

FISCAL FEDERALISM IN INDIA: A NEW POLITICAL ECONOMY APPROACH

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DOCTOR OF PHILOSOPHY IN ECONOMICS

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CERTIFICATE

This is to certify that the thesis entitled “**FISCAL FEDERALISM IN INDIA: A NEW POLITICAL ECONOMY APPROACH**” submitted by **Mr. Bharatee Bhusana Dash** bearing **Regd. No. 06SEPH04** in partial fulfillment of the requirements for the award of **Doctor of Philosophy in Economics** is a bonafide work carried out by him under my supervision and guidance.

This thesis has not been submitted previously in part or in full to this or any other University or Institution for the award of any degree or diploma.

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DECLARATION

I **Mr. Bharatee Bhusana Dash** hereby declare that this thesis entitled “**FISCAL FEDERALISM IN INDIA: A NEW POLITICAL ECONOMY APPROACH**” submitted by me under the guidance and supervision of **Prof. Angara V. Raja** is a bonafide research work. I also declare that it has not been submitted previously in part or in full to this university or any other university or institution for the award of any degree or diploma.

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To My Mother

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Bharatee Bhusana Dash
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ABSTRACT OF THE THESIS

Fiscal federalism in India: A New Political Economy Approach

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The six decades of experience of federalism in Indian since its independence could be divided into two phases: first phase, first three decades, is dominated by the practice of centralized federalism, where the state governments were in a subordinate position and hardly had any power to set their own policies; whereas in the second phase, last three decades, the practice of cooperative and competitive federalism is seen, where the state governments are allowed to play decisive roles in setting not only their own policies but also the policies of the central government. Focusing on the second phase of federalism in India, this thesis makes a detailed empirical analysis of the political-economic background on which fiscal decisions related to revenue collection and expenditure allocation of the Indian states are undertaken before these decisions affect the economic outcomes of its states.

Based on the insights obtained from public choice models, that the self-interested politicians try to maximize their political support and minimize their political costs while making decisions on fiscal policies, two categories of political factors, intragovernmental (i.e. vote bank politics at state level to hold power and stay in office) and intergovernmental (i.e. strategic use of intergovernmental transfers at state level to serve political objectives), are identified and linked with revenue collection and expenditure allocation of the Indian states. Finally, the impacts of policy interventions of governments (i.e. through fiscal and decentralization policies) on income inequality of the Indian states are investigated. A panel dataset of 14 major Indian states spread over 27 years (from 1980-81 to 2006-07) is explored for the purpose this thesis and standard panel data estimation methods are used to arrive at the results.

Chapter 2 of this thesis aims at examining the impacts of government-specific political characteristics on fiscal outcomes of the Indian states. Five forms of endogenous political determinants: forms of governments (single party government verses coalition government), ideology of the government (ideologically left-wing government verses right-wing government), electoral cycle years (years just before elections), strength of the opposition (strong opposition verses weak opposition) and majority of the government (simple majority verses super majority); are identified and a number of indices are constructed to capture each of the government-specific political characteristics. Two sets of hypotheses are constructed by linking these political determinants with aggregated and disaggregated fiscal outcomes related to own revenue collections and expenditure allocation. The results of this chapter suggest that the political determinants are systematically and significantly linked with tax revenue

collections, internal debt generation, and expenditure allocation of the Indian states even in the presence of the traditional determinants.

Empirically examining how far the imposition of conditions on intergovernmental transfers has prevented the Indian states from using these transfers to serve their own purposes is the objective of chapter 3. Two types of transfer related measures are linked with aggregated and disaggregated fiscal outcomes related to own tax revenue collections and expenditure allocation. The first measure aims at investigating the impacts of increases in different categories of transfers on different types of fiscal outcomes of the Indian states, whereas the second measure examines how these states adjust their fiscal outcomes to immediate cuts in different forms of transfers. The findings on unconditional transfers suggest that the state governments find it easy to divert such transfers to compensate for tax revenue collections, whereas conditional transfers are observed to improve the collection of direct and indirect tax revenues. Immediate cuts only in conditional transfers improve total and indirect tax revenue collections. The results on expenditure responses suggest that imposition of conditions on transfers has failed to prevent the Indian state governments from diverting these transfers to meet less productive expenditures. Unlike the defiant revenue responses, the expenditure responses of the Indian states are observed to be quite responsive to immediate cuts in conditional and unconditional transfers.

Chapter 4 of this thesis investigates whether there is a link between policy interventions of governments and income inequality across the Indian states. An index based on the concept of relative per-capita income of the Indian states is used to quantify the degree of interstate income inequality and two policy measures related to fiscal and decentralization policies have been used. Expenditure and revenue related measures are used to capture the level of fiscal intervention in the economic affairs in the Indian states. These measures capture the level of government intervention through fiscal policies. Constitutional status was granted to the local governments in 1993-94 with the help of two constitutional amendments. A policy dummy is introduced to account for the impacts of this policy of decentralization on income variations of the Indian states. The findings suggest that both categories of policy measures have reduced the level of regional inequality. The study is also conducted for three sub-samples of 14 Indian states divided according to their levels of incomes. Increasing fiscal intervention has reduced the levels of regional inequality among the low-income states, whereas it has widened with the establishment of local governments. Surprisingly, no significant relation between the level of regional inequality and both policy measures is found among the groups of high-income and middle-income states.

This thesis concludes that politics go hand in hand with public finance management of the Indian states. From the point of view economic performance, the findings suggest that policy interventions of governments (i.e. through fiscal and decentralization policies) have helped reducing income inequality of the Indian states. Some of the findings of this thesis confirm existing presumptions, while others are in contradiction to existing notions.

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Chapter 1

Introduction

1.1 General Introduction

The role of government in economic development is one of the oldest and most controversial topics in economics. Over the years, scholars since Adam Smith have tried to define the role of an ideal government, but there is no unanimity on this. The *laissez faire* doctrine that dominated the debate till the end of 19th century strongly believed in the ability of market forces to allocate resources efficiently in an economy. Government should, under this doctrine, perform only the necessary functions such as providing national defence and maintaining law and order in an economy. However, governments played a major role in financing wars and bailing out economies from the great depression in the first half of the 20th century. Apart from this, the interventionist role of the government was supported on the ground of correcting for market failures.¹ However, by the 1970's, the fact that governments also fail was quite evident and faith on the ability of market forces in redressing government failures and other economic problems begun to revive. Since then, again, the interventionist role of government has been criticised and economies are urged to allow markets to operate relatively freely. However, the new role of the government is not the same as that prescribed in the traditional doctrine of *laissez faire*. Unlike in the *laissez faire* doctrine, the role the government is seen as a facilitator of markets rather than as an intervener. Governments must provide the basic prerequisites that a market needs to thrive, and regulate the monopolies that reduce the welfare of the society. Even though this definition does not explain the role of government completely, certainly, it's one of the lesser controversial definitions. Scholars from various disciplines have contributed in the process of redefining the role of the government.

In modern times, governments use a wide range of public policies as the instruments to achieve the goals of economic development and growth. But what kind of public policies are more likely to accelerate the process of economic development and growth is a difficult question to answer. Motivated by this

¹ Market failure is associated with imperfect information, Externalities, and Public goods.

question, a large body of literature has studied the link between economic outcomes and public policies.² This line of research gained momentum after the seminal works on the theories of endogenous growth formulated by Lucas and Romer in the mid 1980's. The thrust of this strand of literature is that the economic policies can play decisive roles in effecting long-run growth of per-capita income, channelled through individual decisions regarding investment in human and physical capital.³ After these works, a growing literature has emerged over the years to examine the empirical relevance of the findings of the elegantly designed endogenous growth models. The literature tracing effects of various economic policies on per-capita income growth is abundant.⁴ In the recent years particularly, fiscal policies have received increasing attention.

1.1.1 Determinants and the Impacts of Fiscal Policies: A Public Choice Approach

Fiscal policies can foster economic development and growth through a number of different channels. These channels can be both macroeconomic (e.g. through the influence of aggregated fiscal outcomes like the budget deficits) as well as microeconomic (through its influence on efficient use of public resources) in nature. From a macroeconomic perspective, insights obtained from past research suggests that stable fiscal policies like low levels of budget deficit and public debt are key from point of view of economic growth of a country, which in turn helps in reducing poverty and improving human development indicators (Easterly et al., 1994; Chen and Ravallion, 1997; Rodrik, 2000; and Dollar and Kraay, 2001). Moreover, stable fiscal policies reduce the risk of occurring economic crisis and

² Majority of the research that investigates the link between economic outcomes and public policies concentrates on achieving higher economic growth. The economists' fraternity is particularly more concerned about the issue of sustainability of economic growth of a country in long-run, because they strongly believe that higher economic growth for a longer time period can take care of most of the economic problems of an economy. Reinert (1999), Easterly (2001 and 2005), Easterly and Levine (2001), Helpman (2004), Tabellini (2005), and Tanzi (2005) and have reviewed this line of research in detail.

³ Barro (1991 and 1998), and Barro and Sala-i-Martin (1995) have discussed both theoretical and empirical findings of endogenous growth theory in much greater detail.

⁴ Some of the important public policies that are linked with the growth of per-capita income are such as openness to international trade (Frankel and Romer, 1999), fiscal policy (Easterly and Rebelo, 1993a and 1993b), financial development (Levine et al., 2000), and macroeconomic policies (Fischer, 1993).

attracts domestic as well as foreign investors to participate in the economic activities of an economy. The benefits that an economy gets from increasing investments are well-discussed in the literature (Flug et al., 1998; and Gavin and Hausmann, 1998). From a microeconomic perspective, tax, expenditure, and financing policies have significant effects on economic outcomes. Tax-related policies have strong and direct impacts on the decisions of private agents to save and invest, which in turn could influence the economic performance of an economy (Milesi-Ferretti and Roubini, 1998). On the expenditure side, several categories of expenditures and expenditure policies influence the levels of per-capita income and human development indicators. Particularly, increasing spending on infrastructure, education and public health, and research and development can help economies in their growth and development (Lucas, 1988; Barro, 1990; Romer, 1990a; and Bloom et al., 2001). Evidence obtained from cross-country empirical studies vindicates the fact that different components of public expenditure influence economic outcomes differently (Landau, 1983 and 1986; Ram, 1986; Barro, 1991 and 1998; and Devarajan et al., 1996). However, if the policy makers know that prudent fiscal policies hold the key for the development and growth of an economy, why do they not implement such policies? In other words, are there other factors that prevent them from selecting efficient fiscal policies? If so, what then are the determinants of fiscal policies? There are no simple and unique answers for these questions. Different branches of literature have attempted to answer these questions from different perspectives. The insights obtained from public choice theory, which believes political discretions play a crucial role in determining fiscal policies of an economy, has received increasing attention in the recent years.

Public choice theory draws inspiration from the positivist ideas from political science and it always tries to uncover the political motives of a government behind every decision that it takes. Unlike normative welfare theory, standard public choice theory does not subscribe to the assumption that the politicians are benevolent representatives of people. On the contrary, it assumes that the politicians are opportunistic agents and aim at maximizing their utility functions –

that is, holding power and staying in office – just like any other self-interested rational individuals (Downs, 1957; Black, 1958; Buchanan and Tullock, 1962; Olson, 1965; and Mueller, 2003). Public choice models have the view that the government decisions are the results of interest group politics which do not necessarily maximize the welfare of a society. From the public choice theory's point of view, the extent and the degree of government intervention in the economic affairs is not an economic but a political decision. Incumbent political parties follow various redistributive strategies to win elections and remain in power and, quite often, policies of expenditure allocation and tax setting are used as the instruments to serve their purposes (Nordhaus, 1975; and Rogoff and Sibert, 1988). Apart from opportunistic behaviour, public choice models recognize the presence of strategic interactions (Kraan, 1996; and Mueller, 2003). Strategic interactions between political parties, political parties and voters, and governments are discussed in the literature. This approach considers Public Choice as a field that links *any* political consideration with economic decision making.⁵ This thesis identifies what are the political considerations that operate at the levels of state (sub-national) governments in a federation and checks their empirical relevance in case of the federation of India.

1.1.2 The Economic Role of the Provincial Governments in a Federation

Most of the populous countries in the world are federations. Coexistence of national and provincial (state) governments is an inherent feature of any federation. The idea behind practicing federalism is that the distant national government might fail to take care of multiple regional interests and the provincial governments are in a better position to serve the people in comparison to the national government. In a federation, provincial governments enjoy autonomy in collecting taxes, generating debts, allocating expenditures, and managing budget deficits to a considerable extent. Over last few decades, most of the developing countries have decentralized the fiscal responsibilities from central to sub-national governments in some form or the other. It makes the position of sub-national

⁵ See Mueller (2003) for an excellent compilation of various types of Public Choice models in this line of research.

governments even more crucial in a federation. Ultimately, the fiscal decisions undertaken by provincial governments determine their economic outcomes. Interestingly, provincial governments in most of the federations are elected in the same manner as their national governments are elected, but function under same national governments. Hence, from a public choice perspective, there are reasons to believe that political discretions would play their parts in influencing the fiscal policies of provincial governments in a federation too. Apart from this, both levels of governments share the relations and functions at various spheres to complement each other in their smooth functioning. Sharing fiscal relation between both levels of governments could be singled out as one of the most important shared relations. As a part of shared fiscal relations, the national governments allocate intergovernmental transfers to their provincial governments based on different criterion. This allows the provincial governments to prepare strategies to get increasing resources from the national government, which in turn could be used for their own political purposes. Given that the national government is at top and monitoring the activities of its provincial governments, it would be interesting to know how fiscal policies are managed and determined at the provincial level in a federal system before these policies further affect the economic outcomes of its provinces. Considering the case of the Indian federation, this thesis aims at identifying different types of political considerations that would influence the fiscal decisions related to revenue collection and expenditure allocation of the Indian states before these decisions affect the economic outcomes of its states, and examines these links empirically.

1.2 The Research Problem

The empirical verification of public choice models of governments as reflected in the choice of fiscal policies, would involve testing whether the fiscal decisions are influenced by political objectives. In the literature this has been done through cross country studies for a group of relatively homogenous developed countries including the OECD countries. There has been very little empirical work done on developing countries.

However, developing countries vary enormously across the parameters of political regime, electoral system, governance structure, per-capita income, size of population, country-specific fragmentation, historical experiences and institutional background. In the presence of so many heterogeneous factors, conducting a cross-country study for developing countries' does not seem to be the right approach. Instead, a detailed country-specific analysis would avoid the problem of heterogeneity of factors and at the same time incorporate country-specific information. Focusing on the largest federation in the world, India, this thesis first examines the empirical relevance of public choice models on fiscal decisions of the Indian states. Finally, fiscal outcomes are linked with overall economic indicators to investigate the role of the Indian state governments in influencing their economic performance through fiscal policies.

Towards this end, the six decades of experience of federalism in Indian since its independence is divided into two phases: The first phase (1947-80) is dominated by the practice of centralized federalism, where the state governments were in a subordinate position and hardly had any power to set their own policies; the second phase, since the eighties, the practice of cooperative and competitive federalism is seen, where the state governments are allowed to play decisive roles in setting not only their own policies but also the policies of the central government. In the second phase of federalism, the level and extent of government intervention in the economic affairs, which is usually measured in terms of the size of public spending and revenue collection of a country, of the Indian state has increased gradually over the years. In addition to the process of gradual increase in the level and extent of government intervention in the economic activities, many important reforms and policies related to political, economic, and legal aspects were also introduced during this period which helped the Indian economy to perform well along the measures of human development and economic growth in the later years. However, among the policies, the policy of decentralization, constitutional status was granted to the local governments in 1993-94 with the help of two constitutional amendments, is the one which has extended the level and extent of government intervention in the economic activities of the Indian

states further. As the result of these amendments, local governments came into existence and started intervening in the economic activities of the Indian states at very local level. These two amendments enhanced the political status, and assigned greater fiscal responsibilities to the local governments.

Increasing government intervention (i.e. through fiscal and decentralization policies) allows the Indian states to participate increasingly in the processes of achieving higher economic development and growth by setting their own fiscal policies. On the other hand, growing autonomy in setting fiscal policies also allows the state-specific political discretions to play an important role in influencing revenue collection and expenditure allocation of the Indian states. Increasing fiscal interventions of the states governments could produce desirable economic outcomes only if the objectives of the incumbent political parties coincide with the objectives of achieving improved economic performance. However if governments use fiscal policies with the objectives of securing votes, to stay in power; then the increasing fiscal intervention of the state governments *per se* may not bring about desired economic outcomes. Concentrating on the most productive and eventful phase of federalism in India, the second phase, this thesis makes a detailed empirical analysis of the political-economic background on which fiscal decisions related to revenue collection and expenditure allocation of the Indian states are undertaken before these decisions affect the economic outcomes of its states. Based on the insights obtained from public choice models that the self-interested politicians try to maximize their political support and minimize their political costs while making decisions on fiscal policies, two categories of political factors, intragovernmental (i.e. vote bank politics at state level to hold power and stay in office) and intergovernmental (i.e. strategic use of intergovernmental transfers at state level to serve political objectives), are identified in this thesis and linked with revenue collection and expenditure allocation of the Indian states. Finally, the impacts government intervention, measured through fiscal and decentralization policies, on income inequality of the Indian states are investigated.

1.3 Schematic Model

A schematic model is used to analyze the research problem of this thesis logically. The schematic model of this thesis below illustrates the relationships of intragovernmental and intergovernmental political factors with fiscal outcomes in the first stages and the relationship between fiscal outcomes and economic performance later in the second stage (Figure – 1.1). This model is prepared to study the role of the Indian states governments in shaping their fiscal outcomes, and influencing economic performance, subsequently. The subsections that follow discuss these links systematically.

