

**BUDGET MODEL : An Analysis of Impact of  
Budget on Growth and Inflation in India  
during 1980-81 to 1991-92.**

by

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## **ABSTRACT**

An attempt has been made in this paper to develop a budget model by appropriately linking the various macro-economic and budgetary variables to offer a frame work for analysing the impact of budgeting on growth and inflation. The author first discusses the current trends in budgeting, growth and inflation in India, and then discusses methodology used in developing the model. The model is developed using a simultaneous-equation regression method. An empirical analysis of the model is carried out using time-series data for the eight-year period, 1980-81 to 1987-88, validated the model with the actual data of 1988-89, and worked out projections for 1989-90, 1990-91 and 1991-92. These projections provided useful insights into the likely impact of budget on the real growth of the economy, and for assessing the potential for fiscal inflation. Finally, the conclusions and limitations of the study are discussed.

### **1. Introduction**

An attempt has been made here to analyse certain relevant conceptual issues relating to growth concepts, the role of budgeting and linkages.

Economic development is a complex process which involves, in addition to economic factors, many social, political, technological, managerial and cultural changes. The primary purpose of development is to increase the welfare of the citizens. The measurement of this welfare involves identifying the relevant quantitative and qualitative factors. The most common index of development used in economic literature is per capita NNP (Net National Product) at constant prices. This connotes only the quantity of growth. The quality of growth is measured in terms of the QOL (Quality of Life) index. One of the most important components of this is inequality in the distribution of income across different income groups. QOL index will also include life expectancy at birth (in years), employment levels, per capita availability of basic needs like food, clothing, housing, health, education, certain basic entertainment facilities etc. for each income group separately, level of participation in relevant decision-making, social mobility (no barriers to occupation etc.), freedom of expression and the like. In the Indian context, achievement of growth with social justice (equity) has been one of the most important development objectives ever since the inception of planning as far back as early 1950s.

Various government ministries/departments are engaged in public policy formulations. The policy areas include fiscal and monetary policies, agriculture, industry, infrastructures, income and pricing policies, and trade policies. The budget in this context constitutes the most important formal operational document which reflects the government's objectives, policies and priorities for the mobilization and deployment of the country's resources. It thus essentially plays a very important supportive role but not exactly the leading role.

In the context of a developing economy, where public investment constitutes a substantial component of total investment, the budget plays a very significant role in its development process. This includes not only increasing the quantum of GNP, but also its redistribution in favour of the deprived sections of people. The budget has also a very important role in maintaining price stability and achieving a balance of payments equilibrium.

Budget formulation essentially involves raising revenues and deciding expenditures as per the objectives and priorities of the Government. One of the conspicuous features of budgeting in almost all developing countries is that government expenditures, for various reasons, often exceed the revenues. The need for increasing public sector investments, meeting populist demands, like loan melas and large scale loan waivers, compel the government to spend more than what it gets. As a consequence, the governments are forced to borrow, which leads to increased debt servicing charges there by, increasing budgetary pressures. Such borrowings also increase inequality as it increases the quantum of interest incomes of the rich. The borrowings also include external borrowings which in turn, causes strain on the country's balance of payments equilibrium. After reaching the saturation level for borrowings, the governments are invariably forced to borrow from the Central Bank against short term treasury bills. This increases money supply through increase in the monetary base of the economy and causes fiscal inflation. In addition, occasional budgetary stress is caused by natural calamities like droughts and floods. External factors like a oil crisis, world recession, political instability in other countries, wars etc. also cause budgetary stress. Another important cause of budgetary stress in developing countries is failure to achieve production targets, particularly of mass consumption goods.

Achieving high growth through larger doses of government expenditures very often conflicts with the other fiscal objectives like price stability and redistribution of income. Such conflicts are

unavoidable, the task of choosing the right mix being extremely difficult.

The recent problems of foreign exchange crisis, double-digit inflation rate etc. amply prove the incongruities in the various government policies. It is well known that the growth of the Indian economy is highly import-dependent. During the first half of the 1980s, the Indian economy experienced a high growth rate of GNP, mainly because of import liberalisation. But this, over the years cumulated into a foreign exchange crisis and, the Gulf war accentuated it. During the same period, various populist measures including provision of foreign exchange at the official rate (hidden subsidy) for the production of various luxury items like CTVs, Maruti vehicles etc. were undertaken. A large dose of deficit financing became absolutely essential, and this fuelled the double-digit fiscal inflation.

To fight these evils, devaluation together with substantial reduction in budget deficits became necessary. To compensate for reduction in imports and also to inject a reasonable level of international competition to improve the efficiency of domestic production, foreign investment policies have recently been liberalised. The inflow of foreign investment is likely to be very slow in the initial stages. Moreover, past experience shows that investments by multinational companies are mostly in selected areas like, drugs, electrical, general and transport equipments etc. In the long run, multinational companies usually cause a net outflow of foreign exchange, if they are not adequately involved in exports and, therefore, may not help to solve the country's balance of payments problems. However, there are other benefits of multinational investments, such as, increase in production and employment. Multinational companies will definitely not help in the country's pressing needs of making available mass-consumption goods, and thus may not be able to make a meaningful contribution to the economic development of the country. Their production will be limited to luxury items to which only a few rich will have access. This and the higher pay packets offered by the MNCs will accentuate the existing high inequality in income and wealth. All these fears will compel the government to move few steps forward and then few steps backward. Such uncertainties invariably lead the country to live with smaller dozes of imports.

