomenon since the beginning of 1980s and this period unfolded for many developing countries with the events of mounting external and internal debt led to loss of international credibility, high rates of inflation, a large growth in balance of payments deficits, and major deceleration in growth performance, and, in the light of that, the following literatures found focussing on the linkages between fiscal deficits and macroeconomic variables in empirical works with strong theoretical underpinnings .

The empirical investigation to establish the relationship between fiscal deficit and the interest rate has generally been confined to the developed economies. Tanzi (1985) made use of alternative definitions of budget deficits in the context of US economy observed that sensitivity of interest rate to government spending has got diluted over the years because of other factor affected interest rates beyond deficits is high international capital mobility. Similarly, the studies by Dalamagas (1987), Kulkarni and Eric Lee (1996) found no evidence of positive causation between interest rates and fiscal deficits. However, other set of studies including Cebula (1990), Correia Nunes et al. (1995) found a positive linkage between interest rate and fiscal deficit.

In the Indian context, the protracted contention between Prabhat Patnaik (2001) and Deena Khatkhate (2001) caters around various theoretical contours of the issue. While the former undermined the theoretical proposition that high level of fiscal deficit causes higher real interest rate, the latter vehemently encountered the view and asserted that the rise in fiscal deficit does push up the interest rate. Theoretically, the issue has remained inconclusive, empirical evidence is also quite limited. The empirical research in the Indian context has largely been confined on the issue of fiscal spending and its impact on the private initiative or the crowding out phenomenon, thereby intuitively addressing the issue of impact of fiscal deficit on the interest rate.

According to the classical theory and its modern versions, deficit financing crowds out private investment because both public and private sectors have to compete in terms of loanable

funds that consequently increases the rate of interest and displaces private investment and the transmission mechanism channel for displacement of private investment or rather expenditure works through rate of interest. It may also work through movements in the price level that depend on how much investment is financed and the extent of capacity utilisation in the economy. On the contrary, the net effect of increase in public investment on private investment would be positive in the Keynesian framework, via the multiplier as the economy is operating below capacity. The critically important points considered in this respect include the extent to which public and private investments are competitive or complementary in nature, the state of capacity utilization in both consumer goods as well as capital goods industries, foreign exchange reserve position, and the manner in which public investment is financed. However, insofar as public investment is targeted in nominal terms and financed by money creation, price effects may erode real public investment and subsequently have a dampening effect on private investment. The empirical evidence on crowding-out is highly susceptible depending on the following factors including the mode of financing budgetary deficits, components of public expenditure, private capital formation and household's response to deficit financing.

It was found that partial crowding out occurred using US data leading slower economic growth through reduced capital formation and inflation in the long-run while regressed the ratio of 'private investment to income' on the ratio of 'public deficit to income' [Cebula, 1985].

It was claimed that the presence of crowding out on Australian data as the private sector had to compete with the public sector in private savings, because of asymmetry of risks involved in holding between private and public sector bonds and more risks in the former and higher interest rates offered in the latter induced to reduce private investment [Feldstein, 1986]. Some dynamic analyses involving policy simulations exist to capture the crowding-out effect emphasized the modes of financing public deficits chosen, and the elements of public expenditure as components underlie differentials in empirical results [Arestis, 1979; Haque and Monitel, 1993]. It was detected in a study that public capital formation induces higher private capital formation as higher private return generated by public investment [Aschauer, 1989].

In India and other developing countries, evidence on private savings replenishing government deficit is rare (Mohanty, 1995) while there is a plethora of empirical works

substantiating public investment crowds out private investment in some sectors, but strongly complements in certain others, particularly infrastructure sector [Sunderarajan and Thakur, 1980; Krishnamurthy and Saibaba, 1982; Tu Wai and Wong, 1982; Blejer and Khan, 1984; Bardhan, 1984; Pradhan, Ratha and Sarma, 1990; Bhattacharya et. al, 1994; Rao, 1995; and Pillai et. al, 1997, Mohanty, 1995; Desai, 1997]. Though these studies showing varied findings, their deduced combined close observations are: (i) generally crowding out phenomenon happens in the short-run as both public and private sectors have to compete while purchasing resources, and interest payments reduce private consumption, national savings and capital formation; but crowding in phenomenon happens in the long-run when public investment on infrastructure plays a complementary role to help private capital formation and higher private returns generated; further, the private investment function behaves well empirically particularly when the openness of the economy along with the availability of foreign funds does matter; (ii) weakening of crowding-in phenomenon since the mid-1960s seemingly because of the reduced infrastructure generating role of such investment; (iii) crowding in taking place through financial market openness route since 1990s; (iv) the studies on developing countries are limited in scope because of several reasons such as existence of market segmentation, valuation problems, and difficulties in measuring capital stock and many other related factors.

However, the works developed in the Indian context have examined the phenomenon of crowding out, but did not attempt to establish a direct linkage between interest rate and fiscal deficit. Absence of market determined interest rate till recently is seemingly the reason for lacking of such empirical work. However, Chakraborty (2002) has made an attempt to place this issue under scrutiny in VAR framework suggesting one way causality from real rate of interest to deficit and deficit does not induce rise in rate of interest. This study seemed to have been unsatisfactory owing to the choice and measurement of proxies for key variables.

The present research investigates the fiscal impact on interest rate by running causality tests between fiscal deficit and interest rate in the Indian economy as well as by going into the aspects of private investment and crowding in and crowding out phenomenon.

2.2.2.C LITERATURES ON EXTERNAL SECTOR ADJUSTMENT

An important rationale of fiscal reform relates to containing the domestic absorption to a level so that it is consistent with the sustainable external balance. This view underpins the fact that

fiscal adjustment is an important determinant of external sector adjustment being implied not only in the national income identity but also in the dynamic adjustment process in the economy because open economy context involves a continuous alignments-realignment of macro variables with rest of the world [Rangarajan et al. 1989; Rangarajan 1994]. It is generally believed that budgetary deficits spill into external trade deficits, which is popularly known as the problem of 'twin-deficit' [Rakshit, 1983, 1991; Balakrishnan, 1995; Rao, 1995].

This 'twin-deficit' perspective of fiscal adjustment has become a quite contentious issue in India despite having received much less serious attention in the reform process than what should have been [Rao et al. 1999; Rao 1999; Rao 1999]. The central problem of this issue is that if the government fiscal deficit is corrected, would that improve the current account balance? It is certainly tricky to pursue an argument in favour of 'twin deficit' just merely by looking at the ex- post national income identities which are only axiomatic in the way that the national income is defined. This axiomatic ex-post identity indicates that improvements in the current account deficit can take place subject to sectoral savings rise relative to sectoral investment. In another way of saying that an improvement in current account deficits (i.e., an increase in external savings) counterbalances public sector dis-savings thereby pre-empting the crowding out of private sector investment. However, at the least, what can be best is to recognise that fiscal deficit can affect external balance in various ways and not necessarily through the current account deficit.

In the context of whether fiscal deficit causes current account deficit, Dornbusch and Helmers (1988) concluded that forcefully any policies do not have any effect on savings cannot be expected to improve the external balance. On the same count, Feldstein and Horioka (1982) found that just as forcefully cutting the fiscal deficit and thereby increasing the national savings rate would only increase investment with very little impact on the current account deficit. They pointed out that an increase in government dissavings might bring down the investment level in the economy rather than result in increased flow of foreign savings through current account deficit. They suggested that domestic investment is primarily influenced by domestic savings and not so much by international capital inflow. One of its close interpretation is that a decline in government saving or higher fiscal deficit would translate lower level of national investment rather than an increase in flow of foreign savings. This result looms large for countries which are dependent on portfolio capital inflow to sustain their investment activity and not so much

for countries where investment is constrained by the trade gap [Mohanty, M.S., 1997]. Thus, as to whether changes in the savings rate are reflected primarily in the external balance (Dornbusch and Helmers) or in investment levels (Feldstein and Horioka) has been a policy issue of very great contemporary relevance.

Given the greater integration between domestic and world financial markets, fiscal deficits assume a great deal of significance to play as a policy instrument of maintaining the viability of external (foreign) sector. If it is assumed that fiscal deficit does not matter for the external current account balance, it can easily be seen that how an unstable fiscal situation can difficult the finance ability of a given balance of payments deficit through its adverse impact on exchange rate and country credit risks. Rodriguez (1989, 1991) has hypothesised that for a given level of trade deficit, an increase in fiscal deficit might lead to appreciation of real exchange rate, implying higher private spending via a shift of demand to non-tradeables and an increase in their prices. To the extent that fiscal deficit is bond financed, the domestic interest rate effects could dominate to attract capital inflows resulting appreciation of nominal exchange rate. The expectation of a looming depreciation of the over-valued currency could bring down investors' confidence in the economy that might cause a sudden outflow of capital i.e., 'capital flight' could simply take the form of exporters keeping their money abroad in anticipation of future devaluations. This happened vividly in the context of a number of Latin American countries, several countries of eastern Europe, Sub Saharan Africa, and South East Asian economies though once were high performing plunged into currency crises mostly in the mid-1990s despite implemented intensive economic reforms particularly due to heavy dependency on short-term floating foreign institutional investment (FII) with consequence of huge debt service burden and capital repatriate (withdrawing or capital outflow) from the economy, what was described also as the implications of the volatility of the exchange rates at the international monetary system and the problems of co-ordination of monetary, fiscal and exchange rate policies on the management of exchange reserves, which Krugman illustrated as a part of the broader financial crisis [Khatkhate, 1998; Ramanathan and Samuel, 2000]. The consensus conclusion commonly drawn upon the 'currency crisis' or 'contagion' and the validity of the financial-deepening economic growth hypothesis led macroeconomic instability through crisis of the external sector [Ahluwalia, M.S., 2004]. There has been a vast body of literatures with overwhelming recognition that currency crises owing to pro-cyclical financial markets and

pro-cyclical liberalised financial policies have not encouraged growth and instead increased growth volatility, in which various issues like the problems of excessive reliance on short-term external financing, sequence and pace of reforms, exchange rate movement and international capital movement, interest rate parity have become the part of the standard recipe of instability analysis.

To study the directional links between the twin deficits, Darrat (1988) by using Granger Final Prediction Error Criterion (to determine the lag length in conventional Granger causality test) empirically confirmed bi-directional causality and this contention was also reconfirmed by Abell(1990) by applying a vector auto regressive (VAR) model to US data confirming the hypothesis that not only do budget deficits affect trade deficits but also evidence of reverse causality true and the transmission linkage worked via high interest rates, high capital inflows and exchange rate appreciation. By applying the same VAR methodology to panel data consisting of eight OECD countries, Keamey and Monadjemi (1991) found that a temporary and bi-directional relationship exists between the twin deficits. To identify the implications of government borrowings on the current account through variations in the exchange rate, Spiro (1990) found that high government deficits which induce high interest rates causes high inflows of capital and ultimately an adverse current account as there exists a positive relationship between foreign public sector borrowing and the exchange rate. Based on simultaneous model involving bonds, foreign exchange and goods markets, Zeitz and Pemberton (1990) found the evidence that fiscal deficits do affect the current account adversely and occurred through domestic absorption rather than through interest rates and exchange rates. To study this relationship, a similar finding was confirmed by Bachman (1992) using VAR methodology to US data.

India has adopted measures of expenditure compression through a sharp fiscal correction and expenditure switching through devaluation, the present research needs to find the impact of the fiscal deficit on the current account deficit to confirm whether exchange rate is a powerful instrument of adjustment in the current account deficit in India.

2.2.2.D LITERATURES ON POLITICAL ECONOMY OF ADJUSTMENT

The concept of political business cycle (PBC) was originally proposed by Kalecki in 1943 to refer macroeconomic imbalances consequent to myopic government's manipulating behaviour

of using macro policy instruments with a hope to strengthen the chances for their incumbency in re-election by providing artificial favourable economic conditions unusually prior to an election for electoral gain with the economy turns for the worse immediately after election yielded by budgetary cyclical tendencies. However, the theoretical plane of PBC came to be criticised by the rational expectations school and attempts were made at reconciling them since the mid-1980s and inculcated into political budget cycles, in which focus has shifted from real-sector variables like employment, etc, to policy instruments like taxes and transfers or monetary policy, and more attention being directed towards the principle of central bank independence in the context of debt monetisation and financing of fiscal deficits with the objective of minimising inflation [Alesina & Sachs 1980; Rogoff & Sibert 1988; Cukierman & Meltzer 1989; Rogoff 1990; Mourmouras 1997].

Public choice literatures suggest that political parties within a representative democratic system may use alternate preferences with regard to public spending. Manipulations observed in the components of public expenditure as capital expenditure (financed by market borrowing) having longer gestation and barely yield immediate physical returns (or financial dividends) are rarely prioritised by pre-election years while current public revenue expenditure (financed by tax revenue) like subsidies are observed to be increased sharply during election years and fall subsequently. Debt-financing or government borrowing from the RBI is seen to increase through debt-GDP ratio around or at the commencement of the electoral term while the inflationary impact occurs after a lag. Similar manipulations are also observed to have occurred in certain other non-budgetary variables such as escalations in food-grain procurements and prices during pre-election years. Cyclical tendencies within the macro economy and the political preferences concerning public expenditure working together can create strong budgetary imbalances [Alesina & Tabellini 1990]. It was shown in a model of the budget-maximising government that the economy would eventually be destabilised by government's successive political budgetary cycles as aimed at serving partisan and opportunistic ends [Nordhaus 1975]. It was also observed that unemployment rates fall during the election regime, but remain high immediately after an election year in order to compensate for inflation.

The presence of budget cycles was also observed in the context of the Indian economy as dispersed mean growth rates of key macro policy variables differently across pre-election, election and post-election years, and the incumbent government facing an election would seek

to neutralize the demand-pull effects of increased budget deficits by an appropriate policy of commodity-price stabilization either through increasing food-grains imports or by running down buffer stocks so as to insulate the electorate from an increased in food prices; evidenced empirically that receipts on the revenue account comprising both tax and non-tax revenues tend to fall during election years to let certain sections among the electorate go off with tax evasion particularly in the case of central excise duties and corporate taxes, alongside revenue expenditures committed to developmental activities increased in pre-election and election in years followed by a decline in post-election years thereby revenue deficits as a proportion of GDP tend to be higher in pre-election and falling during post-election years [Karnik 1990; Sen & Vaidya 1996; Lalvani 1999].

2.3 CONSOLIDATION OF RESEARCH IDEAS

Despite its vastness, there are still major areas of disagreement, mixed findings and several caveats that do not make literatures reviewed comprehensive. It has been at least to improve wisdom, consolidate current empirical findings and to provide preliminary direction of this present research. If there is any single thread that connects relevant literatures is probably the stylised facts of underlying instability channels. This is done in an attempt not only to show the extent by which various paradigms developed but also to understand how they interplay in the real country context in finding the diversity of empirical interpretations with theoretical postulates and empirical justifications. It seems to have abridged conditions attached traditional and fundamental metaphoric literatures with less empiric structuralist and PBC literatures developed in constraint-optimisation framework with the recent much empiric literatures developed in positive using framework. It has gone well to keep pace with the changing perceptions of sources of instability, filtering relevant methodological contents, formulation of spectrum of policies on meaningful and effective macroeconomic management, and diversity of channels of influences and instability transmission mechanisms.

2.4 RESEARCH GAPS & FUTURE RESEARCH NOTES FOR PRESENT RESEARCH

The structuralist literatures can hardly explain how the Indian economy jumps from one constraint to another by deducing the exact timing as the effective constraint on economic growth process is doctrinal rigidity, and not any real rigidity, emphasising usually on a single constraint, owing to unrealistic assumption of rigidity (time-invariant) and thereby no

substitution or zero shadow price (relative price) and thus can barely analyse the lag impacts of economic policies. Similarly, PBC studies were found tend to provide circumstantial economic evidence of political phenomena rather than being based on sound theoretical ground and explained scarcely macroeconomic policy variables to refer cyclicity of real and budgetary variables in the planning process.

Empirical cross-country studies on this subject have also been dubious because of implicit restrictive assumptions of homogeneity across countries despite there are vast differences and considerable variations in terms of their various structural features, natural and policy induced differences, institutional aspects, with respect to the nature and quality of data as well as statistical procedure for measuring data. Thus quite apart from general methodological flaws pertaining with model specification and econometric procedure, data should not be pooled without considerable cautious.

The existing studies though are partial in period, policy and sector coverage but had come to use gaining the understanding of short-run disequilibrium dynamics for different phases to inform the historical policy environment in the long-run growth process. The literatures available taken together collectively mapped Indian macroeconomic experiences hemmed in with an initial phase of acquiring an industrial base, followed by endogenous deceleration and structural retrogression started in the 1960s, stretched its recessionary impact engulfed by external shocks in the 1970s, followed by industrial recovery through the 1980s and the re-emergence of structural adjustment in the wake of marked recessionary tendencies since the early 1990s.

However, country-specific systematic macroeconomic studies of this nature have been few and far between. More importantly, a great deal of earlier studies carried out prior to 1990s tends to be spurious as are based on traditional regression methodology even dealing non-stationary variables and could mislead in what they advocated their findings. This research aims to fill this gap. It explains why there is a comparative perspective of recessionary episodes in the 1960s and 1990s in the Indian economy ambling all the probable routes of instability channels and their transmission mechanisms. In this way, the advantage of this chapter has been mutual.

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Indian Macroeconomic Performances and Evolution of Development Planning

INTRODUCTION

The title of the research has opened up the possibility of integrating growth and development planning in India. There has been scope for critically examining and integrating instability issues in development planning context, and advantages in trying to view that in various strands of theoretical insights. The choice of issues are guided by relevance by the sake of own interest of this research. This chapter is in restrictive sense closely grounded descriptive findings in empirical works.

The macroeconomic performance and growth fragility of an economy can best be understood at the backdrop of development planning discourse as it helps to constitute a base from which an historically informed factual position may be known to draw upon how the goals of economic planners, their thinking for setting policies, and methods of implementation and treatment of economic strategies through what political and intellectual milieu took shape. It is best to say that the main objective of the planning process directly or indirectly touches stabilization and structural aspects and sustainability of economic growth. It also helps to draw upon how the roles of the government modified, priorities of the government look shaped, and the policy intent explicitly or implicitly shifted periodically while formulating macroeconomic policies, programmes and budgetary exercises in the wake of various economic and political shocks over time.

This holds true for this present study as the studied sample period covers more than five decades of Indian development planning, entrenched into nine consecutive five-year plans along with interim annual development plan holidays. Over the years, though the policy stance of the government of India has changed, the scope and pace of policy changed also varied. Development planning helps to understand economic problems related with many dimensions including the development of agricultural sector, industrialization – the role of public sector, foreign trade sector, and foreign investment.

This chapter provides Five – Year Plan-wise a comprehensive sketch of India’s macroeconomic performance and explains the causes and consequences of changes in economic policy during Indian post-independence period. Within the explanations of how the Indian macroeconomic policy changes happened, it would offer relevant points to trace how their dynamics emerged from the interactions of the then socioeconomic-political foundations with institutional circumstances and historical antecedents, particularly to capture instability fundamentals. It also describes the features of pervasive influence on legislation and government controls which are of help in understanding the thrust of the government’s macroeconomic policies and their effects.

This chapter consists of four sub-sections. Section 3.1 sketches a capsule story of Indian macroeconomic performance and a brief outline of the evolution of the Indian development planning with brief pre-independence historical background. Section 3.2 outlines a systematic comprehensive chronology of Indian macroeconomic themes and events in the face of its changing socio, economic, demographic and political scenario. Section 3.3 discusses PBC approach for studying dynamic disequilibrium problems in Indian macroeconomic management. Section 3.4 discusses some instability fundamentals in India to constitute the bases for comparative perspective of instability, and the remaining section concludes the chapter.

3.1. INDIAN MACROECONOMIC PERFORMANCE & EVOLUTION OF DEVELOPMENT PLANNING: A SYNOPTIC REVIEW

Growth, inflation and external balance are the key ultimate targets by which an economy’s macro performance is most commonly evaluated. However, there is almost as much interest in an array of intermediate target variables which lie at the heart of macroeconomic policy, namely fiscal deficits, current account deficits, savings and investment. India’s macro-performances has been evaluated integrating the discussion highlighting growth performance, inflation scenario, twin-deficit problem and inter-sectoral inconsistency combing tables 3.1 & 3.2 and emanated relevant figures from 3.1 to 3.10.

The following Table 3.1 shows that there have been different bounds of inflation rates and real GDP growth rate patterns as they fall under the different ranges over the studied sample period from 1950-2003

TABLE 3.1: KEY NATIONAL ACCOUNTS AGGREGATES FOR THE INDIAN ECONOMY (1950-51 TO 2003-04) AT RATE VALUES

Year	RY	RINF	RCG	RIGZ	RSGZ	RXZ	RMZ	RYA	RCGZ	RINFFC
1950										
1951	3	3.24	1.03	16.3	46.15	14.8	46	1.49	4.8986486	3.17
1952	2.6	-4.38	0.12	-14.6	-39.84	-15.5	-32.3	3.15	3.5426731	-4.1
1953	6.2	2.52	1.25	13.5	-10.625	-9.94	-7.12	7.7	5.5987558	2.6
1954	4.9	-9.75	0.58	53.3	17.48	9.48	14.87	2.93	4.2709867	-9.88
1955	3.3	-1.43	2.77	9.4	13.09	7.52	12.01	-0.864	7.2033898	-0.92
1956	5.6	12.8	6.95	32.3	32.1	1.32	39.92	5.43	10.27668	12.94
1957	-0.3	3.4	12.61	24.3	5.97	4.17	11.07	-4.49	16.845878	3.48
1958	7.4	3.7	3.54	-1.7	-5.63	-9.88	-15.33	10.07	7.2597137	3.97
1959	2.7	2.6	1.79	10.4	4.38	8.19	-8.51	-1	5.3384175	2.78
1960	5.3	3.9	5.39	26.3	73.28	0.64	22.37	6.73	9.1402715	2.23
1961	3.8	2.1	7.09	0.76	15.85	2.29	-11	0.08	10.779436	2.34
1962	3	4.3	21.34	25.5	14.44	4.11	9.9	-1.98	21.257485	4.7
1963	6.1	8.3	24.73	16.3	24.75	17.96	12.73	2.33	28.888889	8.77
1964	7.4	8.5	3.16	15.81	15.17	3.04	11.95	9.22	7.2796935	8.59
1965	-2.5	8.2	9.19	13.7	-0.23	-8.17	-4.06	-11.04	14.732143	8.67
1966	-0.2	13.3	1.13	-3.19	-15.64	42.16	44.46	-1.42	9.2607004	12.67
1967	7.8	8.6	1.91	9.32	0.96	13.81	4.06	14.87	11.324786	8.67
1968	3.5	2.3	5.34	-6.45	26.93	5.9	-13.81	-0.15	9.6609085	2.77
1969	6.5	3.35	9.48	4.51	19.5	1.75	-7.9	6.42	12.22287	3.24
1970	5.2	1.5	9.19	23.6	20.44	8.98	3.94	7.09	11.489472	1.29
1971	1.7	4.1	10.54	16.99	2.68	0.79	19.76	-1.87	16.157612	5.33
1972	-0.6	12.12	0.29	13.46	4.56	24.64	-5.79	-5.01	6.0417503	10.35
1973	3.2	17.8	-1.15	26.55	33.91	27.19	55	7.2	9.123604	17.21
1974	1.2	16.6	-4.5	17.31	46.81	35.51	50.47	-1.52	21.335646	16.35
1975	9.2	-1.55	10.38	35.68	24.16	25.47	18.51	12.88	18.155826	-2.56
1976	1.7	5.96	7.68	13.01	24.37	27.57	-0.88	-5.77	11.215971	6.16
1977	7.2	5.57	3	-8.17	-0.06	8.16	16.08	10.03	6.3968668	6.19
1978	5.7	2.52	7.3	25.47	14.49	7.15	13.9	2.3	10.961145	1.86
1979	-5.2	15.79	6.25	19.39	4.33	17.21	35.98	-12.77	15.011058	15.1
1980	6.7	11.51	4.71	-0.26	-5.68	8.26	34.69	12.88	16.112491	11.5
1981	6.4	10.26	4.49	40.32	53.58	13.58	8.92	5.29	17.823627	10.22
1982	3.7	7.72	9.46	18.56	7.95	12.74	6.25	-0.68	17.920937	8.17
1983	7.1	8.88	4.36	5.59	-12.28	13.62	12.32	9.55	15.301713	8.8
1984	4.1	7.42	7.22	20.38	-2.95	20.6	10.23	1.47	14.709683	7.48
1985	5.6	7.19	11.12	17.14	28.6	-5.64	11.65	0.74	19.161879	7.27
1986	4.8	6.7	9.88	15.94	-4.5	10.64	2.78	-0.64	18.191845	6.87
1987	4.3	9.2	8.09	-2.91	-7.7	22.59	12.97	-1.32	17.284774	9.37
1988	9.9	8.29	5.18	18.89	11.3	27.76	26.72	15.46	15.192089	8.42
1989	6.4	8.34	4.69	15.61	-6.73	33.55	25.62	1.48	14.279794	8.45
1990	5.8	10.54	3.39	14.42	-23.23	17.41	21.1	4.1	14.023727	10.49
1991	0.9	13.8	-0.66	8.53	104.93	38.43	15.5	-1.54	12.501893	13.81
1992	5.3	8.8	3.13	11.04	-7.79	19.65	29.78	5.79	13.020125	8.71
1993	4.9	9.48	6.46	10.68	-54.1	27.98	17.8	4.12	16.398871	9.59
1994	7.5	9.68	1.23	24.52	209.36	17.94	21.75	5.01	11.168074	9.43
1995	7.6	8.97	8.03	3.14	42.86	28.66	38.43	-0.86	18.57252	9.02
1996	7.4	7.23	4.45	5.72	-4.77	10.8	11.08	9.6	13.126475	7.44
1997	4.5	6.51	11.05	4.64	-11.61	14.04	14.47	-2.42	18.160233	6.67
1998	6	7.88	12.89	13.8	-184.76	18.2	21.92	6.2	24.301204	7.93
1999	7.1	3.84	13.19	17.4	16.77	16.6	18.22	0.31	17.322095	3.94
2000	3.9	3.79	0.48	-2.21	141.26	27.44	15.19	-0.11	5.2284276	3.48
2001	5.2	3.86	3.04	1.13	29.63	5.99	5.13	6.48	7.5958325	3.87
2002	4.6	3.45	3.06	5.55	-27.07	22.2	19.72	-5.2	8.6240978	3.46
2003	8.3	3.67	NA	NA	NA	NA	NA	9.07	NA	3.67

Source: Compiled from Government of India, *Economic Survey*, various issues

Notes: 'NA' means not available

To calculate RINFC, first to obtain the implicit price deflator of GDP at factor cost, annual time-series data on GDP at factor cost at current prices being divided by corresponding unsmoothed GDP at factor cost at 1993-94 prices (1993-94=100) and these estimates are subsequently followed to generate unsmoothed estimates of the annual inflation rate at factor cost. Therefore, RINFC = Rate (YFCZ / YFC x 100). Similarly, RINF = Rate (YZ / Y x 100)

Notations:

- RY annual growth rate of GDP at 1993-94 prices (real)
- RINF annual rate of inflation at market prices at 1993-94 prices = 1
- RCG annual growth rate of final consumption expenditure of the government sector at 1993-94 prices
- RIGZ annual growth rate of gross domestic capital formation of the government sector at current prices
- RSGZ annual growth rate of savings of the government sector at current prices
- RXZ annual growth rate of exports at current prices
- RMZ annual growth rate of imports at current prices
- RYA annual growth rate of agriculture at 1993-94 prices
- RCGZ annual growth rate of final consumption expenditure of the government sector at constant prices
- RINFFC annual rate of inflation at factor cost at 1993-94 prices =1

ECONOMIC GROWTH: A CAPSULE STORY

The glimpse of the performance of the Indian economy has since 1951 been well documented.

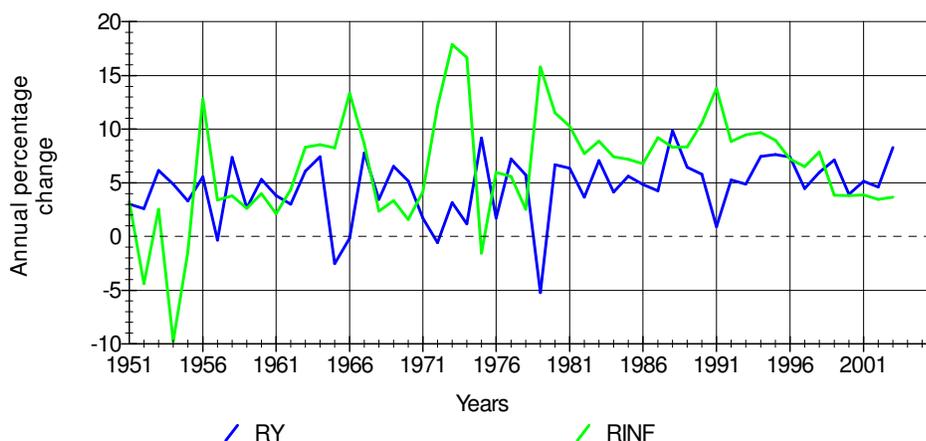


Figure 3.1: Annual Growth of Real GDP (RY) and Inflation Rate at market prices (RINF)

Source: Table 3.1: CSO, various issues of *National Accounts Statistics, Economic Survey*, EPWRF [2004]

Economic growth is the principal gauge of macroeconomic performance. By this standard, the two decades – 1980s and 1990s since 1980-81 have relatively been better across decades in terms of India’s economic performance. The annual growth rate of real GDP remained below 4 per cent until the end of the 70s which was dubbed as the infamous ‘Hindu rate of economic growth’. After averaging the so called ‘Hindu rate’ of 3.73 per cent per year in the 30 years between 1950-51 and 1980-81, it was only in the 80s that the growth rate surpassed 5 per cent per annum. Real GDP growth accelerated to 5.8 per cent in the 80s and stayed at 5.4 per cent in the final decade up to 2003-04. Indeed, if the crisis affected year of

1991-92 is excluded, as it logically should be, GDP growth between 1992-93 and 2003-04 averaged an unprecedented 6.01 per cent.

The growth spurt prior to 1991 was fragile and volatile. There was a massive decline in the growth rate during 1965-67 and 1971-74, a jump during 1975-77, again decline in 1979-80, again climb up in 1980-82, return to Hindu rate growth path during 1982-88 except 1983-84 and 1985-86, upsurge again in 1988-90 and crisis in 1991-92. This instability in the growth pattern itself raises doubts about sustainability about growth rate over long haul. The 1991 crisis confirmed the underlying weakness of the fundamental forces ex post. However, growth during 1990s has been more robust, exhibiting far less volatility. The variation in growth rates appears to have decreased. Prior to 1980, the average annual real GDP growth rate was 3.73 per cent with a standard deviation of 3.29 and after 1980, it has moved to 5.7 per cent with a standard deviation of 1.88 percentage points. Subdividing the post-crisis twelve years following 1991-92 up to 2003-04, there has been an initial high growth period of three years corresponding to the latter part of the Eighth Five – Year Plan; and, since then for almost subsequent six years up to 2002-03, overall average GDP growth drops to 5.21 per cent and decelerated, plateaued, though recovered thereafter.

Now the question is why could growth not sustain or stagnation happened? This raises reasons to investigate whether the reforms of 1990s made a significant contribution to growth. There is not only one reason as is why this deceleration. This research examines whether it was due to loss of momentum in economic reforms, or due to infrastructural bottleneck, or due to poor regulatory framework, or due to inter-sectoral inconsistency. Contrarily, the gaps between potential and actual GDP showing much lower differences in the post-1991 period compared to the previous four decades seems to suggest that macroeconomic policy has had greater success in attaining economy's realised output in the 1990s than in any previous period. This contradiction might guide bearing inflationary extension coupling instability sub-periods.

Certain purely exogenous events visible that evidently disrupted the Indian macroeconomic growth process were the sequence of wars with China (1962) and Pakistan (1965 & 1971), severe droughts and poor harvests (1965-66, 1972-74 & 1987), and two global oil shocks which severally hit the Indian economy during the 1970s [Little & Joshi, 1998]. Because of sudden surfacing of these exogenous shocks, disruptions inevitably took place in

smooth sequencing of Five-Year Plans between 1966-1969, 1979-1980 and 1990-1992 owing to inability of the government to mobilise adequate financial resources in addition to foreign trade crises. These interim periods marked by the ‘plan holidays’.

INFLATION: HISTORICAL PERSPECTIVE

If growth is the key yardstick of macroeconomic performance, inflation or rather its absence is generally the preferred indicator of macroeconomic stability.

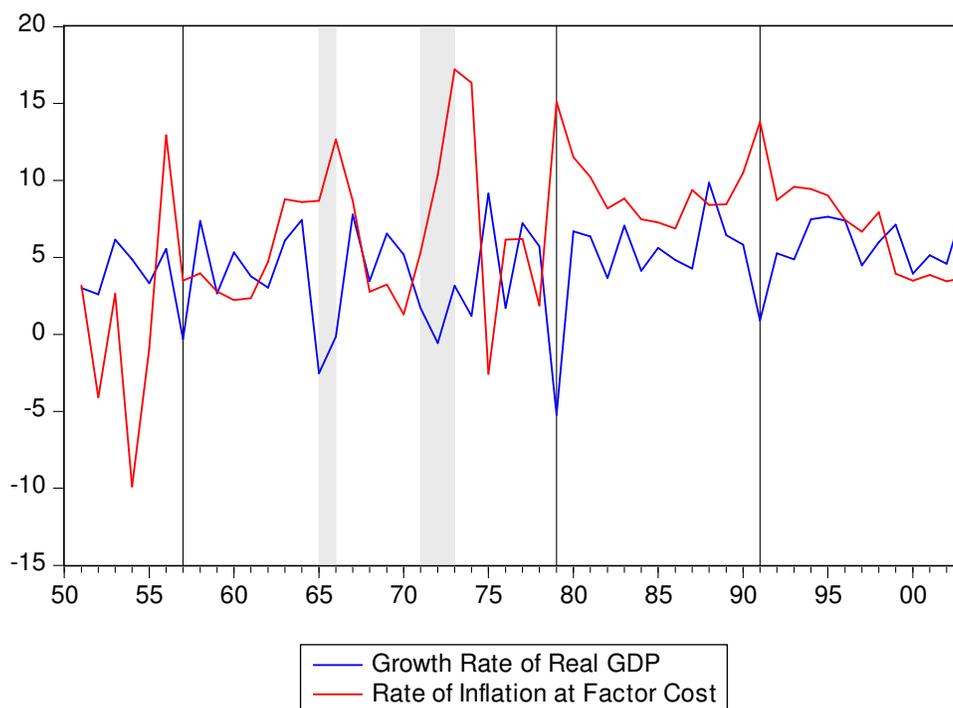


Figure 3.2: Annual Growth Rate of Real GDP and Inflation Rate at Factor Cost

Note: Shaded areas represent Indian macroeconomic growth-rate downturns & inflation peaks

Source: Table 3.1; CSO, *National Accounts Statistics*, EPWRF [2004]

As the above figures 3.1 & 3.2 show that the 1950s has been the best decade over the studied sample period as far as inflation is concerned. The 70s touched the worst record, with annual inflation averaging more than 8 per cent. This was primarily because the decade had to go through the two oil shocks of 1973-74 and 1979-80. In both the decades since 1980-81, inflation has registered averaging in the 7 to 8 per cent range; the annual average rate was 8.46 in the ten years up to 1990-91 and 8 per cent in the ten years since. Leaving out the crisis year of 1991-92, the average rate of inflation in the nine years was a little below close to 7.36 per

cent. A similar pattern is repeated over the sample period 1992-2003 and 1991-2003 in which average rate of inflations were estimated at 6.43 and 7 per cent respectively.

In comparative terms, India experienced high double digit inflation rates in four period of crises including sub-periods of 1964-66, 1972-74, 1979-81 and 1990-92 as inflation rates broadly reached peaks in mid 60s, early 70s and late 70s, and early 90s; and India has also experienced negative and zero inflation rates during a couple of years. There are certain striking observations to be made. The first three peaks were related to the exogenous shocks like drastic shortfalls in agricultural supply because of poor harvests. There were other events in the crisis years too: the massive devaluation of the rupee in 1966 and the two oil – price - rise shocks in 1973-74 and 1979-80; and, there seems to be other plausible channel of influence - the relationship between inflation and the money supply. The last peak is probably additionally related to policy –induced shocks. The shaded regions and lines indicate Indian macroeconomic growth downturns and inflation peaks. However, due to most volatile nature of these series, the above figure shows few significant growth rate downturns and inflation peaks outside the shaded areas.

It has been witnessing a declining trend in inflation rates from the early 1980s. In fact, had it not been oil-price shocks or crop failures in late 1970s, there would have broadly seen a long period of declining trend in inflation rates from the mid 70s, which witnessed the collapse of the Bretton Woods system, the gold-dollar system, and the emergence of flexible rates and later of floating rates. However, there has witnessed falling drift in the inflation rate after mid-90s in combination with falling drift in real GDP growth rate. Though it is argued that inflation has inertia in moving backwards sharply after reaching a higher value, there are also many respective points of time in the Indian economy where steep reduction in the inflation rates are observed. There is also a generally accepted view that a sharp and immediate reversal in the inflation rate hurts the real growth rate. It is interesting to see whether this observation holds true in the context of the experiences of the Indian economy. The above figure shows a mixed evidence for this proposition as some years show negative changes in the growth rates and some others show positive changes. The sharp reversals of high inflation rates hurting the growth prospects as feasible do not hold much ground, depending upon the circumstances. Thus it is interesting to verify the empirical validity of this hypothesis in the light of long-term

drift in inflation rate and growth rate by judging as to whether they remained more or less stationary.

It is important to note that inflation rate from the second half of the 90s has remained relatively low. The inflation rate that stayed higher for several years why began to dissipate or why inflation eased after mid-90s. This seems to have cropped the question that did stabilisation programme undertook since 1991 in Indian macroeconomic management help containing price increases or had increasingly open trade regime in India since 1991 particularly competitive exchange rate translated kept inflation low? Was that due to moderate increase in money supply? Or, more worryingly, was that due to apparent slack in autonomous investment demand? This research addresses these issues squarely during its discourse that follows next.

THE TWIN-DEFICIT PROBLEM

The variations of basic deficit indicators that have taken place in their disposition and the relationships that exist between their constituent components over the studied sample period has been described combining the following Table 3.2 and Figures from 3.3 to 3.8. Much of the theoretical contention on structural adjustment focuses attention on the relationship between the gross fiscal deficit (GFD) (i.e., the investment – savings gap of the government sector) and the current account deficit (CAD) (i.e., investment – savings gap), specifying that GFD is a proximate determinant of the CAD. CAD must be financed either by increasing official capital flows, or by increasing private capital flows, or by running down foreign reserves. And the GFD must be financed either by an excess of private sector savings over investment, or by a CAD. The inclusion of the third gap i.e., the private sector savings – investment gap makes effective the analysis of their contemporaneous movements. It is generally believed that a series of large fiscal deficit is inimical to macroeconomic stability. Such deficits tend to cause crowd out private investment, increase inflationary potential, deteriorate the balance of payments, render financial sector reform more difficult and impose a serious burden of adjustment on future generations.

TABLE 3.2: GROSS FISCAL DEFICIT & CURRENT ACCOUNT DEFICIT & THEIR RELATED MACRO AGGREGATES AT CURRENT PRICES

Year	GFD	CAD	YZ	NFIFAZ	SGFD	SCAD
1950	94	-21	9934	-41	0.946245218	-0.21139521
1951	55	183	10566	-35	0.520537573	1.731970471
1952	114	-34	10366	-25	1.09974918	-0.32799537
1953	168	-13	11282	-19	1.489097678	-0.1152278
1954	309	16	10678	-29	2.893800337	0.149840794
1955	332	39	10873	-10	3.053435115	0.358686655
1956	440	360	12951	-17	3.397421049	2.779708131
1957	593	473	13349	-20	4.442280321	3.54333658
1958	593	376	14874	-35	3.986822644	2.527901035
1959	670	231	15675	-57	4.274322169	1.473684211
1960	724	481	17167	-72	4.217393837	2.801887342
1961	661	345	18196	-98	3.63266652	1.896021104
1962	888	440	19566	-108	4.538485127	2.248798937
1963	982	440	22482	-112	4.367938795	1.957121253
1964	1142	600	26220	-145	4.355453852	2.288329519
1965	1419	599	27668	-164	5.128668498	2.164955906
1966	1481	923	31305	-230	4.730873662	2.948410797
1967	1680	837	36649	-258	4.584026849	2.283827662
1968	1326	416	38823	-255	3.41550112	1.071529763
1969	1246	241	42750	-271	2.914619883	0.56374269
1970	1576	394	45677	-284	3.450314162	0.862578541
1971	2036	478	48392	-291	4.207306993	0.987766573
1972	2433	297	53947	-302	4.509982019	0.550540345
1973	2973	392	65613	-325	4.531114261	0.59744258
1974	2918	653	77479	-291	3.766181804	0.842809019
1975	4286	-117	83269	-255	5.147173618	-0.14050847
1976	4444	-1309	89739	-233	4.952138981	-1.4586746
1977	3726	-1465	101597	-233	3.667431125	-1.44197171
1978	5156	128	110133	-156	4.681612232	0.116223112
1979	6911	580	120841	153	5.71908541	0.479969547
1980	7176	2094	143764	345	4.99151387	1.456553796
1981	9416	2611	168600	40	5.584816133	1.548635824
1982	11967	2566	188262	-634	6.356566912	1.362994125
1983	14097	2517	219496	-944	6.4224405	1.146717936
1984	18644	3292	245515	-1424	7.593833371	1.340854938
1985	21044	6234	277991	-1429	7.570029246	2.242518643
1986	26229	6355	311177	-1805	8.428964866	2.042246053
1987	25878	6825	354343	-2619	7.30309333	1.926099852
1988	31366	12304	421567	-4496	7.4403357	2.918634523
1989	38226	12279	486179	-5731	7.862536226	2.525612994
1990	46820	18196	568674	-7545	8.233188083	3.199724271
1991	44765	3377	653117	-10077	6.854055246	0.517058965
1992	52132	13816	748367	-11645	6.966100857	1.846153024
1993	65389	4791	859220	-12080	7.610274435	0.557598752
1994	71361	11893	1012770	-13083	7.046121034	1.174304136
1995	66912	20780	1188012	-13484	5.632266341	1.749140581
1996	73270	17738	1368208	-13082	5.355179914	1.296440307
1997	80398	22302	1522547	-13205	5.280493804	1.464782368
1998	131714	18362	1740985	-14968	7.565487353	1.054690305
1999	154533	21988	1936831	-15431	7.978651725	1.135256509
2000	179876	12847	2089499	-17285	8.608570763	0.614836379
2001	195707	-7268	2282143	-12086	8.575580058	-0.31847259
2002	186116	-22664	2469564	-19221	7.536391039	-0.91773285
2003			2772194	-25932		

Source: CSO, *National Accounts Statistics*, EPWRF [2004]

Notations:

GFD	Gross fiscal deficit
CAD	Current account deficit
YZ	GDP at current prices
NFIFAZ	Net factor income from abroad
SGFD	GFD as percentage of GDP at current prices
SCAD	CAD as percentage of GDP at current prices

Note: Current account deficit means the difference between gross domestic capital formations (adjusted) and gross domestic savings. And adjusted gross domestic capital formation is equivalent with finances for gross domestic capital formation, which being equal with the summation of gross domestic savings and net foreign

capital inflow. Gross domestic savings includes savings of public sector, private corporate sector and financial assets and physical assets of household sector. Unadjusted gross domestic capital formation means gross domestic capital formation by assets (i.e., construction + machinery and equipment + change of stocks) or by institutions (i.e., organized sectors: public sector and private corporate sector + household sector) [EPWRF, 2004].

One of the key aspects of India's post-independence macroeconomic policy until the mid-70s was the overwhelm emphasis on maintaining a conservative stance with respect to fiscal and monetary policy as the Indian government kept a tight reign on the budget deficit and its monetization during this period. Since then, there was, however, a gradual erosion of fiscal conservatism that had resulted in a steady increase in the fiscal deficit (see, Figures 3.3).

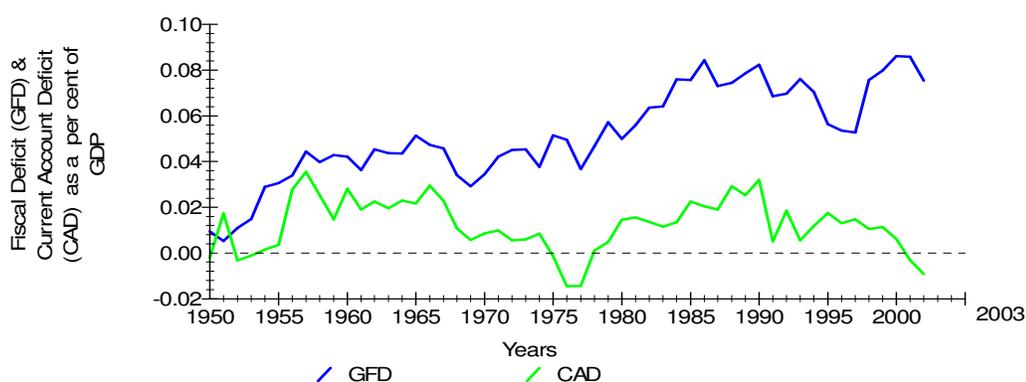


Figure 3.3: The Fiscal Deficit (as a per cent of GDP) & Current Account Deficit (as a per cent of GDP)

Source: Table 3.2; CSO, various issues of *National Accounts Statistics, Economic Survey*, EPWRF [2004]

This radical departure in fiscal policy posture can be gauged in the light of changing political economy of the government with the burgeoning claim for government subsidies by various pressure groups such as public sector workers, small scale industrialists, and medium and large farmers. Resorted to settle the claims through the budgetary process seemed ease with becoming weaken political power at the centre intending to increasingly be populist. The growing fiscal deficits of the central government were an important additive contributory factor behind the severe balance of payment crisis in 1991. However, the government of India has since 1991 attempted to maintain the fiscal deficit under moderate magnitude with some degree of success.

The expansionary fiscal policies combined with the limited measures to liberalise the economy in the mid-80s (described in detail in the later chapter) seemed to have contributed to a discernable increase in real GDP compared to earlier. This growth trajectory, however,

hovered and turned out to be unsustainable as budget deficits widened and current account deficits too owing to rapid increase in imports unmatched by exports growth (see the following Figures 3.4 and 3.5). Since exports growth and import growth affect fluctuations in the growth of overall economic activity, it is essential to construct their fluctuations. The following figures give the relevant picture as it marked the similar fluctuations in the growth rates of the three sets of series.