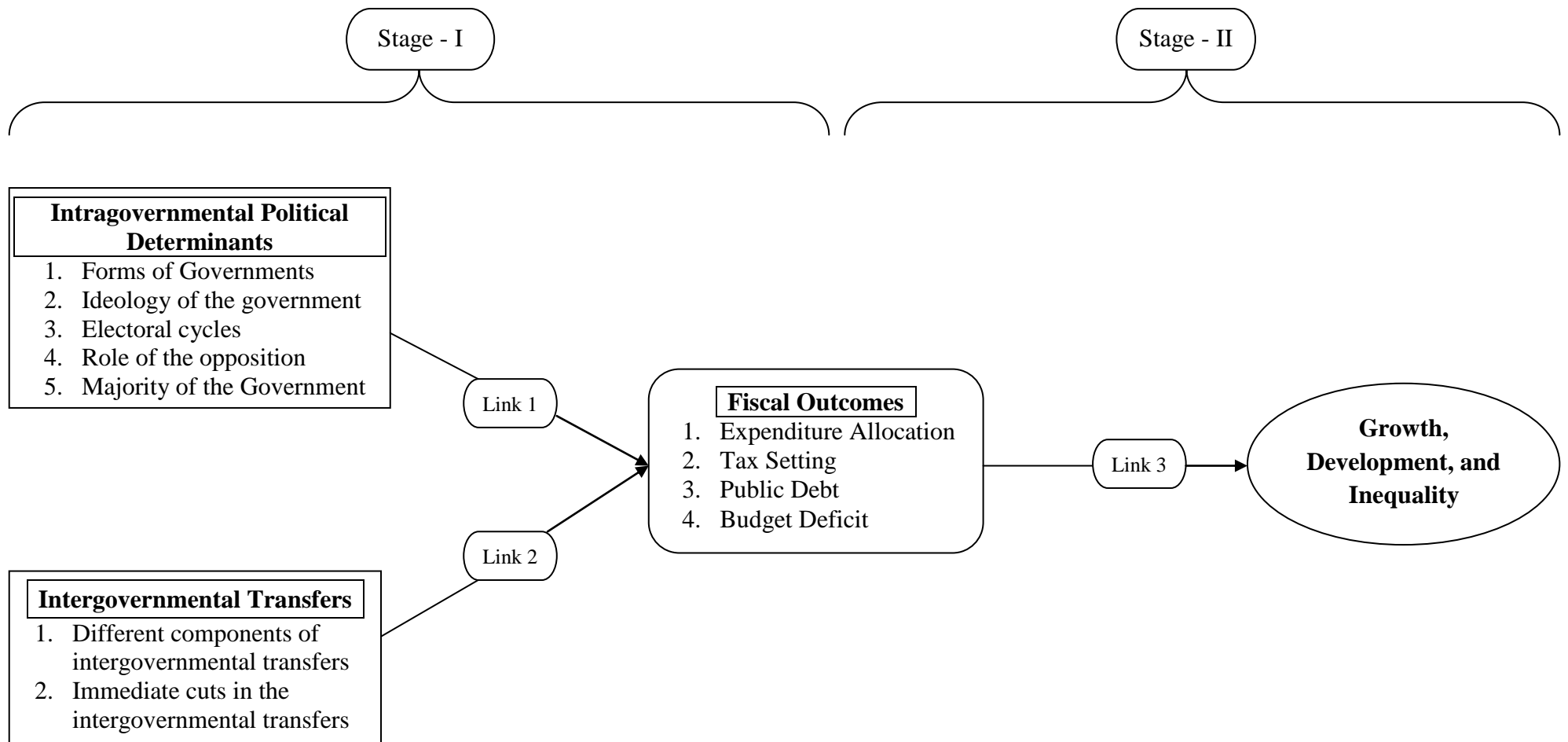


Figure – 1.1: Schematic Model

1.3.1 Intragovernmental Political Determinants and Fiscal Outcomes

Democratically elected governments enjoy utmost power in managing and allocating their annual budgets. Therefore, there are reasons to believe that the incumbent political party's considerations would play an important role in shaping the fiscal policies of an economy to a large extent. The governance structure of the state governments in India closely resembles the central government; both levels of governments are democratically elected for tenure of five years. Since the constitution of India allows for a multi-party electoral system, over the years different national and regional parties have formed governments at both levels. As India is a vast country with multiple regional interests, different political parties have come from different social, political, and historical backgrounds and hold different objectives. Most of the regional political parties have emerged particularly over last three decades and have constituted parts of different governments at different levels over these years. Strong emergence of regional political parties has increased the level of political competition in the elections held during this period and led to the formation of coalition governments quite frequently. Regional differences widen even further in case of the Indian states. Motivated by these facts, this thesis first examines how far these factors affect revenue collection and expenditure allocation of the Indian states.

Shaping public policy is a complex and multifaceted process that involves the interplay of numerous individuals and interest groups competing and collaborating to influence policymakers to act in a particular way. The analysis begins with a well-documented fact that the interest group politics is an inherent part of any political system and powerful interest groups influence the government decisions to a significant extent (Roubini and Sachs, 1989a and b; De Haan and Sturm, 1994 and 1997; Perotti and Kontopoulos, 2002; Ricciuti, 2004, and Bawn and Rosenbluth, 2006). All political parties are affiliated to different types of interest groups and these groups continue supporting their affiliated political parties as long as their objectives are taken care of. Fiscal policies such as group-specific tax exemptions and expenditure diversions are the ones which are often targeted by

the incumbent political parties to cater the objectives of interest groups. Assuming that political parties endeavour to win elections and stay in office by catering the interests of their affiliated interest groups, five types of intragovernmental political determinants; forms of governments (single party government verses coalition government), ideology of the government (ideologically left-wing government verses right-wing government), electoral cycle years (years just before elections), strength of the opposition (strong opposition verses weak opposition) and majority of the government (simple majority verses super majority); are identified in this thesis and are expected to influence the revenue collection and expenditure allocation of the Indian states. Indices are constructed to measure each of the above-mentioned government-specific political characteristics and two different sets of hypothesis are developed linking these political characteristics with the revenue collection and expenditure allocation. Chapter 2 provides a detailed discussion on these issues. Results from this analysis clarify how far the differences in intragovernmental political characteristics of the Indian states affect their revenue collection and expenditure allocation, after controlling for other potential determinants.

1.3.2 Intragovernmental Transfers and Fiscal Outcomes

In a federation, national and sub-national governments are expected to co-operate with each other for the smooth functioning of the economy. One of the important shared functions is the sharing of fiscal relations between both levels of governments. As a part of this, the national government allocates intergovernmental transfers to its sub-national governments in various forms based on different criterion. From a *normative* perspective, the practice of allocating intergovernmental transfers to the sub-national governments in a federation is justified on the ground of *horizontal equity*. The principle of *horizontal equity* is driven by the argument that, with the practice of equitable resource distribution, the resource deficiencies that arise across the sub-national units due to systematic and identifiable factors will cancel out. However, it remains to be tested whether intergovernmental transfers are used in this fashion or are a strategic instrument that allows both levels of governments to pursue their

own political objectives. From the point of view of a national government's political objectives, allocation of intergovernmental transfers could be used as an instrument to gain political support of different regional constituencies during the national level election in a federation. Evidence obtained from country specific studies suggest that the higher level governments divert intergovernmental transfers to those regions where they expect increasing political support during elections.⁶ On the other hand, sub-national governments could use such transfers to serve their own political purposes, including securing vote banks, holding office, and staying in power. Focusing on analyzing the fiscal behaviour of sub-national governments, this thesis, in chapter 3, concentrates on the issue of strategic use of intergovernmental transfers at the Indian state level.

To prevent sub-national governments from using intergovernmental transfers strategically, recent studies have emphasized on careful designing of such transfers in a federal system (Weingast, 1995; Wildasin, 1997; Oates, 1999; Boadway and Shah, 2007; and Freinkman and Plekhanov, 2009). From the point of view of designing intergovernmental transfers, all intergovernmental transfers in India could be divided broadly into conditional and unconditional transfers. Examining how far imposition of conditions on transfers has succeeded to prevent the Indian state governments from using these transfers to serve their own objectives such as substituting for tax revenues and diverting to meet increasing needs of public expenditures is the purpose of the present study. Allocation of intergovernmental transfers does not follow an increasing trend all the time. Therefore, this study also examines the fiscal response of the Indian states to immediate cuts in the intergovernmental transfers.⁷ Results of this study identify the channels through which intergovernmental transfers are used to manage the fiscal outcomes of the Indian states.

⁶ See Grossman (1994) for US, Worthington and Dollery (1998) for Australia, Jones et al. (2000) for Argentina, Rao and Singh (2001), Khemani (2007) and Arulampalam et al. (2009) for India, Johansson (2003) for Swedish municipalities, and Veiga and Pinho (2007) for Portugal;

⁷ Seminal studies by Gramlich (1987), Stine (1994), and Gamkhar and Oates (1996) observed for the first time that the sub-national governments of USA respond asymmetrically to immediate cuts in intergovernmental transfers.

1.3.3 Fiscal Outcomes and Economic Performance

Governments use various public policies to intervene in the economic activities and influence the economic performance of a country. There has been a recent debate in the literature on the role of government as to whether government interventions accelerate or retard the economic performance of a country. Traditionally, economists are of the view that excessive government interventions result in deteriorated economic outcomes. However, these views did not find much empirical support from the experiences of developing countries.⁸ The view regarding government intervention in the economic activities is drawn based on the experiences of developed countries, where market forces take care of most of the problems and governments perform only necessary functions such as maintenance of law and order, environment protection, maintenance of macroeconomic stability, and facilitating physical infrastructure. On the contrary, in the LDCs, apart from performing basic functions, governments in such countries play an important role in providing ideal conditions for the successful operation of markets and facilitating essential public goods and services such as education, health care, and other kinds of economic and social services to the vulnerable sections of the society. Hence, the scope for the interventionist role of government in an economy is more of context specific. From a developing country's perspective, growing income inequality is also an important issue apart from achieving higher economic growth. To complete the logical link between fiscal outcomes and economic performance, this thesis finally investigates the link between policy interventions of governments (i.e. through fiscal and decentralization policies) and interstate income disparities in the context of the Indian states.

Over last three decades, the level of government intervention, measured in terms of the size of public spending and revenue collection of a country, in the Indian

⁸ Bardhan (2000) shows that a more active government has helped East Asian economies (including that of Japan) in achieving higher level of economic growth and development by intervening in the economic affairs. Similarly, an active government has also an important role in the process of achieving higher growth and development of the Indian economy over last two decades (Rodrik and Subramanian, 2004; Panagariya, 2004; and Kochhar et al., 2006).

states has increased considerably. Apart from this, the policy of decentralization has extended the level of government intervention in the Indian states further by enhancing the political status, and assigning greater fiscal responsibilities to the local governments. How far these policy interventions have influenced the economic outcomes of the Indian states is an empirical question. The present study empirically investigates the impact of the level of government intervention (i.e. through fiscal and decentralization policies) on regional income inequality of the Indian states. An index based on the concept of relative per-capita income of the Indian states is used to quantify the degree of interstate income inequality. Expenditure and revenue related measures are used to capture the level of fiscal intervention in the economic affairs in the Indian states. Apart from this, an important step towards decentralisation was adopted with the help of two constitutional amendments in 1993-94 wherein constitutional status was granted to the local governments. A policy dummy is introduced to account for the impacts of this policy of decentralization on income variations of the Indian states. The dummy variable differentiates between the years of pre- and post-policy implementations. Chapter 4 discusses the construction of these variables in detail. The scope for government intervention is not same across all states. Hence, the possibility that the impacts of government policies might be different on different states cannot be ignored. To explore this possibility, the present study also investigates the impacts of the policy measures of government intervention on the levels of regional inequality of the Indian states within different income clusters.

1.4 Objectives of the Study

This thesis begins with an outline of the literature which shows that the role of government in the process of attaining economic growth and development in an economy is instrumented through a wide range of public policies. Then, paying special attention on fiscal policies, it outlines the literature which identifies various political discretions that play a significant role in the background which influence policy before they determine the economic outcomes of an economy. Given this analytical framework, this thesis undertakes a detailed empirical analysis on how the government-specific political characteristics and the centre-

state fiscal relation of the Indian federation influence fiscal outcomes of its states before these outcomes affect their economic outcomes further.

The broad objectives of this thesis are to:

1. Construct indices to measure government-specific political characteristics such as the degree of political fragmentation of governments, ideological stands of governments, electoral cycle years, size of majority of governments, and strength of the opposition of the Indian states.
2. Designing hypotheses linking government-specific political characteristics with both aggregated and disaggregated fiscal outcomes of the Indian states and examining them empirically.
3. Examine how fiscal outcomes of the Indian states respond to imposition of conditions on intergovernmental transfers.
4. Examine whether the Indian states adjust their fiscal outcomes systematically to immediate cuts in the intergovernmental transfers or not.
5. Construct indices to measure the degree of interstate income inequality and policy interventions of governments (i.e. through fiscal and decentralization policies) in the Indian states.
6. Investigate the link between policy interventions of governments and interstate income disparities across the Indian states.

1.5 Data and Methodology

In order to empirically examine the above-mentioned objectives of this thesis, a panel dataset of 27 fiscal years (1980-81 to 2006-07) across 14 major Indian states,⁹ which are chosen on basis of population criteria, is explored. These states

⁹ 16 Indian states that meet the criterion of populous state are: Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal. However, Assam and Jammu and Kashmir are regarded as the special category states. These two states receive special treatments from the central government. Hence, this study ignores the two special category states and concentrates on rest of the 14 non-special category Indian states. In the year 2000 three new

constitute more than 85 percent of the total Indian gross domestic product (GDP) and population.

Annual data on revenue and expenditure budgets of both central and state governments of India are taken from various issues of Reserve Bank of India (RBI) Bulletin. Data on Per-capita SGDP (State Gross Domestic Product) Income, Poverty Rate, and contribution of primary and secondary sector to the SGDP are collected from Central Statistical Organization (CSO). Census Data are used for Dependency Rate and Literacy Rate. Statistical Reports on General Elections to the State Legislative Assemblies are used to construct all political variables of this thesis. Finally, the information given in the 11th Finance Commission Report regarding the years of establishing local governments in different Indian states is used to construct the decentralization policy variable.

Standard panel data estimation methods such as Panel-Correcting Standard Errors (PCSEs) estimation method, two-way fixed-effects estimation method, feasible generalized least squares (FGLS) estimation method, two-stage least square (2SLS) estimation method, and Instrumental Variables (IV) estimation method are used in this thesis to arrive at the results.¹⁰ PCSEs estimation method is used to examine the impacts of state-specific political determinants on revenue collection and expenditure allocation of the Indian states (Chapter 2). FGLS estimation method is employed to investigate the response of own tax revenue collection and expenditure allocation of the Indian states to different forms of intergovernmental transfers (Chapter 3). Five different instruments are selected and 2SLS estimation method is employed to check and address the issue of endogeneity of intergovernmental transfers. Two-way fixed-effects estimation method is used to investigate the link between the level of government intervention and regional income inequality across the Indian states (Chapter 4). Instrumental Variables (IV) estimation method is employed to tackle the problems of endogeneity, where

states were formed: Chhattisgarh (November 1, 2000) was created out of eastern Madhya Pradesh, Uttaranchal (November 9, 2000) was created out of the Hilly regions of northwest Uttar Pradesh, and Jharkhand (15 November 2000) was created out of the southern districts of Bihar. Necessary adjustments in the variables of the parental states are made in the dataset to control for the fact of division of the new states.

¹⁰ The statistical software STATA 10.0 is used to estimate the all results of this thesis.

first lag of the first fiscal measure of government intervention is used as the instrument.

1.6 The Intended Contribution of this Research

This thesis contributes to the literature on the role of state governments in a federation in several ways. First, most of the previous studies have used traditional determinants such as economic fluctuation (business cycles), budgetary institutions (budget constraints), and socio-economic factors (per-capita income, size of population, literacy, poverty and so forth) to explain the differences in revenue collection and expenditure allocation across the state governments in a federal system. This thesis chooses a different set of measures related to incumbent political party's opportunistic behaviour, to explain these differences. Second, usually dummy variables are used in the literature to capture the qualitative government-specific political characteristics of forms of governments (single party verses coalition) and ideology of a government (left-wing verses right-wing). This study has constructed indices in such a way that the degree of fragmentation level and different forms of ideological stands of governments are captured. Apart from this, two other government-specific political characteristics, role of opposition and strength of a government, which are usually ignored in most of the studies, are considered in this study. Third, by linking these political characteristics with the measures of revenue collection and expenditure allocation through two sets of hypothesis, this study provides a better theoretical understanding in this line of research. Fourth, contributing to the literature on fiscal response of intergovernmental transfers, this thesis shows the importance of designing such transfers, particularly conditional verses unconditional transfers, to prevent state governments from using these transfers systematically and strategically to serve their own redistributive purposes. Finally, usually policy interventions of the state governments in a federation are linked with regional economic growth. This study analyzes the impacts of the level of government intervention (i.e. through fiscal and decentralization policies) on the level of regional income inequality across the major Indian states. The present study also explores the possibility of different impacts of policy interventions of

governments on the levels of regional inequality within the states of different income clusters as the receiving ends of the underdeveloped states from the government policies might be different from that of developed ones.

1.7 Plan of the Study

Outline of this thesis is the following. Chapter two entitled ‘Political Determinants of Fiscal Outcomes: A Study of the Indian States’ examines how far the fiscal outcomes of the Indian states are influenced by government-specific political characteristics. It begins with an introduction to the research problem. Then a brief review of the broad literature on political determinates of fiscal outcomes is presented and a number of problems associated with the existing studies on political determinants of fiscal outcomes of the Indian states are identified (Section 2.2). A brief profile on the political practices of India since independence is provided in Section 2.3. A number of hypotheses are designed to link political determinants with fiscal outcomes (Section 2.4) and a snapshot picture of the dataset and variables used in chapter two is presented (Section 2.5). After explaining the model specification issues (Section 2.6), the original findings of the study (Section 2.7) and the issues related to the consistency of baseline findings (Section 2.8) are discussed. Finally, broad conclusions of the study are presented (Section 2.9).

Chapter three ‘Intergovernmental Transfers, Conditionalties, and Fiscal Outcomes: Evidence across the Indian States’ investigates the fiscal response of the Indian states to different categories of intergovernmental transfers. It begins with an introduction to the research problem. Then a brief review of the literature that links intergovernmental transfers with fiscal outcomes of sub-national governments is presented and some empirical issues which are either completely ignored or partially addressed in the literature are identified (Section 3.2). After presenting the practice of fiscal federalism in India (Section 3.3), the significance of designing intergovernmental transfers to prevent sub-national governments from using these transfers for redistributive political purposes is discussed (Section 3.4). This is followed by a summary of the dataset and variables used in

this chapter (Section 3.5). Issues related to selecting appropriate econometric techniques for the estimation of results are discussed in Section 3.6. Then the original findings of the study (Section 3.7) and the issues related to the sensitivity of the original findings (Section 3.8) are analyzed. Finally, some broad conclusions of the study are discussed (Section 3.9).

Chapter four aims at examining how policy interventions of governments affect economic outcomes of the Indian states. This chapter ‘Government Intervention and Regional Inequality: Evidence from the Indian Experience’ examines the relationship between the level of government intervention (i.e. through fiscal and decentralization policies) and income inequality across the Indian states. It begins with the significance of studying the problem of regional income inequality from the perspective of policy interventions of the state governments in India. This is followed with a summary of existing theoretical and empirical literature on fiscal and decentralization policies, and economic performance (Section 4.2). Then the process of policy interventions of governments in the Indian states is discussed briefly in Section 4.3. After discussing the baseline econometric model and the variables, descriptive statistics of the policy measures of government intervention and regional inequality, and the major findings (Section 4.4), broad conclusions of the chapter are summarized in Section 4.5. Finally, thesis summary and conclusions are discussed in Chapter five.

