CHAPTER NINE

THE DEGREE OF HORIZONTAL INEQUALITY AND THE EQUALIZING TENDENCY OF FEDERAL TRANSFERS TO THE REGIONS AND STATES OF NIGERIA

I. INTRODUCTION

It has already been noted that horizontal fiscal imbalance forms the basis of the problem of inter-regional or inter-state financial relations. Hence, the need for horizontal fiscal equalization as a prime objective of federal fiscal transfers. The essence of this objective lies in the fact that in the absence of equalization-oriented transfers, the financially weaker states of a federation would feel alienated from their richer counterparts, because they would be unable to provide public services to their citizens at the level comparable with the richer states. Hence, fiscal transfers should aim at placing all the states at comparable level of fiscal position either in the form of service levels, fiscal capacities or fiscal potentials.[1]

The objective of fiscal equalization is of much relevance to the Nigerian federation as to any other federation riddled with horizontal disparities. This would be the case because in the event of negligence of this objective, the jurisdictions of the federation which are very poor or very rich would develop a strong urge of being on their own. This urge may be translated into civil or political crisis that may eventually pull down the federation.

However, a close look into the Nigerian Resource Devolution in terms of both the theory and practice of inter-state resource devolution, suggests that fiscal equalization is not a defined objective of federal fiscal transfers in Nigeria. This stems from the fact that whereas the horizontal devolution was earlier dominated by derivation principle, higher emphasis was later laid on population and equality-of-state. These principles, as had been pointed out earlier, cannot be regarded as equity-based as such. This is because while the principle of derivation simply transfers back resources to the rich and affluent jurisdictions of the federation from where most of the revenues originate, the population criterion is used in its

1. See, Musgrave, R.A. "Approaches to a Fiscal theory of Political Federalism", in Public Finance, Needs, Sources and Utilization, National Bureau of Economic Research, Princeton, N.J. Princeton University Press, 1961.

absolute sense, i.e., it does not take into consideration the composition of the population, like age, literacy rate, occupational distribution etc. On the other hand, the principle of equality-of-state simply divides the resources amongest the states on equal absolute basis. Thus, in all the principles, no indicator of backwardness or level of development is present. Hence, it could be said that the principles are not equalization-based. Thus, if federal transfers in Nigeria have shown equalization tendencies, such a result would have been achieved by trial-and-error rather than as results of well-defined criteria of resource devolution.

In this chapter, attempts have been made to measure the degree of the disparities in the revenue and expenditure variables of the federating units in Nigeria. A detailed analysis of the equalization tendency of the federal transfers on the total independent revenue of the lower-level governments has also been investigated into, here. We have also examined the determinants of the inequalities of the regions in expenditure on socio-economic services. The analysis is carried out with respect to regions and states of Nigeria. It has to be pointed out, however, that in regards to the determinants of the inequality amongst Nigerian federating units in expenditure on socio-economic services, only the regional analysis has been taken. This is so because the sub-periods of twelve (1968-79), and nine (1980-88) years are too short for a reliable regression analysis. Moreover, a regression analysis for this entire period, 1968-88 may not be quite appropriate as the inquality indices with which the regression is computed is based on different number of states that existed during these periods, i.e., twelve states during 1968-79, and nineteen states during 1980-88.

II. ISSUES EXAMINED

The following major issues have been examined in this chapter.

1. We have examined the degree of inequaliy amongst the Nigerian Regions and States in per capita independent revenue, per capita federal transfers, and per capita expenditure on selected socio-economic variables like, health services, economic services etc.

2. An investigation has also been made to establish whether or not the federal transfers in Nigeria showed tendency towards horizontal fiscal equalization. That is to say, whether or not the poor states received larger federal transfers while richer ones obtained smaller transfers over the period of the study.

3. We have also examined the determinants of the variations in the per capita expenditure of the Regions or States. That is to say, that an attempt has been made to ascertain which categories of states receipts -- independent revenue, statutory transfers, federal grants or federal loans -- are responsible for the inequality in the standard of public services across the Regions and States of Nigeria.

III. METHODOLOGY

In order to examine the issues highlighted above and some other related ones, the methods of Gini Coefficient and multiple regression analysis have been adopted. The Gini Coefficient Ratio has been used to measure the degree of horizontal fiscal imbalances and the equalizing tendency of the various categories of federal transfers.[2] The per capita total independent revenue of the regions and states as pointed out earlier has been taken as a measure of the fiscal capacity of the federating units. Hence, the variations amongst the Regions and States in it are taken to be indicative of the existence of the horizontal fiscal imbalances.

Gini Coefficient estimates have been based on the formula[3] as stated below :

$$G = \frac{1}{2N^2\overline{X}} \sum_{i=1}^{n} \sum_{j=1}^{n} |X_i - X_j|$$

Where; G = Gini Coefficient Ratio

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2. These methods have also been adopted by Chelliah R.J., et al, Trends and Issues in Indian Federal Finance, National Institute of Public Finance and Policy, Allied Publishers Pvt. Ltd. New Delhi, 1981, Chapter IV, and by; Rao, R Sudarsana, Grant-in-Aid and Economic Development in India, Chug Publications, Allahabad, 1986, Chapter 7.

3. This formula has been adopted from Sen Amartya, On Economic Inequality, Rad-Cliffe Lectures, 1973, Oxford University Press, Bombay, 1973. See the note in table 9.01 for the illustration. See also, Chelliah, R. J. et al, ibid, and Rao, R. Sudarsana, ibid.

X_i, X_j = The ith and jth observations of the x variable like per capita independent revenue, per capita statutory transfers etc, of the Regions and States as the case may be.

N = Sample size, i.e., the number of Regions or States.

$\bar{X}$ = Mean of the X variables.

$|X_i - X_j|$ = This shows that only the absolute figures are considered, i.e., the "signs" of the "difference" of X_i and X_j observation are not considered.

The value of G obtained from the above formula ranges between zero and one. The smaller the value of G, the smaller the degree of imbalance in the variable measured, and vice versa. Hence, if we arbitrarily divide the values of Gini Coefficient, then values between 0.0000 to 0.2500 would indicate negligible inequality, between 0.2510 to 0.5000 indicates slight inequality, 0.5010 to 0.750 shows relatively high inequality and 0.7510 to 1.0000 denotes extremely high presence of inequality in the variables.

To examine the equalization effects of federal transfers, Gini Coefficient is first estimated for per capita independent revenue of the regions or states, and then the Gini Coefficient are also estimated after addition of per capita statutory transfers to per capita independent revenue. If the latter Gini Coefficient is smaller (or larger) than that obtained for the former, then the very transfers mechanism, say per capita statutory transfers, are said to be exerting (or not exerting) an equalization effect on the independent revenue of the regions or states. The same technique is applied to all categories of transfers and under different principles.

In regards to the investigation of the nature of the inequality amongst the Regions or States in the provision of socio-economic services, Gini Coefficient approach has, again, been followed.

A multiple regression model has been fitted in order to examine the determinants of the inequality in per capita provision of socio-economic services of the Regions.[4]

4. Chelliah et al, Op Cit, and Rao, R. Sudarsana, Op.Cit, has used this method in their respective work for India.

IV. INEQUALITY IN PER CAPITA INDEPENDENT REVENUE OF THE REGIONS OF NIGERIA

Table 9.01 shows the Gini Coefficient results of "Inequality in Regional per capita independent revenue and Federal Transfers". From column 2 of this table, it is observed that the Gini Coefficient for per capita Independent Revenue of the Regions was 0.0905 in 1956, indicating that inequality was negligible. However, its value rose thereafter and fluctuated till 1988 though it remained below 0.5000 denoting relatively less imbalances. The coefficient had relatively high values during 1968-70 -- 0.4559, 0.5049 and 0.4990 respectively. This implies that during these years inequalities increased after which it narrowed down till 1988.

V. INEQUALITY IN PER CAPITA STATUTORY TRANSFERS TO THE REGIONS OF NIGERIA

Column 3 of table 9.01 shows that the Gini Coefficient of per capita aggregate statutory transfers to the Regions of Nigeria. declined in value from 0.2517 in 1956 to 0.1408 in 1967 with some fluctuations. It shows that the degree of inequality which was negligible in statutory transfers further declined during this period. However, in 1968, the value of Gini Coefficient increased to 0.4613 and to 0.4674 in 1969, and declined to 0.4071 in 1970. These high values of Gini Coefficient point out that degree of inequality in statutory transfers widened in these years. However, Gini Coefficient declined considerably since 1971 (0.1655) till 1988 (0.0145) indicating the tendency towards equality in regional distribution of statutory transfers.

It has been observed that this decline was caused by the creation of the Distributable Pool Account in 1960, and the allocation of its revenue amongst the Regions on principles such as population, equality-of-states, etc, which proved to be more equitable than the derivation principle, which was the only principle of inter-Regional devolution in the earlier period.

TABLE 9.01

INEQUALITY IN REGIONAL REVENUE AND FEDERAL TRANSFERS IN NIGERIA, 1956-88

(GINI COEFFICIENT RESULTS)

Year	Per capita Indep-dent Revenue	Per capita Statu-tory Trans-fers	Per capita Non-distribu-table Pool Account	Per capita Distribu-table Pool Account	PER CAPITA TRANSFERS UNDER THE CRITERION OF				Per capita Federal Grants	Per capita Federal Loans	Per capita Total Trans-fers	Per capita Reve-nue
					Popul-ation	Equality -of-States	School Enrol-ment Ratio	Indepe-ndent Revenue Effort				
1	2	3	3(a)	3(b)	3(b-i)	3(b-ii)	3(b-iii)	3(b-iv)	4	5	6	7
1956	0.0905	0.2517	0.2517	-	-	-	-	-	-	0.6296	0.2411	0.1785
1957	0.3846	0 2347	0.2347	-	-	-	-	-	-	0.6296	0.2547	0.3309
1958	0.1059	0.2500	0.2500	-	-	-	-	-	-	-	0.2500	0.1550
1959	0.1928	0.2584	0.2584	-	-	-	-	-	0.4000	0.6667	0.2086	0.1214
1960	0.1452	0.2006	0.2448	0.1358	-	-	-	-	0.3519	0.4444	0.1705	0.1381
1961	0.2170	0.2013	0.2652	0.1351	-	-	-	-	0.6286	0.6815	0.2627	0.2164
1962	0.1587	0.1673	0.2346	0.1111	-	-	-	-	0.6570	0.6914	0.1745	0.1610
1963	0.2105	0.1638	0.2172	0.1326	-	-	-	-	0.3056	0.1667	0.1747	0.1866
1964	0.1758	0.1387	0.1788	0.1333	-	-	-	-	0.3987	0.0905	0.1517	0.1566
1965	0.1616	0.1276	0.1600	0.1304	-	-	-	-	0.2937	0.1889	0.1517	0.1531
1966	0.1997	0.1443	0.1510	0.1333	-	-	-	-	0.2058	0.3827	0.1494	0.1646
1967	0.1667	0.1408	0.1443	0.1329	-	-	-	-	0.2730	0.2222	0.1609	0.1628
1968	0.4559	0.4613	0.5145	0.3955	-	-	-	-	0.4444	0.7222	0.4652	0.4605
1969	0.5049	0.4674	0.5227	0.4000	-	-	-	-	0.5556	0.3761	0.4538	0.4766
1970	0.4990	0.4071	0.5070	0.3399	0.3333	0.3501	-	-	0.4444	0.3333	0.3997	0.4355
1971	0.0870	0.1655	0.2997	0.0208	0.0029	0 0382	-	-	0.0988	0.0434	0.1446	0.1106
1972	0.0930	0.1218	0.2936	0.0208	0.0034	0.0383	-	-	0.0843	0.0186	0.0756	0.0813
1973	0.1553	0.1192	0.2911	0.0200	0.0021	0 0384	-	-	0 0533	0.0036	0.0542	0.0801
1974	0.1151	0.1513	0.3821	0.0200	0.0026	0.0382	-	-	0 0178	0.0634	0.0739	0.0830
1975	0.1294	0.1718	0.3639	0.0201	0.0029	0 0385	-	-	0 0597	0.0510	0.1038	0.1092
1976	0 1235	0 0816	0.4037	0.0206	0.0028	0.0384	-	-	0.0403	0.0340	0.0432	0 0540
1977	0.1947	0.0575	0.3988	0.0108	0.0025	0 0326	-	-	0.0187	0.0354	0.0400	0.0774
1978	0.3087	0.0665	0.4275	0.0101	0.0026	0.0327	-	-	0 0168	0.0110	0 0434	0.0868
1979	0 2064	0.0447	0.3788	0.0093	0 0023	0 0328	-	-	0 0086	0.0093	0.0269	0.0685
1980	0.1634	0.0451	0.3856	0.0045	0.0025	0 0327	-	-	-	0.0108	0.0426	0.0819
1981	0.1715	0.0133	0.4037	0.0156	0.0025	0.0326	0.0480	0.2626	-	0 0205	0.0132	0.0724
1982	0 2894	0.0336	0.3796	0.0107	0 0015	0 0305	0 0362	0 2230	-	0.0359	0.0338	0 0863
1983	0.1543	0.0307	0.3846	0.0129	0.0019	0 0304	0.0346	0 2702	-	0.0193	0.0295	0.0908
1984	0.2694	0.0274	0.3819	0.0129	0.0022	0 0307	0 0352	0 2802	-	0 0361	0 0279	0.0768
1985	0.2883	0.0225	0 3896	0.0151	0.0027	0 0303	0 0316	0 2945	-	0.0115	0.0192	0 0819
1986	0.2145	0.0138	0.0831	0 0137	0.0032	0 0301	0.0317	0 2743	-	0.0163	0.0137	0.0881
1987	0.1734	0.0219	0.3948	0.0166	0.0036	0 0302	0 0315	0 3060	-	-	0 0219	0.0806
1988	0 1535	0.0145	0.1381	0.0079	0.0043	0.0205	0.0330	0.2799	-	-	0 0145	0.0641

P.T.O.

Table 9.01 (Contd)

Source of data : Tables 7.01, 7.04 to 7.08 and Appendix Table VII
Note : 1. The Gini Coefficient results have been obtained using the formula :

$$G = \frac{1}{2\,N^2X} \sum_{i=1}^{n} \sum_{j=1}^{n} |x_i - x_j|$$

where G = Gini Coefficient
xi,xj = The ith and jth observation of the X variables like per capita independent revenue, per capita transfers, etc.
$\bar{X}$ = The mean of X variables
N = The sample size, i e., number of regions
|xi-xj| = This implies that only the absolute difference of xi and xj observations are considered. That is, the signs (+) or (-) are not taken into consideration.

