CHAPTER TWO

CONCEPTS AND METHODOLOGY

I. INTRODUCTION

This chapter examines two basic issues. The first relates to the meaning of the fundamental concepts used in this research endeavour, which in most common economic usage are subject to plurality of interpretation and understanding. After examining such concepts and their meaning, those definitions that seem not only appropriate, but also convey the generally accepted ideas are finally chosen for the present work. The concepts revisited here are, fiscal imbalances, vertical fiscal imbalances, horizontal fiscal imbalances, fiscal adjustment, fiscal equalization and independent revenue of the governments.

The second issue examined is the detailed methodology followed in tackling the various objectives of this work. This has been dealt with in respect to an inquiry for a specific objective and in a specific chapter or section of the work. In the application of a particular methodology, attempt has been made to eliminate, as much as possible, conflicts between concepts and methods for a particular problem, especially in regards to vertical and horizontal fiscal imbalances.

II. CONCEPTS

II.1 FISCAL IMBALANCES

Federalism and federal principles are unmistakably synonymous with inequality.[1] This is true in political connotations, and more so in economic senses. This in true-heartedness, therefore, stigmatises "fiscal imbalances"[2] as the core subject in fiscal

1. Most federal economists agree to this point. See for instance,
   Wheare, K. C., Federal Government, Oxford University Press, 1953.
   May, R.J. Federalism and Fiscal Adjustment, Oxford University Press, 1969,
   Sinha, R.K. Regional Imbalances and Fiscal Equalization, South Asian Publishers, New Delhi, 1984
   Wildavsky, A. "Federalism means inequality : Political Geometry, Political Sociology and Political Culture" in The Cost of Federalism edited by Golembewski, R.T. and Wildavsky A, Transaction Inc. New Brunswick, NJ. 1984.
   Adarkar, B.P. The Principles and Problems of Federal Finance, P.S. King and Sons London, 1933.

2. The term fiscal imbalances and fiscal inequality are used interchangeably.

federalism. That is, the interaction of the governments - the centre and the states, and the states interse - in a federal polity assumes a crucial dimension since the same affords a systematic approach of mitigating the disparity. This thereby produces stability of the federation and hence ensuring the survival of the same.

The term fiscal imbalance is used in two senses. The first implies the inequality in revenue and expenditure of the centre and the states respectively -- which is generally referred to as "Vertical Fiscal Imbalance". The second means the inter-state disparity in revenue-expenditure variables and is known as "Horizontal Fiscal Imbalance". Thus the use of the concept,fiscal imbalance in the above two senses indicates more or less the same thing.

An unqualified use of the term "fiscal imbalance" complicates its understanding and leaves us at sea of its real implications. This would be the case because the vertical fiscal federalists and their horizontal counterparts are bound to interpret the term differently. However, both the interpretations of the concept reflect the same thing: a disequlibrium between constitutional division of resource and responsibility[3] across the governments.

Federalism entails the existence of more than one tier and one unit of decision-making in a polity. By the virtue of the federal constitution, more productive and more elastic revenue bases and less expensive and expansive expenditure obligations are assigned to the apex authority while more expensive and expansive expenditure obligations and less productive and less elastic revenue bases are alloted to the lower-level governments. Since the resource endowment differs between various states of the same federation, there is bound to be inequality amongst the governments in their fiscal operations. Since there is a dichotomy inherent in the constitutional division of revenue bases and expenditure obligations between the centre and the states, it means that in the absence of fiscal transfers,

3. Most fiscal federalists would use this expression in relation to the financial relationship between the centre and the states only. However, the same could be applied for the inter-state financial relations because the equal constitutional responsibility of the states in terms of their sphere of expenditure activities are not matched across the states by revenue yield from their equal constitutional resource bases. The equality in the sphere of the revenue bases and expenditure activities of the states refer to the revenue heads for the former and expenditure items for the latter and not to their "yield" and "outlay" respectively as these would naturally differ across the states.

the budget of the central government will always generate surpluses whereas those of the states will always be in deficit. Similarly, because of uneven distribution of natural resources, while some states are rich, others are poor. Thus in the absence of fiscal transfer the budget position of some states could be more favourable than those of other states. It may therefore suffice to say, that, fiscal imbalance exists in a federation when the budget position of government(s) vis-a-vis the other government(s)is at a disadvantage. That is to say when the governments within the vertical or horizontal arrangements cannot discharge their constitutional obligations at the same standard.

This way fiscal imbalance necessarily implies a disproportionate relations in revenue and expenditure of the centre and the states on the one hand, and an inter-state disparity in the fulfilment of budgetary obligations on the other hand. The former is referred to as vertical fiscal imbalance and the latter as horizontal fiscal imbalance.

II.1.1 VERTICAL FISCAL IMBALANCES

This term has been defined differently by different federal economists. According to Lane, it is "a situation in which the division of revenue sources and expenditure functions between the federal government on the one hand and the state governments on the other hand is such that the latter are considered to have insufficient revenue sources (in the absence of aid from the federal government) to enable them to carry out their expenditure functions at levels which would produce a reasonable balance between the marginal benefits obtained from federal expenditures"[4].

K.C. Wheare[5] similarly has observed that : it, vertical fiscal imbalance, is an accepted measure of financial subordination of the regional governments to the general government who has been able to acquire sufficient resources under their own control to perform their functions while the regional governments have come to rely on grants from the general

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4. Lane, W.R. Australian Federalism:Equity and Efficiency, An unpublished seminar paper. Department of Economics, University of Queensland, (May,1968) pp.1-2

5. Wheare K.C, Op. Cit. pp. 115.

government to discharge their own responsibilities. Prof. Scott[6] used the expression "non-correspondence" to describe the problems that emanate from the financial resources being inadequate to discharge the functions of the states in a federal set up. H.L. Bhatia[7] wrote that there is an "inherent imbalance" in a federal set-up in favour of the central government because it (the federal government) is "normally" entrusted with those taxes which show a good degree of elasticity and bouyancy such that the resources at its disposal are 'normally' more than its requirement, whereas on the other hand, the states are 'usually' left with inelastic sources.

According to Thimmaiah, "....as the functions and sources of revenue are divided between the national and unit governments in a federation invariably on the basis of conflicting principles and through the process of best possible compromise solution, the resulting fiscal arrangement is always unsatisfactory. In other words, the problem of "non-correspondence" between the functions alloted to each layer of government and the sources of revenue assigned to enable them to perform those functions inevitably arises...This fiscal problem of federalism is theorised as vertical federal fiscal imbalance"[8]

A clear indication from the above definitions is that Thimmaiah's "vertical federal fiscal imbalance", Lane's 'situation', Wheare's "fiscal subordination", Scott's "non-correspondence" and Bhatia's "inherent imbalances", depict one thing : a dichotomy between the revenue yield and expenditure functions of the centre on the one hand, and of the states on the other hand.

This imbalance basically originates from the federal statute, the constitution which assigns more productive and more elastic resource bases to the centre with less expensive and less expansive responsibilities to perform, whereas it allots the states the more expensive and more expansive responsibilities with highly less productive and inelastic resource bases.[9]

6. Scott, A. D; "The Economic Goals of Federal Finance", Public Finance, No.3 1964.

7. Bhatia, H.L. Centre-State Financial Relations in India, Abhinav Publications, New Delhi, 1979, pp.20-21.

8. Thimmaiah, G., Federal Fiscal Systems of Australia and India (A study in comparative relevance), Associated Publishing House, New Delhi, 1976.

9. See the Federal Constitutions of USA, Australia, Canada, Germany, India, Nigeria etc. And for detailed discussion see, Musgrave R.A, and Musgrave P.B., Public Finance in Theory and Practice, McGraw-Hill Book Co., 1973, Thimmaiah G. op. cit 1976, Sinha R.K., op.cit. 1984.

However, this is without prejudice to the fact that the degree of the fiscal imbalance depends to a great extent on the nature and method of formation of a particular union, - whether it is a centralistic or decentralistic federation, and whether the same has been created by aggregation of units that were hitherto autonomous or by disaggregation of a unitary polity into federating units.

Thus, the definitions under examination reveal that vertical fiscal imbalance has become synonymous with the inability of the lower-level governments to finance their own responsibilities from their own sources of revenue. Or conversely, the concentration of resources in the hands of the federal government in excess of its expenditure requirements. In other words, what these definitions imply is that the vertical division of resource and responsibility leaves the lower-level authorities "unsatisfied".

There is hardly any contention in the correctness of the above observation so long as it does not apply to a loose federation (wellknown as confederation), or under a redefined "independent revenue"[10] of the centre and the states, or for that matter under an assumption, a realistic assumption - that the centre always faces a constraint in printing more currency or borrowing (internally or externally) during periods of economic emergency. Under these conditions, there is no doubt that the myth of the "overflowing riches" of the centre, that is, that the centre always records a pre- transfers budget surplus - may be subjected to serious questioning.