Devaluation will tend to reduce imports. The prospects for foreign investment is not yet clear. The government is committed to control budget deficit. The economy may, therefore, have to be content with a low rate of GNP growth atleast during the next couple of years. If the GNP goes down, revenue realisation will also go down. Unless

sufficient precautions are taken to adjust downwards the government's planned expenditures, this will invariably lead to a high budget deficit and consequently, a high inflation rate.

This paper attempts to develop a budget model by appropriately linking the various macro economic and budgetary variables, to offer a framework for analysing the impact of budgeting on growth and inflation.

## **2. Current trends in Budgeting, Growth & Inflation in India**

The total population in 1988-89, the latest year for which all the relevant published data are available, was about 800 million, with a per capita real income (NNPfc, at constant 80-81 prices) of about Rs.2077.5, which was Rs.3875 at current prices. The long-term real growth rate of per capita income of the economy during the 38 yr period from 1950-51 to 1988-89 was about 1.62% per annum. The growth rates for nominal and real total incomes were 9.9% & 3.79% respectively during the same period. The long-term population growth rate during the same period was 2.13% with implicit inflation rate of about 6.11%.

The aggregate budget outlay of the Centre, State and Union Territories together for 1988-89 was about 33% of GDPmp at current prices, aggregate revenue of 21.8% and the gap of 11.2%. Aggregate internal(net) and external(net) borrowings constituted 27.8% & 2.35% of the total outlay respectively. The aggregate outstanding internal & external liabilities of the Central Govt. constituted as high as 52% & 6.5% respectively of GDPmp at current prices. The budget deficit constituted about 3.92% of the total outlay.

As regards the various components of the government expenditures, development expenditures constituted as high as 61% of the total outlay. Of the total non-development expenditures interest payments alone constituted a very high 32.5% followed by defence 30%, and the balance 37.5% was for the broad items like general administration, police and subsidy payments.

During 1988-89, tax revenues constituted 78% of the total revenues, with Union excise duties, Customs, Sales tax, Direct tax and other taxes constituting 28%, 24%, 20.3%, 14.7% and 13% respectively of the total tax revenue. Internal resources from the public sectors constituted 48% of non-tax revenues.

The above data indicates the following limitations as well as choice areas for budget formulations.

With regard to the various non-development expenditures, interest on debt which is the result of past borrowings, there is practically no scope for economizing.

Defence expenditures depend on perception of external threat.

Reduction of subsidies on food and fertilizers will affect the common man. Equity considerations will not allow this to be reduced except that such subsidies may be restricted to the needy only.

Economy in the area of general administration is possible.

It may be necessary to effect substantial cuts in development expenditures. However, this may affect growth unless the shortfall is compensated by commensurate investment by private sectors. Ultimately, the axe will fall on the investment in social services like health and education.

The major tax revenue sources are excise, customs and sales taxes. The Government always exercises caution in taxing mass consumption goods. This leaves the government with little choice except to increase indirect taxes on luxury and semi-luxury products.

It appears, therefore, that if the government has to earn more revenues, it must encourage imports and, the production of luxury and semi-luxury goods. But, as can easily be argued, this will starve the mass consumption goods producing sectors of adequate resources, and accentuate inequality.

Governments also cannot easily ignore the demands of the higher income groups who aspire for a much higher material standard of living because they constitute a dominant pressure group in influencing all government policy formulations.

These are the realities which usually compel the Government to decide a particular course of action in formulating its annual budgets.

### **3. Methodology**

The various macro economic and budgetary variables are first segregated into endogenous and exogenous ones. Endogenous variables are those where reasonable predictions can be worked out using appropriate regressions with certain estimated values of other endogenous or exogenous variables as independent variables. Exogenous variables are, on the other hand, autonomous in nature like defence and public sector investments. The relationships of

certain variables like the different tax rates are very complex in nature. These tax rates, when increased, will normally tend to increase revenues, but beyond a certain limit (which is not easy to identify), tend to reduce revenues through their adverse effects on the output levels. These tax rates have also been taken as exogenous in the present exercise.

It is relatively easy to first obtain the estimates of GDPmp at current prices as all the expenditure items like consumption (private & public), investment (private & public), exports, and imports etc. are at current market prices. As is known, in the Indian conditions, the output of agriculture continues to be dependent on weather conditions and are very difficult to predict using the time series data. This component of GDP is therefore treated as exogenous. Non-agricultural GDP is found to be having a good correlation with the level of the previous year's capital stock. The private sector investment which forms an important component of the capital stock estimation is observed to be correlated with public investment and imports. Thus, GDPmp at current prices will finally be dependent on the agricultural output of the current year and the levels of public investment and imports of the previous year.