Thus, for example in 1956, the per capita independent revenue of Eastern, Western and Northern Regions of Nigeria stood at 0.43, 0.65 and 0.54 Naira respectively The mean, therefore, is [.43 + .65 + .54]/3 = $\bar{X}$ = 0.54 Naira. In order to calculate the Gini Coefficient in this year, we first calculate the

$$\sum_{i=1}^{n} \sum_{i=j}^{n} |xi - xj|$$

In this case, we enter the xi's (the per capita total independent revenue) for the three regions vertically, and the same figures are entered as xj's horizontally. Then we deduct the xj's from the xi's When we add the difference horizontally, we get |xi-xj |. And when we add the sum of these differences vertically we get |xi-xj|.

= xi/xj	0.43	0.65	0 54		$\Sigma\|x - xj\|$
0.43	0.00	0.22	0.11	=	0 33
0.65	0.22	0.00	0.11	=	0.33
0.54	0.11	0.11	0.00	=	0.22
			$\Sigma\Sigma$ |xi - xj|	=	0.88

Therefore the Gini Coefficient in this year =

$$G = \frac{1}{2N^2X} \sum_{i=1}^{n} \sum_{j=1}^{n} |x_i - x_j|$$

$$= \frac{1}{2(3)^2\,0.54} \times 0\,08$$

$$= 0.0905$$

2. The blank spaces indicate that transfers were not effected under these pools or mechanics of transfers in these years.

Column 3(a) of table 9.01 presents the Gini Coefficient results for the per capita Non-Distributable Pool component of the statutory transfers. As this pool is devolved on the basis of the single principle of derivation, it is not surprising that the results here reflect relatively high degree of inequality amongst the Regions though with no definite trend. The value of the Gini Coefficient was 0.2517 in 1956 and revolved around it till 1959 (0.2584) after which it declined with fluctuations till 1967, (0.1443), reflecting a tendency towards equality. Between 1968 and 1970, a rise in Gini Coefficient to 0.5145, 0.5227 and 0.5070 respectively indicates widening tendency as in the case of the other two variables examined earlier. Thereafter, the values of Gini Coefficient, though are smaller and fluctuating have remained above the values recorded between 1956 and 1967 (except in 1986 and 1988). This indicates that larger inequalities prevailed in the variable in the period after 1967 than before it, though in 1988 the Gini Coefficient declined greatly to 0.1381 suggesting tendency towards equality.

However, in contrast to the above, it has been observed that the disparity amongst the Regions in their per capita receipts from the second component of the statutory transfers, the Distributable Pool, was quite low. This is depicted in column 3(b) of table 9.01. From here, one notes that from 1960 when this Account was created, upto 1967, the coefficient declined from 0.1358 in 1960 to 0.1329 in 1967 indicating not only negligible imbalance, but a further tendency towards equality. During 1968, 1969 and 1970, the figures rose to 0.3955, 0.4000 and 0.3399 respectively indicating widening of inequalities in Distributable Pool transfers to the Regions. From 1971, the Gini Coefficient declined in value and revolved around 0.0206 till 1976 indicating absence of inequality and a tendency towards narrowing of these inequalities with a further narrowing till 1988 with Gini Coefficient of the value 0.0079.

Thus, the inequalities in per capita federal transfers to the Regions under the Distributable Pool Account were negligible as values of Gini Coefficient was between 0.1358 in 1960 and 0.1329 in 1967 which increased between 1968-70 as Gini Coefficient was 0.3955, 0.4000 and 0.3399 in 1968, 1969 and 1970 respectively. However, a tendency towards equality

during 1971-88 is seen with Gini Coefficient assuming lowest value in 1980 and 1988. It may be noted that during 1960-69, there was no definite formula for the devolution of the Distributable Pool transfers amongst the Regions. On the other hand, during 1971-79 the resources were devolved on the basis of two principles of population and equality-of-state, while during 1980-88, it was devolved on the basis of four-factor formula of population, equality-of-state, Independent Revenue Effort, and School Enrolment Ratio. This, therefore, suggests that the modified formula of horizontal resource devolution, in 1971 and in 1980 has helped in lowering the variations amongst the Regions in per capita Distributable Pool Transfers.

Columns 3(b-i) to 3(b-iv) of the table 9.01 denote that various principles under the Distributable Pool transfers, e.g., Population, Equality-of-State; School. Enrolment Ratio and Independent Revenue Effort reflect similar variations in degree and trend as shown in aggregate Distributable Pool Account. The exception, however, is with respect to the transfers under the Independent Revenue Effort which showed higher degree of inequality. Thus, one finds out from column 3(b-i) that with the exception of the last year of civil war, 1970, the Gini Coefficient in respect to transfers under population criterion was negligible between the range of 0.0015 to 0.0043 recorded in 1982 and 1988 respectively. Here, it has to be pointed out that the very existence of the "negligible" disparity in per capita transfers to the regions under the population criterion is not a welcomed result. This is so because transfers under population criterion are supposed to be "disparity-neutral" as its per capita distribution is expected to vary directly and proportionately across the regions. That is, the per capita transfers to the respective regions under the population criterion is supposed to be the same, and hence, no disparity, and thus, yield a Gini Coefficient of 0.0000 which would show perfect equality. The result here, however, has been obtained consequent upon the fact (as pointed out in chapter 7) that the Nigerian Revenue Allocation Authorities have been adopting the population figures of the old and highly controversial census of 1963 in its resource devolution exercises, assuming implicitly that the population of all the regions (states) had been growing at the same rate. This is not the case, as, the population estimates

of the Nigerian Census Commission show that the population of Western Region grew faster than those of the other Regions. It has thus been discovered that the per capita transfers to the Western Region under the population criterion lagged behind those of the Eastern and the Northern Regions.

Regarding the transfers under the Equality-of-State principle, the Gini Coefficient results are shown in column 3(b-ii) of the table. From here, it is observed that the Gini Coefficient was 0.3501 in 1970 when this principle was introduced, reflecting a slight presence of inequality. It then declined to 0.0382 in 1971 which indicates tendency towards equality. Therafter, it declined with fluctuations to 0.0326 in 1977 and to 0.0205 in 1988, which thereby shows that the per capita transfers under the principle of Equality-of-State moved toward equality during the period. The years 1977, 1982 and 1988 showed significant decline in the value of Gini Coefficient. These were the years when the newly created states were inducted in the revenue allocation system. And since equal number of states were not created in all the respective erstwhile Regions of the East, West and North, it was obvious that their respective per capita receipts from the equality-of-states pool altered in such a manner that all the regions were not affected in the same way. This as pointed out earlier was the case because, this pool is devolved on the basis of equal absolute shares amongst the states.

It may be noted that while in 1977 Imo state was the only "new" state created out of the erstwhile Eastern Region, the Western Region had two additional ones -- Ogun and Ondo, while the former Northern Region had four new states of Niger, Plateau, Gongola and Bauchi. This, therefore, meant that in 1977, the Northern Region, (the poorest) had the highest number of new states participating in revenue devolution and since all the states are entitled to equal absolute share under this principle, it therefore implied that the Northern Region had higher access to the revenue divisible under the equality-of-state principle. Hence, the decline in the Gini Coefficient in 1977. The same reason explains the decline in Gini Coefficient in 1982 when the Federal Capital Territory of Abuja, which is situated in the former Northern Region, was given the status of a state for the purpose of revenue

devolution while no corresponding favour was done to either the Eastern or the Western Regions. And again, while the Eastern and the Northern Regions had their respective New States of Akwa-Ibom and Katsina represented in the 1988, no such favour was done to the Western Region. These results, therefore, show that the reorganization of the states with the poorest Region, (in terms of per capita independent revenue) the North, getting the higher number of states had increased its federal transfers under the Equality-of-State vis-a-vis the Eastern and the Western Regions. And this has brought about narrowing down of the gap between the Regions.

As per the transfers under the School Enrolment Ratio, Column 3 (b-iii) shows that the Gini Coefficient declined in value from 0.0480 in 1981 to 0.0330 in 1988 which indicates almost negligible presence of disparity and a further reduction in disparity in the per capita receipts of the Regions, i.e., a tendency towards perfect equality.

However, the transfers under the Independent Revenue Effort (column 3 (b-iv)) indicates the presence of (and a tendency towards) inequality. With Gini Coefficient at 0.2626 in 1981 which rose with fluctuations to 0.3060 in 1987. However, in 1988, the coefficient declined to 0.2799 which indicates narrowing down of the gap slightly.

VI. INEQUALITY IN PER CAPITA FEDERAL GRANTS AND LOANS TO THE REGIONS OF NIGERIA

The Gini Coefficient results in regards to per capita federal grants and per capita federal loans to the regions are depicted in columns 4 and 5 respectively of Table 9.01. From column 4, it is noted that the value of Gini Coefficient with respect to per capita federal grants stood at around 0.4000 in 1959 indicating some presence of inequality and tremendously increased to 0.6570 in 1962 after declining to 0.3519 in 1960, indicating that inequalities widened during these years. However, thereafter, Gini Coefficient declined with fluctuations to 0.2058 in 1966 indicating tendency towards narrowing of the inequalities. However, its value rose to 0.5556 in 1968 and declined continuously to 0.0178 in 1974 and further to 0.0086 in 1979 (with fluctuations in value). In short, per capita Federal Grants

showed widening of inequalities between 1960-62 and 1968-74, while the period 1962-65 and 1974-79 experienced narrowing down of disparities in per capita Federal Grants. It may be further noted that relatively high values of Gini Coefficient in earlier years indicate not only the existence of inequalities but the increased values also indicate widening the inequalities further. Similarly, the low values of Gini Coefficient indicates a tendency towards equality. It may be noted that during the earlier period, Federal Grants were arbitrarily transferred to the regions whereas during the latter period, from 1971, the two principles of population and equality-of-state were used in the allocation of Federal Grants.

From column 5 of the table, it is noted that the degree of the inequality of the regions in per capita Federal Loans closely followed the pattern of Federal Grants. It is interesting to note from here that the values of Gini Coefficient were quite high between 1956 (0.6296) and 1962 (0.6914) indicating the presence of high degree of inequality and a further widening of it during this period. A sudden fall in the value of Gini Coefficient in 1963 to 0.1667 and to 0.0905 in 1964 reflects tendency towards reduction in inequalities. A rise in its value thereafter and reaching the maximum value of 0.7222 in 1968 indicates reinforcement of tendency towards widening of inequalities during this period. However, a fall in value of Gini Coefficient from 1969 (0.3761) till 1986 (0.0163) shows strong tendency towards equalization. It was in the year 1979 that Gini Coefficient had lowest value of 0.0093, showing a strong tendency towards equality.

Like in the case of Federal Grants, the low degree of inequality in per capita Federal Loans to the Regions after 1970 was made possible by the induction of the two principles of Population and Equality-of-State in the loan distribution amongst the regions (states).

VII. INEQUALITY IN PER CAPITA TOTAL TRANSFERS AND PER CAPITA TOTAL REVENUE OF THE REGIONS OF NIGERIA

The Gini Coefficient results of the disparity in the per capita total transfers to the regions are depicted in column 6 of table 9.01. From here, it is noted that the inequality trends in the per capita total transfers are similar to those of per capita total statutory transfers, Federal Grants and Federal Loans. Thus, the coefficient showed a declining trend

with fluctuations, from 0.2411 in 1956 to 0.1494 in 1966 after which it rose for two years with its value at 0.4652 in 1968. A decline in the value of Gini Coefficient occured continuously after this till 1973 when it was 0.0542. The declining trend continued (with the exception of 1974-75) till 1988 when the Gini Coefficient was 0.0145. In short the results of Gini Coefficient indicate that per capita total transfers showed reduction in inequality between 1956-66, a widening between, 1966-68, followed, again, by narrowing down of inequalities till 1988. This thereby implies that the inequalities in the per capita federal transfers to the regions were highest during the period 1968-70 and lowest in the latter period.

As for the disparity in the per capita total revenue of the regions, column 7 of the table indicates similar trend as observed in respect of the total federal transfers. Thus, the trend shows a decline in the inequality, with fluctuations, from 0.1785 in 1956 to 0.1531 in 1965, followed by a rise and high values of 0.4605, 0.4766 and 0.4355 in 1968, 1969 and 1970 respectively. After 1970, the Gini Coefficient not only declined but remained very low in value reaching 0.0641 in 1988. Thus, inequalities declined between 1956 and 1965, rose and were high between 1968 and 1970, and declined and were very low between 1970 and 1988.

The lower values of Gini Coefficient after 1970 in respect of statutory transfers, total transfers and total revenue were the result of modification of the principles of inter-state resource devolution as pointed out earlier. That is, whereas before 1970 the devolution of federal transfers to the states was mainly based on the one principle of derivation, between 1970 and 1979 these revenues were devolved on the basis of three principles, viz, Derivation, Population and Equality-of-State, and between 1980 and 1988 two additional principle of School Enrolment Ratio and Independent Revenue Effort were introduced. Thus, the multiple and modified principles of resource devolution allowed better participation of the poorer regions (states) in the divisible revenue, enabling the tendency towards equality.

VIII. THE EQUALIZATION IMPACT OF FEDERAL TRANSFERS ON INDEPENDENT REVENUE OF THE REGIONS OF NIGERIA

In order to capture the equalization effect of federal transfers (of each type mentioned above) on the total independent revenue of the regions of Nigeria, the per capita receipts of a specific transfer variable have been added to the per capita total independent

revenue of the regions for each of the years under study, and thereafter, the Gini Coefficient has been calculated. A lower (higher) value of Gini Coefficient than that resulting from the per capita total independent revenue alone of the regions in a particular year implies an equalization (non-equalization) impact of the particular pool of transfers in that year. Thus, whereas the earlier analysis was based on the per capita total independent revenue, and per capita federal transfers under various categories -- separately, in order to ascertain the degree and trend of inequality in those variables, the analysis here is aimed at ascertaining the equalization impact of each of the various categories of federal transfers on the per capita total independent revenue of the regions.

The results of this exercise are presented in table 9.02. Column 2 of this table has been reproduced here from column 2 of table 9.01 to facilitate the comparison and it presents value of Gini Coefficient for Independent Revenue. Column 3 of table 9.02 denotes that the Gini Coefficient results in respect to the per capita total independent revenue plus per capita total statutory transfers were generally lower than those of per capita total independent revenues alone as depicted in column 2, in all the years except in the years 1956, 1958, 1960, 1962, 1968, 1971, 1972, 1974 and 1975. This entails that the per capita total statutory transfers reduced the inequality in per capita total independent revenue of the regions. It is also noted that the Gini Coefficient results for post statutory transfer per capita revenue of the regions which was 0.1850 in 1956 (see column 3), declined to 0.0641 in 1988, showing equalization tendency of statutory transfers on per capita total independent revenue of the regions.

