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TESTING OF THE 'DISPLACEMENT EFFECT' ASSOCIATED WITH A 'NON-GLOBAL' SOCIAL DISTURBANCE IN INDIA

by

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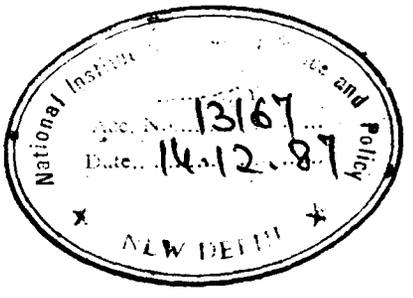

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I. INTRODUCTION

Peacock and Wiseman, in a notable study of the historical patterns of the British government expenditure over the 1890-1955 period, formulated the 'displacement hypothesis' that may help to explain the time profile of government expenditure growth also in other countries and at other times [Peacock and Wiseman, 1961]. They found that government expenditure in the United Kingdom grew in discrete steps rather than continously, the steps or 'plateau' occurring at times of social disturbances caused by the World wars. Their definition of 'displacement' involves

> ".... large-scale social disturbances, such as major wars. Such disturbances may create a displacement effect, shifting public revenues and expenditures to new levels. After the disturbance is over new ideas of tolerable tax levels emerge, and a new plateau of expenditure may be reached, with public expenditure again taking a broadly constant share of gross national product, though a different share from the former" [Peacock and Wiseman, 1967, p.XXXIV].

Several studies have investigated the evidence of 'displacement effect', in a number of countries, as a consequence of major social upheavals.[1]

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1 For a good bibliography, see the following sources: [Peacock and Wiseman 1967, especially Introduction and chapter 2; Pryor, 1968; Musgrave, 1969, especially chapter 4; Gupta, 1967; Diamond, 1977; Bird, 1972].

However, empirical studies investigating the 'displacements' in government spending resulting from the 'social disturbances of a 'non-global' nature are virtually negligible. In the past decades government spending as a proportion of gross national product has increased significantly in several countries, exhibiting a stepwise growth, even in the absence of a major social upheaval.[2] Therefore, one has to examine carefully disturbance of a lesser magnitude or other 'events'[3] which could provide some plausible explanations for the shifts in public expenditure in the recent decades.

The objective of this paper is to test the displacement hypothesis in the context of social disturbances caused by a 'non-global crisis' - the Indo-China hostilities

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2 Views differ regarding the definition of a 'social upheaval! Peacock and Wiseman consider war as the most pronounced form of upheaval, although they seem to admit the possibility of other types of social upheaval. Gupta, Bonin et al, and others extend the concept of social upheaval to include the 'Great Depression'.

3 For example Mahar and Rezende found in their study that public expenditures in Brazil were displaced during the periods 1956-64 and 1964-69, but not as a result of social upheaval such as a War, revolution or Depression. Mann stresses the non-crisis factors that have contributed for 'displacements' in public expenditures in Dominican Republic and Puerto Rico.

of 1962.[4] The interpretation of the 'displacement effect' is briefly reviewed in Section II. In Section III, the hypothesis concerning the change in the pattern and timing of Central government expenditure growth in India associated with the 'crisis' of the 1962 is specified for empirical testing. The statistical results of the 'displacement effect' are presented in Section IV. Finally, in Section V, a brief summary and conclusion of the study are given.

II. DISPLACEMENT EFFECT : INTERPRETATION

The basic thrust of the displacement hypothesis is to explain the time profile of government spending, and the underlying explanation lies in the concept of a

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4 Following the outbreak of Indo-China hostilities, a national emergency was imposed in November 1962. The country's immediate task, in the wake of emergency, was to undertake a massive defence mobilization as quickly as possible without upsetting the general balance of the economy. The expenditure on defence services as a per cent of total central government expenditure increased from 31.00 in 1961-62 to 42.00 in 1963-64. In absolute terms defence expenditure (on revenue account) increased from Rs.2.895 billion in 1961-62 to approximately Rs.7.040 billion in 1963-64, an increase of 143 per cent. During this period, capital expenditure on defence items increased from Rs.229.5 million to approximately Rs.1.120 billion, an increase of 388 percent. The prospect of a larger defence budget obviously called for re-examination of economic priorities and fiscal decisions' in the context of the changed 'environment' resulting from the 'crisis'. The economy was subjected to severe stress and strain. With a view to mobilize resources for defence effort, various schemes were introduced. In the wake of emergency, a campaign to educate public opinion was also launched and the 'Gold Bonds' were introduced as a first step towards weaning people away from gold.