GDPfc at current prices are then estimated from the estimated figures of net indirect taxes. The figures of net indirect taxes are estimated from the revenue estimates. The subsidy figure is also correlated with the total revenues. The various revenues are estimated from the estimated figures of GDPmp, non-agricultural GDP, private consumption expenditures etc.

GDPfc at constant (1980-81) prices are then estimated from the estimated figures of GDP deflators. GDP deflators are found to have good correlations with the gap between total outlay and total revenues and the money supply. Capital receipt figures are, on the other hand, found to be very fluctuating. These are also taken as exogenous. Since capital receipt figures are fluctuating budget data figures are fluctuating. It was therefore, not possible to relate GDP deflator with budget data. Money supply also has been treated here as exogenous, being, by and large, autonomous in nature.

GDPfc at constant prices will indicate the real growth of GDP, and GDP deflator will proxy inflation.

All these linkages between GDP and the various macroeconomic and the budgetary variables are studied as follows :

Step 1: Gross Domestic Product (GDP) at current prices is estimated as follows:

$$YMN = NYMN + AYM^* \quad ..1$$

Where,

$$NYMN = f(TCS^{-1}) \quad ..1.1$$

$$TCS = TCS^{-1} + AGI. \quad ..1.2$$

$$AGI = PUBI^* + PVT \quad .. \quad ..1.3$$

$$PVT = f(fIMP^*, PUBI^*) \quad ..1.4$$

Step 2: Once the GDP at current market prices is known, the GDP factor cost at current prices is estimated as follows:

$$YFN = YMN - NIT \quad ..2$$

Where,

$$NIT = INDT - SUBS \quad ..2.1$$

$$INDT = UED + CD + ST + OTX \quad ..2.2$$

$$UED = NYMN RUED^* \quad ..2.3$$

$$CD = IMP \times RCD^* \quad ..2.4$$

$$ST = PCE \times RST^* \quad ..2.5$$

$$OTX = f(TXLOR) \quad ..2.6$$

$$TXLOR = INDT - OTX + DT \quad ..2.7$$

$$SUBS = f(TR) \quad ..2.8$$

$$PCE = YMN - GCE - AGI - EXP + IMP^* \quad .. \quad ..2.9$$

$$GCE = f(DEFE^* + ONDE) \quad ..2.10$$

$$EXP = f(YMN) \quad ..2.11$$

$$ONDE = f(YMN) \quad ..2.12$$



Step 3: Finally the GDP factor cost at constant (1980-81) prices is estimated as follows:

YFR	=	YFN/IYD x 100	..3
Where,			
IYD	=	f ( GAP, MS <sup>*</sup> )	..3.1
GAP	=	TOTL - TR	..3.2
BD	=	GAP - CAPR <sup>*</sup>	..3.3
TOT	=	DEVE + TNDE	..3.4
DEVE	=	f ( PUBI )	..3.5
TNDE	=	DEFE <sup>*</sup> + INTD + ONDE	..3.6
INTD	=	f ( OSND )	..3.7
OSND	=	OSND <sup>-1</sup> + CAPR	..3.8
TR	=	TTR + NTR	..3.9
TTR	=	INDT + D	..3.10
DT	=	NYNM x RDT <sup>*</sup>	..3.11
NTR	=	IRPS + ONTR	..3.12
IRPS	=	f ( PSCS )	..3.13
PSCS	=	PSCS <sup>-1</sup> + PUBI	..3.14
ONTR	=	f ( YMN )	..3.15

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*\* indicates exogenous variable*

**Endogenous Variables :**

AGI	=	Aggregate Investment
BD	=	Budget Deficit
CD	=	Customs Duty
DEVE	=	Development Expenditure
DT	=	Direct Tax (Personal + Corporate)
Exp	=	Exports
GAP	=	Total outlay less the sum of total tax & non-tax revenues.
INDT	=	Indirect Tax
INTD	=	Interest on National Debt (Internal + External).
IRPS	=	Internal Resource of Public Sector
IYD	=	Index of GDP Deflator
NIT	=	Net Indirect Tax
NTR	=	Non Tax Revenue
NYMN	=	Non-Agricultural GDPmp. Curr. Pr
ONDE	=	Other Non-Developmental Expenditure
OSND	=	Outstanding National Debt
OTX	=	Other Tax Revenue
PCE	=	Private Consumption Expenditure
PSCS	=	Public Sector Capital Stock
PVTI	=	Private Sector Investment
GCE	=	Govt. Current Consumption Expenditure
ST	=	Sales Tax
SUBS	=	Subsidy
TCS	=	Total Capital Stock (Private + Public)
TNDE	=	Total Non-Development Expenditure
TOTL	=	Total Outlay
TR	=	Total Tax and Non-Tax Revenues
TTR	=	Total tax revenue