Column 3(a) of the table, however, shows that when the per capita Non-Distributable Pool Account component of the total statutory transfers is added to per capita total independent revenue, it resulted in increased inequality amongst the regions. This is obvious from the fact that with the exception of the years, 1957, 1959, 1961, 1965-67, 1978, 1982, and 1984-88, the Gini Coefficient results in respect to the per capita total independent revenue inclusive of per capita Non-Distributable Pool transfers were higher than the value of Gini Coefficient for the per capita total independent revenue alone, (compare columns 2 and 3(a)).

TABLE 9.02

THE EQUALIZATION IMPACT OF FEDERAL TRANSFERS ON PER CAPITA INDEPENDENT REVENUE OF THE REGIONS OF NIGERIA, 1956-88

(GINI COEFFICIENT RESULTS)

Year	Per Capita Independent Revenue	PER CAPITA INDEPENDENT REVENUE PLUS PER CAPITA TRANSFERS UNDER THE POOL OR CRITERION OF									
		Statutory Transfers	Non-Distributable Pool Account	Distributable Pool Account	Population	Equality-of-State	School Enrolment Ratio	Independent Revenue Effort	Federal Grants	Federal Loans	Total Transfers
1	2	3	3(a)	3(b)	3(b-i)	3(b-ii)	3(b-iii)	3(b-iv)	4	5	6
1956	0 0905	0.1850	0 1850	-	-	-	-	-	-	0 0407	0 1785
1957	0 3846	0 3250	0.3250	-	-	-	-	-	-	0.3924	0.3309
1958	0 1059	0 1550	0 1550	-	-	-	-	-	-	-	0 1550
1959	0.1928	0 1511	0 1511	-	-	-	-	-	0 2262	0 1796	0 1214
1960	0 1452	0 1684	0 1762	0 1401	-	-	-	-	0 1711	0 1020	0 1381
1961	0 2170	0 1560	0 1830	0 1863	-	-	-	-	0 3211	0 1309	0 2164
1962	0 1587	0 1638	0 1959	0 1306	-	-	-	-	0 2178	0 1748	0 1610
1963	0 2105	0.1956	0 2132	0 1553	-	-	-	-	0 2222	0.2009	0 1866
1964	0 1758	0 1524	0 1774	0 1556	-	-	-	-	0 2222	0.1569	0 1566
1965	0 1616	0 1377	0.1591	0 1471	-	-	-	-	0 1849	0 1656	0 1531
1966	0.1997	0.1513	0 1620	0.1637	-	-	-	-	0 1994	0 2222	0 1646
1967	0 1667	0 1508	0 1560	0 1551	-	-	-	-	0 1806	0.1774	0 1628
1968	0 4559	0 4590	0 4769	0 4330	-	-	-	-	0 4511	0 4619	0 4605
1969	0 5049	0.4832	0 5117	0 4707	-	-	-	-	0 4957	0.4917	0.4766
1970	0 4990	0 4429	0.5013	0 4219	0 4328	0 4403	-	-	0 4959	0.4762	0 4355
1971	0 0870	0 1196	0 1567	0 0519	0 0632	0 0576	-	-	0 0797	0 0756	0 1106
1972	0 0930	0 1092	0 1605	0 0564	0 0602	0 0677	-	-	0 0809	0 0578	0 0813
1973	0 1553	0 1344	0 2040	0 0878	0 0968	0 1044	-	-	0 1424	0 0613	0 0801
1974	0 1151	0 1350	0 2016	0 0680	0 0739	0 0810	-	-	0 1080	0 0537	0 0830
1975	0 1294	0 1585	0 2476	0 0623	0 0691	0 0787	-	-	0 0950	0 0580	0.1092
1976	0 1235	0.0836	0 1351	0 0557	0 0617	0 0721	-	-	0 0718	0 0663	0 0540
1977	0 1947	0 1075	0 2063	0 0838	0 0946	0 1066	-	-	0 1376	0 1102	0 0774
1978	0 3087	0 1175	0 1941	0 0944	0 1055	0 1158	-	-	0 1402	0 1218	0 0868
1979	0 2064	0 0998	0 2221	0 0869	0 0991	0 1114	-	-	0 1122	0 1348	0 0685
1980	0 1634	0 0848	0 1816	0 0701	0 0793	0 0915	-	-	-	0 1489	0 0819
1981	0 1715	0 0757	0 1794	0 0682	0 0945	0 1051	0 1528	0 1830	-	0 1523	0 0724
1982	0 2894	0 0892	0 1799	0 0784	0 0948	0 0826	0 1480	0 1724	-	0 1476	0 0863
1983	0 1543	0 0943	0.1618	0 0881	0 1012	0 1026	0 1417	0 1638	-	0 1426	0 0908
1984	0 2694	0 0995	0 2665	0 0925	0 1159	0 1182	0 2177	0 2842	-	0.1319	0 0768
1985	0 2883	0 0997	0 2706	0 0974	0 1215	0 1239	0 2315	0 3051	-	0 1599	0.0819
1986	0.2145	0.0936	0.2031	0 0949	0 1142	0 1162	0 1864	0.2270	-	0 1829	0.0881
1987	0 1734	0.0806	0 1724	0 0773	0 0902	0 0920	0 1503	0 1905	-	-	0.0806
1988	0 1535	0.0641	0 1441	0 0654	0 0810	0 0736	0 1344	0 1684	-	-	0 0641

Source As per Table No. 9 01

Note For details, please see the notes of Table 9 01

This pool which is devolved on the basis of Derivation proved to be predominantly unequalizing. It can therefore, be said that the Derivation principle may not be very appropriate in the devolution of resources in a federation like Nigeria where horizontal inequality is very pronounced. The use of this principle, in that case, would only increase the fiscal gap amongst the federating units which would definitely not be in the best interest of the federal polity. It may be further noted that the value of Gini Coefficient of per capita independent revenue inclusive of per capita Non- Distributable Pool stood at 0.1850 in 1956, increased with fluctuations to 0.5117 in 1969 indicating widening of inequality, and fell to 0.1441 in 1988 denoting tendency towards equality.

Columns 3(b), and 3(b-i) to 3 (b-iii) reveal the Gini Coefficient results when the per capita transfers under the criteria of Population, Equality-of-State and School Enrolment Ratio are respectively added to the per capita total independent revenue of the regions. These columns show that transfers under these criteria showed equalization tendencies in all the years when they were in operation. Thus, a comparison of these respective columns with column 2 of the table reveals that the Gini Coefficient in respect to per capita total independent revenue alone of the regions was higher than those resulting from the addition of the per capita transfers from the respective pools or principles of transfers to the per capita total independent revenue in all the years. Thus, the per capita Distributable Pool Account when added to the per capita Independent Revenue had the effect of reducing the inequality as the value of Gini Coefficient for it remained lower than what it is for per capita Independent Revenue alone in case of each of the years, (compare column 2 with column 3(b)). Similarly, addition of per capita transfers under the criteria of Population Equality-of-State, and School Enrolment Ratio brought the coefficient below that of per capita independent revenue alone for each of the years. The trend in the value of Gini Coefficient of per capita Independent Revenue inclusive of transfers under each of these criteria followed the pattern of Distributable Pool Account.

However, per capita transfers under Independent Revenue Effort inclusive of per capita independent revenue recorded values of Gini Coefficient (column 3(b-iv) which were

above that of independent revenue alone for the years, 1981-88 (with the exception of 198: when it was below it), when it was in operation, and thus reveal tendency towards increase(disparity. The above given analysis leads us to say that an efficiency-based principle o resource devolution, i.e., the devolution criteria that encourage the revenue-raising capacit: of the regions, like the independent revenue effort, is generally regressive by nature an(hence unequalising in the fiscal disparity of the federating units. This is in conformity witl the general view in federal finance.

After the addition of per capita federal grants to the per capita independent revenue the Gini Coefficient results turn out to be higher in value than before the addition, betweer 1959-67 (with the exception of 1966) indicating unequalizing nature of the transfers However, federal grants, reduced the degree of the inter-regional disparity in all the year: after 1967 as the Gini Coefficient turned out to be lower than it was for per capit: Indenendent Revenue alone for the period 1968-79. It may be recalled that during 1968-7: period the grants were devolved on the basis of the principles of population an(equality-of-states. which proved to be highly equalizing. During the earlier period, however the allocation of the federal grants did not follow any definite principle, hence, it led tc increased inequality.

As for the Federal Loans, a comparison of columns 2 and 5 of the table reveals that these transfers predominantly showed equlalization tendencies. This is especially so during the period, 1968-1986. During the years 1956-68, the values of Gini Coefficient of per capita Independent Revenue inclusive of per capita federal loans were lower than those in respect of the per capita independent revenue alone in all the years with the exceptions of 1957, 1962 and 1965-68. Nevertheless, during the period 1969-86, the coefficient was lower in all the years. The above results thereby show that federal loans proved to be effective mechanism of reducing the disparity of the states inter se in their revenues. This is especially so between 1969 and 1986. The Gini Coefficient results obtained after the addition of the per capita aggregate transfers to the per capita independent revenue (column 6) were lower than those of the per capita independent revenue alone (column 2) in all the years with the exception of 1956,1958 and 1962, 1968 and 1971. This thereby shows the effectiveness of the

per capita aggregate transfers in correcting the imbalance in per capita independent revenue of the regions inter se.

The general picture that emerges from the above analysis, therefore, is that federal transfers in Nigeria have proved to be effective in the reduction of inter- Regional disparity in per capita independent revenue. This has been made particularly possible with the creation of the Distributable Pool Account in 1960, and the induction of the principles of population, and Equality-of-State, in 1970 for the allocation of the same.

Having observed the equalization or unequalization impacts of the various categories of federal transfers on the per capita independent revenue of the regions, it suffices the need to examine the actual and percentage reduction in inequality due to these transfers. The actual reduction in inequality has been estimated by deducting the Gini Coefficient of per capita independent revenue inclusive of per capita federal transfers under a specified pool, like statutory transfers, federal grants etc, from the Gini Coefficient result of per capita independent revenue alone in the respective years. That is to say that :

$$Gr = K - h$$

Where: Gr = the actual reduction or increase in inequality (Gini Coefficient) of the independent revenue due to a specified method of federal transfers.

K = the Gini Coefficient result of per capita independent revenue alone (column 2 of table 9.02).

h = the Gini Coefficient result of per capita independent revenue inclusive of the per capita federal transfers under the respective methods of transfers.

Positive value of Gr implies reduction in inequality while a negative Gr implies an increase in inequality. In order to express the decline or increase in inequality (Gr) in relative terms for purpose of comparison it is shown as a percentage of inequality in total independent revenue (K), we divide Gr by K and multiply it by hundred. That is :

$$\%\,Gr = \frac{K - h}{K} \times 100$$

(Please see note of Table 9.03 for details.)

The above calculations have been done in order to ascertain the trend of reduction in inequality of a particular federal transfer mechanism as well as the effectiveness of a particular pool of federal transfer vis-a- vis the others.

Table 9.03 shows the percentage change in inequality of per capita independent revenue of the regions by the respective channels of federal transfers, during 1956-88. From columns 2 of this table it is noticed that the aggregate statutory transfers increased the degree of inequality of the revenue of the regions in 1956, 1958, 1960, 1962, 1968, 1971-72 and 1974-75, as reflected from negative values of % Gr from where it declined with fluctuations in 1975. On the other hand, the percentage reduction in inequality due to statutory transfers stood at 15.50% in 1957 from where it rose (with fluctuations) to 58.24% in 1988, which thereby showed the increased equalization tendency of statutory transfers over the years. It is also interesting to note that between 1976 and 1988, the percentage reduction in inequality was comparatively high as it ranged from 32.31% in 1976 to 69.18% in 1982.

Column 2(a) of the table, however, shows the erratic behaviour of the impact of the Non-Distributable Pool transfers on the independent revenue of the regions, although it increased the disparity in most of the years. Thus, while it increased the inequality by 104.42% in 1956, it reduced it by 15.50% in 1957, and increased it again by 46.36% in 1958, and the trend went on like that till 1988 when it reduced the inequality by 6.12%. It has to be pointed out, however, that during the period 1968-1983, the Non-distributable Pool transfers increased the disparity in all the years except, 1978 and 1982 - and the maximum percentage increase in inequality during these years reached 91.34% in 1975. In contrast to the above, however, column 2(b) of the table indicates a tremendous impact of the Distributable Pool Account on the reduction of inequality in per capita Independent Revenue of the regions. Thus, we note that the percentage reduction stood at 3.51% in 1960 (when the Account was created). Thereafter the percentage reduction rose with fluctuation to 15.45% in 1970 before shooting to 57.39% (with fluctuations) in 1988. It reached a peak of 72.91% in 1982. It is interesting to note that the percentage reduction in inequality was above 40% between 1973 and 1988.