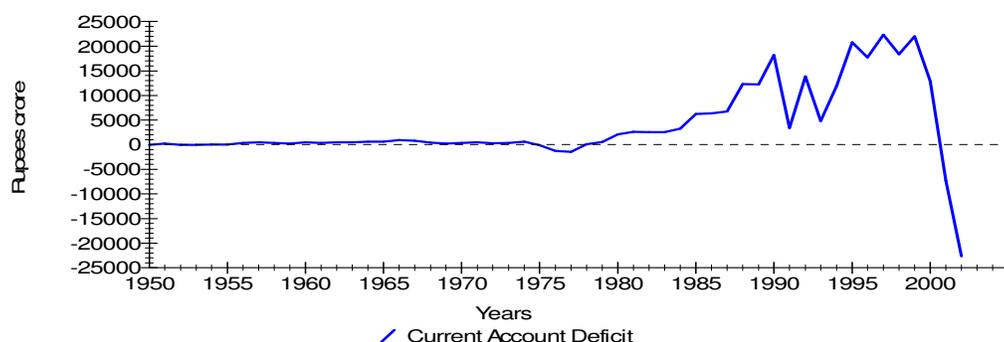


Figure 3.4: Time-Series Plot of Current Account Deficit

Source: Table 3.2, CSO, National Accounts Statistics, Economic Survey, various issues

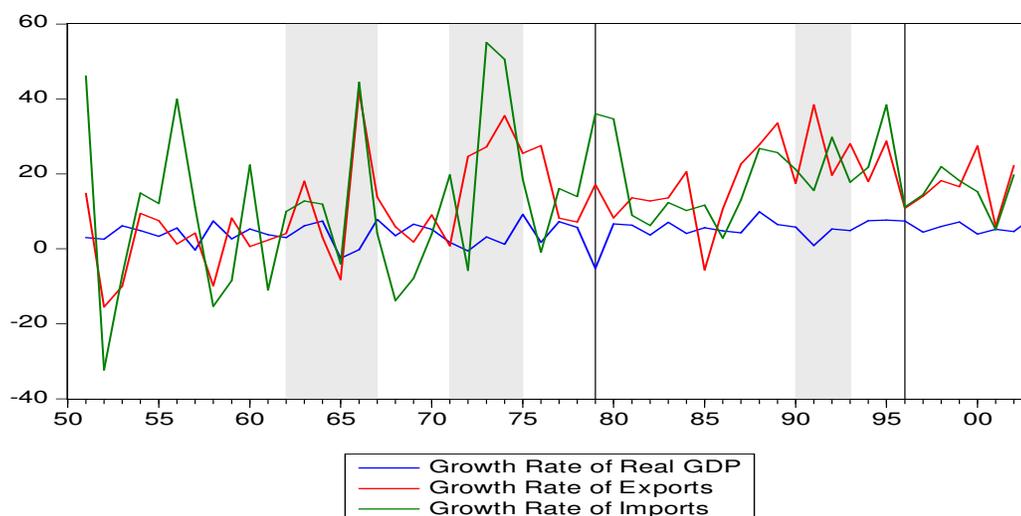


Figure 3.5: Annual Growth Rate of Real GDP, Growth Rate of Exports, and Growth Rate of Imports

Note: Shaded areas represent upturns in the growth rates of value of imports

Source: Table 3.1; CSO, National Accounts Statistics, EPWRF[2004]

It is argued that both exports and imports are important for growth and development, the former in order to pay for imports to stimulate growth from the aggregate demand side and the latter in order to modernise as hinges on improving the production process directly from the

supply side. Despite rapid increase in inward remittances by expatriate Indians, the extending current account deficit started to exhibit a speedy depletion in the nation's foreign reserve position. This condition was further aggravated by the abrupt fall in remittance inflows and oil-price rises caused by the Gulf War triggering to the 1991 BoP crisis. The crisis caused real GDP growth rate temporarily to bottom line in 1991 and proved to be significant for implementing structural-adjustment-cum-liberalisation reforms under the supervision of International Monetary Fund (IMF). Thereafter, there has been a bounced back the Indian economy with annual GDP growth rates comparable to or higher those of the 80s. The rate of inflation evidenced an upsurge in the 1980s may be consequent to expansionary macro-policy. Inflation peaked and hyper to double digit during the 1991 crisis, but subsequently come down possibly as a consequence of monetary tightening and declared policy commitments of fiscal consolidation for successfully combing sustained rapid growth with low inflation. The very little improvement in the fiscal deficit since 1991 has been at the expense of cut in public investment instead of broadening the tax base or downsizing current expenditure as is clearly evident a steady decline in public investment expenditure mirrored by an increase in public consumption expenditure, constituting subsidies and salary bills of the government employees in its bulk (see, Figure 3.6 and 3.7).

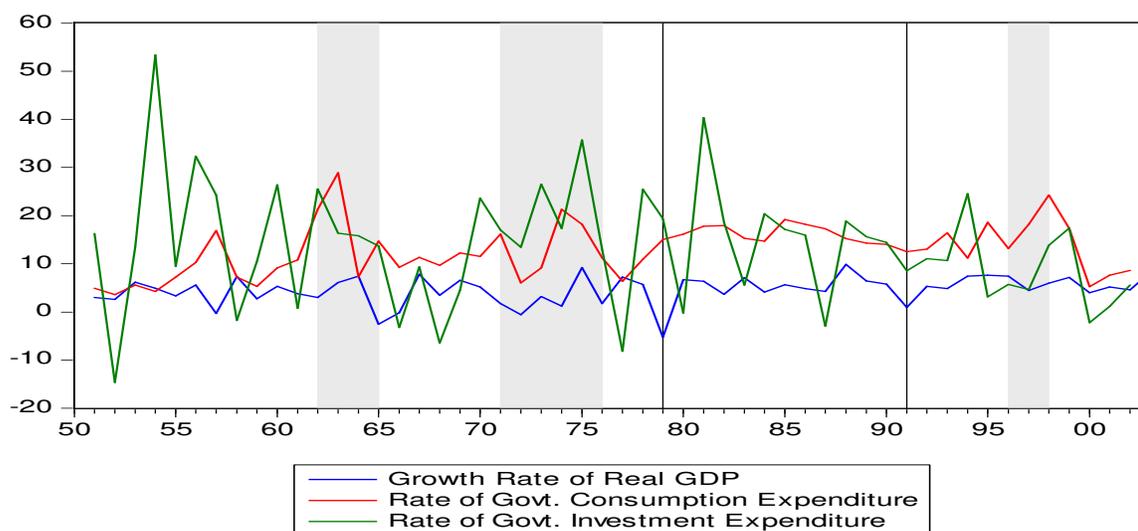


Figure 3.6: Annual Growth Rate of Real GDP, Growth Rate of Govt. Final Consumption Expenditure, and Growth Rate of Govt. Investment Expenditure

Note: Shaded areas represent upturns in growth rates of government consumption expenditure and downturns in growth rates of government investment expenditure.

Source: Table 3.1; CSO, *National Accounts Statistics*, EPWRF [2004].

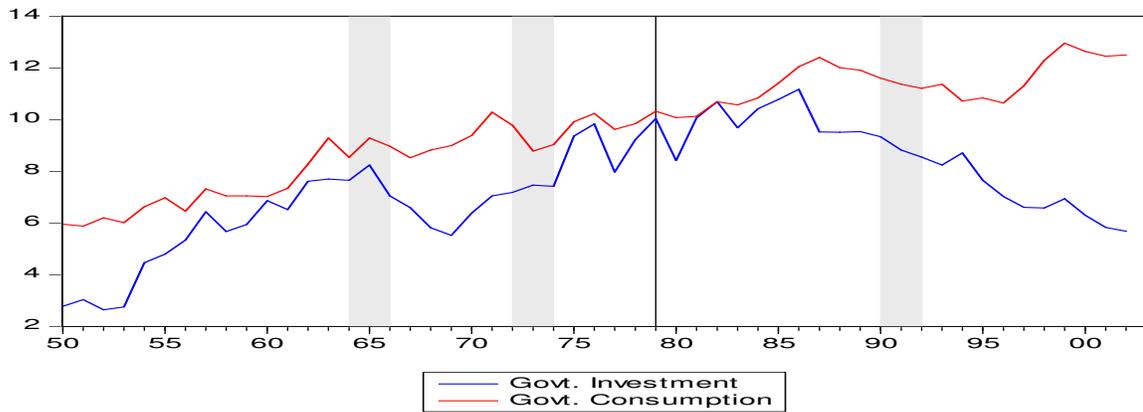


Figure 3.7: Government Investment Expenditure and Government Consumption Expenditure as percentage of GDP at current prices

Note: Shaded areas represent upturns in growth rates of government consumption expenditure and downturns in growth rates of government investment expenditure as percentage of GDP at current prices

Source: Table 3.1; CSO, National Accounts Statistics, EPWRF [2004]

Continued reliance on tighten monetary policy on inflationary containment at a time when the budget deficits running larger could glide long-run growth through sustaining high interest rates. More importantly, the reliance on cuts in public capital formation for want of reducing budget deficits essentially involves an expensive compromise at the cost of infrastructure development needed for rapid growth under the market – oriented policy reforms. Given the economic growth has in the past greatly been dependent on the provision of good quality infrastructure by the state, the fact that the fall in total public investment has been superimposed by a fall in public investment in infrastructure is of great concern.

Having examined the GFD and CAD individually, the following Figure 3.8 analyses the contemporaneous movements in the three gaps- GFD, CAD and the private sector savings-investment gap.

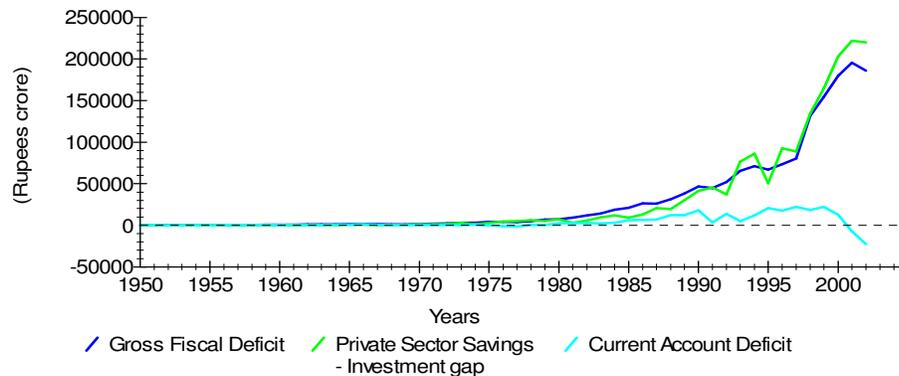


Figure 3.8: The Three Gaps in Practice at absolute values

Source: CSO, National Accounts Statistics, Economic Survey, various issues

The above figure shows the variations in these three gaps over the entire sample period. It indicates that there were few occasions before 1990 when current account surpluses (private sector savings – investment gap) exceeded the GFD. There was, however, relentless increase in the GFD and CAD and culminated both peaked in 1990-91. More noticeable was the fact that private sector savings – investment magnitude drifted to a low level, implying that it left more space GFD to be financed by the CAD. Thereafter both the GFD and CAD because of the stabilization measures imposed reduced significantly in 1991-92. However, these deficit indicators tended upward in which current account surpluses (i.e., private sector savings – investment gap) continues to finance the GFD, implying however, India's fiscal and external balances are vulnerable. However, to study the relationships between these three gaps more systematically, it requires to analyse the behavior of their basic proximate determinant exchange rate, particularly the impact of devaluations of pegged regime in 1966-67 and floating in 1991-92.

INTER-SECTORAL INCONSISTENCY

Inter-sectoral imbalances means slow agricultural growth would imply that reasonable targets of growth in consumption would not be attained and that limitations on the purchasing power of people engaged in agriculture would create demand deficiency problems for industries producing consumer goods, which inevitably gives rise to a temporary inflation accompanied by some industrial slack. The discernible evidence observed in the following Figure 3.9 that before 1990, the pattern of movements in growth rate of agricultural output has almost been tandem with growth rate of real GDP as paralleled and barely reflecting that parallelism after 1990. Post-90s exception may be due to structural change of sectoral contribution to GDP from primary to secondary and services. These joint movements drifted low vividly in the shaded area in the neighbouring years of poor harvesting.

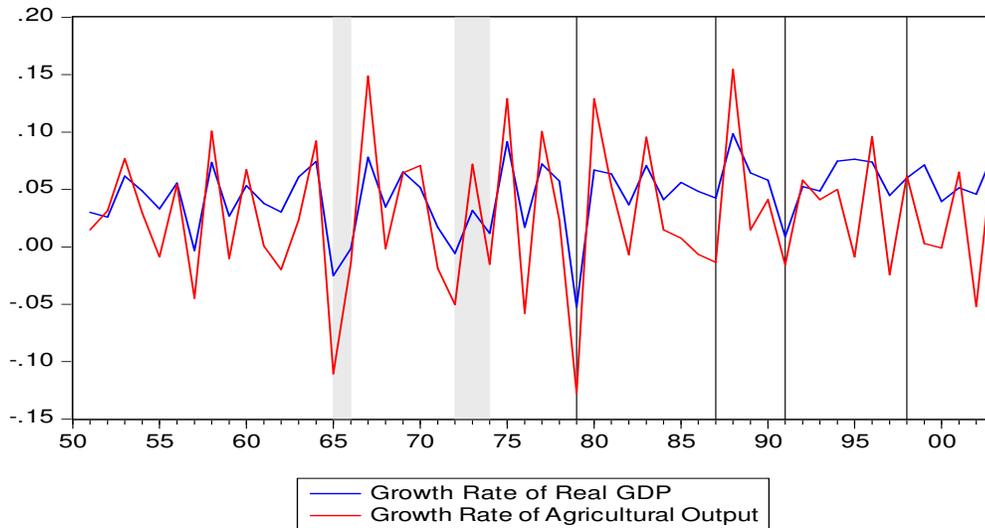


Figure 3.9: Annual Growth Rate of Real GDP and Growth Rate of Agricultural Output

Note: Shaded areas represent downturns in growth rates of agricultural output at 1993-94 prices

Source: Table 3.1; CSO, *National Accounts Statistics*, EPWRF [2004]

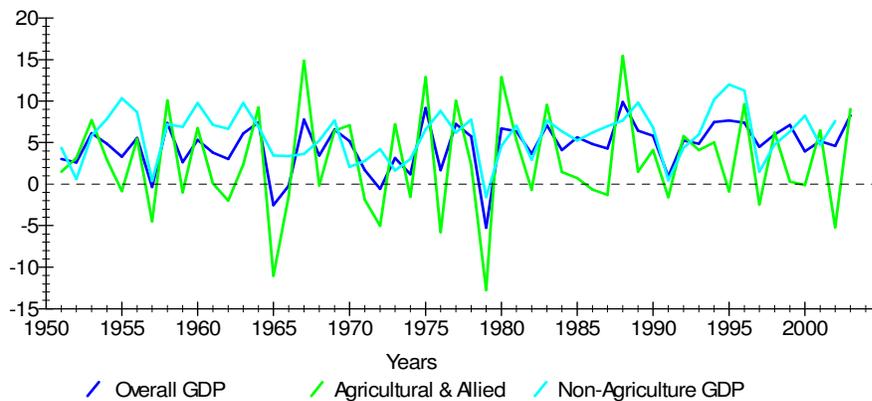


Figure 3.10: Growth Rates of Sectoral GDP at 1993-94 prices

Source: Compiled from Tables 1.1 & 1.3; CSO, *National Accounts Statistics*, EPWRF [2004]

The agriculture and allied sector contributes almost 20 per cent to the total GDP in the Indian economy. The above figure represents the annual growth rate of overall GDP, along with two sectors, agricultural GDP and non-agricultural GDP. It is observed that the growth rate of the non-agricultural GDP remains stable during the studied sample period. On the other hand, presence of volatility can easily be seen in the agriculture sector growth rates. It is because agriculture sector depends predominantly on the rainfall. The agricultural output declined significantly during the crises years with poor rainfall, causing a fall in the overall GDP also. Over the studied entire sample period, the coefficient variation of the agriculture sector is found

to be 2.26, which is significantly higher than 0.50 in the non-agriculture sector. The coefficient of variation in the overall GDP is found to be at .64. There are also implications for changes in relative prices of different rates of growth of agriculture and industry. Thus the inflationary potential of unbalanced growth of agriculture and industry is one of the sources of economic instability.

In such a context, the unusual configurations of many relevant candidate macroeconomic indicators for the Indian economy have given rise to a series of questions regarding the possibility of instability fundamentals of macroeconomic crises in the 1960s and 1990s. In other words, to what extent, stagnation has become more pronounced during these sub-periods. To what extent, do market mechanisms including exchange rate movements help in stabilizing the macroeconomic instability episodes and developments in policy innovations render the macroeconomic crisis obsolete? Perceiving answers to these questions requires an understanding of macroeconomic instability fundamentals, usually a combination of shocks and propagation mechanisms, which cause output to fluctuate around its long-term trends. This is probably the one plausible way to obtain preliminary guideposts for the formulation of instability issues to design instability linkages in the context of stabilisation and growth-oriented adjustment programmes, particularly to present a comparative macroeconomic instability analysis in the 1960s and the 1990s.

Evolution of Indian Development Planning: A Synoptic Review

To appreciate the role of development planning in stimulating growth, it is useful to begin with a brief historical background. It includes a sketch of pre-independence India's economic history before unfolding the period of the present study's main inquiry that begins in 1950-51 and ends in 2002-03. It has made an effort to limit its content to certain macroeconomic events and instability themes, particularly to facilitate to understand subsequent analysis. By and large, this analysis is based on annual observation on the 1950-2004 period or appropriate sub-periods. However, some bits and pieces are also related to the earlier years.

In the pre-independence-era, India could not instrument any economic planning as was under the British Colonial Rule. Pre-independence Indian macroeconomic crises can be seen to lie in the fact of enormous drainage of resources from her to Great Britain which put the Indian economy under severe strain [Naoroji, 1906; Dutt, 1906]; shortages and inflation of the 1940s

that were partly due to outbreak of the Second World War in 1938/39, the Bengal famine of 1943, the mass riots of 1947 and 1948, made lack of transport as most of the shipping and trains requisitioned for military transport; but above all due to purchasing power that remained far in excess of the goods available; few industrial goods produced in the country at that time, and imports were highly restricted; and in its policy response, rationing of food-grains was introduced in 1939[Desai, 2003]. In the course of the freedom struggle, a nationalist economic platform had quintessentially emerged in India. The nationalist leadership was intensely aware of the need for industrialisation to modernise the economy and was convinced that government support and involvement were essential for the task. The revival of the Indian economy became a prominent aim of the freedom struggle with planning as the effective way of achieving it. Against that backdrop, pre-independence planning ideas for development were seen to have thought at individuals or group of individual level. In this regard, it is worth to mention that the works of Planned Economy for India [Visveswaraya, 1934], Bombay Plan of industrialists [Thakurdas et al, 1944], People's Plan of the Indian Federation of Labour [Banerjee et al. 1944] and Nehruvian ideas (1946) were seen to come, in which their consensus emphasis was on industrialisation through import substitution and development of heavy industry, though they were given no official recognition, their tenet continued to dominate post-independence five-year plans at least until the mid-1960s. India by being independent on August 15, 1947, became Federal Republic and adopted Constitution on January 26, 1950, and the Planning commission was set up in March of the same year.

This subsection has been to glimpse the stylised facts of macroeconomic instability in the Indian development planning context, spanning more than five decades in a historically informed way. India has since 1951 formulated and implemented nine Five - Year and Annual Development Plans over the studied sample period. The Indian economy has changed over the years in terms of its varied dynamic process in socio-economic, demographic, political, and institutional context. The relative priorities on its overall or in parts components placed over the years in setting macroeconomic policies, programmes and development strategies, as are highlighted below.

1950-51 TO 1961-66

Over this time-period, the Indian first three consecutive five-year plans continued uninterruptedly. The first five-year plan (1951-56) was essentially being a period of preparation

[Dhar, 2003]. It was formulated based on simple variant of Harrod-Domar growth model, in which the underlying emphasis was on the role of domestic savings and the residuals left for foreign aid to accelerate the rate of growth of the economy as then-low Indian savings rate was the chief barrier [Byres, 1999; Krueger, 2006]. This plan paid relatively more priority to agricultural sector compared to other subsequent plans as allocated a third of total outlays to agriculture unlike other plans [ibid, pp. 130-31]. However, this plan did little more than a projection of public expenditure mainly to subscribe major and medium irrigational investment projects that were already underway [Little and Joshi, 1998].

Though Indian planning commenced since 1951, the foundation of development strategy was first pronounced during the Second Five-Year Plan, in which the intellectual basis embarked on the famous Mahalanobis two-sector model, emphasised state-led, capital intensive rapid heavy industrialisation especially for production of capital goods like steel, other metals and heavy machineries, and import-substituting growth strategy. And as its subsidiary, the increasing importance role assigned to the public sector was first articulated in the Industrial Policy Resolution of 1956 in conjunction with the legal provisions of regulatory framework for industries provided in the Industries (Development and Regulation) Act of 1951, which was subsequently incorporated in the Second Five Year Plan (1956-61). Moreover, in support of strengthening the inner policy-frame of this approach, an industrial classification was made to demarcate economic activity spearheaded by public and private capital, and the policy towards foreign direct investment [FDI] was also defined. It is important to note that though the first five-year plan set the overall interventionist framework of policies, the second five-year plan articulated the analytical foundation for the development strategy that outlasted for subsequent years. This was no doubt partly true that the Second Five-year Plan was essentially central planning in nature.

And the third plan (1961-66) essentially continued the investment patterns of the second plan to give a shape to the latter's goal. In the third plan, like second plan, there was implicit neglect of agriculture and export opportunities. This plan emphasised on to controls by regulating exports and imports, and in the case of selected commodities, state trading particularly considering the limited foreign exchange resources available [Planning Commission, 1951]. Besides restrictive fiscal, monetary and commercial policies, the controls

were largely in the form of various quantitative restrictions (QRs) and prohibitions, rather than in the form of taxes and subsidies [Srinivasan, 2005].

The economic ideas in professional thinking during these three plans were guided by: a) underdevelopment due to deficiency of capital as low per capita income acted as a constraint to growth and there felt for government to promote capital formation mobilising domestic savings supplementing foreign aid to fill the savings gap (residual) in order to generate desired high growth rate, self reliance, full employment and reduction of income inequalities as were the major objectives; (b) the idea of 'export pessimism' owing to the Indian exportables with inelastic demand. That endorsed India to follow the theoretical idea of 'big push' and 'balanced growth'.

However, the optimism generated by the Second Plan was dimmed as there took place unforeseen events imposed burden on the economy while the Third Five-Year Plan was in progress as the Indian economy had to suffer from the economic shocks of two severe droughts in a row in the mid-1960s, which triggered it badly as had to be dependent on American food aid. The sharp decline in agricultural output had to be borne out by a distressed economy which had already been ridden by two armed conflicts – with China in 1962 and with Pakistan in 1965. The emerged security concerns necessitated sizeable sharp increase in the defence expenditure in the budgets. Matters got made worse by the stoppage of US aid and the levelling off of foreign aid; put the economy under severe strain. These strains reached crises proportions when two droughts in quick successions hit the economy in 1966 and 1967. The gdp in absolute values fell in these two years. The sharp worsening in economic circumstances and the security environment demanded adjustments in policy and ramifications on the direction of changes needed in the structure of the economy. The multifaceted crises facing India in the mid-1960s demanded a politically stable leadership. Moreover, at that difficult time, India's losing of two prime ministers in quick succession led to loosening of the political structure, especially the governmental decision making process. In short, the mid-1960s faced with a multidimensional crisis.

1965-66 TO 1979-80

The principal development strategies impacted the Indian economy adversely are: inter-sectoral imbalances between agriculture and industry, and the underestimation of foreign aid

requirements. There felt policy changes required to make the plans more viable in the wake of U.S.'s delay in exports of food to India under PL (Public Law) 480 as India's opposition the Vietnam War. Thus, there was a major shift of policy with the adoption of high yielding varieties seed-cum-fertiliser package and Green Revolution accompanied with increased investment in irrigation and incentive farm practices. This appeared to be the doctrine of growth with stability as the longer-term planning exercise had to be suspended against three Annual Plans to be executed with a view to consolidate the short-run gains prior the next phase of growth could be initiated. The decision to devalue the rupee in 1966 seemed to have been the doorstep to strengthen the process of liberalisation, enabling the economy to dismantle the regulatory system, especially in the area of trade and industry policies. The decision to accept the devaluation cum aid package was quintessential compulsion as further external credit negotiations hinged on it [Sundaram, 1972]. The anticlimax to the high expectation of aid reached in 1972-73 as there was an outflow of foreign aid as a result of the famous 'Nixon tilt'. The formulation of the Fourth Five-Year Plan, which should have initiated three years earlier, had to be halted till 1969. This interval, as was popularly described as the 'plan holiday', covered three annual plans.

The Nehruvian consensus on the management of the long-run course of the economy broke down in the face of the political split after the general election of 1967 and more especially in 1969 in which economic policies became a major arena to play a role focusing poverty alleviation with the general disappointment of 'trickle-down theory' adopting a more stringent licensing policy in the 1970s with a view to reversal of the earlier liberal trends particularly to solve chronic resource problems accompanying MRTP and FERA to undertake the Fourth Five-Year Plan in 1969, despite went through in several versions but in its basic approach was not much different from its predecessors.

Before the Fourth Plan ended, India had to face the Bangladesh Crisis of 1971. This was followed by the poor harvesting due to drought in 1972 and the oil price shock in 1973. The sharp rise in inflation and the consequent political turmoil triggered the country's formidable development problems and complicated the preparation of the Fifth Five-Year Plan (1975-80). Overshadowed by the compelling necessities of short-term adjustments even prior to its commencement in order to keeping manageable the balance of payments, curbing inflation, and preventing drastic cuts in the investment programmes as were felt the dominant concerns of

macroeconomic policies, the sudden deterioration in the balance of payments was managed with the help of large drawings on the International Monetary Fund (IMF), including the Fund's Oil Facility, and larger aid from the India Consortium and the World Bank supplemented by oil purchases on deferred payment, a million tons wheat loans from the Soviet Union and an export promotion drive. Government initiated measures to liberalize imports and reduce controls in the late 1970s and there was again the adverse impact of second oil price shock in 1979 compounded by a severe drought.

1980-81 TO 2003-04

The Sixth Plan (1980-85) was by and large successful as to have marked a transition to a slightly higher growth path and turned out to pursue the policy changes. To meet the growing internal challenges and to absorb external shocks in the face of first oil shock in 1973 and second one in 1979, small beginnings in policy changes to experiment with selective deregulation of industrial and import licensing started since the early 1980s, and the process of economic reforms continued though at a slow and halting pace. The government appointed several committees to examine its fiscal, monetary, industrial and trade policies during this period¹. By the mid-80s, the reform movement gained further momentum. Fiscal indiscipline increased in the Seventh Plan (1985-90) as this plan was financed by domestic borrowing and deficit budgeting to a much greater extent than was targeted and a much similar pattern followed in the financing of the current account deficit. A strong and resilient financial system came to be regarded as a critical concomitant of the new impulses for growth impetus and the philosophy underlying the hiatus for structural change was set out in the Eighth Five-Year Plan (1992-97) and the financial sector reforms dominated the agenda of structural reforms initiated in 1991. The Ninth Plan (1997-2002) proposes to raise foreign investment threshold in a radical departure from the past [Planning Commission, 1999].

In this way, the following stylized facts are implicit in instability argument in the development planning of India catering around the constraints such as the inter-sectoral imbalances, shortage of availability of foreign exchange, problem of gross domestic savings,

¹ *Report of the Committee to Examine Principles of a Possible Shift from Physical to Financial Controls*, Narasimhan, Charman, Government of India, New Delhi, 1985; *Report of the Committee on Trade Policies*, Hussain, Chairman, Ministry of Commerce, Government of India, New Delhi, 1984; *Report of the Committee to Review the Working of the Monetary System*, Chakravarty, Chairman, Reserve Bank of India, New Delhi, 1985; and *Long Term Fiscal Policy*, Ministry of Finance, Government of India, New Delhi, 1985

excess reliance on foreign aid, the problem of transformation of domestic savings into foreign exchange under a trade constraint, export pessimism and over-emphasis on import substitution, highly interventionist macroeconomic management and several controls – import controls, capital movements control, price controls prevailed till 70s caused the inefficiency of use and the maldistribution of resources, trade controls, failure of expansionary fiscal and monetary policy to counter any excess or deficiency of demand, failure of trade policy to be an effective instrument to maintain viable balance of payments on current account to be sufficiently responsive to variations in the exchange rate to maintain adequate reserves and borrowing capacity to maintain an overall balance of supply and demand, fiscal constraint on growth and output i.e., public investment limits to infrastructure limited by public savings, supply side food shocks, supply failure – caused by droughts, wars, political instability, ban of economic sanctions, etc.. In sum up, In India, economic reforms come in waves. The first wave of reforms started with the launching of planning with an emphasis on state led industrialization more particularly of heavy industries. The second wave, though the precise dating of which may be difficult, began when it was found that the growth rate was weak and the trickledown effect was not reasonably adequate and when the need to focus directly on poverty alleviation became evident. The third wave that began in late 80s gathered momentum after 1991. The period since 1991-92 has seen some important changes in the approach to and content of macroeconomic policies. Thus, the intellectual climate relating to development strategy in India has undergone significant changes from import-substitution cum protection of infant-industry argument following financial repression (controlled interest rate structure along with development of domestic financial market) approach of late 1970s or early 1980s to financial liberalisation format [Ahluwalia, 1999; Mckinnon, 1973; and Shaw, 1973]. And following that, export-led outward-oriented growth policy became the moot point, supplanting inward-oriented import-substitution stringency in development thinking. However, India's macroeconomic policies basic development strategy remained essentially unchanged until the mid-80s except the relative emphasis on the different sectors of the economy such as agriculture, industry, foreign trade and finance was modified periodically in the face of various economic and political shocks. In the mid 1980s, a series of hesitant reforms mostly in the form of changes in the policy instruments used in implementing the Five-Year Plans were introduced. However, a full-blown systematic macroeconomic policy reforms covering interrelated sectors was initiated

in 1991, but the implementation remains incomplete as of now. In the 1950s and 1960s, the dominant view in development economics literature was that government must play a role in correcting ‘market failure’, which was seen primarily in the area of allocation of resources over time, i.e., for investment because of myopic nature of market participants, and capital accumulation (capital fundamentalism) was considered the prime mover of economic growth. The development experiences world over since then have also seen that there could be ‘government failure’ as well when regulatory States formulating economy wide plans and faulty macro-management policies.

3.2 Some Stylized Facts or Themes in Indian Macroeconomics: A Chronology of Some Major Economic, Political And Other events

This section is slated to account a systematic comprehensive chronology of macroeconomic themes in the light of development planning dynamism to understand India’s macroeconomic experiences. It would sketch India’s macroeconomic history over the entire period that begins in 1950-51 and ends in 2003-04. In this, it would limit its contents to India’s changing policy context and to certain exogenous events, a knowledge of which would help to understand economic consequences of instability linkages. It is designed to understand the context of economic policies and events.

TABLE 3.3: A CHRONOLOGY OF SOME MAJOR ECONOMIC, POLITICAL AND OTHER EVENTS

Year	Description
1947	India became independent and Jawaharlal Nehru was chosen prime minister.
1948	Mahatma Gandhi was assassinated. The government of India issued the First Industrial Policy Resolution, reserving certain industries for the public sector.
1950	The Republic of India was declared with the promulgation of the Constitution with Dr. Rajendra Prasad was elected as the first president.
1951	A draft of the First Five-Year Plan was published, which was essentially a public expenditure plan.
1956	The Second Five-Year Plan was presented to parliament and approved, which shifted emphasis to government-led industrialization.
1957	Stringent imports and foreign exchange controls were imposed in response to the growing fiscal and balance of payments deficits arose from the implementation of the Second Five-Year Plan. The Congress party retained power in the second general election.
1961	The Third Five-Year Plan continued the investment patterns of the second plan, emphasizing on government-led industrialization.
1962	The Congress party retained power in the third general election. A month long Indo-China border war took place.
1964	Prime Minister Jawaharlal Nehru passed away and Lal Bahadur Shastri was chosen as the successive prime minister.
1965	India and Pakistan went to a war. A cease-fire was declared in the same year.
1966	Lal Bahadur Shastri died. Indira Gandhi became prime minister. Poor harvests triggered a food-shortage and a balance of payments crisis. India devalued its rupee by 36 per cent and received food and monetary aid under an IMF-World Bank programme.

Year	Description
1967	Indira Gandhi remained prime minister after the Congress party retained power in the fourth general election. Again harvesting failure due to severe drought
1969	All domestically owned commercial banks were nationalized. The Fourth Five-Year Plan placing greater priority on the agricultural sector than earlier plans was adopted.
1970	The Monopoly and Restrictive Trade Practices (MRTP) Act to regulate the activities of business houses came into effect.
1971	Indira Gandhi continued as prime minister with the Congress party won the fifth general election. Pakistan and India fought a war and the state of Bangladesh was formally recognized.
1972	The government nationalized all insurance companies
1973	The Foreign Exchange Regulation Act to control foreign investment in India came into effect.
1975	Indira Gandhi declared a state of emergency.
1977	The state of emergency was lifted, and parliament was dissolved. The Janata Party coalition won the sixth general election, and Morarji Desai was appointed prime minister. The targets laid out in the Fifth Five-Year Plan were abrogated by the new government, which resorted to an annual planning mechanism.
1979	Morarji Desai resigned. Charan Singh led a new coalition as prime minister but soon lost support, and parliament was dissolved. India suffered from a severe drought.
1980	The Congress party returned to power in the seventh general election, and Indira Gandhi was appointed as prime minister. To face a significant balance-of-payments problem, India negotiated a loan from the IMF under its Extended Fund Facility. The Sixth Five-Year Plan was launched.
1984	Indira Gandhi was assassinated, and Rajiv Gandhi was chosen prime minister after the Congress party won the ensuing election.
1985	The Rajiv Gandhi government initiated modest liberalization measures with regard to industrial licensing, and imports and exports regulation. The Seventh Five-Year plan was set out and ended with growing fiscal imbalances.
1989	A coalition of non-Congress parties came to power after winning the ninth general election and V.P. Singh was appointed as prime minister.
1990	V.P. Singh resigned from prime ministry after the Bharatiya Janata Party (BJP) withdrew support. Chandra Sekhar led a minority government supported from the outside by the Congress party.
1991	The minority government lost support, and new elections were ordered. Rajiv Gandhi was assassinated during the election campaign. The Congress party won the tenth general election. The new prime minister, P.V. Narasimha Rao appointed Manmohan Singh as finance minister. India faced a severe macroeconomic and balance of payments crisis. To contain the crisis and restore economic health, the then new Congress government initiated a wide ranging programme of stabilization and structural reforms. The exchange rate was devalued and the transition from the prevailing discretionary basket pegged regime to a unified market-determined exchange rate system was accomplished in a phased manner.
1992	The Eighth Five-Year Plan to have placed greater emphasis on private initiative in industrial development than any earlier plans was adopted.
1993	Based on the recommendations of the Narasimham Committee, financial sector reforms were initiated. The unification of exchange rate accomplished.
1994	India had committed to current account convertibility under Article VIII of the IMF.
1996	Following the eleventh general election, the National Front coalition formed the government supported by the Congress party and H.D. Deve Gowda was chosen as prime minister.
1997	H.D. Deve Gowda resigned from prime ministry and was replaced by I.K. Gujral. I.K. Gujral resigned, and fresh elections were ordered followed by government falls. The Ninth Five-Year Plan, placing priority on agricultural and rural development was adopted.
1998	The BJP secured a plurality in the twelfth general election and headed a coalition government with A.B. Vajpayee as prime minister.
1999	The BJP-led coalition government fallen, the National Democratic Alliance- headed by the BJP won a majority in parliament with A.B. Vajpayee was chosen as prime minister in the ensuing election.
2000	Liberalisation measures initiated in the areas of insurance and consumer good imports

3.3. POLITICAL BUSINESS CYCLE (PBC) APPROACH FOR STUDYING DYNAMIC DISEQUILIBRIUM PROBLEM IN INDIAN MACROECONOMIC MANAGEMENT

This research though has not intended to consider whether political business cycles exist in the Indian economy, this sub-section presents a short sketch of political and macroeconomic developments from 1950-51 to 2003-04. This section of this chapter has drawn attention to overall trends in political economy over the entire studied period. Combining the following Table 3.4 & Table 3.5 this sub-section has attempted to trace the Indian political economy of development and the problem of fiscal discipline.

TABLE 3.4: *Election Year & Financial Year*

Dates for Lok Sabha Elections	Financial Year Recorded as Election Year
October 25, 1951 – February 21, 1952	1951-52
February 24 – June 09, 1957	1956-57
February 16 – June 06, 1962	1961-62
February 15 – February 28, 1967	1966-67
March 1 – March 13, 1971	1970-71
March 16 – March 20, 1977	1976-77
June 3 – June 6, 1980	1979-80
December 24 – December 28, 1984	1984-85
November 22 – November 26, 1989	1989-90
June 12 – June 15, 1991	1991-92
April 27 – May 30, 1996	1996-97
February 16 – April 26, 1998	1997-98
September 5 – October 3, 1999	1999-2000
April 20 – May 10, 2004	2004-05

Source: Political Budget Cycle, Mala Lalvani & wikipedia.org

TABLE 3.5: INDIAN SOME FISCAL STATISTICS AT CURRENT PRICES

Year	ITZ	SUBZ	CTZ	DTHZ	RITZ	RSUBZ	RCTZ	RDTHZ	SITZ	SSUBZ	SCTZ	SDTHZ
1950	428	41	39	192	NA	NA	NA	NA	4.3	0.41	0.39	1.93
1951	531	45	41	202	24.06	9.7	5.12	5.2	5.02	0.42	0.38	1.91
1952	461	36	44	204	-13.18	-20	7.31	0.99	4.44	0.34	0.42	1.96
1953	473	15	41	199	2.6	-58.3	-6.81	-2.45	4.19	0.13	0.36	1.76
1954	523	13	37	200	10.57	-13.3	-9.75	0.5	4.89	0.12	0.34	1.87
1955	558	17	37	218	6.69	30.7	0	9	5.13	0.15	0.34	2
1956	646	29	51	242	15.7	70.5	37.83	11	4.98	0.22	0.39	1.86
1957	789	50	56	267	22.1	72.4	9.8	10.33	5.91	0.37	0.41	2
1958	817	49	54	282	3.54	-2	-3.57	5.61	5.49	0.32	0.36	1.89
1959	914	55	107	264	11.8	12.2	98.14	-6.38	5.83	0.35	0.68	1.68
1960	1040	93	111	309	13.7	69	3.73	17.04	6.05	0.54	0.64	1.79
1961	1190	110	157	310	14.4	18.2	41.44	0.32	6.53	0.6	0.86	1.7
1962	1408	144	221	353	18.3	30	40.76	13.87	7.19	0.73	1.12	1.8
1963	1714	148	274	433	21.7	2.7	23.98	22.66	7.62	0.65	1.21	1.92
1964	1931	147	313	450	12.6	-0.6	14.23	3.92	7.36	0.56	1.19	1.71
1965	2273	191	305	470	17.7	29.9	-2.55	4.4	8.21	0.69	1.1	1.69
1966	2594	412	331	501	14.1	115	8.52	6.59	8.28	1.31	1.05	1.6
1967	2778	355	311	548	7	-13.8	-6.04	9.38	7.58	0.96	0.84	1.49
1968	3013	282	300	610	8.4	-20	-3.53	11.31	7.76	0.72	0.77	1.57
1969	3353	294	353	690	11.2	4.25	17.66	13.11	7.84	0.68	0.82	1.61
1970	3864	409	370	721	15.2	39.1	4.81	4.49	8.45	0.89	0.81	1.57
1971	4515	506	472	803	16.8	23.7	27.56	11.37	9.33	1.04	0.97	1.65
1972	5175	643	556	912	14.6	27	17.79	13.57	9.59	1.19	1.03	1.69
1973	5876	823	583	1070	13.5	27.9	4.85	17.32	8.95	1.25	0.88	1.63
1974	7515	1319	709	1259	27.8	60.2	21.61	17.66	9.69	1.7	0.91	1.62
1975	8834	1274	862	1781	17.5	-3.4	21.57	41.46	10.68	1.52	1.03	2.13
1976	9926	1568	984	1792	12.3	23	14.15	0.61	11.06	1.74	1.09	1.99
1977	10689	1973	1221	1657	7.6	25	24.08	-7.5	10.52	1.94	1.2	1.63
1978	12735	2425	1251	1806	19.1	22.9	2.45	8.99	11.56	2.2	1.13	1.63
1979	14709	2795	1392	1995	15.5	15.2	11.27	10.46	12.17	2.31	1.15	1.65
1980	16746	3160	1378	2197	13.8	13	-1	10.12	11.64	2.19	0.95	1.52
1981	20089	3545	1970	2491	19.9	12.18	42.96	13.38	11.91	2.1	1.16	1.47
1982	22985	4248	2185	2650	14.4	19.8	10.91	6.38	12.2	2.25	1.16	1.4
1983	26471	5605	2493	2862	15.1	31.9	14.09	8	12.05	2.55	1.13	1.3
1984	30640	7830	2556	3250	15.7	39.6	2.52	13.55	12.47	3.18	1.04	1.32
1985	36987	8543	2865	3709	20.7	9.1	12.08	14.12	13.3	3.07	1.03	1.33
1986	42714	9795	3160	4168	15.4	14.6	10.29	12.37	13.72	3.14	1.01	1.33
1987	49847	11497	3433	4568	16.6	17.3	8.63	9.59	14.06	3.24	0.96	1.28
1988	57430	14354	4407	5989	15.2	24.8	28.37	31.1	13.62	3.4	1.04	1.42
1989	66749	18590	4729	7159	16.2	29.5	7.3	19.53	13.72	3.82	0.97	1.47
1990	76329	18609	5335	7593	14.3	0.1	12.81	6.06	13.42	3.27	0.93	1.33
1991	86661	22630	7853	9618	13.5	21.6	47.19	26.66	13.26	3.46	1.2	1.47
1992	95596	20450	8898	11717	10.3	-9.6	13.3	21.82	12.77	2.73	1.18	1.56
1993	101126	23251	10060	12925	5.7	13.6	13.05	10.3	11.76	2.7	1.17	1.5
1994	121067	25355	13822	16384	19.7	9.04	37.39	26.76	11.95	2.5	1.36	1.61
1995	142400	27659	16487	20907	17.6	9	19.28	27.6	11.98	2.32	1.38	1.75
1996	162622	37960	18567	24344	14.2	37.2	12.61	16.43	11.88	2.77	1.35	1.77
1997	171141	38742	20016	37193	5.2	2	7.8	52.78	11.24	2.54	1.31	2.44
1998	185125	42267	24529	28317	8.1	9	22.54	-23.86	10.63	2.42	1.4	1.62
1999	221578	46585	30692	32273	19.6	10.2	25.12	13.97	11.44	2.4	1.58	1.66
2000	240851	54350	29587	45213	8.6	16.6	-3.6	40.09	11.52	2.6	1.41	2.16
2001	253612	62426	36091	40773	5.2	14.8	21.98	-9.82	11.11	2.73	1.58	1.78
2002	291789	71718	43514	50599	15	14.8	20.56	24.09	11.81	2.9	1.76	2.04
2003												

Source: CSO, *National Accounts Statistics*, EPWRF [2004]

Note: For indirect taxes and subsidies for the period 1950-51 to 1992-93 not estimated at 1993-94 prices as NAS has not provided.

Notations:

ITZ	Indirect taxes at current prices
SUBZ	Subsidies at current prices
CTZ	Corporation tax at current prices
DTHZ	Direct taxes paid by households at current prices
RITZ	Annual growth rate of indirect taxes at current prices
RSUBZ	Annual growth rate of subsidies at current prices
RCTZ	Annual growth rate of corporation tax at current prices
RDTHZ	Annual growth rate of direct taxes paid by households at current prices
SITZ	Indirect taxes as percentage of GDP at current prices
SSUBZ	Subsidies as percentage of GDP at current prices
SCTZ	Corporation tax as percentage of GDP at current prices
SDTHZ	Direct taxes paid by households as percentage of GDP at current prices

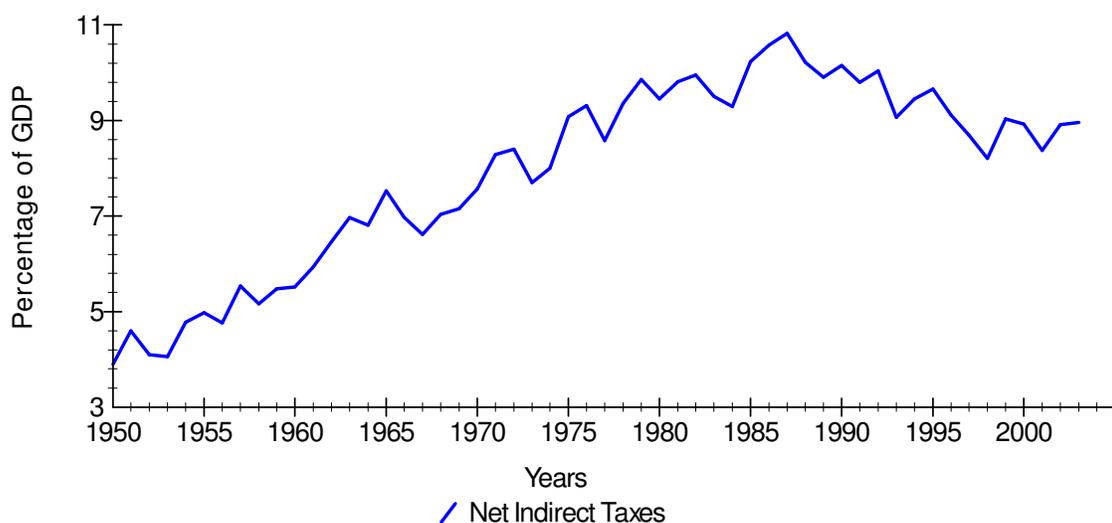


Figure 3.11: Behaviour of Net – Indirect Taxes as percentage of GDP at current prices
 Source: CSO, National Accounts Statistics, Economic Survey, various issues

Until the early 1970s, Indian political system may have had one-party democracy which helped to keep maintaining the ideology of development emphasized on state ownership and controls. However, since mid-70s, the nature of the political system with increasingly becoming weakened for its coalition in nature in most of the cases that motivates the government to manipulate macroeconomic behavior by incurring larger subsidies making public expenditure larger and budget deficits widen to satisfy different pressure groups in election years or immediate before election years than in non-election years only to win election. In the case of inflation formation and inflationary finance, government's attitude also varies with election motive. The above table shows unusual behavior of almost all fiscal statistics including subsidies and taxes both (indirect and direct – corporation tax and direct taxes paid by households) due to myopic behavior of the governments in election years than in non-election years to retain incumbency, leading erosion or dilution of fiscal conservatism or deterioration of fiscal statistics made fiscal laxity or indiscipline. These growing subsidies were influenced by the various pressure groups like big landlords in the late 1960s; big industrialists for getting licenses and loans in the 1970s and 1980s, organized workers in public sector in 1990s caused Pay Commission to revise wages and salaries.

It is important to note that the share of direct taxes had declined steadily from mid-70s till 1990 onwards, increased substantially thereafter, reflecting the sustained attempts to increase the tax base, improve tax compliance, and strengthen the tax collection mechanism. The share of net indirect taxes in GDP, which had increased continuously from 1950-51 onwards, declined since 1991-92 consequent to measures to rationalize the tariff and excise / import duty structure and dismantle protective barrier (see, Figure 3.11). There has been an erosion of fiscal conservatism and liberalization of controls taking place.

This sub-section must not claim that it has tested empirically whether there have been political business cycles during the studied sample period in India. The PBC literatures based on sound empirical basis apart from fiscal statistics consider also the role of exchange rate, capital mobility, fiscal policy, monetary policy and central bank independence in encouraging political business cycles.