In the first case noted here, i.e., in a confederation, -- the type of federalism characterised by weak centre and powerful federating units. Here, the centre is 'usually' the "unsatisfactory" tier of decision-making. This is so because the vast resources are controlled by the more powerful states. The second situation affords a tendency that the "unsatisfactory" layer of authority may be the centre, or the states, or both as either or both the governments are likely to have in its (their) possession less or more resources than its (their) constitutional expenditure obligations. As for the last case, that is, during emergency, both

10. See the sub-head "Independent Revenue" of this chapter.

the governments may have less resources to discharge their respective obligations. This point requires further elaboration. Emergency here could be construed in terms of political and socio-economic crisis such as war or recession which render some or most of the revenue heads of the federal government redundant. In such circumstances the revenue accrual from the major resource bases may stagnate or even decline while expenditures may rise considerably. And if revenue yield from such resource bases normally account for a sizeable proportion of the total federal revenue - individually or collectively - then their is every likelihood that the pre-transfers revenues of the federal government may be less than its expenditures. In this connection the experience of Nigeria in 1968 and 1986 becomes of great relevance. In the former year the nation was at the peak of a three-year civil wars. In that year, the current receipts of the federal government declined by 8.83% approximately, - from N317.36 million in 1967 to N289.32 million in 1968 while the current expenditure increased by around 48.5%, from N142.92 million to N278.05 million during the same period, (see columns 2 and 7 of Appendix tables IV.01). Similarly, whereas the Federal Capital receipts declined by about 11.73%, from N151.70 million in 1967 to N133.91 million in 1968, its capital expenditure increased by 70.36%, from N93.49 million to N159.27 million during the same period (see columns 2 and 7 of Appendix tables IV.02). Consequently, one therefore, notes that in 1968 whereas the total receipts of the Federal government (current plus capital) before fiscal transfers to the states was N423.23 million, its total expenditure in the same year stood at N437.32 million, (see columns 2 and 7 of table 4.01). Thus, in this year the total federal receipts before transfers were less than its expenditure. The deficit was N14.05 million.

In the case of 1986, it has to be pointed out that Nigeria experienced an economic crisis consequent upon the decline in the crude oil production and instability in oil prices. Hence, a decline in its oil revenue mainly from Petroleum Profit Tax and Mining Rents and Royalties -- from N6711.00 to N4811.00 i.e. by 28.31% for the former, and from N4204.10 million to N3002.50 million i.e. by 28.58% for the latter, between 1985 and 1986, (See columns 2 and 3 of table 4.02(c)). Thus whereas the total current receipts of the federal

government declined from N17929.00 in 1985 to N13509.30 in 1986 i.e. by 24.7% approximately, its Current Expenditure increased from N7509.40 to N7963.01 during the same period (see columns 2 and 7 of Appendix table IV.01) i.e. by 5.72%. Similarly, whereas the Capital Receipts of the Centre declined from N3322.90 million in 1985 to a mere N1207.30 million in 1986, its Capital Expenditure increased from N7137.80 million to N9700.50 million during the same period, (see column 2 of and column 7 of Appendix table IV.02). Therefore one observes that in 1986, whereas the aggregate federal receipts (current plus capital) stood at N13509.30 million, its Total Expenditure in the same year was N16489.81 million, (see column 2 and 7 of table 4.01). Thus, in this year the total receipts of the federal government before fiscal transfers to the states was less than its total expenditure. The deficit was N2980.51 million.

Undoubtedly, therefore, in these situations, under confederation, redefined independent revenue of the governments and periods of emergency -- the pre-transfers federal receipts may be less than its expenditure obligations. Hence, the traditional definition of vertical fiscal imbalance which assumed that the centre generally records a pre-transfers surplus becomes questionable. This, invariably, necessities a re-examination of proportional division of resource bases (as reflected by revenue yield) in relation to constitutional responsibilities (as shown by expenditure figures) of the centre and the states. A situation whereby this ratio is not the same for the centre and also for the states clearly indicate that the vertical federal fiscal sickness (imbalance) is present in the federation. Taking into consideration the above conditions, the phenomenon of vertical fiscal imbalances has been redefined here as : "an ailment in centre-state fiscal operations whereby the exact relationship between the aggregate own revenue and the aggregate own expenditure of the centre is in disharmony with the relationship between the aggregate own revenue and the aggregate own expenditure of the states".

This definition has been chosen as the same would make it possible to capture the nature and degree of vertical fiscal imbalance in "usual" and "peculiar" situations as noted above. That is, when the centre is in a pre-transfers surplus or deficit.

It is in this sense that the term vertical fiscal imbalance has been implored in this work - both in theoretical expression and in empirical analysis.

II.1.2 HORIZONTAL FISCAL IMBALANCES

Lane has defined this phenomenon as : "....the existence of economic inequalities between the states such that if they were all to have equal standards of public expenditure from their own revenue, some of them would have to set their taxes and other charges at a higher overall level of severity, than others - a state of affairs which it is convinient to describe as inequalities of fiscal capacity".[11] The second definition examined here is that of R.K. Sinha. According to him : "If....units are required to finance certain assigned traditional functions by their own resources, they will face a situation of fiscal inequalities unless their fiscal capacities are equal. Fiscal inequalities among the units will result in differences in number and/or the standard of the public services performed for and/or the burden of taxes levied upon the owners of economic resources".[12]

In another definition, Buchanan had observed that : "Horizontal inequality would exist in a federation because individuals who are similarly situated would face a more favourable fiscal residum in the richer states."[13] Bahl R. et al (1992) defined horizontal fiscal imbalance to be, "Fiscal disparities....refer to fiscal disadvantages. Fiscal disadvantages arise because, after controlling for intergovernmental aid, some jurisdictions have to exert a higher tax effort to provide a standard package of services or provide less services at uniform tax effort. Fiscal disadvantages can be the result of differences in the cost of provision or in revenue bases".[14]

The first three concepts of horizontal fiscal imbalances bear a clear testimony that disparity in the provision of social services across the states is linked to the disuniformity in revenue yield of the states from their very same resource bases.

11. Lane, W.R. op cit 1968.
12. Sinha, R. K. op cit. 1984. pp.11.
13. Buchanan, J.M. "Federalism and Fiscal Equity", American Economic Review, September 1950. He has defined fiscal residum of an individual as the net difference between the total benefits received from public services, and the total taxes paid.
14. Bahl, R. et al, "Central City-Suburban Fiscal disparities", Public Finance Quarterly, Vol.20 No.4, October 1992, pp. 421.

However, the fourth concept conveys slightly different meaning to the above contention. The authors here preferred to clog the imbalances in the provision of social services, not just to the disparity in the 'own revenue' of the states that militates against a standard provision of public services at a standard tax effort, but to the inequality in their respective' total revenues, that is, their own revenue, plus grants. The former case could be regarded as horizontal fiscal imbalance "proper" (hereinafter referred to as the "real" horizontal fiscal imbalance), and the latter, as the "post devolution" horizontal fiscal imbalance.

It has to be pointed out clearly that horizontal fiscal imbalance exists for obvious reasons of differential amongst the states in resource endowment, size, level of development, fiscal capacity and potential, human capital endowment, ability to harness natural and human resource endowment, etcetra. Thus, according to Thimmaiah, horizontal fiscal imbalance originates in what he paraphrases as "Horizontal economic imbalances" which "refers to inter-state economic disparities resulting from differences in area, climate, topography, soil and mineral resources, and size and distribution of population in terms of age and occupation, productive capacity, levels of income, expenditure and wealth".[15]

In our analysis in this work, both the concepts of the "real" and "post devolution" horizontal fiscal imbalances have been adopted. Whereas the former has been used in examining the basic inequalities amongst the states, the latter has been implored in ascertaining the imapct of federal transfers in reducing the real horizontal fiscal disparities.

Many studies in inter-state fiscal inequalities examine the ex-post fiscal imbalances, that is, relative inequalities among the states in per capita expenditure in socio-economic services, revenue yield, and federal transfers. Sacks and Callahan (1973), Chelliah, R.J. et al (1981), Sinha, R.K. (1984), ACIR (1986), Rao, R.R. (1986) Bahl et al (1992), and Fisher and Navin (1992) are all of this tradition. This study is also in the same tradition.

15. (a) Thimmaiah, G. op cit (1986). pp.
Also see, Fisher R.C. and Navin J.C. "State-Local Fiscal Behaviour : Analysis of Inter-jurisdictional differences" Public Finance Quarterly Vol.20 No.4 October 1992,

(b) Downes T.A. and Pogue, T.F. "Intergovernmental Aid to reduce fiscal disparities : Problems of definition and measurement", Public Finance Quarterly, Vol.20, No.4, October 1992.