Chapter 2

Political Determinants of Fiscal Outcomes:

A Study of the Indian States

2.1 Introduction

What determines the variations in the fiscal outcomes of an economy? A large body of literature discusses a wide range of determinants. The traditional literature uses standard economic and demographic determinants such as income level, growth rate, population size, geographical structure, and trade participation rate to explain the variations in fiscal outcomes of an economy.¹¹ This strand of literature implicitly assumes that the government is a benevolent agent of the people which maximizes the social welfare of the society without being self-interested. On the other hand, the alternative set of explanations come from a relatively new strand of literature which argues that, apart from the traditional determinants, the political determinants such as the political institutions and the political practices play decisive roles in shaping the fiscal outcomes. In a democratically elected political system the elected government enjoys considerable amount of power in managing and allocating annual budgets. Hence, there are enough reasons to believe that political considerations also play a significant role in influencing the fiscal outcomes of an economy.¹²

While the traditional determinants of the fiscal outcomes enjoy wide empirical support, the empirical literature on the political determinants of the fiscal outcomes is confined to the OECD countries with the exception of Mukherjee (2003) which considered a sample of 110 countries. There has been very little country-specific work done. It has been observed that just as the fiscal outcomes public expenditure, revenue collection and the budget deficit vary enormously across the countries, fiscal performance across the Indian states also varies significantly. The constitution of India allows for a multi-party electoral system and for this reason different national and regional political parties form

¹¹ The existing literature in this area of research is quite extensive. However the major studies are Cameron (1978), Meltzer and Richard (1983), Ram (1987), Wallis and Oates (1988), Musgrave and Musgrave (1989), Easterly and Rebelo (1993), Oxley (1994), Alesina and Spolaore (1997) and Alesina and Wacziarg (1998).

¹² Major studies along this dimension include economic studies such as De Haan and Sturm (1994 and 1997), Poterba and Von Hagen (1999), Milesi-Ferretti et al. (2002), Persson and Tabellini (1999, 2000 and 2003a), Harrinvirta and Mattila (2001), Perotti and Kontopoulos (2002), Rucciuti (2004), and Bawn and Rosenbluth (2006); and political studies by Castles (1998), Lijphart (1994 and 1999) and Alvarez et al. (2000).

governments at national and state levels. Budgets are passed at both the levels of governments as per the constitutional provisions. Different political parties have different objectives and have come from different social, political, and historical backgrounds. These parties constitute parts of different governments at different levels. It would be interesting to examine whether these factors affect the fiscal outcomes across the Indian states or not. Using a panel dataset of 14 major Indian states spread over 27 years (from 1980-81 to 2006-07), this chapter attempts to examine whether the fiscal outcomes of the states of the Indian Union are systematically related with government-specific political characteristics.

The chapter is organized as follows. Section 2.2 reviews the literature and identifies the gaps in the studies on the Indian states. Section 2.3 discusses briefly the political practices in India. Section 2.4 discusses the hypotheses of the study. Section 2.5 deals data and variables and section 2.6 discusses the model specification. Section 2.7 discusses the empirical results of the study and section 2.8 checks the robustness of the results. Finally, section 2.9 summarizes and concludes the finding of the chapter.

2.2 Literature review and identifying the gaps in the studies on the Indian states

The literature on the political determinants of the fiscal outcomes of an economy emphasizes two broad categories of factors i.e. the political institutional factors and the political practices, which vary enormously across the countries.¹³ The political institutional factors are:

- (a) Representative system of voting: proportional system verses pluralistic system (Persson and Tabellini, 1999, 2003a; and Milesi-Ferretti et al., 2002);
- (b) Different regimes: presidential regime verses parliamentary regime (Persson and Tabellini, 1999, 2003a; and Alvarez et al., 2000);

¹³ In appendix – 2.2, table – 2.15, an overview of selected empirical studies on political determinants of fiscal outcomes is provided.

- (c) Party system: bi-party system verses multi-party system (Perotti and Kontopoulos, 2002; Ricciuti, 2004; and Bawn and Rosenbluth, 2006).

Political practices that are used as variables in studies refer to:

- (a) Frequency of elections, which is known as the political or electoral cycles in the literature (Persson and Tabellini, 2003b; Shi and Svensson, 2006; and Rogoff and Sibert, 1988);
- (b) Forms of governments: single party government verses coalition government¹⁴ (Laakso and Taagepera, 1979; Harrinvirta and Mattila, 2001; Mukharjee, 2003; and Ricciuti, 2004);
- (c) Ideology of government (Biais et al., 1993; Van Dalen and Swank, 1996; Perotti and Kontopoulos, 2002; Mukharjee, 2003; and Tavares, 2004);
- (d) Majority system: simple majority verses super majority (Roubini and Sachs, 1989a, 1989b; De Haan and Sturm, 1994, 1997; and Ricciuti, 2004); and
- (e) Role of the opposition: strong opposition verses weak opposition (Padovano and Venturi, 2001; and Ricciuti, 2004).

The political institutional factors are determined by the constitutional laws of a country, whereas the political practices evolve over the years. Both the categories of political determinants vary from country to country, government to government and election to election.

2.2.1 Studies on the Indian states and a summary of their findings

At least three studies have attempted to link the political dimensions with the fiscal outcomes across the Indian states (Dutta, 1996; Lalvani, 2005; and Chaudhuri and Dasgupta, 2006). The overall results of the previous studies show that:

¹⁴ In the literature the coalition governments are also known as the divided governments or the fragmented governments or the weaker governments. These different names of the coalition government are used interchangeably in this study.

- (a) Political Fragmentation is negatively related with revenue collections and public expenditures (Chaudhuri and Dasgupta, 2006), whereas Lalvani (2005) finds a positive relation of political fragmentation with both. However Dutta (1996) finds unstable coalition governments overspend on revenue account and does not find any relation with the revenue collections.
- (b) Chaudhuri and Dasgupta (2006) find that the electoral cycle years are associated with lesser revenue collection, lesser spending on the current account and more spending on capital account development expenditure.

2.2.2 Limitations of the studies on the Indian states

There are several problems with the above studies that are worth mentioning:

The studies by Dutta (1996) and Lalvani (2005) used binary dummy variables to capture the fragmentation aspects of a government, whereas Chaudhuri and Dasgupta (2006) used the number of months of a fiscal year that is ruled by a coalition government as the measure to capture the fragmentation aspect of a government. However the *degree* of fragmentation of a government cannot be captured completely by the above mentioned measures. The existing studies merely differentiate between a single party government and a coalition government. Not considering the different possible forms of coalition governments is the *first* limitation of the existing studies on the Indian states. Coalition governments could be of many types. Theoretically, coalition governments could consist of two political parties at one extreme end or be composed of as many as political parties that are required to form the government with required majority (i.e. when every political party holds just one *seat* in the legislature) at the other end. A marginally fragmented government (i.e. of two parties with a dominating partner) is expected to influence the fiscal outcomes differently than that of a highly fragmented government.

The *second* limitation of the existing studies is the time periods of the studies. In Dutta (1996) and Chaudhuri and Dasgupta (2006), the time period begins from early 1970's and ends in early 1990's, whereas Lalvani (2005) starts with the year

1981-82 and ends up in 1998-99. Elections held before the general election of 1980-81 are known for little or no political competition and not many coalition governments were seen during this period.¹⁵ All these studies end when the existence of coalition forms of governments had just begun. The period from 1976-77 to 1979-80 is known as the period of political instability as far as the political situation and the electoral outcomes of India are concerned.¹⁶ On the contrary, in the elections held after 1980-81 political parties faced tougher competition from other national and regional political parties at both levels of the governments. Moreover this was the year when fresh elections were held parallelly at the national level and in most of the states. Considering the above-mentioned reasons, the years after 1980-81 seems to be the ideal time period.

The *third* limitation of the existing studies is that other potential government-specific attributes such as the position of the opposition, the electoral cycles, the kind of majority a government enjoys in the legislature, and the ideology of a government are ignored either completely or partially. The recent literature substantiates the fact that, apart from the factor of fragmented government, above mentioned government specific attributes influence the fiscal outcomes of an economy to a considerable extent. The comparative role of a strong (united) opposition to a weak (fragmented) opposition in making the government accountable and transparent is well discussed in the literature (Padovano and Venturi, 2001; and Ricciuti, 2004). Similarly, ruling political parties using the redistributive political strategies such as budget expansion, tax exemptions, and deficit budgets to appease the voters just before the year of election are commonly observed pre-electoral political practice across the world (Persson and Tabellini, 2003b; and Shi and Svensson, 2006).¹⁷ The practice of incumbent political parties treating electoral cycle years differently from other years during an electoral tenure is also observed across the Indian states (Khemani, 2004). Apart from the

¹⁵ The elections held before 1980-81 were dominated by the Indian national Congress (INC) party single-handed at both centre and states. Hence, neither political competition was observed nor many coalition governments were formed.

¹⁶ During this period governments fell pre-maturely at both centre and states; president's rule was imposed frequently and unconstitutionally to serve the political interests (Dua, 1979); and unprecedented constitutional amendments were made on a regular basis (Austin, 2003).

¹⁷ Such practices are known as 'Political Cycles' or the 'Electoral Cycles' in the literature.

fact of which form of government exists, the excess support (i.e. over and above the required provision of simple majority while forming a government) it enjoys in the legislature also plays a crucial role in terms of providing some sort of stability to the government (Brass, 1977; Roubini and Sachs, 1989a, 1989b; and Dutta, 1996). Stability of a government helps it in making firmer policies and taking tougher decisions whose benefits could only be realized in the future. Similarly the ideology of a government also plays a major role in the process of determining its fiscal outcomes (Biais et al., 1993; Van Dalen and Swank, 1996; Perotti and Kontopoulos, 2002; and Tavares, 2004).¹⁸ Among the existing studies, only Chaudhuri and Dasgupta (2006) controls for the electoral cycle years, whereas ideology is used only to test the robustness of the results. However they have used the number of months, converted into years, a left-wing government ruled in a state during an accounting year as the measure of the ideology of a government. Again, ideology is not simply a binary measure. There are many other intermediate ideological positions that a government can take in between two extreme positions.¹⁹

When the president's rule²⁰ is imposed in an Indian state, the elected state government are suspended from ruling that state. In such a situation, a suspended government cannot be considered as responsible for the fiscal outcomes of that year. As the state government and its government-specific characteristics are not responsible for the fiscal outcomes of a president's rule imposed year, such years should be ignored from the analysis for the respective states. However the tenure of the president's rule affects fiscal outcomes. Only the years whose major portion is spent under president's rule should be dropped. Hence, there should be some criterion to decide whether the years that are affected by the imposition of president's rule should be dropped from the analysis or not. Among the existing

¹⁸ A left wing government is expected to emphasize redistributive policies more than a right wing government.

¹⁹ For instance the paper by Perotti and Kontopoulos (2002) discusses five different types of ideological stands that the governments could have.

²⁰ President's rule is imposed when: (i) a state government fails to control the law and order situation within the state and/or (ii) no political party or a coalition of parties enjoy clear majority in the assembly to form the government. Article – 356 of the Indian constitution deals with the issue of imposing president's rule in detail.

studies, only Lalvani (2006) has controlled for the years of imposition of the president's rule by introducing a binary dummy variable in the regression model. However this has the tendency to exclude those years that may have had presidents rule imposed for a very short period and one which may not influence the fiscal outcomes at all from the analysis. This could be regarded as the *fourth* limitation of the existing studies on Indian the states.

The elections are not always held either in the beginning of the fiscal year or at the end of it. Many times elections are held in the middle of a fiscal year. After a fresh election all other government-specific attributes that are considered also change along with a change of government. When the governments change in the middle of a fiscal year, necessary adjustments for the changes in the government-specific attributes need to be incorporated in the analysis. Not accounting for such changes is the *fifth* limitation of the existing studies on the Indian states.

Given these limitations the present chapter provides a more robust and complete analysis that takes into account the above mentioned problems and incorporates the necessary variables that would overcome the shortfall of existing studies:

- (a) This chapter has used the Effective Number of Parties in the government (ENPG) as the measure to capture the different possible forms of coalition governments and thus captures the degree of fragmentation.
- (b) The time period of this chapter is chosen from 1980-81 to 2006-07 to avoid the abnormal and politically non-competitive years.
- (c) The chapter introduces other government specific variables such as Effective Number of Political Parties in the Opposition (ENPO), the support that the government enjoys in the legislature (stability), the electoral cycle years, and Ideology as determinants of the fiscal outcomes.
- (d) An explicit criterion is evolved to accept or drop particular years from the data set in which presidents rule was imposed as against a simple dummy variable.

- (e) The chapter has used the method of weighted averages to account for the changes in the government specific variables whenever governments changed during the fiscal year.

This chapter extends and refines the previous studies in a significant way and thus provides results that are far more robust than those reported previously. It is seen that some results differ from the previous studies.

2.3 A brief political profile of India

In India governments exist both at the national and state level. The power structure of the state governments is a replica of the central government's power structure. Indian constitution has adopted the pluralistic voting system where the representatives are directly elected by the voters. Each Indian state is divided into few electoral districts, based on their size of population, and these districts are represented by the elected representatives. Finally, governments are formed according to the number of seats occupied by a party or a set of parties in the state legislature. As per the constitutional provisions, an elected government can rule a state for a tenure of five years. A government holds the right of ruling a state as long as it enjoys at least the support of simple majority in the assembly (i.e. legislature at the state level in India). In the era of coalition governments, governments have usually found it difficult to rule for the electoral tenure of five years. Hence, the frequency of holding elections in the Indian states has increased particularly in the recent decades.²¹ Sometimes president's rule is imposed in the Indian states when no particular party or coalition of parties enjoys support of required majority in the assembly to form government. During the imposition of president's rule in a state, the ruling party at the centre also rules in that state.

The first democratic election in the independent India was held in the year 1951. The Indian National Congress party (INC), ideologically a left-centric political party, which had played a crucial role during the freedom struggle of India, had

²¹ See appendix – 2.2, table – 2.7, which show the frequency of the elections and forms of governments led by different political parties across the Indian states since 1975.

won most number of elections both at national and state level. In fact, INC had dominated elections at all levels till the year 1967 when the Congress Party lost its power to a regional party in the state of Tamil Nadu. Since then congress party's dominance has been challenged many times at the central and state level elections. The first non-congress government came into existence at the centre after the general election of 1977. This is the year when the Congress Party's domination collapsed for the first time at the centre and also in many states. Hence, the whole electoral experiences of India could be divided into two sub-periods since independence. The first sub-period spreads from 1951 to 1977, in which INC dominated all elections at both levels with occasional failures. During this period, the degree of political competition that INC faced from other national and regional political parties was negligible. The second sub-period starts with the fall of the congress party government for the first time at the centre in 1977 and still continues. However, the single party government, either a congress party government or a non-congress party government, dominated the elections till the years of late 1980's both at the centre and in the states. Since then, the practice of coalition government formation has dominated the elections at both levels. As per the trend of contemporary electoral practices, it appears that the coalition form of government has become an inherent part of the Indian political system.

The second sub-period seems to be interesting as coalition governments are formed quite often and political parties, both national and regional, of different ideological backgrounds got an opportunity to form governments particularly across the Indian states. Table – 2.1 displays the number of years that each Indian state is ruled under governments of different forms and ideologies over the time-period from 1980-81 to 2006-07. Altogether, 366 fiscal years are ruled by various democratically elected governments across the 14 major Indian states over the sample period of the study. Major Indian states are ruled by the single party governments 68 percent of the time of the total sample period. From the point of view of ideology, these states are ruled 62 percent times by the ideologically centric governments, 28 percent times by the right-wing governments, and 10 percent by left-wing parties.

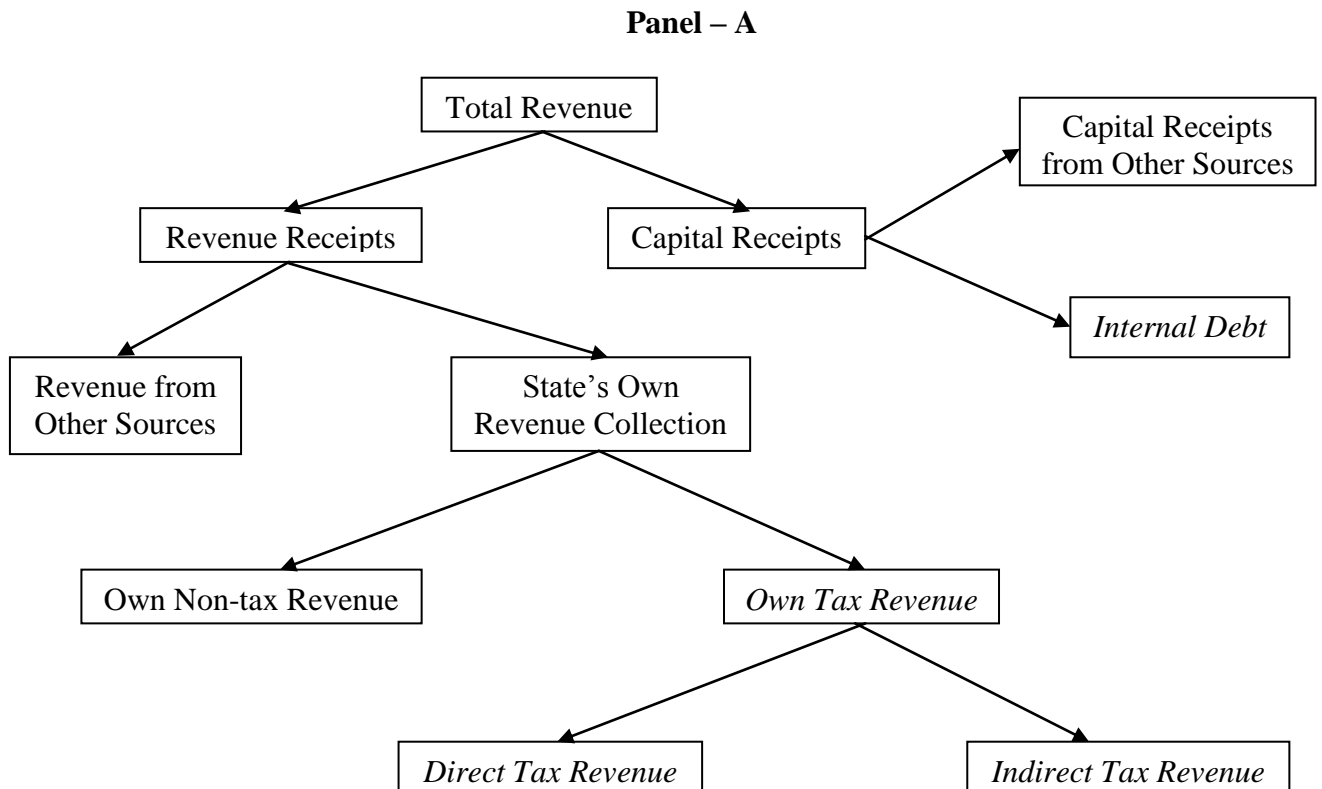
Table – 2.1: State-wise incidence of number of years ruled by different forms and ideologies of governments in India

States	Forms of Governments			Ideological stands of Governments		
	No. of years ruled by democratically elected govt.	No. of years ruled by single party govt.	No. of years ruled by coalition govt.	No. of years ruled by right-wing govt.	No. of years ruled by centric govt.	No. of years ruled by left-wing govt.
Andhra Pradesh	27	27	0	15	12	0
Bihar	26	10	16	6	20	0
Gujarat	27	22	5	17	10	0
Haryana	27	17	10	11	16	0
Karnataka	26	21	5	9	17	0
Kerala	27	0	27	0	16	11
Madhya Pradesh	26	26	0	6	20	0
Maharashtra	27	11	16	5	22	0
Orissa	27	20	7	12	15	0
Punjab	21	16	5	7	14	0
Rajasthan	27	18	9	11	16	0
Tamil Nadu	26	26	0	0	26	0
Uttar Pradesh	25	12	13	3	22	0
West Bengal	27	0	27	0	0	27
Overall	366	248	118	102	226	38

Note: The sample period of the study is from 1980-81 to 2006-07. Broadly, all forms of governments are divided into single party and coalition governments. From the point of view of ideology of a government, three types of ideological stands are identified. Under the category of centric governments, ideologically right-centric and left-centric governments are also included. President's rule imposed fiscal years of the corresponding states are excluded from the sample.