3.4. SOME INSTABILITY FUNDAMENTALS IN INDIA: TRENDS & PATTERNS

Combining information from the following economic time-series contained in Table 3.6 plotted in scattered diagrams of Figures from 3.12 to 3.18, this sub-section collectively provides valuable insight about the trends and patterns of macroeconomic growth process of the Indian economy as first approximation.

TABLE 3.6: KEY MACROECONOMIC AGGREGATES AT NATURAL LOGARITHM

Years	LOG(Y)	LOG(YZ)	LOG(IGZ)	LOG(IPZ)	LOG(GDIAZ)	LOG(GDSZ)	LOG(MZ)	LOG(XZ)
1950	11.90836	9.2037185	5.6204009	6.6437897	6.7638849	6.787845	6.565265	6.6012301
1951	11.938056	9.2653966	5.7714411	6.7153834	7.0630482	6.8926416	6.9440872	6.7393366
1952	11.963746	9.2462865	5.6131281	6.4661447	6.7178047	6.7580945	6.5539334	6.570883
1953	12.023501	9.3309638	5.7397929	6.2576676	6.7742239	6.7889717	6.4800446	6.4661447
1954	12.071083	9.2759408	6.1675165	6.3733198	6.9285378	6.9127428	6.618739	6.5567784
1955	12.103652	9.2940379	6.2576676	6.7322107	7.2506355	7.222566	6.7322107	6.6293633
1956	12.157817	9.4689283	6.5381398	7.0817086	7.572503	7.3677086	7.068172	6.6424868
1957	12.154569	9.4991968	6.7557689	7.0030655	7.5267176	7.2327331	7.1731917	6.6833609
1958	12.225669	9.60737	6.7381525	6.7979404	7.4860526	7.2492151	7.0066952	6.5792512
1959	12.25204	9.6598224	6.8373328	7.0656134	7.5903469	7.4662276	6.9177056	6.658011
1960	12.303925	9.7507442	7.0715734	7.1989312	7.8119734	7.5953873	7.1196356	6.664409
1961	12.341132	9.8089571	7.0791844	7.3369369	7.8127828	7.6624678	7.0030655	6.6871086
1962	12.370883	9.8815486	7.3065314	7.3607399	7.9789964	7.8156105	7.0975489	6.7274317
1963	12.430048	10.02047	7.4576093	7.4639366	8.0718431	7.9240723	7.2174434	6.8926416
1964	12.501801	10.174278	7.6043963	7.6338536	8.2238954	8.0484687	7.3304052	6.9226439
1965	12.47621	10.228032	7.7328075	7.7119965	8.4049199	8.2610098	7.2889277	6.8373328
1966	12.474518	10.351533	7.7002952	8.00102	8.5750847	8.3836618	7.6568101	7.1891677
1967	12.54956	10.509141	7.7894546	8.0599083	8.5548743	8.3790799	7.6966671	7.3185395
1968	12.583683	10.566768	7.7226775	8.1086233	8.5442245	8.4597759	7.548029	7.3758821
1969	12.647056	10.663124	7.7668405	8.341887	8.7554224	8.7166996	7.4656553	7.3932631
1970	12.697486	10.72935	7.9789964	8.368229	8.8597895	8.8022217	7.5043916	7.4792996
1971	12.714443	10.78709	8.1359328	8.4904385	8.9676317	8.9047658	7.6847839	7.4871737
1972	12.708646	10.895757	8.2623009	8.4859089	9.0081018	8.9710674	7.6251071	7.7075122

Years	LOG(Y)	LOG(YZ)	LOG(IGZ)	LOG(IPZ)	LOG (GDIAZ)	LOG(GDSZ)	LOG(MZ)	LOG(XZ)
1973	12.739784	11.091529	8.4978065	8.7035068	9.3405788	9.3055596	8.0633778	7.948032
1974	12.751592	11.257762	8.6574767	9.0406191	9.4752399	9.4238375	8.4719866	8.2519247
1975	12.839287	11.329832	8.9626479	8.9864465	9.5630374	9.5712264	8.6418856	8.4788681
1976	12.856216	11.404661	9.0850039	9.0266579	9.6865124	9.7646851	8.6330188	8.7224171
1977	12.926039	11.528769	8.9997428	9.2944977	9.8350481	9.9105625	8.7821694	8.8008672
1978	12.981806	11.609444	9.2267057	9.4450172	10.077609	10.072217	8.9123386	8.8699605
1979	12.92796	11.702231	9.4040139	9.5242018	10.122382	10.098808	9.2196965	9.0288185
1980	12.992712	11.875928	9.4013739	9.5998793	10.282951	10.208617	9.5175309	9.1081969
1981	13.054382	12.035284	9.7401448	9.942564	10.433115	10.353129	9.6029904	9.2356182
1982	13.090288	12.14559	9.9104135	9.9353253	10.516888	10.444881	9.6637064	9.3555656
1983	13.158678	12.299089	9.9648178	9.9956564	10.623861	10.560671	9.7799065	9.4833402
1984	13.199091	12.411113	10.150348	10.219247	10.806794	10.737765	9.8773489	9.6706724
1985	13.25386	12.535344	10.308619	10.486066	11.008761	10.899827	9.9875529	9.6125335
1986	13.301095	12.648117	10.456568	10.530255	11.086839	10.984462	10.014984	9.7137183
1987	13.342897	12.778021	10.426943	10.705489	11.286439	11.197776	10.136938	9.9174398
1988	13.436929	12.951734	10.600029	10.997757	11.515093	11.384103	10.373804	10.1625
1989	13.499363	13.094332	10.745162	11.136485	11.689044	11.580388	10.601921	10.451869
1990	13.555826	13.251063	10.879913	11.335651	11.915292	11.785545	10.793393	10.612385
1991	13.564853	13.389512	10.961851	11.357756	11.900125	11.876929	10.937544	10.937632
1992	13.616228	13.525649	11.066591	11.644147	12.082333	12.000929	11.198215	11.117094
1993	13.66378	13.66378	11.168094	11.624333	12.198101	12.173658	11.362091	11.36381
1994	13.735763	13.8282	11.38743	11.908865	12.481262	12.435051	11.55895	11.528868
1995	13.809438	13.987792	11.418362	12.320303	12.674597	12.607352	11.884165	11.780912
1996	13.880779	14.129012	11.474049	12.214413	12.721883	12.66748	11.989296	11.883482
1997	13.924587	14.235895	11.519434	12.401059	12.833294	12.771892	12.124499	12.01493
1998	13.982736	14.369962	11.648723	12.459412	12.881618	12.833772	12.322722	12.18219
1999	14.051597	14.476564	11.809201	12.687813	13.103525	13.057678	12.490131	12.335771
2000	14.09026	14.552435	11.7868	12.740233	13.139875	13.114303	12.631618	12.578274
2001	14.140496	14.640625	11.798127	12.837496	13.176694	13.190368	12.681682	12.636481
2002	14.185414	14.719552	11.852151	12.956143	13.262183	13.300839	12.861702	12.837007
2003	14.264928	14.83515	NA	NA	NA	NA	NA	NA

Source: CSO, *National Accounts Statistics*, EPWRF [2004]

Notations:

- Y annual real GDP at 1993-94 prices
- YZ annual GDP at current prices
- IGZ annual gross domestic capital formation of the government sector at current prices
- IPZ annual gross domestic capital formation of the private sector at current prices
- GDIAZ adjusted gross domestic capital formation at current prices
- GDSZ gross domestic savings at current prices
- MZ annual imports of goods and services at current prices
- XZ Annual exports of goods and services at current prices

INFLATION & GROWTH RATE TRADE-OFF

In the following Figure 3.12, it is observed that the dotted density is much higher on the negative side than on the positive side. Here also it can be observed that the correlation coefficient between inflation rate and real GDP growth rate is not significant in magnitude, but negative in value.

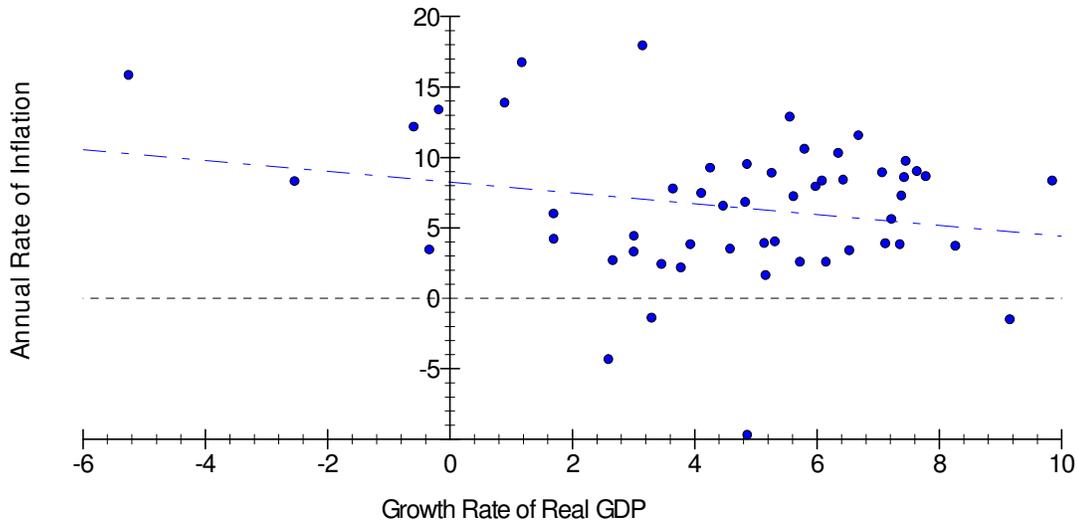


Figure 3.12: Scatter Plot of Annual Rate of Inflation on Growth Rate of Real GDP

Source: Table 3.1, CSO, *National Accounts Statistics, Economic Survey*, various issues

There is no strong evidence of positive correlation between inflation and growth. There is empirical evidence to support the hypothesis the correlation between inflation and growth, if any, is often negative. There is evidence of varied dispersal measures of inflation rates across sub-periods. The recurrent oil price shocks and harvesting failures have raised average inflation rates. But these exogenous shocks had only a temporary push effect on the inflation rates. There is no prima-facie evidence that the long-term trend of inflation rate in India is one of declining. At the same time, there is a barely evidence of a steady state growth rate of real GDP. However, the relationship between inflation rate and real GDP rate can in no way be formalized and cannot be understandable and thus the relevant domestic and external factors such as the role of macroeconomic policies how affecting the most efficient channel - overall savings and capital formation via real interest rate and exchange rate associated with to boost economic growth have to be considered to provide some useful information on the theme of instability. A high inflation rate as a measure of macroeconomic instability can have a deleterious effect on growth. One transmission mechanism by which it may occur is via the efficiency of investment as a high inflation rate is most often correlated with higher variance in relative prices. Thus, episodes of high inflation may lead to the misallocation of investment across different sectors in the economy, and as a result, impact negatively on the efficiency of investment.

SAVINGS, INVESTMENT AND GROWTH NEXUS

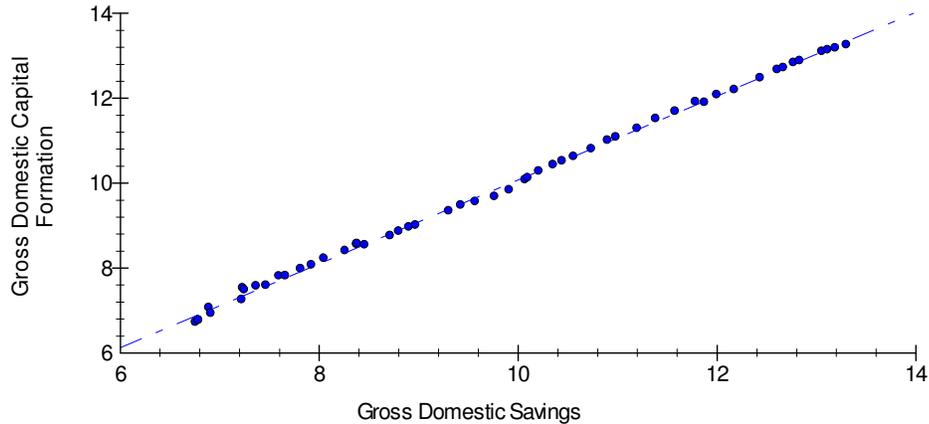


Figure 3.13: Scatter Plot of Gross Domestic Capital Formation on Gross Domestic Savings

Source: Table 3.2, CSO, *National Accounts Statistics, Economic Survey*, various issues EPWRF [2004]

Figure 3.13 plots the scatter diagram of the overall gross domestic capital formation and gross domestic savings. It is important to note that the latter is the close proximate of the size of gross investment though in adjusting minor discrepancies there is some point of departure on their estimation on methodological count [Rakshit, 1983]. How the expenditure components of GDP are disposed of between public investment and private investment, their scatter diagram are plotted below in figure 3.14.

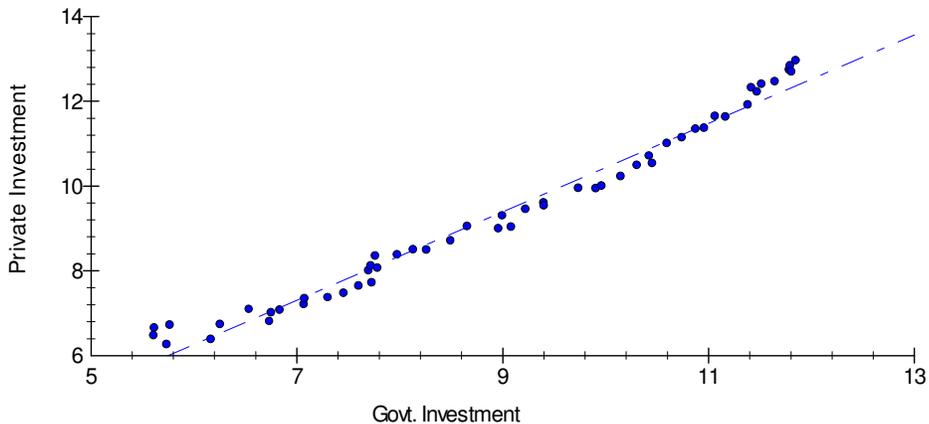


Figure 3.14: Scatter Plot of Private Investment on Government Investment

Source: Source: CSO, *National Accounts Statistics, Economic Survey*, various issues EPWRF [2004]

These figures have been quite interesting as showing how aggregate savings mirrors into gross domestic capital formation over the period which guides another way to look at how

any variations in public investment mirrored by variations in private investment whether competitive or complementary in nature implying instability episodes in the Indian economy. The dotted lines indicate that their mutual trend is positive. However, it is hard to find any clear evidence of the adverse impact of instability on savings and investment from this graphical section and thus it requires rigorous econometric investigation with causal analysis that is carried out in the later part to predict the aggregate and sectoral savings and investment behavior to link the zone of implied instability sub-periods.

However, on examining and comparing the historical movements in gross domestic savings and gross domestic capital formation (adjusted), it clearly shows that the latter has moved almost proportionately with the former as clearly discerned from scatter diagram a strong upward trend. The gap between the two series is ever widening and they seem to have crossed each other at the late 1970s and contained in early 2000s. These patterns may translate into non-linear relationships, or upward drifts in current account deficits, which can clearly be discerned from scatter diagrams of the above figures. The scatter plot of public sector investment and private sector investment is drawn for each year of the sample period and the results are plotted on a logarithmic scale in the figure 3.14, where every scatter point indicates their combination and the dark line indicates the fitted trend line.

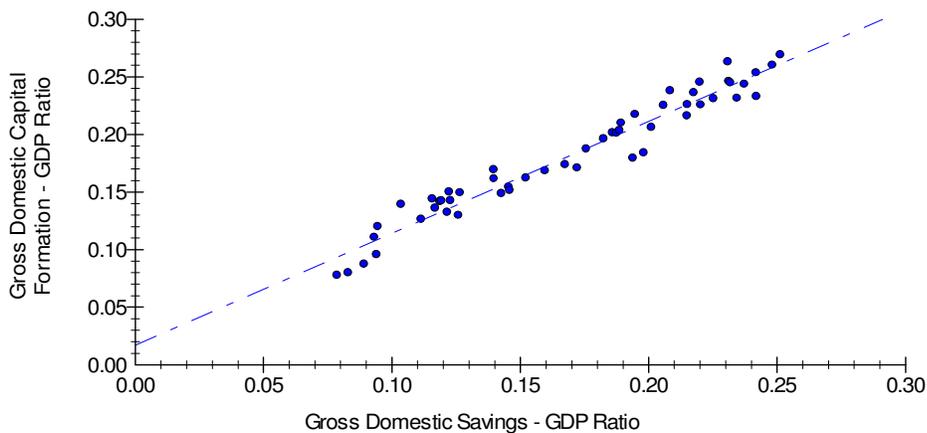


Figure 3.15: Scatter Plot of Gross Domestic Capital Formation – GDP Ratio on Gross Domestic Savings-GDP Ratio
Source: Table 1.2, CSO, National Accounts Statistics, Economic Survey, various issues

The above Figure 3.15 shows that the changes in savings rates are reflected in investment levels. The scatter points of the resultant scatter plot indicate upward fitted trend line. However, the below Figure 3.16 shows the changes in the savings rates are reflected inversely in the external balance.

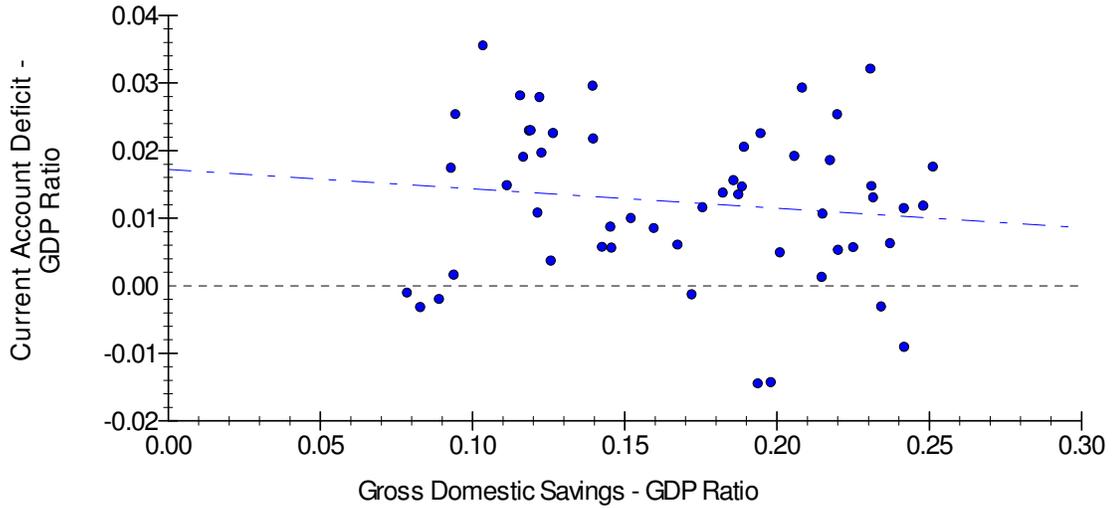


Figure 3.16: Scatter Plot of Current Account Deficit – GDP Ratio on Gross Domestic Savings – GDP Ratio
Source: Table 1.2 & Table 3.2, CSO, National Accounts Statistics, Economic Survey, various issues

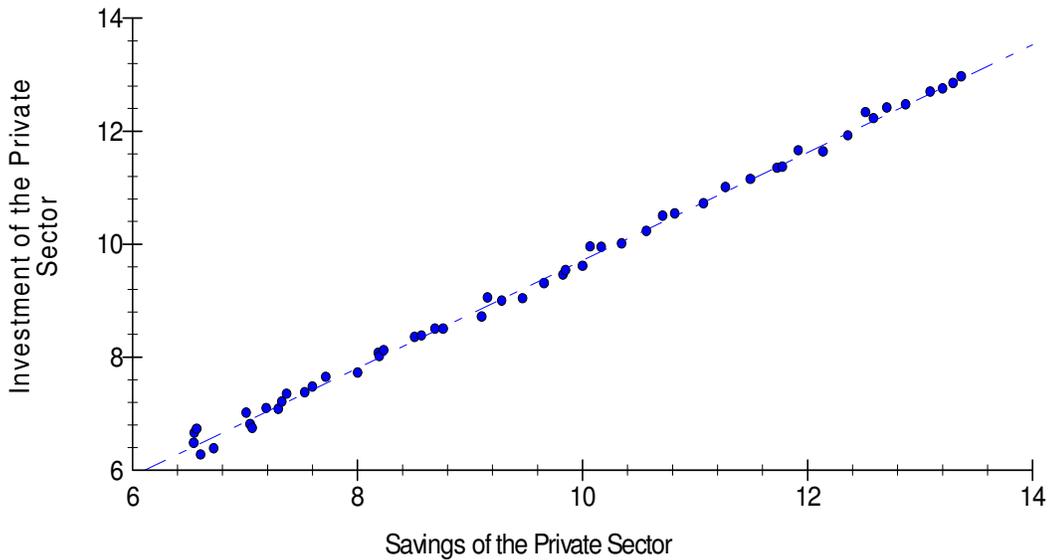


Figure 3.17: Scatter Plot of Investment of the Private Sector on Private Sector Savings
Source: CSO, National Accounts Statistics, Economic Survey, various issues

In the above Figure 3.17, there is also an upward sloping scattered diagram.

The relationship between public and private investment across decades in India has been very complex due to problems of exploring accurately the underlying demand –side and supply-side potential relations. This sub-section has no satisfactory explanation of the offsetting changes in public and private investment as it does not take into account the lag impact. It fails to show

accurately the short-term swings in sectoral investment to show longer-run relationship with public investment. The later part would attempt to make a long-term assessment bringing the role of private investment into the picture of instability episodes. However, to ascertain the validity as to whether identical or varied savings rate have been translated to increase in external savings offsetting public sector dis-savings to slate instability episodes during the 1960s and 1990s in the Indian economy would be examined in detail in the later part of this research.

EXTERNAL SECTOR DIMENSION

This dimension involves a variety of important issues relating to foreign exchange constraints, exports and imports, trade and capital flows, effects of foreign capital inflows, and stabilization aspects. With greater globalisation of the Indian economy, tracking the external sector has become useful. A key driver of this sector is the level of exports. Since exports growth affects fluctuations in the growth of overall economic activity, it is essential to understand fluctuations in exports. The measures such as growth rates of real exports, the price of exports, and the value of exports are worth noting. It would be quite interesting to distinguish the features of the post liberalization phase compared to its earlier phases by understanding how the shares of exports surged as an outcome of external real sector liberalization, especially the active policy of real exchange rate depreciation, reflecting whether the success of India's external sector policies to understand how prudent approach to external debt, in particular to factor in the problem of a surge in foreign capital inflows. However, imports (coefficient of variation is 1.22) have been more volatile than exports (coefficient of variation is 0.95) and exports have been more than that of real GDP (coefficient of variation is 0.64). An important question of import affordability thereby arises. Exports essentially help to pay for strategic imports, but often exports fall short of imports and the international capital flows – this dimension of openness assumes special significance in the overall macroeconomic growth and development process. Foreign capital flows impact the growth process in diverse ways. This capital helps not only to make able bought capital goods from abroad but also help to cover trade deficits (import surplus) in important ways.

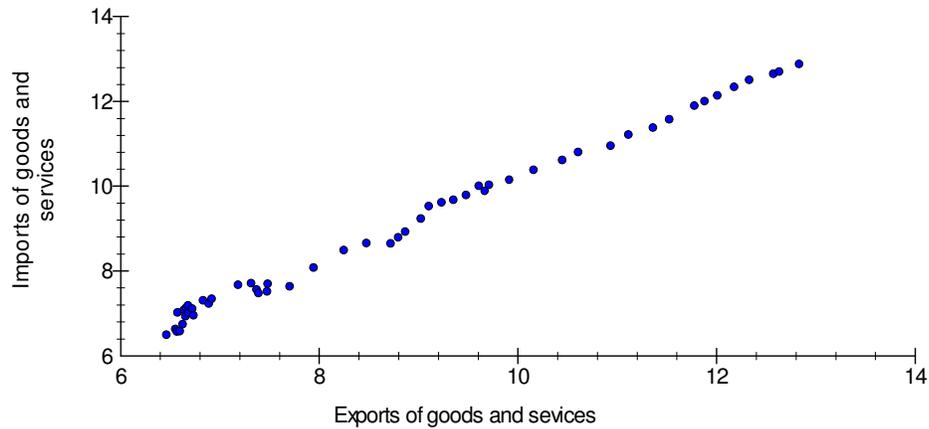


Figure 3.18: *Scatter Plot of Imports on Exports*

Source: CSO, *National Accounts Statistics, Economic Survey*, various issues EPWRF [2004]

The above Figure 3.18 portrays the scatter plot of import values at export values and is self expository.

CONCLUSION

The scatter diagrams as plotted from Figures 3.12 to 3.18 are purely based on cross section data as they are calculated for a point of time. Thus they lack dynamic or temporal element. However, it is important to see the economic relationships in the dynamic context. This is because Indian macroeconomic policies target inflation and growth rates over time as policy pursuits.

There are several reasons why comparative perspective of instability in the 1960s and 1990s is of special interest. This has been a very appropriate case study of the subject at hand for the following reasons. First, the subject owes much to the dynamics of information requires consideration for macroeconomic development and therefore, stabilization and policy analysis, understanding the structural shifts and changes in policy regimes occurred going into history, as India has undergone significant policy transitions relating to key policy variables relevant for the analysis, providing an appropriate framework for a historical analysis of the subject. Second, this subject incorporates information by way of data, reflects changes in the perception of contemporary economic issues, and reflects, as far as possible, new developments in theory and in quantitative methodology. Third, the statistical time-series and data, while not entirely satisfactory, are more extensive and better than earlier as is considered relatively good by

developing country standards, and data are available on a comparable basis for a period of time, which is adequate for systematic econometric investigation. Finally, India's macroeconomic performance and the role of macroeconomic policies in growth acceleration have figured prominently in the policy debate in India in the post-independence period and, in particular, following the structural adjustment reforms initiated in 1991. However, there is no hard empirical evidence to inform these twin-recessionary episodes in the 1960s and 1990s.

There has been a major shift in the Indian economic system towards a market friendly orientation from over-centralised planning and overt-protectionism. Indian economy has undergone significant macroeconomic adjustment policy transitions relating to fiscal, monetary, external, real and financial sector in the post independence period in general, and between the pre and post liberalisation phases, in particular. Structural changes in the Indian economy brought about by reforms particularly following the market oriented structural adjustment reforms initiated in 1991. On this count, it is essential to understand whether the current stabilisation policy that has been initiated in India resulted in the resumption of growth without translating itself into economic instability. Was a similar crisis of 1991 echoed earlier in Indian macro-economic history ever? It provides a basis to study a comparative picture of Indian macroeconomic performances. Quite naturally, references to actual policies would be made illustrating specific points on various macroeconomic issues relating to instability linkages.

The empirical patterns and trends recognition in this chapter are heuristic and should only be treated as first approximations. The proper understanding and evaluation of the instability issues require more rigorous macroeconomic analysis. Although this chapter has been on the analytics of the subject, it has tried to glean information and attempts to present the analytical results in such a way in capable of doing extension of empirical work in the rest of this research. However, this chapter paves the way for more rigorous extensive analysis to understand the relationships between instability and candidate macroeconomic aggregates as is carried out detailed investigations in the later part of this research in presenting a comparative perspective of instability episodes in the 1960s and 1990s along with interim growth phases in the Indian economy over the studied sample period. In the process of specification search, the econometric methodology with a view to minimizing the risk of uncovering spurious relations in the regression analysis used to examine the key economic relationships consistent with economic theory that restricts the dynamics of the process as little as possible to obtain short-

run and long-run nature of explanatory variables and their direction of causation, which are interpretable in terms of disequilibrium (dynamic) and final equilibrium (static) to shed light on the role of policies in determining the nature of the link between growth and stability. The rest of the research would focus the analytical significance of disturbing and adjustment aspects of growth behavior, price behavior, fiscal and monetary policies, external sector, the planning perspectives, inter-sectoral linkages, investment, savings, consumption, public sector capital formation, trade flows and balance of payments that have had policy concerns.

Macroeconomic policy is obviously a major determinant of the real growth of an economy as it causes changes in the intensity of uses of resources and the efficiency within which they are used in the short to medium run to long-run. To understand how important investment in explaining growth process is, the next chapter would concentrate on historical evolution of the Indian varying macroeconomic policy regimes particularly to understand the general conditions governing the size of long-run sustainable public sector deficits such as India's public sector and current account deficits, and associated increases in domestic and foreign aid.

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The Indian Varying Macroeconomic Policy Regimes

4.1 INTRODUCTION

There are many dimensions to economic policy formulations. Macroeconomic policy is obviously a major determinant of the real growth of an economy. Their role relatively varies from short- to medium- to long-run, as they cause changes in the intensity of use of resources, and the efficiency within which they are used. It also influences the level of investment to change, which being the main determinant of long-run growth for an economy. Fiscal, monetary, trade and exchange rate policies are predominantly demand management policies, which are judged by the short- to medium-run success within which they are applied to maintain internal and external stability as to whether keeping inflation within tolerable limits. However, it is most often seen that their plausible longer-run effects on investment in macroeconomic growth process.

There are some point of differences between macroeconomic stabilization policy and structural policies. Macroeconomic stability requires a better coordination between them. The conduct of any government policy is influenced by the spirit of times, as reflected in the intellectual climate and socio-political and economic milieu. The economic policy of a nation is crucial to understand its macroeconomic performances. This is particularly true for a country like India where a highly interventionist government is seen to have followed a complex set of economic policies in a wide variety of areas and sectors since independence. Indian economy has over the studied sample period undergone through varying macroeconomic policy regime, and changes in emphasis placed on different elements in implementing domestic and external sector policies in response to various economic and political shocks. The objectives of macroeconomic policy have long included the avoidance of protracted recessions wherein resources remain under-utilised and of periods of unsustainable growth that can jeopardise reasonable price and exchange rate stability. Thus in order to place the present study in correct perspective, it is necessary to understand India's changing macroeconomic policy trends since independence. To that end, this section provides an introduction to the macroeconomic policies

prevailing in India since dates back to independence. And as its part, fiscal, monetary, exchange rate, industrial, financial, trade policies have in turn independently been discussed into various sub-sections in this chapter. The intent here is not to give a detailed account of Indian economic policies and instead to highlight comprehensively the important features of its varying policy regime.

4.1A FISCAL POLICY

In macroeconomics, fiscal policy consists of a mix of budgetary instruments that government can use to target macroeconomic objectives, in particular stabilisation and growth. Its main components are revenue, expenditure and borrowing. It comprises government expenditure to help achieve its goals and revenues from taxes (direct taxes – mainly corporation and household income tax; indirect taxes – excise and customs) and non-tax sources (mainly from public sector enterprises). The main components of current expenditure are government expenditure behind defense, subsidies and interest. The rise in interest payments is partly consequent to higher interest rates but is mainly due to the rise in the debt. The current revenue balance is the savings of the government. The other side of government expenditure is government capital expenditure. Government fiscal deficit is financed by total borrowing requirement inclusive the borrowing from the central bank. Fiscal deficit less interest payments is primary deficit, which is the balance of revenue and expenditure, which is in principle under control unlike interest payments, which is the result of past transaction. Fiscal policy instruments relate to direct taxes to influence effective demand.

If government spends more than its revenue collection, the gap has to be financed either through money creation or borrowing (from domestic or foreign sources). Money creation could, in turn lead to higher inflation than is desirable. If fiscal deficit is financed through excessively by domestic borrowing may lead to a debt trap and debt management may be unsustainable due to high interest rate / inflation trap and falling private investment. Similarly, over reliance on external borrowing can cause appreciation of the real exchange rates, widening current account deficits, unsustainable foreign indebtedness and dwindling foreign exchange reserves. But given the prevalence of the government sector in the economy – as a corollary of the process of planned economic development the policy variables usually in analysis happens to be the government's current consumption expenditure and capital formation.

The most significant advancement in the methodology in fiscal policy in India seemed to have occurred in the institutionalisation of the concept of fiscal deficit. It is important to note that earlier this concept was notable by its absence from official government documents such as Budgets and Economic Surveys. The concept first appears in the 1989-90 Survey, published in February 1990, stating (p 75): “The central government budget deficit as conventionally defined has fluctuated around 2 percent of GDP in recent years... The conventional budgetary deficit does not indicate the full measure of overall deficit and the government’s draft on domestic savings and dependence on external savings. Within a year or two, tables on fiscal deficit and attendant concepts started to have been routine in Budgets and Surveys, the fiscal deficit has been the focus of the macro dimension of fiscal policy in all relevant contexts and had firmly replaced the earlier, more limited concept of budget deficit [Acharya, 2002]. A fuller measure of the overall deficit, which is commonly used internationally, is the difference between government expenditure and net lending on the one hand and current revenue and grants on the other.

This transition seemed to have been accelerated by the IMF programme of the early 1990s which naturally focussed heavily on fiscal consolidation. Another important change that was occurred in the context of fiscal policy was in the shift of central government borrowings to market interest rates. Prior to 1991, the increases in government borrowing programmes were accompanied through hikes in the statutory liquidity ratio (SLR) imposed on commercial banks. By 1990, the SLR had risen sharply to 39 percent [ibid, pp 1533]. This captive market accommodated placement of government securities at sub-market rates and imposed a corresponding tax on financial intermediation by the banks. From 1992-93, government borrowing started shifting to market interests and the SLR was progressively reduced. While this change has not come to help the fiscal accounts, it was an important constituent of financial sector reform. Government borrowing at market rates was also an essential pre-condition for the development of a healthy secondary market in government securities, which, in turn, was an essential prerequisite for the evolution of monetary policy.

In 1994, the central government had a major initiative to curb its hitherto unrestricted access to the Reserve Bank to finance its deficits. Before 1994, the government could unilaterally access RBI financing through the means of ‘ad hoc’ Treasury bills. Moreover, the government throughout the eighties routinely used this device to meet its requirements for

funds and such monetisation of the deficit became the principal propellant for the expansion of reserve money. Changes in net RBI credit to the central government on average contributed for 93 percent of the variations in reserve money [Rangarajan 1995]. Given that such automatic monetisation of the deficit undermined severally the scope for discretionary monetary policy, the government formalised an agreement with the RBI in September 1994 to phase out 'ad hoc' Treasury Bills over a three year period. The phase out duly occurred and at the end of the three years a new system of ways and means advances was instituted that placed clear limitations on the government's automatic access to RBI financing. It is important to note that this delinking of budget deficits from their monetisation has been a landmark event in India's fiscal/ monetary institutional history. The conditional central assistance in support of agreed programmes of medium term fiscal reform was supported by the recommendations of the Eleventh Finance Commission. At last, in December 2000, the Fiscal Responsibility and Budget Management (FRBM) Bill was later passed in parliament. Amongst its major features include: (a) slash down of the centre's revenue deficit to nil by March 2006, (b) cut down of fiscal deficit to 2 percent of GDP by March 2006, (c) reduction of the ratio of central government liabilities to GDP to 50 percent by March 2011, (d) proportionate cuts in expenditure while there is shortfall of revenue or excess of expenditure over budget targets. FRBM was basically an effort to institutionalise the medium-term process of fiscal consolidation through a legislative mandate.

4.1B MONETARY POLICY

It is not always easy to decouple monetary policy from fiscal policy, financial sector policy and balance of payments policy as they are interlinked to some extent. One of its main aims is stabilisation, growth, and control of inflation adjusting to exogenous shocks and avoidance of policy-mistaken shocks. Besides price, output and employment, it can impact consumption, investment and the balance of payments. The application of monetary policy to promote growth may involve microeconomic issues such as development of banking and financial system, which is beyond the purview of this research.

Since independence monetary policy in India experienced a number of operational and intellectual structural breaks. It is neither entirely contributory to fiscal policy nor heavily constrained by the balance of payments. Though there is an association between fiscal deficits and the supply of money, this can be undermined by instruments at the disposal of the

authorities. The exchange rate is managed as has sometimes been fixed for long periods but exchange controls on capital movements have adequately been effective to permit substantial monetary independence. Monetary policy has several objectives, but the main is to stabilization and growth. Stabilisation refers smooth adjustment to exogenous shocks and avoidance of policy-induced shocks, but as with fiscal policy the variables of interest are not only output and employment but consumption, investment, prices, and the balance of payments as well. It is especially concerned with to achieve the best balance between inflation and economic growth. Its major goal shifted focus to price stability. Inflation targeting has also become the new buzzword for the central banks in many countries. The use of monetary policy to promote growth takes many microeconomic aspects such as the development of an efficient banking and financial system. This sub-section ignores such issues except those interact with the macroeconomic aspects of monetary policy.

The monetary policy instruments in India is wide ranging, embracing both direct (quantity) and indirect (price) approaches. The main direct instruments include reserve ratios, quantitative controls on Reserve Bank lending to banks and the commercial sector, and quantitative credit controls. The indirect instruments work through the administrative setting of various interest rates such as on Reserve Bank lending, commercial bank lending, and deposits. While all these instruments have been available since 1960, the emphasis has changed. In the 1960s, the emphasis was given on indirect measures and there was rarely any variation in reserve ratio. In the 1970s, the emphasis got shifted to direct measures, and this has persisted since then. Among the direct instruments, the priority of variation in reserve ratios has increased considerably compared with variation in Reserve Bank refinance to the commercial sector and quantitative credit controls. Monetary growth in India has been higher in the 1970s and 1980s compared with the 1960s.

From the viewpoint of monetary control, there had been a shift away from indirect to direct approaches in the early 1970s, given the rapid increase in fiscal deficits and the presence of various inflationary pressures. Administratively determined interest rates did have too many conflicting objectives and were rigid to be used for macroeconomic control. There was a tendency to pay as much importance to credit controls on banks as to reserve ratios. By the beginning of the 1980s, the Reserve Bank moved more firmly to money multiplier approach. It is important to note that all the monetary instruments in India both direct and indirect operate

through administrative control or fiat. In India, monetary policy witnessed a most notable break since the mid-1980s when the monetary authorities shifted their preferences towards explicit monetary targeting with feedback on the basis of the recommendations made in the Chakravarty Committee Report. However, its recommendations have undergone radical changes in recent years. Since 1991, with the more market oriented system particularly with the interest rates becoming market determined, open market operations has become a genuine instrument of policy with regard to financing of the budget.

The reforms in the institutional framework and operational procedures for monetary policy in the 1990s were even more significant and far-reaching than in the case of fiscal policy. Prior to 1991, the insistent series of high fiscal deficits, the system of administered interest rates and automatic magnatisation of budget deficits (through 'ad hoc') had placed monetary and financial policy in an unsustainable bind. The foremost authority of the period noted [Rangarajan 1994:

“Until the overall reform process was initiated in 1991, the basic goal of monetary policy was to neutralise the impact of the fiscal deficits..... Monetary management took the form of compensatory increases in the cash reserve ratio (CRR) for banks, controls on growth of commercial credit (mainly to the enterprise sector) and adjustments of administered interest rates”.

Basically banks were bound to fund most of the large fiscal deficits as submarket rates to meet the high and rising SLRs imposed, while the rest was essentially accommodated by the RBI through the medium of 'ad hoc' Treasury bills.

Against this backdrop, the key themes in the reform of the institutional framework and operational procedures for monetary policy have been: Phased reduction in the reserve requirement ratios of CRR and SLR; phased liberalisation of interest rates; elimination of direct credit controls; development of money and financial markets, beginning with those for government securities and bills; restraints on automatic monetisation of budget deficits; activation of open market operations (OMO) by RBI to influence liquidity; policy focus on inter-linkages across various segments of financial markets; restoration of the bank rate as a signalling instrument for monetary policy. These major themes have been pursued with considerable success throughout the decade. The shift of new central government borrowing to market interest rates through auctions from April 1992 was a crucial prerequisite for the

development of government securities markets, without which RBI could not conduct open market operations. This shift was successful to place all primary issues in the market without significant development on RBI, despite a substantial reduction in the SLR. The need for undertaking open market operations felt very sharply with the surge in foreign capital inflow in 1993-94. Since late 1994, the earlier fiscal considerations in monetary policy have taken a back seat following the agreements to cap and to eventually abolish ad hoc Treasury bills. In view of the growing reliance on auctions of government debt instruments, the interest rates are now being influenced mainly by market forces. Increased capital flows have reasonably influenced the liquidity aspect of the financial markets. In this way, the open economy consideration in the conduct of monetary policy more fundamentally shifted the emphasis from the quantity variables (monetary aggregates) to opportunity cost variables (rate of interest and exchange rate) to understand the channels through which transmission mechanism operates in formulating an appropriate monetary policy stance of trying to reduce inflation and interest rates. It is important to note that increased play of market forces in the determination of interest rate and exchange rate may have changed the monetary transmission process [Ray, Joshi and Sagar, 1998].

The use of OMO and repos developed over the course of the decade with the RBI expressing a clear preference for these 'indirect' instruments of monetary management over 'direct' changes in reserve requirements (CRR). OMO and repos have come to the fore as preferred instruments of monetary control. By 1997, interest rates had substantially been liberalised. In 1998 and 1999, the bank rate was effectively deployed to signal the stance of monetary policy and influence prime lending rates of banks. By the spring of 1999, monetary policy had evolved to establish an informal corridor for short-term interest rates, with the fixed repo rate providing the floor and the bank rate the ceiling [Reddy, 1999]. The evolution in the transmission mechanism has been co-ordinated greatly by the abolition of 'ad hoc' Treasury bills and the institution of the new system of limited ways and means advances (WMA) since 1997. But the progress has been disrupted by the series of large and growing fiscal deficits since 1997-98. Though the abolition of 'ad hocs' has cut the automatic link between deficits and monetisation, the problem has not solved yet.

The 1990s saw some evolution in the ultimate objectives of monetary policy. Until at least the middle of the decade, official pronouncements continued to stress the twin objectives

of growth and price stability. Apart from these two important objectives, there appeared third objectives, which has been a conscious attempt on the part of the Reserve Bank in recent years to maintain orderly conditions in the foreign exchange market. From the period of the Chakravarty Committee Report [Reserve Bank 1985] to 1997-98 the annual growth in broad money(M3) had held sway as the sole as an explicit intermediate target of monetary policy. With the liberalisation of financial markets in the 1990s and the increasing importance of external economic transactions, situations have changed. In 1998-99, RBI announced in favour of a ‘multiple indicator approach’, which would cover interest rates, exchange rate and other variables. In reality, M3 appears to continue as the single most important intermediate target. But its exclusivity has clearly been lost.

The conceptualisation and exercise of monetary policy has clearly undergone a sea change during the 1990s. Major institutional reforms carried out. New institutions and operational procedures established and strengthened. The array of instruments of monetary policy has effectively been broadened. The complexity of market interactions recognised. The efficacy of monetary policy continues to be constrained by an excessively loose fiscal policy as well as an insufficiently responsive financial system.

The environment of liberalisation initiated in the early 1990s following the advent of financial reforms and growing integration of financial markets shift in the operating procedure of monetary policy and monetary transmission mechanism to understand money market disequilibrium situation as interest rate and exchange rate have been the two key variables in the conduct of monetary policy and their joint significance has been important to understand the relationship between money, prices and output. The increased cross-border capital flows added an altogether new dimension to the conduct of monetary policy which now has to operate in open-macroeconomic framework, where interest parities increasingly play an important role in determining monetary and exchange rate relationships. This is supported by presence of a framework, which is characterised by a distinct opposition to government budget deficits and the wide current account gaps in recent years. Monetary policy indeed has recognised these aspects by being increasingly raised issue in terms of empirical validity.

4.1C EXCHANGE RATE POLICY

Over the more than last six decades since independence, the exchange rate regime in India has transited from a Par Value System (1947-71) of the IMF during the pre-Bretton Woods system of gold standard during the 1950s and the 1960s to a Basket Pegged Regime (1971-92) during the 1970s and the 1980s under the Bretton woods system and its era to an end and eventually culminating in the present form of a Market - Determined Exchange Rate Regime since March 1993 (1993 to present day) via a transitional phase of a dual exchange rate between March 1992- February 1993 of Liberalised Exchange Rate Management System (1992-93), whereby the rupee's external par value was revised downwards from 4.15 grains of fine gold fixed after gaining independence to 2.88 grains and 1.83 grains, respectively following the devaluation of the rupee in September 1949 and June 1966. And in terms of currencies, the exchange rate of the rupee which had historically been linked to pound sterling was fixed at Rs. 13.33 per pound sterling (or Rs. 4.76 per US dollar) in September 1949, which remained unchanged up to June 1966 when the rupee was devalued by 36.5 percent to Rs. 21 per pound sterling (or Rs. 7.50 per US dollar), that remained constant till 1971 when the suspension of the convertibility of the US dollar brought the era of Bretton Woods to an end [Patnaik, Kapur and Dhal, 2003].

Acquired a certain dynamism the exchange rate management during the 1980s in the context of macroeconomic policies for the external sector and the exchange rate as a policy instrument was actively used to achieve a sustainable current account deficit to ensure improvements in the price competitiveness of exports and consequently the period started from 1983-84 was marked by continuous downward adjustment in the external value of the rupee [Rangarajan, 1998]. By the late 1980s and the early 1990s, however, recognised both macroeconomic policy and the structural factors had contributed to a misalignment in the exchange rate. Despite exports recorded higher growth during the second half of the 1980s, the current account deficit, however, widened driven by internal imbalances and exchange rate misalignment. The weaknesses of the external sector were triggered by the Gulf crisis of 1990 and the capital flows also went dried up. The Reserve Bank, thus, came to effect a two-step sharp downward adjustment in the exchange rate of the rupee on 1 and 3 July, 1991, which effectively translated into a devaluation of the order of 18-19 per cent in the external value of the rupee to counter the massive draw down in the foreign exchange reserve losses, to restore confidence in the investors and to improve domestic competitiveness. Not the depreciation of

the rupee, however, was an isolated event but was an integral part of an overall structural and stabilisation programme to reform India's external sector policies [Rangarajan, 1991].

The transition to a market-determined exchange rate was the key institutional reform which was essentially important for both macroeconomic management and structural reforms in the first-half of the 1990s. India went to a unified, market-determined exchange rate by March 1993 and to full current account convertibility by August 1994 and there has been little change in the institutional framework for India's exchange rate policy. And, there has been a great deal regarding RBI's monitoring the forex market and its linkages with the domestic money market and of the arduous activity of central bank intervention in spot and forward forex markets. Also RBI has, since recent years, evolved a doctrine or view to support its brand of managed floating [Reserve Bank, 2001]. One recent major institutional reform in this area has been the modernisation of the legal framework brought about by the passage of the Foreign Exchange Management Act (FEMA) in December 1999. Its provision came into effect in June 2000 and replaced the earlier Foreign Exchange Regulation Act (FERA). FEMA involves current account convertibility as a base and allows for progressive liberalisation of the capital account. The shift in emphasis to adopt more flexible and market based exchange rate arrangements is reflected by a variety of factors including the changing economic conditions and policy objectives over time, the liberalisation and globalisation of financial market, accompanying increase in capital mobility and the emergence of tension between objectives of lower inflation and external competitiveness.

4.1. D FINANCIAL SECTOR POLICY

Financial intermediation in India was promoted after independence and more rapidly after the nationalisation of major 14 banks in 1969. In the 1950s and 1960s, the Indian financial sector had gone through a fairly liberal environment. This was the period that saw the Consolidation of the Reserve Bank of India (RBI) in its role as the agency in charge of the supervision and control of banks. A key feature of the banking sector during the period was that a bulk proportion of bank credit went in favour of industrial sector, especially to the large borrowers, while agricultural sector remained almost deprived in terms of bank credit. Thus, there felt an increasing realisation among Indian policy makers that there was a need for extensive social

control of the Indian banking system. In July 1969, as its aftermath, 14 of the major commercial banks were nationalised.