tolerable burden of taxation. People generally become more tolerant to a higher level of taxes, that would previously have been thought intolerable, during a period of 'social upheavals'. The contention of Peacock-Wiseman is that once expenditures and taxes have risen (as a proportion of gross national produce) to a higher level as a consequence of social disturbances, it is unlikely that expenditures and taxes would fall back to the pre-disturbance level, though the rate of growth in expenditures and taxes may subside. Once the threshold of resistance to higher tax level is overcome during the period of 'crisis', the threashold of resistance then would shift to another level, followed by a further shift in the level of public expenditure This explains why the long-term time pattern of government expenditure tends to look like a stepwise growth.

There are two versions of the displacement effect. The original or orthodox version implies that 'social disturbances' would tend to increase the leve of government spending in relation to national output, accompanied by a shift in the level of taxes. The less orthodox version does not stress shifts in the ratio of government spending to national output. It is likely that 'inspection process' may generate a different kind of displacement - an inter-functional shift without shifting the levels of aggregate spending and taxes. Bird rightly contends that such

interfunctional shifts is not really related to the 'displacement effect' [Bird, 1970]. But it should be pointed out that if the 'inter-functional shift' is accompanied by a shift in the level of aggregate spending and taxes then it would fall under the displacement effect of the modified version.[5]

Criticisms of the displacement hypothesis have been numerous.[6] More recent studies, using econometric techniques, have produced somewhat conflicting evidence as to the nature and significance of 'displacement effect' in government spending . [Tussing Henning, 1974; Bonin, Finch and Waters, 1969; Proyor, 1968]. Diamond in a recent article, reviews various studies dealing with econometric testing of the displacement effect and observes that "none of the studies has adequately grasped the essential nature of the displacement

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5 The displacement hypothesis was orginally formulated in terms of shift in the share of government speding in gross national product. But in the new introduction to the second edition of their book Peacock and Wiseman have shifted their emphasis of the earlier version by allowing for shifts in the functional distribution of government expenditure.

6 For general discussion of these criticisms, see Bird [1972]; Pryor, 1968 ; and Musgrave, 1969.

effect and because of this, they have misinterpreted their empirical results" [Diamond, 1977, p.396]. He adds

> "... the Peacock-Wiseman analysis of displacement can be interpreted as a theory of the 'structural break". Thus the cetris paribus - assumption that tastes, preferences, and institutions remain constant is denied. On the contrary, they concentrate on times of major social upheaval where these factors can safely be assumed to change. Then they analyse the resulting change in public expenditure growth and attempt to construct a model to explain why these shifts occurred. Ultimately, that model describes institutional changes within and outside the public sector-or in other words,variation in parameters which are normally assumed constant in empirical research" [. Diamond, 1977, pp.396-97].

Diamond argues that Gupta's approach in testing the 'displacement effect' must be favoured to that of Bonin et al, though it is an incomplete test of the 'structural break' hypothesis.

A scanty conflicting evidence of the displacement effect, resulting from the 'interpretation' of the hypothesis and the methodology used in testing it, could not invalidate the displacement hypothesis, though it tends to case doubt on the general applicability of the hypothesis to explain the time pattern of government spending.

If the 'displacement effect' is linked solely to response to social disturbances caused by the World Wars, then this hypothesis would obviously fail to explain the shifts in government spending in many countries in the 1960's and 1970's. It is quite conceivable that a 'non-global'

upheaval is likely to have a greater impact, in terms of the magnitude of social disturbances, at the national level in many developing countries. Such disturbances could very well contribute to the 'displacements' and bring about a change in the public's notion of a tolerable tax burden. Empirical studies testing the nature and significance of the 'displacement effect' in government spending as a consequence of the 'social disturbances' caused by a 'non-global' crisis would be quite useful for the purpose of broadening the scope of the displacement hypothesis.