TXLOR	=	Total Tax Revenue less Other Tax Revenue
UED	=	Union Excise Duty
YFR	=	GDP factor cost at constant prices
YFN	=	GDP factor cost at current price
YMN	=	GDP at market prices

**Exogenous Variables :**

AYMN	=	Agricultural YMN
CAPR	=	Capital Receipts (Internal+External Borrowings)
DEFE	=	Defence Expenditure
IMP	=	Imports (at the Pre-July 91 devaluation rate)
MS	=	Money Supply (M3)
PUBI	=	Public Sector Investment
RCD	=	Customs duty per rupee of Imports.
RDT	=	Direct Tax per rupee of Non agricultural GDPmp, curr. pr.
RST	=	Sales tax per rupee of Private consumption expenditures.
RUED	=	Union excise duty per rupee of Non agricultural GDPmp, curr. pr.

A simultaneous equation regression method is used to obtain the values of all the relevant variables with a double log form in all the cases. Most of the regression equations are simple regressions except in the cases of private investments and GDP deflators where multiple regression equations have been used. The values of all the various regression equations used in this model are presented in the Annexure.

#### **4. Sources of Data**

All the regression equations were estimated using the time series data for the 8 year period from 1980-81 to 1987-88 at current prices. Data of all the macro economic variables were obtained from the National Accounts Statistics (4), Statement 5, Account 1, pp-15. The data on budgetary transactions of the Central, State and Union Territories together were obtained from the Economic Survey(5), table

2.2, pp S-40 & 41. The money stock data were also taken from Economic Survey, table 4.1, pp S-53.

The actual data for all the macro economic and budgetary variables were also available for the latest year, 1988-89. All the relevant variables for that year were first estimated using the model and then compared with the actual data for validation of the model.

Projections were then worked out for the years, 1989-90, 1990-91 & 1991-92.

A sensitivity analysis was then worked out for 1991-92 to study the effects of changes on some of the variables like i) agricultural output, ii) public sector investment,

and iii) imports on the level of GDPfc at constant (1980-81) prices and inflation. All these results are discussed in the next section.

## **5. The Results**

The budget model developed here involves as a first step, estimation of nominal GDP, as the sum of exogenously given agricultural GDP and the estimated values of non-agricultural GDP. The values of non-agricultural GDP is positively corrected as also highly elastic with respect to the capital stock values with one year lag. The elasticity value is 1.28. The capital stock figures consist of both private and public investment components. Public investment is again exogenously given while private investment is estimated as a function of two independent variables, namely, imports and public investment. Private investment is highly elastic and positively correlated with respect to imports. The elasticity value is high at 1.62. Private investment, as expected, is negatively correlated with respect to public investment. However, it is inelastic with a value of only (-)0.27. This indicates that given the total available resources as dictated by the average propensity to save, any reduction in public investment will tend to increase private investment. However, the low value of elasticity indicates that reduction in public investment is only partially made up by increases in private investment. This is expected because the government uses its fiscal powers to raise additional savings which the free market economy is not able to do. Thus, maintaining a high growth of the nominal GDP is dependent on, as per the present analysis, growth of agriculture, imports and public investments.

While it is essential to maintain the high growth of public investment for maintaining a high tempo of income growth, this will tend to reduce real growth of GDP through its impact on inflation. Public investment is the main item in the aggregate development expenditure of the government which currently constitutes as high as 61% of the total outlay. As regards the revenues, customs duties are about 40% of the values of imports. Union excise duties and all direct taxes together constitute about 7% and 3% respectively of the values of non-agricultural GDP. The internal resources of the public sector are elastic with respect to its aggregate capital stock. The value of this elasticity is 1.64. Any reduction in public sector investment may, therefore, reduce the public revenues. Reduction in imports also is likely to adversely affect government revenues. Other non-tax revenues have been correlated with nominal GDP values, with an elasticity figure of only 0.92.

The GDP deflator is correlated with the gap between a) the total outlay and revenues and, b) the money supply. The elasticity with respect to the gap is only 0.12, while it is slightly higher at 0.35 with respect to money supply. It seems that it is only when the gap or the money supply greatly increases that the inflation rate will be high.

Tables 1 & 2 present data on the results of all the various estimates for the period 1980-81 to 1991-92 along with actual data for 1980-81 to 1988-89 (given in the brackets). Table 1 has also provided budgetary transactions data for 1989-90 (RE) & 1990-91 (BE). The budget data for 1991-92 for Central, State and Union Territories were not available. Some data without any State and UT components have been shown for 1991-92 extracted from the Central budget (BE) only.

On comparing the actual and estimated figures of the various budgetary and macro-economic transactions for the period 1980-81 to 1987-88 as provided in Tables 1 & 2, it can be seen that the budget model developed here has been successful in providing reasonably accurate estimates for all these figures.