The evolution of the Indian financial sector that begun from 1969 can be classified into three distinct sub-periods: first, a period of growing financial repression from the early 1970s to the mid-1980s; second, a sub-period of mild reforms till 1991; and at last, as of 1991, a period of a growing liberalised financial sector. In the first period, the bank nationalisation of 1969 was extended to nationalise six more Indian commercial banks in 1980. Banks had to face growing pressure to lend to the priority sector, comprising agriculture and allied activities, small-scale industry, retail trade, transport operators, professional, and craftsmen. In other words, there was more credit available for small-scale firms, while medium and large firms might have received a lower share of bank credit in the process. The other additive factor may be as there was a growing alternative to the banking sector via the statutory liquidity ratio to finance the ever widening budget deficits of the central government during the 1970s and the 1980s, probably crowding out of bank financing of private investment. The commercial banks were essentially to provide short-term credit to the manufacturing sector, while long-term loans were provided by all-India development banks like Industrial Development Bank of India and Industrial Credit and Investment Corporation of India. These term-lending institutions were dependent highly on the government for resources usually by being heavily subsidised and their allocation of long-term loans to firms was firmly monitored by the government according to plan priorities. The government also controlled the stock markets with regard to pricing, quantum, and timing of new issues.

By the end of the eighties, the Indian financial sector had registered remarkable growth in volume and variety, comprising stock market, mutual funds, NBFCS and other institutions. Nevertheless, the important financial institutions were not only all state owned but also were subject to central direction and controls. Banks enjoyed little autonomy because both lending and deposit rates were controlled until the end of the eighties. Even if, the nationalisation of banks helping spread banking to the rural and hitherto uncovered areas, the monopoly granted to the public sector and lack of competition may have led to growing overall inefficiency and low productivity. However, there was significant growth in the commercial banking system in the country both through the expansion of the geographical coverage and amount of resources mobilised of the social control of the banking sector that have been the result of a strictly

enforced branch licensing policy followed by the RBI(Ministry of Finance 1991). Under this policy, the RBI restricted banks from being to open branches in urban and metropolitan areas and instead, the overwhelming emphasis of branch expansion was mostly to the ‘under-banked’ districts in rural and semi-urban areas. This led to an increase in bank deposits. Primarily owing to the branch licensing and real interest rate policies, there was a significant financial deepening in the Indian economy in the 1970s.

In the second sub-period, from the mid-1980s, there was a gradual set of reforms in the money markets with meagre or no change in policies relating to the provision of credit to firms in the industrial sector. While social control of the banking sector may have led to growing inefficiency in the financial intermediation process through the expansion of the geographical spread of the banking system. By 1991, India’s financial system had become saddled with an inefficient and financially unsound banking sector. Some of the underlying reasons for this are: high reserve requirements, administered interest rates, directed credit, poor supervision, lack of competition and political interference. Though the financial sector reforms seemed to have been initiated in the mid-eighties, but actually began in 1991. Several radical reforms measures introduced as recommended by the Narasimham Committee Report (1991) including reduction of reserve requirements as statutory liquidity ratio was substantially reduced; de-regulation of interest rates on short-term loans (provided mainly by the commercial banks) and on long-term loans (predominantly provided by development banks) in a phased manner since 1992; softening of consortium lending arrangements; introduction of prudential norms such as income recognition, asset classification, provisioning for bad and doubtful debts and capital adequacy; strengthening of bank supervision and improving the competitiveness of the financial system, particularly permitting entry of private sector banks through opening up of the banking sector a part of the structural adjustment programme of 1991. Several reform measures initiated also in the non-bank financial sector in the capital market like substantial deregulation of the stock market especially the operation of new issue market and relaxation of restrictions on the entry of foreign portfolio investors; and free pricing of shares have been introduced with the abolition of the Office of the Controller of Capital Issues in 1991. In the very next year, Securities and Exchange Board of India (SEBI) was empowered with statutory powers. Transparency of stock trading practices has significantly improved as a consequence of the establishment of the National Stock Exchange to compete with the Bombay Stock Exchange. On balance, the

financial liberalisation measures initiated since 1991 have led to a relatively easier access to capital markets, both at home and abroad, for firms and may have eased borrowing constraints on their investment decisions during the new policy regime.

Despite there have been significant moves towards redressing financial repression as there has been significant progress in interest rate deregulation, there are still binding restrictions on the progress in developing the debt market as the demand for corporate debt is still constrained by the portfolio restrictions imposed by the government on domestic insurance and provident fund institutions and foreign institutional investors as well. However, the reforms after 1991 have significantly helped to increase foreign exchange reserves and to reduce the inflation rate. The pace of reforms in Indian context has been positive, but slow. It can be stated that a timely and cautious attempt made in liberalising the Indian financial sector, although at a slow pace. Moreover, there have been important lessons for India to be learnt from the South East Asian experiments with financial liberalisation.

4.1E INDUSTRIAL POLICY

The twin influential components of the regulatory framework of industrial development strategy were the Industries (Development and Regulation) Act of 1951 and the Industrial Policy Resolution of 1948, which amended and elaborated later in 1956. The industrial licensing criteria for private industries were under the first piece of legislation, which provided the legal basis for the regulatory system in which industries were to develop. The licensing system introduced three sets of licensing policies to govern almost all aspects of firm behaviour in the industrial sector that were – capacity licensing, monopoly control, and small scale industry reservations. The purview of controlling was not only in the case of entry into an industry and growth of firms, but also for the scale of operation, choice of technology, output or input mix, capacity location and import content. Thus, the government's role did not remain confined to the broad direction of the industrialisation process, and that concerning aspects extended to detailed decisions at the micro level. The principal goal of this Act was to channelize investments in the industrial sector in socially desirable directions.

The Industrial Policy Resolution distinguished industries in the following ways: (i) based on the end use of outputs industries into capital, intermediate, and consumer goods; (ii) according to their ownership, industries into public, co-operative, private and joint; and (iii)

basing on their size of technology, industries into cottage, village, small scale and organised. However, the most important classification was made among industries dividing them into three groups based on the role of the state as was perceived to interplay in each category.

The divisions were: the first one consisted of certain ‘commanding height’ industries – mostly public utilities, basic and strategic industries – such as defence, heavy industry, most mining, aircraft, air and rail transport, communications and power – that were to be reserved exclusively to the public sector; the second one consisting some industries – mostly heavy industries in-between or either or both category that were to be developed jointly by the state and private initiatives and were to be progressively owned by the state; and the third one comprising mostly consumer goods industries that remained open to private firms.

During the Fourth Plan period (1969-74), the reign of controls was reinforced with the two enactments, namely the Monopolies and Restrictive Trade Practices (MRTP) Act of 1969 and the Foreign Exchange and Regulation act (FERA), 1973. The former instrument tipped to prevent the concentration of economic power and to curb restrictive practices i.e., reservations for the small-scale sector. In 1973, FERA came into force and thus from 1973 onwards the further activities of foreign companies were restricted to a select group of core or high priority industries. FERA required all foreign companies operating in India to register under Indian corporate legislation with up to 40 percent equity. Certain exceptions from the threshold limit of 40 percent were made only for companies opening in high priority or high technology sectors such as tea plantations, or those producing predominantly for exports.

This Act subjected investment and expansion proposals of ‘large and or dominant’ industrial undertakings with gross assets exceeding a certain threshold to a separate licensing approach over and above the approvals from the government. The FERA was the most important tool in the hands of the government for regulating commercial and manufacturing activities of branches of foreign firms in India and joint stock companies with a foreign equity holding of over 40 percent; most of them were compelled to dilute foreign equity, and foreign branch companies were obliged to Indianise their shareholdings or fold up. This Act stipulated a list of industries where such firms would be permitted to function, and all new investments and substantial expansions required separate approval from the government. Direct foreign investment was strictly controlled under the regulatory framework of FERA of 1973.

The industrial licensing system had also some import control features built into it. The overriding principle behind industrial licensing system together with import licensing framework supplemented by tariff structure, which came to exist from 1956-57 in the wake of foreign exchange crisis and ended by the first half of the 1970s, led to the elimination of the possibility of competition both foreign and domestic, in any meaningful sense of the term. Over the years, as the then designed licensing system became increasingly complex, it led to a wasteful misallocation of investible resources among alternative industries and also deepened the under-utilization of resources within these industries [Bhagwati and Srinivasan, 1975], thus subscribing to high levels of inefficiency in the industrial sector.

However, from 1980 onwards, industrial policy witnessed greater pragmatism with a gradual cautious deregulation of controls, as industrial licensing approval systems were streamlined. During this period, there was some half-hearted process of relaxation of regulation of industry to dilute licensing and capacity expansion. Greater realism in policy making reflected and a degree of flexibility was introduced as the list of industries open to large firms was also broadened and the asset threshold above which firms were subject to monopoly regulation raised from Rs. 200 million to Rs. 1000 million in 1985-86. By the mid 1980s, India had begun to undertake less interventionist policies.

The second half of the 1980s witnessed considerable de-licensing and relaxation of import controls to upgrade the industrial technology. In the second half of the 1980s, import restrictions moved from quotas to tariffs as a first phase of trade reforms. Until 1991, restrictions were the rule and reforms constituted their selective removal according to a 'positive list' approach. But since 1991, absence of restrictions became the rule with a 'negative list' approach taken to their retention.

In 1991, industrial licensing system was abolished for all industries except those five specified for a select list of health, safety or environmentally sensitive industries. The provisions of the MRTP Act relating to growth, merger, amalgamation, and take-over of large business houses were also eliminated. The list of public sector monopoly industries was reduced from seventeen to six on security and strategic grounds, and all other sectors were opened to the private sector.

The Foreign Exchange Regulation Act (FERA) of 1973 was amended with the objective of lifting constraints placed on foreign companies by the FERA. In the area of foreign investment, instead of the threshold of 40 percent of foreign equity investment 51 percent is now ‘automatically’ approved for a wide range of industries deemed to be of national importance. Foreign investment was opened up in many sectors including export houses, trading houses, hospitals, sick industries, hotels and tourism. Since 1991, there has been substantial liberalisation in the service sectors where the key areas are insurance, banking and telecommunication.

For the first time in the post –war period, the automatic approval of FDI up to 100 percent is permitted in all manufacturing activities including energy sector of power generation in Special economic Zones (SEZs) except those subject to licensing or public sector monopoly. FDI up to 100 percent under automatic route through Foreign Investment Promotion Board (FIPB) is permitted in information technology units including Export Oriented Units (EOUs), Export Processing Zones (EPZs), Special Economic Zones (SEZs), Software Technology Parks (STPs) and Electronics Hardware Technology Parks (EHTPs). India became a signatory to the Convention of the Multilateral Investment Committee Agency (MIGA). Clearly, the industrial policy liberalisation enabled to provide reasonably conducive environment for private sector to diversify and grow. However, certain aspects of the old regulatory framework left remain unresolved in particular, labour laws and bankruptcy procedures that do not allow firms to liquidate their assets easily. One of the important objectives of the current reforms of industrial policy is to remove impediments for efficiency seeking growth.

4.1F TRADE AND PAYMENTS POLICY

These policies are important from the standpoint of their significant effects on the efficiency of resource allocation. The broad objective of trade and payments policies is maintenance of sustainable current account deficit consistent with other objectives such as internal balance, low inflation and high growth. The policy instruments that are used to achieve payments balance are aggregate demand management, use of reserves, official foreign borrowings, controls on private capital flows, trade intervention, and exchange rate policy. Of these the first three are generally examined indirectly or by implication.

To understand the wide sweep of import controls in India, Bhagwati and Desai (1970) in their pioneering study provide the most comprehensive and systematic documentation of the interventionist policies that had come to exist by late 1960s. As they note, general controls on all imports and exports had been prevalent since 1940. Import controls were put in place during the Second World War because government had requisitioned all shipping for military transport. They were relaxed after the independence in 1947 through the expansion of Open General License (OGL) list in a stop-go fashion with the first five-year plan (1951-56) representing a period of progressive liberalisation. But a foreign exchange crisis in 1956-57 put an end to this phase of liberalisation, and comprehensive import controls were brought in and maintained until 1966.

From 1956-57 till the late 1970s, India had a highly restrictive trade regime. The overriding principle behind protective trade regime was to provide protection to domestic industries from foreign competition along with conserving scarce foreign exchange reserves. Generally speaking, depending on the state of the foreign exchange reserves, the sub-periods 1957-62 and 1968-74 have been of severe tightening and the sub-periods 1966-68, 1975-79, and 1982-89 were of moderate relaxation.

However, since independence over the first four decades the overall trade regime of the Indian economy was inward looking. The role of exports as an engine of growth was paid little attention and instead import substitution strategy over a wide area emerged as the basic feature of the foreign trade regime. In fact, it was envisaged that in course of time, as the process of industrialisation-generated demand for imports of certain intermediate inputs, additional consideration in framing import policy was to ensure adequate supplies of inputs to industry. What the underlying envisaged philosophy was that only after building up a large and widely diversified industrial base, export opportunities would follow (Second Five-Year Plan document 1956).

The main instrument of import controls was the import licensing system. The administrative origins of the import licensing system were Imports and Exports Control Act of 1947 and the Import Trade Control Order of 1955. Nearly all imports were under the purview of import licensing or were channelized by public canalising agencies. There was nothing that can be freely imported over the years because a complex system of import licensing was designed

to provide physical allocation of inputs by type of product e.g., raw materials, finished consumer goods, intermediate and capital goods, etc., by type of users such as established importers, actual users, etc, and by categories like banned, restricted and Open General License (OGL).

The objective of this policy was to control the end use of imports and prevent profiteering by intermediaries. The only exceptions were few essential commodities subject to government discretion and listed in the OGL category. The import policy classified capital goods into lists of banned items, restricted items and the OGL category items. For restricted capital goods, those in the OGL could be imported without a license subject to several conditions. The most important feature of these was that the importing firm was to be governed by the actual user rule and had to use the imported item in its own production process and could not sell that imported equipment prior completion of five years without having the permission of licensing authorities so that the resulting change in capacity must remain compatible with the capacity approved by the industrial licensing clearance.

Thus for capital goods, the policy mechanism was designed being dominated by the 'indigenous angle' with blatant neglect of cost and quality considerations. Intermediate goods were classified into the banned, restricted and limited permissible categories plus OGL list. Of these, the names for the first three lists suggest in order of import licensing stringency. OGL imports of intermediate goods were also subject to 'actual user' condition. The import of finished consumer goods were, however, banned except those which had to satisfy the criteria of 'essentiality' like edible oils, kerosene, and life-savings drugs and could only be imported by the designated government monopoly import trading agencies. The licensing system was supplemented by a tariff structure, which was to provide additional protection to domestic industries from foreign competition.

In June 1966, India devalued the rupee from Rs. 4.76 to Rs. 7.5 per dollar agreed with the World Bank and IMF package and this was followed by another severe drought. The nominal devaluation was 36.5 percent in terms of exchange rate dollars per rupee and the devaluation was 57.6 percent when exchange rate is measured rupees per dollar. This was accompanied by some liberalisation of import licensing and cuts in import tariffs and elimination of export subsidies for approximately a year. But by 1968, intense domestic

reaction in the wake of devaluation led India to turn its policy stance towards inward looking with vengeance. So far as liberalising initiatives were concerned, they were almost all reserved and import controls tightened. This regime was consolidated and strengthened in the subsequent years to come and remained more or less intact till the beginning of a period of phased liberalisation in the late 1970s.

Beginning in the export-import policy of 1977, the attitude to import controls changed. The reforms of export-import policy undertaken successively, which started by about the late 1970s. From 1977 onward, there has been a slow but sustained relaxation of the import control system, particularly in the direction of expanding the scope of the OGL list. Pursell (1992) quoted two factors facilitated the emergence of the liberalisation phase. First, by mid-70s, industrialists themselves were beginning to find the strict regime counterproductive and at the same time a domestic lobby in favour of liberalisation of imports of raw materials and machinery had come to exist and there was no counter lobby in the case of raw materials and machinery imports that had no import substitutes. Second, improved export performance and remittances from overseas workers had led to the accumulation of a comfortable level of foreign exchange reserves. These reserves lent confidence to policy makers.

Towards, the end of the 1970s, India's failure to significantly step up the volume and proportion of her manufactured exports in the face of the Second oil Price Shock began to worry the policy makers. It led to the policy concerning realisation that international competitiveness of Indian goods had suffered from growing technological obsolescence and inferior product quality, limited range and high cost which in turn were due to the highly protected local market. Another limiting feature for Indian manufactured exports lay in the fact that marketing channels in the industrialised countries were substantially dominated by MNEs. The government intended to deal with the situation by introducing a degree of flexibility in the trade policies. The policy was accompanied by putting emphasis on the modernisation of industry with liberalised imports of capital goods and technology, exposing the Indian industry to foreign competition by gradually liberalising the trade regime, and assigning a greater role to MNEs in the promotion of manufactured exports. This strategy was reflected in the policy pronouncements of the 1980s. These covered the emerged areas: liberalisation of industrial licensing (approvals) rules and exemption from foreign equity restrictions under FERA to 100 percent export-oriented units. The trade policies play a role to shape gradually liberalised the

imports of raw materials and capital goods by gradually expanding the list of items on the OGL.

Several capital goods, which until 1976 remained under stringent import licensing, were steadily liberalised as were shifted to the OGL category. There has been somewhat greater permissiveness in the administration of import licensing as a steady liberalisation of imports of capital equipment and of technology started soon after by about 1976. The number of capital goods items on the OGL list expanded from 79 in 1976 to 1,329 in April 1990. The basic intension of these changes was to allow domestic industries to modernise, and the OGL status was usually accompanied by reduction in custom tariff rates. According to Prusell (1992), the import licensing of capital goods in the restricted list was administered with less stringency during the 1980s. To explain its consequences, Goldar and Renganathan (1990) showed that the import penetration ratio in the capital goods sector increased from 11 percent in 1976 to 18 percent in 1985. World Bank (1989) and Aksoy (1992) mentioned that the goods in several instances that were allowed to be imported were imperfect substitutes of domestically produced goods and thus import liberalisation during this period may not have impacted to immediate direct competition to established producers of intermediate and capital goods. Furthermore, there had been an increase in the average effective tariff rate on capital goods from 37 percent in 1973 to 63 percent in 1988. Also, the imports of finished consumer goods remained in the banned list for the entire duration of the 1970s and 1980s.

CONCLUSIONS

he evolution of the policy formulation and the implementation over the years has often been described as ‘gradual’ (or denigrated or stuck) in terms of pace and ‘broken’ (or ineffective) in terms of achieving the outcomes that policy makers ostensibly intended. There has been a major consensus in intellectual climate of economic thinking to identify the Indian economic era. Three broad periods are identified in terms of pace and scope of the evolution of economic policies in the post-independence period of India. The first phase – since independence to the mid 1980s- was one of state controlled (or in commanding height or state conservatism or interventionist), which was described as inward looking posture (or of reforms by stealth) [Bhagwati and Srinivasan, 1984], and was also christened as disgusted funereal pace of liberalisation [Joshi and Little, 1994]. The second phase - from the mid 1980s to the early

1990s or prior to 1991- was a period of gradual, hesitant and uneven economic reforms as was described reforms were lacking in boldness and were lopsided, as was coinage slow shifting from planning the economy to management of the economy [Kurien, 1996] and which was an effort at more fundamental change at freeing the economy and was termed as piecemeal measures i.e., some minimal management by the state with the liberalised measures occurring mostly in the trade and industrial sector [Bhagwati, 1993]. The third phase from June 1991 to the present is IMF-World Bank led stabilisation cum structural adjustment package of reforms which aimed at to introduce full blown economic liberalisation of outward oriented rapid, speedy and radical economic reforms, with the reforms encompassing almost every aspect of the policy regime in development strategy [Byres, 1999].

Short-run disequilibrium dynamics and long-run equilibrium relations of output, prices, investment, the sustainability of public deficits, current account deficits at both level and rate values of macroeconomic instability analysis brings into sharp focus of the role of fiscal, monetary, BOP and exchange rate policies. It involves the following interdependent analytical issues such as their modus operandi, coordination between the policies, channels of causation, and degree of effectiveness to influence effective demand. The policy dynamics of this chapter provide useful guidance for development policy in India, particularly relating to macroeconomic growth process. In particular, they have a number of implications for identifying macroeconomic instability sub-periods. Several of the policy changes discussed in this chapter has significant implications for the Indian macroeconomic behaviour and on the relationship between macroeconomic policies and growth. The complexity of the Indian policy regime and the occasional shifts in economic policy provides a guideline for this research in delineating the links between policy variables and the behaviour of saving, investment, and output growth in the Indian context, as is the task for the chapters to follow. In the next chapters, it would report the following sets of policy exercises corresponding to: fiscal policy, monetary policy, exchange rate or currency devaluation policy, and policy mix. All comparisons are made empirically with the sample validation solutions.

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Theoretical Framework: Some Issues of Macro-economic Stability & Growth

INTRODUCTION

A macroeconomic instability situation usually takes the form of accelerating inflation and unsustainable fiscal and current account deficits. On the contrary, stabilization involves returning to low and stable inflation and a sustainable fiscal and current account position. Stabilization is obviously necessary in response to a macroeconomic crisis, but structural reform may or may not go with stabilization measures. Since some reforms may amplify the macroeconomic problems, it has been argued that stabilization should precede structural reforms. However, the content and timing of the stabilization measures must be considered in the light of the macroeconomic situation.

The purpose of this chapter is to digress briefly the theoretical framework incorporating relevant predilections in view of the importance to macroeconomic policies on growth and the underlying macroeconomic adjustments in an economy that would come to help gaining the empirical and analytical later part of this research, as is used for pedagogical discussion. Thus it is necessary to recall the salient aspects of instability issues in alternative theoretical paradigms in order to ensure clarity and smoothness and to place the research in correct perspective. In other words, theoretical instability channels underlie in the role of policies and thus theoretical and policy interaction constitute economic tradeoffs among policies, variables and outcomes through which instability is commonly measured. This chapter sets in to discuss the determinants of macroeconomic instability theoretically.

In such a context, the following issues like fiscal adjustment, twin-deficit problems, investment-growth nexus, devaluation, exchange rate, money-supply – price level, the counter-cyclical nature of inflation, the impact of absorption on reserves, the evolution of the debt-income ratio, the relationship between real interest rate and growth, the sustainability of the fiscal stance, amongst others, could act as theoretical guideposts for the formulation of issues in the role and conduct of macro-economic stabilization policy. These theoretical points would

enable the present research to translate the implied interrelationships into various policy - relevant solutions for some of the urgent structural adjustment problems confronted the Indian economy over the studied sample period. This chapter provides the following lines of approaches for analyzing responses towards such imbalances. Theoretically, it would be possible to predict the effects of policy relevant variables such as interest rates, exchange rates, capital inflows, amongst others, on key macroeconomic outcomes such as inflation, international reserves, savings, investment, fiscal deficits, BoP, and, above all, economic growth.

5.1 THEORY OF FISCAL ADJUSTMENT

While the pace of fiscal adjustment has to pay attention to cyclical factors, it is certainly important to speed up fiscal adjustment during periods of boom and recovery when there is a natural tendency for the budget to improve. A prime essential of macroeconomic stability in the medium and long-run is the sustainability of the fiscal deficit of the government. Such fiscal deficit can be financed by printing money, borrowing domestically, or borrowing abroad. However, excess reliance on each of these methods can lead to a crisis. If fiscal deficit is financed through domestic borrowing, the relationship between the interest rate and the growth rate of GDP is critical. If the former surpasses the latter, any primary deficit net of the inflation tax leads to a debt trap, in other words, to an explosive debt/GDP ratio. This is clearly unsustainable and would lead to the government reneging on the debt either explicitly or indirectly by eventual monetization and hyper-inflation and thereby the high interest / inflation trap and the subsequent spectre of an economic slowdown, which is often a leading indicator of recession [Rao, 2000].

Thus to analyze the fiscal stance, it is essential to understand the relationship between real interest rate (cost of capital) paid on the internal debt (r) and growth rate of real output (g). For such theoretical context, let 'd' represents the ratio of internal debt to GDP at market prices, i.e., $d = ID/GDP$. The movements in the debt-income ratio are closely related to its proximate determinants given by the following equation: $\Delta d = (r-g) d + x$; where Δd = change in the debt-income ratio, r = the implicit interest rate on internal debt less the inflation rate, and x is the primary deficit to income ratio, i.e., $x = PD/GDP$. A primary deficit is in theory sustainable if the interest rate is less than the growth rate of GDP because the debt/GDP ratio would converge

to a limit. However, this notion of sustainability is based on the assumption of constant values of the interest and growth rates. If the primary deficits remain high, there would likely to be a large divergence between the actual debt/GDP ratio and its theoretical limit [Rao, 1999].

Fiscal sustainability is critically associated with the excess of the growth rate over the real interest rate i.e., $r - g < 0$. Thus it is important to examine the relationship between these two variables. On this point, it is true that a rise in the real rate would by weeding out unproductive investment, increase the productivity of capital. It is thus hypothesized that there should be an inverse relationship between the real rate of interest and the incremental capital-output ratio (ICOR), because the reciprocal of the latter is a measure of the productivity of capital. This means that a rise in the real interest rate would decrease the ICOR (i.e., increase the productivity of capital). It is equally true that a rise in the real interest rate could reduce the investment rate per se. Since the growth rate is the product of the marginal productivity of capital and the investment rate, the overall effect of the real interest rate on the growth rate would depend on the relative magnitudes of these two conflicting effects; it seems probable that at very high real rates, the negative impact would outweigh the positive impact, thereby causing a contraction in growth [Rao, Samant and Asher 1999]. The difference between the actual fiscal deficit (X) and the cyclically neutral fiscal deficit (CNFD) is the fiscal stance (FIS); i.e.,

$$FIS = X - CNFD$$

$$\& CNFD = g \text{ GDP}^* - t \text{ GDP}$$

Where, g is the expenditure- to -nominal GDP ratio, and t is the revenue –to-nominal GDP ratio, both in a given base period, GDP^* is the trend value of GDP. A positive FIS implies an expansionary stance. And fiscal impulse is the inter-year change in the fiscal stance; i.e., fiscal impulse = ΔFIS

5.2 THEORY OF EXTERNAL SECTOR ADJUSTMENT

5.2.1 TWIN - DEFICIT PROBLEM

If the fiscal deficit is financed by borrowing abroad, the process in turn would imply that debt sustainability requires that the interest rate on external borrowing be less than exports [Joshi & Little 2004]. If this condition is realised, a primary deficit (i.e., non-interest) in the current account of the balance of payments is sustainable. If there is a large primary current account deficit, it would imply a high terminal external debt/export ratio, which is likely to raise the

interest rate at which the country can borrow and there would be credit rationing. It is important to note that public sector deficits can increase external debt in two ways: (a) by direct public foreign borrowing and (b) by increased internally held public domestic borrowing which is likely to spill over into current account deficit and increased private foreign borrowing. If there is excess demand situation with a fiscal deficit and current account deficit, this problem can be eased in two ways: (a) fiscal retrenchment accompanied with expenditure switching policy such as exchange rate devaluation (or depreciation) and (b) by policies to promote private investment.

Much of the underlying theoretical debate of the structural adjustment programme is on the relationship between the gross fiscal deficit (GFD) and the current account deficit (CAD). The twin-deficits are largely the results of the development strategies being followed by the country as well as macroeconomic policies pursued by its major trading partners. The national income identity decomposing domestic absorption into its basic components incorporating the balance sheet accounting identity of the assets and liabilities of monetary system in the presence of external sector budget constraint transformed to savings-investment balance states that aggregate domestic investment is financed by domestic savings and foreign savings (or current account deficit) i.e.,

$$I = S + CAD; \text{ where, } I = I_g + I_p \text{ and } S = S_g + S_p$$

$$\text{Or, } I_p = S_p - (I_g - S_g) + CAD$$

$$\text{Or, } I_p = S_p - GFD + CAD$$

where, GFD = gross fiscal deficit and CAD = current account deficit of the domestic economy [Mohanty, 1997; Marwah and Klein, 1998; Chandrasekhar, 1999; Rao 1999; Rao et al. 1999a, 1999b; Ahluwalia, 2004]. GFD are caused due to any or all of the followings: excessive public sector investment, increasing government consumption in the form of subsidies to public enterprises, a reluctance to raise taxes and spending increased. CAD is foreign savings or positive savings of the foreign residents (of the external sector) in their dealings with the economy or, the balancing item between current external expenditures and foreign exchange receipts. The components of the former include total imports, net investment income accruing to the external sector from the government (or, interest on external debt by government), and net investment income accruing to the external sector from the private while

that of later include total exports, net official transfers that the government receives from external sources, net external receipts of the private sector comprising net transfer payments from the external to the private sector and net factor payments from abroad. Thus CAD must be financed either by drawing down international reserves (or net foreign assets) or by an increase in net capital inflows implying an increase in international indebtedness of the domestic economy.

The current account deficit as well as the gross fiscal deficit are generally linked within a general equilibrium framework as their basic proximate determinants, primarily the rates of inflation and growth, are themselves endogenous variables. Thus any meaningful analysis towards such imbalances suggests that their fundamental causes be specifically identified as the general equilibrium nature of the problem is not only a theoretical issue. Based upon the above identity, it indicates that improvements in the CAD can take place only if sectoral savings rise relative to sectoral investment. This also indicates that an increase in external savings i.e., the CAD can offset public sector dissavings whereby the pre-empting the crowding out of private sector investment. Now if the government fiscal deficit is corrected would that reduce the CAD? To ascertain the validity of this proposition, it has recently been a contentious policy issue in the context of the Indian economy particularly with the initiatives of structural adjustment programmes in the 1990s.

5.2.2 THEORY OF EXCHANGE RATE

This sub-section begins with some terminological preliminaries. As an empirical economic proposition the purchasing power parity (PPP) theory states that international prices of traded goods and services when converted to a common currency should equalise across national boundaries. Cassel (1921) viewed PPP as a determinant of “true equilibrium of the exchange”. However, there are many who have raised question about the validity of the PPP as a theory of exchange rate determination and accorded some value to the doctrine only when “disturbances are mainly of a monetary origin”. The broad consensus that has emerged in the literature about the validity of PPP has aptly been summarised by Rogoff (1996), “while few empirical literatures take PPP seriously as a short-term proposition, most impulsively believe in some variant of PPP as an anchor for long-run Real Exchange Rate”.

Following the British convention, the nominal exchange rate is the price of home currency in terms of foreign currency, i.e., so many units of foreign currency per unit of domestic currency. On the other hand, the American convention defines the nominal exchange rate as so many units of domestic currency per unit of foreign currency [Joshi & Little 1998]. However, the present research has followed the British convention. The absolute version of the PPP theory implies that the nominal exchange rate (E) is determined exclusively by the ratio of foreign price level (P_f) to home country's price level (P_h). In other words, nominal exchange rate is the price of one unit of foreign currency (i.e., \$) in terms of the home currency (Rs.). If law of one price holds for a particular commodity 'i' then PPP based nominal exchange rate for that commodity would be given as:

$$E_i = P_f^i / P_h^i ;$$

A fall in the exchange rate means a devaluation of the home currency, and a rise means an appreciation.

Expressing all variables in logarithms, the absolute version of PPP can be expressed as:

$$\log (E_i) = \log (P_f^i) - \log (P_h^i)$$

On the other hand, the relative version of PPP does not specify any relationship between the levels of exchange rate and prices of the traded commodities and instead it merely states that relative change in the nominal exchange rate should be equal to relative change in foreign price minus relative change in domestic prices (or, price differentials between the two countries), i.e.,

$$\Delta \log (E_i) = \Delta \log (P_f^i) - \Delta \log (P_h^i)$$

Thus test for relative version of PPP can be carried out merely as a test of whether the rate of growth in exchange rate has been able to offset the difference between the rate of growth in home and foreign price indices. However, theoretically PPP should be valid only for traded goods and in the absence of any such relevant price index for traded goods, a number of price indices like WPI (Wholesale Price Index) and CPI (Consumer Price Index) can be experimented.

On the other hand, the 'real exchange rate' is not an exchange rate in the ordinary sense but the proxy for the competitiveness of tradable goods and it can be defined in different ways

depending on the relative price that is the focus of interest. According to PPP theory, the real exchange rate (RER) can be defined in the long run as the nominal exchange rate (E) that is adjusted by the ratio of the foreign price level (P_f) to the home price level (P_h). Mathematically, it can be written as $RER = E P_h / P_f$. In terms of this definition, a decrease in RER can be interpreted as the real appreciation of the exchange rate. If PPP holds, then principal source of variation in RER should be the price ratios and not the nominal exchange rate. Consider the following expression of changes in RER:

$$\Delta \log (RER) = \Delta \log (E P_h / P_f) = \Delta \log (E) + \Delta \log (P_h / P_f)$$

The variance decomposition exercise vividly reveals that the variation in real exchange rate is dominated by the variation in nominal exchange rate, rather than by the price ratios as predicted by PPP theory [Nag & Mitra 1998]. The Nominal Effective Exchange Rate (NEER) is taken as representative of exchange rate. The NEER is a weighted average of the bilateral nominal exchange rates of the home currency in terms of foreign currency. In the construction of the NEER, the exchange rate of a currency is expressed as the price of one unit of that currency in terms of the numeraire foreign currency [Mathur 1999]. A rise (fall) in the NEER thus represents an appreciation (depreciation) of the home currency Rupee.

5.2.3 THEORY OF DEVALUATION

Devaluation is a stabilization tool to cure BoP disequilibria. However, foreign trade area of an open under-developed economy may itself be one of the structural constraints for macroeconomic stability particularly when the Marshall-Lerner-Robinson condition for the stability of the foreign exchange market stating that the sum of price elasticities of home demands for the foreign good and of foreign demand for the home good should at least be unity violates is linked to domestic structural rigidities due to low elasticity of supply of the exportable of the underdeveloped economy, and devaluation accompanying rise in the domestic price of the exportable may trigger an inflationary spiral. Moreover, capital mobility of capitalists could be one of the reasons for the balance of payments disequilibria of the under-developing economies [Ray, 1990]. The Marshall-Lerner expenditure-switching condition implies that a rise in exchange rate (devaluation) would improve the trade balance. However, in a situation where the export response is weak and the share of imports in variable costs is high, a devaluation could result in a domestic recession as tends to be contractionary if the decline in

the value of the Keynesian multiplier resulting from distributional shifts is greater than the increase in income resulting from the rise in the trade balance associated with the devaluation [Kaldor, 1978; Krugman and Taylor, 1978; Taylor 1983; Patnaik, 1991].

As long as to that extent that structural trade imbalances persist, 'capital flight' could simply take the form of exporters keeping their money abroad in anticipation of future devaluations, which could act as a barrier to capital inflow and in turn would involve depletion of foreign reserves. Thus the effects of devaluation on growth working through its effects on foreign savings (or to finance the current account deficit) are ambiguous. Moreover, that results in inflows of Foreign Institutional Investment (FIIs) and Portfolio Investment (FPI) more, which are financial capital for commercial credit and are more speculative and extremely unstable in nature for their easy repatriability and responding adversely to any instability either of the real economy or financial variables such as rate of inflation and the exchange rate; instead of Foreign Direct Investment (FDI) aimed at little impact on productive capacity creation and thereby impinges on growth. The factors that affect the profitability of investment opportunities in developing countries (or host country receiving the capital) include real and monetary factors in the host country such as growth rate of real GDP, inflation rate, appreciation in exchange rate, interest rate differentials, host country's financial system and government policies regarding financial management. One strand of theoretical thought in aiding the development and growth process include investment-led, import-led and export-led growth strategies while the other thought swayed from financial repression to financial deepening hypotheses in promoting macroeconomic growth and development [Agarwal 1997; Marwah & Klein 1998; Masih 1999]. The behavior of important variables related to BoP are exports, imports, current account balance, exchange rate, external debt, foreign exchange reserves, and net invisible earnings.

5.3 THEORY OF SAVINGS, INVESTMENT & GROWTH

Investment is one of key linkages through which macroeconomic policies influence the real sector. The nature of the linkage varies between countries, and the theories of investment differ in terms of the channel of influence. Theoretically, there are four popular investment approaches namely accelerator model, the cash-flow model, the securities valuation or Tobin's 'q' model and the standard neoclassical model [Bischoff 1971; Clark 1979]. All these models

focussed on the movements in net investment. One of the important mechanisms by which instability may occur is via the inefficiency of investment. It is evidenced that episodes of high inflation may lead to misallocation of investment across different sectors in an economy that consequently impact on efficiency of investment.

The theoretical and empirical studies point out that savings and investment have a pivot role to play in the instability adjustment process as they are the direct variables bearing upon macroeconomic policies that in the short to medium run causes to change in the intensity of use of resources, and the efficiency within which they are used, to be a major determinant of the long-run real growth rate of an economy. Such transmission channels combine both the real and financial factors as well. How the role of savings and investment is important in explaining economic growth discussed earlier in chapter 2, in which the traditional Harrod and Domar growth theory underpinned the investment rate as the prime mover of economic growth while the neoclassical growth theory considers investment rate to be important in explaining the level of per capita income, but not the growth rate of per capita income; and in the new endogenous growth theory, investment has more recently regained importance as a key determinant of economic growth.

5.3.1 PUBLIC & PRIVATE INVESTMENT / CROWDING –IN & - OUT

It is important to note that debt sustainability issue and the crowding out issue are connected. Even if long-run sustainability is not threatened, high fiscal deficits are undesirable because they may lead to crowding out of private investment or net exports. Certainly the magnitude of these effects depends on as to whether there is output slack and private savings are growing. However, private savings cannot grow fast enough reasonably indefinitely to absorb high fiscal deficits. If private investment is crowded out by unproductive public consumption, the growth rate of GDP would directly be reduced. Even if it is crowded out by public investment, there is a loss in terms of growth, if, as being often the case, private investment is more productive than public investment. If crowding out takes in the form of higher trade deficits, the economy's external debt increases. The growing volume of government borrowing may drive up interest rates and reduce private investment and GDP growth. Thus crowding out could be severe enough to lead to unsustainable debt. The fall in interest rates that follows from fiscal adjustment may help to 'crowd in' private investment, but this is not automatic as other

conditions are important to be met such as provision of infrastructure and the transparency and credibility of the reform process.

Fiscal policies affect private investment through three major channels: public investment, public deficits and the user cost of capital. The effect of public investment on private investment has to be understood with respect to two opposing views whether the ultimate effect of the former on the later is one of displacement or promotional by understanding the channels through which the effect is transmitted. One school (classical theory as well as its modern versions) argues that public investment must displace private investment. Or, more generally, when expenditure in growth process is financed through taxation, inflation or debt, utilising the scarce resources which normally is available for the use of private sector in the production of marketable goods, the effect works through the rate of interest, but the channel of influence may be the price level, depending on how much investment is financed, in which full employment output is always critical. And so it is claimed that deficit financing and thus government borrowing can crowd out private investment since both public and private sectors have to compete in terms of loanable funds which inevitably raises the rate of interest, thereby displacing private investment. In other words, debt-based deficits put pressure on domestic credit and consequently rise in interest rates leading to crowding out of private investment. On the other hand, the second school advocates that the net effect of increase in public investment on private investment is positive in Keynesian economy via the multiplier effect if the economy is operating below capacity, i.e., the crowding in effect is brought about by raising capital productivity, which in turn, pushes up the demand for inputs and other services. All these eventually raise the demand for output produced in the private sector and as a consequence an increase in private sector investments. Thus, the higher the complementarity between public and private capital, the more likely be that public investment would have a net positive effect on private investment. There is strong likelihood that an increase in government investment generally 'crowds in' private investment, and that a reduction in the former would reduce private investment as well. The critically important considerations in this respect are: (i) the extent to which public and private investments are competitive or complementary in nature; (ii) the position of capacity utilization in both consumer goods as well as capital goods industries; (iii) the ability to import capital goods, i.e., the foreign exchange reserve position, and (iv) the mode through which public investment is financed.

To examine the link between investment and growth, the present research needs to have a theoretical framework in order to build the analytical framework, which appropriately captures causality running in an empirically testable manner by using the gross investment rate rather than the stock of capital as is the appropriate indicator of investment in explaining long-term growth. One subsidiary interest of this research has been to ascertain empirically the relationship between the investment rate and the growth rate in the Indian economy with emphasis on the role of policy in mediating postulated relationship. Scott's theory of endogenous economic growth (1989, 1992) has certain features to purport the need of this present research from both theoretical and empirical points of view as provides an explicit role for policy to influence, interactively with gross investment, the relationship between investment and growth as gross investment captures both investment (capital formation) and technological effort. This theory allows for policy to impact on the relationship between investment and growth by impacting the efficiency of investment as gross investment combines both technological change and related policy factors.

5.4. POLICY RESPONSE TO EXOGENOUS SHOCKS: SOME THEORY

Economic theory emphasises the pivotal differentiation between temporary and permanent negative shocks to real income. A temporary shock is self-reversing and does not imply a reduction in permanent income. Current consumption needs therefore to be maintained above the temporarily low current income. But in the case of permanent negative shock, the underlying proposition is in favour of an immediate cut in consumption as income has gone down permanently. A reduction in food output due to drought is an example of temporary reversible shock and stabilisation requires the costs of stock – holdings or borrowings as optimal stabilisation measure based on the equality between marginal cost and marginal benefit principle with the usual assumption of diminishing marginal utility of income can only be attained in course of time. This principle suggests that the use of foreign exchange reserves or loans is clearly a cheaper method of stabilisation than building up of a buffer stock from domestic procurement or imports to stabilise food prices. This argument thus suggests no obvious role for demand management policy of the conventional type.

A rise in the international price of oil and the consequent deterioration in the terms of trade could in principle be permanent. This means that a rise in the price of imported oil would

reduce the country's real income permanently below its previous trend. Thus it may be optimal to postpone some of the necessary cuts in consumption fairly quickly and external borrowing for consumption may be used cautiously. The current account deficit can be expected to widen due to increase in oil import bill. This further influences the ratio of the current account deficit to exports to reduce. This in turn may require a depreciation of the nominal exchange rate for mobility of resources to shift production towards tradable goods and consumption switching (away) from them to combat inflation and BoP deterioration [Hamilton 1983].

The general argument on inflation is that it is an outcome of an array of factors such as monetary expansion, expansionary fiscal policy and deficit financing, excess demand, structural bottlenecks, inter-sectoral inconsistency and supply constraint, deficits in foreign exchange reserves, currency devaluation, poor harvest due to severe drought, changes in administered prices, oil price hike, exchange rate shock, interest rate shock, terms of trade shock etc. [Rani 1999; Murthy 2000].

CONCLUSION

This chapter has not attempted to examine which theory of growth and stability is more appropriate in the Indian context. Such an attempt falls outside the scope of this research. Rather, it has been interested in pursuing a more limited objective to ascertain theoretically the route of instability channels with emphasis on the role of policy in mediating the postulated relationships. In particular, it looks at the determinants of macroeconomic instability and the interrelationships between macroeconomic policies, variables and outcomes. These theoretical points would act as guideposts for subsequent empirical analysis explaining the instability linkages between real sector and financial sector indicators being influenced by macroeconomic policies and exogenous shocks to accurately predict the effect of policy-relevant variables such as interest rates, exchange rates, capital inflows, amongst others, on key macroeconomic outcomes such as fiscal deficits, savings, investment and inflation, external reserves and BoP, income distribution and, above all, economic growth in India.

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Research Methodology on Time-Series Econometrics with an Application to Macroeconomic Instability

METHODOLOGICAL LINKAGE

This section describes the underlying rationale for constructing a comparative perspective of macroeconomic instability and outlines the methodology. Macroeconomic instability analysis of the effects of policies and exogenous shocks on economic growth is generally conducted within one of the three alternative frameworks: (a) a macroeconomic growth model, (b) business cycle approach; (c) a multifactor technological production function. In (a) the emphasis is on how the macroeconomic policies affect the growth parameters such as the savings – income ratio and the capital – output ratio. In (c), the main emphasis is on the scale, productivity and efficiency parameters of the production function. Thus framework (c) falls potentially in the ambit of endogenous growth theory provided foreign investment can be treated as an endogenously generated (or market determined) input factor to be used in the production function. However in (b), time-series econometrics like unit root tests, co-integration within error correction framework, and causality tests are essentially useful. The unit root methodology was developed as a means to provide a summary of economic series that exhibits a potential long-run relationship with the fluctuations of economic activity. Methodologically, this chapter explains the concepts of stationary, non-stationary and co-integration, and their relation to theoretical and methodological perspectives of instability linkages between macroeconomic variables and economic outcomes. It also discusses for unit root tests the Augmented Dickey Fuller (ADF) test and the Ljung – Box (LB) test. It also has a brief discussion of co-integration, Co-integrating Regression Durbin – Watson Test (CRDW), and error correction mechanism (ECM), bi-variate Granger causality tests and their extension to multivariate co-integration framework.

UNIT ROOT TESTS

An econometric model illustrating some of the instability linkages is discussed in this chapter. Suppose, the theory suggests that there is a linear relationship between the values of some uni-

variate time-series at time 't' and (t-1) for which time-series data are available for a period of sufficient length. Then the obvious useful way to test the theory is to estimate by considering a linear equation of the form: $Y_t = \alpha + \rho Y_{t-1} + e_t$; where, e_t is the stochastic (random) error term with the classical assumptions of the Ordinary Least Square (OLS) method of zero expected value (mean), constant finite variance (homoscedastic), zero auto (serial) correlation (un or non correlated) due to zero auto covariance as are independent of time (time-invariant), absence of correlation between the error term and the regressors, and correct specification of the conditional mean function, i.e., no omitted variables and appropriate function form. Such an error term is also known as white noise error term. This stochastic process is also called stationary stochastic process when the estimation is conventionally done by the OLS method, the overall fit is tested by R^2 , and the statistical significance of ' ρ ' is tested by using the standard t-test. The coefficient ' ρ ' measures the degree of persistence of deviations of Y_t from mean. The classical approach of estimation to statistical inference routinely used in the applied macroeconomic research work is based on the assumption that the data sources are stationary. That is, data-series over time grow in a fairly steady, constant manner, reflecting smoothly evolving economic forces, and in this sense, fluctuations in the time-series are taken to imply the influence of cyclical or temporary factors and eventually the series bounce back to their trend growth values, as the mean, variance and covariance are assumed tend to remain constant over time.

When $\rho = 1$, these deviations are permanent what is known as the unit root problem, i.e., a non-stationary situation. In this case, the time-series (Y_t) that has a unit root is said to follow a random walk – it can wander arbitrarily far from any given constant if enough time passes. It is important to note that the applications of the unit root tests have shown that the assumptions of classical estimation method are not satisfied by most number of macroeconomic time-series as large of them are not stationary around a deterministic trend. Instead, they have stochastic trends; i.e., some economic shocks that affect a series would have a permanent effect on the level of the series, making the series wander without a tendency to return to mean value. Thus, the mean, variance and covariance of the series will be time-variant or time-dependent, i.e., tending to vary over time. If variables are non-stationary, using classical estimation methods, such as OLS, to estimate relationships with unit root variables gives misleading inferences. In other words, in this case, the OLS estimates tend to have sample distributions

with properties very different from those assumed under the conventional procedure, and regression coefficients tend to appear spuriously significant, which is known as the spurious regression problem.