III. HYPOTHESES AND STATISTICAL TECHNIQUE

The following null hypotheses are formulated for the statistical testing of the displacement effect[7] in Central government expenditure in India as a consequence of a less pronounced 'social upheaval' - the Indo-China

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7 For testing the displacement effect Gupta - [1967] measures the shift in thelevel and change in the income-elasticity of government expenditure during the period after a social upheaval. Bird - [1972] rightly points out that it is only the shift in the level of government spending is an illustration of the displacement effect, and the change in income-elasticity of government spending would reflect something different. It is for this reason the hypothesis relating to the change in income-elasticity of government expenditure was not tested using Gupta's statistical technique.

hostilities in 1962.

(1) The 'crisis' of 1962 is not associated with a shift in the level of Central Government spending, either in the aggregate or in terms of functional categories, with relation to the national income growth;

(ii) the income-elasticity coefficients of government spending both the aggregate and functional categories, between the periods before and after the 'crisis' do not differ significantly. This is to test the 'structural breaks'[8] associated with the 'crisis' of the 1962; and

(iii) the percentage of functional categories of expenditure in the total government expenditure (gi/G) is not significantly greater after the 'crisis' than from the average before the 'crisis'. This is to test the significance of compositional changes in government spending associated with the 'crisis'.

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8 Diamond- [1977] interprets the displacement effect as a structural break theory. He uses the technique pioneered by Rao and Chow to test for 'structural breaks' associated with social upheavals.

To test the significance of a shift (i.e. to test the null hypothesis No:1) Gupta's formula[9] as given below was used:

$$|t| = \frac{\text{Shift}}{s^1} \text{ with } v=N_1 - 2 \text{ degrees of freedom}$$

where $$s^1 = \sqrt{s^2 \left[1 + \frac{1}{N_1} + \frac{(X_{N+1} - \bar{x}_i)^2}{\sum (X_i - \bar{x}_i)^2}\right]}$$

and $$s^2 = \sum (y_i - y_i^1)^2 / N_1 - 2$$

y_i and x_i denote the observed values of Log G (G= government expenditure) and Log Y (Y= national income) respectively during the period before the crisis, y_i^1 denotes estimated value of log G calculated from the regression equation (Log G= Log a+b Log Y) for the period before the 'crisis'.

To measure the 'shift' in the level of government spending with relation to national income associated with the 'crisis', the level of government expenditure in the year immediately after the shift with reference to the regression equation for the sub-period prior to the crisis

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9 Gupta's statistical technique is used with certain modifications in the grouping of data into sub-periods. Gupta leaves out the crisis years, and his comparisons of public expenditures are between normal years. In our study the period 1950-51 - 1969-70 has been considered, and no year has been left out as an abnormal year. The 1950-51 - 1969-70 period has been sub-divided into two periods, 1950-51 to 1961-62, and 1962-63 - 1969-70. The 'crisis' (Indo-China hostilities) took place around the last quarter of the year 1962. Thus we have made a crucial assumption that the 'crisis' did not affect the public expenditure in 1961-62, and the impact of the crisis was felt from 1962-63 onwards.

The X^1S used in the above tests are ratios of functional categories of expenditure to the total government expenditure.

The necessary statistical series for the period 1950-51 - 1969-70 are taken from the report published by the Trade Development Authority.[12]

IV STATISTICAL RESULTS

Results of the 'displacement effect' tests, for both aggregate expenditure and functional categories, are presented in Table 1. By the statistical tests of significance, the null hypothesis No.1 is rejected at 0.1% level for the following categories of government spending suggesting thereby that the shifts in the level of expenditure occurred as a consequence of the 'crisis' of the 1962:

(a) Total government expenditure
(b) Defence expenditure
(c) Debt. services
(d) Contributions to States and miscellaneous adjustments
(e) Civil administration
(f) Non-defence expenditure (i.e. total government expenditure minus defence and debt services).

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12 Data on the Indian Economy: 1951 to 1971, Research and Analysis Division, Trade Development Authority, New Delhi, 1972.