2.4 The derivation of testable hypotheses

In this section, two sets of testable hypotheses are developed linking the fiscal outcomes with the political determinants. Fiscal outcomes could be divided into two broad categories: (a) revenue related and (b) expenditure related. The revenue related fiscal outcomes used in the study are: (i) Own Tax Revenue, (ii) Direct Tax Revenue, (iii) Indirect Tax Revenue, and (iv) Internal Debt, whereas (i) Total Expenditure, (ii) Capital Expenditure, (iii) Revenue Expenditure, and (iv) Non-Plan Expenditure are the expenditure related fiscal outcomes. Figure – 2.1 shows the schematic representation of all the fiscal outcomes that could be derived from the annual accounts of total expenditure and revenue collections of the state governments of India. However, all the fiscal outcomes are not used in this study. The reasons why some of the possible fiscal measures are ignored in this study are described later in this section.



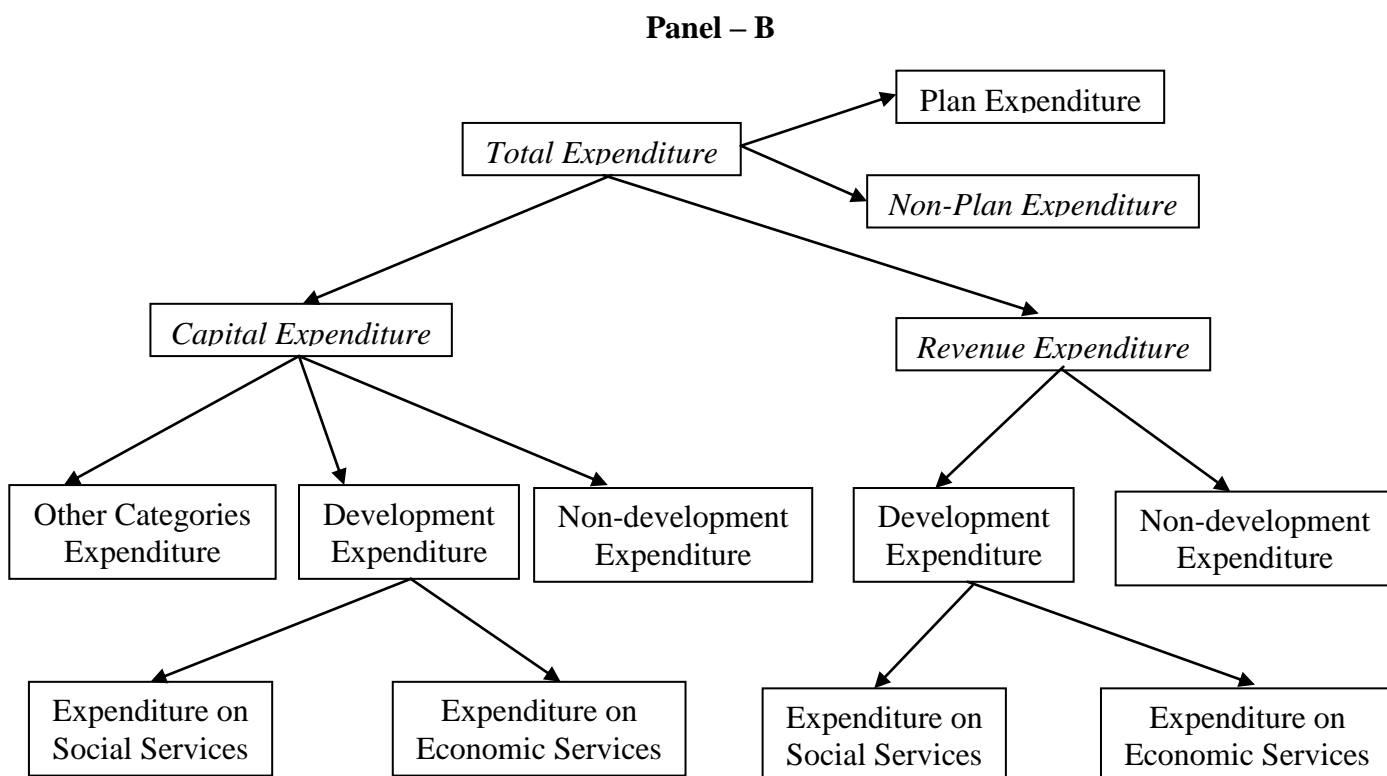


Figure – 2.1: Schematic Representation of Fiscal Outcomes
 Note: Panel – A and Panel – B display all the possible revenue and expenditure related fiscal outcomes that could be considered in case of the Indian states. However, only the italicized ones are used.

Five types of political determinants: electoral cycles, ideology of a government, support to a government, degree of fragmentation in a government, and degree of fragmentation in the opposition are considered in this study. The political determinant of electoral cycles is determined constitutionally as the elections in India are held as per the constitutional provisions. On the contrary, other four political determinants are related to the post electoral outcomes at the state level. Usually, the formation of a government, the ideological stand it supports for, the strength of its opposition, and the type of support it enjoys in the legislature are decided after an election. Since the position of the government is closely associated with the kind of opposition it faces and majority it enjoys, only the fragmentation level of government is considered while formulating hypotheses. However the political determinants of the role of the opposition and the level of support to the government are used in the regression analysis. Hence, electoral

cycles, ideology of the government, and fragmentation of the government are the only determinants that are considered while deriving the hypotheses.

2.4.1 The General Hypotheses

In the literature, a coalitional government is regarded as a weaker government in terms of policy making and adopting a particular stance as compared to a government that enjoys absolute majority. Quite often weak- governments fail to make and implement stricter fiscal policies due to various reasons such as multiple party interests, lack of majority, disagreement among multiple decision makers, and are subject to interest group capture at various levels.²² Since the future of the coalition governments is relatively uncertain, such governments are expected to end up with myopic fiscal outcomes, which are undesirable from a long-term perspective. However as mentioned above *the degree of fragmentation* of a coalition government can affect its strength in decision making. Similarly the literature on *ideology* predicts that the ideologically left-wing governments do not seem to be much concerned about the long-term fiscal and economic outcomes. Such governments are well known for their economic policies that emphasize lesser on long-term investment projects, collection of indirect tax revenues, and participation of private entrepreneurs in the economic activities. The studies on *electoral cycles* predict that the fiscal policies and other economic priorities alter just before the year of election and become more of redistributive types. Hence, fiscal policy is expected to become more of redistributive just before the year of elections. In the remaining part of this section two different sets of hypotheses related to revenue and expenditure are developed and tested empirically in the subsequent sections of the study.

²² The literature that subscribes to the notion that coalition governments are weak governments is quite extensive. It consists of both theoretical and empirical contributions by different scholars from various disciplines. The notable ones are De Haan and Sturm (1994, 1997), Borrelli and Royed (1995), Hahm (1996), Hahm et al. (1996), and Hallerberg and Hagen (1999).

2.4.2 The Derivation of Specific Hypotheses

2.4.2.A Hypotheses on Revenue

Total revenue collection of the Indian states could be divided into revenue receipts and capital receipts. Revenue receipts include taxes and duties collected by the state governments, revenue receipts from the centre, and interests and dividends earned from its previous investments. The state governments retain considerable control over the collection of revenue receipts. However, not all the revenues that a state government receives from different sources are self collected. As India follows a federal governance structure, its states receive a considerable amount of revenue from the centre over which the states have no control. Hence, a state government's own revenue, which is net of the revenues that a state receives from the centre, is the part of the revenue receipt that is collected by the state itself. Further, the own revenue collected by a state could be decomposed into tax revenue and non tax revenue. Tax revenue of a state comprises of revenues from direct taxes, indirect taxes and various duties that are collected during a fiscal year. On the other hand, non tax revenue includes the returns a state receives from its past investments. Since a state does not have much control over the non tax revenue collections of a particular fiscal year, own tax revenue collection is that part of the revenue receipts which is expected to be influenced by the political determinants of a state. On the other hand, capital receipts include loans raised by the state from the internal market; loans and advances from the centre; recovery of old loans and advances, which were previously offered to other states; and the capitals collected from disinvestment. A state and its government specific attributes do not seem to be playing a major role in generating a larger part of the capital receipts. The loans and advances that the Indian states receive from the central are formula based transfers. Hence, the states governments have no control on it. Similarly, a state government does not seem to have any control either over the capitals generated from disinvestment and recovery of old loans and advances during a fiscal year. Internal debt (that is loans raised from the internal market) is the only part of the capital receipt which is collected by the states governments themselves with some authority. To summarise, collection of tax revenues and its

components, on the side of revenue receipts, and capitals generated in form internal debt, on the side of capital receipts, are the only revenue related fiscal outcomes that are used to construct hypotheses in this study.

A1. Hypotheses on Own Tax Revenue

The fact that different political parties are affiliated to different interest groups is well-established in the literature.²³ Therefore all the coalition partners of a coalition government will endeavour to protect their affiliated interest groups from being taxed and levied duties. Since the interests of all coalition partners will be incorporated, the tax revenue collection is expected to fall as the number of parties increase under a coalition government.

The impact of ideology on the size of a state's own tax revenue collection is not quite straight forward. The standard public finance theories show that the indirect taxes and the duties fall heavy on the poorer and vulnerable sections of the society. The stand of a left wing government suggests that it will protect the vulnerable sections of the society from being taxed and levied duties and the burden of the taxation will be largely shifted to be borne by the richer sections of the society, which pay direct taxes. Hence, the impact of ideology on overall tax revenue collection depends on the interplay between different categories of taxes. In India, like the case of other developing and underdeveloped countries, the direct tax-base is considerably narrow as the income of the largest sector of the economy, the primary sector (i.e. includes agriculture and informal sector), is

²³ A large body of literature links the role of powerful interest groups with the underlying government decisions. The major studies in this area are: Roubini and Sachs (1989), De Haan and Sturm (1994), Persson and Tabellini (1999), Harrinvirta and Mikko (2001), Padovano and Venturi (2001), Perotti and Kontopoulos (2002), Ricciuti (2004), Bawn and Rosenbluth (2006) and Schaltegger and Feld (2009). Different interest groups have different objectives and are associated with different political parties. The interest groups operate at different levels and continue supporting their affiliated political parties as long as their objectives are taken care of. For instance interest groups belonging to various industries force the governments to implement favourable industrial policies, where as regional interest groups demand for more region-specific public welfare projects and interest group of the farmers target to get favourable agricultural policies. In return, to win in the election, political parties need support of different interest groups at different levels. Elite interest groups help the political parties financially, whereas common interest groups constitute their major vote-banks.

exempted from being taxed due to various economic and political reasons.²⁴ If left party governments cannot raise the tax rates for direct taxes but lower the indirect taxes, then lower own tax revenue collection appears to be the most likely fiscal outcome under a left wing government. If, on the other hand, they are in a position to raise the direct tax rates then this outcome may not manifest itself.

The prevalence of populist policies in form of exemptions from taxes and relaxing of duties to appease the voters will be more pervasive just before the year of elections. Hence, it is expected that the revenues collected from taxes and duties in the electoral cycle years will be relatively lower.

The above discussion leads to three hypotheses regarding own tax revenue collection by the state governments:

H1a: The tax revenue collection will be lower under a politically fragmented government as compared to a less fragmented or a single party government.

H1b: The tax revenue collection will be lower as the ideology of a government becomes more left oriented.

H1c: The tax revenue collection will be lower in an electoral cycle year as compared to the other years during an electoral tenure.

A2. Hypotheses on Direct and Indirect Tax Revenue

Own tax revenue of a state could be decomposed into two different parts that is direct tax revenue and indirect tax revenue.²⁵ Different political determinants are

²⁴ As per the Indian income tax act of 1961 (Chapter 3, Section 10(1)), agricultural income is exempted from taxation. See Singh and Srinivasan (2006) for a detailed discussion on this issue. This can be taken as an institutional constraint.

²⁵ The sources of the direct tax revenue are income (i.e. taxes on professions, trades, callings and employment), and property and capital transactions (i.e. land revenue, stamps and registration fees, and urban immovable property tax), whereas the indirect taxes are collected from commodities and services (i.e. sales tax, state excise, taxes on vehicles, taxes on goods and passengers, taxes and duties on electricity, entertainment tax, surcharge and cess on sugar cane, and other taxes and duties) that are sold during a fiscal year. Direct tax revenue has contributed 13 percent to total tax

expected to influence different categories of the tax revenue collections differently.

Different sections of the society form different groups of tax payers and also constitute vote banks of different political parties. Respective political parties of a coalition government would try to exempt their associated interest groups (that is groups of tax payers) from paying taxes and duties. As maximizing the size of vote banks and forming government are the final objectives of political parties, coalition governments are not expected to discriminate between the groups of direct and indirect tax payers. As the result, collections of revenues of both the categories of taxes are expected to be lower as the number of parties increase under a coalition government.

Governments affiliated to different ideological positions are expected discriminate among different groups of tax payers. Hence, the impact of ideology will be different for different categories of taxes. As mentioned earlier, the priority of a left wing government will be to protect the weaker sections of the society by subsidizing the prices and exempting the taxes on the necessary goods and services. Hence, collection of indirect tax revenue is expected to be lower as the ideology of a government becomes more left oriented. On the other hand, a left wing government is expected to charge higher tax rates to the higher income groups that pay direct taxes. As the result, direct tax revenue collection is expected to be higher as the ideology of a government becomes more left oriented. On the contrary, the pro-market- ideologically right-wing governments are expected to do just the opposite.²⁶

revenue collections of the Indian states over last three decades and its contribution has increased remarkably in most of the states particularly over last one and half decades.

²⁶ Right-wing governments believe in designing incentives for private investors to participate in wealth creating activities in an economy by relaxing direct taxes and removing inefficient and unwanted business barriers in various ways. The standard economic theory suggests that the indirect taxes on commodities and services are not borne completely by the consumers. All the agents, starting from the primary producer to the final good consumer, bear the burden of taxes partially. Moreover the indirect taxes are inelastic in nature and have wider tax bases. The properties of inelasticity and wider tax bases of the indirect taxes allow a government to collect more revenues from them. On the contrary, the direct tax is more elastic and falls heavily on the tax payers. Higher direct tax rate would encourage black market and tax evasion, and creates

Incumbent political parties do not seem to be discriminating between different groups of tax payers. Hence, such political parties are expected to follow intensified redistributive political tactics of exempting taxes and relaxing duties just before the year of election irrespective of different groups of tax payers. As the result, the revenue collections of both the categories of taxes are expected to be lower during such years.

The above discussion leads to two sets of hypotheses regarding the collection of direct tax and indirect tax revenue by the state governments:

H2a: Revenue collection from direct taxes will be lower under a politically fragmented government as compared to a less fragmented or a single party government.

H2b: Direct revenue collection from direct taxes will be higher as the ideology of a government becomes more left oriented.

H2c: Revenue collection from direct taxes will be lower in an electoral cycle year as compared to the other years during an electoral tenure.

And,

H3a: Revenue collection from indirect taxes will be lower under a politically fragmented government as compared to a less fragmented or a single party government.

H3b: Revenue collection from indirect taxes will be lower as the ideology of a government becomes more left oriented.

H3c: Revenue collection from indirect taxes will be lower in an electoral cycle year as compared to the other years during an electoral tenure.

disincentives to participate in the wealth creating activities. As the result, the direct tax base would narrow down and the collection of tax revenue would shrink. Irrespective of ideology, a government with a higher revenue collection would be in a better position to serve the welfare enhancing objectives of the society and the governments that underutilize the tax generating capacity would put the future of the economy at risk.

A3. Hypotheses on Internal Debt

As mentioned above, due to various redistributive policies adopted due to political reasons governments are expected to forgo the opportunities of maximizing the tax revenue collection. On the other hand, governments need to spend more to enhance the welfare of a state. Under such circumstances, a government with an insufficient amount of revenue collection depends increasingly on raising capital from internal and external sources. However the Indian states do not have the luxury of generating capital from the external sources independently. There are also restrictions in generating capital from internal sources. The state governments of India require the central government's permission before borrowing from the internal capital market. Given these institutional constraints Indian states do not have much freedom in generating capital from either source. However in the era of coalition government, the central government does not seem to be in a strong position to force the state governments to follow its directives strictly. Under these conditions, getting permission of the central government to borrow more from the internal market does not appear to be a potential constraint. Over the years raising capital from the internal market has been proved to be an easy source of revenue for the Indian states.²⁷

Generating internal debt is not a cost free fiscal instrument that could be substituted for the revenues collected from the legitimate internal sources by a state government on its own. Debt accumulation for a long period could jeopardize the future of an economy if it is not managed judiciously. Hence, debt management is one of the most delicate decisions that a government has to make. It would be interesting see how the policy of managing internal debt of the Indian states is influenced by different political determinants. Since the political determinants – political fragmentation, ideology, and the electoral cycles – should result in a lower tax revenue collection (see revenue hypotheses under A1) and

²⁷ Internal debt includes loans from various national banks, and issuing of special securities and bonds.

larger size of public expenditure (see expenditure hypotheses under B1),²⁸ increasing internal debt seems to be the most likely fiscal outcome in case of all three political determinants

The above discussion leads to three hypotheses regarding generating the internal debt by the state governments:

H4a: The internal debt will be higher under a politically fragmented government as compared to a less fragmented or a single party government.

H4b: The internal debt will be higher as the ideology of a government becomes more left-oriented.

H4c: The internal debt will be higher in an electoral cycle year as compared to the other years during an electoral tenure.

2.4.2.B Hypotheses on Expenditure

The annual budget of expenditure comprises of two broad categories of expenditures i.e. revenue expenditure and capital expenditure. Revenue expenditure is that part of the total expenditure which a government spends on collect revenues during a fiscal year. This part of the expenditure does not create physical assets, which offer returns in the future. The major components of revenue expenditure comprise of the expenses on functioning of the government departments, interest payments on debt, and subsidies. It's also known as government consumption, which is used to meet the day to day running expenses of a state government. On the contrary, Capital expenditure is the money spent by the government to generate new assets and maintain the existing ones. It is

²⁸ In brief, the literature on political determinants predict that: (i) the size of public expenditure would increase as the size of the coalition government gets larger, (ii) ideologically left wing governments would prefer to have a larger size of public expenditure as such governments believe on public sector expansion and higher degree of government intervention in an economy, and (iii) the electoral cycle years would see a relatively large size of public expenditure as the intensity of redistributive political tactics will be higher just before the year of election in comparison to the initial years of an electoral tenure.

otherwise known as public investment, whose returns will be realized over a time period in the future. Both the categories of expenditures constitute the total expenditure of a state and the state governments have complete discretion in spending the whole budget. Different government-specific factors are expected to influence the total expenditure and its components differently.