TABLE 9.03

PERCENTAGE REDUCTION IN INEQUALITY OF PER CAPITA INDEPENDENT REVENUE OF THE REGIONS BY VARIOUS CATEGORIES OF FEDERAL TRANSFERS, IN NIGERIA, 1956-88

Year	Statutory Transfers	REDUCTION IN INEQUALITY DUE TO THE POOL OR CRITERION OF .								
		Non-Distributable Pool Account	Distributable Pool Account	Population	Equality-of-State	School Enrolment Ratio	Independent Revenue Effort	Federal Grants	Federal Loans	Total Transfers
1	2	2(a)	2(b)	2(b-i)	2(b-ii)	2(b-iii)	2(b-iv)	3	4	5
1956	-104.4199	-104.4199	-	-	-	-	-	-	55 0276	-97 2376
1957	15 4966	15.4966	-	-	-	-	-	-	-2.0281	13.9626
1958	-46 3645	-46 3645	-	-	-	-	-	-	-	-46 3645
1959	21 6286	21 6286	-	-	-	-	-	-17.3237	6 8465	37 0332
1960	-15 9780	-21.3499	3 5124	-	-	-	-	-17.8375	29.7521	4.8898
1961	28.1106	15.6682	14.1475	-	-	-	-	-47.9724	39 6774	0 2765
1962	-3.2136	-23.4405	17 7064	-	-	-	-	-37 2401	-10 1449	-1 4493
1963	7 0784	-1.2827	26.2233	-	-	-	-	-5 5582	4.5606	11 3539
1964	13 3106	-0 9101	11 4903	-	-	-	-	-26 3936	10 7509	10 9215
1965	14 7896	1 5470	8 9728	-	-	-	-	-14 4183	-2 4752	5 2599
1966	24 2364	18 8783	18 0270	-	-	-	-	0 1502	-11 2669	17 5764
1967	9 5381	6 4187	6 9586	-	-	-	-	-8 3383	-6 4187	2 3395
1968	-0 6800	-4 6063	5 0230	-	-	-	-	1 0529	-1 3161	-1 0090
1969	4 2979	-1 3468	6.7736	-	-	-	-	1 8221	2 6144	5 6051
1970	11 2425	-0 4609	15 4509	13 2665	11 7635	-	-	0 6212	4 5691	12 7255
1971	-37.4713	-80 1149	40 3448	27 3563	33 7931	-	-	8 3908	13 1034	-27 1264
1972	-17 4194	-72 5806	39 3548	35 2688	27 2043	-	-	13 0108	37 8495	12 5806
1973	13 4578	-31.3587	43 4643	37 7950	32 7753	-	-	8 3065	60 5280	48 4224
1974	-17 2893	-75 1520	40 9209	35 7950	29 6264	-	-	6 1685	53 3449	27 8888
1975	-22 4884	-91 3447	51 8547	46 5997	39 1808	-	-	26 5842	55 3449	15 6105
1976	32 3077	-9.3927	54 8988	50 0405	41 6194	-	-	41 8623	46 3158	56 2753
1977	44 7869	-5.9579	56 9594	51 4124	45 2491	-	-	29 3272	43 4001	60 2465
1978	61 9372	37 1234	69 4201	65 8244	62 4879	-	-	54 5837	60 5442	71 8821
1979	51.6473	-7 6066	57 8973	51 8643	46 0271	-	-	45 6395	34 6899	66 8120
1980	48 1028	-11 1383	57 0991	51 4688	44 0024	-	-	-	8 8739	49 8776
1981	55.8601	-4 6064	60 2332	44 8980	38 7172	10 9038	-6 7055	-	11 1953	57 7843
1982	69 1776	37 8369	72 9095	67 2426	71 4582	48 8597	40 4285	-	48 9979	70 1797
1983	38 8853	-4 8607	42 9034	34 4135	33 5062	8 1659	-6 1568	-	7 5826	41 1536
1984	63 0661	1.0765	65 6644	56 9785	56 1247	19 1908	-5 4937	-	51 0393	71 4922
1985	65.4180	6.1394	66.2157	57 8564	57 0239	19 7017	-5 8273	-	44 5369	71 5921
1986	56 3636	5.3147	55.7576	46 7599	45 8275	13 1002	-5 8275	-	14 7319	58 9277
1987	53.5179	0.5767	55.4210	47.9815	46 9435	13.3218	-9 8616	-	-	53 5179
1988	58 2410	6.1238	57 3941	47 2313	51 9218	12 4430	-9 7068	-	-	58 2410

Source Table 9.02

Note :

1. Percentage reduction in inequality has been calculated with the formula -

$$\%\,Gr = \frac{k - h}{k} \times 100$$

Where

% Gr = the percentage reduction or increase in inequality (Gini Coefficient) of the independent revenue due to a specific method of Federal Transfers.

k = the Gini Coefficient result of per capita independent revenue alone (column 2 of table 9.02)

h = the Gini Coefficient result of per capita independent revenue inclusive of federal transfers under the respective pools of transfers.

2. A value of %Gr which is positive, implies reduction in inequality while a negative %Gr implies an increase in inequality.

For an illustration, in 1956, for instance, k = 0 0905 (see column 2 of table 9 02), and h = 0 1850 (see column 3 of the same table) Hence, percentage reduction in inequality =

$$\%\,Gr = \frac{k - h}{k} \times 100 = \frac{0\,0905 - 0\,1850}{0\,0905} \times 100$$

$$= \frac{0\,0945}{0\,0905} \times 100 = -104\,42\%$$

Thus, in 1956, the total statutory transfers increased the regional inequality in per capita independent revenue by 104 42%

From column 2(b-i) we note that transfers under the population criterion reduced the inequality in revenue of the regions by 13.27% in 1970 and 47.23% in 1988, reaching the peak of 67.24% in 1982. It is noted here that the percentage reduction after 1970 was much higher than the 1970 figure which thereby shows an increased effectiveness of population criteria in the reduction of the inequality in the regional revenue. Transfers under the Equality-of-State criterion also followed the trend of the transfers under population criterion. Thus, from column 2(b-ii) of the table one notes that the percentage reduction in inequality of the revenue due to Equality-of-State transfers stood at 11.76% in 1970 and 51.92% in 1988, reaching the peak of 71.46% in 1983. Thus principles of Population and Equality-of-State used to devolve the Distributable Pool Account showed high percentage reduction in inequality in per capita Independent Revenue to regions just like the aggregate Distributable Pool. The percentage reduction in inequality of the revenues due to transfers under School Enrolment Ratio was a bit less. It stood at 10.90% in 1981 (when it was created), and at 48.86% in 1982 reflecting a greater impact of this principle in mitigating the inter-regional inequalities in revenues. It then declined to its lowest value of 8.17% in 1983 before rising with fluctuations to 12.44% in 1988, (see column 2(b- iii)). In a sharp contrast, however, transfers under the independent revenue effort increased the inequality by -6.71% in 1981 which increased with fluctuations to -9.71% in 1988.

From column 3 of the table it is noted the Federal Grants increased the disparity of the regions in per capita independent revenue by -17.32% in 1959, by -8.34% in 1967, after reaching a peak of -47.97% in 1961, and reducing the inequality by 0.15% in 1966. Thereafter, this transfer mechanism reduced inequality in the remaining years. The percentage reduction which stood at 1.05% in 1968 jumped (with fluctuations) to 45.64% in 1979 when the grants were last awarded, after reaching a peak of 54.58% in 1978. As for the federal loans, column 4 of the table shows that it caused a decline in the per capita independent revenue of the regions upto the tune of 55.03% in 1956 which declined with fluctuations to 14.73% in 1986. (When the loans were last made). It had reached a peak of

60.54% in 1978. It however increased the inequaliy by -2.03% in 1957, -10.14% in 1962, -2.48% in 1965, -11.27% in 1966, -6.42% in 1967, and -1.32% in 1968.

An examination of column 5 of the table also reveals that the aggregate transfers were quite effective in reducing the gap amongst the regions in the per capita total independent revenue. Thus, although it increased the inequality by -97.24%, -46.36%, -1.45%, -1.01% and -27.13% in 1956, 1958, 1962, 1968 and 1971 respectively, it caused a decline in the inequality by 13.96% in 1957 and by 58.24% in 1988, after reaching a peak of 71.88% in 1978.

From the above analysis, it is, therefore, observed that the aggregate statutory transfers played the pivotal role in the reduction of the imbalance amongst the regions in their independent revenue. This was followed by federal loans, with federal grants playing the least role. We also observe that of the two components of statutory transfers, i.e., Non-Distributable Pool and Distributable Pool, the latter caused relatively larger reductions in the inequality while the former increased it. And, again, of the four principles used in allocating the Distributable Pool, i.e., Population, and Equality-of-States, played the crucial role in reducing the inequality while the role of School Enrolment Ratio was less. The Independent Revenue Effort intensified the disparity instead. Hence, it is deduced that statutory transfers has been playing the major role of inter-Regional fiscal equalization in Nigeria.

IX. INTER-STATE INEQUALITY IN THE REVENUE VARIABLES, 1968-88.

In this section, attempt has been made to analyse the fiscal imbalance of the federating unit of Nigeria on state lines. The period of analysis here is 1968-79, and 1980-88 when Nigeria was constituted by twelve and nineteen states respectively.

IX.1. INEQUALITY IN PER CAPITA INDEPENDENT REVENUE OF THE STATES OF NIGERIA

Tables 9.04(A) and 9.04(B) show the inequality amongst the states in per capita revenue variables for the period, 1968-79, and 1980-88 respectively. From column 2 of table

9.04(A) it is observed that the Gini Coefficient in respect to per capita independent revenues assumed the value of 0.5039 in 1968 indicating existence of high inequality and it rose continuously to 0.6592 in 1970 which thereby reflects an increase in inequality during these years. It declined to 0.3346 in 1971 reflecting a decline in inequality. Thereafter, it increased with fluctuations to 0.4067 in 1979 which shows that during this period, the inequality in per capita total independent revenue of the twelve states increased. The value of Gini Coefficient which stood at 0.6296 and 0.6592 in 1969 and 1970 respectively indicates that the gap amongst the twelve states in per capita Independent Revenue was widest during these two years as these were the highest coefficients recorded.

However, column 2 of table 9.04(B) indicates that the Gini Coefficient value stood at 0.4653 in 1980 which declined continuously to 0.3547 in 1983, implying a reduction in the inequality in per capita Independent Revenue of the ninteen states of Nigeria during these years. Thereafter it rose to 0.4562 in 1984 and reached a peak of 0.5072 in 1985 which reflects increase in inequality. Thereafter it declined with fluctuations to 0.3213 in 1988 implying a decline in the inequality of the nineteeen states in their per capita total independent revenue.

IX.2. INEQUALITY IN PER CAPITA STATUTORY TRANSFERS TO THE STATES OF NIGERIA

The Gini Coefficient results for the per capita total statutory transfers to the states are depicted in column 3 of tables 9.04(A) and 9.04(B) respectively. From here, it is also observed that the disparity amongst the states was high. However, column 3 of table 9.04(A) shows that the Gini Coefficient which assumed the value of 0.5316 in 1968 declined with fluctuations to 0.2204 in 1979 after reaching a peak of 0.5715 in 1969. This thereby shows a narrowing down of the gap in the per capita Independent Revenue of the states due to statutory transfers during this period. It is also interestingly noted that apart from the year 1969, the coefficients recorded in all other years were lower than that in 1968 which reflects the equalization tendency of these obligatory transfers. It is further noted from column 3 of table 9.04(B) that the Gini Coefficient which assumed the value of 0.2016 in 1980 declined

sharply (with fluctuations) to 0.1355 in 1988 which thereby indicates that the gap amongst the states narrowed down considerably during this period. Interestingly, also, we note that the coefficient value in all the other years were lower than the 1980 value.

Nevertheless, column 3(a) of the respective tables show that the disparity amongst the states in their per capita receipts was highest in the Non-Distributable Pool component of the total statutory transfers. This is reflected by the Gini Coefficient which assumed a very high value of 0.6626 in 1968, reflecting existence of high inequalities and then rose with fluctuation to the peak of 0.8097 in 1975 which thereby showed a tendency towards increase in inequality during these years. Thereafter, it declined to 0.6040 in 1979. indicating fall in inequality during these years. However, we note that apart from the years 1970-73, 1976 and 1979 the Gini Coefficient values recorded in other years were higher than the 1968 value, which implies increased disparity during these years.

As we see from column 3 (a) of table 9.04 (B), the inequality in the Non-Distributable pool transfers was even higher during 1980-88. Thus, the Gini Coefficient assumed the value of 0.9016 in 1980 implying a very high degree of inequality, and then it rose with slight fluctuations to 0.9029 in 1983 before declining marginally (with fluctuations) to 0.8242 in 1988, which thereby shows negligible narrowing down of the gap amongst the states. It is interesting, however, to note that the lowest Gini Coefficient recorded during this period was as high as 0.7710, in 1986 -- and this value itself shows a high degree of inequality.

With regards to the second component of the aggregate statutory transfers, i.e., the Distributable Pool Account, column 3(b) of the table not only shows that the disparity amongst the states is quite low in this Pool, but also, that it showed declining tendency over the periods. Thus, the Gini Coefficient which assumed the value of 0.4493 in 1968 declined with fluctuations (but remained below the 1968 figure) to 0.0965 in 1979, reflecting a strong equalization tendency of the Distributable Pool transfers during this period. Similarly, the Gini Coefficient of this Pool which stood at a very low value of 0.1391 in 1980 declined to 0.1224 in 1988, which indicates not only negligible inequality amongst the states but a

TABLE 9.04(A)
INEQUALITY IN STATES' REVENUE AND FEDERAL TRANSFERS IN NIGERIA, 1968-79
(GINI COEFFICIENT RESULTS)

Year	Per Capita Indepen-dent Revenue	Per Capita Statutory Transfers	Per Capita Non-Distributa ble Pool Account	Per Capita Distribut-able Pool Account	TRANSFERS PER CAPITA UNDER THE CRITERION OF		Per Capita Federal Grants	Per Capita Federal Loans	Per Capita Total Transfers	Per Capita Total Revenue
					Popula-tion	Equality-of- States				
1	2	3	3(a)	3(b)	3(b-i)	3(b-ii)	4	5	6	7
1968	0 5039	0.5316	0 6626	0 4493	-	-	0 7153	0.8571	0 5442	0 5082
1969	0 6296	0 5715	0 6897	0 4470	-	-	0 7824	0.5014	0 5420	0 5777
1970	0 6592	0 4181	0 5238	0 3901	0 3567	0 5010	0 9306	0.5606	0.4277	0 5062
1971	0 3346	0 3130	0 4854	0 1891	0 0083	0 3294	0.2260	0.2418	0 2958	0 2838
1972	0 3901	0 2907	0 5247	0 1897	0 0105	0 3272	0.2014	0 2955	0.2594	0 2859
1973	0 3840	0 3143	0 6114	0 1887	0 0160	0 3270	0 1715	0 2862	0 2782	0 2932
1974	0 3342	0 4097	0 7582	0 1873	0 0127	0 3242	0 1688	0.2980	0 3421	0 3244
1975	0.2825	0.4825	0 8097	0 1865	0 0149	0.3272	0.1554	0 3351	0.3921	0.3579
1976	0.3290	0 3222	0.6472	0 1858	0 0158	0.3221	0.1624	0.2716	0.2119	0 2607
1977	0 3913	0.2471	0.7849	0 0990	0.0170	0.1936	0.1244	0.2061	0.2061	0 2249
1978	0.3843	0.2342	0.6742	0.0978	0.0181	0.1923	0.1029	0.1015	0.1783	0.2165
1979	0.4067	0.2204	0.6040	0.0965	0 0193	0 1912	0 0974	0 0966	0 1658	0 2016

Source : Calculated on the basis of data presented in Tables 8.01(A), 8.04(A) to 8.08 (A) and in Appendix Table VIII.01.

Note : 1. The blank spaces indicate that these methods of Federal Transfers have not been inducted in these years.

