1. INTRODUCTION

Federal form of government, in comparison to the unitary structure, is usually observed in large nations, as it promotes efficiency - both economic and political. Such efficiency is furthered by the division of governmental functions between vertical tiers depending upon their respective comparative advantages. A common market too, within federal structure leads to economic efficiency for the constituent units.

Federalism is said to be efficient from political perspective as well, as it provides for a large population (often heterogeneous) to come together, while allowing the constituents to retain their identity and autonomy over a wide spectrum of public life (Vithal and Sastry, 2001). However, federalism per se cannot guarantee efficiency, which depends primarily on appropriate assignment of functions/duties, provision of adequate resources among different tiers of government, and rules to regulate their relationship. Mere assignment of activities and thus of expenditures is considered as passive form of fiscal federalism while intergovernmental transfer of revenue leads to active fiscal relations, a by and large preferred option.

There exists a considerable volume of literature dealing with federal systems at the national and international levels. However, two sets of factors namely, the ‘impact of globalization’, and the perceived ‘advantages of decentralization’ that lead to the importance of sub-national and local governments; have pushed to the fore contemporary discussions on federalism (Rangarajan, 2004). Another emerging area in the relevant literature is handling of environmental externalities (both positive and negative) in the federal setup that is the focus of this Study. Externalities arise when certain actions of producers or consumers have unintended effects on other producers or / and consumers. Occurrence of such externalities disturbs the equilibrium between public / private costs and benefits and results into sub-optimal outcomes (Sankar, 2003). Intergovernmental fiscal transfers have the potential to be one of the policy options to correct distortions due to such environmental externalities. As there are spatial externalities in the provision of ecological services, intergovernmental fiscal transfers are an innovative way of compensating the local and state public actors for their ecological public functions (Kumar and Managi, 2009).
The Chapter is organized in such a manner to capture the essence of entire work carried out in the Thesis. After introducing the concept of fiscal federalism, the next part of this Chapter deals with contextual relevance of the Study. It also highlights the mosaic of diversity of social-economic and natural resources within the federal system of India. The Chapter subsequently, deals with the importance of environmental externalities within the context of overall sustainability. Equity and efficiency\textsuperscript{1} concerns are important for any society more so, for a diverse country like India. Any fiddling with the parameters of resource devolution framework will no doubt, have a bearing on such concerns. Relevant research questions had been framed to be handled in detail in the later Chapters. The concluding part of this introductory Chapter as a curtain raiser, explains organization of the Thesis.

1.1 FISCAL FEDERALISM

Fiscal federalism is a subset of federalism that deals with the State as an aggregator of national preferences, and the allocation and distribution of resources for desirable governmental interventions at appropriate levels (Musgrave, 1998). Standard text books on economics inter alia, mention that governmental interventions become more relevant where market failures arise, as also is the case of public goods (Musgrave and Musgrave, 1989). It is also well documented that unless sub-national and other lower levels of government have sufficient resources to provide reasonably comparable level of services at comparable levels of taxation, federal system may become dysfunctional. Any mismatch between allocation of responsibilities and the availability of resources at different levels of government has the potential to undermine the efficacy of federalism. In addition, a vibrant federal structure should also encourage efficient use of available resources and provide an appropriate mechanism of incentives and disincentives to the constituent units (Rangarajan, 2004).

A federal unit had several fiscal and political mechanisms for discharging functions by constituent entities. Out of fiscal mechanisms, intergovernmental transfers are resorted for correcting vertical and horizontal imbalances among different entities of federal system. Such transfers tend to equalize the resource base of sub national governments, correct inter-jurisdictional spillovers and

\textsuperscript{1} Efficiency means higher output per unit of given inputs. On the other hand, equity concerns arise out of asymmetry of resource endowment and opportunities among the constituent members.
improve administrative efficiency. Other important criteria for intergovernmental transfers include (Schroder and Smoke 2002): provision of revenue adequacy and growth; predictability, simplicity and transparency; allocative efficiency; equity; incentives for sound fiscal management; and sub-national resource mobilization.

The design of intergovernmental fiscal transfer involves determination of the transfer pool and the allocation of funds among sub-national governments on the basis of an objectively defined formula and/or other considerations. Two important instruments widely deployed for fiscal transfers are ‘devolution of taxes and duties’ and ‘grants-in-aid’. The later could be conditional, matching and input/output/outcome based. In a multi-tier system of governance, intergovernmental fiscal transfers often take place based on certain criteria, not only between different tiers (paternal transfers) but also among different entities at the same tier (fraternal transfers). The types of transfer instruments and considerations for spending autonomy also play an important role in the design of intergovernmental transfers (Shah, 2006).