The validity of the model is established by projecting the same set of budgetary and macro-economic transactions data for 1988-89 and comparing them with the actual ones. The actual and estimated figures of GDP deflators for 1980-81 to 1988-89 have been plotted in a graph and shown in the enclosed fig.1, which shows the closeness of the estimated figures with those of the actuals.

The validity of the model gave us confidence to work out projections of all these transactions data for 1989-90 to 1991-92 also.

The growth rate of real GDP during 1989-90 is projected to be about 5.2%, while during 1990-91 & 1991-92 this growth rate is expected to be 4.42% & 5.3% respectively. The expected higher real growth rate of GDP in 1991-92 (5.3%) is because of the expected lower inflation during that year. The inflation rate in 1991-92 is expected to be lower because of expected reduction in budget deficit as well as money supply compared to the previous years. The reduction in budget deficit will be more due to decrease in the rate of growth in the government expenditures than increase in the rate of revenues.

The lower growth of government expenditures will not only be in the various non-development expenditures but also be in the development expenditures. Any reduction in the level of public sector investment which constitutes the major development expenditures for any particular year, may not reduce the level of nominal GDP during that year, but will help to reduce inflation rate during the same year as it will reduce the rate of increase in government expenditures. This is what is seen in the results of alt 2 as given in Table 3. However, it will definitely reduce growth of nominal GDP in the following year but would increase the value of real GDP by a lowering of the inflation rate. This will be evident from the results of alt 4. in Table 3. The reason for this may be unproductive uses of the public sector resources.

Alt 1 of Table 3 provides the estimates of various projections when agricultural output remains the same as the previous year. It will reduce the value of nominal GDP. It will also reduce both revenues and expenditures as far as they are linked to the level of nominal GDP, keeping the fiscal inflation rate almost unchanged. The real GDP will, therefore, also reduce to about the same level as the nominal GDP.

Alt 3 of Table 3 provides estimates of the various transactions data when the level of imports is reduced for 1991-92. Though there will be no reduction in nominal GDP during the year, but there will be a definitely lower growth of nominal GDP during the following year. Imports being important determinants of private investment, any reduction in imports will reduce the aggregate investment. A reduction in imports will reduce customs duties and thereby decrease revenues. Expenditure remaining the same, it will increase rate of inflation, and finally reduce the growth rate of real GDP.

## **6. Conclusions & Limitations**

This budget model was constructed with the limited purpose of studying the impact of budget on the real growth of the economy through an analysis of aggregate investment and assessing the

potential for fiscal inflation. It has been possible to identify public investment and imports as the key factors in growth. The key factors in fiscal inflation have been identified as certain unproductive government expenditures including development expenditures, certain unproductive cheap money policies etc. The present budgeting style, being dependent on heavy borrowings, is increasing inequality. There is a need for tax realisation exclusively for meeting development needs from available earnings assets.

It seems that the government is both the cause and the cure of many economic evils like inflation, foreign exchange crisis, and slow growth.

It will be necessary to maintain higher levels of public investment, if the high tempo of growth is to be maintained. However, the productivity of these investments have to be monitored very closely. The growth, particularly of the private investment is highly import elastic. In order to make the best use of the scarce foreign exchange for achieving meaningful growth of the economy, the government should try as a policy to discourage the production of import intensive luxury goods. These activities should be left entirely to market forces. No hidden subsidy in the form of making available foreign exchange at a low official rate for the manufacture of these items should be given. In fact, to avoid a recurrence of the foreign exchange crisis the government should prepare along with the budget, foreign exchange budgeting also, with closely monitoring its implementations.

The government may think of restructuring the taxation policy and introducing a new tax like 'development tax' to meet all public investment expenditures. This development tax may be imposed on various earning assets like land, buildings, various equipments etc. and may be imposed by the central, state and regional development authorities concurrently. The central or the state development tax, apart from meeting the expenses of the central/state public sector undertakings may also have some component for reallocation to backward regions. It should be possible to restrict the public sector's investment expenditures to the level of development tax realised. Borrowings should be avoided as far as possible to check accentuation of inequality in the distribution of income & wealth.

One of the major flaws in India's development pattern is the neglect of the production of basic need items. To introduce greater equity through improved production of basic need items, the public sectors, particularly at the state and regional levels, will have to shoulder bigger responsibilities. The country should not only

concentrate on elitist production and consumption activities. There has to be a balance in the production of mass consumption goods and elitist products, with the former given top priority for all the public sector investments.

The monetary authority should not adopt cheap money policies to encourage private investment unless it is productive. As seen from the model, the money supply has higher inflation potential than budget deficits.

A few limitations of the study are that the budget model developed here is a simple model. It treats many of the important components like agricultural GDP, imports, public investments, various tax rates etc, as exogenous variables. The analysis of inflation is confined to fiscal inflation only and can be expanded to include details of monetary phenomenon also. Thirdly, there is a need to analyse the budget and growth relationship separately at the central, state and regional levels. With increasing development needs, and dispersal of various production activities throughout the country, the state and regional bodies will have to play an increasing role.

The present study may at best be treated only as a beginning.