2. For details of estimation of Gini Coefficient, please see notes of Table 9.01.

TABLE 9.04(B)
INEQUALITY IN STATES REVENUES AND FEDERAL TRANSFERS IN NIGERIA, 1980-88
(GINI COEFFICIENT RESULTS)

Year	Per Capita Indepen-dent Revenue	Per Capita Statutory Transfers	Per Capita Non-Distribut-able Pool Account	Per Capita Distribu-table Pool Account	PER CAPITA TRANSFERS UNDER THE CRITERION OF				Per Capita Federal Loans	Per Capita Total Trans-fers	Per Capita Total Revenue
					Popula-tion	Equal-ity-of-State	School Enrol-ment Ratio	Indepe ndent Reve-nue Effort			
1	2	3	3(a)	3(b)	3(b-i)	3(b-ii)	3(b-iii)	3(b-iv)	4	5	6
1980	0 4653	0 2016	0 9016	0 1391	0 0071	0 2491	-	-	0 1428	0.1967	0 2661
1981	0.4036	0.1794	0.8916	0.1495	0 0190	0 2396	0 1968	0 5072	0 1519	0 1753	0.2138
1982	0.3900	0.1628	0.8678	0.1370	0 0146	0 2398	0.1842	0.5234	0.1767	0.1616	0 2054
1983	0.3547	0.1750	0.9029	0 1389	0 0144	0 2396	0 1851	0 5098	0.1549	0.1717	0.2269
1984	0.4562	0.1696	0.8916	0.1370	0 0149	0 2395	0.1840	0.4585	0.1779	0.1691	0 2027
1985	0 5072	0 1529	0 8162	0 1370	0 0145	0 2395	0 1815	0 4911	0 1758	0 1577	0 2138
1986	0 3571	0 1406	0 7710	0.1351	0 0192	0 2378	0 1797	0 4524	0 1651	0.1426	0 2026
1987	0.4117	0 1505	0 8158	0.1330	0 0160	0 2392	0 1829	0 4534	-	0.1505	0 2259
1988	0.3213	0 1355	0 8242	0 1224	0 0163	0 2242	0 1817	0 4491	-	0 1355	0.1908

Source : Calculated on the basis of data presented in Table 8.01(B), 8.04(B) to 8.08(B) and in Appendix Table VIII.02.

Note : Please refer to notes for table 9.04 (A).

tendency towards narrowing down of the gap amongst them. We also note that apart from 1981 when the Gini Coefficient was slightly high at 0.1495, its value in the remaining years was less than the 1980 figure. It may be noted that the more pronounced decline in 1977-79 could be attributed to the reorganisation of the federation into nineteen states in 1976[5], whereas the data studied here are for the twelve states in existence by 1976 as these three years are close to the end of the period of the study. This is also the case in 1988 when the value of Gini Coefficient is lower. In that year the states had been reorganised into twenty one. But the data given here are with respect to the nineteen states in existence by 1987.

As for the transfers under population criterion, the degree of inequality in 1970 was quite high and became negligible by 1979. The value of the coefficient was 0.3567 in 1970 from where it declined with fluctuatioins to 0.0193 in 1979, (see column 3(b-i) of table 0.04(A)) indicating a tendency towards equality in per capita transfers amongst states. Similarly for the period 1980-88, the coefficient was very low in value indicating absence of inequality, which rose from 0.0071 in 1980 to 0.0163 in 1988 after reaching the peak of 0.0192 in 1986; (see column 3(b-i) of table 9.04(B)). Thus, during the period, 1968-79, the gap amongst the states declined while during 1980-88, the gap amongst the states in per capita transfers under population criterion increased indicating slight widening of inequality though its degree was negligible. However, column 3(b-ii) of the respective table shows that inequality amongst the states in per capita transfers under the Equality-of-States criterion was high. Nevertheless, the Gini Coefficient which assumed the value of 0.5010 in 1970 reflects high degree of inequality which declined to 0.1912 in 1979 with some fluctuations indicating a fall in inequality in this variable. Similarly, it declined from 0.2491 in 1980 to 0.2242 in 1980. The fall in the value of the Gini Coefficients reflects that during these periods, the transfer under this principle showed tendency towards equalization.

As for the transfers under School Enrolment Ratio, the Coefficient which stood quite low at 0.1968 in 1981 (when it was introduced) indicating negligible inequalities declined

5. For details see section III.1 of chapter two dealing with "Universe of Study" under Methodology.

marginally to 0.1817 in 1988, (see column (b-iii) of table 9.04(B). This thereby shows narrowing down of the gap in transfers to the states under this Account. In the case of transfers under Independent Revenue Effort, column (b-iv) of table 9.04(B)), the degree of disparity was quite high with the coefficient standing at 0.5072 in 1981 (when it was introduced), then it rose to 0.5234 in 1982 implying increase in inequality. However, it declined marginally thereafter to 0.4491 in 1988 reflecting a reduction in the gap amongst the states in their per capita federal transfer under this pool.

IX.3. INEQUALITY IN PER CAPITA FEDERAL GRANTS AND PER CAPITA FEDERAL LOANS TO THE STATES OF NIGERIA

The Gini Coefficient results for the per capita federal grants to the Nigerian states during 1968-79 is depicted in column 4 of table 8.04(A). It is observed that the Gini Coefficient assumed very high value of 0.7153 in 1968 which rose to 0.7824 in 1969, and further to 0.9306 in 1970, thereby showing the presence of very high degree of inequality and an increase in the disparity among states during these years. The Coefficient declined to 0.2260 in 1971 and further declined continuously (except in 1976) to 0.0974 in 1979 reflecting a drastic reduction in the variations amongst the states in their per capita receipt of Federal Grants, i.e., a strong tendency towards equalization in inter-state per capita receipts of Federal Grants in Nigeria.

Column 5 of table 9.04(A), also indicates that although the degree of inequality in per capita federal loans was slightly high, there was a drastic reduction in it during 1968-79. Thus, the Gini Coefficient which assumed the value of 0.8571 in 1968 declined rapidly with fluctuations (but below the 1968 value) to 0.0966 in 1979 which thereby implies narrowing down of gap amongst the per capita Federal Loans to Nigerian states. However, column 4 of table 9.04(B) indicates that during 1980-86 the inequality in the per capita federal loans to the states increased. Hence, the coefficient which stood at, as low as 0.1428 in 1980, indicating neglegible presence of inequality, rose with fluctuations to 0.1651 in 1986 after reaching a peak of 0.1779 in 1984. This reflects that during these years the gap amongst the states in their per capita federal loans widened, although the degree of inequality was negligible.

IX.4. INEQUALITY IN PER CAPITA TOTAL TRANSFERS AND PER CAPITA TOTAL REVENUE OF THE STATES OF NIGERIA

Coming to the disparity in the per capita total transfers to the states, we observe from column 6 of Table 9.04(A) that although the Gini Coefficient results were a bit high -- which reflect a high disparity in the per capita total transfers to the states during 1968-79, these values declined substantially over time. Thus, the Coefficient which assumed the value of 0.5442 in 1968 declined with fluctuations to 0.1658 in 1979. We also note that the Coefficient in the other years was lower than the 1968 value. Hence, a reasonable narrowing down of the inter-state gap was recorded during this period. Similarly, column 5 of Table 9.04(B) shows that Gini Coefficient of the total transfers during 1980-88 remained at low values indicating neglegible presence of inter-state inequality and it declined from 0.1967 in 1980 to 0.1355 in 1988 which reveals a narrowing down of the neglegible gap in the total federal transfers to the states during this period.

As regards the total revenue, the coefficient which assumed quite high value of 0.5082 in 1968 declined (with fluctuations) to 0.2016 in 1979 after reaching the peak of 0.5777 in 1969, (see column 7 of table 9.04(A)). This shows high degree of inequality in early years and a narrowing down of it in the per capita total revenue of the states during 1968-79. Similarly, the gap amongst the states in their per capita total revenue was substantially reduced during 1980- 88. Thus, the coefficient which assumed quite low value of 0.2661 in 1980 (less inequality) declined with fluctuations (but remained below the 1980 value) to 0.1908 in 1988, indicating reduction in existing negligible inequalities amongst the states in per capita Total Revenue.

Now, a general inference that can be drawn from the above analysis is that although the inequality amongst the states in their per capita total independent revenue and per capita federal transfers existed during the periods, it was highest during the three years of the civil war, i.e., 1968-70, and, over the years, various transfers variables showed a tendency of reducing the disparity.

Another clear inference that can be drawn from the analysis is that the values of Gini Coefficient (inequality) obtained in all the years, and all the variablels with respect to our state-wise analysis, were higher than those obtained in all the years and for all the variables with respect to the region-wise analysis, (compare table 9.04(A) and 9.04(B) with table 9.01) i.e., values of Gini Coefficient were higher in the case of states than in case of regions. This finding here supports the observations of Fisher and Navin[6] - who using Coefficient of Variation (CV) - discovered that when states are grouped into regions, the degree of disparity in the variables is reduced.

X. THE EQUALIZATION IMPACT OF FEDERAL TRANSFERS ON THE PER CAPITA TOTAL INDEPENDENT REVENUE OF THE STATES OF NIGERIA

In order to ascertain the equalization tendency of the various categories of federal transfers, we have followed the same approach as in the case of regional analysis. That is, the per capita transfers to the respective states under the various mechanisms have been added to their respective per capita total independent revenues. Thereafter, the Gini Coefficients have been calculated. And a comparison is made between the Gini Coefficient of per capita independent revenue alone with the Gini Coefficient of per capita independent revenue inclusive of the per capita transfers under the various categories. If the value of the latter is lower than the former, it implies equalization tendency of the particular transfer mechanism, and vice versa[7].

The results obtained from this exercise are presented in tables 9.05(A) and 9.05(B) for the periods 1968-79 and 1980-88 respectively. When we compare column 3 (which gives value of Gini Coefficient for post-transfers independent revenue) with column 2 (which gives Gini Coefficient for Pretransfers Independent Revenue) of table 9.05(A), it is noted that except for the three years, 1968, and 1974-75, the Gini Coefficients of per capita total independent revenue inclusive of per capita total statutory transfers (column 3) was lower

6. Fisher, R.C. and Navin, J. "State-Local Fiscal Behaviour;Analysis of Inter-Jurisdictional Differences, 1962-87", in Public Finance Quarterly, Vol.20 No.4 October 1992, pp. 443-449.

7. For details see section VIII of this chapter.

than that of per capita independent revenue alone in all the remaining years. This thereby indicates that in all these years, the aggregate statutory transfers showed strong equalization tendency on the independent revenue of the states. It increased the inequality only in the three years noted above. It is also noted that value of Gini Coefficient in the per capita total independent revenue inclusive of per capita total statutory transfers declined from 0.5069 in 1968 to 0.2583 in 1979 with fluctuations inbetween. This also shows that over the years there was tendency towards equalization. A comparison of columns 2 and 3 of table 9.05(B) (like that of Table 9.05A) shows that in all the years, during 1980-88, the Gini Coefficient of per capita independent revenue inclusive of per capita total statutory transfers was lower than that resulting from per capita total independent revenue alone. This thereby reflects strong tendency of equalization by the statutory transfers during these years. The Gini Coefficient which stood at 0.2720 in 1980 fell to 0.1908 in 1988 implying equalization tendency of the same over the years.

However, when we add the per capita Non-Distributable Pool component of the statutory transfers to the per capita total independent revenue, it is observed that the Gini Coefficient resulting from it was higher than those obtained with respect to the per capita total independent revenue alone in all the years with the exception of 1970-72 during the period 1968-79, and 1988, during the period 1980-88, (compare column 3(a) with 2 in tables 9.05(A) and 9.05(B)) respectively. This result therefore shows that the transfers under the Non- Distributable Pool Account increased the inequality amongst the states in most of the years. This result is not surprising as observed earlier, because this Pool is devolved on the basis of Derivation which generally favoured the richer states. We may also note that during 1968--79, the Gini Coefficeient of independent revenue inclusive of Non- Distributable Pool transfers declined from 0.5471 in 1968 to 0.4277 in 1979 reflecting an increased equalizing tendency of these transfers. It also declined from 0.4953 in 1980 to 0.3163 in 1988 showing a tendency towards equalization.

TABLE 9.05(A)

THE EQUALIZATION IMPACT OF FEDERAL TRANSFERS ON PER CAPITA INDEPENDENT REVENUE OF THE STATES OF NIGERIA, 1968-79

(GINI COEFFICIENT RESULTS)

Year	Per Capita Independent Revenue	PER CAPITA INDEPENDENT REVENUE PLUS PER CAPITA TRANSFERS UNDER THE POOL OR CRITERION OF							
		Statutory Transfers	Non Distributable Pool Account	Distributable Pool Account	Population	Equality-of-States	Federal Grants	Federal Loans	Total Transfers
1	2	3	3(a)	3(b)	3(b-i)	3(b-ii)	4	5	6
1968	0.5039	0.5069	0.5471	0 4474	-	-	0.5013	0.5238	0.5082
1969	0.6296	0.5923	0 6461	0 5542	-	-	0.6221	0 5991	0.5777
1970	0 6592	0.4591	0.5937	0 5218	0 5523	0.5891	0.6580	0.6219	0 5062
1971	0.3346	0 2913	0.3322	0 2799	0 2812	0.3251	0.3263	0.3225	0.2838
1972	0 3901	0.2978	0 3605	0 3060	0 3028	0 3692	0 3746	0 3445	0.2859
1973	0 3840	0.3185	0.4023	0 2941	0 3033	0.3622	0.3692	0.3169	0 2932
1974	0 3342	0.3547	0.4507	0.2611	0.2517	0.3202	0.3236	0.2991	0.3244
1975	0.2825	0 4139	0.5562	0.2193	0 1833	0.2885	0.2276	0.2794	0.3579
1976	0.3290	0.3096	0.4232	0 2379	0 2063	0.3162	0 2403	0 2782	0.2607
1977	0.3913	0.2630	0.4530	0 2120	0 2389	0 2821	0 2894	0.2732	0.2249
1978	0 3843	0.2713	0.4319	0 2193	0 2574	0 2904	0 2963	0 2655	0.2165
1979	0.4067	0.2583	0.4277	0 2157	0 2486	0.2984	0.2560	0.2925	0 2016

Source . Same as per table 9.04(A).

Note : 1. The blank spaces indicate that these methods of Federal Transfers has not been inducted in these years.