Selection of appropriate criteria for determining the inter se shares of various administrative units in the overall devolution of resources (both revenue sharing and grants-in-aid) is very important. Population is generally used as the basic indicator of need for public goods and services and a main criterion of fiscal transfer, across the world. It ensures equal per capita transfers across sub national units, provided that there is no differential in the capacities and the needs of sub-national units, as also in the costs of providing various services.

The ‘area’ of a sub national unit is another important factor, as an entity with larger area has to incur additional administrative and other costs to deliver a comparable level of service to its citizens. At the other end of this argument, even the smaller units may have to incur certain minimum costs in establishing the framework of government machinery. Several other criteria such as tax efforts and fiscal discipline etc along with ‘area’ and ‘population’ are considered in the design of the framework for intergovernmental fiscal transfers (Shah, 2006). Grants-in-aid also have a number of variations. They could be state or program specific; matching or non-matching; conditional or unconditional etc. Most of the time, designing such transfers means balancing ‘equity’ and ‘efficiency’ concerns among the constituent units.
1.2 CONTEXTUAL RELEVANCE OF THE STUDY

Whereas the socio-economic functions of public sector have long been a part of the fiscal transfer schemes across the world, functions related to ecological services have not yet been integrated. Available literature primarily focuses on the delivery of socio-economic (civic) services while treatment of intergovernmental fiscal transfers for providing ecological services by the State and sub-national entities is at a nascent stage. Some amount of work has been done in countries like Germany, Brazil, USA, Australia (Ring, 2002 and 2007; Fredriksson, 2002; Hajkowicz, 2007) in integrating environmental externalities into intergovernmental fiscal transfers.

By and large, Indian fiscal federalism too is constrained by considerations of mainly socio-economic parameters for various fiscal transfers. Ecological considerations hitherto overlooked into intergovernmental fiscal transfers in India, cannot any longer, be ignored in view of low per capita availability and immense anthropogenic pressures on natural resources. In order to achieve sustainable development, it is important that all three pillars namely; social, economic and environmental are considered appropriately at various levels of government. As of now, there is only a rudimentary mechanism for intergovernmental transfers incorporating environmental concerns including externalities in India. The reports of XII and XIII Finance Commissions (FCs) had tackled this aspect although, in a limited manner in India.

XII FC for the first time provided grants of Rs.1,000 crore to states based on the forest area within their jurisdictions during the award period 2005-2010. In their report XIII FC further carried forward environmental considerations while granting Rs.5,000 crore each as forest grant, as an incentive for grid connected renewable energy, and as water sector management grant subject to setting up of a Water Regulatory Authority (WRA) and achieving the normatively assessed state-specific recovery of water charges (total Rs.15,000 crore) over and above other grants. As it could be seen, such initiatives are necessary but not sufficient.

In order to counter this lack of environmental concerns in the policy arena in the country, this Study examines Indian fiscal federalism in the light of environmental externalities, and attempts to evolve a framework for the design of fiscal transfers for taking such externalities into account. As per the allocation
function of public policy (Musgrave and Musgrave, 1989), different tiers of government are charged with the provision of various social, economic and environmental services to citizens in India too. The Indian Constitution, which is “basically federal but with strong unitary features” (Basu, 1980); has a clear cut division of various socio-economic intergovernmental functions and division of tax powers. As environment was not a burning issue at the time of framing of Indian Constitution, it did not deal with environment *per se* in a comprehensive manner. However, a framework for dealing with environmental issues had subsequently evolved over a period of time in India.

Environmental functions between different tiers of government in India have evolved through subsequent constitutional amendments and other policy measures since Independence. Judicial activism (largely as a response to public interest litigations) in India too had played an important role in defining environmental functions and earmarking resources (in terms of Net Present Value of forests) to Compensatory Afforestation Management and Planning Agency (CAMPA) beyond directly mandated by state legislatures / Parliament (Supreme Court Order dated 30 October 2002 and 1 August 2003 in IA No. 566 in WP (C) No. 202/95). Various High Courts too, have designated ‘green benches’ and had pronounced important judgments on environmental matters in the country.