B1. Hypotheses on Total Expenditure

The literature predicts that the affiliation of the numbers of the interest groups to a government increases as the number of political parties increase in a coalition government. In order to meet the demands of the interest groups, coalition partners are expected to propose an expansionary expenditure budget and will try to maximize their share from the common pool of total expenditure. Since the demands of all coalition parties will be incorporated in the budget, the size of total public expenditure is expected to increase as the size of the coalition government increases.

Left-wing governments prefer public sector expansions and higher degree of government interventions in an economy. Mass employment generation in the public sector will be one of the major agendas of such governments. An ideologically left-wing government does not believe that the channels through which the market forces operate would generate desirable economic outcomes in a society. In the light of these issues, such governments would prefer to initiate a large number of welfare-oriented projects and schemes to enhance the welfare of the larger and weaker sections of the society. Hence, the left-wing governments would prefer to have a bigger size of the expenditure budget.

The studies on electoral cycles predict that the years just before the elections are expected to see a relatively bigger size of public expenditure in comparison to the initial years of an electoral tenure. Just before the year of election the incumbent political parties would spend more across the constituencies to appease the voters

to vote for them in the next election.²⁹ Such years are also expected to see increasing number of short-term welfare-improving schemes and schemes that generate temporary mass employments.

The above discussion leads to three hypotheses regarding incurring the total expenditure by the state governments:

H5a: The total public expenditure will be higher under a politically fragmented government as compared to a less fragmented or a single party government.

H5b: The total public expenditure will be higher as the ideology of a government becomes more left-oriented.

H5c: The total public expenditure will be higher in an electoral cycle year as compared to the other years during an electoral tenure.

B2. Hypotheses on Revenue Expenditure

Revenue expenditure is the expenditure that is incurred on general items and it contributes for more than 80 percent of the total government expenditure of the Indian states. The larger is the size of the revenue expenditure, the greater are the scopes for the incumbent political parties to play redistributive tactics. The major part of this expenditure goes in paying pensions and salaries to the government employees. Politically fragmented governments make regular salary hikes of the employees, bring quick promotions for the employees and create new employments on a large scale to serve the interests of their interest groups. Apart from this, such governments introduce various populous and temporary schemes such as poverty eradication, redressal of different forms of unemployment and

²⁹ Constructing new roads and repairing the old ones, electrification and establishment of the telephonic connections in the remote areas, establishing the drainage systems and regular supply of the drinking water are the most commonly observed pre-electoral practices followed by the incumbent political parties in India.

subsidization of various public goods and services.³⁰ Another important characteristic of such schemes is that every time a new party comes into power, it introduces more number of such schemes and makes the existing ones more attractive and redistributive. Such kinds of practices under the governance of fragmented governments seem to be pervasive across all the government portfolios. Hence, the total revenue expenditure (i.e. size of the government consumption) of a fragmented government is expected to be higher in comparison to a less fragmented or a single party government.

Left-wing governments also believe in expanding the public sector by generating new employment, subsidizing public goods and services, and introducing various welfare enhancing schemes during their tenure. Hence, a larger part of the total expenditure is expected to be spent on revenue expenditure under the regime of a government that tends more towards left ideology.

As the incumbent political parties are expected to follow intensified redistributive political tactics just before the year of election, the revenue expenditure's budget is expected to be higher during such years.

The above discussion leads to three hypotheses regarding incurring the revenue expenditure by the state governments:

H6a: The revenue expenditure will be higher under a politically fragmented government as compared to a less fragmented or a single party government.

H6b: The revenue expenditure will be higher as the ideology of a government becomes more left-oriented.

H6c: The revenue expenditure will be higher in an electoral cycle year as compared to the other years during an electoral tenure.

³⁰ Schemes like supplying free electricity to farmers (in the state of Andhra Pradesh) and competition among political parties, both at centre and states, to subsidize the price of rice further are the recent examples in India.

B3. Hypotheses on Capital Expenditure

The impacts of political determinants on capital expenditure are expected to be different. Capital expenditures do not offer instantaneous returns. Usually, the gestation period between the incurred expenditures and the realization of returns is longer. These expenditures are made at a point of time and the benefits are realized at different points of time in the future. The expenditures incurred in developing and maintaining the social, economic and physical infrastructures of a state are covered under the head of capital expenditure. The other important characteristic of this type of expenditure is its specificity and particularity. Unlike the items covered under the head of revenue expenditure, the capital expenditure items are more region-specific and easily targetable. Different political parties enjoy a strong hold over different geographical regions of an economy. Moreover, these political parties are often paid-off in terms of being re-elected in the elections on the basis of their ability in transferring resources to their supported electoral constituencies during the tenure of their governance. Being region-specific and easily targetable in nature, capital expenditure could be considered as an instrument for the incumbent political parties to transfer the resources to their favourable constituencies. When all the coalition parties are expected to do such practices, the total capital expenditure budget (i.e. size of the public investment) of a state will be of large size.

Left-wing governments usually do not concentrate on the expenditures that will create assets and physical infrastructure, which would provide returns in the future. Rather, these governments believe on spending more on consumable goods and services (i.e. revenue expenditure), which provide immediate returns to the majority of the society. Hence, left-wing governments are expected to spend less in the capital expenditure account in comparison to their right-wing counterparts.

As the capital expenditures are region-specific and easily targetable in nature, such expenditures are expected to be incurred more intensively during the electoral cycle years. Constructing roads, providing electricity and establishing telephone connections in the remote place, constructing dams and irrigation

projects, and establishing sanitation facilities are the most commonly observed pre-poll public activities that the incumbent political parties undertake. Spending on these areas is accounted under the capital expenditure budget. Carrying out these pre-electoral practices seems to be pervasive across the Indian states (Khemani, 2004).

The above discussion leads to three hypotheses regarding incurring the capital expenditure by the state governments of India:

H7a: The capital expenditure will be higher under a politically fragmented government as compared to a less fragmented or a single party government.

H7b: The capital expenditure will be lower as the ideology of a government becomes more left-oriented.

H7c: The capital expenditure will be higher in an electoral cycle year as compared to the other years during an electoral tenure.

Apart from the broader categories of revenue expenditure and capital expenditure, the total expenditure of a state could also be classified into plan and non-plan expenditures. Plan expenditures are the expenditures made on programs and projects, which are pre-decided according to the plans that a state follows during an accounting year. Since the planned expenditures are pre-decided as per the plans of a state, the political determinants that are considered in this study do not seem to have much scope to influence it. Non-plan expenditures include all other possible expenditures that a government undertakes. Basically, the non-plan expenditure budget is the amount that is spent to meet the expenditures on unforeseen and non-planned accounts. Interest payment and servicing of debts, paying subsidies, and repayment of market borrowings are the major items that are covered under the category of non-plan expenditures. The category of non-plan expenditure offers greater scope to a government in making adjustments and accounting for unforeseen and non-planned events. Hence, the sole concentration

of this study will be on the part of non-plan expenditures, which are expected to be determined by the political characteristics of a state.

B4. Hypotheses on Non-plan Expenditure

Supplying subsidized goods and services is one of the commonly used policies that the incumbent political parties rely upon. As the number of the political parties increase in a government, the size of the subsidy budget is expected to increase, because of the increasing number of interest groups affiliation to the government. Moreover, since the fragmented governments are expected to rely heavily on the market borrowings,³¹ the size of spending in paying interest and servicing debts, and repaying the market borrowings will be higher under a highly fragmented government in comparison to the lesser ones. Hence, such governments are expected to prepare a larger non-plan expenditure budget.

The left-wing governments are generally known to launch a wide range of unplanned welfare enhancing programs during a fiscal year. Such governments also prefer larger budget of subsidy to subsidize the consumable goods and services that are consumed by the majority of the society. To meet the increasing need of expenditure the left governments would also need to borrow substantially from the market.³² As a result, the spending on paying for interest rates, debt servicing charges, and repaying market borrowings is expected to be higher. Hence, an ideologically left government is expected to spend more on the non-plan expenditure items.

As a part of pre-electoral tactics, the incumbent political parties would like to expand the subsidy budget as the increasing number of consumer goods and services will be subsidized just before the year of election. On the above, more

³¹ The coalition governments are expected to sacrifice genuine opportunities to collect tax revenues in the process of protecting their respective interest groups from being taxed and levied duties. Hence, it is expected that such governments would borrow more from the market to meet the increasing requirements of expenditure.

³² The vulnerable sections of the society consume most of the necessary goods and services, and a significant amount of indirect tax revenue comes from it. As the left-wing governments would like to protect such sections from being taxed, such governments are expected to end up with less tax revenue collection due to a lower indirect tax policy. As a result, increasing amount of borrowings is expected to be made from the market to meet the expenditure requirements.

borrowings will be made from the market³³ and a large scale of unplanned, populist, and short-term programs will be initiated. Hence, electoral cycle years are expected to see higher non-plan expenditures.

The above discussion leads to three hypotheses regarding incurring the non-plan expenditure by the state governments:

H8a: The non-plan expenditure will be higher under a politically fragmented government as compared to a less fragmented or a single party government.

H8b: The non-plan expenditure will be higher as the ideology of a government becomes more left-oriented.

H8c: The non-plan expenditure will be higher in an electoral cycle year as compared to the other years during an electoral tenure.

Total public expenditure could also be divided into development expenditure and non-development expenditure. The development expenditure comprises of expenditures incurred on providing economic and social services on education, health care, family planning, labour employment, agriculture, irrigation, and transport and communication. Incurring development expenditures on revenue and capital accounts contribute to the growth and development of a state directly. On the other hand, non-development expenditure constitutes of expenditures on items related to administrative services, debt services, fiscal services, pension, and other general services. But spending on administrative services (i.e. on district administration, police, and others), in particular, contribute to the development and growth of a state both directly and indirectly. Hence, these classifications of the expenditure are designed for serving purely administrative purposes. Moreover the items covered under these classifications of expenditures coincide with the items covered under revenue and capital expenditures, and plan and non-plan

³³ Expenditure budget expansion and tax rate exemptions are commonly observed pre-electoral political practices. Hence, governments are expected to borrow more from the market to meet the increasing spending requirements just before the year of election.

expenditures. Hence, there are no compelling reasons to develop hypotheses on development and non-development expenditures linking political determinants. Apart from this, the expenditure budget could be decomposed further in terms of expenditures on Economic Services and Social Services. The same reasons why the category of development and non-development expenditures is ignored could also be extended for the ignoring expenditures on Economic and Social Services in this study.

2.5 Data and Variables

An annual dataset of 27 years (1980-81 to 2006-07) across 14 largest Indian states is used for the study. Those years whose major parts are spent under the president's rule are dropped from the analysis. The criterion for selecting an accounting year for the analysis is that at least one quarter of that year should be ruled by a democratically elected government. The idea is that the government of a state needs a minimum amount of time to rule over it before controlling and making some impact over the fiscal outcomes of that state. Ruling for at least one-quarter of a fiscal year by an elected government of a state is considered as a sizeable time period to control and make some impact over the fiscal outcomes.³⁴ However in a number of occasions a few states have been ruled under the imposition of president's rule for a whole fiscal year. Since such fiscal years do not meet the selection criterion, dropping these years from the analysis leaves an unbalanced panel data set.

Total public expenditure, own revenue collection, and their different components are used as the measures of the fiscal outcomes of the major Indian states. These fiscal outcomes are used as the dependent variables in the regression. All dependent variables are expressed in terms of per-capita Indian rupees, adjusted with the base year price of 1999-2000. Two sets of the independent variables that are political determinants and economic and demographic determinants are used in the regression. The political determinants are Effective Number of Political

³⁴ One-quarter time period is chosen arbitrarily. However changing the length of the time period to two quarters did not affect the findings (See section – 7).

Parties in the Government (ENPG),³⁵ Effective Number of Political Parties in the Opposition (ENPO), Excess Support to a government (SG),³⁶ the Index of Ideology (IOI),³⁷ and Electoral Cycle Dummy (EC); and the economic and demographic determinants are Per-capita Income (PCI), Primary Sector's contribution (PS), Literacy Rate (LR), Dependency Rate (DR), and the population living below poverty line (PR).³⁸ Information regarding units of measure and data sources of the variables is discussed in detail under appendix – 2.2, table – 2.6. Statistical summary of the variables is displayed in table – 2.2.

³⁵ This index is the inverse of the Harfindahl Index, which is extensively used in the literature of Industrial Organization to measure the monopoly power of a firm in an industry. Laakso and Taagepera (1979) and Taagepera and Shugart (1989) have discussed the mathematical properties and advantages of using this index over other alternative indices that are used to measure the fragmentation of a government. Many of the recent studies Volkerink and De Haan (2001), Mukherjee (2003), Ricciuti (2004), Bawn and Rosenbluth (2006) have used this index to measure the fragmentation level of government. The definition of this index is discussed in appendix – 2.1. In this study the same index is also used to measure the level of fragmentation of the opposition i.e. Effective Number of Political Parties in the Opposition (ENPO).

³⁶ It measures the strength and the stability of a government. The methodology of constructing this measure is discussed in appendix – 2.1.

³⁷ Index of Ideology ranges between 1 and 5 (see appendix – 2.1). Each numerical value stands for a specific position of a political party's ideology. Determining the stand of a political party in the ideology scale is straight forward in case of the single party governments. The real problem arises in case of the coalition governments. The ideology of the coalition government is determined according to the party's ideology that leads the government. In the Indian context, at least at the state levels, never parties of extreme ideological stands have formed coalition. Always the left-wing political parties are seen as collaborating with the left-centric parties and the right-wing political parties with the right-centric ones. So far the only exception is observed when BJP (Bharatiya Janata Party), a right-wing political party, supported BSP (Bahujan Samaj Party), a left-centric political party, to form government in Uttar Pradesh during the year 2002-03. However their coalition lasted only for few months. All the political parties who have ever ruled across the Indian states over the time period of the study are considered in this study. All parties are codified according to their party objectives and policies that they have subscribed and implemented over the years. The codes of all parties are displayed in Appendix – 2.2, table – 2.8. So far Chhibber and Nooruddin (2004) is the only study which has codified political parties according to their ideologies at the state levels of India. However the purpose of their study is different from the purposes of this study.

³⁸ Among the economic and demographic determinants, per-capita income and primary sector are the only variables that are available year-wise for the Indian states. Other three determinants are decadal measures. Following the standard practices of the literature the data points for the missing years of the decadal measures are filled by interpolating decadal indicators with the help of the simple growth rate formula. The same practice is followed throughout the thesis to fill the data points for the missing years in case of the decadal measures.

Table – 2.2: Summary Statistics

Variable	Description	Obs.	Mean	SD	Min.	Max.
OTR	Own Tax Revenue	370	1064.49	599.84	116.93	3109.77
ODTR	Own Direct Tax Revenue	370	144.36	87.59	32.32	583.1
OITR	Own Indirect Tax Revenue	370	920.13	530.11	84.62	2671.75
ID	Internal Debt	370	363.53	179.68	67.72	922.1
TGE	Total Government Expenditure	370	2850.82	1254.74	914.79	6368.64
RE	Revenue Expenditure	370	2068.94	905.35	663.07	4582.89
CE	Capital Expenditure	370	781.87	374.97	221.09	2026.62
NPE	Non-Plan Expenditure	370	2079.72	998.31	617.33	5124.74
DR	Dependency Rate	370	12.74	1.36	9.99	16.53
PCI	Per-capita Income	370	16041.61	8230.55	3326.87	38565.37
PR	Poverty Rate	370	31.92	14.58	5.2	70.07
LR	Literacy Rate	370	57.61	14.49	30.11	93
PS	Primary Sector	370	34.31	10.45	11.28	55.26
IOI	Index of Ideology	370	2.56	1.27	0	5
SG	Support to a Government	370	36.91	17.48	0	86.09
EC	Electoral Cycle	370	0.2	0.4	0	1
ENPG	Effective Number of Political Parties in the Government	370	1.34	0.65	1	4.98
ENPO	Effective Number of Political Parties in the Opposition	370	2.83	1.09	1.12	6.34

It is observed many times that some of the political parties offer external support to a government without being a part of the government and its decisions. Such supporters are also known as the external coalition partners and under few occasions such practices are observed in the Indian political system.³⁹ External coalition partners neither take part nor own direct responsibility for the decisions that its supported government undertakes. Hence, such coalition partners are ignored as the parts of a government in this study. The index of Effective Number of Political Parties in the Government (ENPG), which measures the degree of fragmentation of a government, accounts for only the active and internal coalition partners that support a government. Usually the fiscal year in India starts from 1st April and ends on 31st March of the next year. This is the time duration for which

³⁹ There are numerous occasions in the Indian context when governments are formed with the help of external coalition partners at both central and state levels of governments. The best examples of the recent past are the governments that are formed after the elections of 1999 and 2004 at the centre. After the general election of 1999, Bharatiya Janata Party (BJP) led National Democratic Alliance (NDA) coalition government was formed with the help from a regional party's external support named Telugu Desham Party (TDP). Similarly, United Progressive Alliance (UPA) coalition government, headed by the Congress Party of India, was formed with the help of external support of left-parties after the general election of 2004.

the annual budgets are estimated and approved. Hence, all the dependent variables, being the components of the expenditure and revenue budgets, are measured during the tenure of a fresh fiscal year. On the other hand, there is no such hard and fast rule that the governments will be changed either in the beginning or at the end of a fiscal year. Many times elections are held and new governments are formed in the middle of a fiscal year. When the governments change in the middle of a fiscal year, the government-specific attributes also change along with it. Hence, the data set of government-specific variables needs to be adjusted for such changes. To make the necessary adjustments in the data set weighted-averages of the variables are used. Weights are calculated according to the number of days each government has ruled in an Indian state during a fiscal year. The simplest example is when a normal fiscal year is completely ruled by only one government in a state. The weight will be *one* in this case and the values of the government-specific variables do not require to be adjusted. Complicating the case, for instance, if a fiscal year of 365 days loses 65 days under the imposition of president's rule in a state and rest of the 300 days are ruled by two democratically elected governments, then the weights in this case will be determined according to the number of days that each governments rule from the total of 300 normal days that are ruled by the elected governments. For example, suppose the first government rules for 95 days and the second government rules for the remaining days of the fiscal year. Then the assigned weights will be $(95/300)$ and $(205/300)$ for the respective governments. Similarly, it could be generalized for cases of more than two governments. This weighting scheme is applicable only to the government-specific political measures that change with the governments.⁴⁰

⁴⁰ The variable, electoral cycle (EC), is not applicable for the weighted average scheme. Elections do not always precede government changes. Elections in India are held according to the constitutional provisions. There are occasions when the governments across the Indian states have changed without elections being held. When the existing government fails to prove its majority in the legislature, the government changes without a fresh election being held, provided an alternative group of political parties manage to enjoy the support of the required majority to form the government. Apart from this, as the control variables do not change with the governments, the weighting scheme is not applicable in their cases.