II.2 FISCAL ADJUSTMENT

The existence of vertical and horizontal federal fiscal imbalances are serious problems that obstruct a smooth operation of a federal system unless they are adequately taken care of. These imbalances are inherent in every federal polity and this cannot be avoided notwithstanding what care the framers of the federal constitution take with respect to the division of resource and responsibility. "The allocation of financial resources to the general and regional governments in the original constitutions has not corresponded with the allocation of functions to these governments. This is not surprising. Conditions in a variety of communities joined together in a federation differ too much from time to time and from place to place for a fixed division of financial resources to be laid down finally in a constitution. There is and can be no final solution to the allocation of financial resources in a federal system. There can only be adjustments and re-allocations in the light of changing conditions. What a federal government needs, therefore, is machinery adequate to make these adjustments and to make them also in such a way that the financial independence of the general and regional governments is preserved so far as possible".[16]

Thus fiscal adjustment is a process for correcting the vertical and horizontal fiscal imbalances. Basically, it refers to inter-governmental fiscal transfers, that is, the flow of financial resources from one government to the other in the vertical arrangement and the readjustment of the available resources between the horizontal units such that each tier of administration and each unit of government will have enough resources at its disposal to discharge its constitutional responsibilities.

Cognise may also be paid to the fact that redistribution of functions between the centre and the states could form part of the vertical fiscal adjustment scheme.

Whereas the vertical fiscal adjustment is inevitable (as noted earlier) to enable each tier of decision-making to be able to discharge its constitutional obligations, the horizontal

16. Wheare, K.C. op. cit pp 122-123

Also see, May, R. J. op cit pp-55, and Bhargava, R. N. Theory and Working of Union Finance in India, Chaitanya Publishers, Allahabad, 1977 pp. 99.

adjustment becomes crucial in order to reconcile the "homogenous and hetrogenous"[17] or the "centripetal and centrifugal"[18] elements in a federal set up. That is those forces that act towards the formation of a well-knitted federalism and those other forces that act towards the formation of loosely federalism.

Thus as Aronson observed, "If, for each public good, we could define a governmental unit with geographic boundaries beyond which the benefits of the public good did not reach, if average income levels were the same in all governmental units, if the distribution of income were the same in all governmental units, and if people were not free to move about, there would be no need for instruments of intergovernmental fiscal relations. Because none of the above conditions exist, it has been necessary to tie the decentralized system of federalism together with a set of intergovernmental fiscal instruments called grant-in-aid".[19]

II.3. FISCAL EQUALIZATION

This concept has been subjected to many usage and interpretation, and there is no gainsaying that it is understood differently by different people. Similarly, no compromising 'reason' exists on what exactly 'fiscal transfers' seek to equalise. All that is know is that fiscal equalization exercises are attempts to mitigate the vertical and horizontal fiscal disparities.

According to Mathews, "fiscal equalization is a systematic process of intergovernmental financial transfers directed towards equalization of the budget capacity or economic performance of a number of associated governments".[20]

II.3.1 VERTICAL FISCAL EQUALIZATION

As has been observed earlier, vertical fiscal imbalance exists due to the dichotomy between the 'resource' and 'responsibility' of the centre and the states. But anyhow, each

17. May R. J. op. cit. pp.

18. Rao Hemlata, "Federal Fiscal Transfers, Objective and Criteria", in Centre-State Financial Relations in India edited by R.K. Sinha; Deep and Deep Publications, New Delhi, 1986.

19. Aronson, J.R., Public Finance, McGraw-Hill. Inc. 1985 pp. 161. Note that "grant-in-aid" as used here necessarily encompasses other instruments of fiscal adjustment aimed at achieving inter-state equality, The statutory transfers, discritionary grants and loans.

20. Mathews, R. L. et al., The Economics of Federalism, Australian National University Press, Canberra, 1980, p. 255.

tier of decision-making should have enough resources at its disposal to discharge its expenditure obligations. This calls for what, as we have noted, has been regarded as centre-state fiscal adjustment.

When this adjustment works towards an equitable distribution of revenue in relation to expenditure of one tier of government with the other, then fiscal transfers are said to be vertically equalizing. This would therefore mean that if after the vertical fiscal adjustment the revenue-expenditure ratio of the centre is the same with the revenue-expenditure ratio of the states, then a perfect vertical equity is said to have been achieved. This is generally achieved through transfers of resources from the richer tier of government to the relatively poorer one.

It is in the above senses that concept of vertical fiscal equalization has been followed in this work.

II.3.2 HORIZONTAL FISCAL EQUALIZATION

R.K. Sinha has described the objective of this concept in the following lines : "....fiscal equalization intends to make possible for the governments within the equalizing system to provide a standard range and quality of services for their citizens, while making comparable fiscal efforts in the form of standard rates of taxation and other charges".[21]

Adarkar has also opined that in horizontal fiscal equalization : "there is a case for supporting the backward parts at the expense of the advanced even though the former did not promise rapid development into industrial or wealthy localities..."[22]

What the above two definitions indicate is that horizontal fiscal equalization programmes are deliberate non-efficiency based efforts aimed at bridging the gap in socio-economic variables among the states. This academic endeavour does not challenge the

21. R. K. Sinha, op. cit p. 13. Also see Hemlata Rao, op. cit.

22. Adarkar, B.P. The Principles and Problems of Federal Finance, P.S. King and sons Ltd, London, 1933 p. 215

Also see, Reddy K. N. "Inter-state Differences in Social Consumptions". Economic and Political Weekly, June 12, 1976.

appropriateness of the concept of fiscal equalization as contained above, and hence the use of this term in this work is strictly in the above sense.

On the side of what federal transfers seek to equalize, there seem to be an irreconciliable disagreement. Some extreme views believe that it implies equalizing the absolute financial transfers to the states.[23] Others feel that what should be equalized are : fiscal capacity[24] and performance,[25] tax rate and tax effort,[26] and fiscal residua.[27]

In this work, as stated earlier, an ex-post fiscal disparity measure is being followed, and hence its approach of fiscal equalization should be, in a spirit of confirmity, an ideal one for this work. Thus the ex-post concepts of fiscal equalization, that is, equalization of relative differences in per capita expenditures, own revenues and federal transfers have been adopted here.

II.4 INDEPENDENT REVENUE

Under the traditional definition, independent revenue of the states are revenues by virtue of constitutional provision, are regarded as "own revenues from own sources" of the state governments. These are revenue accruals which are either imposed, collected and retained by the states, or, imposed and collected by the centre but the entire proceeds are assigned to the states.

All other revenues, thus, form part of the revenues of the federal government. These include those resources that are obligatorily sharable between the centre and the states.

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23. This implies the allocation of equal amount of financial assistance to all the unit governments

24. Fiscal capacity equalization is an attempt for all the unit governments to provide to their citizens a standard range of public services at a comparable burden of taxes and charges -, Sinha R.K, op. cit and Mathews, Federalism in Retreat : The Abandonment of Tax Sharing and Fiscal Equalization, Address to Canberra Branch of Economic Society of Australia and New Zealand, 8 July, 1982.

25. Fiscal performance equalization involves specification of performance standards and action to bring the budgetary performance of recipient governments in line with the performance standards, - Sinha, R.K. op. cit.

26. See Thomas A Downes and Thomas F Pogue op. cit.

27. Buchanan is the author of fiscal residua equalization. He has defined the fiscal residua of an individual as the difference between 'expenditure benefit' and the 'tax paid', Buchanan, J.M. op. cit.

The main issue here is whether, in reality, sharable revenues constitute federal resources. The answer, by the token of the expression "sharable" itself seem quite obvious: that is those resource accruals form a divisible revenue pool which neither the centre nor the states has an exclusive right over. Both the governments are claiments of proportions thereof, the actual 'share' of which is usually determined by a competent authority such as the Fiscal Review Commission in Nigeria, or the Finance Commission in case of India.

In other words, what this boils down to is that the centre is nothing but a legislative and administrative authority in respect to these revenue heads. And when it legislates, and collects, it faces no option in giving to the states their own "share". The federal constitution has made it compulsorily so. It therefore, carries a strong implication that no matter whatever may be the pre-transfers budget position of the federal governments, the states cannot be dennied their statutory allocation from the apex authority.

Since these are transfers which the 'Constitution' has assured the states of, and for which the centre has no discretion in making, it would seem very appropraite to treat them as part of the independent revenue of the states. This approach would seem to be quite on the right track, because, by the nature of the resource heads that constitute the divisible pool, and by the very fact that their transfers have been made mandatory, there seem to be a true-tale that "statutory transfers" are made in lieu of tax powers surrendered to the centre by the states.[28] The centre and the states would, no doubt, be having concurrent powers over such revenue heads, but because of efficiency reasons and the inter-jurisdictional effects of taxes or charges on those resource bases, the power to legislate and administer them has been bestowed on the centre. Also it should be noted that other statutory transfers such as the Grants made under Article 275 of the Indian Constitution (which are not in the form of tax-sharing) should as well form part of the independent revenue of the states. This should be so for the same reason as stated earlier that the Centre has no discretion in transfering such grants to the States.