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TABLE 1 : Estimated Budgetary Transactions, 1980-81 to 1991-92.  
(Figures in brackets are the actual figures)

Item/Year	80-1	81-82	82-83	83-4	84-5	85-6	86-7	87-8	88-89	89-90	90-91	91-92
1. Total	36283	44597	52093	61872	73252	83295	99478	112652	129780	153068	171186	186515
Outlay	(36845)	(43738)	(52747)	(60829)	(72825)	(83961)	(100790)	(112170)	(130048)	(159618)	(176191)	
2. Dev	23703	29129	34068	40189	47902	53027	62844	68926	77235	91684	99735	106199
	(24426)	(28653)	(33591)	(39274)	(48085)	(53397)	(63778)	(68801)	(79548)	(99754)	(107993)	
3. Non-Dev	12579	15468	18025	21683	25349	30267	36634	43726	52544	61384	71451	80315
	(12419)	(15085)	(19156)	(21555)	(24740)	(30564)	(37012)	(43369)	(50500)	(59864)	(68198)	
4. Defence*	3867	4652	5408	6309	7136	8519	11166	13182	14940	16100	17250	16350
5. Interest	2957	3706	4498	5602	6983	8642	10258	12535	15435	18968	23102	27799
	(2957)	(3745)	(4637)	(5524)	(6863)	(8006)	(10591)	(12991)	(16447)	(20571)	(24389)	
6. Others	5755	7109	8118	9772	11230	13106	15209	18009	22169	26136	31099	36165
7. Curr. Rev	25036	30479	34174	39839	45439	55184	63895	73969	85496	96804	115670	130835
	(24563)	(30425)	(35795)	(40989)	(47098)	(56773)	(64823)	(73485)	(85714)	(102856)	(117855)	
8. Tax Rev	19974	24328	27036	31256	35356	43244	49737	57036	64839	71973	86004	95845
	(19844)	(24142)	(27242)	(31525)	(35813)	(43267)	(49540)	(56976)	(66925)	(76762)	(89183)	
9. Inc+Corp	2815	3474	3760	4157	4458	5321	6055	6899	7426	8300	13293	15466
	(2817)	(3445)	(3754)	(4192)	(4484)	(5375)	(6039)	(6626)	(8691)	(9821)	(11587)	(12855)
0. Customs	3408	4300	5118	5581	7041	9526	11474	12962	15802	15200	14440	14440
	(3409)	(4300)	(5119)	(5583)	(7041)	(9526)	(11475)	(13703)	(15805)	(17877)	(21460)	(25900)
11. Un. Ex. Dty	6497	7489	8076	10130	11084	12827	14530	16720	18565	22346	26586	30933
	(6500)	(7421)	(8059)	(10222)	(11151)	(12956)	(14470)	(16426)	(18841)	(22103)	(25125)	(27402)
12. Sales Tx	3971	5120	5728	6404	7181	8824	9991	11721	13202	15279	18877	20836
	(4018)	(5063)	(5667)	(6507)	(7326)	(8742)	(9975)	(11613)	(13670)	(15564)	(17853)	
13. Others	3281	3944	4352	4983	5590	6745	7685	8732	9841	10847	12807	14167
	(3100)	(3913)	(4643)	(5021)	(5811)	(6668)	(7581)	(8609)	(9918)	(11397)	(13158)	
14. Non-tax Revenue	5062	6150	7137	8582	10082	11940	14157	16933	20657	24830	29666	34990
	(4719)	(6283)	(8553)	(9464)	(11285)	(13506)	(15283)	(16509)	(18789)	(26094)	(28672)	
15. Int. Res of PS	1648	2002	2449	3019	3758	4647	5791	7156	8814	10951	13474	16377
	(1374)	(2235)	(3371)	(4393)	(4920)	(5963)	(6388)	(7318)	(9174)	(12430)	(17351)	
16. Oth. NT	3413	4148	4688	5563	6324	7293	8366	9776	11842	13879	16192	18612
	(3345)	(4048)	(5182)	(5071)	(6365)	(7543)	(8895)	(9191)	(9615)	(13664)	(11321)	
17. GAP	11247	14118	17918	22033	27812	28110	35582	38683	44283	56263	55516	55680
	(12282)	(13313)	(16952)	(19840)	(25727)	(27188)	(35967)	(38685)	(44334)	(56762)	(58336)	
18. Cap. Rec*	8831	10794	14603	17705	20622	19549	26817	33180	39232	44613	49337	48273
19. Bud. Def	2416	3324	3315	4328	7190	8561	8765	5503	5051	11650	6179	7407
	(3451)	(3519)	(2349)	(2125)	(5105)	(7639)	(9150)	(5505)	(5102)	(12149)	(8999)	

\* Actual figures

Table 2  
 Estimated Macro-economic Balances, 1980-81 to 1991-92  
 (Actual figures are shown in the brackets)