An intuitive explanation of its significance is as follows. As the means and variances of the unit root variables change over time, all the computed statistics using OLS estimation in a regression model fail to converge to their true values as the sample size increases. Furthermore, conventional tests of hypotheses will then tend to be seriously biased towards rejecting the null hypothesis of no relationship between the dependent and independent variables. This is a serious problem if the null hypothesis is true. In other words, when the OLS estimation method works with non-stationary variables, there is always the possibility of ‘Type-I’ error; accepting the relationship as significant when, in fact, they are uncorrelated. However, measures of the overall fit of the regression, such the coefficient of determination R^2 tend to provide an artificially high explanatory power of the regression, as is called the problem of ‘nonsense correlation’ or ‘spurious regression’[Yule 1926]. The spurious regression problem has also other implication that low D-W statistics (converges towards zero) often indicates that the variables in a regression model are non-stationary [Phillips 1986].

The existing business cycle theories having alternative macroeconomic paradigms have so far treated economic fluctuations as temporary deviations from a stable trend rate of growth of output and offered different explanations for these fluctuations in which a distinction is made between the determinants of the trend rate of growth of output and cycles. However, the assumption about the stability of the long-run trend rate of growth of output is untenable because aggregate output in many countries found non-stationary. Thus this finding casts a doubt about the usefulness of the existing theories on the merits of short-run stabilisation policies to promote the trend growth rate of output as were less noticeable such disagreement. Together unit roots and cointegration have important implications for the specification and estimations of dynamic economic approach. It is convenient to view co-integration as a technique to estimate the equilibrium or long-run parameters in a relationship among unit root variables. It is worth noting that cointegration techniques are useful for estimation not only to neo and new classical theories that use the equilibrium framework but also for Keynesian economics though based on disequilibrium framework as it can be interpreted as equilibrium

economics in which resources are underemployed. In this way, the usefulness of cointegration techniques to Keynesian approach should not be underestimated.

The methodological conflict between the equilibrium framework of the theory and the disequilibrium environment from which data gathered is resolved by extending the equilibrium specifications to include disequilibrium adjustment mechanisms. The extended equation is then estimated from which estimates of the long-run or equilibrium parameters are derived by imposing equilibrium conditions, which are then used to test the underlying theory. The short-run or the dynamic disequilibrium relationships are estimated utilising the estimates of the long-run parameters of cointegration techniques within the error correction framework. In other words, cointegration facilitates utilisation of the estimated long-run parameters into the estimation of the short-run disequilibrium relationships, as there is a trade-off. Finally, the robustness of the estimated dynamic disequilibrium relationships is determined by subjecting them to the post-regression standard diagnostic test statistics. And thus the traditional approach can be criticised as it neglects the problems caused by the presence of the unit root variables while the main advantage of cointegration is that it being capable directly to test or falsify the underlying theory. In this way, it is advisable for the theoretical framework of this present research to apply essentially estimation methods of cointegrating regressions and joint estimation of both the long and short-run specifications that are computationally demanding. It has thus necessarily paid relatively more attention to the time-series underlying theoretical insights to test for unit roots, estimate cointegrating regressions and error correction specifications.

It is important to note that until the publication of Granger and Newbold (1974), the problem of ‘nonsense correlation’ or ‘spurious regression’ got paid far too little attention by applied econometricians. They by simulation showed that how misleading standard regression procedure can be if applied to non-stationary variables. According to them, high R^2 values can occur together with apparently significant t-values in regression entailing two completely unrelated series if both are integrated at order 1 (a series is said to be integrated of order 1 when the differenced series is stationary with positive spectrum at zero frequency).

A stochastic process means a random process. A stochastic process may be stationary or non-stationary. It is stationary if its mean, variance and serial auto-covariance and thereby serial

auto correlation remain constant over time; otherwise the time-series is said to be non-stationary or having presence of unit root or random walk. If a time-series is differenced once and the differenced series is stationary then the original series is said to be integrated of order 1, denoted by $I(1)$. This $I(1)$ series is called non-stationary or random walk as there is unit root. Similarly, an original series has to be differenced once or more times, say 'd'times before the differenced series becomes stationary, then the original series is said to be integrated of order 'd' or $I(d)$ and is non-stationary and having presence of unit-root or random walk. If a series is originally stationary and does not have to be difference any time i.e., if $d=0$, then the original series is called stationary time series or stationary process and having presence of no unit root and is denoted by $I(0)$. The terms a 'stationary process' and an $I(0)$ process are as synonymous.

Moreover, they recommended that if more than two independent $I(1)$ series are used in a regression, the possibility of a spurious relationship rises further. In upshot, Granger-Newbold results emphasised the need to rework the basic statistical techniques used in applied econometrics.

A simple alternative to cure the problem of spurious correlation dealing with non-stationary variables can be to estimate relationships using differenced series instead using them at level values [Nelson and Plosser 1982; Mills 1990]. The effect of taking the rate of change in a variable typically removes any trend. This indicates that the non-stationary time-series would become stationary if they are first differenced. However, doing that would have real danger as important components of the potential relationship between variables may remain undiscovered (Granger 1987). Thus, estimation based on differences are likely to fail yielding a long-run relationship, if exists. Differencing can thus in way be a satisfactory method tackling a spurious correlation problem.

Recent advancements in time-series econometrics revolutions came with two alternative approaches to redress the spurious regression problem without losing any information about the data at level value. These are the general to specific modelling procedure formulated by Hendry (1996) and the other one is the cointegration approach pioneered by Engle and Granger (1987). The general to specific methodology on error correction approach to time-series analysis was first developed by Sargan (1964) but was started from the early 1960s in the works of London School of Economics. The merit of this methodology is to accommodate the relationship being

investigated within a reasonable complex dynamic specification, including lagged dependent and independent variables so that a parsimonious specification of the model can be captured [Hendry, Pagan and Sargan 1985]. An important advantage of this method is that it yields equations with first-differenced and stationary dependent variables unlike simple first-differenced equations and makes use of long-run information in the data appropriately [Wickens and Breucsh 1988].

This methodology starts with an estimation procedure of over-parameterized autoregressive distributive lag (ADL) order:

$$Y_t = \alpha + \sum_{i=1}^m A_i Y_{t-i} + \sum_{i=0}^m B_i X_{t-i} + \mu_t \quad (6.1)$$

Where α is a vector of constants, Y_i is a (nx1) vector of endogenous variables, X_i is a (kx1) vector of explanatory variables, and A_i and B_i are (nxn) and (nxk) matrices of parameters.

The above equation (7.1) can be re-parameterised in terms of differences and lagged levels in order to separate the short-run and long-run multipliers of the system as follows:

$$\Delta Y_t = \alpha + \sum_{i=1}^{m-1} A_i^2 \Delta Y_{t-i} + \sum_{i=0}^{m-1} B_i^2 \Delta X_{t-i} + C_0 Y_{t-m} + C_1 X_{t-m} + \mu_t \quad (6.2)$$

Where

$$C_0 = -I - [\sum_{i=1}^m A_i] \text{ and } C_1 = -I - [\sum_{i=1}^m B_i]$$

Where the long-run multipliers of the system are given by $C_0^{-1}C_1$ and I is the identity matrix. Equation 6.2 is known as the error correction mechanism (ECM). This is the particular formulation that is generally used as the ‘maintained hypotheses’ of the specification search. However, there are many different ways by which the dynamics of the general model could be presented as all of them would result in the same estimates of the unknown parameters, but each of them carries information differently that consequently make easier to interpret and understand (Pagan 1987). But there are number of reasons as is why the ECM is generally

much more preferred over the other formulations: first, the ECM has a first-differenced dependent variable and not a typical trending variable; second, it provides the model is correctly specified and the disequilibrium error of the specification would also be stationary, which can therefore be estimated by standard classical estimation methods such as OLS; third, an ECM involves parameterisation that clearly distinguishes between long- and short-run effects and this separation between long- and short-run parameters in an ECM makes possible to assess for either the validity of the long-run implications of theory or of incorporating them into the estimation process.

The estimation procedure having first estimated the unrestricted equation (6.2) usually goes progressively to simplifying it by restricting statistically insignificant coefficients to zero and reformulating the lag patterns where appropriate in terms of levels and differences to achieve orthogonality. As part of the specification search, it is essential to check rigorously at every stage as to whether the more general of models for possible misspecifications. Such checks would provide guide for both to have visual inspection of the residual from the fitted version of the model and tests for serial correlation, heteroskedasticity and normality in the residual, and the appropriateness of the particular functional form used. More importantly, any suggestion of the autocorrelation in the residual should guide to rethink about the form of the general model. Above all theoretical consistency must be born in this methodology used throughout the testing down procedure.

COINTEGRATION TECHNIQUES

Stationary of a time-series is very essential as the use of a non-stationary time-series in regression analysis can yield dubious and spurious relationships. Data-series (Y) can be either : (i) trend stationary: if $Y^* = a + bt$, then $e = Y - Y^*$ is stationary; (ii) differenced stationary: ΔY_t is stationary and (iii) the series may have to be de-trended and differenced in order to obtain a stationary series [Enders, 1995].

A time-series y_t is said to be integrated of order 1 or $I(1)$ if Δy_t is a stationary time-series. A stationary time-series is said to be $I(0)$. The concept of cointegration on the spurious regression problem was developed by Engle and Granger (1987) as an extension to the earlier work by Granger and Newbold (1974). They observed that despite the individual economic series may be non-stationary, a vector of variables, taken together, may be cointegrated as

generating a stationary residual subject to these variables are individually integrated of the same order. If the particular vector of the variables is placed together on the basis of sound economic theory, then a cointegration relationship among them can be explored as the long-run (equilibrium) relationship explained by the theory. A prerequisite for testing the sets of variables for cointegration is to establish the properties of the individual series and the order of integration of each variable must be determined because series with different orders of integration cannot be cointegrated.

Based on the conceptual analogy between cointegration and the economic concept of equilibrium, Engle and Granger propose a consecutive two-stage approach to modeling economic relationships entailing non-stationary variables, subject to the variables are integrated of the same order. The first stage captures modeling the long-run or cointegrating the relationship. The short-run dynamic disequilibrium relationship among the variables is estimated at the second stage. The second stage disequilibrium relationship can best be represented with an error correction mechanism. Engle and Granger (1987) prove that if the variables of same order are cointegrated i.e., if there exists an equilibrium relationship, then the short-run disequilibrium relationship between them can be captured by the ECM. This mechanism is referred to as the Granger representation theorem.

The order of integration of the series is determined by using the Dickey – Fuller (DF) and the Augmented Dickey-Fuller (ADF) tests for a Unit Root. The test statistic is the ‘t-ratio’ for the lagged level of the variable with the null being the series having unit root. A data-series is said to be integrated of order ‘d’, if it requires to be differenced d times to become a stationary series. Suppose, there is a vector (a set of variables) X_t containing n variables, all of which is I (1). This set of variables are said to be cointegrated if there exists a linear combination of these variables $Z_t = \alpha X_t$ such that Z_t is I (0), where α is known as the cointegrating vector. Therefore, in a long-run relationship between two variables both of them must be cointegrated of the same order if the error term is to be I(0) [Deadman and Charemza, 1992]. The following tests such as Cointegration Regression Durbin-Watson Test (CRDW), Dickey-Fuller Test, and Ljung-Box Test are used to test whether a set of variables is cointegrated. The null hypothesis is both the variables are not cointegrated. Prior to using the three tests for cointegration, cointegration regression is run, if the errors are found stationary i.e., I(0), then the two series are said to be cointegrated.

The econometric investigation of this research draws upon recent advances in time-series econometrics in regard to minimising the risk of uncovering spurious relations. It aims to redress the spurious regression problem through continuous interplay of theory and data in the process of specification search. This analysis has helped to suggest which variables should enter into a relationship, and the data are left to determine whether this relationship is static or dynamic. Using multiple cointegration and causal relationship techniques, the study has examined the short-run and long-run relationships between real and nominal macroeconomic variables. Prior to causality testing, the study employed the cointegration technique to determine whether the set of variables are cointegrated or not. The Dickey-Fuller (DF) and the Augmented Dickey-Fuller (ADF) tests for the presence of unit-root properties used wherever appropriate. Application of econometric TSA techniques helps in the identification of stable long-run and disequilibrium short-run relationships between the key macroeconomic variables under study. The interdependence of series behaviour on the policy framework establishes the degree of endogeneity or exogeneity of macroeconomic behaviour. Before analysing the relevant economic relationships, this study has carried out exogeneity tests to spotting complex simultaneous links, otherwise, estimates would have been unreliable. Make use of such tests on a priori basis rules out the possibility of the bias and gives more consistent results and helps in detecting the direction of causalities and ensures the smooth running of Recursive Systems whereby findings would remain robust.

CONCLUSION

The methodological conflict between the equilibrium framework of the theory and the disequilibrium environment from which data gathered is resolved by extending the equilibrium specifications including disequilibrium adjustment mechanisms. The extended equations are then estimated from which estimates of the long-run or equilibrium parameters are derived by restricting equilibrium conditions. These equilibrium parameters are then used to verify the underlying theory. Before analysing short-run macro dynamics and long-run equilibrium relationships devising error correction models and cointegration, this research has on a priory basis examined the nature of data particularly when variables are non-stationary for the presence of unit root with a view to minimising the risk of uncovering spurious relations and carried out endogeneity tests to rule out the possibility of estimates to be biased, unreliable and

simultaneity; detecting the direction of causality, causality tests were run to quantify more consistent instability results . Together unit roots, co-integration and causality tests have important implications for the specification and estimations of dynamic macroeconomic study.

By extending the ideas of unit root tests, ECM, co-integration and causality the next two chapters would establish short-run disequilibrium instability and long-run stability channels for the Indian economy.

The Phase Analysis of Instability Episodes: the Case of the Indian Economy, 1950-2003

INTRODUCTION

Changes in any economy's structure are predominantly gradual; those dynamic factors and their weights tend to relatively vary, but the structure and dynamics influence each other. These changes and interactions – along with domestic and international policies as well as outside events – explain why macroeconomic growth and stability vary a great deal over time. Policies have economic, financial, and political constraints may be reactive or proactive and can and sometimes do benefit from learning. Outside events or shocks represented by their presumed results shift economic and other variables that affect macroeconomic stability. The exogenous shocks like irregular components are to a large extent unpredictable random in nature, and that often dominant in the short-run.

Fluctuations in economic activity are a feature of the behaviour of most economies, and an understanding of their patterns and causes is important for economic analysis of instability episodes. The objectives of macroeconomic policy have long included the avoidance of protracted recessions and of periods of unsustainable growth that can jeopardise reasonable macroeconomic stability. The general perspectives provided by the various decades of the Indian macro-economy as well as the empirical evidence gathered in this regard help to offer useful guideposts for interpreting instability episodes observed in the Indian economy, in particular the role of shocks and policies. Such an approach in this chapter concentrates on suggesting ways in which macroeconomic policies and exogenous shocks have been influential for instability episodes. It discusses about relevant macroeconomic indicators for the Indian economy as a whole and analyses their sustainability.

In this context, this chapter explores three main underlying issues. *First*, it examines some of the main features of macroeconomic instability in the Indian economy over the past more than five decades against the backdrop of some of the theories advanced in order to

explain the stylised facts of macroeconomic crises. *Second*, it attempts to assess the two-way interactions between macroeconomic policies and economic outcomes: initially by examining the main factors that influence macroeconomic instability, and then by considering the role of economic policies in instability linkages and macroeconomic stabilization. Although there are uncertainties about understanding exactly the nature of the economic disturbances that cause macroeconomic instability as well as identifying the determinants of movements and co-movements of candidate macro-variables because exogenous shocks in many ways are often elusive and generally unpredictable. This suggests that it is necessary to understand macroeconomic warranted situations and its more fundamental misalignments with historical antecedents. However, the main focus has been to distinguish the instability sub-periods in the 1960s and 1990s. The concluding section draws upon some instability implications for policy posture and surveillance.

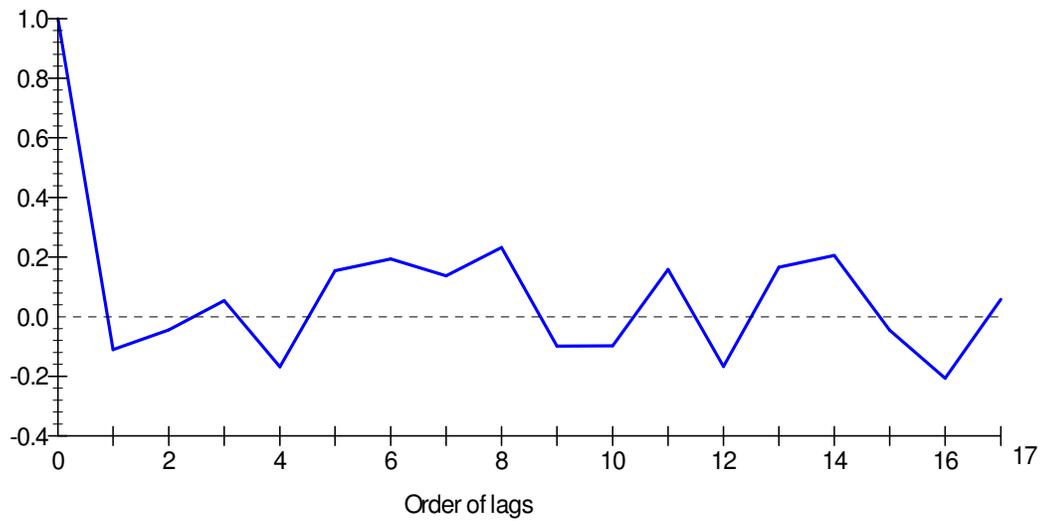
This chapter looks at all of these aspects of economic change as it breaks down the Indian macroeconomic performance of the studied sample period into a sequence of successive expansions and contractions and their respective stages. This is done with the aid of smoothing applied to the series of growth rate of Indian real aggregate economic activity. Smoothing of trend-cycle decomposition is done to reduce volatility. Smoothing techniques are applied cautiously so that that cannot disturb and conceal factual information. Measures relating to longer-run trends and intermediate –run fluctuations at levels, growth rates, as well as detrended values are examined. It concentrates on to identify Indian macroeconomic instability sub-periods based on factors and relationship using standard deviation-correlation matrix that helps to explain how Indian macroeconomic policies reflected in constituent elements of national aggregates and structural changes. It concentrates to analyse how economic indicators, while adjusted for inflation, are affected by fiscal, monetary and exchange rate policies as well as new developments in technology, globalisation and foreign trade.

The usefulness of these exercises allows how can the stages of macroeconomic instability be identified? Another query is that what are the dimensions of this stage and how are they related? This chapter also throws light on every episodic salient features. In broader terms, the objective of this investigation is to distinguish Indian economy's sub-episodic and evanescent instability phases.

This chapter is organised into the following four subsections. Section 7.1 examines the nature of Indian real GDP. Section 7.2 involves empirical analysis of indicator approach to instability episodes. Section 7.3 identifies the instability stages of the Indian economy. Section 7.4 evaluates the historical sources of instability of each stage. And the rest concludes this chapter.

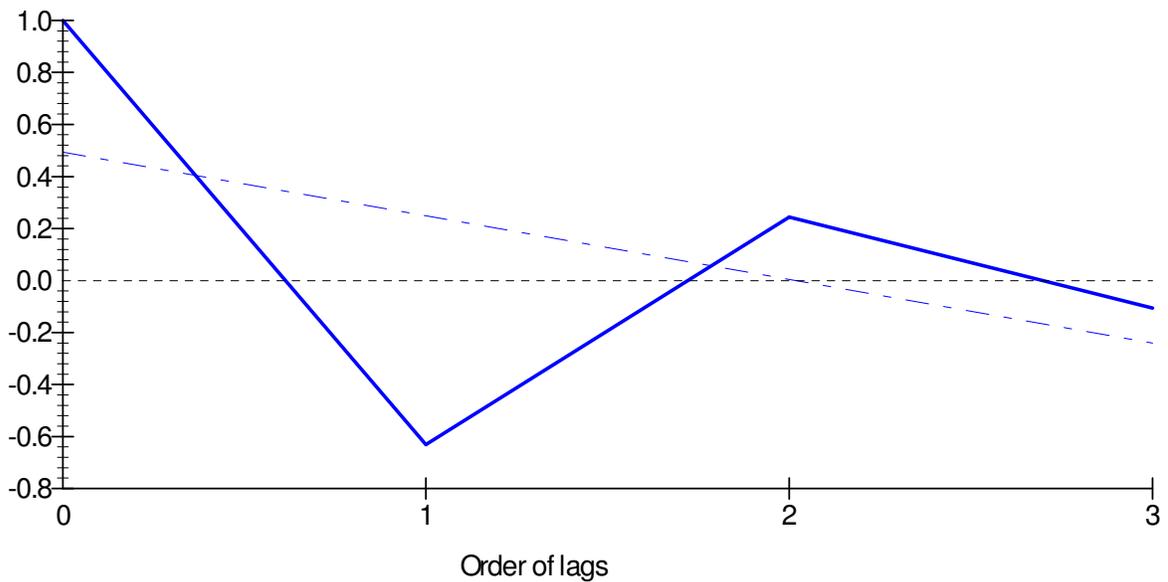
7.1 THE INDIAN REAL GDP ANALYSIS

This sub-section has in its preliminary effort made an attempt to provide information as is why the decades 1960s and 1990s as compared to others have been the case in point or rather are of special interest for macroeconomic instability analysis. Before specifying respective instability sub-periods, it has plotted autocorrelation function (ACF) of growth rate of real GDP of the Indian economy in the following six figures 7.1 and 7.1 (A) – 7.1 (E) for the unbroken sample period from 1950-51 to 2002-03 and decade-wise non-overlapping sub-sample periods respectively. Figure 7.1 indicates a seemingly visual impression of Indian real GDP growth rate to be stationary as there is no indication of ceaseless tapering off of the values of autocorrelation coefficients with the increase of orders of lags. However, visual impression does not always convey the true indication which is why further sophisticated treatment is required before passing judgement to confirm about the nature of Indian real GDP rate that to be followed in the next chapter. However, in comparing the nature of the Indian real GDP rate across decades, the ACFs for the 1960s [see Figure 7.1 (B)] and 1990s [see Figure 7.1 (E)] appear to be somewhat distinct compared to those of other decades in terms of their dips. In both the cases, the changes of linearity drifted downward more than once unlike the rest. So far as the kinked point occurred and points of tilting below the zero line more pronounced of the Indian real GDP rate across decades are concerned, both the decades 1960s and 1990s are having a great deal of resemblance unlike others. However, seeing facet switching of ACF of real GDP alone cannot capture the overall information about instability episodes.



Source: Compiled data from NAS, CSO [EPWRF, 2004]

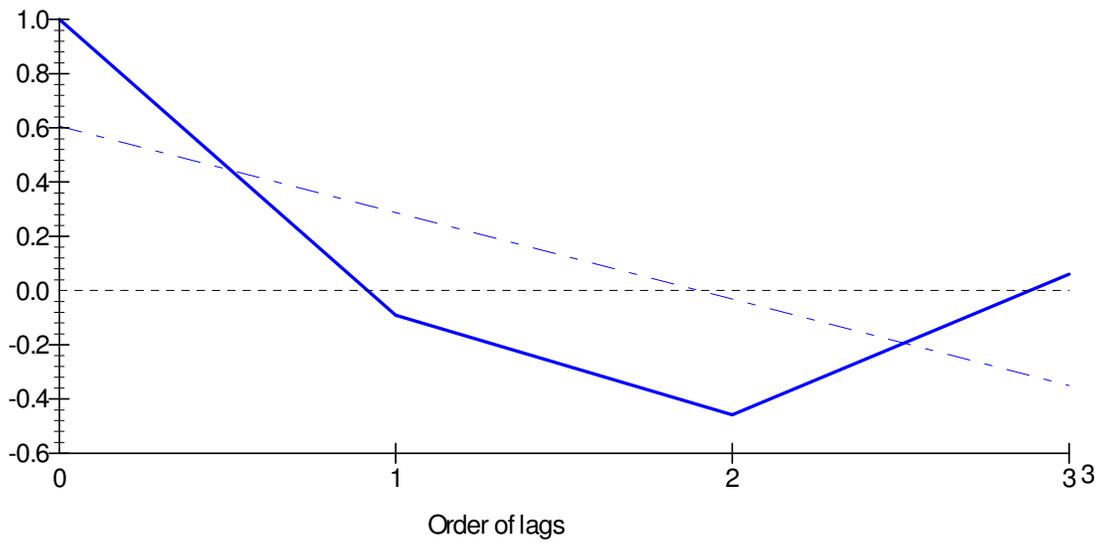
Figure 7.1: Autocorrelation Function of the Indian Real GDP Rate, 1950-51 to 2003-04



Source: Compiled data from NAS, CSO [EPWRF, 2004]

Note: the 'dashed-line' is the fitted trend line of autocorrelation coefficients

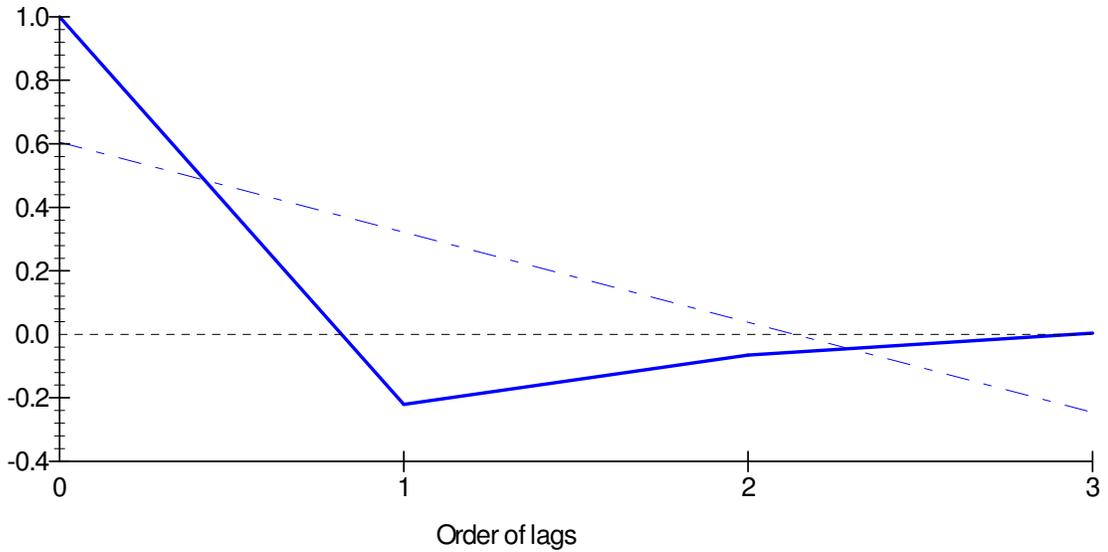
Figure 7.1(A): Autocorrelation Function of the Indian Real GDP Rate, 1950-51 to 1959-60



Source: Compiled data from NAS, CSO [EPWRF, 2004]

Note: the 'dashed-line' is the fitted trend line of autocorrelation coefficients

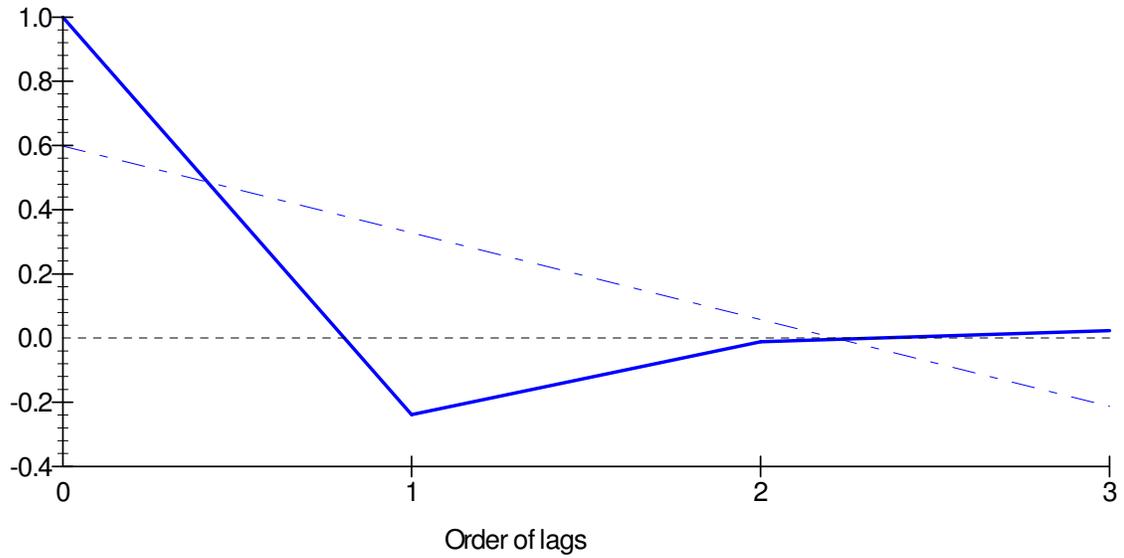
Figure 7.1(B): Autocorrelation Function of the Indian Real GDP Rate, 1960-61 to 1969-70



Source: Compiled data from NAS, CSO [EPWRF, 2004]

Note: the 'dashed-line' is the fitted trend line of autocorrelation coefficients

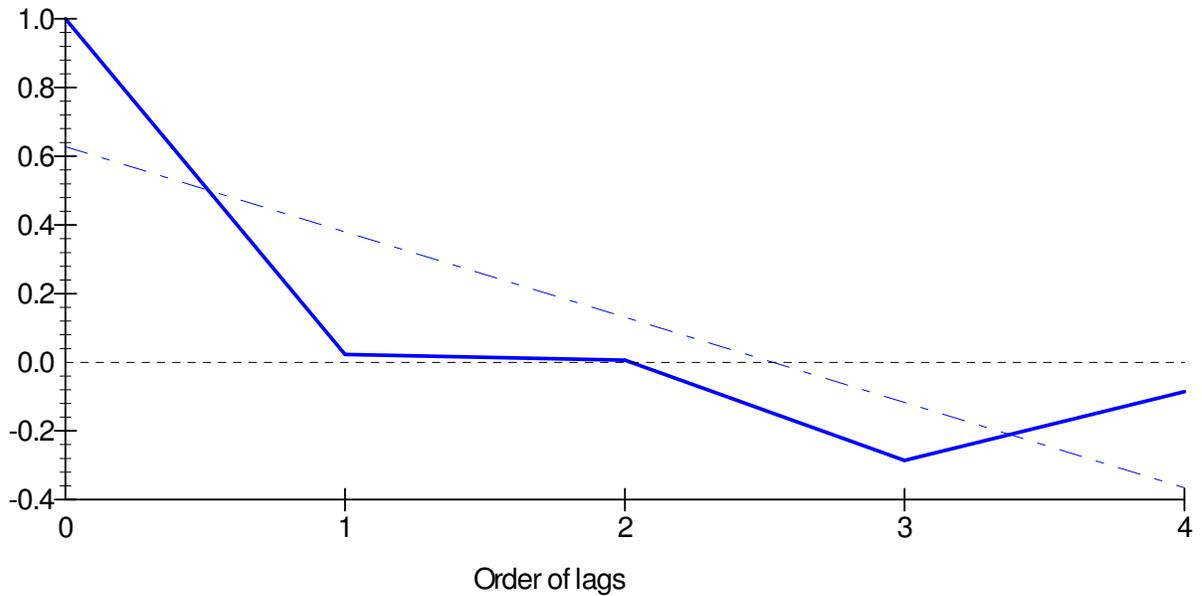
Figure 7.1(C): Autocorrelation Function of the Indian Real GDP Rate, 1970-71 to 1979-80



Source: Compiled data from NAS, CSO [EPWRF, 2004]

Note: the 'dashed-line' is the fitted trend line of autocorrelation coefficients

Figure 7.1(D): Autocorrelation Function of the Indian Real GDP Rate, 1980-81 to 1989-90



Source: Compiled data from NAS, CSO [EPWRF, 2004]

Note: the 'dashed-line' is the fitted trend line of autocorrelation coefficients

Figure 7.1(E): Autocorrelation Function of the Indian Real GDP Rate, 1990-91 to 2002-03

However, this estimated ACF approach does not adequately report about the fitted partial and cross correlation functions and thereby does not claim to be statistically significant substantiate approach. Specifying instability episodes, it requires probing economic analysis about switching regimes of the sub-period to a reasonable extent so that the role of macroeconomic management in setting policies in response to propagation of shocks or innovations can be captured in multifaceted economic indicators entailing sectoral behaviour understanding the consequences of lag length in the rolling period manner to be statistically significant approach.

7.2. INDICATOR APPROACH TO INSTABILITY EPISODIC ANALYSIS: EMPIRICAL EVIDENCE

This sub-section applies the indicator approach to evaluating macroeconomic instability episodes in the Indian economy. The emphasis on the indicator approach is on the concerted nature of the upswings and downswings in different measures of economic activity. Economic indicators are essentially classified into leading, coincident, and lagging categories. Macroeconomic instability episode can be determined based on the central tendency and volatility of the individual series in a set of economic indicators with historical factual information. There is considerable evidence that the indicator approach to macroeconomic instability being used widely in combination with other methods. As is true of any economic system, all the macroeconomic variables are interrelated and a change in any one of them does have an impact on the other variables as well as on the deficit measures. It is, therefore, interesting to study the impact of all these variables taken together on the macroeconomic instability indicators using correlation- standard deviation matrix. Since the results are almost similar with the scatter plot approach in the previous chapter 3, this empirical section would report and discuss it, focussing on relatively more crucial variables. This table initially compiled the data and based upon recognition of empirical patterns and regularities and in the later part carried out the relevant empirical investigations. However, these results could be viewed as a pointer to the nature of the relationship that could exist between deficit measures and major macroeconomic variables but could not indicate the direction of these relationships for which further rigorous econometric investigation has been the task in the subsequent chapters.

TABLE 7.1 : Macroeconomic Instability Indicators: The Statistical Evidence in the Indian Economy, 1950-2003

	1950-59		1960-69		1970-79		1980-89		1990-2003	
	<i>Mean and standard deviation of smoothed growth rates</i>									
	Avg	SD	Avg	SD	Avg	SD	Avg	SD	Avg	SD
GDP	3.91	2.23	4.07	3.17	2.92	4	5.89	1.7	5.43	1.8
Inflation	1.42	5.94	6.32	3.72	8.07	6.7	8.56	1.51	7.53	3.2
Consumption	.93	3.02	.89	1.87	.85	2.98	.85	1.89	.76	1.93
Private consumption	.87	3.21	.81	1.9	.76	3.5	.74	2.2	.64	1.8
Govt. consumption	.05	3.84	.07	7.5	.09	4.9	.11	2.6	.11	4.6
Investment	.11	19.6	.14	8.6	.17	9.9	.21	5.4	.24	9.6
Govt. Investment	.04	18.75	.06	11.48	.08	12.33	.09	11.60	.074	7.27
Private Investment	.06	24.77	.08	9.95	.10	13.91	.12	13.35	.15	16.82
Savings	.10	15.2	.12	8.06	.17	9.74	.19	5.41	.23	7.92
Govt. Savings	.01	31.51	.027	22.29	.037	16.12	.03	21.45	.002	96.70
Private Savings	.08	16.04	.09	11.55	.13	10.73	.16	7.25	.23	7.56
Exports	.06	9.87	.04	13.15	.053	11.25	.06	10.45	.10	8.88
Imports	.07	24.53	.05	16.8	.057	19.99	.08	9.88	.11	8.25
Fiscal deficit	.02	.014	.041	.006	.044	.006	.06	.019	.07	.011
Current account deficit	.01	.014	.02	.007	.001	.009	.01	.006	.01	.010
	<i>Correlation Matrix: Correlation coefficients of all the possible explanatory variables with smoothed GDP growth rates</i>									
GDP	1		1		1		1		1	
Private consumption	0.82		0.93		0.89		0.76		0.8	
Govt. consumption	-0.3		-0.1		0.16		-0.65		0.4	
Investment	0.06		-0.26		0.64		0.23		0.52	
Govt. Investment	.06		.21		-.03		.07		.35	
Private Investment	-.05		-.087		-.03		.38		.42	
Savings	0.21		-0.33		0.31		0.16		0.46	
Govt. Savings	.13		.39		-.69		.12		-.09	
Private Savings	.18		-.54		.36		.06		.52	
Exports	-0.35		-0.07		-0.25		0.25		-0.53	
Imports	-0.23		-0.13		-0.11		0.62		0.33	
Trade balance	0.13		0.26		-0.07		-0.013		-0.53	
Inflation	0.16		-0.26		-0.62		0.27		-0.33	
Fiscal deficit	-0.02		-0.45		-0.29		-0.13		-0.19	
Current account deficit	-0.11		-0.26		-0.17		0.4		0.35	

Note: GDP, consumption and investment are measured at constant 1993-94 prices; exports and imports are measured in terms of rupees crore; the trade balance, fiscal deficit and the current account deficit are computed as percentage of GDP at current market prices; and the inflation rate is measured by the GDP deflator.

Source: compiled from NAS, CSO, EPWRF, 2004

THE MACROECONOMIC IMPACTS OF THE VARIABLES ARE SUMMARISED BELOW CONTAINED IN TABLE 7.1:

The patterns discerned in the above Table 7.1 indicate that fluctuations in economic activity have been a persistent feature of Indian macroeconomic development and have, to a certain extent, been characterised by varying degrees of regularity in terms of duration and amplitude. In such a context, a greater understanding of some of the forces underpinning these fluctuations can be obtained by analysing the inter-temporal nature of the correlations amongst the variables

across phases. Table 7.1 shows some of the relevant patterns across decades. A useful perspective of this sub-section has been on the relationship between macroeconomic policies and twin-deficits adjustments as causal statements inevitably involve informed judgement rather than exact proofs are provided in the above Table 7.1. It shows government and private savings-investment balances and the corresponding current account deficits across sub-periods over the entire studied period. It is well known that the current account deficit is identically equivalent with the sum of government sector gross fiscal deficit and private sector surplus (savings – investment gap of the private sector). To begin with, a mean – standard deviation (SD) table for all the expected explanatory variables and the dependent variables has been obtained. Based on their values, several variables are selected as the potential explanatory variables. The results in the Table 7.1 indicate that there are the features which distinguish the decades from each other.

The growth rates of real GDP show almost a positive trend but it is found to have dipped in the 1960s, 1970s and slightly glided in 1990s. On the other hand, the inflation rates show a rising trend. But it is found to be volatile as their standard deviation varies across non-overlapping sub-sample periods. For inflation rate, the 1970s is the highest ever among the five decades considered.

On the other hand, there has been distinct fall in the share of consumption across decades, which may be the prime reasons for the fall in absorption which might cause demand recession and to mirror this, the share of gross domestic savings increased may reflect the impacts of the financial liberalisation measures. The trends in private consumption observed continued to decline monotonically as before reaching a trough of 64 per cent in the 1990s. The share of Government consumption, which had increased ceaselessly from 1950-51 onwards, declined though marginally in the 1990s, seems to have been partly as a consequence of the fiscal austerity measures adopted (see Table 7.1).

There has been an overall increase in saving and investment rates in India through the entire studied sample period, though with considerable fluctuations year-wise from 10 percent to over 24 per cent. Domestic capital formation has predominantly been financed through domestic savings (see Table 7.1). The contribution of foreign capital inflows (or, foreign savings or, CAD, which represents the domestic investment – savings gap) has remained less

than 5 per cent throughout the studied sample period. It is important to note that the macroeconomic crisis in mid 1960s was preceded by a rapid increase in government domestic fixed capital formation over several years that led large current account deficits and inevitably there involved heavy external borrowing. Private savings accounted for over 90 per cent of gross domestic savings rate throughout, with government savings rate falling constantly from the 1980s. Much of the fall in government savings since has emanated from dilution in the fiscal position of the government administrative departments. Despite the rapid growth of corporate savings since mid-80s, household savings continued to account for over fourth-fifths of total private savings.

On the other hand, the relative contributions of the government and private sectors to gross domestic capital formation have changed considerably across the decades. Government investment is in increasing trend till 80s and accounted for much of the increase in the total investment. However, there has been a sharp fall of government investment in the 1990s. The government investment, after peaking at 9 per cent during 1980s fluctuating around a declining trend to reach to 7.5 per cent in the 1990s, as portrays the Table 7.1. There has been an increasing trend of private investment across decades and private investment has dominated the overall investment trends in the economy. The increase in private investment in the 1980s and 1990s was mainly due to a rapid increase in private corporate investment. There has been a marginal increase in the share of private investment, which enabled it to reach an all time high of 15 per cent in the 1990s. This research has analysed whether instability of government investment reduced the rate of growth of the economy and thereby led macroeconomic crises sub-episodes. There has been relative variation of private sector surplus, which is defined as the savings – investment gap of the private sector, across decades, as is shown in the Table 7.1. The share of exports surged to a peak of 10 per cent in 1990s from its earlier level of 6 per cent in 1980s probably as an outcome of external real sector liberalisation.

In decadal comparison, there has been an increasing trend of investment – savings rate gap of the government sector indicating more fiscal deficit, albeit, declined marginally in the 1990s, may be this fiscal correction due to fiscal consolidation. However, the overall Indian savings and investment patterns across decades are consistent with the argument that domestic capital formation being largely dominated by domestic savings. Among the decades covered in

this study, each decade has one of the lowest degrees of reliance on net foreign capital inflows for financing domestic capital formation.

As estimated by its standard deviation (SD), it is worth to note that, opposing to stylised facts, the growth of GDP is smoother than that of private consumption while the growth of public consumption, investment, savings both at gross and sectoral levels, exports and imports are much more volatile across decades over the entire studied sample period. In other words, components of GDP are more volatile than output. It is indeed pertinent to note that, during the 1960s and 1970s, private consumption is less volatile than output and during the former decade; public consumption recorded its highest ever annual growth rate and investment recorded lowest during 1970s in Indian macroeconomic scenario. There has also been a declining trend in public investment since mid-1980s. In effect, the quest of this research is for the origin of comparative instability episodes in the 1960s and 1990s.

In the lower panel of Table 7.1, a correlation matrix for all the expected explanatory variables and the dependent variables has been obtained and correlation coefficients decade-wise are provided. Based on the correlation matrix, several variables are selected as the potential explanatory variables. Besides real GDP, the best three instability signifying economic indicators are inflation, gross fiscal deficit and current account deficit.

By and large, it is observed that the growth rate of GDP is positively and robustly well correlated with the growth rate of private consumption and, to a certain extent, with the growth rates of public consumption, investment, exports and imports. As observed the variable inflation rate has negative correlation coefficients with real GDP except in 1950s and 1980s and thus to be countercyclical for most of the sub-periods while the other three variables namely trade balance, fiscal deficit and current account deficit possess negative coefficients for most of the decades except for the latter with positive signs in the 1980s and 1990s as expected and to be fairly countercyclical. However, this long holding and fairly robust relationship between growth and inflation does not seem to have hold during the sub-period 1995-2003, as found correlation between them is 0.30 (not shown in the Table 7.1). Growth rate of real GDP and inflation rate though are found to influence instability but not significant statistically as the degree of explanatory power has reasonably not been good. However, the above Table 7.1

shows that in all cases, there has been a satisfactory relative separation of the high or fast growth and low or slow growth phases.

However, the 1960s and 1990s as compared to other decades remained lesser impressive to an extent and lagged behind in terms of overall macroeconomic performance considering the nature of basic economic indicators. This is not fully revealed by this correlation matrix, which gives only static cross correlation needs to consider lag length to be dynamic.

Thus to account a comparative perspective of twin recessionary episodes in the 1960s and 1990s, it is essential to understand the twin-deficit nexus explaining the causal direction of government public sector deficits and private surplus through interlinking their sectoral role in the light of debt management scenario. It would explain how the adjustment to the crises was engineered either by a fall in government public deficit rather than a rise in private surplus as a result of fiscal adjustment. It requires a more thorough examination of the fiscal sustainability issues and to capture the instability fundamentals as the result of a neglect of fiscal dynamics in making comparative instability perspective of this research. How exchange rate depreciation played a crucial role for current account adjustment as a competing hypothesis appeared needs to be analysed. It needs to include the discussion on the behaviour of the real exchange rate to understand how helped exports to grow quite rapidly and how helped rapidly inflation rate to be reversal in spite of the high domestic inflation. It suggests that India generally targets its inflation and growth targets over time as policy pursuits. In this way, all the sub-period of analysis fall under the different growth and inflation ranges.

However, it is probably difficult to get a comprehensive view about comparative instability episodes as the nature of the correlation carries such large information in a somewhat consolidated manner as presented in the above table 7.1. In such a context, an improved understanding of the interaction between policies and instability indicators such as how trade and financial linkages may propagate and amplify economic disturbances – fundamental economic influences that determine the movements of interest rates and exchange rates and thereby macroeconomic stabilisation in understanding the nature of disturbances that cause macroeconomic instability is required. Thus an in-depth investigation would, however, be needed to draw more information regarding the features of cyclical nature of Indian inflation in

the policy context before the present research passes judgement about the comparative perspective of recessionary episodes in the 1960s and 1990s along with its interim growth phases.

7.3. IDENTIFICATION OF INSTABILITY STAGES

This section provides a good base to identify Indian macroeconomic instability sub-periods in the de-trended measure of total economic activity. Smoothing has been applied with caution to reduce volatility to show local trends more clearly. The moving average can reveal the tendencies of the economy's movements better than the much more unsmoothed underlying data. The following Figure 7.2 shows the types, timing and duration of year to year growth cycle fluctuations. The purpose of this chapter is to examine phase-wise the historical sources of macroeconomic instability in India. In an attempt to obtain evidence regarding the existence of recessionary episodes and in order to ascertain whether inflation is pro-or counter-cyclical in the Indian economy, this sub-section has generated smoothed estimates of the growth rate of real GDP and inflation rate over the fifty four year period from 1950-51 to 2003-04 and these have been plotted in the following Figure 7.2 and Figure 7.3 respectively. There have also been fitted both a linear trend line as well as non-linear (cyclical by using five-year moving average end) trend line through these smoothed growth rates in the Figure 7.2 while gross fiscal deficit and current account deficit as percentage of GDP over the sample period have been plotted in the Figure 7.3.