In the nutshell, it will be prudent to say that in so far as fiscal federalism in India is concerned, socio-economic considerations have had an upper hand and the environmental issues have been, at best, factored in a cursory manner. Although all three tiers of government in India do earmark and spend considerable financial resources for environmental conservation and related activities (Budget documents of various states and Annual Reports of the concerned Ministries); environmental externalities have not been factored in any significant manner in the Indian fiscal federalism.

Overlooking ecological services especially, externalities in the intergovernmental fiscal transfers in India in a holistic manner, on the one hand leads to scarcity of financial resources for environmental interventions at desired levels, and on the other hand, encourages ‘free-rider’ behavior among the constituent units. As a case in point, deteriorating indicators of water quality at interstate border of Haryana- Delhi and Delhi-Uttar Pradesh of river Yamuna are indicative of ‘free-rider’ tendencies among the concerned states (Water Quality
Status of River Yamuna, CPCB, 2004 and 2005). The unabated pollution caused by industries and other sources in Delhi is mainly responsible for this situation. The brunt is borne by the people down stream of Yamuna. The lack of fiscal resources at the appropriate level (Delhi Pollution Control Committee coupled with lack of facilities and ineffective enforcement) and free-rider behavior of the people and government of Delhi both could be considered as major reasons for compromising ecological sustainability in the instant case. It is not difficult to cite similar examples in several other parts of the country.

1.3 MOSAIC OF DIVERSITY IN INDIA

Indian federal structure is unique in more than one ways and therefore, the theoretical framework and resulting measures available elsewhere in the world, had to be modified as per the specific requirements of the country. Due to the large number of states, which differ in various aspects like area, size of population, income, tax base, and mineral and forest resources etc, designing intergovernmental fiscal transfer system even on socio-economic considerations, has been intrinsically complex in India.

If environmental externalities are to be considered for fiscal transfers, it would enhance complexities manifold of the system. Partly because of this reason, and mainly lesser importance given to environment in the overall scheme of things, such transfers based on externalities had not been attempted in any significant manner in India. As per the reasons mentioned in subsequent sections, environmental externalities can no longer be ignored and need to be integrated in the fiscal federalism in India. Fig 1.1 captures the existing demographic and geographical area diversity among Indian states. This large scale diversity in terms of population and geographic area prevents putting all the states and UTs in India on an equal footing for fiscal transfers.

In addition to area and demographic diversity, there is wide variation in terms of economic development among the Indian states. Fig 1.2 provides a snapshot of interstate comparison in terms of per capita State Gross Domestic Product (SGDP) over past three years in the country. It is not only the absolute numbers but rate of growth in SGDP also varies from state to state. A long time series data will also reinforce this contention. If we consider Union Territories (UTs) as well, the socio-economic diversity would get further accentuated.
Demographic and Geographical Diversity among Indian States

![Graph showing the relationship between area and population among Indian states.](image)

Fig 1.1 Scatter diagram of area and population among Indian states

![Graph showing variations in per capita State GDP for FY 2003-04, 2004-05 and 2005-06.](image)

Fig 1.2 Variations in per capita State GDP for FY 2003-04, 2004-05 and 2005-06

Due to reasons such as geography, resource endowment, political and cultural ethos etc, socio-economic development is unequal within and among Indian states. Although intergovernmental fiscal relations in India are formal, it has been documented that the vertical and horizontal imbalances are large; and any correction of these imbalances is at best partial (Vithal and Sastry, 2001).
The growth experience of the past few decades in India shows that the states with broad industrial base, well-developed institutions and infrastructure have performed better than those without them (Rangarajan, 2004). This leads to uneven growth that further accentuates inter and intra regional inequalities and impairs the capacities of sub national and local governments to provide an acceptable level of services. It could, therefore, be inferred that further stress on federalism is caused due to non-inclusive growth in the society. Although ‘equity’ concerns had been addressed in a number of ways in the Indian society, a lot more still needs to be done.

When it comes to natural resource endowments, the trail of diversity continues in the country. Fig. 1.3 provides a snapshot of forest cover over various states in India. As the Indian society has had low per capita availability (land, water and forests) of natural resources due to large population, it does not have the luxury of overlooking environmental considerations in the decision making process. The states with large natural resource base have their people and government finding no incentive for conserving such resources. As a result, their natural resources are getting eroded over a period of time (Reports of FSI). Forces of globalization also find it attractive to set up their industrial units in the states rich in terms of mineral resources underneath the forest cover and, thereby, further deplete and degrade it. On the other hand, the so called well off and ‘efficient’ states within the Union do not share the cost of utilizing ecological space of natural resource rich states and, in the process, encourage free riding behavior.