2.6 Model Specification

Selection of an appropriate econometric model holds the key for the analysis of an empirical study. The base line regression model selected to model the fiscal outcomes of the Indian states could be written in the following form:

$$Y_{it} = \alpha + \beta P_{it} + \phi X_{it} + \lambda_i + \mu_t + v_{it}; i = 1, \dots, N, \text{ and } t = 1, \dots, T \quad (2.1)$$

where subscript i stands for the number of Indian states and t for the time-period of the study. Y , the dependent variable of a regression, represents for the set of parameters that are used to measure the fiscal outcomes of the Indian states. Two types of measures of fiscal outcomes related to government expenditures and own revenue collections are considered in this study. The expenditure and revenue fiscal indicators are measured in log of per capita Indian rupees (at 1999-2000 base year prices).⁴¹ On the other hand, all independent variables are divided into two groups as variables of interest and control variables. The variables of interest, the political determinants, hold the centre stage of the analysis. Vector (P) in the regression equation represents for the set of political determinants. Apart from the political determinants, a set of economic and demographic determinants are used as the control variables. The control variables are chosen on the basis of their significance in the literature.⁴² The control variables, symbolized as X in the equation, are chosen on the basis of data availability and their applicability in the context of Indian states. Among the control variables, per-capita income (PCI) is transformed into log and others are used in their level forms. Table – 2.3 displays the hypothesized relations of the variables of interest with the fiscal measures as discussed under the section of derivation of testable hypotheses.

⁴¹ The budget deficit/surplus (in percentage terms) could have used as a measure of fiscal outcomes. But it is not used in this study due to the problem of incompatibility with other measures of fiscal outcomes. The numerical values of the deficit indicator could be either positive or negative, whereas the numerical value of government expenditure and revenue collection could be only positive. In this study all the fiscal measures are expressed in logarithmically transformed forms. Technically, only the logarithmic transformation of the positive numerical values is allowed. Since deficit/surplus indicators cannot be logarithmically transformed, use of this fiscal measure is avoided in this study.

⁴² The traditional determinants that are discussed in the literature that link economic performance with the fiscal outcomes of an economy are per-capita income, dependency ration, literacy rate, poverty rate, trade openness, density, geographical size, and population.

Table – 2.3: Expected Signs

	OR	OTR	ODTR	OITR	ID	TGE	RE	CE	NPE
IOI	–	–	+	–	+	+	+	–	+
EC	–	–	–	–	+	+	+	+	+
ENPG	–	–	–	–	+	+	+	+	+

Both sets of independent variables that are discussed above have temporal and spatial variations. There are determinants which vary only in one dimension. The time invariant and state specific unobservable explanatory variables like institutions, historical factors and geographical features need to be controlled for as there is evidence to suggest that these factors play a significant role in influencing the fiscal outcomes of an economy. The state specific dummies, vector λ_t in the equation, are introduced in the regression equation to control for the unobserved time invariant and state specific explanatory variables. Similarly, over the years, the central government of India has implemented various policies and undertaken a number of reforms to improve the tax revenue collections and manage the debt burden of its states. The policies at the central level apply equally across all the states. The impact of such policies, which are state invariant and time specific, is incorporated in the model by including the time specific dummies, vector μ_t in the equation. The unexplained variations in the regression are captured by the error term v_{it} , which is assumed to be normally distributed, homoskedastic and independent across the observations.

Given the nature of the data set, cross-sectional and time-series, the standard Ordinary Least Squares (OLS) assumption of independent and identically distributed errors is unlikely to be satisfied. Since panel data sets have both temporal and spatial dimensions, the problems of autocorrelation and heteroskedasticity are most likely to occur. In the presence of problems of autocorrelation and heteroskedasticity in a regression equation the calculated coefficient parameters will be biased. A standard estimation method of correcting heteroskedasticity in an unbalanced panel dataset is to calculate Panel-Correcting Standard Errors (PCSEs).⁴³ Apart from correcting for heteroskedasticity the

⁴³ Beck and Katz (1995 and 2004) have developed this method of calculating standard errors. They have used Monte Carlo analysis to show the supremacy of the method of PCSEs in calculating parameter standard errors over other available methods.

method of PCSEs also corrects for first-ordered autocorrelation within specific panels with the option of first-order Panel Specific Auto-Regression (PSAR1).⁴⁴ All regressions are calculated by using the estimation method of PCSEs with the option PSAR1.⁴⁵ As per the condition, this estimation method holds well for the datasets in which number of years exceeds the number of units. In case of this study the required condition is met well as the number of years (27) exceeds the number of Indian state (14).

Many of the recent studies use the lag of dependent variable as an independent variable in the regression to correct for autocorrelation. However, introducing the lag of the dependent variable on the right-side of the regression equation leads to the problems of endogeneity with respect to both time-specific and state-specific fixed effects.⁴⁶ As the fixed effect dummies of the Indian states are believed to be affecting the current and past fiscal outcomes, inducing the lagged depending variable on the right-side of the equation in the presence of the fixed effects could be seen as a potential source of creating the problems of endogeneity. Hence, the method of introducing lagged dependent variable as an explanatory variable is avoided in this study. Correcting the error term for the first order panel specific autocorrelation is used here as the alternative strategy, instead of introducing the lagged dependent variable as an explanatory variable in the regression model.

2.7 Results

The following sub-sections analyse the results based on the empirical model that is outlined in the previous section. The dependent variables are the aggregated and disaggregated components of Indian state governments' revenue and expenditure accounts. The set of independent variables, which includes both control variables

⁴⁴ In STATA the problem of first-order panel specific autocorrelation could be redressed by using the method of PCSEs with the option of *correlation (PSAR1)*.

⁴⁵ The Breusch-Pagan test is used to check heteroskedasticity and the Wooldridge test to check autocorrelation. Presence of heteroskedasticity and auto-correlation were observed in case of all the fiscal outcomes. Wooldridge (2002) discusses his test to check for the first-order autocorrelation in detail. See Drukker (2003) for a detailed discussion on the procedure of checking autocorrelation in STATA.

⁴⁶ Bawn and Rosenbluth (2006) discuss the possibilities of such types of endogeneity problems in detail.

and variables of interest, remains same for all the regression models. Time-specific and state-specific dummies are included in all the models to control for the unaccounted time-invariant and state-invariant factors. First, the findings of the revenue related fiscal outcomes are discussed and then that of the expenditure related fiscal outcomes.

2.7.1 Results of Revenue Related Fiscal Outcomes

The findings of the revenue related fiscal outcomes are displayed and discussed in this sub-section. Four different fiscal measures related to the own revenue collection: own tax revenue (OTR), own direct-tax revenue (ODTR), own indirect-tax revenue (OITR), and internal debt (ID) are considered and the results are displayed in table – 2.4.

Table – 2.4: The Impact of Political Determinants on Revenue Collection

	(1) OTR	(2) ODTR	(3) OITR	(4) ID
IOI	– 0.046*** (0.011)	0.001 (0.015)	– 0.053*** (0.011)	0.015** (0.006)
SG	0.002*** (0.0007)	– 0.0002 (0.001)	0.002*** (0.0007)	0.0002 (0.0003)
EC	– 0.024** (0.011)	– 0.025* (0.015)	– 0.024** (0.012)	0.004 (0.005)
ENPG	– 0.047** (0.023)	– 0.058* (0.03)	– 0.045* (0.024)	0.025* (0.014)
ENPO	– 0.008 (0.009)	– 0.027** (0.013)	– 0.007 (0.01)	0.001 (0.005)
DR	0.012 (0.02)	0.041** (0.02)	0.004 (0.021)	0.005 (0.013)
PCI	0.622*** (0.069)	0.355*** (0.081)	0.668*** (0.077)	0.376*** (0.004)
PR	– 0.012*** (0.003)	– 0.003 (0.003)	– 0.014*** (0.003)	0.001 (0.001)
LR	0.01*** (0.003)	0.004 (0.004)	0.012*** (0.003)	– 0.002*** (0.002)
PS	0.002 (0.002)	0.002 (0.003)	0.002 (0.002)	– 0.001 (0.001)
C	0.566 (0.748)	1.112 (0.814)	– 0.022 (0.834)	2.194*** (0.483)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
R-squared	0.99	0.98	0.99	0.99
Number of obs.	370	370	370	370
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

***p < 0.01; **p < 0.05; and *p < 0.10

Column – 1 in table – 2.4 shows the regression results of own tax revenue collection. All the variables of interest except ENPO emerged significant at different levels of significance. IOI, SG and ENPG are the only significant variables of interest in the regression model. Negative signs of IOI, EC and ENPG indicate that the left wing governments, electoral cycle years and the coalition governments are associated with the reduced tax revenue collection; whereas positive sign of SG suggest that the increasing support to a government improves its revenue collection from taxes. Since the variable IOI varies between value 5 and 1 (See Appendix – 2.1), its coefficient indicates that when a government’s ideological position shifts from a relatively right wing stand to a relatively left

wing stand, per capita own tax revenue collection reduces by 4.6 percent. Similarly, coefficient of SG shows that Per capita tax revenue collection improves by 0.2 percent as the support of a government increases by one percent. The interpretation of the coefficient of ENPG will be different. As the variable ENPG changes with the introduction of an additional party in the government, its coefficient indicates that with the inclusion of an additional party in the government the per capita own tax revenue collection shrinks by 4.7 percent. The redistributive tactics that the incumbent governments apply just before the year of election seem to be playing a crucial role. The per capita tax revenue collection decreases by 2.4 percent during such years.

Column – 2 and 3 display the regression results, when the collected tax revenues are decomposed into direct and indirect tax revenues respectively. EC, ENPG and ENPO are the only significant political determinants of direct tax collection. The interpretations of the coefficients of EC and ENPG are same as of results of OTR. Negative sign of ENPO suggests that the fragmented oppositions are associated with reduced size of revenue collection from direct taxes and the per capita direct taxes revenue collection decreases by 2.7 percent with the inclusion of an additional party in opposition. IOI holds the expected sign, but has failed to come significant at the acceptable levels of significance. One possible reason for the insignificance of Ideology in case of direct tax could be that the changes in the direct tax rates are easier to observe and closely followed by the voters. If the states with left wing governments charge significantly higher direct tax rates in comparison to the states ruled by relatively right wing governments, such unpopular policies might cost the left parties by losing their vote banks. Probably, the left wing governments are also swayed by the vote-bank centric policies and it prevents them from charging higher direct tax rates significantly. On the other hand, all the political determinants except ENPO came significant for the fiscal outcome of indirect tax revenue collection. Since the revenue collection from indirect taxes constitutes more than 80 percent of the total tax revenue collection, the results of OITR are quite similar to the same of OTR. IOI, EC and ENPG hold the hypothesized signs.

Column – 4 displays the regression results of Internal Debt as a fiscal measure. IOI and ENPG are the only significant political determinants. Per capita internal debt increases by 1.5 percent as a government's ideological position shifts from a relatively right wing stand to a relatively left wing stand. Similarly, with the inclusion of an additional political party in a government the per capita internal debt increases by 2.5 percent. The redistributive political tactics that the incumbent governments adopt during the electoral cycle years do not seem to be playing a crucial role. However EC appears with an expected negative sign. It is expected to be significant if the policies regarding generating debt from the market put in practice during the electoral cycle years are significantly different from the policies of the normal years in an electoral tenure. One of the possible reasons for its insignificance could be that in the era of coalition governments and competitive politics in India, the governments might not be treating the electoral cycle years different from the normal ones.

The overall findings suggest that IOI, EC and ENPG appeared with their respective expected signs in case of all the revenue related fiscal outcomes. ENPG is the only political determinant which came significant every time. Ideology of a government proved to be a crucial determinant of all revenue based fiscal outcomes except the case of direct tax revenue. Pre-electoral policies matter only when the tax related fiscal outcomes are considered, whereas role of opposition is mattered only in case of revenues collected from direct taxes. Excess support to a governments improves the collections of own tax revenue and indirect tax revenue of the Indian states significantly. On the other hand, PCI is the only control variable that emerged significant for all revenue related fiscal outcomes. LR came significant in case of all fiscal outcomes except direct tax revenue, whereas PR fails to come significant in case of direct tax revenue and internal debt. DR proved to be significant only for the direct tax revenue collection, whereas PS never appeared to be significant.

2.7.2 Results of Expenditure Related Fiscal Outcomes

In this sub-section the results of the expenditure related fiscal outcomes are analyzed. Regression analysis for four categories of expenditure related fiscal outcomes: total government expenditure (TGE), capital expenditure (CE), revenue expenditure (RE), and non-plan expenditure (NPE) are performed and results are displayed in table – 2.5. The interpretations of the regression coefficients remain same as of the results of revenue related fiscal outcomes, but the signs will determine the directions of movements.

Table – 2.5: The Impact of Political Determinants on Expenditure

	(1) TGE	(2) RE	(3) CE	(4) NPE
IOI	0.003 (0.005)	0.012** (0.005)	– 0.015* (0.008)	0.014** (0.006)
SG	0.0005* (0.0003)	0.0003 (0.0003)	0.0013*** (0.0005)	0.0001 (0.0003)
EC	0.002 (0.005)	0.002 (0.005)	0.007 (0.009)	0.014* (0.008)
ENPG	0.027*** (0.008)	0.031*** (0.009)	0.028** (0.013)	0.04*** (0.012)
ENPO	– 0.004 (0.006)	0.001 (0.005)	– 0.014** (0.007)	– 0.005 (0.006)
DR	0.008 (0.009)	0.007 (0.009)	0.009 (0.015)	0.014 (0.011)
PCI	0.347*** (0.031)	0.367*** (0.033)	0.333*** (0.05)	0.383*** (0.043)
PR	– 0.001 (0.001)	– 0.0003 (0.001)	– 0.005** (0.002)	– 0.002 (0.002)
LR	0.004*** (0.0015)	0.003** (0.0014)	0.0056** (0.0023)	0.0033* (0.002)
PS	– 0.001 (0.001)	– 0.001 (0.001)	– 0.001 (0.002)	– 0.001 (0.002)
C	4.498*** (0.36)	3.961*** (0.369)	3.471*** (0.562)	3.712*** (0.435)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
R-squared	0.99	0.99	0.99	0.99
Number of obs.	370	370	370	370
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

***p < 0.01; **p < 0.05; and *p < 0.10

Column – 1 of table – 2.5 displays the regression results of total government expenditure. Results show that SG and ENPG are the only significant variables of interest. Both significant coefficients could be interpreted as: one percent extra support of a government increases the per-capita size of government by 0.05 percent and the introduction of an additional party in a government it increases by 2.7 percent, respectively.

For a disaggregated analysis the total public expenditure is decomposed into revenue expenditure and capital expenditure. Column – 2 displays the findings of revenue expenditure. IOI and ENPG are the only significant variables of interest and both are linked with the revenue expenditure positively. When a government's ideological position shifts from a relatively right-wing stand to a relatively left-wing stand, the size of per-capita spending on revenue expenditure (i.e. government consumption) increased by 1.2 percent. The size of per-capita revenue expenditure increases by 3.1 percent with the inclusion of an additional party in the government. Column – 3 displays the findings of capital expenditure. All political determinants except EC emerged significant at different levels. Interpretation of the coefficients of IOI, SG and ENPG remains same as of the results of TGE and RE, but the signs will determine the directions of movements. As predicted, ideologically left-wing governments spend significantly lesser on investment purposes in comparison to their right-wing counterparts. Similarly, the predictions that are made out in the section of derivation of hypotheses regarding the behaviour of a divided government related to capital expenditure also came true. Interestingly, stable governments spend more on the component of capital expenditure (i.e. public investment). Negative sign of ENPO suggests that the fragmented oppositions are associated with reduced size of public investment and the average per-capita capital expenditure of the Indian states decreases by 1.4 percent with the inclusion of an additional party in opposition.

The regression result of non-plan government expenditure is displayed in column – 4. Among the political determinants IOI, EC and ENPG are the only significant ones. All the three variables hold their hypothesized signs respectively. Positive signs of IOI and ENPG suggest that the ideology and government fragmentation

are associated with increasing size of non-plan expenditure. Moreover the significance of EC suggests that the size of per-capita non-plan expenditure increases by 1.4 percent just before the year of election.

The overall findings suggest that the predictions made regarding the behaviour of IOI, EC and ENPG in section – 3 are justified. ENPG is the only variables of interest that appeared significant for all categories of public expenditures. The variable IOI emerged significant when the total expenditure is disaggregated in different components. Support to a government matters only for the size of government and the size of public investment. The importance of opposition's role is realized only in case of capital expenditure. Non-plan expenditure is the only category of expenditure which has increased significantly just before the years of elections. On the other hand, PCI and LR are the only control variables which have emerged significant across all the categories of expenditures. DR and PS never came significant, whereas PR emerged significant only for capital expenditure.

2.8 Robustness of the Results

The aim of this section is to test the robustness of the results that are discussed in the previous section. Sometimes empirical results are very sensitive to specific factors like introduction and/or exclusion of variables of interest or making minor modifications in the sample selection criteria or using alternative methods of result estimation. If the results show a great deal of variation in reaction to such minor adjustments, then the original baseline regression results cannot be trusted. In this study three types of different strategies are applied to check the consistency of the baseline regression findings.

2.8.1 Introducing a new variable of interest

The first strategy to check the robustness of the original result is done by introducing a new potential variable of interest. There are studies which have shown that the intergovernmental transfers the provincial governments receive from the central government receive have perverse incentives in collecting their

own revenues and making public expenditures judiciously.⁴⁷ In the Indian context, Rao and Singh (2001), Khemani (2007) and Arulampalam et al. (2009) have shown that, apart from the economic and demographic criteria, the centre-state political affiliation (i.e. when same political parties rule both at the centre and in the states) plays a crucial role in determining a state's share of revenue that it receives from the centre. Hence, the centre-state political affiliation could be considered as a potential political determinant of the fiscal outcomes.⁴⁸

The centre-state political affiliation variable is a dummy variable. It holds value *one* if the same political party holds power both at the centre and in a state during a fiscal year, otherwise its *zero*.⁴⁹ The results after the introduction of the political affiliation dummy are displayed in table – 2.9 and 2.10, Appendix – 2.2, for the revenue related and the expenditure related fiscal outcomes, respectively. In the regression tables coefficients of the control variables and the intercept term are not reported as they do not hold the centre-stage of the analysis. This is also applicable for other two robustness strategies that are discussed below in this section. The new variable never emerged significant and no notable changes are observed in the results of the original variables of interest with the introduction of this new variable. The overall findings of this strategy suggest that the baseline regression results are quite insensitive to the introduction of centre-state political affiliation dummy variable.

2.8.2 Changing the selection criterion of the fiscal years

As mentioned in an earlier section, during the period of imposition of *president's rule* in India the democratically elected governments are suspended from

⁴⁷ Studies on intergovernmental transfers and their impact on fiscal outcomes have established these relations. Dollery and Worthington (1996) provides a detailed survey of this strand of literature.

⁴⁸ In this study only those political determinants that are endogenous to the Indian state governments are considered. Since the centre-state political nexus is an exogenous determinant to the system, it is ignored as a variable of interest in the original analysis. As the existing studies on the Indian states have established the centre-state political nexus plays a crucial role in determining the transfers that a state receives from the centre, it is used to check the robustness of the findings of this study.