2. The difference between this table and 9.04(A) is that in the latter case, the Gini Coefficient was with respect to the respective variables alone whereas in this table 9.05(A), the Gini Coefficient in column 3 to 6 is with respect to the respective channels of Federal Transfers inclusive of total independent revenue.

TABLE 9.05(B)

THE EQUALIZATION IMPACT OF FEDERAL TRANSFERS ON PER CAPITA INDEPENDENT REVENUE OF THE STATES OF NIGERIA, 1980-88

(GINI COEFFICIENT RESULTS)

Year	Per Capita Independent Revenue	PER CAPITA INDEPENDENT REVENUE PLUS PER CAPITA TRANSFERS UNDER THE POOL OR CRITERION OF								
		Statutory Transfers	Non-Distributable Pool Account	Distributable Pool Account	Population	Equality-of-State	School Enrollment Ratio	Independent Revenue Effort	Federal Loans	Total Transfers
1	2	3	3(a)	3(b)	3(b-i)	3(b-ii)	4	5	6	7
1980	0 4653	0 2720	0 4953	0 2497	0 2818	0 3394	-	-	0 3568	0 2661
1981	0 4036	0 2190	0.4110	0 2089	0 2544	0 2812	0 3309	0 4095	0 3583	0 2138
1982	0 3900	0 2106	0 3904	0 2042	0 2541	0 2756	0 3246	0.3962	0.3430	0 2054
1983	0 3547	0 2335	0 3765	0 2182	0 2606	0 2783	0 3178	0 3600	0.3274	0 2269
1984	0 4562	0 2224	0 4937	0 2020	0 2336	0 2948	0 3619	0 4617	0 2633	0 2027
1985	0 5072	0 2324	0.5179	0 2216	0 2578	0 3255	0 3986	0 5031	0.3109	0 2138
1986	0 3571	0 2074	0.3590	0 2147	0 2222	0 2825	0 3132	0 3623	0 3147	0 2026
1987	0 4117	0 2259	0 4169	0 2188	0 2556	0 3051	0 3567	0 4064	-	0 2259
1988	0 3213	0 1908	0 3163	0 1894	0 1953	0 2592	0 2869	0 3196	-	0 1908

Source : Same as per table 9.04(B)

Note · Please refer to notes of Table 9.05 (A) for details

Nevertheless, a comparison of column 3(b) with column 2 of the Tables reveals that the transfers under the Distributable Pool Account showed strong equalization tendency in all the years during the two periods. Thus, the Gini Coefficient of per capita total independent revenue inclusive of per capita Distributable Pool transfers was lower than that of per capita total independent revenue alone in all the years. The trend also showed a declining tendency during these periods. Hence, a fall in the Gini Coefficient from 0.4474 in 1968 to 0.2157 in 1979, and from 0.2497 in 1980 to 0.1894 in 1988 (see column 3(b) of the tables).

The equalization tendency and the trend of transfers under the criterion of population, Equality-of-State (except in 1975) and School Enrolment Ratio was also similar to that of the Distributable Pool Account, (see columns 3(b-i) and 3(b-ii) in table 9.05(A), and 3(b-i) to 3(b-iii) in table 9.05(B)). This was also the case with respect to Federal Grants, Federal Loans (except in 1968) and Total Transfers (except in 1968), (see column 4 to 10 of the tables). Thus, apart from a few exceptions noted above, all these channels of transfers showed strong equalization tendency on the per capita independent revenue of the states. However, column 3(b-iv) of table 9.05(B) indicates that except for the three years, 1985, and 1987-88, transfers under the Independent Revenue Effort proved to be unequalizing. This is so because the Gini Coefficient of per capita total independent revenue inclusive of per capita transfers under this criterion was higher in all the years (except for the three years noted above) than that resulting from per capita total independent revenue alone; (compare column 3(b-iv) with column 2 in table 9.05(B)).

From the above, it could, therefore, be deduced that (with the exception of transfers under the Non-Distributable Pool Account and Independent Revenue Effort), the transfers under all the channels showed strong equalization tendency on the per capita Total Independent Revenue of the states during the periods studied.

Having examined the equalization (or unequalization) tendencies of the various categories of federal transfers, it suffices the need to examine its magnitude. The percentage

reduction or increase in inequality of per capita total independent revenue of the states by various categories of federal transfers during the periods 1968-79, and 1980-88 is shown in table 9.06(A) and 9.06(B) respectively.[8]

From column 2 of table 9.06(A) it is observed that while the total statutory transfers increased the inequality by -0.60% in 1968, by -6.13% in 1974 and by -46.51% in 1975 (as stated earlier, the negative figures indicate increase in inequality) it reduced it by 5.92% in 1969 and by 36.491% in 1979 (positive figures imply reduction in inequality) which thereby shows that over the years the equalization impact of total statutory transfers increased. In 1980, the reduction in ineqaulity due to total statutory transfers stood at 41.54% from where it increased with fluctuations to the peak of 54.18% in 1985 and declined to 40.62% in 1988. Thus, while the statutory transfers were very effective in the reduction of inequality during this period, its influence declined marginally between 1980 and 1988; (see column 2 of table 9.06(B). However, column 2(a) of the tables shows that the Non-Distributable Pool caused a decline in inequality by 9.94% in 1970, 0.10% in 1971 and by 7.59% in 1972. However, a tendency of this Account to widen inequalities is observed in latter period as it shows negative figures. It has also been observed that the percentage increase in inequality due to the Non-Distributable Pool stood at -6.45% in 1980 and at - 1.26% in 1987, after reaching the peak of -8.22% in 1984. This thereby indicates that over these years though the inequalities were increased the influence of the Non-Distributable Pool in increasing the disparity amongst the states declined. Infact by 1988, this Account reduced the disparity by 1.56%.

Column 2(b) of table 9.06(A), reveals that the equalization impact of the Distributable Pool Account increased over the years, as the percentage reduction in inequalities of 11.21% in 1968 rose with fluctuations to 46.96% in 1979. However, during 1980-88, the percentage reduction in inequality dropped with fluctuations, from 46.34% in 1980 to 41.05% in 1988 after touching a peak of 56.31% in 1985, (see column 2(b) of table 9.06(B)). As for transfers under population criterion, while the percentage reduction increased from 16.22% in 1970 (when it was introduced) to 38.87% in 1979 during 1968-79,

8. See section VIII (pp.292) or Note of Table 9.03 for method of calculation).

TABLE 9.06(A)
PERCENTAGE REDUCTION IN INEQUALITY OF PER CAPITA INDEPENDENT REVENUE OF THE TWELVE STATES OF NIGERIA BY VARIOUS CATEGORIES OF FEDERAL TRANSFERS, 1968-79

Year	REDUCTION IN INEQUALITY DUE TO THE POOL OR CRITERION OF							
	Statutory Transfers	Non-Distributable Pool Account	Distributable Pool Account	Population	Equality-of-States	Federal Grants	Federal Loans	Total Transfers
1	2	2(a)	2(b)	2(b-i)	2(b-ii)	3	4	5
1968	-0.5954	-8 5731	11 2125	-	-	0 5160	-3 9492	-0 8533
1969	5.9244	-2 6207	11 9759	-	-	1 1912	4 8443	8.2433
1970	30 3550	9 9363	20.8434	16 2166	10 6341	0 1820	5.6584	23.2100
1971	12 9408	0 7173	16 3479	15 9594	2 8392	2 4806	3 6163	15 1823
1972	23 6606	7 5878	21 5586	22 3789	5 3576	3 9733	11 6893	26 7111
1973	17 0573	-4.7656	23 4115	21 0156	5 6771	3 8542	17.4770	23 6458
1974	-6 1341	-34 8594	21 8731	24 6858	4 1891	3 1718	10 5027	2 9324
1975	-46 5133	-96.8850	22 3717	35 1150	-2 1239	19 4336	1.0973	-26.6903
1976	5 8967	-28 6322	27 6900	37 2948	3 8906	26.9605	15 4407	20 7599
1977	32 7881	-15.7680	45 8216	38 9471	27 9070	26 0414	30 1814	42 5249
1978	29 4041	-12 3862	42.9352	33 0211	24 3560	22.8988	30 9133	43 6639
1979	36.4888	-5.1635	46.9634	38 8739	26 6290	37.0543	28.0797	50 4303

Source : Calculated from table 9.05 (A) as illustrated in table 9.03.
Note : Please see notes of Table 9.05(A)

TABLE 9.06(B)
PERCENTAGE REDUCTION IN INEQUALITY OF PER CAPITA INDEPENDENT REVENUE OF THE NINETEEN STATES OF NIGERIA BY VARIOUS CATEGORIES OF FEDERAL TRANSFERS, 1980-88

Year	REDUCTION IN INEQUALITY DUE TO THE POOL OR CRITERION OF								
	Statutory Transfers	Non-Distributable Pool Account	Distributable Pool Account	Population	Equality-of-State	School Enrolment Ratio	Independent Revenue Effort	Federal Loans	Total Transfers
1	2	2(a)	2(b)	2(b-i)	2(b-ii)	2(b-iii)	2(b-iv)	3	4
1980	41 5431	-6.4475	46 3357	39 4369	27 0578	-	-	23 3183	42 8111
1981	45 7384	-1 8335	48 2408	36 9673	30 3271	18 0129	-1 4618	11 2240	47 0268
1982	46 0000	-0 1026	47 6410	34 8462	29 3333	16 7692	-1 5897	12.0513	47 3333
1983	34 1697	-6 1460	38 4832	26 5295	21 5393	10 4032	-1.4942	7 6966	36 0304
1984	51 2495	-8 2201	55 7212	48 7944	35 3792	20.6708	-1.2056	42.2841	55 5677
1985	54 1798	-2 1096	56 3091	49 1719	35 8241	21 4117	0.8084	38.7027	57 8470
1986	41 9210	-0 5321	39 8768	37 7765	20 8905	12 2935	-1 4562	11 8734	43 2652
1987	45 1299	-1 2631	46 8545	37 9160	25 8926	13 3592	1.2873	-	45 1299
1988	40 6162	1 5562	41 0520	39 2157	19 3277	10 7065	0 5291	-	40 6162

Source : Calculated from table 9.05(B) as illustrated in table 9.03.
Note Please see notes on Table 9.05(B).

it declined marginally (with fluctuations) from 39.44% in 1980 to 39.22% in 1988 after reaching a peak of 49.17% in 1985, see columns 2(b-i) in tables 9.06(A) and 9.06(B). Thus, while the equalization impact of the population transfers increased in the earlier period, it declined in the latter period. Similar impact and trend are observed with regards to transfers under the Equality-of-State criterion as the percentage reduction in inequality was 10.63% in 1970, and 26.63% in 1979. In 1980 it was 27.06% which declined to 19.33% in 1988, during 1980-88, (see columns 2(b-ii) in the tables). It may also be noted that transfers under this principle increased the inequality by -2.12% in 1975. Regarding the transfers under the School Enrolment Ratio, the percentage reduction was slightly lower at 18.01% in 1981 when it was introduced. It then declined with fluctuations to 10.71% in 1988 after reaching the peak of 21.41% in 1985. Thus, like in the other variables examined earlier, the equalization impact of transfers under School Enrolment Ratio became less substantial over the years during 1980-88, although it reached its peak in 1985, (see column 2(b-iii) in table 9.06(B)). However, column 2(b-iv) of the table indicates that although transfers under the Independent Revenue Effort increased the inequality of the states in per capita independent revenue, the percentage increase was not high. It stood at -1.46% in 1981, and declined to -1.21% in 1984 from where it rose back to -1.46% in 1986. It is however, interestingly noted that this transfer mechanism reduced the disparities by 0.81% in 1985, 1.29% in 1987 and 0.53% in 1988.

Coming to the Federal Grant, it has been noted from column 3 of table 9.06(A) that the influence of this channel of transfer increased tremendously over the years. Thus, whereas the percentage reduction was 0.52% in 1968, it rose with slight fluctuations to 3.17% in 1974, and then jumped to 19.43% in 1975. From there it rose to 37.05% in 1979. This thereby reflects an increased impact of the Federal Grants in the reduction of the disparity in the independent revenue of the states. The Federal Loans, also gained importance over the years in its role in bridging the gap amongst the states. Thus, whereas it increased the disparity by -3.95% in 1968, it reduced it by 4.84% in 1969 which rose with fluctuations to 28.08% in 1979, during the period 1968-79, see column 4 of table 9.06(A). However, during

the period, 1980-86, the percentage reduction in inequality remained a bit high, although it declined from 23.32% in 1980 to 11.87% in 1986 after reaching the peak of 42.28% in 1984; see column 3 of table 9.06(B). Hence, during this period, the equalization impact of the federal loans declined in influence.

Column 5 of table 8.06(A) and column 4 of table 8.06(B) carry the combined impact of the total transfers on the per capita independent revenue of the states. From here it has been observed that the total transfers like most of its components assumed an increased equalization tendency between 1968 and 1979. We, therefore, note that whereas it increased the disparity by -0.85% in 1968, it reduced it by 8.24% in 1969 which rose with fluctuations to 50.43% in 1979 (after increasing the disparity again by -26.69% in 1975). However, the percentage reduction in inequality fell from 42.81% in 1980 to 40.62% in 1988 after reaching a peak of 57.85% in 1985, see column 4 of table 9.06(B). The decline in the percentage reduction during 1980-88 indicates that during this period, the equalization impact of the federal transfers was reduced although it remained comparatively high.

An inference that could be drawn from the above -- as had been noted earlier -- is that the enlargment of the resource base of the Distributable Pool Account in 1980 (at the cost the Non-Distributalbe Pool) has proved to be a good omen for the inter-state resource devolution in Nigeria. This is so because this action has brought about a more equitable distribution amongst the states. Another interesting observation is that the magnitude of reduction in inequality (for almost all the variables) was higher during 1980-88 than during 1968-79.

XI. INEQUALITY AMONGST THE REGIONS OF NIGERIA IN PER CAPITA EXPENDITURE ON SOCIO-ECONOMIC SERVICES

In this section of the study, attempts have been made to examine the variations in the per capita expenditure on socio-economic services offered by Nigerian Regions. The Gini Coefficient method as applied earlier has been adopted. Thus, table 9.07 presents the Gini Coefficient results for inequality in per capita expenditure of the regions on socio-economic services.

An overview of this table shows that the per capita expenditure of the regions on socio-economic services showed high variations. This is true for all the variables -- General Administration, Health Services, Other Social Services, Economic Services, and Total Expenditure. This was especially so during 1956-79 and comparatively low for the remaining period, i.e., 1980-88.