Literature survey reveals that most of the Indian literature pertaining to ecological fiscal reforms mainly focuses on greening public income. Much less has been written and done on greening the public expenditure and its allocation (Sankar, 2003). On the basis of the theory of public goods, a political process of resource determination/transfer is required for efficient provisions of public goods (Musgrave and Musgrave, 1989). Somehow, mainstream politics had not bestowed the desired level of attention on the provisioning of ecological services in India. This coupled with the absence of relevant policy inputs has resulted into intergovernmental fiscal transfers almost bereft of considerations of environmental spatial externalities in the country.

Like other fields, public finance has also been endowed with a rich theoretical framework. In the Indian context, the real issue is effectively utilizing
available theoretical framework in the field of public finance for formulating robust public policies. As a case in point, the theory of multi-unit finance (Musgrave, 1959) that deals with the questions of the optimum number of fiscal communities and the number of inhabitants within each community; and the optimal service level for any given group size cannot be straightaway applied in the Indian context. While designing an efficient model for multiple fiscal units differing in size and population as is the case in India, a number of other parameters such as differences in socio-economic conditions and income, congested goods, economies of scale, and benefit overlap and arbitration need to be taken into account (Musgrave and Musgrave, 1989).

![Forest Map of India](https://www.mapsofindia.com)

**Fig 1.3 Forest Map of India (Source: CIL)**

However, on account of historic, cultural and political considerations, widely varying area and population of the states in India is a given fact. Political and administrative ethos also varies among Indian states. Similarly local bodies
both urban and rural, have wide variations on account of a number of parameters namely area, population, resources and institutional capacity. The theory of multiunit finance for the provision of quality public services, therefore, could not be *ipso facto* applied in the Indian context. In order to draw some conclusions from the available theoretical framework and to adapt them in so far as environmental externalities in India are concerned is one of the main motives of this Study.

Due to the aforesaid reasons in the Indian context and to ensure environmental sustainability, it would be useful to identify adjustments to be made to fiscal federalism to respond to the forces of globalization on the one hand; and requirements of decentralization on the other. It could also be inferred that intergovernmental fiscal transfer system in India has to not only consider existing socio-economic but also ecological diversity among various states and UTs, and a host of other complex parameters. This Study is a step in that direction.

Many experts are of the view and rightfully so, that intergovernmental fiscal transfer in India has been carefully crafted after taking into consideration the various forms of socio-economic diversity (Vithal and Sastry, 2001). However, but for the relevant recommendations of XII and XIII FCs, ecological diversity of India has not been considered in the intergovernmental fiscal transfers. This Study attempts to integrate this diversity as environmental externalities in a holistic manner with intergovernmental fiscal transfer system in India.

As discussed earlier, consideration of environmental factors and ecological services had found some mention in intergovernmental fiscal transfers in India. This inadequate treatment of the issue has resulted in the under-provision of some environmental services (clean water) and stress on other ecological services (diminishing per capita forest area) in the country. International experience elsewhere demonstrates that integration of ecological functions into intergovernmental transfers can counteract under-provision of ecological goods and services (Ring, 2007). The present Study, therefore, is very timely and relevant from the point of view of public policy in India.

**1.4 A CASE FOR ENVIRONMENTAL EXTERNALITIES**

Environmental externalities like other externalities in a federal setup affect either positively (states having healthier / larger forests area than the national
average) or negatively (over exploitation of water resources / pollution in interstate rivers) various stakeholders living outside the given jurisdiction. As most of environmental externalities are outside the purview of market mechanism, there is a need for the State intervention exploring the role of different levels of government and their interrelationships through fiscal instruments. The two principal modes of fiscal transfers, namely, tax devolution and grants, need to be evaluated in order to integrate environmental externalities in India.

A proper evaluation depends on certain distinguishing features of both modes namely ‘flexibility in the case of tax devolution’ and ‘fixation in nominal terms for grants’. These modes have their other relative merits and demerits. Buoyancy or otherwise of taxes affects the quantum of tax devolution while the volume of grants once determined remain unaltered over a period of time. While needs, cost disabilities, and fiscal efficiency are the other different criteria for transfers under tax devolution, need of assistance, including critical events, normally decide the quantum of both ‘unconditional’ and ‘specific purpose’ grants. A robust intergovernmental fiscal transfer system needs to factor in all these considerations in an optimum manner. This Study further explores the efficacy of fiscal transfer instruments in the Indian context.