28. It would be interesting to note here that the 1948 constitution of Switzerland provided for compensation to be paid to the Cantons for the loss of customs revenue consequent upon their surrender of the power to levy customs duties to the central government. Similarly, in Australia and Canada in 1942 the Centre used obligatory compensatory grants to induce the states to vacate from the field of Income Tax. And in Canada, again, corporation taxes were similarly surrendered. Also in India the states surrendered to the Centre their constitutional right to levy sales tax on Sugar, tobacco and textile under a rental agreement.

In connection with the ongoing discussion, it suffices the need to recapitulate what K.C. Wheare said. According to him, "Grants if they are to rank as independent sources of revenue, must not depend, of course, upon the goodwill of the contributing government. They must be obligatory contributions about which the contributing government has no discretion".[29]

An interpretation of the above postulation would imply that any intergovernmental obligatory transfers should rank as independent sources of revenue of the recipient governments because the grantor government is constitutionally bound to 'make it' under any circumstances.

In the light of the above, we redefine independent revenue of the governments as the total revenue accrual at the disposal of a particular tier of authority after effecting statutory fiscal adjustment. This means that for the states, this independent revenue is equal to their total revenue receipts from their own sources plus their statutory receipts from the Central government. On the other hand, for the centre, it means its total revenue minus statutory transfers to the states. That is to say, its own exclusive (non-sharable) revenues plus its 'share' from the 'divisible' pools. It has to be pointed out, however, that the discretionary federal grant and federal loans cannot form part of the independent revenue of the states as the Centre is not held under obligation to make them.

This study has adopted both the traditional and the redefined concepts of the independent revenue of the governments. The two have been used separately in attempt to analyse the vertical fiscal imbalances in Nigeria. The need for the redefined concept arises particularly because of a seemingly clear belief that an exclusion of statutory transfers from the independent revenue of the states while exaggerating the degree of vertical fiscal imbalances also overestimates the equalizing tendency of federal transfers on the same, as the statutory transfers form an integral part of federal transfers to the states.

29. Wheare, K.C. op cit. p. 101.

III. METHODOLOGY

III.1 UNIVERSE OF STUDY

This research covers all the sub-governmental unit that existed in the Nigerian federation for the period under study. That is to say, the four regions in existence upto 1967, the twelve states of the federation as at 1976, the nineteen states and a Federal Territory in existence by 1987 and the twenty-one states and a Federal Territory that made up the nation as at 1988. These form the horizontal tier that is being studied along with the federal government in a vertical framework. Thus, The Federal-State financial relations have been analysed for the entire time framework of thirty-three years. This period is further divided into three phases of twelve, twelve and nine years (1956-67, 1968-79 and 1980-88) respectively which conform with the three distinct phases of the Nigerian Federalism.

In regards to the finances of the horizontal governments and the interaction amongst them, the study has adopted two approaches. The first tries to examine the inter-State financial relations within the contemplation of the original three regions that made up the federation of Nigeria. This thereby implies that all data information in relation to the States created out of those Regions in the later years are aggregated according to the triangular Regional formation.

Thus, here, like in the vertical analysis the entire thirty-three year (1956-88) time series data are worked upon to ascertain what exactly happened to the fisc at the Regional lines.

The second approach examines the financial relationship amongst the federating units in each of the sub-periods, that is 1956-67, 1968-79 and 1980-88. This has been done with a view at finding out what happens between all the horizontal units obtainable in the country at a particular time. This also makes comparison between the three phases possible.

However as Mid-Western Region was carved out of the Western Region in 1963, (a date which is very close to the end of the first phase of this study), the study deals with the

three Regions for the period 1956-67 - Eastern Region, Western Region and Nothern Region. This way, the Western Region is regarded as the undivided and thus for all practical purposes, the Mid-Western Region is taken as part and parcel of the Western Region. Therefore, all data information relating to Mid-Western Region is aggregated with that of Western Region.

Similar approach is followed in the treatment of the states reorganised in 1976. The East Central State was divided into Anambara and Imo States, Western State was bifurcated into Oyo, Ogun and Ondo States, Benue-Plateau was divided into Benue and Plateau States, North Western State was divided into Sokoto and Niger States, while North. Eastern State was fragmented into Bauchi, Borno and Gongola States. The original States are treated as undivided between the period 1968-79 as this reorganisation timing is close to the end of the second phase, i.e., 1979.

This is also the procedure followed in the case of Cross River State out of which Akwa Ibom State was created, and Kaduna State out of which Katsina State was created - both the states were created in 1987, a period, again, very close to the end of the third period of study, i.e. 1988.

III.2 TOOLS AND TECHNIQUES

The various tools and techniques used in this research study are discussed in detail below.

III.2.0 VERTICAL IMBALANCES : Methodology Applied

This research endeavour like most other works follows simple proportions and ratios in attempt to detect the fiscal disparity between the Centre and the States. That is to say, that, on the basis of the said proportions and ratios the true picture of division of revenue and/or expenditure of the vertical governments will emerge. An examination of this over time will reveal clearly the developing pattern of the same.

Adopting the same technique, it examines the intra- governmental fiscal position - federal revenue as a proportion of its expenditure, and states revenue as a proportion of its expenditure, to throw a clearer light on the fiscal disequilibrium of the two tiers of authority.

Notwithstanding the relevance of the aforesaid methods, the researcher found them wanting as a measure of vertical fiscal imbalance - especially within the applicability of the redefined concept.[30] Thus, the researcher evolved a technique referred to as the "VERTICAL IMBALANCE RATIO". And the same has also been applied in analysising various aspects of vertical imbalances in Nigeria. Before going into this model, it would suffice the need to reappraise the traditional methods which form the building blocks for the new approach.

III.2.1 VERTICAL IMBALANCES - TRADITIONAL MEASURES REVISITED

III.2.1.1 THE REVENUE DEPENDENCE RATIO (RDR) OR EXPENDITURE CONCENTRATION RATIO (ECR)

Here, let's suppose that a two-tier federal polity is constituted by a horizontal fragmentation or aggregation of "n" states such that the total fiscal operation of the lower tier of decision-making is a simple summation of their individual revenue and expenditure activities. That is to say that :

$$Rs = rx_1 + rx_2 + rx_3 ..... + rx_n \quad .....(1)$$

$$Rs = \sum_{i=1}^{n} rx_i \quad .....(2)$$

Where : Rs = Total revenue of all the states
rx_i = revenue of state 1,2,3,...n
n = Total number of states in the federation

Similarly ;

$$Ex = ex_1 + ex_2 + ex_3 .... + ex_n \quad .....(3)$$

Thus,

$$Ex = \sum_{i=1}^{n} ex_i \quad .....(4)$$

30. See the subhead "Vertical Fiscal Imbalance" under the heading 'Concepts' of this chapter.

Where : Ex = total expenditure of all the states
$ex_1 ... ex_n$ = expenditure of state 1,2,....n.
n = Total number of States

The Revenue dependence ratio or expenditure concentration approach, as has been noticed in the traditional definitions of vertical fiscal imbalance, works on a presupposition that there is always a shortfall between the revenue and expenditure of the states. This implies that at every point of time,

$$\sum_{i=1}^{n} rx_i < \sum_{i=1}^{n} ex_i \quad \text{.....(5)}$$

which also implies that,

$$\sum_{i=1}^{n} rx_i \; / \; \sum_{i=1}^{n} ex_i < 1 \quad \text{.....(6)}$$

$$\text{Thus RDR or ECR} = \sum_{i=1}^{n} rx_i \; / \; \sum_{i=1}^{n} ex_i \quad \text{.....(7)}$$

The RDR reveals the extent to which the states would depend on the centre to meet up with their expenditure obligations, or in other words to what extent expenditure relative to revenue is concentrated with the states.

This way, the result of equation 7 is a quotient which lies between zero and one. That is to say that $0 < RDR < 1$. And if we equate the vertical parity ratio[31] one, to zero, that is by subtracting the vertical parity ratio, one, from zero. In this case equation 7 (RDR)[32] could be rewritten as (Rs/Es)-1. The result thus obtained from this RDR formula is a negative number which lies between -1 and 0. That is $-1 < RDR < 0$. By implication what the RDR shows is not only that the fiscal capacity and potential of the states are limited, but that in

31. The vertical parity ratio is defined here as a ratio of equality between the revenue and expenditure of a particular government giving value equal to one.

32. Where $\sum_{i=1}^{n} rx = Rs$ = Aggregate revenue of all the states

$\sum_{i=1}^{n} ex = Es$ = Aggregate expenditure of all the states

Thus, the RDR or RCR formula in equation 7 could be rewritten as Rs/Es.

their highest accrual, they must also leave the budget outlay of the governments partially financed.

The basic interpretation given to this phenomenon is that the more productive revenue bases are concentrated in the hands of the federal government whereas expenditure gets packed with the states. Thus on a prori, the RDR indicts the federal government of grossing pre-transfers budget surpluses at the face of supposed endemic deficit of the states. The budget deficit of the states which is equal to the RDR value -- purportedly -- reflects the degree of vertical fiscal imbalance.