All the above categories of expenditure, except civil administration, were displaced upward (postive shift). Although expenditure on social and development service was displaced downward (a negative shift) it was not found to be statistically significant.

Table 2 presents results of tests for 'structural instability'. The empirical results confirm structural instability for all the categories of expenditure at the .001 level of significance. This leads to the rejection of the null hypothesis No.2 suggesting that income elasticity coefficients of government expenditure, both aggregate and functional categories, between the periods before and after the 'crisis', are significantly different. Although the 'structural break' associated with the 'crisis' is significant for all the categories of expenditure, the 'break' appears to be more pronounced for debt services than for civil administration, social and development services, and contributions to the State governments.

The statistical tests for the significance of the changes in the composition of government expenditure are shown in Table 3. The results confirm that significant changes in the composition of government expenditure have taken place as a consequence of the 'crisis', of the 1962. Expenditures on social and development services, and civil

administration, as ratios of total government spending, have shifted downward, while the ratios of debt services and contributions to the States have shifted upward. The downward shift in the ratio of defence expenditure was not found to be statistically significant.

V SUMMARY AND CONCLUSION

The results presented in Section IV provide empirical support for the 'displacement effect' in government expenditure associated with the Indo-China hostilities of 1962. There was a statistically significant effect on the pattern and timing of growth in government expenditure, causing a sharp departure from the underlying trends both in total expenditure, and on functional categories that prevailed during the pre-crisis period 1950-51 to 1961-62. The changes in the level of government expenditure were in fact accompained by a major shift in the level of tax revenues suggesting a break through on the revenue constraint. The 'crisis' not only produced 'structural instability' but also changed the composition of government expenditure. It is rather surprising to note a downward shift in social and development services coinciding with an upward shift in Central government's contributions to the States. It is quite likely that the 'crisis' of the 1962 has precipitated a change in the fiscal structure of the Indian

federal setup by giving a greater role for the State governments in the sphere of social and development services by transfering relatively more resources from the Centre to the States.

One of the plausible explanations is that the shift that occurred in the level of tax revenues of the Central government associated with the 'crisis' of 1962 might have generated pressures for increased spending on social and development services, resulting from the 'inspection process' after the 'crisis'. The responsibility for handling social and development programs; for most part, comes under the purview of the State governments. It is quite conceivable that, given the relatively less elastic tax revenue sources of the State governments as compared to the centre, an increasing transfer of resources from the Centre to the States was probably necessary for carrying out expanding social and development services at the State level. This probably resulted in a downward shift in the ratio of Central government expenditure on social and development services to the total budget, accompanied by an upward shift in the ratio of Central transfers to the State governments. Thus it can be concluded that the social upheaval of a lesser magnitude (upheaval of a non-global nature) could also produce 'displacements' by changing the pattern and timing of public expenditure growth.

REFERENCES

[1] Andic, S., and Veverka, J., "The Growth in Government Expenditure in Germany since the Unification", Finanzarchiv, N.F. Band 23, 1963-4, pp.169-278.

[2] Bird, Richard M., "The Displacement Effect: A critical Note", Finanzarchiv, vol.30, No.3, 1972, pp.454-63.

[3] Bird, Richard M. The Growth of Government Spending in Canada, (Toronto: Canadian Tax Foundation, 1970)

[4] Bonin, J.M., Finch, B.W., and Waters, J.B., "Alternative Tests of the Displacement Effect", Public Finance, vol.24, 1969, pp.441-452

[5] Diamond, J., "Econometric Testing of the 'Displacement Effect' A Reconsideration", Finanzarchiv, Bond 3, 1977 pp.387-404.

[6] Goffman, I.J. and Mahar D.J., "The Growth of Public Expenditures in selected Developing Countries: Six Carribean Countries, 1940-65", Public Finance, vol.26, pp.57-74

[7] Gupta, S.P. "Public Expenditure and Economic Growth: A Time Series Analysis", Public Finance, vol.22, No.4, pp.423-61.

[8] Holmans, A.E., "The Growth of Public Expenditure in the United Kingdom Since 1950", Manchester School of Economics and Social Studies, vol.36, 1968, pp.313-327.