⁴⁹ When single party governments rule both at the centre and in a state, then the case is simple and straight forward. A modification is made when coalition governments exist at both levels. If the coalition governments exist at both levels, then the political nexus between the *leading parties* of the coalition governments is considered.

performing day-to-day business of the states. Under such circumstances the democratically elected state governments cannot be attributed for the fiscal outcomes of that particular period. The time duration of the imposition of president's rule vary from few days to years. The arbitrarily chosen selection criterion is *one quarter* for the baseline regression analysis. But ruling for just one quarter of a fiscal year might not be enough for a government to influence the fiscal outcomes of that particular fiscal year. As a part of the second strategy to test the robustness of the original results, the selection criterion is changed to *two quarters*. Hence, those fiscal years that are ruled by the democratically elected governments at least for two quarters are included in the analysis.

After changing the selection criterion few more observations are dropped from the analysis. The results after making this modification are displayed in table – 2.11 and 2.12, Appendix – 2.2, for the revenue related and the expenditure related fiscal outcomes, respectively. Similar to the previous strategy, the new regression results do not vary significantly from the original ones. The numerical magnitudes of the coefficients changed marginally. Otherwise, the expected signs and the significance levels of the variables of interest have remained same. From the findings of this robustness strategy, it could be concluded that the baseline regression findings are immune to the change in the selection criterion of the fiscal years.

2.8.3 Alternative Method of Estimation

This is the *third* strategy to check the robustness of the original results. The model specification remains same as of the baseline regression analysis, but the results are calculated with an alternative method of estimation. The baseline regression results are estimated using the Panel-Correcting Standard Errors (PCSEs) method, which corrects for heteroskedasticity and first-order panel specific autocorrelation with the option of PSAR1. However this is not the only method that corrects for the problems of heteroskedasticity and autocorrelation. The results could be calculated with the method of Feasible Generalized Least Squares (FGLS), which

also redresses the problems heteroskedasticity and autocorrelation.⁵⁰ The results calculated with FGLS estimation method are displayed in the table – 2.13 and 2.14, Appendix – 2.2, for the revenue related and the expenditure related fiscal outcomes, respectively. The results estimated using FGLS estimation methods do not vary significantly from the original ones. The overall impression about the results is not different from the results of other two strategies that are discussed above.

After applying all the three strategies of checking robustness of the baseline results, it could be concluded that the original findings of this study are unbiased and consistent. Few exceptions are observed, but they are not serious enough to turnaround the original results. Since the original results passed through the robustness tests, the claims that are made in this study hold well.

2.9 Summary and Conclusion

Traditionally it is believed that the fiscal outcomes of an economy are determined by the economic and demographic determinants. However recent literature on determinants of fiscal outcomes acknowledges the role of political factors in influencing them. In this study both the sets of determinants are considered and empirically investigated whether the political determinants still influence the fiscal outcomes significantly in the presence of traditional determinants or not. Five types of political determinants: government fragmentation, strength of the opposition, majority of the government, ideology of the government and electoral cycle years are taken into account and two sets of hypotheses are developed by linking the political determinants with the expenditure and revenue related fiscal outcomes. A sample of 14 larger Indian states, spread over the time period from 1980-81 to 2006-07, is used to examine the hypotheses. The results of this study suggest that the political determinants explain the variations of fiscal outcomes across the Indian states significantly even in the presence of the traditional determinants.

⁵⁰ FGLS with the options of *panels (heteroskedastic)* and *correlation (PSARI)* corrects for heteroskedasticity and first-order panel specific autocorrelation, respectively. For more information see the *xtgls* command of 9th or more advanced version of Stata Reference Manual on Longitudinal/Panel Data.

Appendix – 2.1

(a) Index of Ideology (IOI): All the political parties that have ever headed a government, across the Indian states, over the time period of the study are considered. In case of the coalition governments, as most of the time the political parties having relatively similar ideologies form the government, the ideology of such a government is decided on the basis of the ideology of the party that leads the coalition. The spread of the index is from point 1 to 5:

- 1 – When a right-wing political party holds the government;
- 2 – When a right-centric political party holds the government;
- 3 – When a centric political party holds the government;
- 4 – When a left-centric political party holds the government;
- 5 – When a left-wing political party holds the government.

There are few occasions, when governments have changed in the middle of a fiscal year. Some adjustment is requiring to be made in the index. For such occasions, the adjusted index is:

- $IOI \leq 1.5$: When a right-wing political party holds the government;
- $1.5 < IOI < 2.5$: When a right-centric political party holds the government;
- $2.5 \leq IOI \leq 3.5$: When a centric political party holds the government;
- $3.5 < IOI < 4.5$: When a left-centric political party holds the government;
- $IOI \geq 4.5$: When a left-wing political party holds the government.

(b) ENPG (Effective Number of Political Parties in the Government): It is defined as:

$$\text{ENPG} = \frac{1}{\sum S_i^2}$$

Where S_i represents i^{th} party's share in the government (i.e. the number of seats that the i^{th} party holds / total number of seats the government holds in the legislature). For a single party government the numerical value of this index is 1, and increases as the number of parties increase in a government. The formula and the interpretation remain same for the calculation of ENPO (Effective Number of Political Parties in the Opposition).

(c) Support to the government: It measures what kind of majority a government enjoys in the legislature. Its defined as:

$$\text{Support} = \frac{(P - N_1)}{N_2} \times 100$$

Where N_1 is the minimum number of seats required to win in the legislature for a political party or set of political parties to form the government (i.e. by the rule of simple majority). $N_2 = N - N_1$, where N is the total strength of the legislature (N_2 is the rest of the seats in the legislature, which are won by the opposition political parties). P is the number of seats the government has actually won in the legislature. Hence, this variable varies between 0 and 100. It's *Zero*, when the government enjoys an exact simple majority in the legislature, and 100, when all the seats are won by the government.

Appendix – 2.2

Table – 2.6: List of variables and Data Sources

Variables and Descriptions	Source
<i>Own Tax Revenue</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Own Direct Tax Revenue</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Own indirect Tax Revenue</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Internal Debt</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Total Government Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Revenue Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Capital Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Non-Plan Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Per-capita SGDP (State Gross Domestic Product) Income</i> : in real per-capita (1999-2000 Indian rupees)	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Dependency Rate</i> : percentage of the number of persons under age 15 plus the number of persons aged 65 or older for every one hundred persons 15 to 64.	Various issues of <i>Census Data, Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Poverty Rate</i> : the percent of the population living below the poverty line.	Planning Commission Estimates. (<i>Compendium of Environment Statistics, 1999</i> , Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi).

<i>Literacy Rate</i> : percentage of the literate population.	Various issues of <i>Census Data, Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Primary Sector</i> : contribution of primary sector to the SGDP (State Gross Domestic Product) in percentage.	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Index of Ideology</i> : ranges between 1 (right-wing government) and 5 (left-wing government). See Appendix – 2.1 for more detailed description.	Data calculated from <i>Statistical Reports on General Elections to the State Legislative Assemblies (New Delhi, Election Commission of India (ECI), Butler et al. (1996), and Lalvani (2005)</i> .
<i>Support</i> : the excess of support a government enjoys over simple majority in percentage. See Appendix – 2.1 for more detailed description.	Data calculated from <i>Statistical Reports on General Elections to the State Legislative Assemblies (New Delhi, Election Commission of India (ECI), Butler et al. (1996), and Lalvani (2005)</i> .
<i>Electoral Cycle</i> : a binary Dummy variable for the years just before the elections.	Data calculated from <i>Statistical Reports on General Elections to the State Legislative Assemblies (New Delhi, Election Commission of India (ECI), Butler et al. (1996), and Lalvani (2005)</i> .
<i>ENPG (Effective Number of Political Parties in the Government)</i> : number of parties form the government. See Appendix – 2.1 for more detailed description.	Data calculated from <i>Statistical Reports on General Elections to the State Legislative Assemblies (New Delhi, Election Commission of India (ECI), Butler et al. (1996), and Lalvani (2005)</i> .
<i>ENPO (Effective Number of Political Parties in the Opposition)</i> : number of parties in the opposition.	Data calculated from <i>Statistical Reports on General Elections to the State Legislative Assemblies (New Delhi, Election Commission of India (ECI), Butler et al. (1996), and Lalvani (2005)</i> .
<i>Political Affiliation Dummy</i> : holds value <i>one</i> if the same political party holds power both at the centre and in a state during a fiscal year, otherwise its <i>zero</i> .	Data calculated from <i>Statistical Reports on General Elections to the State Legislative Assemblies (New Delhi, Election Commission of India (ECI), Butler et al. (1996), and Lalvani (2005)</i> .

Table – 2.7: State-wise Elections and Governments by the Political Parties over the Period of (1975 – 2007)

Serial No.	States	State-wise Years of Election (1975-76 to 2006-07)							
1.	Andhra Pradesh	1978 (INC) [60]	1983 (INC) [61]	1985 (TDP) [68]	1989 (INC) [62]	1994 (TDP) [73]	1999 (TDP) [61]	2004 (INC) [63]	
2.	Bihar	1977 (JP) [66]	1980 (INC) [52]	1985 (INC) [60]	1990 (JD <i>Led</i>) [59]	1995 (RJD <i>Led</i>) [63]	2000 (RJD <i>Led</i>) [51]	2005 (JD(U) <i>Led</i>) [59]	
3.	Gujarat	1975 (INC) [53]	1980 (INC) [77]	1985 (INC) [81]	1990 (JD <i>Led</i>) [75]	1995 (BJP) [66]	1998 (BJP) [64]	2002 (BJP) [70]	2007 (BJP) [64]
4.	Haryana	1977 (JP) [83]	1982 (INC <i>Led</i>) [51]	1987 (LKD) [66]	1991 (INC) [57]	1996 (HVP <i>Led</i>) [52]	2000 (INLD) [52]	2005 (INC) [74]	
5.	Karnataka	1978 (INC) [66]	1983 (JP <i>Led</i>) [51]	1985 (JP) [62]	1989 (INC) [79]	1994 (JD) [52]	1999 (INC) [59]	2004 (INC & JD(S)) [55]	
6.	Kerala	1977 (INC <i>Led</i> UDF) [65]	1980 (CPM <i>Led</i> LDF) [62]	1982 (INC <i>Led</i> UDF) [59]	1987 (CPM <i>Led</i> LDF) [58]	1991 (INC <i>Led</i> UDF) [60]	1996 (CPM <i>Led</i> LDF) [61]	2001 (INC <i>Led</i> UDF) [70]	2006 (CPM <i>Led</i> LDF) [70]
7.	Madhya Pradesh	1977 (JP) [72]	1980 (INC) [77]	1985 (INC) [78]	1990 (BJP) [69]	1993 (INC) [54]	1998 (INC) [54]	2003 (BJP) [54]	
8.	Maharashtra	1978 (JP) [58]	1980 (INC) [65]	1985 (INC) [56]	1990 (INC) [53]	1995 (BJP & SHS) [52]	1999 (INC & NCP) [51]	2004 (INC & NCP) [51]	

9.	Orissa	1977 (JP) [74]	1980 (INC) [79]	1985 (INC) [78]	1990 (JD) [82]	1995 (INC) [78]	2000 (BJD & BJP) [71]	2004 (BJD & BJP) [62]		
10.	Punjab	1977 (SAD <i>Led</i>) [77]	1980 (INC) [53]	1985 (SAD) [62]	1992 (INC) [74]	1997 (SAD) [64]	2002 (INC) [52]	2007 (SAD <i>Led</i>) [57]		
11.	Rajasthan	1977 (INC) [76]	1980 (INC) [66]	1985 (INC) [57]	1990 (BJP <i>Led</i>) [66]	1993 (BJP <i>Led</i>) [51]	1998 (INC) [76]	2003 (BJP) [60]		
12.	Tamil Nadu	1977 (AIDMK) [56]	1980 (AIDMK) [55]	1984 (AIDMK) [56]	1989 (DMK) [64]	1991 (AIDMK) [71]	1996 (DMK) [74]	2001 (AIDMK) [58]	2006 (DMK <i>Led</i>) [57]	
13.	Uttar Pradesh	1977 (JP) [83]	1980 (INC) [72]	1985 (INC) [63]	1989 (JD <i>Led</i>) [51]	1991 (BJP) [52]	1993 (SP <i>Led</i>) [54]	1996 (BJP <i>Led</i>) [56]	2002 (BSP <i>Led</i>) [51]	2007 (BSP) [56]
14.	West Bengal	1977 (CPM) [70]	1982 (CPM) [69]	1987 (CPM) [74]	1991 (CPM) [73]	1996 (CPM) [62]	2001 (CPM <i>Led</i> LF) [68]	2006 (CPM) [71]		

Note: Years of the general elections from 1975-76 to 2006-07 are reported in this table. Years of mid-term elections are not reported here as the outcomes of such elections have never disturbed the composition of a government. The parties that formed governments during the years of election are mentioned in (.) and the percentage of seats won by the corresponding governments in their respective legislatures is expressed in [.]. When only one party's name is mentioned in the table, it represents a single party government. In case of two parties, it's a coalition government of two parties and for coalition governments of more than two parties *Led* (in italics) is written after the party that leads the government. In case of the coalition governments of more than two parties, the party that heads the government is mentioned and its allied parties are ignored to keep the table simple. There are occasions when new governments replace the older ones without an election being held. Such instances are not reported in this table, but are incorporated in the analysis. The party specific detailed information is reported in the table – 2.8 below.

Table – 2.8: Ideological codes of the Indian Political Parties

Serial No.	Abbreviation	Party Name	Political Ideology	Ideological Stand	Ideology Scale
1.	AIDAMK	All India Anna Dravida Munnetra Kazhagam	Social Democratic, Populist	Centre	3
2.	BJD	Biju Janata Dal	Populist, Economic liberalism	Right-Centre	2
3.	BJP	Bharatiya Janata Party	Economic liberalism	Right	1
4.	BSP	Bahujan Samaj Party	Dalit Socialism, Socialism	Left-Centre	4
5.	CPI	Communist Party of India	Communism	Left	5
6.	CPI(M)	Communist Party of India (Marxist)	Communism	Left	5
7.	DMK	Dravida Munnetra Kazhagam	Social Democratic, Populist	Centre	3
8.	HVP	Haryana Vikas Party	Social Democratic, Populist	Centre	3
9.	INC	Indian National Congress	Populist, Democratic Socialism, Social Democracy	Centre	3
10.	INLD	Indian National Lok Dal	Populist, Economic liberalism	Right-Centre	2
11.	JD	Janata Dal	Populist, Economic liberalism	Right-Centre	2
12.	JD(S)	Janata Dal (Secular)	Populism, Social Democracy	Centre	3
13.	JD(U)	Janata Dal (United)	Integral Humanism, Conservatism	Right-Centre	2
14.	JP	Janata Party	Populist, Economic liberalism	Right-Centre	2
15.	LDF	Left Democratic Front	Communism	Left	5
16.	LF	Left Front	Communism	Left	5
17.	NCP	Nationalist Congress Party	Populist, Democratic Socialism, Social Democracy	Centre	3
18.	RJD	Rashtriya Janata Dal	Populism	Centre	3
19.	SAD	Shiromani Akali dal	Religious (Sikh), Populist, Economic liberalism	Right-Centre	2
20.	SHS	Shiv Sena	Economic liberalism	Right	1
21.	SP	Samajwadi Party	Populist, Democratic Socialism	Centre	3
22.	TDP	Telugu Desam Party	Regionalist, Fiscally Conservative	Right	1
23.	UDF	United Democratic Front	Populism, Democratic Socialism, Social Democracy	Centre	3

Note: The parties that are ever headed a government are mentioned in the table. The parties are arranged in the alphabetical order. LDF (in Kerala), LF (in West Bengal) and UDF (in Kerala) are not specific political parties. These are the names of alliances formed by different sets of political parties in different states having same ideological stands. Apart from the major parties that are mentioned in the table, sometimes small parties have constituted parts of different governments across the Indian state over the years. Such parties are not reported in the table. The ideology scale spreads from point 1 to 5.

Table – 2.9: Results of Revenue Related Fiscal Outcomes (After Introducing the Political Affiliation Dummy)

	(1) OTR	(2) ODTR	(3) OITR	(4) ID
IOI	– 0.047*** (0.011)	– 0.0001 (0.015)	– 0.054*** (0.011)	0.015** (0.006)
SG	0.002*** (0.0007)	– 0.0002 (0.001)	0.002*** (0.0007)	0.0002 (0.0003)
EC	– 0.024** (0.011)	– 0.026* (0.015)	– 0.026** (0.011)	0.004 (0.005)
ENPG	– 0.047** (0.023)	– 0.055* (0.03)	– 0.045* (0.024)	0.026* (0.014)
ENPO	– 0.009 (0.009)	– 0.027** (0.013)	– 0.007 (0.01)	0.001 (0.005)
AD ^a	0.011 (0.014)	0.032* (0.019)	0.014 (0.016)	0.003 (0.007)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
R-squared	0.99	0.98	0.98	0.99
Wald chi-square	18268.72***	11967.16***	211002.03***	58241.6***
Number of obs.	370	370	370	370
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses. ^a AD is the abbreviation of the variable *Political Affiliation Dummy*.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 2.10: Results of Expenditure Related Fiscal Outcomes (After Introducing the Political Affiliation Dummy)

	(1) TGE	(2) RE	(3) CE	(4) NPE
IOI	0.004 (0.005)	0.012** (0.005)	– 0.015* (0.008)	0.013** (0.006)
SG	0.0004 (0.0003)	0.0002 (0.0002)	0.0013*** (0.0005)	0.0001 (0.0004)
EC	0.003 (0.005)	0.002 (0.005)	0.007 (0.009)	0.014* (0.008)
ENPG	0.026*** (0.008)	0.031*** (0.009)	0.027** (0.013)	0.04*** (0.012)
ENPO	– 0.004 (0.005)	0.001 (0.005)	– 0.014** (0.007)	– 0.005 (0.006)
AD ^a	– 0.008 (0.007)	– 0.008 (0.006)	– 0.009 (0.012)	– 0.012 (0.009)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
R-squared	0.99	0.99	0.99	0.99
Wald chi-square	38947.08***	46868.47***	42520.11***	71717.7***
Number of obs.	370	370	370	370
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses. ^a AD is the abbreviation of the variable *Political Affiliation Dummy*.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 2.11: Results of Revenue Related Fiscal Outcomes (After Changing the Selection Criterion of the Fiscal Years)

	(1)	(2)	(3)	(4)
	OTR	ODTR	OITR	ID
IOI	– 0.045*** (0.011)	0.001 (0.015)	– 0.052*** (0.011)	0.015** (0.006)
SG	0.002*** (0.0007)	0.0001 (0.001)	0.0024*** (0.0008)	0.0001 (0.0003)
EC	– 0.031** (0.011)	– 0.029* (0.016)	– 0.031** (0.012)	0.002 (0.005)
ENPG	– 0.061** (0.023)	– 0.08* (0.032)	– 0.056** (0.023)	0.022 (0.016)
ENPO	– 0.011 (0.009)	– 0.03** (0.014)	– 0.009 (0.01)	– 0.001 (0.005)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
R-squared	0.99	0.98	0.99	0.93
Wald chi-square	16563.09***	9514.19***	15244.91***	51654.1***
Number of obs.	366	366	366	366
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 2.12: Results of Expenditure Related Fiscal Outcomes (After Changing the Selection Criterion of the Fiscal Years)