There is no doubt that the RDR gives an idea of the Centre-State finances, but the fact is that this 'idea' is not adequate for an appropriate measure of vertical fiscal imbalance. The transparency of this contention stems from the point that RDR is mute over the revenues and expenditures of the federal government, and invariably fails to capture the exact revenue expenditure relations of the Centre and the States. Consequently, it may, therefore, be seen as an inadequate measure of vertical fiscal imbalance.

III.2.1.2. THE REVENUE SURPLUS RATIO (RSR) OR REVENUE CONCENTRATION RATIO (RCR)

This approach follows a reverse course of the former. Here, the revenue and expenditure accounts of the states are considered redundant variables in explaining the degree of intergovernmental fiscal disequilibrium.

The prima facie assumption of this technique clicks on revenue concentration in the hands of the federal government as synonymous to vertical fiscal inequity. It underminds whether or not such concentration gets fully neutralized or relatively counterbalanced by warrnanted expenditures. It also neglects the fact that the centre is only one tier of the dual decision-making arrangement

From the above, what follows, therefore, is that in all situations, it is assumed that :

$$Rf > Ef \qquad \text{.....(8)}$$

Where :

Rf = total revenue of the federal government.

Ef = total expenditure of the federal government.

From inequality (8) it means that RSR or RCR = Rf/Ef .....(9)

and, Rf/Ef > 1 .....(10)

The result of equation (9) is a positive number that lies between one and infinity. That is, $1 < RSR < \infty$. Equation 10 reveals how many times the revenue of the federal government is capable of containing her expenditure. It does not say anything about the states - neither their revenue nor expenditure. It simply measures the intra-governmental (federal) positive budget position and not inter-governmental (federal and states) fiscal (Revenue-Expenditure) disparities.

III.2.1.3. THE REVENUE CONCENTRATION RATIO (RCR)

The third alternative measure of vertical fiscal inequity aggregates the revenues of the centre with that of the states, and thereby assertains their relative distribution.

Thus,

$$Rt = Rf + Rs \quad \text{.....(11)}$$

Where :

Rt = total revenue of the federation

Rf = revenue of the federal government

Rs = revenue of the state governments.

Therefore :

$$\frac{Rf + Rs}{Rt} = 1 \quad \text{.....(12)}$$

$$Rf < 1 \quad \text{.....(13)}$$

and

$$Rs < 1 \quad \text{.....(14)}$$

Therefore, RCR = Rf / Rs .....(15)

Where (15) is a positive number which lies between zero and infinity. That it is; $0 < RCR < \infty$.

A value of RCR in equation (15) which is greater than one reflects the concentration of revenue in the hands of the federal government. And conversely, if it is less than one, it implies decentralization of revenue, that is, concentration of revenue in the hands of the states. The higher (or smaller) the value of RCR, the higher (smaller) the degree of centralization (or decentralization), as the case may be depending on whether or not, it is greater or less than unity. The serious inadequacy of this technique must be pointed out as being the negligence of the expenditure of the two levels of government.

III.2.1.4. THE EXPENDITURE CONCENTRATION RATIO (ECR)

The method of the expenditure concentration Ratio is similar to that of Revenue Concentration Ratio. Here, vertical fiscal imbalance is taken as a ratio of expenditure of the federal and the state governments to the total expenditure of all the governments

Thus :

$$E_t = Ef + Es \quad \text{.....(16)}$$

Where :

Et = total expenditure of the federation

Ef = expenditure of the federal government

Es = expenditure of the state governments.

Therefore :

$$\frac{Ef + Es}{Et} = 1... \quad \text{.....(17)}$$

$$Ef < 1 \quad \text{.....(18)}$$

and $Es < 1$ .....(19)

Therefore $ECR = Ef/Es...$ .....(20)

Where : ECR = Expenditure Concentration Ratio

Similar to the Revenue Concentration Ratio, equation (20) is a positive number which lies between zero and infinity. In other words, $0 < ECR < \infty$. A value of $ECR = 0$ implies that the entire expenditure obligations of the federation is carried out by the States while the Centre performs nothing. Conversely, when the $ECR = \infty$, it implies that the Centre undertakes the whole expenditure activities of the federation while the States perform nothing.

If ECR as per equation (20) is greater than unity, it reflects the concentration of expenditure in the hands of the federal government. And on the other hand, if it is less that unity, it implies that expenditure obligations are more performed by the states. The main limitation in using this technique is its exclusion of the revenue of the centre and the states. The measure is therefore inherently misleading. It could be thus, regarded as a partial measure of intergovernmental fiscal operations.

III.2.2. MODELLING THE VERTICAL IMBALANCE RATIO

Having highlighted the various ways through which scholars impress the presence or absence of vertical fiscal disparity, and their serious shortcomings, we proceed to construct a more appropriate model using the Vertical Imbalance Ratio (VIR) - which eliminates as much as possible these limitations, and hence, turns out to be a more acceptable measure of centre-state fiscal inequality.

III.2.2.1 BASIC ASSUMPTIONS OF THE VERTICAL IMBALANCE RATIO

1. The federal and state governments are integral parts of the same polity such that the revenue and expenditure activities of the two governments exert a simultaneous effect on the same people. In other words, the Centre and the States do not exist exclusive of each other.

2. The aggregate revenue or expenditure of all the governments of the federation is the summation of the respective revenues or expenditures of the centre and the states.

That is to say that the share of the federal or the states in the total revenue or expenditure of the federation is a fraction of a whole.

3. The vertical fiscal relations link the revenue of a particular tier of decision-making to its expenditure obligations and its revenue and expenditure relationship, to the revenue and expenditure relationship of the other tier of government.

4. There is no encroachment of one government upon the spheres of resource or responsibilty of the other tier of decision-making. This thereby implies that the 'take-over' of responsibility obligation by one government from another is preceded by a requisite constitutional amendment so that such a 'takeover' is not rendered unconstitutional.

III.2.2.2. THE MODEL

Based on the above assumptions, it follows that :

$$Rt = Rf + Rs \qquad \text{.....(see equation 11)}$$

and

$$Et = Ef + Es \qquad \text{.....(see equation 16)}$$

Which means that

$$\frac{Rf}{Rt} \div \frac{Rs}{Rt} = \qquad \text{.....(21)}$$

$$\frac{Rf}{Rt} \times \frac{Rt}{Rs} = \frac{Rf}{Rs} \qquad \text{.....(22)}$$

Where : Rf/Rt = Share of the federal government in the total revenue of the federation,

Rs/Rt = Share of the states in the total revenue of the federation.

Rt = Total revenue of the federation.

hence Rf/Rs = The Ratio of the share of federal and states revenues in the total revenue of the federation.

Similarly,

$$\frac{Ef}{Et} \div \frac{Es}{Et} = \qquad \text{.....(23)}$$

$$\frac{Ef}{Et} \times \frac{Et}{Es} = \frac{Ef}{Es} \qquad \text{.....(24)}$$

Where : Ef/Et = Share of federal government in the total expenditure of the federation.

Es/Et = Share of the state governments in the total expenditure of the federation.

Et = Total expenditure of the federation.

hence, Ef/Es = The Ratio of the share of expenditures of the federal and state governments in the total expenditure of the federation.

It may be noted that in the earlier sections, (III.2.1.3 and III.2.1.4), the revenues and expenditures of the federal and state governments had been defined as total absolute amount. In this section, however, these variables have been defined as proportions as the same will be more convinient for calculation. Nevertheless, the results would be the same whether the variables are in total absolute amount or in proportions. For illustration, see Appendix II. Now, integrating the respective shares of the federal and states in the total revenue and expenditure of all the governments gives a quotient which reflects an ideal measure of vertical fiscal imbalance. Thus, bringing equations 22 and 24 together, we get :

$$\frac{Rf}{Rs} \div \frac{Ef}{Es} \qquad \text{.....(25)}$$

$$\frac{Rf}{Rs} \times \frac{Es}{Ef} \qquad \text{.....(26)}$$

Which can be rewritten as

$$\frac{Rf}{Ef} \times \frac{Es}{Rs} = RfEs/EfRs \qquad \text{.....(27)}$$

Therefore the VIR = $RfEs/EfRs$ .....(28)

Thus, when we divide the product of the federal share of revenue and states share of expenditure by the product of federal share of expenditure and states share of revenue, we get the Vertical Imbalance Ratio. Equation 28 carries a strong implication that it yields a quotient that simultaneously, reflects the centralization (or decentration) of revenue or expenditure as well as the degree of the same. It also affords an automatic, comparison of the participation in revenue and expenditure of the two tiers of decision- making in the total revenue and expenditure of the whole federation. Thus, for instance, if the result of equation 28 is a quotiant which is greater than one, it implies that revenue is concentrated in the hand of the federal government while the expenditure is concentrated in the hard of the states. This, in other words means, that, the share of federal government in the total revenue of the federation is greater than its share of expenditure from the total expenditure of the federation. And hence, that the share of the states revenue in the total revenue of the federation is smaller than their share of expenditure in the total expenditure of the federation. The converse of the above deduction will also hold correct if the result of equation 28 is a quotient which is less than one.