Column 2 of the table reveals that the level of inequality in General Administration was quite low. The Gini Coefficient with respect to General Administration assumed the value of 0.1871 in 1956 which increased to 0.3016 in 1957, reflecting widening of gap in the per capita expenditure of the regions in General Administration. Thereafter, the Coefficient declined (with fluctuations) to 0.0661 in 1988 after reaching the peak of 0.3929 in 1970. Hence, over the years the gap in the per capita expenditure of the regions in General Administration narrowed down considerably. It would be interesting to note that apart from the three years 1968-70 when the inequality was high, i.e., the Gini Coefficient was high in these years -- the degree of inequality was lower in the remaining years than in 1957, as the Gini Coefficients in these years were below the 1957 value.

The degree and trend of the inequality as observed above was to a great extent similar with respect to per capita expenditure on : Health Services (column 3), Other Social Services, (column 4), Economic Services, (column 5), and Total Expenditure, (column 6). This thereby connotes that not only was the disparity in per capita expenditure on these services low, it showed a tendency towards equalization during the period under study.

XII. INEQUALITY AMONGST THE STATES IN PER CAPITA EXPENDITURE ON SOCIO-ECONOMIC SERVICES

The variations in the per capita expenditure of the twelve states during 1968-79, and of the nineteen states during 1980-88, on these socio-economic services are presented in Tables 9.07(A) and 9.07(B) respectively through the Gini Coefficient results of the per capita expenditure of the states on these variables.

TABLE 9.07

INEQUALITY AMONGST THE NIGERIAN REGIONS IN PER CAPITA EXPENDITURE ON SOCIO-ECONOMIC SERVICES, 1956-88

(GINI COEFFICIENT RESULTS)

Year	General Administration	Health Services	Other Social Services	Economic Services	Total Expenditure
1	2	3	4	5	6
1956	0.1871	0.1313	0 1667	0.1917	0.2022
1957	0.3016	0.2079	0 4198	0.2127	0.2182
1958	0.2626	0.0178	0 1759	0.2107	0.1538
1959	0.2989	0.1353	0 2456	0.1134	0.1848
1960	0.2222	0.0978	0 3525	0.1900	0.2163
1961	0.1197	0.1508	0.3333	0.2249	0.2297
1962	0.0324	0.1004	0 3243	0.2026	0.1829
1963	0.2029	0.0996	0 2020	0.1951	0.1632
1964	0.1648	0.1235	0 0711	0.2435	0.1645
1965	0.2066	0.0645	0 1975	0.1902	0.1367
1966	0.1896	0.1021	0.2222	0.1632	0.1424
1967	0.2171	0.1192	0 2978	0.2018	0.1668
1968	0.3631	0.4127	0.5278	0.4040	0.4292
1969	0.3667	0.4753	0.5556	0.4356	0.4519
1970	0.3929	0.2103	0 5714	0.4586	0.4473
1971	0.1366	0.2255	0 3932	0.1935	0.1758
1972	0.1381	0.2080	0.2889	0.1569	0.1464
1973	0.1259	0.2098	0.1975	0.1151	0.1364
1974	0.1047	0.1841	0 1880	0.1320	0.1161
1975	0.1345	0.2233	0 1414	0.1520	0.1457
1976	0.1104	0.2549	0.2222	0.1532	0.1055
1977	0.1440	0.1299	0 2674	0.1850	0.0899
1978	0.1489	0.1684	0 2320	0.1598	0.0962
1979	0.1461	0.1883	0.1868	0.1238	0.1058
1980	0.1153	0.1203	0.0897	0.0528	0.0995
1981	0.0908	0.0693	0 1128	0.0723	0.0720
1982	0.0735	0.0789	0 0288	0.0286	0.0515
1983	0.0644	0.0830	0.0621	0.0698	0.0810
1984	0.0686	0.1042	0 0926	0.0982	0.1003
1985	0.0723	0.2320	0.0833	0.1572	0.1122
1986	0.0837	0.1166	0 0533	0.1572	0.1096
1987	0.0730	0.0749	0.0078	0.0790	0.0911
1988	0.0661	0.0779	0 0406	0.0427	0.0561

Source of Data : Federal Office of Statistics, Lagos, and National Census Comission, Lagos.

Note : 1 Other Social Services include Community Development and Rural Sanitation Programmes.

2. For method of estimation of Gini Coefficient, please see notes of Table 9.01.

Column 2 of these tables shows that during 1968-79, the Gini Coefficient in respect to General Administration which assumed the value of 0.4371 in 1968 declined to 0.1425 in 1979 after reaching a peak of 0.4875 in 1969 which thereby implies that not only were disparities in per capita expenditure of states quite high, but there was a tendency towards a reduction of inequality over this period. However, it is noted that apart from 1969 and 1975 the value of Gini Coefficient in the other years was lower than the 1968 figure which means that the gap amongst the states in their per capita expenditure in General Administration was narrowed considerably over the years. On the other hand, during 1980-88, the coefficient which assumed the value of 0.2894 in 1980 declined to 0.1965 in 1988 implying quite low level of disparity amongst the states, having further equalization tendencies in the per capita expenditure on General Administration during this period. It is also interestingly noted that the value of the coefficient recorded in all the years was below the 1980 figure. As for Health Services, the coefficient declined (with fluctuations) from 0.5633 in 1968 to 0.1625 in 1979 during 1968-79, and from 0.2653 in 1980 to 0.1605 in 1988, during 1980-88, (see column 3 of the tables). The decline for Other Social Services was from 0.5602 to 0.1061, and from 0.3200 to 0.1700 during the two periods respectively, (see column 4). Similarly, the Gini Coefficient for Economic Services declined with fluctuations from 0.4298 to 0.0862 between 1968 and 1979, and from 0.2802 to 0.1677 between 1980 and 1988. The coefficient also showed a decline with respect to the Total Expenditure : from 0.3522 to 0.0952 during 1968-79 and from 0.2726 to 0.1591 during 1980-88. These values of Gini Coefficient indicate that degree of inequality in per capita expenditure on each of these variables was very high during 1968-79 and declined tremendously during latter period, i.e., 1980-88.

In short the degree and the equalization tendencies of these variable were similar during the respective periods. Nevertheless, the degree of the inequality was high in all the variables although the same seemed highest with respect to Other Social Services. As has been noted, the narrowing down of the variations in the gap amongst the states in the noted variables was high duriing 1980-88. A possible explanation for this could be the narrowing down of the disparity amongst the states in their per capita aggregate revenues.

TABLE 9.08 (A)
INEQUALITY AMONGST THE NIGERIAN STATES IN PER CAPITA EXPENDITURE ON SOCIO-ECONOMIC SERVICES,1968-79
(GINI COEFFICIENT RESULTS)

Year	General Administration	Health Services	Other Social Services	Economic Services	Total Expenditure
1	2	3	4	5	6
1968	0.4371	0 5633	0 5602	0.4298	0.3522
1969	0.4875	0 6446	0 5608	0.5039	0.3989
1970	0.4121	0.5537	0.6240	0.4892	0.3698
1971	0.2666	0.4054	0 7365	0 3640	0.3135
1972	0.3215	0.4611	0 4590	0.3279	0.3061
1973	0.3540	0 4604	0 3590	0.3164	0.3039
1974	0.3484	0 4260	0 3409	0.3219	0.3198
1975	0.4768	0 5045	0 3719	0.4616	0.3510
1976	0.3959	0.6071	0 4674	0.3759	0.2978
1977	0.3857	0.4725	0 5051	0.3568	0.2708
1978	0.3682	0.4074	0 3358	0.2869	0.2405
1979	0.1425	0.1625	0 1061	0.0862	0.0952

Source : Please refer to Table 9.07
Note · See notes of Table 9.07.

TABLE 9.08 (B)
INEQUALITY AMONGST THE NIGERIAN STATES IN PER CAPITA EXPENDITURE ON SOCIO-ECONOMIC SERVICES, 1980-88
(GINI COEFFICIENT RESULTS)

Year	General Administration	Health Services	Other Social Services	Economic Services	Total Expenditure
1	2	3	4	5	6
1980	0.2894	0.2653	0.3200	0.2802	0.2726
1981	0.2395	0.2217	0.2959	0.2278	0.2221
1982	0.2075	0.1877	0.2192	0.1774	0.1742
1983	0.2215	0.2299	0.2520	0.1965	0.1913
1984	0.1913	0.2261	0.2384	0.2245	0.2034
1985	0.1925	0.2317	0 2232	0.2657	0.2415
1986	0.1930	0.2393	0.2437	0 2506	0.2079
1987	0.2040	0.1787	0.1981	0.2504	0.1985
1988	0.1965	0.1605	0.1700	0.1677	0.1591

Source : Please refer to Table 9 07
Note See notes of Table 9.07

XIII. THE DETERMINANTS OF THE INEQUALITY IN THE REGIONAL PER CAPITA EXPENDITURE ON SOCIO-ECONOMIC SERVICES

In this section, attempts have been made to examine the causes of the regional disparity in the per capita provision of socio-economic services as reflected by per capita expenditure of the respective regions in these services. The socio-economic services chosen are : General Administration, Health Services, Other Social Services (which includes Community Development, Rural Sanitation etc.), and Economic Services. We have excluded other variables such as, expenditure on Education, Housing etc, as comprehensive data on these for all the regions were not available.

The inequality index of per capita Independent Revenue, and the inequality index[9] of the respective categories of federal transfers (per capita) have been used as the explanatory variables, while the inequality index of the per capita expenditure on the respective public services are the explained variables. This approach has been followed because (as we have seen in the earlier chapters) the theory and practice of Fiscal Federalism show that there is a strong relationship between the level of public services provided by the federating units in a federation and the quantum of resources they are able to generate. Hence, variations in the fiscal capacity of the regions or states (as reflected by their independent revenue) are likely to cause variations in their expenditures on public services. Since the independent revenues of the federating units are augumented by the federal transfers, the variations in the per capita federal transfers may also cause variations in the per capita expenditure of the regions on public services. Hence, we try to examine :

(a) Whether or not the variations (rise or fall) in the per capita Independent Revenue of the regions explain the variations in the per capita regional expenditure on General Administration, Health Services, Other Social Services, and Economic Services.

(b) Whether or not the variations (rise or fall) in the per capita regional Total Transfers (or any of its components i.e., Statutory Transfers, Federal Grants and Federal Loans) from the Centre explain the disparity in the per capita expenditure of the regions on General Administration, Health Services, Other Social Services, and Economic Services.

9. The Gini Coefficient Values have been used for this purpose.

The methodology followed by us is based on that of Chelliah R.J. et al[10], and Rao R. Sudarsana[11]. Thus, a simple linear multiple regression equation as follows has been followed :

$$Y = B_0 + B_1X_1 + B_2X_2 + U$$

Where : Y = inequality index[12] of per capita expenditure of the regions in General Administration, Health Services, Other Social Services and Economic Services respectively for the period 1956-88.

X_1 = inequality index of per capita Independent Revenue of the regions (T_1Ri) for the period 1956-88.

X_2 = inequality index of the respective categories of per capita federal transfers such as per capita aggregate transfers, (TT_i), per capita Statutory Transfers ($TOSTT_i$), per capita Federal Grants (FG_i), per capita Federal Loans (FL_i) etc, for the period 1956-88[13].

B_o, B_1 and B_2 = Parameters to be estimated

U = Stochastic error term.

In the above model, B_0 indicates the intercept. That is the level of Y when X_1 and X_2 are both equal to zero. On the other hand B_1 and B_2 show the variations in Y as a result of one percentage point variation in X_1 and X_2. While the T- statistics has been used to test the significance of the estimated parameters, the F-Ratio has been adopted to verify the goodness of fit of the entire model -- that is, to test the coefficient of determination R^2 of the regression equation.

The regression results of the determinants of the inter-regional variations in the index of per capita expenditure on public services are depicted in table 9.09.

XIII.1. DETERMINANTS OF INEQUALITY IN THE REGIONAL EXPENDITURE ON GENERAL ADMINISTRATION

Equations 1 to 5 of table 9.09 show the determinants of the regional inequalities in per capita expenditure on General Administration. From here it is revealed that the simple

10. Chelliah R.J; et al. op.cit. pp. 65-70.
11. Rao, R. Sudarsana, Op.Cit. pp. 215-222.
12. See note 9.
13. For Federal Grants and Federal Loans the period is 1956-79 and 1956-86 respectively as these were the periods when these Fiscal Transfers methods were in use in Nigeria.

linear multiple regression model has proved to be a good fit - with high values of $\overline{R}^2$, the coefficient of determination which are statistically significant at 1% level in all these equations. The $\overline{R}^2$, assumed the values 0.7378, 0.7725, 0.5245, 0.4362, and 0.7843 for equations 1,2,3,4 and 5 respectively which implies that the extent of 44% to 78% variations in the index of disparity in per capita Expenditure of the Regions in General Administration are caused by the variations in the index of disparity in per capita Independent Revenue (X_1) and each the disparity indices of the various categories of federal transfers, e.g., Total Transfers, Total Statutory Transfers, Federal Grants, Federal Loans and Distributable Pool Account Transfers (i.e., X_2 for each of the equations, 1,2,3,4 and 5 respectively). It is observed from the table that B_1, the coefficient of X_1 (inequality index of per capita Independent Revenue) though is positive in case of each of these equations, it is statistically significant in case of equation 3 and 4 only, with values equal to 0.567 and 0.411 respectively, implying that one percentage point increase in the index of disparity in per capita Independent Revenue caused 0.567 and 0.411 percentage point increase in the index of disparity in per capita expenditure on General Administration respectively. This variable, i.e., per capita Independent Revenue, X_1 has been found to be statistically non-significant for equations 1,2 and 5.

As far as variable X_2 is concerned, it is observed from table 9.09 that except the disparity index of per capita Federal Grants (equation 3), X_2 has proved to be statistically significant where the values of B_2 (the coefficient of X_2) are is positive as expected and assumes values equal to 0.584 (equation 1), 0.602 (equation 2), 0.133 (equation 4), and 0.696 (equation 5). This indicates that a one percentage point increase in the inequality index of each of TT, TOSTT, FL and DPA caused 0.584, 0.602, 0.133 and 0.696 percentage point increase respectively in the disparity index of per capita expenditure of the regions on General Administration (GA). As regards the index of per capita Federal Grants, it is not only found to be statistically non-significant but its coefficient, B_2, assumes negative value, -0.024, which is contrary to our expectation and hence needs further examination.

TABLE 9.09
THE DETERMINANTS OF INTER-REGIONAL INEQUALITY IN PER CAPITA EXPENDITURE ON SOCIO-ECONOMIC SERVICES IN NIGERIA, 1956-88, REGRESSION RESULTS.