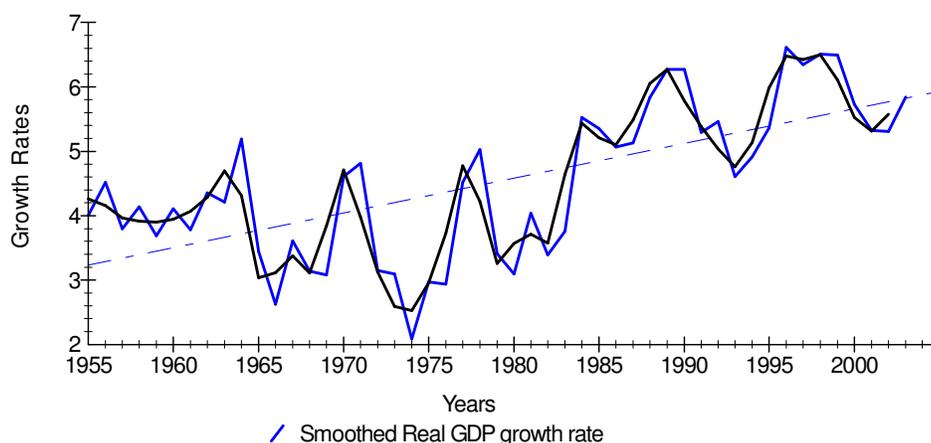


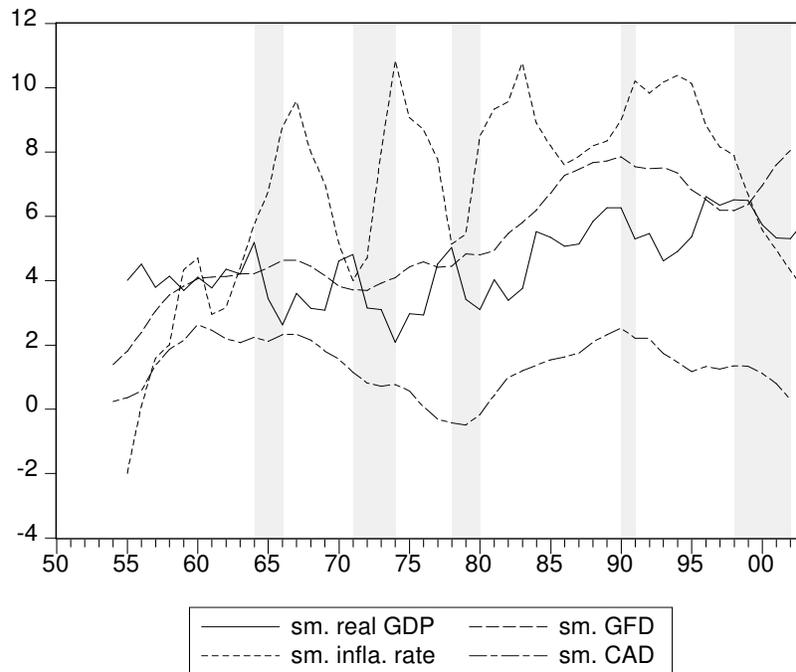
Figure 7.2: Stages of Macroeconomic Instability and Real GDP Behaviour in the Indian Economy, 1950-51 to 2003-04

Note: For smoothed GDP growth rate, annual GDP series at 1993-94 prices has initially been smoothed out by using five-years moving average method and estimates of growth rate were then computed from these smoothed data-series.

Source: compiled from NAS, CSO, EPWRF, 2004

There has been an overall increase in real GDP rate in India through the post-independence period, though with considerable fluctuations from year to year. Two specific episodes of instability behaviour in India in the 1960s and 1990s, which represented a significant departure from the overall trends, have generated a considerable discussion to probe on the underlying causes. The first episode was in the mid-60s, when real GDP growth rate fell sharply to negative values after almost a decade of sustained growth from the first year of the Five-Year Plan (see Fig. 7.2). The inflation peak and the rise in gross fiscal deficit and current account deficit have witnessed in the same period (see Fig. 7.3). The second episode was the decline in the real GDP growth rate to a bottom line immediately before the initiation of the structural adjustment cum stabilization programme of 1991. The other indicators like inflation rate, GFD and CAD recorded a reflection of an upward trend too. This brought about a comparative perspective to analysis why these adverse changes in the economic fundamentals during this two sub-periods. Such drop in real GDP was also pronounced in the early and late-70s. And India's performance has continued to be impressive in the 80s as such drops were far less pronounced as maintained growth performance consistently apart from some notable stylized facts. Interestingly, such drops were also pronounced in the immediate post-reform period, reflecting structural changes in the economy brought about by reforms.

These general patterns, inter-decadal differences in growth rates, reflect a variety of comparable factors, including differences in the overall macroeconomic climate. Moreover, there are significant differences across decades with regard to restrictiveness of the policy regimes relating to stabilization and growth. Behind these overall similarities between instability patterns in the 1960s and 1990s, significant differences can be observed across sub-periods in terms of the degree of reliance on macroeconomic policies for growth and stability.



Note: Shaded areas represent Indian macroeconomic growth downturns (recessions) and inflation peaks.
 'sm' means smoothed

Source: compiled from NAS, CSO, EPWRF, 2004

Figure 7.3: Macroeconomic Instability Indicators: Indian Economy, 1950-51 to 2003-04

The results, which have been presented in both the figures 7.2 & 7.3, have extremely been interesting on the following counts. *First*, empirical regularity in the ensuing patterns of growth is clearly reminiscent of sub-periodic recessionary behavior. *Second*, there seems to be a certain pattern of symmetry in the behavior of cyclical trend as have been superimposed upon the smoothed growth rates vis-a-vis the linear trend around which it is fluctuating, as are clearly visible while in each of these cases, the growth rate has followed the classical pattern of fluctuating around a cyclically- steadily increasing trend. It is vividly clear that the peaks of the cycles are relatively short-lived as compared to the troughs. *Third*, it is by and large observed that except for the ten years from 1952 to 1962 and the 1980s except the later years, the inflation rate seems to have clearly been counter-cyclical, often mirroring instability with almost identical turning points. *Fourth*, It is interesting to note that during the last phase of macroeconomic contraction from 1998-2002, both the growth rate and inflation rate seemingly shown sudden pattern reversal as to have moved in a clearly pro-cyclical manner as suggest their co-movements because they have comparatively been weak one. It is important to note

that pro-cyclical macroeconomic policies are the sources of macroeconomic instability. Pro-cyclical macro policies do not encourage growth and instead in fact increase growth volatility. If the five-year economic contraction pattern from 1998 to 2002 is indeed an empirical regularity, then the recession of 1997-98 has been the very much part of the sub-period which commenced in 1995-96, and seems to have gone by the observed trends and trough has been bottomed out as peaked in 1999-2000.

Finally, a cyclical expansion is usually believed to improve an economy's fiscal position by increasing tax receipts. Besides, this effect would be further underpinned by the counter-cyclical nature of inflation which would ensure minor scope for fiscal erosion [Olivera 1967; Aghevli and Khan 1978]. In Figure 7.3, there are also provided smoothed estimates of the fiscal deficit ratio (GFD) and the current account deficit ratio (CAD). The ensuing pattern in Figure 7.3 highlighted by the inverse nature of the association between the 'trench' in the real growth rates of GDP over the period 1988-95 and the corresponding 'bulge' in the fiscal deficit ratios seems to suggest that the above hypothesis is supported. The CAD as well as the GFD are usually linked within a general framework as their basic proximate determinants, mainly the rates of inflation and growth, are themselves endogenous variables. Thus, any meaningful analysis of these deficits requires that their fundamental causes be specifically identified as the general equilibrium nature of the problem is not only a theoretical issue because the current account balance is consistent with medium term fundamentals, such an economy's normal pattern of savings and investment. If the deviation of exchange rate from equilibrium stems from unsustainable policies, as with an appreciation associated with a large fiscal deficit, then policies should be adjusted rapidly in order to restore macroeconomic balance and dissipate the risk of disruptive shifts in market sentiment could by inviting speculative attacks lead to a financial crisis.

Any precise dating of the beginning and end of a crisis has somewhat been arbitrary in this research. This graphical section has analysed India's macroeconomic staying for which sub-periods either has been good or dismal and has also paid attention to draw the overall policy trends over the entire sample period. The present study has chosen the instability sub-period as the co-existence of economic contraction (i.e., peak to trough) accompanied with negative growth rate of real gdp as is characterized by pronounced, pervasive and persistent declines in output and inflation rate nearly double digit as is the rule of thumb. The instability

phases are shaded according to recession in each of the contraction phases across decades and at no other time. Even the most volatile of these series show few significant declines outside the shaded areas and the present study has been cautious to distinguish from these false signals being guided by historical sources economic rationale of instability. Negative changes are concentrated in recessions, with but a few minor exceptions such as 1991-92 when real growth rate of GDP was at much bottomed level with slight positive value. The popular rule of two consecutive declines in GDP applies in most but not here. It is important to note that economic slowdowns begin with reduced but still positive growth rates can eventually develop into recessions. India has experienced macroeconomic instability episodes characterized by pronounced, pervasive, and persistent declines in output, income and trade.

After 1957-58, the following recessionary sub-periods are clearly visible:

- (i) during the 1960s, the two-year economic contraction with recession between 1964-66;
- (ii) during the 1970s, the four-year economic downturn including recessionary year 1972-73 between 1971-74; the two-year economic slowdown including recessionary year 1979-80 between 1978-80;
- (iii) during the 1990s, bottom growth rate in 1991-92; and
- (iv) five-year economic contraction between 1998-2002.

In this way, the results of instability phases are consistent with the earlier reported real GDP results in ACF estimation.

It is important to note that a chronology of growth cycles for the Indian economy for 1951-75 was established by Chitre (1982, 2001). The dates of Indian business cycles and growth rate cycles particularly recessionary sub-periods over the period from 1960 -2001 were established by a study [Dua and Banerjee, 1999; 2001]. Two similar close studies covering Indian economy over the period 1950-98 & 1950-2000 have been by Rao et al (1999) & Rao (2004). The other contemporary study particularly to explore Indian sub-periodic macroeconomic crises covering the sample period from 1964 -1991 was developed by Joshi & Little (1998).

7.4. EVALUATION OF INSTABILITY STAGES

This sub-section concentrates to account a general assessment of causes, policy responses, consequences and aftermath of each crisis in a chronological manner. It involves mainly an appraisal of the role of short-run macroeconomic policy in relation to the crises episodes. Here, the main concern is with policy in relation to crisis, not with a connected account of specific policies over the studied entire sample period. It involves a brief comparison of the symptoms and causes of the crises. High inflation and a marked deterioration of the balance of payments are the primary concerning issues in this analysis. The aspect of industrial recession though is important but got paid less pressing concern in this research as it has been mainly to evaluate stabilisation policies, which can also enhance the severity of recessions. This section highlights the underlying economic principles of temporary, reversible, anticipatory short-term supply side macro-management of exogenous shocks (viz. drought, political instability, oil crises, etc).

MACROECONOMIC CRISIS IN 1957-58

It is seen that price increasing began to dissipate in 1952 as inflation rate became negative as is partly true due to the end of Korean War as India saw easing of inflation [Desai, 2003]. During the first half of the 1950s, inflation in India was low and in some years negative so that real exchange rate depreciated modestly. However, 'export pessimism' led to high export taxes and neglect of investment and modernisation in the export sector, resulting into exports stagnated. Although the wartime machinery for administering import controls was still in place, the import regime was in practice fairly liberal. Capital controls were much more restrictive compared to import controls but in no way particularly fierce. Indian economy reached the trough of growth rate cycle in 1957-58 as the contraction of economic activity began to manifest followed by a severe balance of payment crisis after the second Five-Year Plan inaugurated in 1956, which was based on an ambitious heavy industrial development strategy. But a foreign exchange crisis in 1956-57 put an end to the phase of liberalisation and comprehensive import controls were brought in and maintained until 1966. Import licensing, one of whose crucial characteristics was the 'indigenous clearance' hurdle, which used to give automatic quota protection to any imports for which there were provisions of domestic substitutes. Controls on private capital movements were also overwhelmed and have remained extremely stringent ever since. Officially, the prevailing exchange rate regime was an adjustable peg Bretton-Woods

style regime [Patnaik, Kapur & Dhal, 2003]. However, in practice, it was operated as a fixed nominal exchange rate reinforced first by reserve losses, then by import and capital controls, and foreign aid. As reserve depleted, foreign aid and official foreign borrowing increased substantially. The real exchange rate appreciated substantially as inflation in India was relatively faster than inflation abroad.

MACROECONOMIC CRISIS IN 1965-67

The nominal exchange rate was fixed to the pound sterling and, given the nature of the Bretton Woods regime; the nominal exchange rate remained constant over 1960-65. But Indian prices continued to rise relatively faster than the foreign prices and the real exchange rate appreciated further. The appreciation was fairly modest from 1960-63 as was about 5 per cent but sharp in 1964 and 1965 about 16 per cent. Export subsidies were introduced and increased. However, real exchange rate appreciated by 13 per cent over the next two years despite increasing export incentives. The import control regime intensified in severity to the point when domestic industry was starved of essential inputs. In 1965, war and drought brought about macroeconomic instability. Exports grew moderately over 1960-63, stagnated in 1964, and collapsed in 1965.

Indian economy followed by the next trough in 1965-66 and 1966-67. The crisis of the mid-1960s seemed to have been due to snared Indian economic development strategy – its under-emphasis on agricultural development and its overwhelming priority on foreign aid that triggered to suspend the Five-Year Plan in favour of three annual plans over 1966-69. It is quite clear that the two consecutive years 1965-66 and 1966-67 during the 1960s were years of crises, as experienced negative growth rates. Several points are worth noting on this count.

The deeper possible manifold antecedents delved of these crises include: *First*, exogenous events like wars, as India, in the first half of the 1960s, had to involve in two wars – war with China in 1962 and with Pakistan in 1965; *Second*, the other exogenous event was harvest failure due to poor monsoons as this sub-period was severally hit by two successive severe droughts in 1965 and 1966; *Third*, the magnitude of the adverse effects of these droughts was intensified further due to the neglect of the agricultural sector in favour of industry in the Second five-year plan (1956-61) as this plan worked out a strategy of state-led, import-substituting industrialization; *Fourth*, the obstruction of remittances of profits was due to

controlled exchange rate system; *Fifth*, the other factor was due to lack of stress to import fertilisers for agriculture which, in turn, caused the slow growth of agricultural output and too much emphasis was on capital goods imports; exports were sluggish because held back partly by the inadequate supply of both agricultural and imported inputs; *Sixth*, further, there was not much done to improve the agricultural sector's performance in the Third five-year Plan (1961-66); *Seventh*, the special interest group with considerable political influence on policy making seemed to have been beneficiaries with industrial licensing policies dictated by political unfeasibility and not by economic rationality.

The macroeconomic consequences conceived the following instability channels: *First*, matters got made worse by the sharp growth of defense expenditures set off by the wars, increasing the consolidated government fiscal deficit, public fixed capital formation under the Third Plan was slow to get under way, government final consumption expenditure rose; *Second*, total agricultural production to value added fell to a considerable lower level and growth rates became negative in two quick successions in 1965-66 and 1966-67 and the shortage of food grain output was further worsened as United States refused to renew food aid (PL 480) in 1965 as consequence of the war with Pakistan.

As a result, inflation accelerated to a double digit in 1966-67 and was creeping as foodgrain prices rose sharply though there may be a lag impact of foodgrain production and their full effect on prices; a rate regarded at the time was dangerous and intolerable. India had to increase food grain imports as famine was looking feared. Despite there were imports, food-grain availability seemed to have remained far adequate to chase the crisis. Once US aid was scaled down in 1966, the payments deficits became unsustainable, and the rupee was devalued. Then, in the absence of aid, government investment had to come down; a plan holiday for three years declared, and constructions of new public sector plants came to a halt, industries built up with secure import barriers proved unviable. Thus 1966 turned out to be a turning point in the India's economic history. Exports also suffered from the drought, and despite being upsurge total net aid, the balance of payments was under tremendous strain with foreign exchange reserves hovering close to their statutory minimum level. The underlying balance of payments situation deteriorated considerably in 1965-66 and 1966-67.

The government's policy response to this crisis had several components: the devaluation – liberalisation-aid package, the management of food supplies, and conventional demand management. The devaluation package had of course been negotiated prior to the crisis and was seen as a long-term measure. So, it was a response only in the sense that it was introduced after the onset of the crisis, though there was no doubt a hope that it would ease the balance of payment problems. The concerning aspects with devaluation package believe clearly engendered serious ill feeling, which persisted and continued to influence Indian macroeconomic policy for some years. But the uncertainty evolved around probably the exacerbated price inflation at the time and - for good or ill- strengthened India's determination to rely as little as possible on aid, and even on trade in the future. Exports of traditional goods also worsened and the dollar value of exports fell in 1966-67 and in 1967-68 due to droughts, despite the devaluation in 1966. The balance of payments situation improved after 1966-67, mostly due to the fall in food imports after the agricultural recovery and the decrease in capital goods imports. It is important to note that both the second and third plans were financed in a non-inflationary manner.

The devaluation could take the place of the highly selective and inefficient system of export subsidies that should be abandoned. At the same time, control over imports of most raw materials and components (but not the major items of machinery and equipment and consumer goods) should also be relaxed. The devaluation was not so much to contain the current account deficit but to achieve a balance of higher level with a much more limited set of controls. Most of the policy recommendations were adopted in 1966 to protect macroeconomic crisis. During the 1960s, the first great drought had occurred, reserves were at depleting level, inflation was accelerating and famine was looming large.

Food-grain production picked up in the next calendar year 1967 due to the impact of green revolution. But the crisis of 1965-66 and 1966-67 was superimposed upon a 'quiet crisis' or a creeping paralysis that had been evident for several years more. The slow growth of agriculture and exports coupled with the venture to continue with the investment programmes of the Third Plan yielded the balance of payments into deficits that was restricted only by import controls of such strictness in which production and exports hampered. In the absence of a buffer stock, sound food policy, public procurement policies through public works, food prices and consumption could have been cushioned from the effects of the drought by imports

of food but foreign exchange reserves constrained the imports. The limitations on supply management policies triggered the pressure for a fiscal response to the crisis. There had also been a mild industrial deceleration due to a reduction in demand from the agricultural sector and shortage of agricultural raw materials and imported inputs. Restrictive fiscal policies followed during this period that accentuated deceleration. The worst hit sector was that of capital goods where the production fell considerably over the two-year periods 1966-67 and 1967-68 and rose gradually after that. As reported by a study that the mid-sixties evidenced the emergence of underlying strains as well as a few new factors which were to change the course of industrialisation in the following period [Ahluwalia, 1985]. Another study attributed the deceleration as structural retrogression [Shetty, 1978].

Thus the diagnosis very closely of the two recessions in the 1960s in line with the description given above can be explained by the two wars, a drop in agricultural output, industrial deceleration, restrictive fiscal policies, the BOP crisis, and high inflation.

MACROECONOMIC CRISES OF 1972-75: ANTECEDENTS, CONSEQUENCES AND POLICY RESPONSES

Indian economy during the 1970s has basically been stifled by controls as the product of an interventionist approach. However, in the 1970s, some liberalization occurred. One obvious example is the greater flexibility in the use of the exchange rate, which came in stealthily first under the cover of a sterling peg, later under the guise of a multicurrency basket. According to this study, 1972-73, 1973-74 and 1974-75 during the 1970s were crises years. Several factors initiated the recession occurred in 1972-73 that had a political component and a macroeconomic component, which in turn later had an inflation component and balance of payments component as well. These different components interacted rather in a dispersed way. The agitation in 1971 in the then erstwhile Pakistan resulted in a huge influx of refugees into India causing an enormous economic burden. Indo-Pakistani relations deteriorated, which culminated in a war in 1971. The grounding and carry out of this war yielded in a sharp rise in defense expenditure over and in excess the expenditure incurred to support the refugees. The agriculture sector was severely hit in 1972-73 as poor rainfall resulted in sharp drop in foodgrain and agricultural production. At the same time, foreign aid sanctioned by United

States declined even more sharply before the war of 1971 and was virtually ceased to stop in 1972-73. Thus, at a time when India was struggling to tackle the high expenditures owing to drought and war and also had felt the need to increase capital investment to make up for the stagnation in the late 1960s, support in terms of foreign aid fell significantly. This increased the reliance of the government on borrowing from the RBI, fuelling inflationary impacts. During this period, the management of food supplies in response to the crisis was also not effective. Not only agricultural production fell in 1972-73 but food imports were also delayed. Moreover, government bought far less than what was authorized so that food availability being necessary. Furthermore, India had to pay very higher prices on the world wheat market due to the delay in purchases. The government in an attempt nationalized wheat trade in 1973 in order to abolish middlemen but instead the situation aggravated and the scheme had to be disposed of. The macroeconomic crisis came with the oil crisis in October 1973; the Arab countries took control of their own oil production and raised the oil price manifold. And the blow was both external and internal. Externally, the balance of payments again became unsustainable, and the government had to mess up to borrow money from abroad. Internally, price hiked suddenly accelerated, and led to strident demands for wage increases. The government itself was in frantic trouble, and could not meet the wage demands. Hence came with the railway strike in 1975, which had to be suppressed brutally. The balance of payments started deteriorating in 1973 due to rise in the prices of imported goods, particularly oil. The oil price shock increased oil prices in 1973. Worsened terms of trade had been coupled with increased current account deficit. The facet of the crisis was mainly external in origin but was coupled with domestically caused inflation. As evidenced by the Figure 7.2, inflation accelerated from single digit in 1971-72 to double digits in the following three years. It was resulted mainly by internal factors, specifically the severe droughts of 1972 and 1974, accompanied with expansionary macroeconomic policies. The political circumstances became growingly unstable during 1973 and 1974, somewhat but not entirely due to inflation and food shortages, subsumed in the imposition of a national emergency in 1975.

THE CAUSES OF THE CRISIS OF 1979-80 AND ITS CONSEQUENCES

The dilution of fiscal conservatism was vividly evident in the upward creep in fiscal deficits after the mid-1970s. However, it did not lead to more than a small increase in inflation or inflation-tolerance. Fiscal and monetary policies continued to counter robustly to overt inflation i.e., continued to be relevant as was capable to slate short-term anti-inflationary policies may be due to comfortable parliamentary majorities. Though the rate of inflation did not increase much, fiscal deterioration was instantly recognizable. The consolidated government's fiscal deficit was about 5 per cent of GDP in mid-1970s. The basic argument for the deterioration in the public finances to examine why the fiscal aspects of these changes evident particularly from the mid-70s, in particular the following may be mentioned: first, green revolution in the 1960s brought into prominence the larger landlords emerged as growing demand groups to make claim on state resources in the budgetary processes; second, the dominant groups of significance were the big industrial capitalists; third, small businessmen and traders became the dominant pressure group and their interests were congruent with demanding tax concessions and the reservation of products for small enterprises production particularly when reservations for small- scale industry were greatly expanded; fourth, organized sector workers also became a significant pressure group as the public sector expanded and acquired enormous influence because they were in charge of managing the system of control [Kohli, 1991]. Thus government adopted measures that increased government expenditures or reduced tax and non-tax receipts and these changes acted slowly and were sometimes interrupted by fiscal retrenchment containing inflation or by the temporary ascendancy of fiscal conservatives. However, the general trend in the 1970s and 1980s was unmistakable. In sum up, the persistence of control system was in turn another manifestation for fiscal deterioration resulted from pervasive controls.

The most worth noting event was the rapid turnaround of the balance of payments by 1976, the crisis was over and payments became perfectly manageable. Even the mini-oil crisis of 1978-79, India could have managed with great ease as India unlike many developing countries did not borrow heavily in those years. As India had not taken recourse to private loans, and so escaped catastrophe while others had defaulted on their international debts. Then in the early 1980s, oil started to flow from Bombay High, and India's balance of payments seemed looking extremely solid. The 1979-80 crisis was resulted by the simultaneous

occurrence of both internal and external shocks. The drought in 1979 was very disastrous resulting in a severe drop in agricultural production. Indian economy also suffered from the consequences of the international oil price jump. At the same time, home oil supplies also disrupted by the agitation in Assam, which accounted for a-third of India's oil production. All these factors resulted power shortages leading further shortages of coal and transport facilities. The effects of drought accompanied with the shortage of key inputs triggered to an industrial recession. This situation led to both high inflation and a large current account deficit. Prices were almost flat in 1978-79 but rose by double-digit percentage in the immediate following three years consecutively. The current account of the balance of payments was in surplus in 1977-78 but went into a deficit in 1979-80 and 1980-81.

Thus, the origin of the crisis was essentially similar to that of 1973. Nevertheless, the aftermath was quite different. In its response, the government attempted to bring about an expansionary adjustment, adopting much less restrictive measures. Though inflation came down in 1982-83, the current account deficit remained high, and the public finances worsened. This seemed underpinned current account and fiscal deficits to be even larger during the second half of the 1980s. After the short-lived recession, Indian economy grew rapidly during the 1980s. Growth rate of GDP per annum increased from about 3% from the mid-sixties through the seventies to around 5.88% in the eighties. This expansion lasted for the longest period from 1980 to 1990 under the study as shown by the Figure 7.1. The economic reforms initiated from the mid-eighties onwards attributed the expansion. The manifold measures included industrial deregulation, financial liberalization, import deregulation, export incentives, exchange rate depreciation, and tax reforms. The drought in 1987 was not so severe and the agricultural sector recovered soon after. More liberalization occurred in 1980, which was mainly concerned with deregulation of industrial licensing and softening of the restrictions on monopolies and both these measures seemed to have big business support as they were not accompanied by any serious trade liberalization. However, the pace of industrial deregulation was much faster in the late 1980s and the import liberalization related mainly to inputs and components but very little was done to open up Indian industry to foreign competition. In summary, liberalization consisted little more than the piecemeal deregulation of industrial licensing and the introduction of a measure of exchange rate flexibility. However, interventionist ideology prevented any

significant action in the more difficult areas such as trade liberalization, financial liberalization, and reforms of the labour market and public sector enterprises.

More importantly, there was expansionary fiscal policy, the manufacturing sector continued to grow, and exports also increased. At the same time, it is clear that the underpinning macroeconomic fundamentals were not adequate enough to keep sustaining the expansion. Fiscal and current account deficits were large and the burden of domestic and foreign debt was heavy and unsustainable. The consolidated government's fiscal deficit rose persistently to reach about 8 per cent of GDP at the end of the 1980s. At that level, it clearly endangered to explode into high inflation or a balance of payments crisis. As the macroeconomic fundamentals were weak, the Iraqi attack of Kuwait in 1990 and the Gulf War were enough to set on a full-blown crisis. However, the overall development of macroeconomic policy that took place till 1991 has two important features: there was an erosion of fiscal conservatism; and there was a gradual and piecemeal liberalization of controls, but without having any fundamental reforms of the system.

MACROECONOMIC CRISES IN 1991

Macroeconomic instability episodes before 1991 were driven mainly by weather, wars and oil crises. In 1991, the Indian economy was delved in the throes of a macroeconomic crisis. By the early 1980s, many developing countries went bankrupt, and international bankers were short of borrowers; India with its sustainable balance of payments looked very attractive. Bankers especially Japanese ones, poured money into Indian economy in the 1980s which was one of the precipitate roots of the payments crisis in 1991[Desai, 2003]. The crisis made India's credit rating sharply downgrading and a cut off of foreign loans. Despite that, unlike earlier crises, exogenous factors were relegated with minor importance in causing the crisis, as it was largely policy- induced because past macroeconomic policy mistakes over a long-period had left the Indian economy in a fundamentally unsound state and wrong footing. Inflation, fiscal and current account deficits, and domestic and foreign borrowing all manifested high. There had been a steep depletion in foreign exchange reserves even inadequate to a level of two-week imports. In these circumstances, structural reforms were initiated by the government in 1991. The immediate concerns of the reforms were to contain inflation, reduce the fiscal deficit, improve the BOP position, and above all, to stabilize the economy. Measures that were

undertaken included fiscal contraction, a credit squeeze, and a devaluation of the rupee. The instantaneous impact on the economy was contractionary.

MACROECONOMIC CRISIS IN 1997

The recovery or expansion, which started in late 1991 continued to exist until when the macroeconomic growth rate once again downturned in 1997. The liberalization and reforms adopted following the external crisis of 1991 had initially rewarded with an improvement in almost all the economic indicators because GDP growth rate, exports, investment, and foreign exchange reserves rose rapidly. However, by 1995, reform process had itself lost its momentum. Moreover, the elections in 1996 brought forth a coalition government short-lived could not focus on key economic issues. Industrial production, industrial investment, and consumer demand fell sharply and the economy faced infrastructure bottlenecks. The macroeconomic crisis lasted for one year. This has by and large been subjected on the long-awaited package of 'second- generation' reforms to have adequate measures for technological developments, institutional reforms, and policy innovations for further growth prospects. By the late 1990s, the agricultural sector accounted for only 20 per cent of the GDP, dropped from 35 per cent in the late 1970s. Meanwhile, the development of irrigation seems to have made agriculture dependent far less on weather, and the creation of substantial buffer stocks of food-grains has made the economy far less vulnerable to crop failures. Thus the economy has now been much less susceptible to weather-related shocks.

CONCLUSION

This analysis basically involves short-term supply side macroeconomic policy appraisal. The next chapters would concentrate on long-run demand-management policy trends on long-run growth; sustainability aspects of fiscal policy, monetary policy, and expenditure switching devaluation of exchange rate policies; on deficits indicators such as gross fiscal deficit, current account deficit and the role of sectoral savings and investment in the Indian macroeconomic growth process over the entire studied sample period including disequilibrium dynamic episodes.

However, the findings that this chapter has been able to draw are very suggestive, but not definitive. Despite certain minor problems of definitions and measurements left unresolved with regard to Indian macroeconomic instability analysis, the resulting integration in this chapter helps to detect the structural changes occurred in the real and financial sectors of the Indian economy over the entire sample period, in general, and between the pre- and post-liberalisation phases, in particular. In such a context, it has, apart from delineating the overall trends, identified many important empirical patterns and regularities to facilitate translation of certain important theoretical constructs on structural adjustment problems into various policy relevant solutions and interrelationships for the formulations of issues in the role and conduct of macroeconomic stabilisation policy with particular emphasis is placed on the specific episodes on macroeconomic dips in order to set the stage for the empirical analysis in this ensuing research. It has dealt with notably growth-inflation trade-off, the existence of recessionary episodes, the counter-cyclical nature of inflation, the twin deficit problem, the sustainability of fiscal stance, amongst others, which could act as guideposts to understand the issues of macroeconomic instability particularly to facilitate an in-depth and rigorous empirical investigation in the subsequent chapters, identifying the underlying plausible instability linkages by providing information about policy implications of the crises-ridden episodes and assessing which of the policies have either been pro-cyclical or counter-cyclical in nature. The findings are carefully analysed pertaining with key policy shifts in India. However, the best kind of approach for a more complete understanding of macroeconomic instability is through causal dynamic relationships specified by macro-econometric analysis via detailed structural model building. The next two chapters would summarise the key findings for comparative instability perspective and draw upon policy lessons in the wider context.

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Comparative Perspective of Macroeconomic Instability in the 1960s & 1990s: An Empirical Approach

INTRODUCTION

This chapter examines the role of sectoral savings and investment in economic growth in the light of the Indian instability experiences over the studied sample period up to 2002-03. These are important intermediate variables which link the real economy with the financial sector. This chapter is based on recent advances in time-series econometrics. The findings are carefully interpreted in relation to key policy shifts in India to inform the comparative recessionary perspective in the 1960s and 1990s. To examine the link between sectoral savings, investment and growth, it needs to have an analytical framework which appropriately captures causality running from the former to the latter in an empirically testable manner because they are appropriate indicators in explaining the long-term growth. They also provide an explicatory role for policy to influence interactively with the relationship between investment and growth.

A useful perspective in this research is on the relationship between macroeconomic policies, public deficit and current account deficit. These indicators consider separately the balance of savings and investment of the public, private corporate and private household sectors, concentrating on savings, investment and their determinants. It also shows implicitly how total investment is financed by the savings of the three sectors and by foreign savings. However, deficits by themselves do not imply macroeconomic problems particularly when the resources are used productively as they can generate a future stream of income to cover the servicing costs of macroeconomic dis-equilibria incurred.

Useful information on the relationship between macroeconomic policies and the twin-deficit adjustment has already been highlighted in table 7.1 in the earlier chapter 7, which shows government and private savings-investment balances and the corresponding current account deficits. As the current account deficit ($I - S$) is identically equal to the difference between gross fiscal deficit of the government sector ($=I_g - S_g$) and private sector surplus ($=S_p$

– I_p), causal relationships inevitably involve the underlying judgements rather than exact proofs. This identity indicates that improvements in the current account deficits can only take place if sectoral savings rise relatively to sectoral investment. The policies which do not have any impact on savings cannot be expected to improve the current account balance of the external sector [Dornbusch and Helmers, 1988]. It is generally believed that an increase in current account deficits (external savings) offset government sector dis-savings thereby preempting the crowding out of private sector investment. This research has also concentrated on government and private investment, and on its efficiency and contribution to growth. However, it is beyond the purview of this research to attempt a complete explanation of the determinants of savings and investment. It has rather concentrated on suggesting ways in which macroeconomic policy may have been influential.

This chapter is structured as follows. Section 8.1 estimates the Indian private savings function and private corporate investment function in multivariable framework to provide an account of overall policy assessment to throw light on the possible key structural shifts particularly to investigate the comparative perspective of macroeconomic dips in the 1960s and 1990s. Section 8.2 investigates the causal relationships and the direction of contemporaneous movements of these three gaps and their proximate determinants. Section 8.3 explains the trends of sectoral savings and investments in the three gap problems. The rest would conclude the chapter.

8.1 ECONOMETRIC EVIDENCE: INSTABILITY FUNDAMENTALS IN THE ESTIMATED INDIAN PRIVATE SAVINGS AND PRIVATE CORPORATE INVESTMENT BEHAVIOUR

This section has econometrically made an attempt to explore as to whether the disjunction between private corporate investment and public investment to be one of the many reasons behind twin macroeconomic crises in the 1960s and 1990s. The findings would also facilitate the subsequent section of causality analysis particularly to focus on the role of sectoral savings and investment and their disjunction for Indian macroeconomic growth process and instability. This section should have been preceded by the next one as the nature of the Indian macroeconomic time-series examined and contained in the second one. However, this does not necessarily signify that this research has been relegated with minor importance to this econometric issue. What in sequence of this chapter is done is only to focus the research issue.

There are two opposing hypotheses as a policy issue of very great practical relevance in macroeconomics: Feldstein and Horioka hypothesized that changes in the savings rate are primarily reflected in investment levels while Dornbusch and Helmers hypothesized that in the external balance.

Table 8.1: *Regression Results: Feldstein Horioka hypothesis (I/Y on S/Y) versus Dornbusch and Helmers hypothesis (CAD/Y on S/Y) in the Indian context*

Regression Model	Equation Number				R^2	$R\text{-Bar Sq.}$	$DW\text{-Statistic}$
Model: OLS: 1950-51 – 2002-03	8.1a	I/Y =	.017	+ 0.97 S/Y	0.96	0.95	0.67
		<i>T-Ratio (Prob.)</i>	3.15 (.003)	31.50 (.000)			
Model: OLS: 1950-51 – 2002-03	8.1b	CAD/Y =	.064	S/Y	.17	-.17	.55
		<i>T-Ratio (Prob.)</i>	6.68 (.000)				

Source: Author's calculation from CSO, National Accounts Statistics

To ascertain the validity of these two opposing propositions in the Indian context, the following regression equations disregarding the time-series properties are estimated by classical OLS method in the below Table 8.5. Equation (8.1a) indicates a very high correlation between savings and investment rates while equation (8.1b) indicates nearly absence of any correlation between current account deficit rates (CAD/Y) and savings rates (S/Y) [see Table 8.1, as estimated co-efficient in the former case has been 0.97 as compared to .064 in the latter and in both the cases, estimated co-efficient have well been statistically significant. Equation (8.1a) reveals high goodness of fit as having more R^2 and $R\text{Bar}^2$ and in terms of DW statistic too compared to (8.1b) estimation]. This hypothesis is also supported well even if regression done using co-integrating regression method. Thus, it is clear that in the Indian context, the proposition that domestic savings is the main source of domestic investment holds good and changes in the savings rate are reflected primarily in the external balance stands rejected. It is important to note that CAD or foreign capital inflows (or foreign savings, which represents the difference between domestic investment and savings) have been less than 2 per cent of GDP during much of the period under consideration. Thus, it can be argued that the two specific recessionary episodes of the 1960s and 1990s in the Indian economy may be the consequence of investment instability or rather volatility in the public and private sectors in addition to the

impact of exogenous shocks, which needs rigorous econometric investigation and the relevant exercise on that count to be followed next.

It is well known that the Indian private sector consists of two sub-sectors namely private corporate and private household. The specification of the following two regressions of private savings (of both household and corporate) rate function and private corporate investment function and their determinants are given in equation (8.2a) and (8.2b). These specifications would facilitate to understand how the relative contribution of the public and private sectors to gross domestic capital formation in Indian macroeconomic growth process changed in the period under consideration in this study providing useful policy implications from theoretical point of view particularly to understand India's twin instability episodes in the 1960s and 1990s. It is best to say at its outset that all the variables used in the regressions found to be non-stationary, as is examined rigorously contained in the next sub-section.

Private savings function can be specified as follows:

$$SSP = f(\Delta Y, RINT, RINF, SSG, SYA, TOT, NFIFA, D) \quad (8.2a)$$

For private corporate investment function, this research uses the following specification:

$$SIC = f(\Delta Y, SIG, P_{90}D) \quad (8.2b)$$

NOTATIONS:

<i>Dependent variables</i>	<i>Description</i>
SSP	Private savings as per cent of GDP
SIC	Private corporate investment as per cent of GDP.
<i>Independent variables</i>	<i>Description</i>
ΔY	Inter-year change in real GDP
RINT	Real interest rate
RINF	Inflation rate
SSG	Government savings as per cent of GDP
SYA	Share of agriculture to GDP
TOT	Terms of trade
NFIFA	Remittances
D	Crisis dummy variable; 1 for years 1971 through 1977 and zero otherwise, to capture combined effects of exogenous shocks, if any, of war in 1971, oil price crises in 72-74 and political emergency 1975-77
SIG	Government investment as percent of GDP
$P_{90}D$	Post reform dummy; 1991 onwards = 1; and 0, otherwise

It is important to note that drought may have instability impact for the short-run and the variable SYA stands to be proxy in this regard. However, oil crises might have long-run impact through adversely affecting balance of payments (BoP) . Thus this variable is added to account for the dips in the sectoral savings-investment function, if any, in the twin instability sub-periods in the 1960s and 1990s.

Equations (8.2a) and (8.2b) are estimated over the studied sample period from 1950-51 to 2002-03 using the Indian annual macroeconomic time-series dataset. All the variables are measured relative to GDP at current prices except obviously for TOT, D and P₉₀D. Data sources are listed in the previous chapters and methods of data transformation adopted are also discussed elsewhere in this research. Though the exercise to examine the time-series properties of the adopted variables is shown in the following section using the standard Dicky-Fuller procedure, this section, however, does have information on a priori basis about the nature of the variables used as to whether either I(1) or I(0) category.

The unit test results have been reported in the following sub-section in the Table 8.4, suggesting that all the variables do not have the same order of integration. The variables – SSP, SSG, SYA, ΔY , TOT, NFIFA, SIC and SIG are found to be integrated of order one (I(1)) while RY, RINF belong to the I(o) category [see Table 8.4 in subsection 8.2]. This section has therefore used the general to specific modeling procedure of ARDL (auto regressive distributive lag) approach of co-integration with ECM model, which minimizes the possibility of estimating spurious relations to keep retaining long-run information.

Regression estimates for private savings rate and private corporate investment rate are reported in the following Table 8.2 and Table 8.3.

TABLE 8.2: Determinants of the Private Savings Rate in India: Regression Results

Δ SSP =	0.16	0.03 RY _t	+ 0.17 RINT _{t-1}	+ .003 RINF _t	-.29SSG _t	-.003 Δ TOT _t
	(0.78)	(1.45) ^a	(1.58) ^a	(1.57) ^a	(3.61) ^c	(1.37) ^a
	-.04	+ .001	-.002SYA	-.004D	-	
	TOT _{t-1}	NFIFAZ _{t-1}			.36SSP _{t-1}	
	(1.89) ^b	(1.37) ^a	(0.96)	(1.35) ^a	(5.45) ^c	
$R^2=0.78$			$F(10,42) =$ 9.27 ^c			$S.E. of regression =$.009
$DW = 2.25$			$LM1 - \chi^2(1)$ =2.09			$LM2 - \chi^2(2) = 2.17$
$RESET - \chi^2 =$ 0.20			$JBN - \chi^2(2) =$ 0.08			
		Long-run (steady – state) effect on savings rate				
		Real GDP growth(RY)				0.11 ^a
		Real interest rate(RINT)				0.25 ^a
		Inflation rate(RINF)				0.20 ^a
		Government savings rate(SSG)				-0.54 ^c
		Terms of trade(TOT)				-.007 ^a
		Remittances(NFIFAZ)				0.02 ^a
		Crises Dummy (D)				-.005 ^a

Notes: t-ratios of regression coefficients are given in brackets. Approximate critical values for the t-ratios are as follows: 10 per cent = 1.31 (^a); 5 per cent = 1.69 (^b) and 1 per cent = 2.44 (^c). The test statistics are : LM = Lagrange multiplier test of residual serial correlation; $RESET$ = Ramsey test for functional form misspecification; JBN = Jarque – Bera test for the normality of residuals

Source: Author’s calculation from CSO, National Accounts Statistics, various issues and other official sources as is mentioned in the section: data sources in chapter 1

The final prudent estimated equation combined with a set of commonly used diagnostics statistics and long-run elasticities relating to the candidate explanatory variables, which are computed from the long-run (steady-state) solutions to the estimated equation, which are given in each lower panel of the tables Table 8.2 and Table 8.3. Both the estimated equations have statistically been significant at the one per cent level of significance with respect to standard F test and perform well by all diagnostic tests. From the point of view of Chow test for parameter stability conducted by splicing the total sample period into 1950-90 and 1991-2003, there has been no evidence of parameter instability. On re-estimating for the various sub-periods, all equations went through Chow test of out of sample forecasting ability (Chow’s prediction failure test for the post-reform period 1991-03).

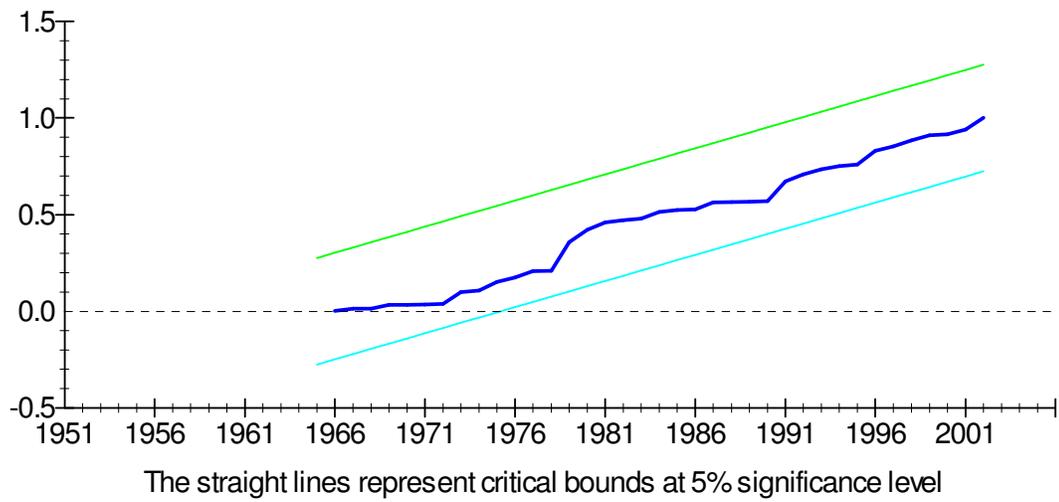


Figure: 8.1 : Plot of Cumulative Sum of Squares of Recursive Residuals of Private Savings Rates using Equation (8.2a)

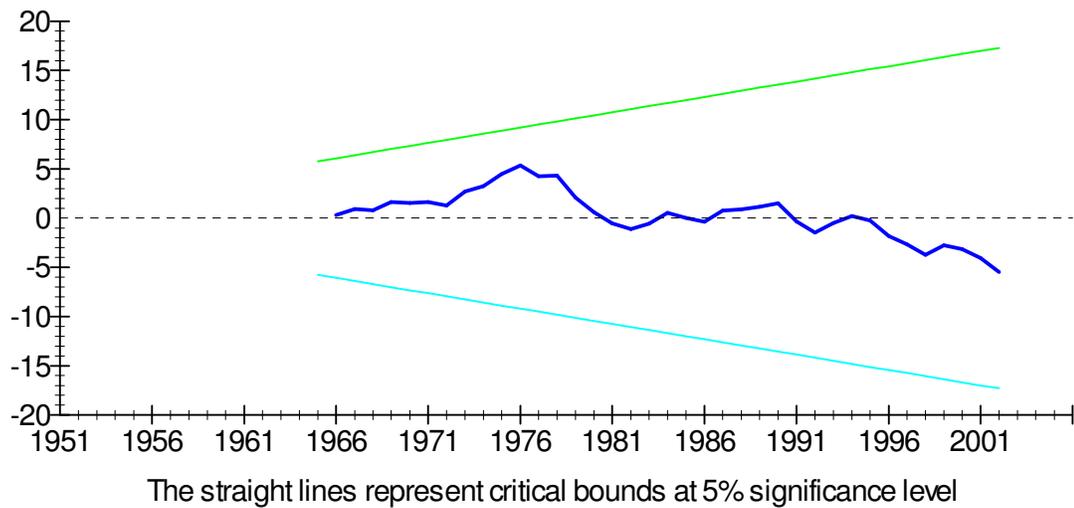


Figure: 8.2 Plot of Cumulative Sum of Recursive Residuals of Private Savings Rates using Equation (8.2a)

Besides these tests, a residual correlogram up to five years are estimated for each equation, with no indication of significant serial correlation.

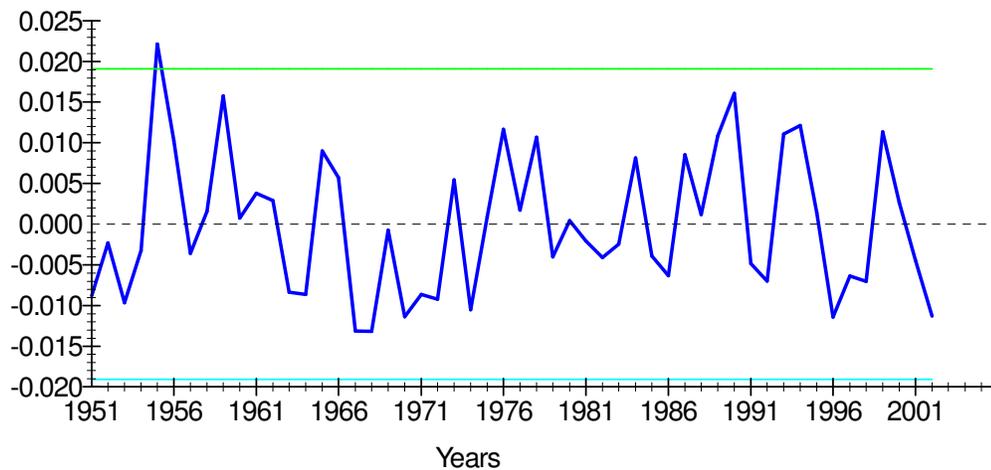


Figure: 8.3 Plot of Residuals and two Standard Error Bands of Private Savings Rates using Equation (8.2a)

Turning to the Table 8.2, the finding for the real interest rate variable (RINT, which is the difference between deposit rate and inflation rate) reveals that one percentage point increase in RINT is associated with a 0.25 percentage point increase in the private saving rate. This result seems to have been interesting considering the fact of macroeconomic instability sub periods in the 1960s and the 1990s (as in both decades annual plan holidays were the common feature) during the studied period. Overall the Indian experiences provide support that high real interest rates promote private savings in the economy. It is important to note that the real interest rates remained positive for much of the period under study. This has clearly been an important factor behind the high savings rate evidenced in India in the post independence period.

However, the theoretical argument is that there is an inverse relationship between the real rate of interest and the incremental capital-output ratio (ICOR) [the theoretical justification is: $p \cdot MP_k = r$; where, p is the price of the product; $MP_k (= \Delta Y / \Delta YK)$ = marginal product of capital; $ICOR = \Delta K / \Delta Y$ and productivity of capital is the reciprocal of ICOR; and ‘ r ’ is the real interest rate]. It is true that a rise in the real interest rate would by wiping out unproductive investment increase the productivity of capital and thereby a fall in ICOR. It is also true that a rise in the real interest rate could reduce domestic capital formation (investment) rate per se and thereby growth rate of output. Since the growth rate is the product of the marginal productivity of capital and the investment rate, the overall effect of the real interest rate on the growth rate

would depend on the relative magnitude of these two opposing effects. Thus it seems plausible that a very high real rate, the negative impact would offset the positive impact, thereby causing a contraction in growth.