Therefore, it is the harmony (or disharmony) between the proportionate shares of revenue and expenditure of each of the tiers of government in the total revenue or expenditure of the whole federation within a comparative framework that determines the presence or absence of vertical fiscal imbalance. In this sense, thus the vertical fiscal imbalance could exist even when the federal and state governments are both at a pre-transfers budget deficit as pointed out section II.1.1 of this chapter, that is, during emergency; under a confederation or redefined independent revenue of the governments. In the last two cases noted here the vertical fiscal imbalance could be states' favoured contrary to the established belief that the same is always a federal-favoured phenomenon.

From equation 28, it is obvious that vertical fiscal balance exists when RfEs/EfRs = 1, i.e., when the identity RfEs = EfRs is established. This will be the case only when there is a relative equilibrium in the budget position of each tier of government. That is to say that

this condition will only exist when there is a simultaneous balance between Rf and Ef, and also between Rs and Es.

If Rf $\neq$ Ef even though Rs = Es, vertical fiscal imbalance remains present. The converse of this statement also holds correct. This implies thereby that the aforesaid identity between the two sets of variables, i.e., Rf = Ef and Rs = Es, is a condition to measuring the Centre-State fiscal parity. Following the above deductions, it becomes glaring that vertical fiscal imbalance could be defined as the disparity between the revenue-expenditure ratio of one tier of decision-making in relation to the revenue-expenditure ratio of the other layer of government. The VIR has been illustrated with hypothetical figures in Appendix II. The same may be referred to.

III.2.2.3. VALUE, RANGE AND INTERPRETATION OF THE VIR

The value, range, and interpretation of the vertical imbalance Ratio are as follows :

The value of VIR lies between zero and infinity such that :

$0 < VIR < \infty$ .....(29)

Three situations emerge from this :

1. **VIR = 1**

This implies that in equation 28, RfEs = RsEf, which further means that Rf = Ef and Rs = Es. What this connotes is that vertical fiscal imbalance is absent. This is so because there is an equal proportional relationship between the revenue and expenditure of the two governments. That is, Rf/Ef = 1 and Rs/Es = 1 and hence RfEs/EfRs = 1.

2. **VIR > 1**

This means that RfEs > RsEf in equation 28. This also shows that Rf > Ef and Rs < Es. This situation depicts one where vertical fiscal imbalance exists such that there is a concentration of revenue (relative to expenditure) in the hands of the federal

government, whereas there is concentration of expenditure (relative to revenue) in the hands of the states. This is a case of federal favoured fiscal imbalance (FFFI).

3. **VIR < 1**

Here, what this implies is that in equation 28, RfEs < RsEf, which further indicates that Rf < Ef and Rs > Es. This is also a clear case where vertical fiscal imbalance exists. But, here, there is a concentration of revenue (relative to expenditure) in the hands of the states, whereas expenditure (relative to revenue) is concentrated in the hands of the federal government. This is a case of states favoured fiscal imbalance (SFFI).

An important feature of this model is that whereas the VIR measures the concentration of revenue relative to expenditure, its reciprocal 1/VIR measures the concentration of expenditure relative to revenue.

From the above interpretations, it could be deduced that :

1. Since a value of VIR greater than one implies a federal-favoured vertical fiscal imbalance, it means that the bigger this value, the more federal-favoured the vertical fiscal imbalance. That is, when the VIR approaches double digit or even exceeds that and tends towards infinity. Therefore, any fiscal adjustment measure that reduces the same - falling towards the vertical parity ratio of one - has a tendency of vertical fiscal equalization.

2. As the value of VIR less than one implies a state- favoured vertical fiscal imbalance, it means that the smaller this value, the more state-favoured the vertical fiscal imbalance. That is, when the VIR tends towards zero. Therefore, any fiscal adjustment measure that increases the same towards the vertical parity ratio of one has a tendency of vertical fiscal equalization.

3. Since 1/VIR indicates the concentration of expenditure relative to revenue in the hands of a particular tier of government, a value of 1/VIR which is less than one means a federal-favoured vertical fiscal imbalance. That is the federal share in the total expenditure of the federation is less than its share of revenue in the total revenue of the federation. While the states share of expenditure in the total expenditure of the federation is less than its share of revenue in the total revenue of the federation. Therefore, as 1/VIR becomes small the more federal-favoured the vertical fiscal imbalance. Hence any fiscal adjustment mechanism that causes a rise in 1/VIR such that it moves towards the vertical parity ratio, one, would be deemed to have a tendency towards vertical fiscal equalization.

4. A value of 1/VIR greater than one implies a state- favoured vertical fiscal imbalance. That is, the share of the states expenditure in the total expenditure of the federation is smaller than their share of revenue in the total revenue of the federation while the share of federal expenditure in the total expenditure of the federation is greater than its share of revenue in the total revenue of the federation. Therefore as 1/VIR becomes greater, that is approaches double digit or even moves towards infinity, the more state-favoured the vertical fiscal imbalance. Hence any fiscal adjustment technique that reduces the same towards the vertical parity ratio, one, has a tendency towards a vertical fiscal equalization.

From the above, it could therefore be inferred that vertical fiscal imbalance could be corrected through either revenue or expenditure adjustment. Revenue adjustment would involve transfer of resources from the particular tier of government that enjoys a favoured vertical fiscal imbalance to the other tier of government which is disfavoured. On the other hand expenditure adjustment would involve transfer of expenditure obligation from a particular tier of decision- making that is dis-favoured by the vertical fiscal imbalance to the other tier of authority that is so favoured.

Here, it might seem pertinent to point out that the above interpretations are based on the assumption that the revenue and expenditure of the federal government in equations 28 form the dividend whereas the revenues and expenditure of the states form the divisior. If, however, this order is changed, the reading and the interpretation of the VIR also changes.

III.2.3 OUR APPROACH

This work has adopted both the traditional and the Vertical Imbalance Ratio methods for examining the degree of vertical fiscal imbalance in Nigeria. The traditional methods have been adopted in their forms of simple ratios of division of resource and responsibility (revenue and expenditure) between the governments, and within them also. But as noted, inter alia, the above methods are found wanting in one way or the other, especially in their failure to integrate the fiscal operations of both the centre and the states to arrive at a single indicator of how the revenues of the entire federation are divided between the federal and the federating units in relation to their respective expenditure functions.

III.2.4 VERTICAL FISCAL EQUALIZATION

In order to investigate into the equalizing tendency of federal transfers in Nigeria, the vertical fiscal imbalance before federal transfers has been estimated with the VIR formula cited in equation 28 earlier, for the entire period covered in this work.

That is :

(1) $VIR = RfEs/EfRs$

Thereafter, to ascertain the degree of vertical fiscal imbalance after a particular transfer mechanism has been used, the above formula has to be re-defined to incorporate such transfers effected.

This way, after **STATUTORY TRANSFERS,** the formula becomes :

(2) $VIR = [(Rf - Rst)\ Es] / [Ef\ (Rs + Rst)]$

Where : Rst = Statutory transfers to the states. All other variables in the equation are the same as in equation 28.

Similarly, after **FEDERAL GRANTS :**

(3) VIR = [(Rf - Rfg) Es] / [Ef(Rs + Rfq)]

Where : Rfg = federal grants to the states.

After **FEDERAL LOANS** are disbursed, the equations becomes :

(4) VIR = [(Rf - Rfl) Es] / [Ef(Rs + Rfl)]

Where : Rfl = Federal loans to the states.

And after all transfers have been made,

(5) VIR = [(Rf - Rtt) Es] / [Ef(Rs + Rtt)]

Where : Rtt = total transfers to the states.

If after the above calculation, the VIR obtained in either of the redefined equations above, i.e., 2 to 5 is different from the result yielded by the pre-transfers VIR, that is, "1" above, and if the same tends towards "unity", then the very transfer mechanism which yielded such result will be said to be equalizing, and vice versa.

Should there be a situation whereby the VIR obtained as per the redefined equation is not only different from the one as per the original equation, that is, the pre transfer expression, but also tends "beyond" unity, then, this would be a case of "reversed vertical fiscal imbalance".

Let's say, for an instance, that before and after transfers, the VIR was 1.85 and 0.98 respectively. Here, we see that the post-transfers VIR is not only different from the original one, that is, $1.85 \neq 0.98$, but has also tended "beyond" unity, (0.98 is less than one).

This means that the vertical fiscal imbalance has been reversed because the pre-transfers VIR of 1.85 indicates a federal favoured fiscal imbalance, whereas a post-transfers VIR of 0.98 entails a "states-favoured" fiscal imbalance. This is a situation where the remedy "cures" and "creates" a disease. Here the federal favoured imbalance is corrected, but state favoured imbalance is created.