1.5 EQUITY AND EFFICIENCY CONCERNS

‘Equity’ refers to a concept encompassing ideals of fairness and equality. On the other hand, ‘economic efficiency’ refers to the relationship between the monetary value of ends and the monetary value of means. As far as various factors are concerned, the available literature demonstrates that equity factors have a maximum weight in resource transfer formulae in India (Vithal and Sastry, 2001).

At the same time, issues relating to fiscal efficiency encompassing a number of parameters linked to delivery of services and quality of governance have also been considered but not to the desired extent. It is said that ‘equity’ often leads to rob-Peter-to-pay-Paul approach providing certain disincentives to relatively ‘well-off’ and so called ‘efficient’ administrative units within the federation. From the policy perspective, the question of ‘equity versus efficiency’ is paramount for fiscal transfers in a federal structure. The resultant friction between the protagonists of ‘equity’ and ‘efficiency’ could be minimized to an
extent by promoting fiscal transfers to also take into account environmental externalities (both positive and negative), which is the main premise of this Study.

1.6 RESEARCH QUESTIONS

Payment for ecological services after taking into consideration both positive and negative externalities at the intergovernmental levels is a more complex issue than that of socio-economic concerns. Apportionment of cost and benefit sharing among the sub-national units in the federation and the valuation of ecological services in monetary and the real term is fairly complicated and exhaustive. The first research question, therefore, that comes to the mind is “what could be the basis to determine ‘provisioning’ and ‘utilization’ of ecological services by the sub-national units?” In search of the answer to this question, the Study covers both aspects of “conservation of natural resources” and “consumption patterns” observed within and inter se in sub-national units.

The second research question deals with the basis for intergovernmental transfers capturing environmental externalities by different ecosystems. Whether intergovernmental fiscal transfers could be made on the basis of estimates of both opportunity as well as direct costs of conservation of protected areas, is the question? If the answer to this question is negative, what could be the alternative basis for intergovernmental transfers? In this Study, it has also been tried to explore the idea of “whether conservation and consumption of natural resources on the per capita basis by the sub-national entities individually and collectively within a federation could be the basis for intergovernmental fiscal transfers?”

The third research question addressed in this Study is “whether intergovernmental fiscal transfers on the basis of environmental externalities lead to harmonizing ‘equity’ and ‘efficiency’ concerns in the Indian context?” The last but not the least important question is “which principal mode whether ‘tax devolution’ or ‘grants’ (conditional or unconditional) or a combination of both modes and the extent of fiscal transfers, needs to be deployed for accounting for environmental externalities in intergovernmental fiscal transfer in India?” The Study attempts to answer the above research questions.
1.7 ORGANIZATION OF THE THESIS

Chapter 2 deals with the theory and practice of fiscal federalism. It starts with the conceptual framework of fiscal federalism together with relevant international experiences. As a number of competing demands are exerted on the limited financial resources, it is important for policy makers to prioritize such demands and arrive at an optimal solution.

The next Chapter mainly focuses on fiscal federalism in India. The fiscal federal system including role of Financial Commissions, relevant constitutional provisions and related issues in India, are dealt in this Chapter. Chapter 4 confines itself to various aspects of environmental federalism. Environmental federalism in India is also discussed in this Chapter. The conceptual framework and the issue of designing fiscal transfers additionally on the basis of environmental externalities are handled in Chapter 5. Experience available elsewhere in this regard is carefully analyzed in this Chapter. On the basis of certain externalities, a mechanism for internalizing environmental externalities in India is discussed in Chapter 6.

Given the importance of socio-economic concerns and the need for political acceptability, the proposed design framework has been kept simple and incremental steps are considered for transfer among states based on their ‘conservation measures’ and ‘consumption patterns’ without altering the basic formula of transfers implemented by the successive Finance Commissions in India.

Inter-state analysis has been done on the basis of “effective forest area” as a proxy for considering ecological services as positive externalities and “per capita consumption of HSD and MS” in comparison to national averages for capturing negative externalities. It has been found that this methodology is suitable for comparatively larger states in terms of area and population. Smaller states / UTs do need special treatment.

The last Chapter 7 deals with the important findings, limitations and conclusions arrived at in this Study and how they can be put to use in fiscal federalism in India in general. This organization ensures that the dissertation is not only sound on the conceptual framework but also results into relevant policy recommendations.