This inverse pattern between real interest rate and ICOR and thereby investment rate is by and large true right across the sample, especially over the cyclical variations in real interest rate during the mid-60s and 90s though the inverse relationship seems to have broken down after the mid 90s as there witnessed positive relationship may be owing to change in interest rate regime from its earlier 'administered' to 'deregulated'. This could be one of the many reasons as to why the Indian growth rates dipped into recession in the 1960s and the 1990s. However, to ascertain the validity of this claim that high real interest rate affected adversely the investment and thereby output in the 1960s and the 1990 and to empirically establish this proposition, it needs more exhaustive investigation by estimating the regression equation of real growth rate on real interest rate.

Now turning to the Table 8.2, the variable - real GDP growth rate (RY) is an important determinant of the private savings rate – the coefficient of RY is positive and is statistically significant. A rise in the growth rate by one percent leads to a long-run increase in the private savings rate by 0.11 per cent. The coefficient of TOT is negative and statistically significant, implying that real income gains (losses) consistent with terms of trade improvement lead to lower (higher) savings, as the terms of trade movements is generally considers as permanent shocks. The coefficient on NFIFAZ is narrowly positive as significance only at the 10 per cent level, implying some, though weak, statistical support for the view that migrant remittances promote domestic savings performance. The positive coefficient of the inflation rate as captured by the RINF suggests that a positive effect on the private savings rate supporting increased uncertainty in the Indian macroeconomic environment.

There is support that government savings is a substitute for private savings in the context of Indian economy though not to the fuller extent as suggested by the Ricardian equivalence hypothesis. The findings indicate that a one percentage point increase in the government saving ratio is siphoned off with 0.54 percentage point reduction in the private savings rate. Thus, an improvement in government savings consequent to a shift in income from the private end to the public end, say, by higher income tax would contribute to an

increase in gross domestic savings. The coefficient on SYA i.e. the share of agriculture in GDP failed to attain statistical significance to the growth in private savings rate and so is dropped from the final equation from being considered its impact on long-run growth. However, the variable D is found having statistically significant coefficient in all experimental runs and hence cannot be dropped from the final equation.

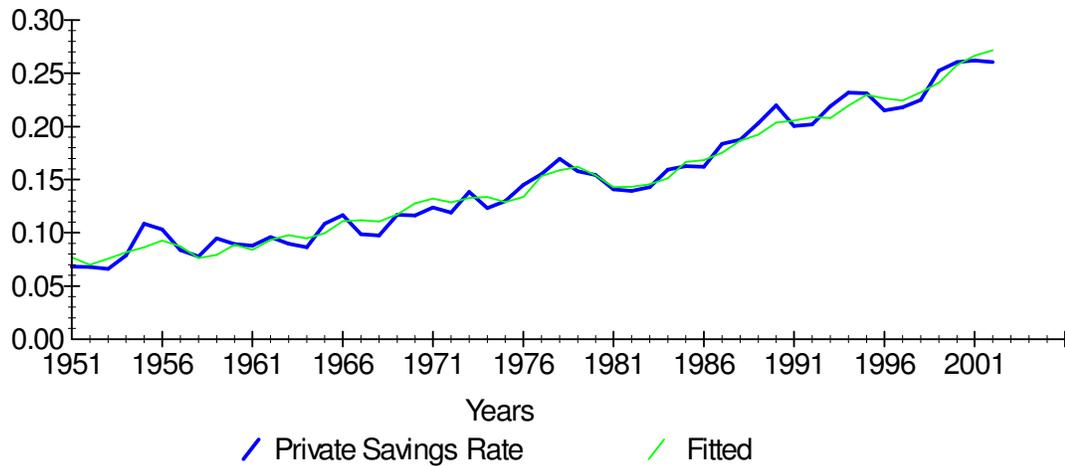


Figure: 8.4: Plot of Actual and Fitted values of Private Savings Rates in the long-run using Equation (8.2a)

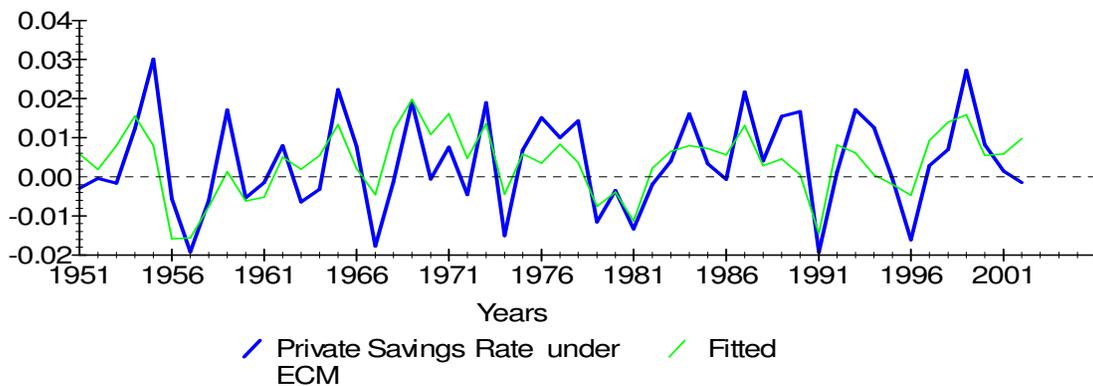


Figure: 8.5: Plot of Actual and Fitted values of Private Savings Rates in the long-run with short-run impact using Equation (8.2a)

TABLE 8.3 : Determinants of Investment of the Private Corporate Sector in India: Regression Results

$\Delta SIC_t =$	-2.17 +	1.11 ΔY_t	+ 0.17 ΔSIG_t	+0.12 IG	-.59 SIC_{t-1}	+ 0.53 P_{90D}
	(1.79) ^b	(1.57) ^a	(3.61) ^c	(2.69) ^c	(2.47) ^c	(3.47) ^c
$R^2=0.58$			$F(3,49) = 7.22^c$		$S.E. \text{ of regression} =$	
$DW = 2.45$			$LM1 - \chi^2(1)$.15	
			=1.57		$LM2 - \chi^2(2) = 0.45$	
$RESET - \chi^2 =$			$JBN - \chi^2(2) =$		$SPEC - \chi^2(2) = 3.19$	
0.20			0.06			
			Long-run (steady – state) effect on savings rate			
			Change in real GDP (ΔY)			1.97 ^a
			Government Investment Rate (ΔSIG_t)			42 ^c

Source: Author's calculation from CSO, National Accounts Statistics, various issues and other official sources as is mentioned in the section: data sources in chapter 1

Notes: t-ratios of regression coefficients are given in brackets. Approximate critical values for the t-ratios are as follows: 10 per cent = 1.31 (^a); 5 per cent = 1.69 (^b) and 1 per cent = 2.44 (^c). The test statistics are : *LM* = Lagrange multiplier test of residual serial correlation; *RESET* = Ramsey test for functional form misspecification; *JBN* = Jarque – Bera test for the normality of residuals, *SPEC* = Sargan's test for the correct specification of instruments

Turning to the Table 8.3, the results support the hypothesis that the acceleration principle has not been very significantly important in explaining the Indian corporate investment behavior as the coefficient on the GDP variable (ΔY) though positive but significant at 10 per cent level. A one percentage point increase in the rate of growth in real GDP is associated with a 1.97 percent increase in corporate investment in the long-run.

In so far as the issue of crowding –in or crowding –out effect of private corporate investment is concerned, the results for the government investment (SIG) variable does not robustly support the view that in the Indian economy public investment has a strong complementary relationship with corporate investment. The impact (short-run) and long-run (steady-state) elasticities of private corporate investment with respect to public investment are 0.17 and 1.97 respectively. However, it is important to note that in the long-run the degree of complementary is more pronounced as compared to the short-run. The positive and significant coefficient entangled to the post-90s- dummy (P_{90D}) can be interpreted as the private household investment being substituted, albeit, marginally by the private corporate investment following 1991-92.

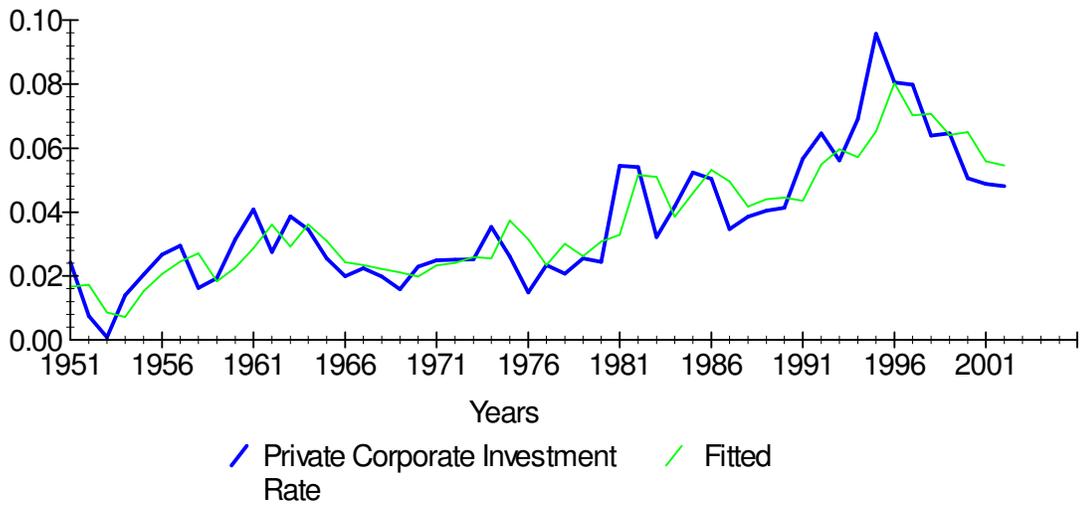


Figure 8.6: Plot of Actual and Fitted values of Private corporate investment rates in the long-run using Equation (8.2b)

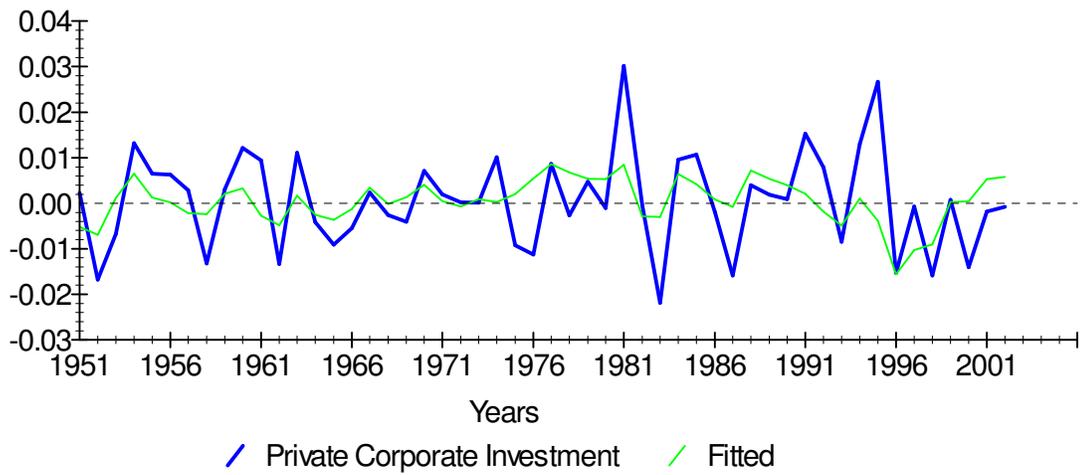


Figure 8.7: Plot of Actual and Fitted values of Private corporate investment rates in the long-run with short-run impact using Equation (8.2b)

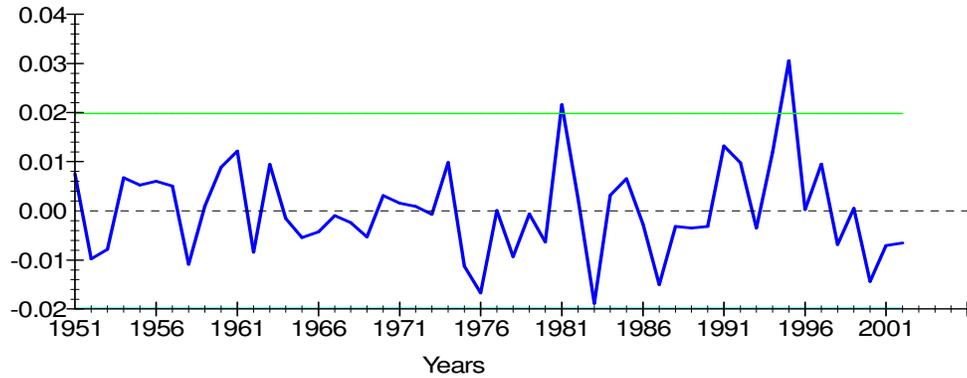


Figure: 8.8: Plot of Residuals and two Standard Error Bands of Private corporate investment using Equation (8.2b)

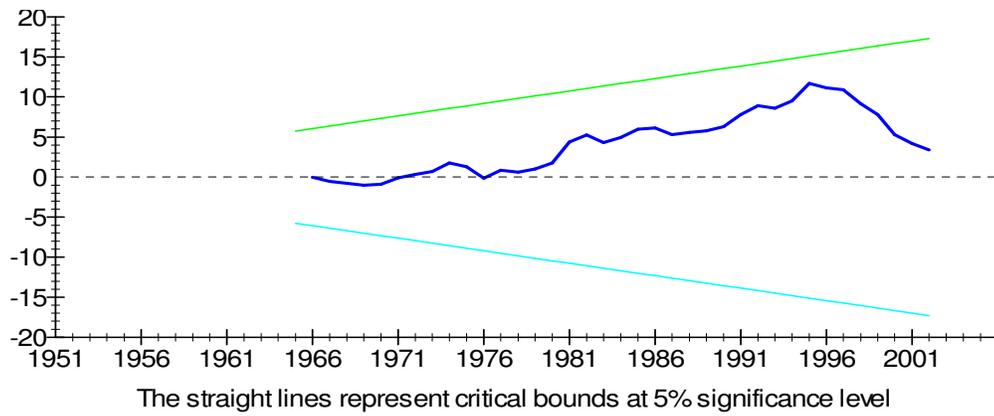


Figure: 8.9: Plot of Cumulative Sum of Recursive Residuals of Private corporate investment rates using Equation (8.2b)

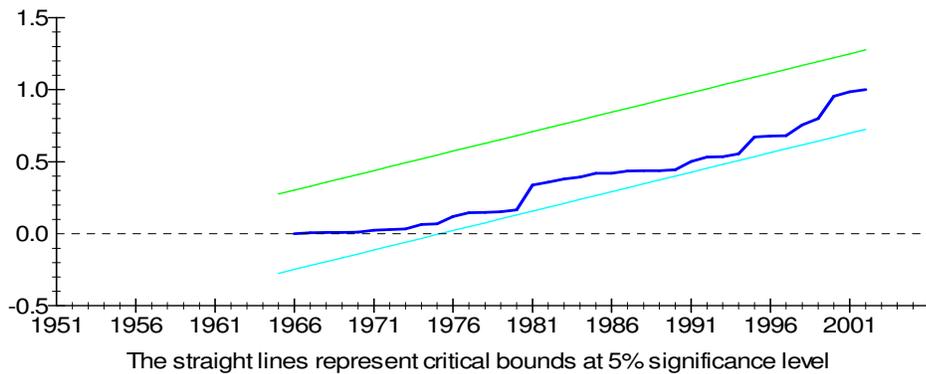


Figure: 8.10: Plot of Cumulative Sum of Squares of Recursive Residuals of Private corporate investment rates using Equation (8.2b)

The above figures 8.1, 8.2, 8.9 and 8.10 show that the parameters of both the private savings rate function and private corporate investment function have almost been stable. However, in Figure 8.10, it can be seen that there is a tendency to shift the recursive residuals of private corporate investment function tending to touching the band line during the mid-60s and 1990s may be attributable its role to the macroeconomic instability episodes as it had critical value of standard error during the mid 1960s and the 1990s [see Figure 8.8]. However, the seemingly parameter instability of private corporate investment in Figure 8.10 might suggest that recursive residual test holds good to test structural break-point and remains far from being significant for lag adjusted model, for which parameter stability mis-specification be solved by the predictive failure test [Chow, 1960]. However, this evidence may be a claim of structural shifts. Both in the Figure 8.3 and 8.8, plot of residuals have almost been within two standard error bounds implying that residuals are serially uncorrelated or white noise. This is another way of saying that the assumed determinant of both the private saving function and private corporate investment function are found to be co-integrated. In this sense, the dynamic model specification for both the Indian functions seems to have been reasonably just. However, in the figure 8.8, there is a tendency of the residuals of private corporate investment function in very rare cases have been out of bound lines may suggest that the behavior of private corporate investment may be partly held responsible for that twin instability episodes of the 1960s and 1990s and the dynamism for private corporate investment seemed to have been halted for some sub-periods as findings suggest under this study.

Thus it is important to note that gross domestic savings has still been the predominant source for gross domestic capital formation. Till 1980s, government investment behavior was less volatile than its private outfit. Public savings started showing dismal performance since 1980s. There has been a series of variations in real interest rate and growth differentials and thereby sectoral savings-investment disjunction, mainly of private corporate sector as household sector till date is the major player as stationary its behavior either in terms of savings or investment. Thus, the disjunction of savings behavior between government sector and private corporate sector in terms of domestic capital formation might have led the seeds for underlying macroeconomic crises as economic fundamentals besides exogenous shocks in which government's policy co-ordination between fiscal, monetary and exchange rate might not have worked properly with a vision of long-run stable growth rate, inflation target, interest

target and exchange rate target. Thus may be, it was difficult to play for all the four variables rightly in tandem with like growth rate, inflation rate, interest rate and exchange rate as composite combo variable for stabilization to have had stable macroeconomic environment.

Combining the regression estimated results reported in the Table 8.2 and the Table 8.3 for the private savings function and the private corporate investment with an analysis of the behavior of the key explanatory variables such as sectoral savings and investment and their determinants like real interest rate, inflation rate, terms of trade, remittances to figure out the underlying macroeconomic fundamentals and stylized facts of recessions in the 1960s and the 1990s in explaining comparative perspective of instability episodes and how Indian macroeconomic growth process differed across periods in the face of exogenous shocks informing Indian macroeconomic policies to stabilize the economy which summararily would be presented in the next chapter.

8.2. THE INDIAN DEFICIT INDICATORS & MACROECONOMIC VARIABLES: A CO-INTEGRATION AND CAUSALITY ANALYSIS

The above description about how the variations in the three gaps to maintain savings-investment balance over the entire sample period in the Indian context occurred motivates this section to investigate econometrically the short-run and long-run causal relationship and the direction of contemporaneous movements in these three gaps, and the results are presented below in the table. Deficits impact major macroeconomic variables. With the state growingly being viewed as a welfare state, this relationship between deficit indicators and macroeconomic variables is becoming very evident particularly in developing countries. Any effort to study the relationship between the three gaps more systematically must analyse the related variables in aggregate sense as well as sector-wise on all fronts, including domestic, external, real, financial such as sectoral consumption, investment, savings, exports, imports, internal debt and external debt, foreign direct investment, foreign capital inflow, factor income from abroad, money supply, the real exchange rate, interest rate, inflation rate, and above all economic growth and thereby macro policy mix. Thus, one of the main objectives of this chapter is to identify the probable transmission channels of instability in the Indian context to compare the instability sub-periods in the 1960s and 1990s.

This section investigates the role of sectoral savings and investment in influencing macroeconomic growth process in India using a multivariate co-integration and causality analysis framework. It attempts to examine whether deficit indicators and the macroeconomic variables share a co-integration and causal relationships using the Indian annual macroeconomic time-series dataset for the 54-year period from 1950-51 to 2003-04 particularly to understand how India's macroeconomic policies are prudent to maintain these deficits at a level consistent with other macroeconomic objectives such as controlling inflation, prompting private investment and maintaining external credit worthiness. Prior to causality testing, co-integration is first employed to test as to whether long-run equilibrium relationships exist between deficit indicators and the variables. The co-integration framework enables to investigate the existence of one or more long-run relationships between them.

This section examines time-series properties of the data used by employing unit-roots tests and reports their nature and estimates economic relationships in the co-integration – error correction framework to shed light on the short-run dynamics out of equilibrium and to provide information for one or more co-integrating long-run stable relationships between macroeconomic variables in a multivariate framework with full sample and non-overlapping sub-samples when some or all of the variables are non-stationary in the Indian context with lead-lag relationships.

NATURE OF INDIAN MACRO TIME-SERIES DATABASES

This section has first examined the underlying time-series properties of the variables used and thereby the nature of the data. It begins the estimation process by using the standard Dicky-Fuller procedure. Testing for stationarity and finding the order of integration of an observed time-series has been the principal concern in doing so. Prior to testing for a causal relationship between the time-series, the first step is to check the stationarity of the variables employed as regressors in the equations to be estimated. The following Table 8.4 contains the test reports along with description of variables used for empirical investigation.

TABLE 8.4: Tests for Unit Roots of Variables Used In the Econometric Analysis

Notations / Data Series	ADF test of $H_0: I(1)$ versus	Whether $I(1)$ or
	$H_1: I(0)$	$I(0)$
Y (gross domestic product at 1993-94 prices)	4.92(0) ³	I(0)
YZ (gross domestic product at current market prices)	12.8(0) ³	I(0)
RY (growth rate of gross domestic product at 1993-94 prices)	-2.92(0) ³	I(0)
ΔY (Inter-year change in gross domestic product at 1993-94 prices)	-0.43	I(1)
GDPDEF (price deflators at gross domestic product at market prices; where, 1993-94=100; = YZ/Y*100)	1.65(0)	I(1)
RINF (inflation rate)	-2.49 (0) ³	I(0)
CAD (adjusted current account deficit)	-0.51(0)	I(1)
GFD (gross fiscal deficit)	1.24(0)	I(1)
TD (trade deficit)	-2.98(0)	I(1)
C (total final consumption expenditure at 1993-94 prices)	3.02 (0)	I(1)
CG (government final consumption expenditure at 1993-94 prices)	0.96 (0)	I(1)
CP (private final consumption expenditure at 1993-94 prices)	2.86 (0)	I(1)
SG (gross savings of the government sector)	-0.61(0)	I(1)
SP (gross savings of the private sector)	7.08 (0)	I(1)
SH (gross savings of the household sector)	8.01(0) ³	I(0)
SC (gross savings of the private corporate sector)	0.20 (0)	I(1)
SZ (Gross domestic savings)	5.17(0) ³	I(0)
IG (gross capital formation of the government sector)	0.79 (0)	I(1)
IP (gross capital formation of the private sector)	2.82 (0)	I(1)
IH (gross capital formation of the household sector)	5.09 (0) ³	I(0)
IC (gross capital formation of the private corporate sector)	-0.77(0)	I(1)
GDCF [adjusted gross domestic capital formation (or gross capital formation) at 1993-94 prices]	0.03(0)	I(1)
XZ (exports of goods and services at current prices)	9.02(0) ³	I(0)
MZ (imports of goods and services at current prices)	8.46(0) ³	I(0)
IPDZ (interest on public debt at current prices)	13.23(0) ³	I(0)
YA (Gross domestic product from agricultural sector)	-1.75(0)	I(1)
YM (Gross domestic product from manufacturing sector)	2.27(0)	I(1)
YC (Gross domestic product from construction)	2.72(0)	I(1)
YINFS (Gross domestic product from infrastructure)	-1.50(0)	I(1)
PDA (Price-deflator in agriculture)	0.51(0)	I(1)
PDM (Price-deflator in manufacturing)	-0.40	I(1)
E [Nominal exchange rate (Rs. Per US\$)]	0.02 (0)	I(1)
RER (Real exchange rate)	-1.69 (0)	I(1)
ID (Total internal debt)	7.9 (0)	I(0)
ED (External debt of the central government)	-0.08 (0)	I(1)
INT (Nominal interest rate (one-year deposit rate)	-0.85	I(1)
M3 (Broad Money)	1.31 (0)	I(1)
RINT [Real interest rate (INT – RINF)]	-1.86 (0)	I(1)
ICOR (Incremental capital-output ratio)	-7.40 (0)	I(0)
NFIFAZ (Net factor income from abroad or remittances)	.52 (0)	I(1)
SSYA(Share of agriculture to real GDP)	-.42 (0)	I(1)
TOT (Terms of trade)	-2.40 (0)	I(1)
SSP (Private savings as percentage of GDP)	-.13(0)	I(1)
SIC (Private corporate investment as percentage of GDP)	-1.89(0)	I(1)
SIG (Government investment as percentage of GDP)	-2.14(0)	I(1)

Notes:

1. Except in the cases of RY, ΔY , RINF, TD, all the tests are performed with 'trend and intercept' to allow for the possibility that for most economic time-series, the usual competing alternative to the presence of a unit root is a deterministic linear trend. The critical value at the 5 per cent level is -3.49 and for RY, ΔY , RINF, TD allowing no intercept and no trend, the critical value at the 5 per cent level is -1.94.
2. Figures in parentheses imply the order of augmentation required to obtain residual whiteness.
3. Rejection of null hypothesis

Source: Author's calculation from CSO, National Accounts Statistics, various issues and other official sources as is mentioned in the section: data sources in chapter 1

The results for the ADF test (presented in the above Table 8.4) suggest that the variables do not have the same order of integration. The Table 8.4 suggests that the variables- annual change in real GDP, GDP deflator, current account deficit, trade deficit, aggregate final consumption expenditure, government final consumption expenditure, private final consumption expenditure, government savings, private savings, private corporate savings, government investment, private investment, private corporate investment, gross domestic capital formation, GDP from agriculture, GDP from manufacturing, GDP from construction, GDP from infrastructure (i.e. from electricity, gas and water-supply; and, transport, roads, communications), price deflator in agriculture, price deflator in manufacturing, exchange rate, real exchange rate, external debt, nominal interest rate, money supply, real interest rate, remittances, share of agriculture to GDP, terms of trade, ratio of private savings as percentage of GDP, ratio of corporate investment as percentage of GDP, and ratio of government investment as percentage of GDP are found to be integrated of order one (I(1) [i.e. non-stationary or presence of unit roots] while retaining long-run information against the variables – real GDP, monetary GDP, growth rate of real GDP, growth rate of inflation, gross domestic savings, household savings and household investment, exports of goods and services, imports of goods and services, interest rate on public debt, internal debt, and incremental capital output ratio belong to the I(0) category [i.e., stationary or absence of unit roots].

Prior to apply ADF test for the presence of unit root, this section has also performed the exercise having gone through their visual inspection of time-series plots of correlogram or autocorrelation function (ACF) of the candidate variables under scrutiny as a first priority to understand the nature of the data. If the visual inspection of a time-series variable at levels shows linear trend and if its first difference shows no evidence of trend, then the variable is found to be non-stationary or having presence of unit roots [I(1)] i.e. the distribution function of the variable is believed to be time-variant or would have non-constant mean and variance and then the graphical plot of that variable is believed to be consistent being integrated at an order 1 and denoted as I(1).

However, the ADF tests are sensitive to the choice of lag length and over-parameterization for the selected model can happen when the lag length chosen exceeds the ‘true’ lag length. In view of the size-power trade-off, to choose appropriate model selection criteria indicating correct lag length with optimal order of augmentation, Akaike Information

Criterion (AIC) and Schwarz Bayesian Criterion (SBC) leads to a parsimonious model as reported in the following Table 8.4 while finding the studied variables whether I(1) or I(0). The theoretical justification of applying unit root tests are avoiding the risk of spurious regression as conventional OLS method may prevent to get the true short-run and long-run macroeconomic relationships providing short-run instability information within long-run stable dynamic analysis.

THE INDIAN REAL GDP ANALYSIS

One important question seems to have cropped for this research is that why the Indian real GDP at level value and at rate value found stationary though there has been a considerable rise in the trend rate of growth of real GDP since the mid-1970s. From 1950-51 to 1975-76, it was below 3.4 per cent a year growth compared to slight more than five per cent since then till 2002-03. If dated the change since early 1980s, the difference would be still greater. The question arises behind these two trend growth rates as to whether be there anything to explain? The question seems to involve the analysis of Indian macroeconomic management i.e. how important were the Indian macroeconomic policies in explaining economic growth. On this count, demand management and supply management short-run and long-run policies are important in the context of greater pressure of demand, more efficient use of existing resources, higher investment and more efficient investment.

This section reports the estimated autocorrelation and partial autocorrelation functions of Indian real GDP, 1950-2003, shown in the following Table 8.5. The estimated function in Table 8.5 combined with the similar analysis of the estimation of the first-order AR model of the first-differenced, logarithmic - transformed Indian real GDP series, shown in Table 8.6 along with the other corresponding graphical plot of correlogram of Indian real GDP in Figure 8.11 show virtually identically result that Indian real GDP at level value has by and large been stationary. The uni-variate time-series model, Table 8.6 has been statistically an adequately fitted model [as the computed T-ratio has been greater than the critical value at 5 percent level to being stationary to be statistically significant, see Table 8.6], albeit, it is argued that the AR(1) and random walk with drift processes are adequate representations of the time-series process of Indian real GDP to be comparable to understand the dips in the 1960s and 1990s as there would be some significant macroeconomic association as is why changes in real GDP,

given the lags of the autocorrelation and partial autocorrelation functions as there is a variation of the random walk with drift as the residuals of this model show few deviations from normality.

TABLE 8.5: *Estimated correlogram Function of India's Real GDP 1950-51 to 2003-04*

Lags	Autocorrelation coefficient	Standard error	Partial autocorrelation coefficient	Box – Pierce Q-Stat	Probabilities
1	0.919	0.13	0.919	48.144	0
2	0.846	0.22	0.011	89.72	0
3	0.774	0.27	-0.029	125.22	0
4	0.704	0.31	-0.023	155.24	0
5	0.635	0.34	-0.037	180.16	0
6	0.571	0.36	-0.01	200.73	0
7	0.511	0.37	-0.016	217.51	0
8	0.45	0.39	-0.036	230.84	0
9	0.395	0.401	-0.008	241.32	0
10	0.344	0.408	-0.006	249.47	0
11	0.299	0.413	-0.004	255.75	0
12	0.254	0.417	-0.022	260.41	0
13	0.212	0.42	-0.021	263.73	0
14	0.168	0.422	-0.048	265.86	0
15	0.126	0.423	-0.02	267.09	0
16	0.086	0.4244	-0.022	267.68	0
17	0.052	0.4248	-0.001	267.9	0
18	0.019	0.4249	-0.019	267.94	0

Source: Author's calculation from CSO, National Accounts Statistics, various issues

TABLE 8.6: *Autoregressive Time-Series Model of Real India GDP*

Variable	Coefficient	Std. Error	T-Ratio	Prob.	5% Critical Value
Real GDP (-1)	0.069021	0.014465	4.771706	0	-3.4969
C	-6383.06	3887.05	-1.64214	0.107	
Trend@ 1950=1	-114.9436	345.0802	-0.33309	0.7405	
R-squared	0.740522				
Adjusted R-squared	0.729931				
S.E. of regression	14101.43	Akaike info criterion		22.0019	
Sum squared resid	9.74E+09	Schwarz criterion		22.11447	
Log likelihood	-569.0494	F-statistic		69.92029	
Durbin-Watson stat	2.137456	Prob (F-statistic)		0	

Note: Dependent Variable: DGDP

Adjusted Sample: 1952 2003

Source: Author's calculation from CSO, National Accounts Statistics, various issues

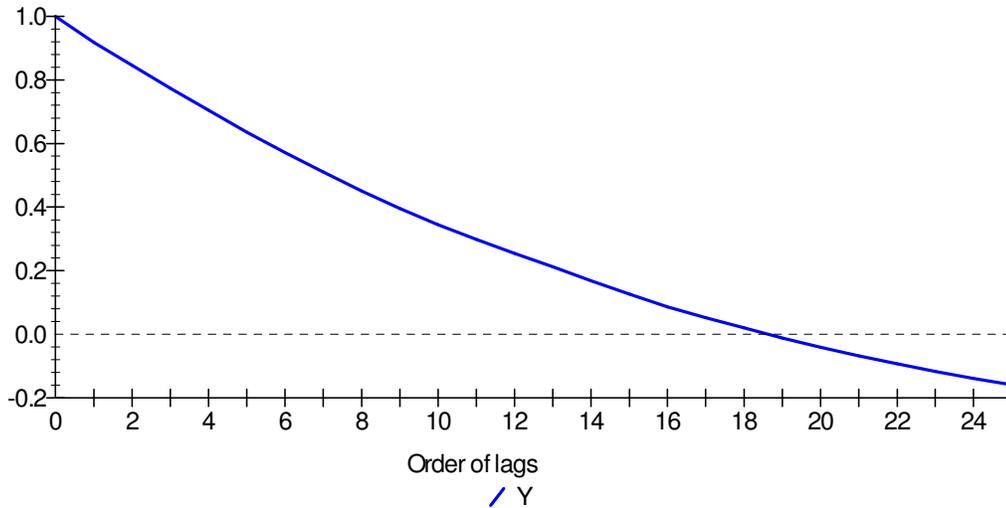


Figure 8.11: Correlogram of the Indian Real GDP (Y) at level value over the sample period from 1950 to 2003

Source: Author's calculation from CSO, National Accounts Statistics, various issues

The Indian rate of inflation has also been stationary as the statistical findings in the above Table 8.4 and the corresponding plot below 8.12 suggest. Now the question is has India been a low inflation country? But, the PBC literatures argue that India might be politically induced low inflation country. Now the question is has the Indian fiscal and monetary stances been conservative or rather countercyclical throughout the studied sample period? It has already been pointed out that India's pre-80s conservative fiscal and monetary stances diluted or rather eroded to chase debt burden, deficit monetization and to combat foreign exchange constraint, especially after 1991 as India's late 60s administered interest rate cum financial repression approach in bank nationalization spirit to induce import substituting development strategy has changed radically to deregulated interest rate cum market determined exchange rate regime. On the other hand, India had to face various exogenous shocks particularly due to droughts, oil price rises and political aberration such as war. That might have led to inflationary bubble for the time being and seems could not sustain its shocks for longer period. In other words, shocks might have made inflation more volatile without affecting the low long-run trend. Inflation is affected by exogenous shocks such as changes in food production, non-farm production (domestically produced raw materials) and import prices via adverse terms of trade shocks and exchange rate shocks. However, oil price shocks might have had sustainable impacts as it makes foreign reserve depleted and current account deficit worsen.

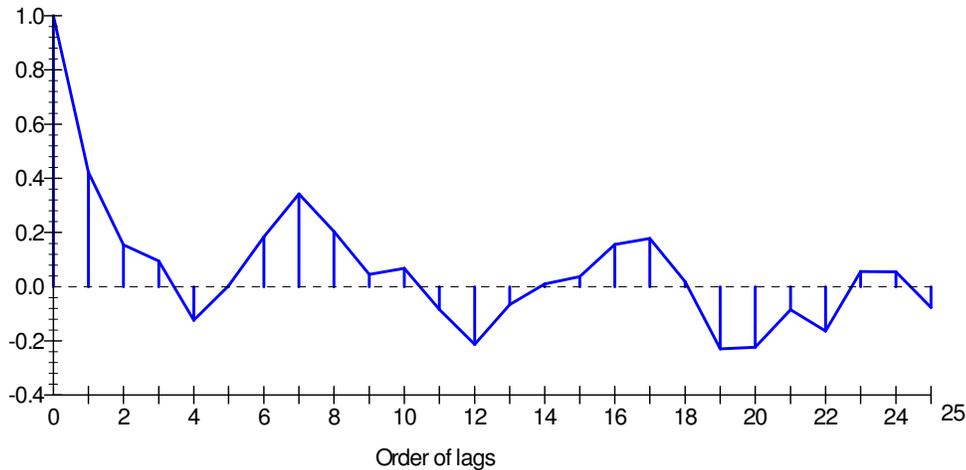


Figure 8.12: Correlogram of the Indian Annual Inflation Rate, 1951 to 2003

Source: Author’s calculation from CSO, National Accounts Statistics, various issues

However, this uni-variate the no-change naïve model of unit root tests may cast doubt on the effectiveness in modeling statistically significant the respective real GDP changes and inflation creeping episodes in the 1960s and the 1990s , examining the predictive information, and recent development of regime-switching model might well be conjecture one. However, this section came to help for the subsequent causality and co-integration analysis to slate the Indian comparative instability perspective in the 1960s and 1990s.

HOW INDIAN INSTABILITY MEASURES CAUSE MACROVARIABLES

This sub-section has utilized the Indian annual macroeconomic time-series datasets for the years 1950-51 to 2002-03 to see the Granger causality between the macroeconomic deficit measures viz. GFD, CAD and TD and macroeconomic variables (all in Indian rupees). Though it has not tested for the Akaike criterion for the purpose of determining optimum lag length, given the annual data series for the variables. It has opted for three period lag lengths for the test. Then it has tested the standard zero restriction of H_0 . Following the F –statistic and corresponding probabilities nearing zero, it cannot reject the null hypothesis, although the second one is rejected at 5 per cent level of significance. Thus one-way Granger cause implies not the reverse is true while bidirectional causality refers the reverse is also true. Given the granger causality, it helps to concentrate on the regressions in determining dependent and explanatory variables.

TABLE 8.7: Results of Causality for GFD and the Macroeconomic Variables (Granger Test) & Summary of the Causal Relationship between them(Full Sample 1950-51 to 2002-03)

Variables	Null Hypothesis		Direction of Causality
	Variables do not Cause GFD F- statistic(Prob.)	GFD does not Cause Variables F – statistic(Prob)	
	GR	GR	Granger
CAD	14.81 (1E-05)	15.70 (6E-06)	X
TD	14.42 (1E-05))	1.90 (0.16)	TD→GFD
GDCF	6.96 (0.0023)	5.94 (0.0051)	GDCF↔GFD
lg	11.80 (7E-05)	16.53 (4E-06)	X
lp	17.30 (2E-06))	3.67 (0.033)	lp →GFD
lc	15.75 (6E-06))	1.13 (0.33)	lc →GFD
Sg	11.80 (7E-05)	2.60 (0.084)	Sg →GFD
Sc	13.10 (3E-05))	5.009 (0.0108)	Sc→GFD
Cg	10.51 (0.0002)	3.35 (0.04)	Cg ↔GFD
E	4.40 (0.01)	15.52 1E-05	GFD→E
RER	4.11 (0.02)	7.99 (0.001)	RER↔GFD
ED	3.87 (0.02)	2.27 (0.11)	GFD→ED
INT	2.51 (0.09)	2.18 (0.12)	GFD →INT
M3	11.74 (.0001)	9.9 0.0003	M3↔GFD

Note: 'x' denotes no causality; '→' denotes unidirectional causality; and, '↔' denotes bidirectional (feedback) causality

Source: Author's calculation from CSO, National Accounts Statistics, various issues and other official sources as is mentioned in the section: data sources in chapter 1

The results of the causality tests among deficit measures and macroeconomic variables reported in the above Table 8.7 seem to have been very interesting. It is found that deficit measures like fiscal deficit causes mostly the non-stationary variables and in most of the cases deficit measures has not caused the stationary variables (see, household savings and investment found stationary not having been caused by fiscal deficit while corporate investment, corporate savings, government investment, government savings being non-stationary are caused by fiscal deficit. Thus Indian deficit measures and non-stationary variables are believed to be in long-run relationship as co-integrated at order one not only using ADF tests but also based on CRDW test (results not reported). On the other hand, though there is weak evidence relating with twin-deficit causation, however, all the intermediate candidate variables like sectoral

investment and savings and policy variables like interest rate, exchange rate, inflation rate and growth rate have reasonably been found having causation from deficit indicators.

It may be noteworthy finding that as household investment and savings are found to be stationary, then for stability, government and corporate saving- investment nexus may be the prerequisite essential for the long-run stability and their disjunction may lead periodic instability. Thus the problem is at the core of macroeconomic management. Thus stability depends on how government uses corporate surplus.

The following Table 8.8 has reported the estimated dynamic cross-correlation functions between private investment and government investment in India and in this one year lead/lag rolling approach it is found that the relationship between them is not quite clear as there is no clear indication of being complementary or not. Thus the issue of crowding out / in of private investment has been subject to policies relating with demand and supply side both.

TABLE 8.8: *Dynamic cross-correlation (lag/lead) between private investment (IPZ) and government investment (IGZ) over the sample period 1950-2003: Correlations are asymptotically consistent approximation*

IPZ, IGZ (-i)	IPZ, IGZ (+i)	i	lag	Lead
. *****	. *****	0	0.9739	0.9739
. *****	. *****	1	0.9122	0.8518
. *****	. *****	2	0.8474	0.7433
. *****	. *****	3	0.7762	0.6419
. *****	. *****	4	0.6862	0.5416
. *****	. *****	5	0.6156	0.4588
. *****	. *****	6	0.5544	0.3769
. *****	. ***	7	0.4904	0.3107
. ****	. **	8	0.4250	0.2275
. ****	. **	9	0.3554	0.1752
. ***	. *	10	0.3028	0.1362
. **	. *	11	0.2537	0.0930
. **	. *	12	0.2074	0.0601
. **	. .	13	0.1637	0.0264
. *	. .	14	0.1235	-0.0020
. *	. .	15	0.0879	-0.0282
. *	. * .	16	0.0591	-0.0487
. .	. * .	17	0.0245	-0.0665
. .	. * .	18	-0.0065	-0.0846
. .	. * .	19	-0.0337	-0.0998
. * .	. * .	20	-0.0568	-0.1129
. * .	. * .	21	-0.0809	-0.1258
. * .	. * .	22	-0.1022	-0.1393
. * .	. ** .	23	-0.1174	-0.1503
. * .	. ** .	24	-0.1339	-0.1608

8.3. THE SUSTAINABILITY OF SAVINGS AND INVESTMENT BALANCES IN THREE GAPS: INDIAN MACROECONOMIC CRISES

Based upon the basic twin-deficit identity, the following Table 8.8 describes variations in three gaps over the entire studied sample period and the results are contained in the table itself. It portrays savings and investment of the three sectors, as well as for India as a whole before, during, and after the macroeconomic instability sub-periods. It also shows how total gross domestic capital formation is financed by the savings of the three sectors and by external savings.

Table 8.9 : Behaviour of Three Gaps Before, During, and After Instability Episodes across Decades

(Percentage of GDP at market prices)

<i>Periods</i>	<i>Government Investment</i>	<i>Government Savings</i>	<i>Public Gap</i>	<i>Private Savings</i>	<i>Private Investment</i>	<i>Private Surplus</i>	<i>Gross Domestic Capital Formation (Adjusted)</i>	<i>Gross Domestic Savings</i>	<i>External Savings</i>
1950-59	4	1	2.6	8.18	7.04	1	11	10	1.1
1960-69	6	2.7	4.1	9.8	8.4	.1	14	12	2.0
1970-79	8	3.7	4.4	13	10	3	17	17	.0.1
1980-89	9	3	6	16	12	4	21	19	1.8
1990-03	7.4	0.2	7.1	23	15	8	24	23	1

Note: Gross Domestic Savings not estimated at 1993-94 prices as given by the CSO

Source: compiled from NAS, CSO, EPWRF, 2004

The above Table 8.8 shows that both the gross domestic savings and gross domestic capital formation rates have grown in India over the studied sample period. Domestic capital formation in India has predominantly been financed through domestic savings. Both the savings and investment rates revealed significant cyclical behaviour, with the savings rate more volatile than the investment rate. The coefficient of variation over the period 1950-2003 was .30 for the savings rate as compared to .28 for the investment rate. Until the 1980s, private investment was less volatile than government investment. This was because of changes in government investment were made with the intention of controlling inflation and stabilizing the economy. On the other hand, private savings has accounted for the bulk share of gross domestic savings, with government savings revealing a decline from the early 1980s onwards [see Table 8.8]. However, private savings increased at different pace across decades. Within the private savings, household savings has continued to remain the lion sharer. However, the share of

corporate savings in total savings increased in the 1990s. There has been dismal showing in public savings since 1970s persistently.

Turning to investment, the relative contribution of the government and private sectors to gross domestic capital formation has changed considerably across sub-periods under consideration. Till the early 1980s, the increase in the overall gross capital formation was driven mainly by increase in government investment. Albeit, the rise in investment rate from the mid-1980s onwards can be attributed mostly to the increase in private investment, in respect to a steady decline in government investment. The rise in private investment in the 1980s and 1990s has mostly obtained from a rapid rise in private corporate investment, particularly in the 1990s resulting a fall in household investment between these two periods.

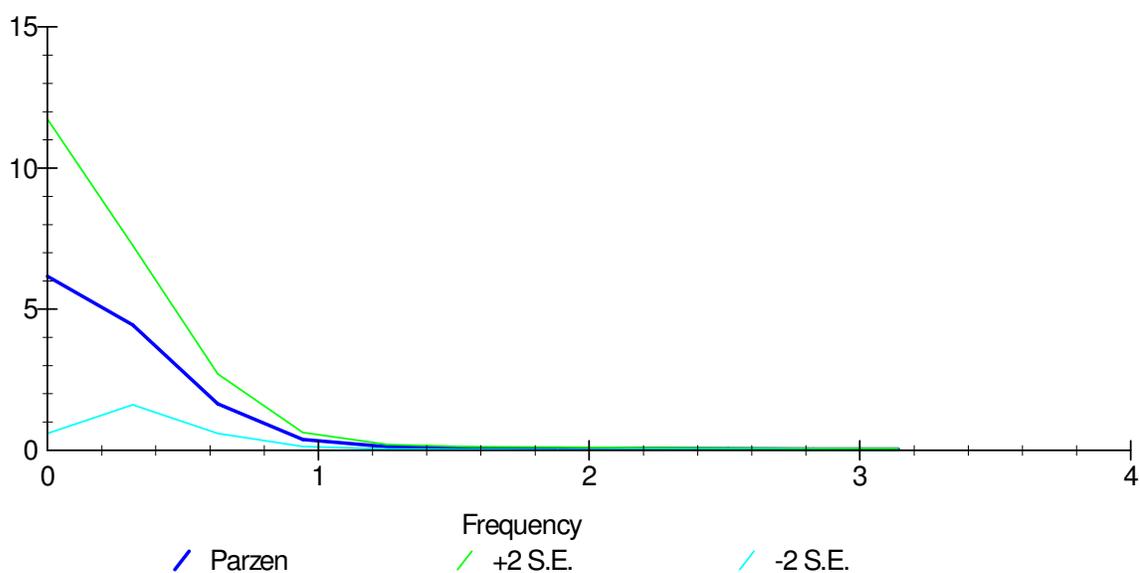
It can be observed that the private sector surplus remained somewhat roughly constant during the 1980s. The current account balance would have been improved without cutting government investment had there been risen in public savings. This tendency continued to exist till the early 1990s. The relentless increase in the gross fiscal deficit and the current account deficit culminated in 1991-92 crises. However, gross fiscal deficit and current account deficit were reduced instantaneously and significantly in 1992-93 due to stabilization cum structural reforms measures.

There were few occasions in the 90s when private surpluses exceeded public gap because of current account surpluses. However, there witnessed scarcely an indication of current account adjustment despite some rise in private surplus. The underlying basic indicators reveal that these gaps have increased again after mid-90s and private surplus continued to be the major source of financing the gross fiscal deficit, implying that fiscal and external stances are economically vulnerable for macroeconomic stability and fiscal consolidation as policy commitments declared to combine successfully sustained rapid growth with low inflation.