In order to ascertain "by what degree" a particular transfer channel or the aggregate transfers has effected a reduction in the vertical fiscal imbalance, what has been done is to deduct the VIR of a particular transfer channel or that of the aggregate transfers from the original VIR.

The percentage reduction in vertical fiscal inequality has been calculated with the following formula.

$$R = \frac{IB - IA}{IB - 1} \times 100$$

Where :

R = Percentage reduction in vertical fiscal imbalance

IB = Degree of vertical fiscal imbalance (VIR) before transfers.

IA = Degree of vertical fiscal imbalance (VIR) after a specific method of transfers.

1 = Vertical Parity Ratio, that is, nil vertical fiscal imbalance.

The result of this formula could be negative. This would imply that a fiscal adjustment exercise has worsened the vertical fiscal imbalances. Take for instance if the pretransfers and post-transfers VIR is say, 0.90 and 0.80 respectively. This would imply that the vertical fiscal imbalance before transfers was already state-favoured and the fact that fiscal adjustment has reduced it further to 0.80 indicate, that the state-favoured imbalance has been boosted.

III.2.5 HORIZONTAL FISCAL IMBALANCES

A measure of horizontal fiscal imbalance adopted in this work follows the method adopted by Chelliah et al (1981).[33] The detailed technique is given below :

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33. Chelliah R. J. et al, NIPFP New Delhi, Trends and Issues in Indian Federal Finance, Allied Publishers (P) Ltd, New Delhi, 1981. For detailed discussion on the aproach see, Sen Amartya, On Economic Inequality (Rad-Cliffe Lectures, 1973), Oxford University Press, Bombay, 1972, and also Rao, R. S. Grant-in-aid and Economic Development in India, Chugh Publications, Allahabad, 1986.

III.2.5.1. THE DEGREE OF INEQUALITY IN OWN REVENUE, STATUTORY TRANSFERS, FEDERAL GRANTS, FEDERAL LOANS AND TOTAL REVENUE

The extent of disparity of the states interse in the above variables have been inquired into with the following formula :

$$G = \frac{1}{(2N^2\overline{X})} \sum_{i=1}^{n} \sum_{j=1}^{n} |xi - xj|$$

Where :

G = Gini concentration ratio, i.e., Gini Coefficient

xi,xj = The ith and jth observations of the x variable

$\overline{X}$ = the mean of the observations

N = The sample size.

Before the application of this formula, all the variables have been reduced to per capita value in order to obtain the relative values of the revenue and expenditure the variables. This has been made necessary as any comparison based on the absolute figures may not yield a correct impression. A higher value of the Gini coefficient "G" entails a higher dgree of inequality amongst the states in the requisite variable, and vice versa.

III.2.5.2 EQUALIZING TENDENCY OF FISCAL TRANSFERS ON STATES OWN REVENUE

The equalizing impact of each pool of transfers on states own revenue has been investigated into separately, and then, collectively. Their equalizing tendency will be weighed on the basis of whether or not 'it' or 'they' reduce(s) the Gini cofficients of the states own revenue, and vice versa.

This means that the per capita of a particular transfer method has been added to that of the states own revenue and then the Gini coefficient will be calculated with the formula cited above.

If the Gini coefficient obtained here (after adding the per capita of a transfer channel to that of the states own revenue) is less than that obtained when the formula was applied to the 'states own revenue' alone, then, such particular transfer mechanism is said to be equalizing. An opposite result reflects a non-equalizing tendency of the requisite transfer method.

III.2.5.3. THE TREND OF INEQUALITY OF THE REGIONS AND STATES IN EXPENDITURE ON SOCIO-ECONOMIC VARIABLES

The standard of socio-economic services are presumed to be adequately reflected by the amount of money expended on them by the concerned authority. As such the per capita expenditure on those services will be calculated using the Gini coefficient formula cited earlier. This will reveal to what extent inequality exists amongst the Regions and States. An inter- temporal comparison of these value of Gini coefficient say between T1 and T2, (T = time), will show the trend of the disparity among the states in these socio-economic indicators. These variables include per capita expenditure of the states on General Administration, Health Services, Other Social Services, and Economic Services.

III.2.5.4. DETERMINANTS OF THE INEQUALITY AMONGST THE REGIONS IN EXPENDITURE ON SOCIO-ECONOMIC VARIABLES

An attempt to find out to what extent the inequality of the Regions in various revenue heads influence their inequality in socio-economic variables has been done.

For this a simple linear and log-log linear models have been fitted. The best fit on the basis of R^2 have been chosen for analysis. Thus the inequality in a particular socio-economic indicator has been taken as the independent variable, while the inequality in the revenue heads, say, own revenue and statutory transfers, or own revenue and total transfers etc, are the independent variable. This way, in all the equations, inequality in own revenue of the states becomes a common variable.

This approach has been followed because as noted earlier, inequality among the states in fiscal capacity which is reflected in inequality in own revenue is the basic indicator of horizontal fiscal equity. As such its exclusion in any model that tries to investigate into the determining impact of inequality of states revenues on the differential in the provision of socio-economic services may not be appropriate. The inequality indicators for socio-economic variables and revenue heads used here are the results of Gini-coefficient "G" calculated with the formula cited earlier in page 42. The analysis of horizontal inequalities, using the gini coefficient, has been done in chapter eight.

III.2.5.5 MISCELLANEOUS

The other techniques used in the study are as follows :

(i) Rank correlation coefficient has been used to measure the relative position of the states in terms of their respective own revenue, statutory receipts, grants, loans ecetra. The same technique is followed to examine changes in the aforesaid relative position of the states over a period of time. This will be reflected in the difference in the value of 'R' i.e., Rank Correlation Coefficient between the two periods.

(ii) The regressivity or progressivity of the federal transfers are also verified with the rank correlation coefficient. Thus, a ~~negative~~ positive, rank correlation coefficient 'R' would imply a regressive effect of a particular transfer mechanism, and vice versa. Thus a ~~negative~~ positive R implies that the relatively richer states also got higher per capita transfers from the Centre while the relatively poorer states got lower per capita transfers from the Centre. On the other hand, a ~~positive~~ negative R would imply that the relatively backward states received higher per capita transfers from the Centre while the richer states got lower per capita amount from the Centre.

APPENDIX II

APPLICATION OF THE VERTICAL IMBALANCE RATIO

The practicality of the VIR is demonstrated here. The model is illustrated with hypothetical revenue and expenditure statements of the Centre and the States for an imaginary nation, "I". Later, in chapter six the model is used to investigate into the Centre-State fiscal disparity in Nigeria.

VERTICAL IMBALANCES

Appendix Table II.01 portrays a calculation of VIR with artificial budgetary figures of both the federal and the state governments of the imaginary nation, "I". The table is divided into three parts wherein it is supposed that during the period Y1 to Y4, there is a parity between the aggregate revenue and expenditure of the entire federation. Y5 to Y7 indicate a phase of perpetuated aggregate deficits, whereas Y8 to Y10 on the other hand show a surplus phase. This classification has been made necessary as an avenue to posit the fact that vertical fiscal imbalance is not a phenomenon that rears its head only when the federal government is in a pre-transfers favourable budget position and,or the states in a pre or post transfers budget deficits, as the traditional definition of vertical fiscal imbalance supposes.

It is rather a fiscal problem that manifests itself under different fiscal behaviour of the federal and state govenrments. During this condition, the budget inclination of the federal and the states might infact be in contradition to the big myth which spells that a pre-transfers federal favoured and states dis-favoured budget positions necessarily implies the existence of vertical fiscal imbalance. This classification further shows that vertical fiscal imbalance is not just a federal-favoured crisis as it is often supposed. It could, however, be state-favoured, especially in loose federations or confederated states.

This way from the table under reference, Y1 and Y4 demonstrate the two extreme cases of vertical fiscal imbalance. In the first case, as columns 8 and 10 show, in Y1 the federal

govenrment controlled 99.99% of the total revenues of the whole nation whereas it shouldered only 0.01% of the total expenditure. The states, on the other hand, as it could be observed in coloumns 9 and 11, is in possession of a meagre 0.01% of the revenue but tackled an expenditure obligations of 99.99%.

Thus, when the VIR formula is applied as per equation 28, the result which is shown in columns 14 and 15 indicates an infinitely large VIR. 99933336.67, and an infinitely small 1/VIR, 1^{-08} (0.00000001). This way, as federal share of the total revenue keeps approaching 100.00% and her share of expenditure tends towards 0.00% (which hold the converse correct for the states), the VIR approaches infinity. It would eventually reach same if the situation arises whereby the centre controls the entire revenue of the federation (100.00%) with a zero share in expenditure, whereas on the other hand the states which perform 100.00% of the expenditure functions is entrusted with zero revenue powers.