[9] Hook, E., "The Expansion of Public Sector - A Study of the development of Public Expenditures in Sweden During the years 1912-1958", Public Finance, vol.17, 1962, pp.289-312.

[10] Mahar. J., and Rezende, Fernado A., "The Growth and Pattern of Public Expenditure in Brazil", Public Finance Quarterly, vol.3, No.4, pp.380-99.

[11] Martin, A., and Lewis W.A., "Patterns of Public Revenue and Expenditure", The Manchester School of Economics and Social Studies, vol.24, No.3, 1956, pp.203-44.

[12] Mann, Arthur J., "Public Expenditure Patterns in the Dominican Republic and Puerto Rico, 1930-1970", Social and Economic Studies, vol.24, No.1, 1975.

[13] Musgrave, Richard A., Fiscal Systems (New Haven: Yale University Press, 1969).

[14] Peacock, Alan T., and Jack Wiseman, The Growth of Public Expenditure in the United Kingdom, (Princeton N.J.: Princeton University Press, 1961).

[15] Peacock and Jack Wiseman, The Growth of Public Expenditure in the United Kingdom, revised edition, (London: George Allen and Unwin LTD, 1967).

[16] Pryor, Frederic L., Public Expenditures in Communist and Capitalist Nations (Homewood: Richard D Irwin, 1968).

[17] Rosenfeld, Barry D., "The Displacement Effect in the Growth of Canadian Government Expenditures", Public Finance, vol.28, 1973, pp.301-314.

[18] Tussing A.D., and Henning, J.A., "Long-run Growth of Nondefense Government Expenditures in the United States", Public Finance Quarterly, vol.2, 1974, pp. 202-222.

TABLE I

Analysis of 'Shift' in Total Central Government Expenditure (Revenue Account) and Selected Functional Categories

Year	National income	Total Central government expenditure	Total tax revenue	Civil administration	Defence services (net)
		Rs. crore (at current prices)			
1950-51	9530	346.64	357.00	21.29	164.13
1951-52	9970	381.40	459.99	24.10	170.96
1952-53	9820	390.67	381.06	23.30	179.52
1953-54	10480	401.30	363.28	20.74	186.30
1954-55	9610	416.35	399.26	30.63	186.66
1955-56	9980	440.74	411.47	33.57	172.23
1956-57	11310	473.83	493.76	38.06	192.15
1957-58	11390	631.33	575.33	42.01	256.72
1958-59	12600	675.46	553.06	48.11	250.93
1959-60	12950	736.04	642.44	52.04	230.86
1960-61	14150	826.21	730.14	58.66	247.55
1961-62	14780	911.94	875.37	59.17	289.54
1962-63	15380	1314.13	1060.98	75.18	425.30
1963-64	17200	1658.60	1374.33	77.51	704.15
1964-65	20400	1806.69	1562.80	81.87	692.85
1965-66	20700	2000.63	1784.62	93.40	726.18
1966-67	23670	2244.46	1933.96	122.97	797.80
1967-68	27630	2449.65	1936.67	136.48	862.21
1968-69	27930	2678.91	2018.84	153.52	921.05
1969-70	31174	2934.70	2110.37	177.32	966.00
Constant (a)					
1951-1962		-13.3583	-10.3570	-17.0067	-5.1949
1963-1970		-2.8938	-1.4320	-8.1512	-2.6693
Elasticity coefficient (b)					
1951-1962		2.1032	1.7765	2.2069	1.1285
1963-1970		1.0511	0.8846	1.2824	0.9270
"t" value for shift		12.276^{+++}	12.061^{+++}	6.710^{+++} (-)	23.076^{++++}

contd..2/-

TABLE I (contd.)