In this way, the above Table 8.8 having examined effectively the Indian sectoral savings and investment behavior analyses contemporaneous movements in the two gaps, namely gross fiscal deficit and current account deficit by invoking the third one – private surplus (deficit) to describe variations in these three gaps over the entire sample period in order to get the results for pursuing comparative macroeconomic instability perspective in the Indian economy in the

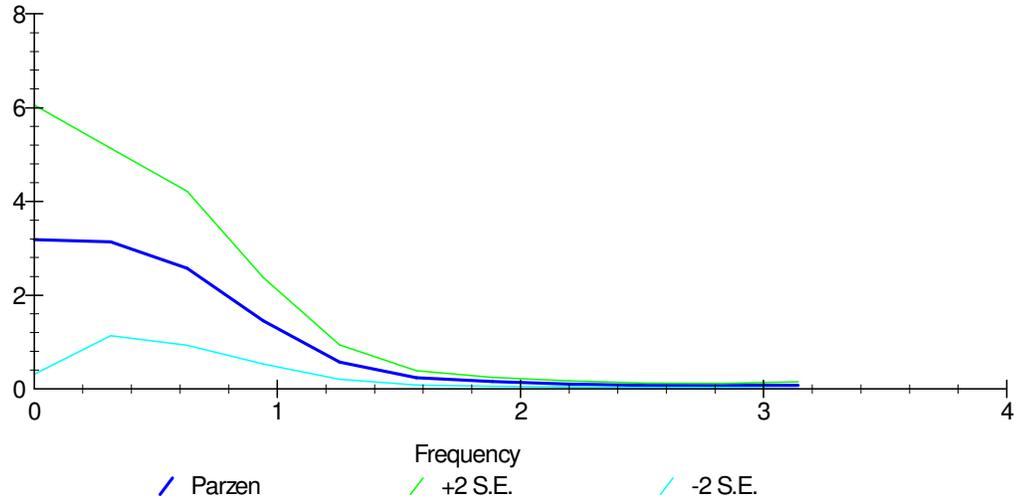
1960s and 1990s as the three gaps identity suggests that the gross fiscal deficit of the government must be financed either by an excess of private sector savings over investment (private surplus), or by a current account deficit.

Combining the following figures from 8.13 (A) to 8.13(D), the diametrical asymptotic behavior of standardized spectral density function in Parzen window also displays the public savings rate lagging behind (sluggish) public investment rates widened the gross fiscal deficits and current account deficits.



Source: Compiled data from NAS, CSO [EPWRF, 2004]

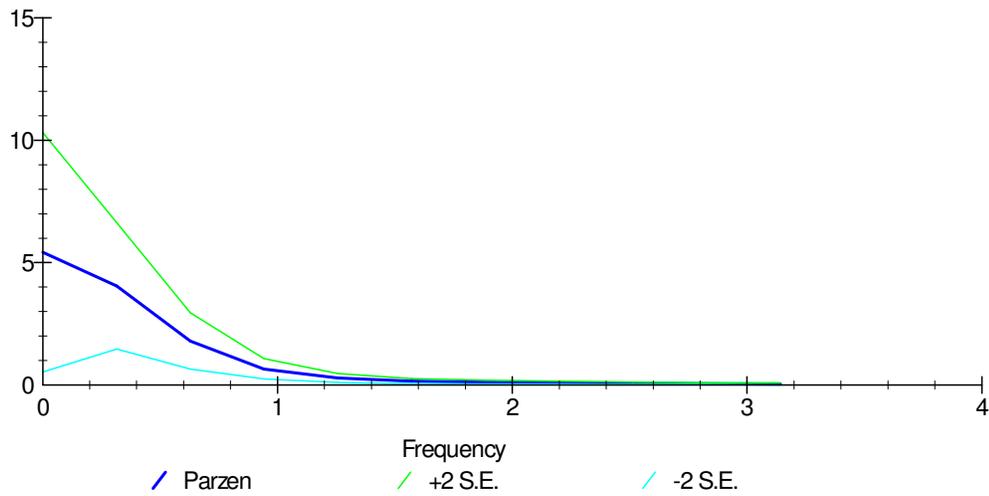
Figure 8.13(A): *Standardized Spectral Density Function of Public Gross Domestic Capital Formation*



Source: Compiled data from NAS, CSO [EPWRF, 2004]

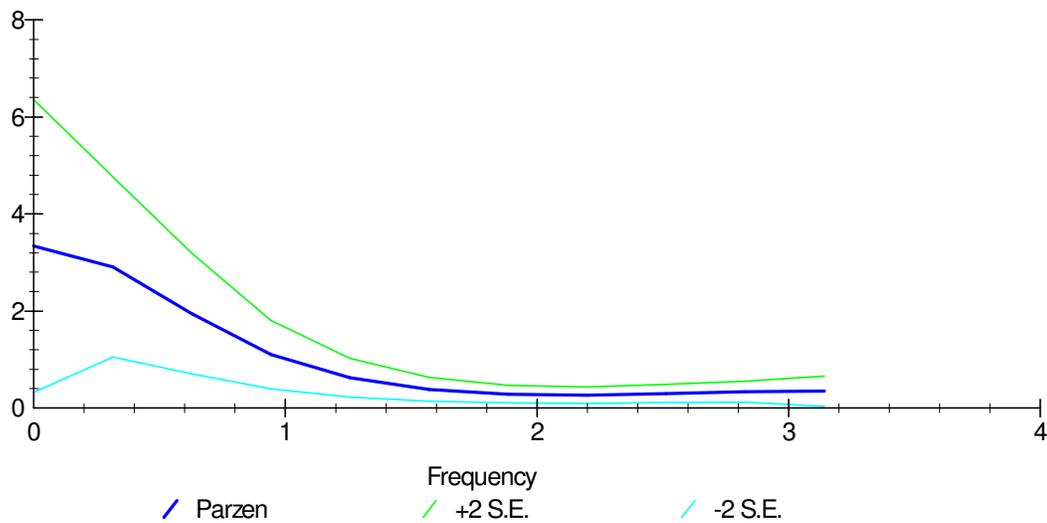
Figure 8.13(B): Standardized Spectral Density Function of Public Savings

Source: Compiled data from NAS, CSO [EPWRF, 2004]



Source: Compiled data from NAS, CSO [EPWRF, 2004]

Figure 8.13(C): Standardized Spectral Density Function of Gross Fiscal Deficit



Source: Compiled data from NAS, CSO [EPWRF, 2004]

Figure 8.13(D): Standardized Spectral Density Function of Current Account Deficit

This diametric dynamic view, their upper and lower openness, the changes in curvature with robustness of ordering and their deviations from standard errors bands and their variation get support from the above empirical analysis as provide similar qualitative results consistent with a priori expectations. This allows further investigation among their basic proximate determinants, as is carried out in the next chapter.

CONCLUSION

This empirical investigation provides a descriptive assessment of the following distinct but interrelated instability issues, viz., (i) fiscal transmission mechanism after and before the implementation of economic reforms; (ii) change in the fiscal operating procedure and the debt management; (iii) the possible changes in the monetary transmission mechanism in the face of financial reforms; (iv) trade related transmission mechanism; (v) BoP related transmission mechanism; (vi) economic activity wise transmission mechanism; (vii) the initiation of financial reforms and capital management mechanism.

The next chapter would end the thesis by presenting a comparative perspective of recessionary study in the 1960s and 1990s and summarise the findings in a nutshell.

COMPARATIVE MACROECONOMIC RECESSIONS IN THE 1960S & 1990S AND CONTEMPORARY MACRO-MANAGEMENT AND SHORT-TERM & LONG-RUN MACROECONOMIC POLICIES: AN APPRAISAL

This chapter is organized as follows. Section 9.1 highlights the backdrop of twin-instability episodes of the 1960s and 1990s. Section 9.2 has made an attempt to present a comparative perspective by focusing their underlying sources, origin, facts, determinants, and their timing, and magnitude, policy responses to them, policy aftermath, policy sustainability, and the then prevalent constraints. Section 9.3 would compare the twin episodes econometrically by assessing the impact of devaluation, changing interest rate regime, exchange rate influences on India's exports, imports, foreign capital inflows, remittances, overall trade balances, and above all economic growth. Section 9.4 would make an overall assessment of India's macroeconomic policies from the view point of long-term growth and stability. The rest would conclude the thesis.

9.1. BACKDROP OF TWIN-INSTABILITY EPISODES OF THE 1960S AND 1990S

The following Table 9.1 stands to compare the two non-overlapping decades 60s and 90s and would report in what respects they are distinct from others.

TABLE 9.1: *Periodic Regression Results of Gross Domestic Capital Formation Rates on Gross Domestic Savings Rates & Crises Dummies*

Dependent Variable (Gross Domestic Capital Formation as % age of GDP at market prices)	1950-59	1960-69	1970-79	1980-89	1990-03
Explanatory Variables [co-efficient/ T_Ratio (Prob)]					
Gross Domestic Savings	.99 (4.48)	1.03 (8)	1.28 (9.72)	1.14 (60.48)	1.03 (93.85)
Government Savings	.75 (.60)	.52 (2.99)	-1.30 (-2.14)	-.28 (-2.46)	.32 (2.15)
Crisis Dummy		.006 (.97)	.004 (.55)		: .005 (.74)
R Squ.	.73	.59	.88	.93	.70
R Bar Squ.	.70	.48	.85	.95	.64
DW Statistic	.73	1.32	1.46	2.49	2.09

Notes (i) Method adopted OLS; for 1950-59 and 1980-89 no dummy variable introduced while for 1960-69, for 1970-79 and 1990-2003 three separate crises dummies were introduced to capture the drought impact and the impact of oil price hikes while regressions performed (ii)The values in brackets are T - Ratios

Sources: Author's calculation from NAS, CSO, various issues

The above Table 9.1 shows that the contribution of government savings to capital formation as regressors has fallen across decades at least till 1990. This may be another way of saying that government savings though showing dismal decaying since mid-80s but might have started that falling trend since before. The estimated coefficients of government savings rate have statistically been significant, while the crises dummies attribution kept sustaining shocks impact would have been trivial, as coefficients not found statistically significant. However, it should not claim that oil crises do not impact adversely the balance of payments drifting long-run consequences. Now the question seems to have cropped that why have 1960s and 1990s been special in terms of worsening features. It is well known that the macroeconomic environment as well as macroeconomic management through which these decades went through was not qualitatively similar. This seems to be the tenet to differentiate these two crises episodes in the 1960s and 1990s in the Indian economy.

The regression results presented in the above Table 9.1 have been captured in the following six figures from 9.1(A) to 9.2(c) only to visualize as to how both the decades have been distinct in terms of macroeconomic performance.

The following figures from 9.1 (A) to 9.1 (c) in an array show that why the fitted investment rate function in the mid-60s having wide discrepancies between fitted and actual values; why its autocorrelation function of residuals changes its curvature from convex to origin to convex from below having a perverse drift after a certain lag difference and why plotted residuals has been skewed negatively in the mid-60s. What laid this mid-60s foundation need an economic explanation?

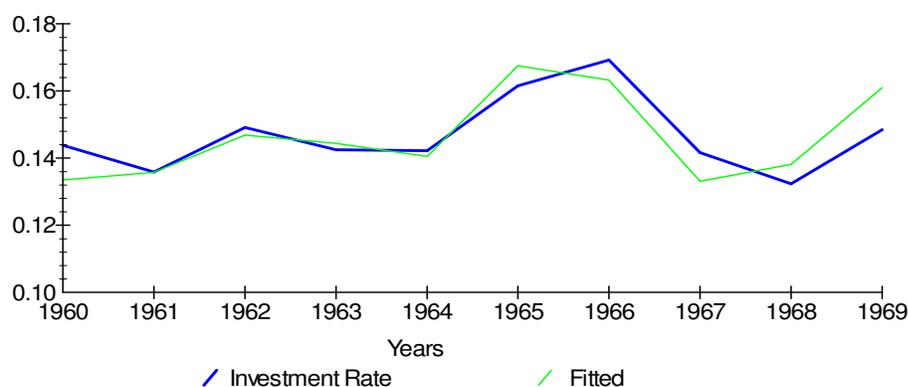


Figure 9.1(A) Plot of Actual and Fitted Values of Investment Rate function, Sample 1960-69

Source: Calculated sourcing NAS, CSO [EPWRF, 2004]

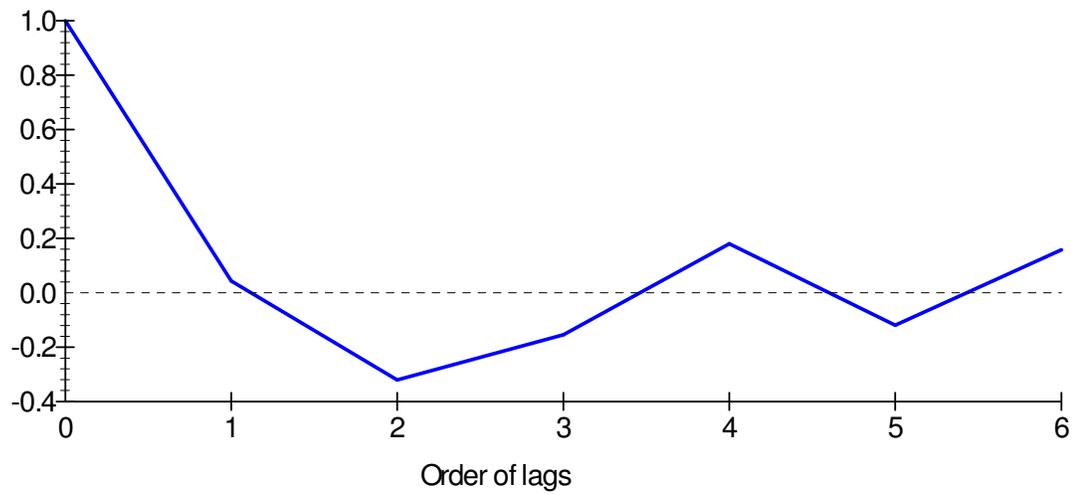


Figure 9.1(B) Autocorrelation Function of Residuals, Sample 1960-69

Source: Calculated sourcing NAS, CSO [EPWRF, 2004]

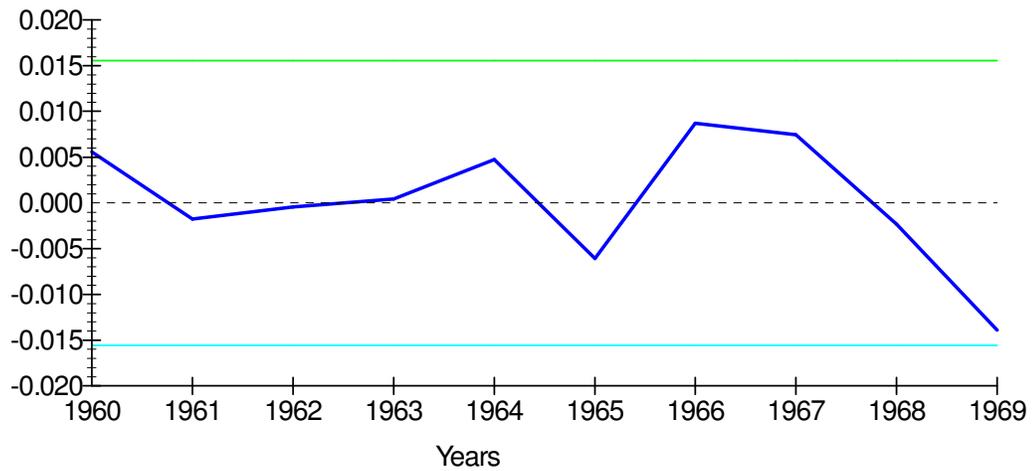
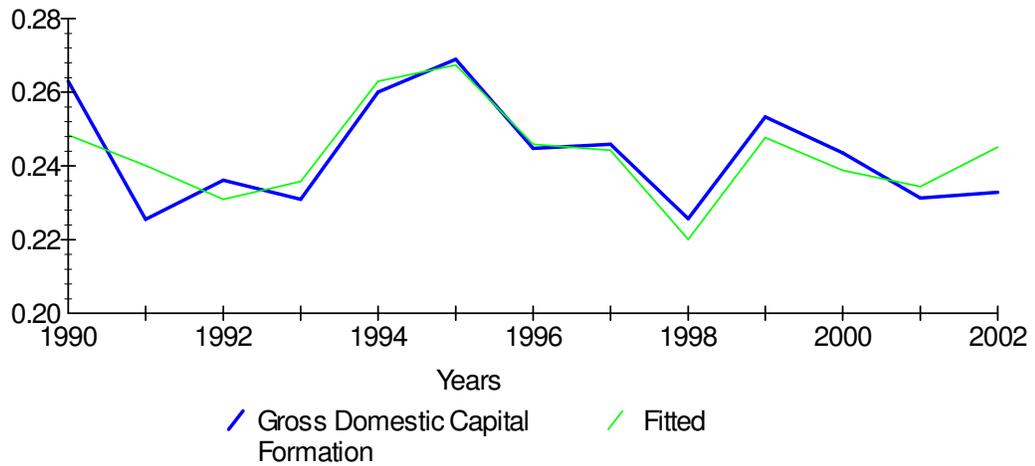


Figure 9.1 (C): Plot of Residuals, Sample 1960-69



The similar telling aspects happen for 90s, where there are wide discrepancies between fitted and actual values, autocorrelation function drifted negatively in 1991. This clear visual inspection can be observed right through the figures from 9.2 (A) to 9.2 (c).

Figure 9.2 (A) Plot of Actual and Fitted Values of investment rate function, Sample 1990-03

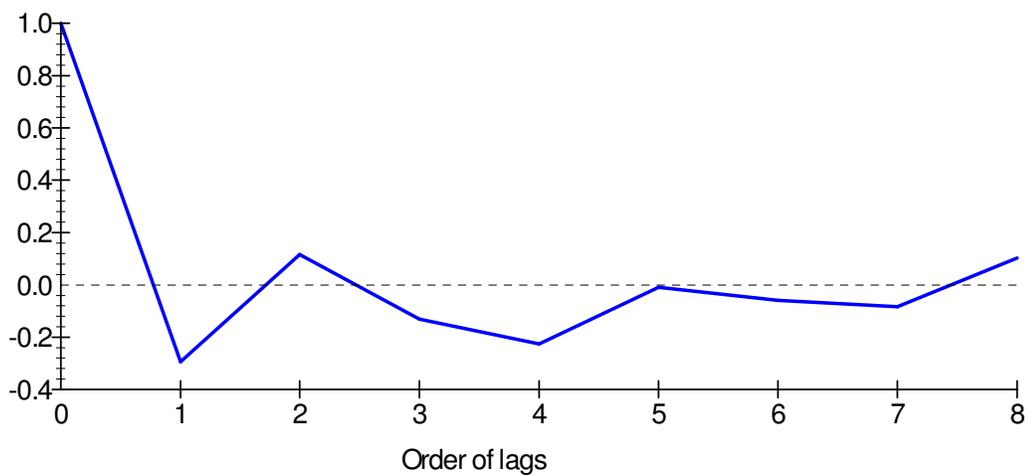


Figure 9.2(B) Autocorrelation Function of Residuals, Sample 1990-03

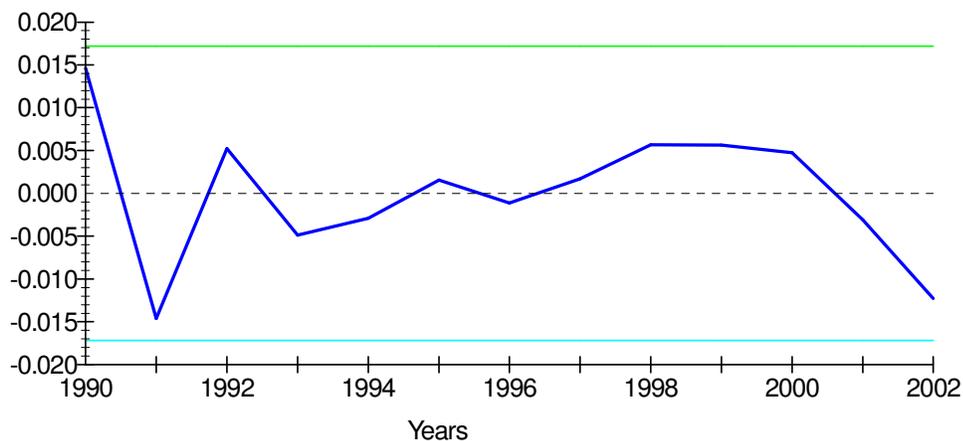


Figure 9.2 (C): Plot of Residuals, Sample 1990-03

Though there is a great deal of resemblances of investment rate functions in the mid-60s and early 90s in terms of pictorial look, however, there are a reasonable extent of differences in terms of fluctuations, magnitude, persistence, pronounced and perverse of the investment rate function in the 1960s and 1990s in the Indian economy, which purports to explore their underlying causes, origin, facts and determinants with factual information, which has since the first writing of the instability character in this thesis been focus.

9.2 THE MID-60S CRISIS

The effects of the macroeconomic instability in the mid-60s were basically exogenous factors led – two severe droughts in succession in 1965-66 and 1966-67 and wars with China in 1962 and with Pakistan in 1965, probably worsened India’s economic stability and in the absence of buffer stock, problem of public procurement, non-renewal of US food aid (PL 480), growth of plan and non-plan defense expenditure. All these exogenous events led public consumption expenditure or non-plan budgetary expenditure (like defense) and non-budgetary expenditure (like subsidies) on the current account to increase replacing public investment expenditure on capital account to grow. In response to the crisis, government had policies with several components such as devaluation, liberalization aid package, the management of food supplies, and conventional demand management. The devaluation package had of course been adopted as a long-term measure. The limitations on supply management policies (constraint of foreign

exchange) to insulate food prices and consumption increased the pressure for demand management policies such as fiscal response to this crisis.

During this crisis, expenditures were running from the estimates and most indicators of the public sector's demand pressure were at a peak. Real government consumption expenditure rose more proportionately than the rise in public sector investment expenditure. Real agricultural GDP fell and monetary (nominal) GDP rose. Total government expenditure rose more proportionately than that of revenue receipts and resulted a fall in government's fiscal deficit as a proportion of GDP and even in absolute terms. Public investment as a proportion of GDP peaked and the gap between public investment and savings also peaked. Net RBI credit to the government also rose. There was a fall in current revenue surplus though taxes were increased modestly. However, there had been a quite large cut in capital expenditure virtually to cure macroeconomic instability and catastrophic counterbalance and there was a reduction in the real government expenditure, especially gross domestic capital formation (investment) as was seen in the following year the plan holidays for 1966-69 to happen. The public sector investment fell but the gap between public sector savings and investment fell only slightly as a proportion of real GDP as real government consumption was stationary and thereby the real GDP was virtually stagnant, inflation continued and monetary GDP rose. The consolidated government's fiscal deficit rose as the increase in revenue lagged behind expenditure and net foreign aid receipts increased severely and so RBI credit to the government rose marginally.

India experienced severe recession in the mid-60s (1964-66). As demand management policy, fiscal policy was very restrictive (tightened) as cut in public expenditure on capital formation was the policy posture and monetary stance was too non-accommodative at least during the crisis and may be was expansionary a bit after the crisis as inflation was hovering. The reduction in government investment expenditure might have caused slow growth of output. Government's the then expenditure downsizing investment policy may be one of the reasons for being industrial stagnation in capital goods industries in the late 1960s.

In so far as the external dimension is concerned, droughts in 1965 and 1966 might have impacted exports of primary produce badly. However, even before the drought year 1965, India's BoP position was weak and worsened current account deficit, might be that was due to agricultural stagnation and slow export growth. And the other contributory factors may be the

neglect of agriculture, pervasive controls of imports and public industrial led import substituting inward looking development strategy. However, the mid-60s crisis motivated India to adopt liberalization-cum explicit devaluation package in 1966 to boost exports might be as a long-run measure. That was combined with anti-inflationary restrictive fiscal and monetary policies to be effective elements of aggregate demand management policies. The success of devaluation might have been impacted badly with its start due to drought impacts on exports and inflationary situation. The behavior of the real exchange rate might be critical for achieving effective adjustment due to exogenous shocks. It is important to note that current account adjustment requires not only exchange rate depreciation but also combined with prudent fiscal and monetary policies. However, the success of devaluation as a policy measure has been examined in the later section econometrically. This crisis might have led the foreign borrowing situation worsened, which being indicated growing fiscal deficit. The crisis was sensible to maintain public investment kept going during the crisis.

It is important to note that in the absence of adequate food reserves or buffer stocks and foreign exchange reserves to be effective anticipatory policy India's crisis were severe in the mid-60s. Cuts in public investment as contractionary demand management policy may have a useful role to play if their timing and content is just. The policy response to inflationary bubbles that result from exogenous shocks should be non-accommodating so that inflation does not get built into the prevailing system.

MACROECONOMIC CRISES IN 1991

Macroeconomic instability episodes before 1991 were attributed mainly by exogenous or extraneous shocks like weather, wars and oil crises. In 1991, the Indian economy was delved in the throes of a macroeconomic crisis, which has basically been policy ridden or due to policy appropriateness or policy mistakes or policy unsustainability or policy induced. The economic reforms initiated from the mid-eighties onwards attributed the Indian macroeconomic expansion in which fiscal policies were expansionary and monetary policy was also expansive. The drought in 1987 was not so severe and the agricultural sector recovered soon after. More liberalization occurred in 1980, which was mainly concerned with deregulation of industrial licensing and softening of the restrictions on monopolies and both these measures seemed to

have big business support as they were not accompanied by any serious trade liberalization. However, the pace of industrial deregulation was much faster in the late 1980s and the import liberalization related mainly to inputs and components but very little was done to open up Indian industry to foreign competition. In summary, liberalization consisted little more than the piecemeal deregulation of industrial licensing and the introduction of a measure of exchange rate flexibility. However, interventionist ideology prevented any significant action in the more difficult areas such as trade liberalization, financial liberalization, and reforms of the labour market and public sector enterprises.

More importantly, there was expansionary fiscal policy, the manufacturing sector continued to grow, and exports also increased. At the same time, it is clear that the underpinning macroeconomic fundamentals were not adequate enough to keep sustaining the expansion. Fiscal and current account deficits were large and the burden of domestic and foreign debt was heavy and unsustainable. The consolidated government's fiscal deficit rose persistently to reach about 8 per cent of GDP at the end of the 1980s. At that level, it clearly endangered to explode into high inflation or a balance of payments crisis. As the macroeconomic fundamentals were weak, the Iraqi attack of Kuwait in 1990 and the Gulf War were enough to set on a full-blown crisis. However, the overall development of macroeconomic policy that took place till 1991 has two important features: there was an erosion of fiscal conservatism; and there was a gradual and piecemeal liberalization of controls, but without having any fundamental reforms of the system.

By the early 1980s, many developing countries went bankrupt, and international bankers were short of borrowers; India with its sustainable balance of payments looked very attractive. Bankers especially Japanese ones, poured money into Indian economy in the 1980s which was one of the precipitate roots of the payments crisis in 1991[Desai, 2003]. The crisis made India's credit rating sharply downgrading and a cut off of foreign loans. Despite that, unlike earlier crises, exogenous factors were relegated with minor importance in causing the crisis, as it was largely policy- induced because past macroeconomic policy mistakes over a long-period had left the Indian economy in a fundamentally unsound state and wrong footing. Inflation, fiscal and current account deficits, and domestic and foreign borrowing all manifested high. There had been a steep depletion in foreign exchange reserves even inadequate to a level of two-week imports. In these circumstances, structural reforms were initiated by the

government in 1991. The immediate concerns of the reforms were to contain inflation, reduce the fiscal deficit, improve the BOP position, and above all, to stabilize the economy. Measures that were undertaken included fiscal contraction, a credit squeeze, and a devaluation of the rupee. The instantaneous impact on the economy was contractionary. In the 90s, the manifold policy measures included industrial deregulation, financial liberalization, import deregulation, export incentives, exchange rate depreciation, and tax reforms.

This sub-section has only concentrated on macroeconomic policies with short-term objectives. Later part would assess India's overall macroeconomic policies on long-term growth.

9.3 COMPARATIVE DEVALUATION OF 1966-67 AND 1991-92

This section has made an attempt to compare the effects of devaluation as structural adjustment programme of 1966-67 and 1991-92 on India's exports, imports, trade balance, and above all economic growth. The natural logarithmic transformations of India's exports as well as imports series are found to be non-stationary while at level values stationary. To assess the long-run and short run effects of devaluation, intercept dummy, time-trend and slope dummy are introduced in which three years since 1966 and another three years since 1991 weights are given 1 and zero for other years while regressions are carried out based on Autoregressive Distributed Lag Estimates ARDL (1) selected based on Schwarz Bayesian Criterion the fitted long-run estimated regression equation of balance of trade seemingly shows that the trend remains almost same in both the episodes of devaluation in the mid 1960s and 1990s as the parallelism of the fitted and actual estimation indicates that, which is shown in the below of the plotted representation of trade balance estimation in Fig 9.3 (A). Though their parallelism may indicate devaluations have impacts qualitatively similar for both the decades. But the pictorial indication of Fig. 9.3 (A) reveals that the vertical difference of fitted and actual trade balance line rises more in the 90s. Not only that, the inner line difference also rises in the 90s. Now the question is does it indicate that trade balance in the 1990s has been affected much more badly? The following figures 9.3 (A) to 9.3 (E) addresses the question. May be devaluation brought forth imports more and exports less. Thus it needs to see whether trade balance estimation becomes unstable due to instability of imports. This study has performed CUSUM test to test

whether trade balance parameter is stable or not. But it supports parameter instability. And it shows that tendency for being instability after 1991. Now the question is is it due to growing fiscal deficit affected current account deficit badly or in mid-60s that could not take place due to restrictive fiscal policy? Now it needs to see whether devaluation came to help export promote or import more. The answer for 1991-92 devaluation is obvious no. The following section would enquire into that.

One more interesting context is that when the study conducted regression under same method of balance of trade introducing intercept, exchange rate and real GDP growth rate as regressors the fitted regression under ARDL(1) also indicating the impact of devaluation alike the former. Visual inspection of the below mirrors the replica of the other. Thus it can be said though partly, that both the devaluations impact growth rate of real GDP very scanty.

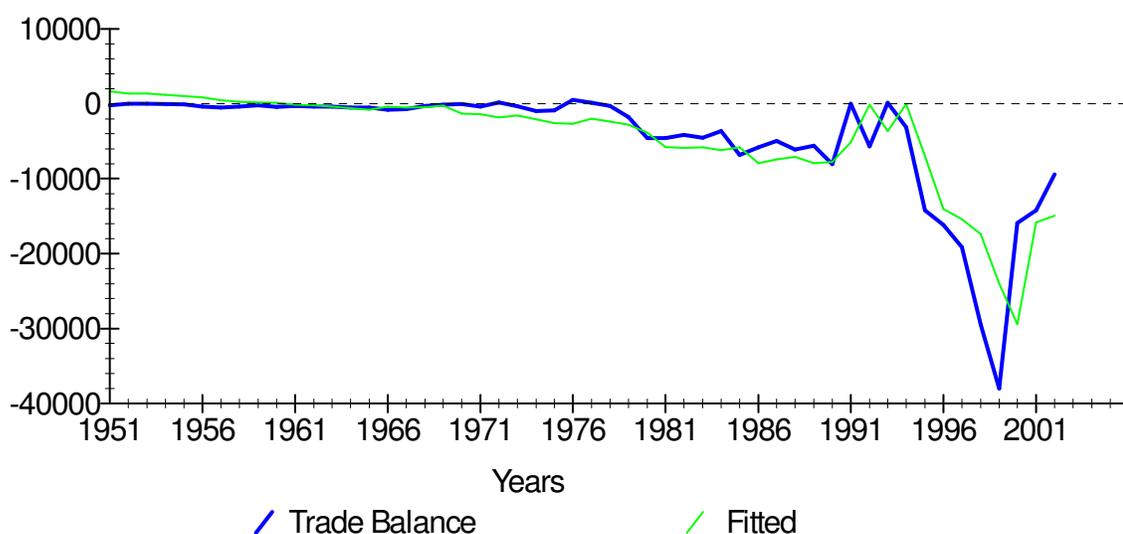


Figure: 9.3(A) Plot of Actual and Fitted Trade Balance Estimation under ARDL (1)

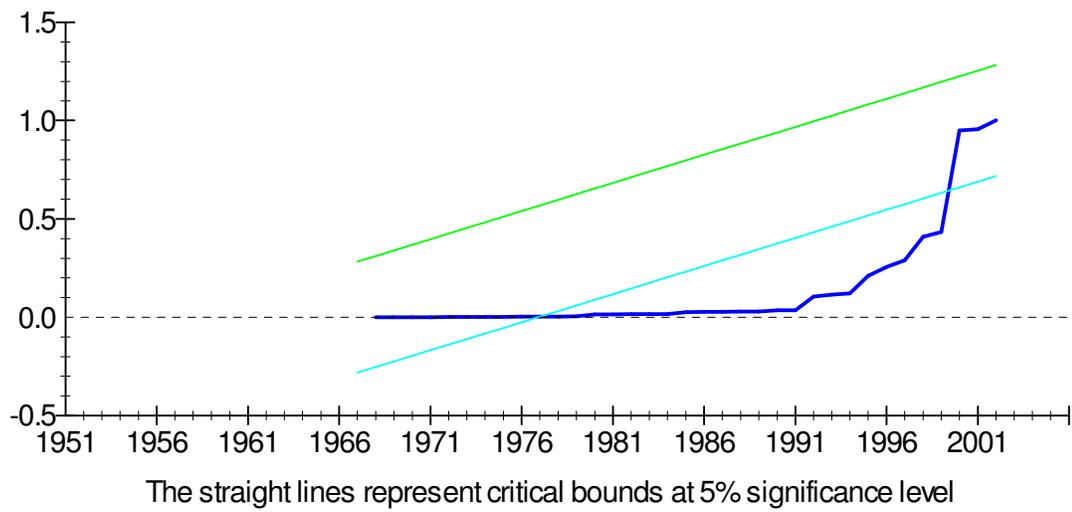


Figure: 9.3(B) Plot of CUSUM recursive residuals of Trade Balance under ARDL (1)

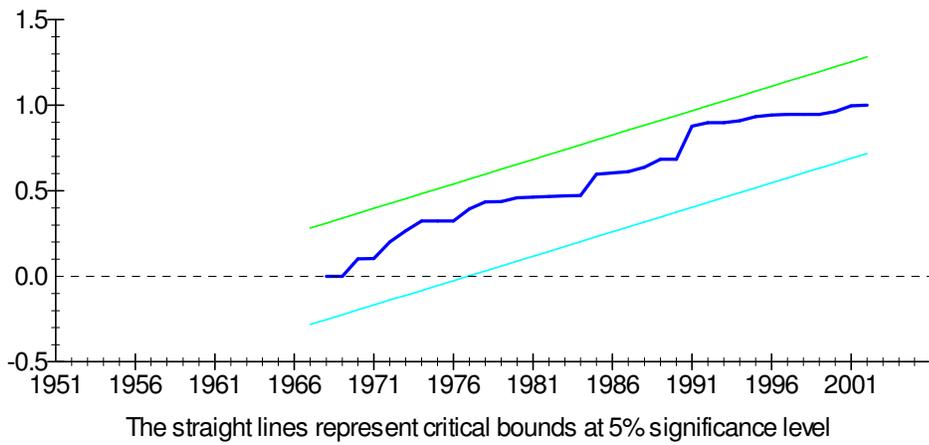


Figure: 9.3(C) Plot of CUSUM of recursive residuals of India's exports

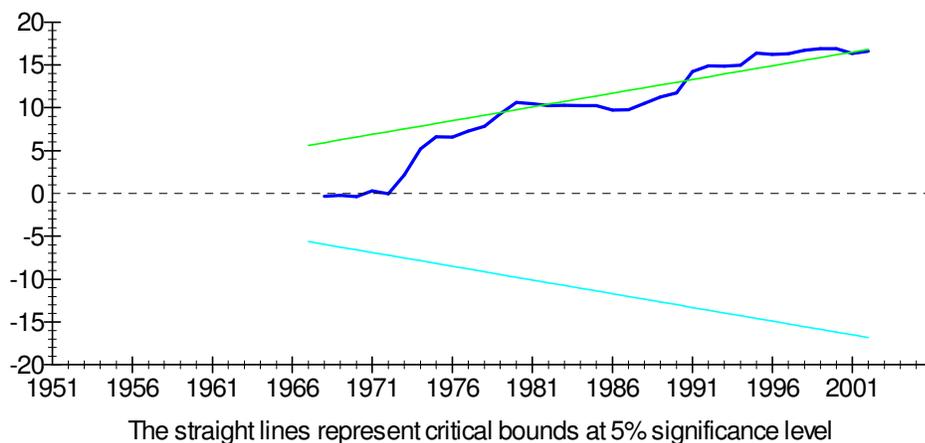


Figure: 9.3(D): Plot of CUSUM of recursive residuals of Indian Imports

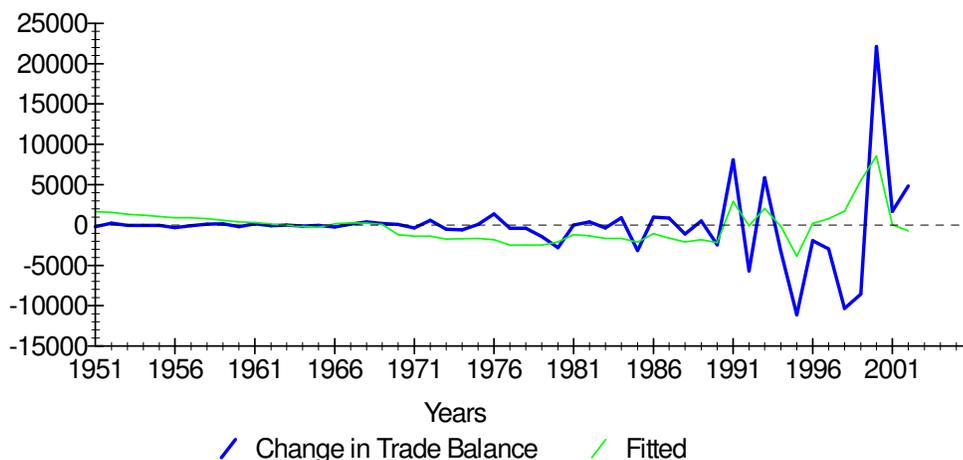


Figure: 9.3(E): Plot of Actual and Fitted values with short-run impact

Thus the question is how the relationship between gross fiscal deficit and current account deficit was during both the sub-periods and whether depreciation impacted exports to grow or instead imports to grow. But the question is why? Does it due to expansionary fiscal and monetary policy in the 1990s devaluation could not impact growth rate via balancing sectoral savings and investment. The above figure 9.3 (E) is showing the short-run impact of devaluation on trade balance having more fluctuations in the 1990s.

The plotted results of co-integration regression and ECM measures indicate that exports, imports and trade balance following a long-term trend and have not been impacted

positively by the two doses of devaluation in the 1960s and 1990s at least to maintain economic stability by promoting exports and thereby growth rate of output. Thus devaluation does not seem to have acted correctively to improve trade balance and thereby real GDP growth. Thus devaluations seem to have worsened the debt burden. In this way balance of payments remain unsustainable as neither accompanied by improved net export earnings or by accelerating external finance. There has been a clear indication of creeping inflation after devaluation measures adopted years. Thus the question is to what extent devaluation in 1991-92 has been successful in response to external debt and foreign exchange crisis compared to that of devaluation in 1966 of the planned development regime. Theoretically devaluation and debt linkage is that increase in exports due to devaluation would generate essentially the repayment capacity to outweigh the debt overheating and bring down the need for borrowing in the long-term.

The movements of trade balance from actual and fitted values needs to examine a more systematic analysis of factors which caused deficit in the first place to understand the relationship between three gaps. It is believed that there is a relationship current account deficit and real exchange rate. The results of fitted regression in error correction model show that real exchange rate and current account deficit are inversely related. Thus, the pegging of the nominal exchange rate from 1950-1966 led to a steady appreciation in the real exchange rate from 1950-66 resulting current account deficit and as its consequence current account deficit portrayed an increasing trend. On the other hand in 1991, the result of devaluation is showing some dismal story. Thus it can be concluded that the devaluation though not worked but others macroeconomic policies were to some extent conducive compared to that of expansionary policies in 1990s. However, situation seems to have started better in the late 1990s might be due to fiscal consolidation being tagged.

On the other hand, devaluation cannot claim as of being effective to promote foreign capital inflow or remittances to come in more. What happened in the case of foreign direct investment, most of them are in the foreign institutional investment or foreign portfolio investment.

9.4 THE INDIAN OVERALL MACROECONOMIC POLICY ON LONG-RUN GROWTH

The objectives of macro policy are mainly threefold namely, considerations of equity, stabilize the growth of output, and maintain reasonable price stability. Stability and long-run growth are positively related provided price stability is not achieved by cut in investment to be a demand contraction policy. On this count, India's fiscal policy can be criticized. Without price stability, fiscal policy may result in destabilization of industrial output. In particular, government gross domestic capital formation in the 1960s and 1970s was less stable than what should have been. Price stabilization would have been achieved better had there been built adequate foreign exchange reserves and food stocks to combat the harvest failure, which left investment cutting to counter inflation. In the 1980s, India's fiscal policy became lax as was expansive (expansionary) with larger increase in current expenditure though contributed to achieve an increased growth rate of output but could not outlast with sustenance for sustainable period as hinged on an excessive rate of growth of public debt, culminated in crisis and recession in the early 1990s.

The fiscal problem has often changed its course of history. In India, central fiscal policy was pronounced within the framework of a high level of public investment, which was essentially supposed to be conducive for rapid economic development. The country's excess reliance on high public investment to promote and sustain a satisfactory long-run growth rate supported by presumed public savings that to be higher has not been realized.

The highly interventionist approach of Indian macroeconomic management that prevailed till mid-80s in which controls and public sector led capital intensive import substituting highly protective and subsidized industrial strategies were the elements, favoured credits at low interest rates (financial repression approach of bank nationalization) did not seem to have been conducive securing internal and external balances of aggregate demand and supply to achieve long-run growth with stability as long-run fiscal policy barely limits public sector deficits without an inflationary growth of the money supply or fuelling alarming domestic or the external debt. It needs to examine in the short-run as to whether larger or smaller deficits (or surpluses) have been used correctly to restrict or stimulate demand. Imbalance of investment and savings of the private sector results in excess or deficient demand unless timely and successfully use of fiscal policy counters. However, presently considering the

existing level of the public deficit and the debt, adopting fiscal policy to counter inflation may not be wise. In the past, there has been used fiscal policy to mitigate inflation arising from drought. However, inflation arising from the supply side was better met by depleting reserves, of either foreign exchange or food or both.

In the short-run, monetary policy is partly independent of fiscal policy. In the long-run, real interest rates are determined by savings and investment. Monetary policies such as the use of discount rates to influence demand in the short-run, changing the growth of base money supply, by varying reserve requirements controlling credit and fiscal policy can be used to counter any excess or deficiency of demand that is generated in the private sector.

The Indian overwhelmed public investment led long-run growth strategy for rapid economic development remained far to being materialized due to public savings constraint insofar as the long-run growth aspects of India's central fiscal policy are concerned. In India, central fiscal policy is believed to have been conducted within the framework of a high level of government investment. This was supposed reasonably to have engineered the growth of rapid economic development.

The reasons for disappointing growth of public savings may lie in the premise of both on the expenditure and revenue sides of the balance. The reasons for the rapid growth of current public expenditure in the mid-80s were due to fiscal laxity for electoral gain and to satisfy the wants of different pressure groups, an increase in magnitudes of subsidies, weaker tax base due to the constitutional fact of limitations of centre-state relations (no agricultural tax and land tax).

It seemed to surface in the realm of public expenditure – revenue balance with the evaporation of fiscal conservatism during the 1980s for myopic political interest of opportunistic ends along with sharp deterioration of fiscal statistics like contribution of direct taxes to GDP fallen that might have caused the growth of the black economy, and more reliance on the indirect taxes got to be happened. On the other hand, net operating surplus and thereby non-tax revenue appeared flat consequent to poor performances of public sector enterprises. At the same time, constitution laid central - state financial relation may limit the structure of taxes as there is exemption of taxes on agricultural income (by the central government) and land tax once collected and now go-off as state's own revenue. India's more reliance on indirect taxation

may imply having had increase degree of protection as it has a strong incentive to concentrate on tariffs rather than on excise taxes suggesting a plausible tool to control expenditure which is more desirable for growth in the absence of difficult structural reforms.

Turning to the balance of external payments to maintain a viable balance of payments on current account, there is no doubt that imports and exports are reasonably responsive to variations in the exchange rate to be an effective instrument for macroeconomic instability provided fiscal and monetary policy are used to maintain an overall balance of supply and demand. However, the trade balance may take some time to respond and thereby the maintenance of adequate reserves and borrowing capacity is thereby important. However, in the event of the large exogenous shocks like oil crises, the fate of macro-management is uncertain.

CONCLUSION

This research has attempted to quantify economic relationships with historical factual information particularly to gauge macroeconomic instability episodes in the policy context. The major focus though is comparative recessionary episodes of the 1960s and 1990s, it has made an overall assessment of India's macro management, its problems, solutions considering its prevalent constraints. This research has been a dynamic study. Its main points of coverage were the changing policy dynamics in the context of India's changing macroeconomic growth experiences, in which besides economic factors other factors are also taken into account while quantified economic relationships.

Instability itself is vast. Its problem arises from two ends: macroeconomic management mistake and exogenous shocks. Decoupling one effect from other might not be always possible. Policies can be categorized either demand side or supply side; either short-run in nature or long-run in nature, but in terms of target, policies are usually categorized. For measuring instability episodes, what are important to understand the route of transformation channels and that lie at the seed of macro policy variables. And no macroeconomic policy is isolated from others thus the macroeconomic impacts of policy mix is important in the premise of growth rate, interest rate, exchange rate and inflation rate.

This research has perceived that the key linkage of macroeconomic instability is the investment and savings nexus and the overall and sectoral disjunction. Thus, the behavior of

savings and investment, their determinants in the process of economic growth is important. Savings-investment has long been the key linkage; and sectoral savings and investment and their disjunction may be one of the principal routes through which instability transmitted. Savings-investment seems to be the key variables which are believed to have direct or indirect impact of policies. This research seems to have immense utility to policy planners, forecasters, market participants and above all researchers.

FURTHER AGENDA

This research may suggest that there are a lot of issues that remain untouched to be in the field of instability analysis. In this field, how the changes in innovation or stock of capital, equipment investment are functioning in shaping macroeconomic growth process is important, besides infrastructural investment. Labour force, poverty analysis, estimation of production function and factor intensities are important to understand the productivity problem which may constitute an important element for instability analysis.

Since recent quarterly data started publishing, based on that data series India's instability analysis would have been analysed better. Instability analysis in the context of cross country can be very relevant as this study has basically been country-specific, in the context of Indian economy. The context of south East Asian currency contagion should be a wing of such kind of research. The impact of financial liberalization particularly after the global financial meltdown may be one of the pertinent subsidiary aspect of instability study. Moreover, the time-period for being studied in this field should include the recent periods,

However, this research wants to be a study in the field of applied macro-econometric research where policy analysis has been the focus to understand the Indian changing macroeconomic growth process and development by presenting a comparative perspective of recessionary episodes in the 1960s and the 1990s.

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