	1	2	3	4	3	5	6	7	8	9	10	11
Item/Year	80-1	81-82	82-83	83-4	84-5	85-6	86-7	87-8	88-89	89-90	90-91	91-92
1.GDPmp, Cur	136013*	160685	178414	206499	230439	260297	292711	334429	393991	451238	514805	579909
		(159760)	(178132)	(207589)	(231387)	(261920)	(291974)	(332616)	(394992)			
2.Pvt.Cons	97093	114039	125344	143915	158188	177545	196677	224111	251007	291032	343225	396886
	(98128)	(112710)	(124112)	(145965)	(161455)	(175777)	(196341)	(222119)	(260028)			
3.Govt.Cons	12917	15732	18047	21389	24370	28610	34770	40994	48620	55440	63047	68378
	(13084)	(15355)	(18272)	(21141)	(24352)	(29174)	(34625)	(40843)	(47203)			
4.Tot. Inv	30495	35223	39274	45855	53067	60025	66076	74914	110732	119347	118076	121133
	(28453)	(40013)	(40784)	(43061)	(48788)	(62946)	(67230)	(75386)	(94367)			
5.Exports	9102	10499	11483	13014	14296	15868	17546	19667	22630	25418	28455	31510
	(9029)	(10256)	(11563)	(13139)	(15846)	(14951)	(16543)	(20281)	(25983)			
6.Imports*	13596	14809	15736	17675	19484	21754	22359	25259	39000	40000	38000	38000
7.Indirect Tax	17158	20854	23276	27099	30898	37922	43681	50136	57413	63673	72710	80378
	(16746)	(20089)	(22985)	(26471)	(30640)	(36987)	(42714)	(49847)	(57403)			
8.Subsidy	3050	3919	4535	5515	6522	8356	10074	12142	14605	17112	21474	25126
	(3160)	(3545)	(4248)	(5605)	(7830)	(8543)	(9795)	(11497)	(14135)			
9.GDPfc Curr.Pr	121904	143750	159673	184916	206063	230731	259104	296434	351183	404676	463568	524657
	(122427)	(143216)	(159395)	(186723)	(208577)	(233476)	(259055)	(294266)	(351724)			
10.GDP.Defl	101	108	118	128	140	147	161	171	187	205	225	241
	(100)	(110.26)	(119.03)	(128.80)	(138.62)	(149.09)	(159.21)	(173.06)	(187.36)			
11.GDPfc Const.Pr.	119964	132680	135284	144132	146971	155993	160397	172454	187480	197239	205968	216868
	(122427)	(129889)	(133915)	(144865)	(150469)	(156600)	(162711)	(170041)	(187725)			
12.Money Supp- ly(M3)*	55774	62752	72868	86089	102357	118679	140720	163142	198853	237430	310000	380000

\*Actual figures

Table 3 : Sensitivity Analysis, 1991-92

Items	1988-89	Alternative Results : 1991-92				
		BASIC	Alt1	Alt2	Alt3	Alt4
A-1 GDPmp						
Curr.Pr.	393991	579909	576909	579909	579909	579107
2 Pvt.Cons.	211007	396886	396886	399943	399505	400759
3 Govt.Cons.	48620	68378	68378	68378	68378	68297
4 Tot.Inv.	110732	121133	121133	118076	116514	116577
5 Exports	22630	31510	31370	31510	31510	31473
6 Imports	39000	38000	38000	38000	36000	38000
7 Ind.Tax.	57413	80378	80222	80564	79656	80544
8 Subsidies	14605	25126	25061	25127	24950	25064
9 GDP Defl	187.3	241.9	241.9	238.4	242.3	236.6
10 GDPfc Con Pr	187480	216868	215651	219995	216761	221309
B-1 Tot.Outlay	129780	186515	186278	1800509	186515	176755
2 Deve.Exp.	77235	106199	106199	99735	106199	96503
3 Tot.Rev.	85496	130835	130566	130839	130113	130579
4 Tax Rev	64839	95845	95689	96031	95122	95983
5 Non-Tax Rev	20657	34990	34877	34807	34990	34596
6 GAP	44283	55680	55711	49211	56402	46176
7 Bud.Deficit	5051	7407	7438	938	8129	(-)2096