Analysis of 'Shift' in Total Central Government Expenditure (Revenue Account) and Selected Functional Categories

Year	Debt services	Non-defence expenditure (total expenditure minus debt services and defence	Social and Development services	Contributions to States and adjustments between States and Centre
	Rs. crore (at current prices)			
1950-51	37.36	145.15	39.50	15.59
1951-52	39.00	171.44	42.49	17.31
1952-53	36.50	174.85	41.72	22.80
1953-54	40.82	174.18	51.53	25.91
1954-55	39.72	189.97	58.17	29.79
1955-56	43.14	225.37	82.41	35.87
1956-57	39.06	242.62	108.09	28.26
1957-58	42.08	332.53	154.14	45.90
1958-59	48.63	375.90	175.74	46.25
1959-60	69.38	435.80	210.09	48.94
1960-61	77.09	501.57	232.40	48.55
1961-62	82.85	539.55	176.29	198.01
1962-63	245.43	643.40	186.09	198.45
1963-64	278.35	675.10	172.44	238.40
1964-65	316.41	797.43	199.88	272.90
1965-66	370.62	867.83	214.90	328.83
1966-67	463.45	983.21	232.91	411.67
1967-68	510.43	1085.01	271.84	473.69
1968-69	528.02	1221.84	298.31	484.84
1969-70	565.00	1371.00	310.25	514.54
Constant (a)				
1951-1962	-12.5702	-21.3149	-39.5771	-19.0390
1963-1970	-6.5393	-4.0240	-2.2812	-8.9840
Elasticity coefficient (b)				
1951-1962	1.7514	2.8829	4.7355	2.4151
1963-1970	1.2489	1.0836	0.7711	1.4822
"t" value for shift	20.195^{+++}	5.850^{+++}	1.463(-) NS	9.586^{+++}

$^{+++}$ denotes significance at 0.1 per cent level; $^{++}$ denotes significance at 1 per cent level; $^{+}$ denotes significance at 5 per cent level; NS denotes not significant; (-) denotes negative shift.

Data Source: Data for the year 1950-51-1969-70 are taken from Data on the Indian Economy: 1951 to 1971, compiled by the Research and Analysis Division of the Trade and Development Authority, New Delhi, India.

The expenditure on revenue account includes all those categories of expenditures which lead to the provision of goods and services during the year concerned or in the very immediate future.

For want of adequate 'deflators' all the data are expressed in current prices.

One crore rupees = 10 million rupees.

TABLE 2

TESTS FOR 'STRUCTURAL INSTABILITY' ASSOCIATED WITH THE 'CRISIS' OF THE 1962: EMPIRICAL RESULTS

			1950-51 - 1961-62	1962-63 - 1969-70	1950-51 - 1969-70
			1	2	3
1. Total Government Expenditure	Constant	a	-13.358	-2.894	-11.125
	Elasticity	b	2.091	1.060	1.870
Log G=Log a+b Log NI	$\bar{R}^2$		.93	.97	.96
	N		12	8	20
	Chow F test		-	-	24.714*
2. Total Tax Revenue	Constant	a	-10.357	-1.432	-9.020
	Elasticity	b	1.776	.885	1.637
Log T= Log a+b Log NI	$\bar{R}^2$		.87	.90	.95
	N		12	8	20
	Chow F test		-	-	16.688*
3. Non-defence Expenditure	Constant	a	-21.315	-4.024	-11.279
	Elasticity	b	2.883	1.083	1.807
	$\bar{R}^2$		.92	.98	.93
Log G_D= Log a+b Log NI	N		12	8	20
	Chow F test		-	-	22.511*
4. Civil Administration	Constant	a	-17.007	-8.151	-11.549
	Elasticity	b	2.207	1.282	1.622
	$\bar{R}^2$		.87	.93	.95
Log CA=Log a+b Log NI	N		12	8	20
	Chow F test		-	-	9.513*
5. Defence (net)	Constant	a	-5.159	-2.669	-10.125
	Elasticity	b	1.129	.934	1.665
Log D= Log a+b Log NI	$\bar{R}^2$		.82	.80	.94
	N		12	8	20
	Chow F test		-	-	16.921*
6. Debt Services	Constant	a	-12.570	-6.539	-21.075
	Elasticity	b	1.761	1.249	2.684
Log DS= Log a+b Log NI	$\bar{R}^2$		.85	.97	.93
	N		12	8	20
	Chow F test		-	-	44.391*
7. Social & Development	Constant	a	-39.977	-2.281	-10.179
	Elasticity	b	3.995	0.831	1.572
	$\bar{R}^2$		.81	.89	.68
Log SD=Log a+b Log NI	N		12	8	20
	Chow F test		-	-	15.511*
8. Contributions to the States & other adjustments	Constant	a	-19.039	-8.984	-26.272
	Elasticity	b	3.539	1.533	3.206
	$\bar{R}^2$		.70	.97	.91
Log X= Log a+b Log NI	N		12	8	20
	Chow F test		-	-	9.127*
9. Per Capita Government expenditure	Constant	a	-12.344	-2.753	-9.946
	Elasticity	b	2.647	1.061	2.230
	$\bar{R}^2$		.79	.95	.92
Log G_p=Log a+b Log NI	N		12	8	20
Per capita	Chow F test		-	-	16.386*