Another extreme situation is illustrated with Y4. This depicts a case of state-favoured vertical fiscal imbalance. With focus on columns 8,9,10 and 11, it could be seen that the states which control 99.99% of the total revenue has a share of only 1.00% of the total expenditures whereas the federal government which performs 99.00% of all expenditure functions of the federation enjoyed only 0.01% of the total revenue. The result is a VIR of 1^{-08}, that is, 0.0000001 and a 1/VIR of 989654.69. This,as obvious as it is, is a clear reversal of the impression created by Y1.

Similar to the situation of Y1, as the states share of the total revenue approaches 100.00% and their expenditure comes close to 00.00% (which in any case up-holds the opposite for the centre), the VIR approaches zero. It would eventually gets to the zero mark if at any time the states have 100.00% share of the total revenue of all the governments and perform zero expenditure obligation. This would thereby imply that the apex government with zero share in revenue is charged with 100.00% expenditure function of the nation.

These two cases demonstrated above are too extreme to comply with reality, the plauisible values of VIR in practice (as would be seen later when it is applied to Nigeria in

chapter six) would record high departure from these extreme values. This is also depicted by Y5 (during which the aggregate budget of the federation as well as the budget of the states are in deficit while that of the federal government recorded surplus) and Y7 - when the whole federation and the federal government observed deficits whereas the states recorded a surplus. In these two years, the VIR stood at 1.56 and 0.85 respectively. Similarly, in Y8 and Y10, the VIR recorded were 1.14 and 0.78 respectively. In these two periods, the aggregate budget of the federation recorded surplus. The federal recorded surplus in Y8 and deficit in Y10 while the states observed deficit in Y8 and surplus in Y10, and Y7 during the deficit phase, as by Y8 and Y10 during the surplus period.

VERTICAL BALANCE

It is also noted from Appendix table II.01 during the first phase of the hypothetical analysis, (Y1 to Y4), Y2 exhibits situations of fiscal balance with VIR equal to one. It is interesting to note that in Y2 the concentration of revenue in the hands of the federal government is very high, 95.00%. But then a fiscal balance is established with an equal off-setting expenditure concentration at the centre, (see columns 8 and 10). This left the states with a revenue share of only 5% for the year Y2, which is equally matched with 5% share in expenditure.

What this situation portrays is that what is crucial in the estimation of vertical fiscal imbalance is that revenue in the hands of a particular tier of authority be examined jointly with its expenditure within the framework of the revenue and expenditure of the other tier of govenrment.

Thus, as it is evident from above, the fact that a particular layer of decision-making controls higher proportion of the total revenue of all the governments does not mean that vertical fiscal imbalance exists if the same is off-setted by a proportionate expenditure share.

The above cases, no doubt, imply "Centralist" and "Decentralist" federal fiscal systems depending on whether or not the revenue and expenditure are both concentrated with the centre or the federating units.

As it could be seen from the Appendix table (II.01), in the case cited above, not only do the overall revenue and expenditure tally but those of the two tiers of authority also show parity. But in Y6, both the centre and the states are in deficit which is also reflected in the aggregated fiscal operation of all the governments. Even then a vertical fiscal parity is established as the proportion of revenue of each tier of government in the total revenue of the federation is matched by their respective proportionate expenditure shares in the total expenditure of the federation.

Similar picture is also observed in Y9 where the upper and lower-level authorities register surpluses. These instances, again, give credence to the point that proportional distribution of revenue and expenditure between the centre and the states jointly determine the existence or absence of vertical fiscal imbalance.

All the above analysis is based on the proportional distribution of the revenue and expenditure variables of the centre and the states as shown in Appendix table II.01.

Appendix Table II.02, however, shows the VIR with the variables reduced to a common base. As it is seen from columns 14 and 15 of this table, the results obtained here are exactly the same with what is depicted in Appendix table II.01. That is, the VIR remains the same whether the variables are in total absolute amount or whether they are reduced to proportions or common base. This would be so because the relationship between the variables in these cases does not change.

APPENDIX TABLE II.01

VERTICAL IMBALANCE RATIO UNDER DIFFERENT BUDGET BEHAVIOUR FOR COUNTRY I (PERCENTAGE SHARE APPROACH)

YEAR	TOTAL REVENUE (Rt)	TOTAL EXP. (Et)	FEDERAL REVENUE (Rf)	FEDERAL EXP. (Ef)	STATES REVENUE (Rs)	STATES EXP. (Es)	PERCENT AGE SHARE OF FED. REVENUE (Rf) (Rf/Rt)	PERCEN TAGE SHARE OF STATES REV (Rs) (Rs/Rt)	PERCEN TAGE SHARE OF FED. EXP. (Ef) (Ef/Et)	PERCEN TAGE SHARE OF STATES EXP. (Es) (Es/Et)	Rf x Es	Ef x Es	VIR	1/VIR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Y1	85680.00	85680.00	85671.43	8.57	8.57	85671 43	99.99	0.01	0.01	99.99	9998 00	0.00	99933336.67	0.00
Y2	86352 00	86352.00	82034.40	82034.40	4317.60	4317.60	95.00	5 00	95.00	5.00	475.00	475 00	1 00	1 00
Y3	120033 00	120033 00	1200 33	42011.55	118832 67	78021 45	1 00	99 00	35 00	65.00	65 00	3465.00	0 02	53.31
Y4	124569.00	124569.00	12.46	123323.31	124566 54	1245 69	0.01	99 99	99.99	1 00	0 01	9899 01	0 00	989654 69
Y5	127994 00	128888 00	89595.80	77332.80	38398.20	51555 20	70.00	30 00	60.00	40 00	2800 00	1800.00	1 56	0 64
Y6	128284 00	129002.00	93647 32	94171.46	34636 68	34830 54	73 00	27 00	73 00	27.00	1971 00	1971 00	1.00	1.00
Y7	129005 00	130691 00	96753.75	101938.98	32251 25	28752.02	75 00	25.00	78.00	22.00	1650 00	1950 00	0 85	1.18
Y8	136922 00	135877.00	93106.96	88320.05	43815 04	47556.95	68.00	32 00	65.00	35.00	2380.00	2080.00	1.14	0.87
Y9	151699 00	149986.00	98604.35	97490.90	53094 65	52495.10	65.00	35 00	65.00	35.00	2275 00	2275.00	1.00	1.00
Y10	155628 00	152861:00	108939.60	114645.75	46688 40	38215 25	70.00	30 00	75.00	25.00	1750.00	2250.00	0.78	1.29

NOTE : The Revenue and Expenditure figures in this table are all hypothetical.

APPENDIX TABLE II.02

VERTICAL IMBALANCE RATIO UNDER DIFFERENT BUDGET BEHAVIOUR OF COUNTRY I (COMMON BASE APPROACH)

YEAR	TOTAL REVENUE (Rt)	TOTAL EXP. (Et)	FEDERAL REVENUE (Rf)	FEDERAL EXP. (Ef)	STATES REVENUE (Rs)	STATES EXP. (Es)	COMMON BASE, Rf = 100							
							(Rf)	(Ef)	(Rs)	(Es)	Rf x Es	Ef x Rs	VIR	1/VIR
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Y1	85680.00	85680.00	85671.43	8.57	8.57	85671 43	100.00	0.01	0.01	100.00	10000.00	0.00	9993336.67	0.00
Y2	86352 00	86352 00	82034 40	4317.60	4317.60	4317 60	100 00	100.00	5.26	5.26	526.32	526.32	1.00	1.00
Y3	120033 00	120033 00	1200 33	42011 55	118832 67	78021.45	100 00	3500 00	9900.00	6500 00	650000 00	34650000 00	0 02	53 31
Y4	124569 00	124569 00	12 46	123323 31	124556 54	1245 69	100 00	989753.69	999651 20	9997 51	999751.20	989408469538 95	0 00	989654 69
Y5	127994 00	128888 00	89595 80	77332 80	38398 20	51555 20	100 00	86 31	42 86	57.54	5754.20	3699 13	1 56	0 64
Y6	128284 00	129002.00	93647 32	94171 46	34636 68	34830.54	100 00	100.56	36 99	37 19	3719.33	3719 33	1 00	1 00
Y7	129005.00	130691 00	96753 75	101938.98	32251.25	28752.02	100 00	105 36	33.33	29 72	2971 67	3511 97	0.85	1 18
Y8	136922 00	135877 00	93106 96	88320.05	43815.04	47556.95	100 00	94 86	47.06	51.08	5107.78	4463.94	1.14	0.87
Y9	151699.00	149986 00	98604 35	97490.90	53094.65	52495.10	100 00	98.87	53.85	53.24	5323 81	5323 81	1.00	1 00
Y10	155628 00	152861.00	108939.60	114645 75	46688 40	38215 25	100.00	105.24	42.86	35 08	3507 93	4510 20	0 78	1.29

NOTE : The Revenue and Expenditure figures in this table are all hypothetical.