Equation No.	Dependent Variable	B_0	B_1	B_2	$\bar{R}^2$	DW	F.Ratio	Degree of Freedom
1	2	3	4	5	7	8	9	10
1.	GA_i =	0.0590 (3.1980)*	+0.1227TIRi (1.2800)	+0.5836 TTi (6.9664)*	0 7378	1.2404@@	46 0265*	30
2.	GA_i =	0.0448 (2.5982)**	+0.1502 TIRi (1.7442)	+0.6020 TOSTTi (7.7793)*	0 7725	1.3197@@	55.3417*	30
3	GA_i =	0.0818 (3.1123)**	+0.5669TIRi (4.9105)*	-0.0236 FGt (-0.3549)	0 5245		33.6728*	21
4.	GA_i =	0.0509 (1.8766)	+0.4107TIRi (3.3979)*	+0.1333FLt (2 5535)**	0.4362	0.9501@@	13.3803*	28
5.	GA_i =	0.0860 (4.3564)*	+0.0294TIRi (0.2636)	+0.6959DPAi (6.5243)*	0.7843		51.9078*	26
6.	HS_i =	0.0539 (1.8609)	+0.3500TIRi (2.3293)**	+0.2189TTi (1.6667)	0.3517	1.2354@@	9.6790*	30
7	HS_i =	0.0468 (1.7043)	+0.3044TIRi (2 2212)**	+0.3188TOSTTi (2.5896)**	0.4211	1 3349@@	12.6366*	30
8.	HS_i =	0.0755 (2.2204)**	+0.5322TIRi (3.5620)*	-0.0516FGt (-0 6000)	0.3345		6.7797*	21
9.	HS_i =	0.0518 (1.7136)	+0.4776TIRi (3.5461)*	-0 0246FLt (0 4224)	0 2958	1.1824@@	7.7217*	28
10.	HS_i =	0.0836 (2.2864)**	+0.2382TIRi (1.1508)	+0.3305DPAi (1.6723)	0.3349		8.0500*	26
11.	OSS_i =	0.0678 (2.0251)	+0.1617TIRi (0.9301)	0.8875TTi (5.8418)*	0 6552	1.1812@@	31.4044*	30
12	OSS_i =	0.0461 (1.4481)	+0.2019TIRi (1.2695)	+0.9183TOSTTi (6.4259)*	0 6899	1 4147@	36.5894*	30
13.	OSS_i =	0.1055 (2.9655)*	+0.7181TIRi (4.5952)*	+0.1121FGt (1.2471)	0.5725		16.3984*	21
14.	OSS_i =	0.0525 (1.2680)	+0.5425TIRi (2.9408)*	+0.2772FLt (3.4781)*	0 4748	0.7193@@	15.4632*	28
15.	OSS_i =	0.1625 (3.6085)*	-0.2234TIRi (-0.8765)	+1.2336DPAi (5.0674)*	0.6078		22.6984*	26
16.	ES_i =	0.0541 (3.1565)*	+0.1819TIRi (2.0433)**	+0.6040TTi (7.7624)*	0 7949	1.2669@@	63.0250*	30
17	ES_i =	0.03998 (2.2823)*	+0.2282TIRi (2.6095)*	+0 5936TOSTTi (7.554)*	0 7875	1.4384@	60.2840*	30
18.	ES_i =	0.0731 (3.4071)*	+0.5218TIRi (5.5358)*	0 1126FGt (2 0763)	0 6899		38.5384*	21
19.	ES_i =	0.0463 (1.6898)	+0.4905TIRi (4.0218)*	+0.1242FLt (2.3576)**	0.4795	1.2873@@	15.7400*	28
20	ES_i =	0 0970 (4.7250)*	+0.0381TIRi (0.3279)	+0 8143DPAi (7.3359)*	0 8229		66.0478*	26

Table 9 09 (Contd.)

Source of Data : Tables 9.01 and 9.07

Note :

(1) Regression Equation; $Y = B_0 + B_1x_1 + B_2x_2 + U$

Where

Y = Inequality index in per capita expenditure on General Administration, Health Services, Other Social Services and Economic Services respectively for the period 1956-88

x_1 = Inequality index of per capita independent revenue of the Regions for the period 1956-88.

x_2 = Inequality index of the respective categories of per capita federal transfers - Total Transfers, Total Statutory Transfers, Federal Grants, Federal Loans and Distributable Pool Transfers, for the period 1956-88.

B_0, B_1, B_2 = Parameters to be estimated

U = Stochastic Error Term

(2) Figures in brackets denote T-Statistic

(3) *,**, denote the 1% and 5% levels of significance respectively.

(4) @, denotes "Not significance for autocorrelation at 1% level.

(5) @@, implies test inconclusive for autocorrelation at any level.

(6) GA_i = Inequality index of per capita expenditure on General Administration
HS_i = Inequality index of per capita expenditure on Health Services
OSS_i = Inequality index of per capita expenditure on Other Social Services
ES_i = Inequality index of per capita expenditure on Economic Services
TIR_i = Inequality index of per capita Total Independent Revenue
TT_i = Inequality index of per capita Total Transfers
$TOSTT_i$ = Inequality index of per capita Total Statutory Transfers
FG_i = Inequality index of per capita Federal Grants
FL_i = Inequality index of per capita Federal Loans
DPA_i = Inequality index of per capita Distributable Pool Transfers

(7) T-Statistic has been applied on B_0, B_1 and B_2 with T-Statistic having the following critical values :

Degree of Freedom (DF)	Level of Significance	
	1%	5%
21	2.831	2.080
26	2.779	2.056
30	2.750	2.042

(8) F-Test has been applied to $\bar{R}^2$ with F-Ratio having the following critical values :

Degree of Freedom (DF)	Level of Significance	
	1%	5%
2, 21	5 78	3.47
2, 26	5.53	3.37
2, 30	5 39	3.32

(9) The Regression estimates have been carried out with the Statistical Programme, T.S.P.

It may be further noted that equation 5 is the best fit amongst the five equations as the coefficient of determination, $\overline{R}^2$, is highest (0.7843), giving index of disparity in per capita DPA (X_2) as the best explanatory variable of index of disparity in per capita Expenditure on General Administration (GA) in Nigeria.

XIII.2. DETERMINANTS OF THE INEQUALITY IN REGIONAL EXPENDITURE ON HEALTH SERVICES

In equations 6 to 10 of Table 9.09 we have explored the determinants of the variations in the Regional disparity in per capita expenditure on Health Services. From here, it is revealed that the simple linear multiple regression model has proved to be a good fit -- with the coefficient of determination, $\overline{R}^2$, statistically significant at 1% level in all these equations. The $\overline{R}^2$, assumed the values, 0.3517, 0.4211, 0.3345, 0.2958 and 3349 for equations 6,7,8,9 and 10 respectively which implies that 30% to 42% variations in the disparity index of per capita Expenditure on Health Services (HS) are caused by the variations in the index of disparity of per capita Independent Revenue (X_1), and each of the disparity indices of Total Transfers (TT), Total Statutory Transfers (TOSTT), Federal Grants (FG) Federal Loans (FL) and Distributable Pool Account (DPA), (i.e., X_2 for each of the equations 6,7,8,9 and 10 respectively). From the table it has been observed that B_1, the coefficient of X_1 (inequality index of per capita Independent Revenue) was positive in all the equations (6 to 10) as expected. It was also statistically significant in four out of the five equations, (i.e., in equations 6 to 9). While B_1 was significant at 5% level in equations 6 and 7, it was statistically significant at 1% level in equations 8 and 9. The values of B_1 is equal to 0.350, 0.304, 0.532 and 0.478 respectively in equations 6 to 9, implying that one percentage point increase in the index of disparity in per capita Independent Revenue caused 0.350, 0.304, 0.532, and 0.478, percentage point increase in the index of disparity in per capita expenditure on Health Services (HS) respectively. However, this variable, has been found to be statistically non-significant for equation 10.

As far as X_2 is concerned it is noted from the Table that except in equation 7 (i.e., inequality index of per capita aggregate Statutory Transfers) X_2 has proved to be statistically non-significant, (i.e., for equations 6,8,9 and 10 respectively though positive in equations 6,9 and 10). In equation 7, X_2 was positive and statistically significant at 5% level with B_2

assuming the value of 0.3188. This indicates that a one percentage point increase in the inequality index of aggregate statutory transfers, TOSTT, caused 0.319 percentage point increase in the inequality index of per capita expenditure on Health Services (HS). It has also been noted that the inequality index of Federal Grants (FG) is not only found to be statistically non-significant but its coefficient, B_2, assumes negative value of -0.0516 (which is contrary to our expectation and hence needs further examination).

It may be interesting also to note that equation 7 is the best fit amongst the five equations as the coefficient of determination $\overline{R}^2$ is highest (0.4211), giving the disparity index in per capita aggregate statutory transfers (X_2) as the best combined explanatory variables of the index of disparity in per capita Expenditure in Health services in Nigeria.

XIII.3. DETERMINANTS OF THE INEQUALITY IN REGIONAL EXPENDITURE ON OTHER SOCIAL SERVICES

Equations 11 to 15 of table 0.09 shows the determinants of the per capita regional Expenditure on Other Social Services (which include Community Development and Rural Sanitation etc.). From here it is noted that the results are similar to the ones obtained with respect to the per capita Regional Expenditure on General Administration. Thus, the simple linear multiple regression model has proved to be a good fit -- with high values of $\overline{R}^2$, the coefficient of determinatin which are statistically significant at 1% level in all these equations. The $\overline{R}^2$ assumed the values 0.6552, 0.6899, 0.5725, 0.4748 and 0.6078 for equations 11,12,13,14 and 15 rspectively. This implies that 47% to 69% variations in the disparity index of per capita Expenditure on Other Social Services are caused by variations in the index of disparity in per capita Independent Revenue (X_1), and each of the disparity indices of the various categories of federal transfers, e.g., Total Transfers, Total Statutory Transfers, Federal Grants, Federal Loans, and Distributable Pool Account Transfers (i.e., X_2 for each of the equations, 11,12,13,14 and 15 respectively). It has also been noted that B_1, the coefficient of X_1 (inequality index of per capita Independent Revenue) though positive in equations 11 to 14 as expected, it is statiscally significant in case of equations 13 and 14 only with values equal to 0.7181 and 0.5425 respectively. This implies that a percentage point increase in the index of disparity in per Capita Independent Revenue

caused 0.72 and 0.543 percentage point increase in the index of disparity in per capita Expenditure on Other Social Services respectively. This variable, i.e., per per capita Independent Revenue, X_1, has been found to be statistically non-significant for equations 11,12 and 15. In equation 15, the variable is not only statistically non-significant but is also negative contrary to our expectation, and thus requires further investigation.

As for the variable, X_2, it has been observed from Table 9.09 that except the disparity index of per capita Federal Grants (equation 13), X_2 has proved to be statistically significant where the value of B_2 is positive as expected and assumes values equal to 0.8875 (equation 11), 0.9183 (equation 12), 0.2772 (equation 14), and 1.2336 (equation 15). This indicates that a one percentage point increase in the inequality index of each of these variables, i.e., Total Transfers (TT), Total Statutory Transfers (TOSTT), Federal Loan (FL), and Distributable Pool Account (DPA) caused 0.888, 0.918, 0.277, and 1.23 percentage point increase respectively in the disparity index of per per capita Expenditure of the regions on Other Social Services (OSS). As regards the index of per capita Federal Grants (FG), it has not been found to be statistically significant, although its coefficient B_2 assumed a positive value as expected.

It may also be further noted that equation 12 is the best fit amongst the five equations as the coefficient of determination $\overline{R}^2$, is highest (0.6899) giving index of disparity in per capita aggregate Statutory Transfers (TOSTT) as the best explanatory variable of index of disparity in per capita Expenditure on Other Social Services (OSS) in Nigeria.

XIII.4. DETERMINANTS OF THE INEQUALITY IN REGIONAL EXPENDITURE ON ECONOMIC SERVICES

The results of the regression analysis presented in equations 16 to 20 of table 9.09 show the determinants of the regional variations in per capita Expenditure on Economic Services. From here it has been observed that the simple linear multiple regression model has proved to be a good fit, with high values of $\overline{R}^2$, the Coefficient of determination which are statistically significant at 1% level in all these equations. The $\overline{R}^2$ assumed the values, 0.7949, 0.7875, 0.6899, 0.4795 and 0.8229 for equations 16,17,18,19 and 20 respectively,

which implies that the extent of 48% to 82% variations in the index of disparity in per capita Expenditure of the Regions in Economic Services are caused by variations in the index of disparity in per per capita Independent Revenue (X_1), and each of the disparity indices of the various categories of federal transfers, e.g., Total Transfers, Total Statutory Transfers, Federal Grants, Federal Loan and the Distributable Pool Account Transfers (i.e., X_2 for each of the equations, 16,17,18,19 and 20 respectively). It has been observed from the Table that B_1, the coefficient of X_1 (inequality index of per Capita Independent Revenue) was positive in each of these equations as expected, and it is also statistically significant in four out of the five equations (i.e., equations 16 to 19), with values equal to 0.1819, 0.2282, 0.5218, and 0.4905 respectively. This implies that one percentage point increase in the index of disparity in per capita Independent Revenue caused 0.182, 0.228, 0.522, and 0.491 percentage point increase in the index of disparity in per per capita Expenditure on Economic Services respectively. This variable, i.e., per capita Independent Revenue, X_1, has been found to be statistically non- significant for equation 20.

As far as variable X_2 is concerned, it is observed from the Table that B_2, the coefficient of X_2 assumed positive values in all the equations as expected. Except for the disparity index of per Capita Federal Grants (equation 18), X_2 has proved to be statistically significant where B_2 assumes the values equal to 0.6040 (equation 16), 0.5936 (equation 17), 0.1242 (equation 19) and 0.8143 (equation 20). This indicates that a one percentage point increase in the inequality index of each of TT, TOSTT, FL and DPA, caused 0.604, 0.594, 0.124 and 0.814 percentage point increase respectively in the disparity index of per per capita Expenditure of the Regions on Economic Services (ES). Regarding the inequality index of per capita Federal Grants, it has been found to be statiscally non-significant, (see equation 17).

It is interesting to note that equation 20 has proved to be the best fit amongst the five equations as the coefficient of determination, $\overline{R}^2$, is highest (0.8229), giving index of disparity in per capita Distributable Pool Account (DPA), X_2, as the best explanatory variable in index of disparity in per capita Expenditure on Economic Services in Nigeria.