Notes: * denotes significance at 1% level. NI denotes national income. The chow F test shown in column 3 tests for 'structural instability' within the period.

TABLE 3

Structural Changes in the Central Government Expenditure (Revenue Account) of India, 1951-70

YEAR	Total Expenditure as a percentage of National Income	Non-Defence Expenditure as a percentage of National Income	Tax Revenue as a percentage of National Income
1950-51	3.64	1.52	3.75
1951-52	3.82	1.72	4.61
1952-53	3.98	1.78	3.94
1953-54	3.83	1.66	3.47
1954-55	4.33	1.98	4.15
1955-56	4.41	2.26	4.12
1956-57	4.19	2.15	4.37
1957-58	5.54	2.92	5.05
1958-59	5.36	2.98	4.39
1959-60	5.68	3.36	4.96
1960-61	5.84	3.54	5.16
1961-62	6.17	3.65	5.92
Average 1951 to 1970	4.73	2.46	4.49
1962-63	8.54	4.18	6.90
1963-64	9.64	3.92	7.99
1964-65	8.86	3.91	7.66
1965-66	9.66	4.19	8.62
1966-67	9.48	4.15	8.17
1967-68	8.87	3.93	7.01
1968-69	9.59	4.37	7.23
1969-70	9.31	4.40	6.77
Average 1963 to 1970	9.24	4.13	7.54
"t" Value	-6.52^{+++}	-6.03^{+++}	-10.32^{+++}

Contd..Table 3

TABLE 3

YEAR	Expenditure by Function, as a Percentage of Total Expenditure				
	Civil Administration	Defence (Net)	Social and Development services	Debt Services	Grants, aids to states and adjustment between states and centre
1950-51	6.14	47.35	11.40	10.78	4.50
1951-52	6.32	44.82	11.14	10.23	4.54
1952-53	5.96	45.95	10.68	9.34	5.84
1953-54	6.66	46.42	12.84	10.17	6.46
1954-55	7.36	44.83	13.97	9.54	7.16
1955-56	7.62	39.08	18.70	9.79	8.14
1956-57	8.03	40.55	22.81	8.24	5.96
1957-58	6.65	40.66	24.42	6.67	7.27
1958-59	7.12	37.15	26.02	7.20	6.85
1959-60	7.07	31.37	28.53	9.43	6.65
1960-61	7.10	29.96	28.61	9.33	5.88
1961-62	6.49	31.75	19.33	9.09	21.71
Average 1951 to 1970	6.88	39.99	19.04	9.15	7.58
1962-63	5.72	32.36	14.16	18.68	15.16
1963-64	4.67	42.45	10.40	10.78	14.37
1964-65	4.53	38.35	11.06	17.51	15.11
1965-66	4.77	38.10	10.74	18.53	16.44
1966-67	5.48	35.55	10.38	20.65	18.34
1967-68	5.57	35.20	11.10	20.47	19.34
1968-69	5.73	34.68	11.14	19.71	18.10
1969-70	6.03	33.29	10.57	19.47	17.53
Average 1963 to 1970	5.31	36.25	11.19	18.98	16.80
"t" Value	-6.02^{+++}	1.17	3.14^{++}	-17.83^{+++}	-5.39^{+++}

Notes: +++ denotes significance at 0.1% level; ++ denotes significance at 1% level; + denotes significance at 5% level. Negative sign of the 't' Value denotes upward shift in the ratio; positive sign of the 't' Value denotes downward shift in the ratio.