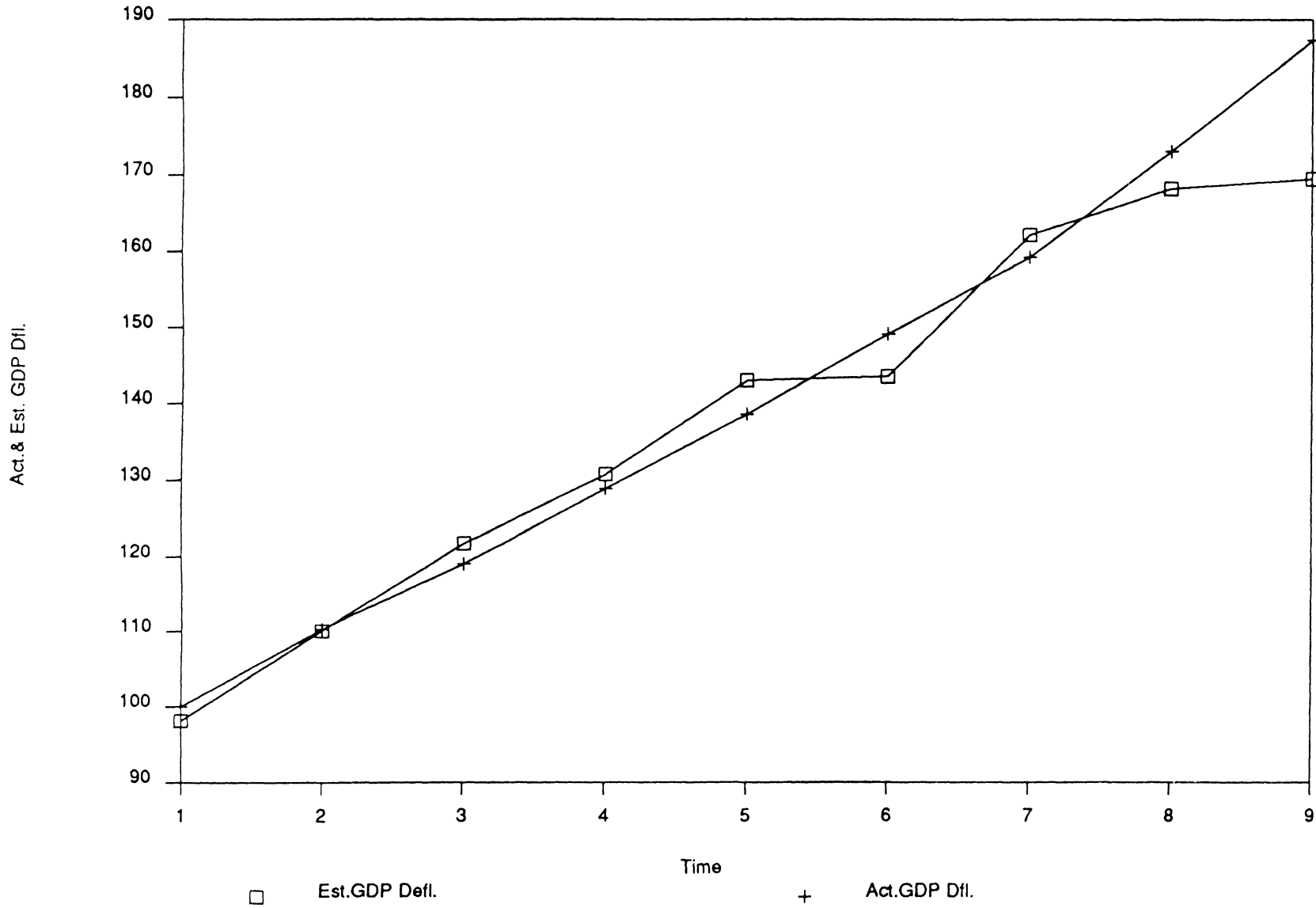
Alt 1 - Agr.GDP reduced to 90-91 level

Alt 2 - Pub.Sector Inv.reduced to 90-91 level

Alt 3 - Imports reduced by Rs.2000 cr. over 90-91 level

Alt 4 - Pub.Sector Inv. for 90-91 & 91-92 reduced to Rs.60000 cr. for both the years.

# Act. & Est. GDP Dfl.80-81 To 89-90



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**Annexure : Regression Equations of Macroeconomic & Budgetary Variables.**

1.  $NYMN = 0.008187 \times (TCS^{-1}) + 1.283229$   
 $R^2 = 0.999307$
2.  $PVTI = 0.043365 \times (IMP) + 1.618304 \times (PUBI) - 0.27123$   
 $R^2 = 0.734784$
3.  $OTX = 0.422522 \times (TXLOR) + 0.921228$   
 $R^2 = 0.988110$
4.  $SUBS = 0.007501 \times (TR) + 1.275234$   
 $R^2 = 0.967395$
5.  $GCE = 1.583182 \times (DEFE + ONDE) + 0.982013$   
 $R^2 = 0.998675$
6.  $EXP = 0.365666 \times (YMN) + 0.856336$   
 $R^2 = 0.961786$
7.  $ONDE = 0.001782 \times (YMN) + 1.267958$   
 $R^2 = 0.975535$
8.  $IYD = 0.708182 \times (GAP) + 0.118802 \times (MS) + 0.353013$   
 $R^2 = 0.995991$
9.  $DEVE = 1.529604 \times (PUBI) + 1.004565$   
 $R^2 = 0.997786$
10.  $INTD = 0.009947 \times (OSND) + 1.166423$   
 $R^2 = 0.991851$
11.  $IRPS = 0.000006 \times (PSCS) + 1.635790$   
 $R^2 = 0.915916$
12.  $ONTR = 0.003381 \times (YMN) + 1.169588$   
 $R^2 = 0.969667$

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