	(1)	(2)	(3)	(4)
	TGE	RE	CE	NPE
IOI	0.004 (0.006)	0.012** (0.006)	– 0.012 (0.008)	0.013* (0.007)
SG	0.0004 (0.0003)	0.0002 (0.0003)	0.001** (0.0005)	0.0001 (0.0004)
EC	– 0.0001 (0.005)	0.001 (0.005)	– 0.0003 (0.009)	0.012 (0.008)
ENPG	0.023*** (0.009)	0.03*** (0.009)	0.021* (0.012)	0.039*** (0.012)
ENPO	– 0.004 (0.005)	0.002 (0.005)	– 0.015** (0.007)	– 0.004 (0.006)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
R-squared	0.99	0.99	0.99	0.99
Wald chi-square	46778.92***	49783.74***	59482.96***	72383.72***
Number of obs.	366	366	366	366
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 2.13: Results of Revenue Related Fiscal Outcomes (FGLS Estimation Method)

	(1)	(2)	(3)	(4)
	OTR	ODTR	OITR	ID
IOI	– 0.037*** (0.009)	– 0.005 (0.011)	– 0.043*** (0.01)	0.006 (0.004)
SG	0.0013** (0.0006)	– 0.001 (0.001)	0.002*** (0.0006)	0.0001 (0.0002)
EC	– 0.028*** (0.01)	– 0.022* (0.012)	– 0.027** (0.011)	0.002 (0.003)
ENPG	– 0.037* (0.019)	– 0.076*** (0.026)	– 0.036* (0.02)	0.014* (0.008)
ENPO	– 0.007 (0.008)	– 0.026** (0.011)	– 0.004 (0.009)	0.002 (0.003)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	3241.01***	2125.27***	2778.48***	15610.24***
Number of obs.	370	370	370	370
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 2.14: Results of Expenditure Related Fiscal Outcomes (FGLS Estimation Method)

	(1)	(2)	(3)	(4)
	TGE	RE	CE	NPE
IOI	0.002 (0.004)	0.01*** (0.003)	– 0.016** (0.007)	0.01** (0.005)
SG	0.0005** (0.0002)	0.0002 (0.0002)	0.0013*** (0.0004)	– 0.0001 (0.0003)
EC	0.004 (0.004)	0.002 (0.004)	0.003 (0.008)	0.008 (0.005)
ENPG	0.019*** (0.006)	0.018*** (0.007)	0.028** (0.011)	0.027*** (0.009)
ENPO	– 0.0002 (0.003)	0.003 (0.003)	– 0.01* (0.006)	– 0.001 (0.004)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	14795.92***	16614.82***	4651.77***	11043.92***
Number of obs.	370	370	370	370
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 2.15: Selected empirical studies on political determinants of fiscal outcomes

Author(s)	Econometric Method and Data	Sample	Fiscal Outcome(s)	Political Determinant(s)	Main Results^a
1. Roubini and Sachs (1989a)	Panel Data: 1973 to 1982	OECD Countries	Public Spending, and Budget Deficit	Political Fragmentation	Significant
2. Roubini and Sachs (1989b)	Panel Data: 1973 to 1982	OECD Countries	Budget Deficit, and Public Debt	Political Fragmentation	Significant
3. Blais et. al. (1993)	Panel Data, Cross-country, and Time-series: 1960 to 1987	15 Countries	Public Spending	Ideology	Significant
4. Alt and Lowry (1994)	Panel Data: 1968 to 1987	States of USA	State Revenue, State Expenditures and Budget Deficit	Political Fragmentation	Significant
5. De Haan and Sturm (1994)	Panel Data: 1981 to 1989	OECD Countries	Government Debt and Public Spending	Government Changes and Ideology	Significant
6. Poterba (1994)	Panel Data and Cross-country: 1988 to 1992	States of USA	Budget Deficit	Political Fragmentation and Electoral Cycles	Significant
7. Dalen and Swank (1996)	Time Series: 1953 to 1993	Netherlands	Public Spending	Ideology and Electoral Cycles	Significant
8. Dutta (1996)	Panel Data: 1967-68 to 1992-93	15 Indian States	Revenue Expenditure, Revenue Collection, and Revenue Deficit/Surplus	Political Fragmentation	Significant
9. De Haan and Sturm (1997)	Panel Data: 1982 to 1992	OECD Countries	Government Debt and Public Spending	Political Fragmentation	Insignificant
10. De Haan et al. (1999)	Panel Data: 1979 to 1995	OECD Countries	Government Debt	Political Fragmentation	Significant
11. Hallerberg and Hagen (1999)	Panel Data: 1981 to 1994	15 European Countries	Budget Deficit and Public Debt	Political Fragmentation	Significant
12. Kontopoulos and Perotti (1999)	Panel Data: 1960 to 1995	OECD Countries	Public Expenditure, Budget Deficit, and Public Debt	Political Fragmentation	Significant
13. Schady (2000)	Cross-section: 1991 to 1995	Peruvian Provinces	Public Expenditure	Electoral Cycles	Significant
14. Schuknecht (2000)	Panel Data: 1973 to 1992	24 Developing Countries	Public Expenditure	Electoral Cycles	Significant
15. Ashworth and Heyndels (2001)	Panel Data: 1965 to 1995	OECD Countries	Tax Structures	Political Fragmentation	Significant
16. Balassone and Giordano (2001)	Panel Data: 1971 to 1990	8 European Countries	Budget Deficit	Political Fragmentation and Ideology	Significant
17. Harrinvirta and Mattila (2001)	Panel Data: 1971 to 1996	17 OECD Countries	Public Expenditure, Revenue Collection, and Budget Deficit	Political Fragmentation, Ideology, and Electoral Cycles	Significant

18. Padovano and Venturi (2001)	Time-series: 1948 to 1994	Italy	Public Expenditure and Budget Deficit	Political Fragmentation and Electoral Cycles	Significant
19. Volkerink and De Haan (2001)	Panel Data: 1971 to 1996	22 OECD Countries	Budget Deficit	Political Fragmentation and Ideology	Significant
20. Galli and Padovano (2002)	Time-series: 1950 to 1998	Italy	Public Debt and Public Deficit	Political Fragmentation and Electoral Cycles	Insignificant
21. Perotti and Kontopoulos (2002)	Panel Data: 1970 to 1995	19 OECD Countries	Public Expenditure, Revenue Collection, and Budget Deficit	Political Fragmentation and Ideology	Significant
22. Mukherjee (2003)	Panel Data: 1978 to 1996	110 Countries	Public Expenditure	Political Fragmentation, Ideology, and Electoral Cycles	Significant
23. Khemani (2004)	Panel Data: 1960 to 1992	14 Indian States	Public Expenditure, Revenue Collection, and State Borrowing	Electoral Cycles	Significant
24. Ricciuti (2004)	Panel Data: 1975 to 1995	19 OECD Countries	Government Surplus, Primary Government Expenditure	Political Fragmentation	Insignificant
25. Tavares (2004)	Panel Data: 1960 to 1995	19 OECD Countries	Change in Revenue and Expenditure	Ideology	Significant
26. Lalvani (2005)	Panel Data: 1981-82 to 1998-99	14 Indian States	Public Expenditure, Revenue Collection, and Budget Deficit	Political Fragmentation	Significant
27. Bawn and Rosenbluth (2006)	Panel Data: 1970 to 1998	17 OECD Countries	Public Expenditure	Political Fragmentation and Ideology	Significant
28. Chaudhuri and Dasgupta (2006)	Panel Data: 1974-75 to 1994-95	14 Indian States	Public Expenditure and Revenue Collection	Political Fragmentation and Electoral Cycles	Significant
29. Elgie and McMenamin (2008)	Panel Data: 1975 to 2004	OECD and Non-OECD Countries	Fiscal Deficit/Surplus	Political Fragmentation and Ideology	Insignificant
30. Schaltegger and Feld (2009)	Panel Data: 1980 to 1998	26 Swiss Cantons	Public Expenditure and Public Revenue	Political Fragmentation	Significant

^a Result 'Significant' suggests that the data supports the hypothetical links between fiscal outcomes and political determinants.

Chapter 3

Intergovernmental Transfers, Conditionalities and Fiscal Discipline:

Evidence across the Indian States

3.1 Introduction

Intergovernmental transfers between governments have long been an important feature of many federations in the world. Whether the outcomes of transfers are good or bad depends on the incentives that the transfer systems create for the national and sub-national governments in a country.⁵¹ Over the years the Indian federation has made a number of attempts to make its state governments less dependent on the central government by varying the size, composition, terms and conditions of intergovernmental transfers. A few policy measures are also undertaken at the national level to complement the process. Apart from this, over the years, the central level agencies, the planning commission and the finance commission of India, have made several amendments in their respective transfer allocation formulas that they use to allocate transfers across the Indian states. One of the basic objectives behind all these measures is to improve the fiscal discipline across the Indian states (i.e. making productive use of public resources, improving own revenue collection, and maintaining the overall budget deficit at a lower level). How far the central government's policy measures have succeeded in forcing the state governments to manage their public finances judiciously is an empirical question. Empirically examining the impact of varied size, composition, terms and conditions of intergovernmental transfers on fiscal outcomes (i.e. revenue collections and expenditure allocations) of the Indian state governments is the primary motivation of this study. However the broad idea that is formulated as a hypothesis is based on the literature that subscribes the idea that the states governments may use unconditional transfers to serve their own political purposes.

Intergovernmental transfers in India comprise of revenue and capital transfers. Revenue transfers comprise of tax devolution and grants which do not carry the burden of repayment. The revenue transfers could be divided into two broad

⁵¹ In this study, the term 'sub-national governments' refers to all governments below the national level.

categories: conditional transfers,⁵² basically project-based grants and sanctioned to serve specific purposes, and unconditional transfers,⁵³ sanctioned to meet general purpose expenditure requirements of the states governments. As both the categories of revenue transfers embody different terms, conditions, and incentive structures, the impacts of these transfers are expected to be different on different components of revenue collections and expenditure allocations. On the other hand, capital transfers are the loans that the states receive from the central government which are long-term and concessionary in nature. The central government of India's loan sanctioning policy towards its states is criticised severely on various grounds.⁵⁴ Hence, based on the recommendations of the Twelfth Finance Commission (TFC) of India, the central government of India has discontinued the process of advancing loans to the state governments on plan purposes since the fiscal year of 2005-06. Moreover, the burden of repayment of loans (i.e. capital transfers) creates a different set of conditions and incentives than that of the non-repayable transfers (i.e. revenue transfers). Considering above discussed issues, the capital transfers are ignored and only the revenue transfers are considered in this study.⁵⁵ The *first objective* of this study is to examine whether fiscal responses of the Indian states differ significantly across different categories of

⁵² Grants allocated by the Planning Commission of India and central government ministries to the Indian states constitute conditional revenue transfers. The grants given by the Planning Commission is conditional on the ground that these are planned transfers and given to be used for developmental purposes and the Central Ministries grants are conditional because their transfers are project-based and purpose specific.

⁵³ The Finance Commission of India allocates non-plan and unconditional revenue transfers, constitutes devolution of centrally collected tax revenues and non-plan grants, to fill the gap between revenue collections and expenditure requirements of the Indian states. This is also known as *gap-filling* approach.

⁵⁴ The planning commission of India sanctions loans and plan grants in a package together based on Gadgil formula. The normal category Indian states are given intergovernmental transfer in a ratio of 70 percent loan and 30 percent grants (10 percent loan and 90 percent grants for the special category of states). It means, if a normal category state receives a grant of Rs. 30 from the centre, it must borrow Rs. 70 from the same, and that, too, at an interest rate which is usually higher than the open market rate of interest. In particular, Twelfth Finance Commission TFC has criticized the practice of central government's forceful loan sanctioning policy on the following grounds: (a) there are no rational why plan grants to the states should be linked to compulsory loans from the centre, (b) it encourages the state governments to prepare larger plan sizes, sponsored by the central government's loans, (c) it makes the state governments over reliant on central government's loans and the debt position of these governments deteriorates further (i.e. the central government's loans constitute 60 percent of the states' indebtedness), and (d) since almost the expenditure on plan is met by the centre from borrowed funds, central loans as a part of the plan assistance unnecessarily increase the fiscal deficit of the centre.

⁵⁵ Here onwards, 'intergovernmental transfers' would be understood as 'revenue transfers' in this study.

intergovernmental transfers or not. However the first objective aims at investigating only the impacts of increases in different categories of intergovernmental transfers on different types of fiscal outcomes. Intergovernmental transfers do not follow an increasing trend all the time.⁵⁶ It would be interesting to know the reaction of the state governments to immediate cuts in different forms of transfers. Examining the possibility whether the Indian states adjust their fiscal outcomes systematically to immediate cuts in the intergovernmental transfers or not is the *second objective* of the study. A number of expenditure and revenue related fiscal measures are used in the analysis. Standard econometric tools are employed and a balanced panel dataset of 26 years, from 1981-82 to 2006-07, across the 14 major Indian states is used to test both the objectives of this study.

The structure of this chapter is as follows. Section 3.2 reviews the literature and identifies the gaps in it. Section 3.3 discusses the fiscal federalism in India. Section 3.4 discusses designing of intergovernmental transfers. Section 3.5 deals with data and variables and section 3.6 discusses the model specification of the study. Section 3.7 discusses the empirical results of the study and section 3.8 checks the robustness of the results. Finally, section 3.9 summarizes and concludes the finding of the chapter.

3.2 Literature review and identifying the gaps in the literature

Both the determinants of fiscal outcomes have been intensively researched before.⁵⁷ The justification in support of intergovernmental transfer is that all sub-national governments are not equally capable of generating resources on their own to meeting expenditure requirements. In the absence of redistribution of resources across the regions horizontally, the resource scarce regions will struggle to eliminate the interregional differences in economic growth and development in an

⁵⁶ Over the years, fluctuations in the flow of different components of intergovernmental transfers are observed. Particularly, in the initial years of 1980's, an increasing trend of intergovernmental transfers was a common phenomenon, whereas a declining trend of such transfers is frequently observed in the post-liberalization era, started with the series of reforms of 1991. However, neither of the trends is continuous.

⁵⁷ In appendix – 3.2, table – 3.30, an overview of selected empirical studies on fiscal responses of intergovernmental transfers is provided.

economy (Prud'homme, 1995; and Rodden and Rose-Ackerman, 1997). Hence, the role of a powerful national government is seen as a benevolent distributor of resources which tries to distribute the resources across different regions as per their requirements.⁵⁸ However, these studies assume that the sub-national governments make best use of the intergovernmental transfers and the national government's purposes are served with due respect. The seminal studies by Borcharding and Deacon (1972), Bergstrom and Goodman (1973), McGuir (1975 and 1978), and Pommerehne and Schneider (1978) have questioned these traditionally held assumptions. Unlike the traditional literature, this branch of literature is inspired by positive ideas. The thrust of this literature is that the intergovernmental transfers alter the budget constraints of the sub-national governments and it allows them to make adjustments in the fiscal outcomes to serve their own political purposes. After these seminal works, a number of studies have investigated the fiscal responses of sub-national governments to intergovernmental transfers.⁵⁹ However these studies investigate the fiscal responses of sub-national governments to an increase in intergovernmental transfers. For the first time, Gramlich (1987), Stine (1994), and Gamkhar and Oates (1996) observed a new phenomenon that the fiscal performance of the sub-national governments of USA respond asymmetrically to immediate cuts in intergovernmental transfers. This is called 'Asymmetry Hypothesis' in the literature, where the effects of immediate cuts in intergovernmental transfers on fiscal outcomes are investigated. Over the years, such practices are observed in other parts of the world too.⁶⁰

In spite of such an impressive list of studies, there are some issues which are either completely ignored or partially addressed in most of the studies. *First*, most

⁵⁸ Musgrave (1959) and Oates (1972) are the major studies that have argued in favour of centralization of fiscal and monetary policies of an economy. In the recent times, many studies have argued for a powerful central government to address the issues of differences in interregional resource distributions. Prud'homme (1995) and Tanzi (1995) are the major ones in this regard.

⁵⁹ See Dollery and Worthington (1996) for a comprehensive survey of this literature.

⁶⁰ It will be an arduous task to do a thorough survey of the literature that examines 'Asymmetry Hypothesis'. However, frequently cited studies are by Lalvani (2002) and Karnik and Lalvani (2005) for India; Heyndels (2001) and Bastiaens et al. (2001) for Belgium (i.e. Flemish Municipalities); Volden (1999), Gamkhar (2000), Cohen (2002) and Deller and Maher (2005) for USA apart from the above mentioned pioneer studies; Levaggi and Zanola (2003) for Italy; Alderete (2004) for Mexico; and Melo (2002) for Colombia.

of the studies have investigated expenditure responses to intergovernmental transfers, whereas the revenue response part has remained largely under emphasized (exceptions are Stine, 1994; Lynch, 1997; Rajaraman and Vasishtha, 2000; and Bastiaens et al., 2001). Since the sizes of revenue collections and public expenditures are two different sides of a budget, both revenue and expenditure related fiscal outcomes of the Indian states are considered and linked with intergovernmental transfers in this study. *Second*, majority of the studies have considered fiscal outcomes at an aggregate level. Often, fiscal management at the aggregate level does not give much information regarding the management mechanisms of fiscal outcomes at the disaggregate level and uncovering such facts would be helpful from the point of view of policy makers. Otherwise, erroneous policies would fail to produce desirable fiscal outcomes. This study considers various types of disaggregated revenue and expenditure related fiscal outcomes along with the aggregated ones of the Indian states. *Third*, the issue of endogeneity of the intergovernmental transfers is quite often overlooked in many studies (exceptions are Stine, 1994; Gamkhar and Oates, 1996; Volden, 1999; Lalvani, 2002; Knight, 2002; Gordon, 2004; and Karnik and Lalvani, 2005). As the intergovernmental transfers are often allocated after taking sub-national governments' requirements into account, there are possibilities that such transfers would be endogenous determinants. While allocating intergovernmental transfers, the economic status of the Indian states are explicitly taken into account. However the issue of endogeneity is an empirical question. Following standard practices of the literature, this study checks endogeneity of intergovernmental transfers in the Indian context and suitable econometric estimation methods are employed to deal with it.

Apart from addressing these general shortcomings of the literature in this study, selecting the Indian states to examine the impact of intergovernmental transfers on revenue and expenditure related fiscal outcomes are interesting and unique from at least two perspectives. *First*, particularly the centre-state fiscal relation has undergone many changes over last six decades of federalism in India. However, not many attempts have been made to evaluate the impact of this relation on

public finances of the Indian states.⁶¹ The purpose of this study is quite different from the existing ones as it aims at investigating the fiscal responses to different forms of intergovernmental transfers across the Indian states in a more detailed manner. *Second*, none of the existing studies on India have explored the link between different forms of intergovernmental transfers and revenue and expenditure related fiscal outcomes of the Indian states. This study also examines whether imposition of conditions on transfers change fiscal responses of the Indian states or not which adds a further dimension to the existing studies.

3.3 Fiscal Federalism in India

India is a federal nation where both central and state governments exist together as per the constitution. India is a federal union of states consisting of 28 states and 7 union territories. The governance structure of the state governments closely resembles that of the central government, whereas the union territories are administered by an administrator appointed by the president of India. Due to the federalistic nature of governance, both governments share relations in several spheres. However it is the central government which enjoys an upper hand in case of the issues related to emergencies and inter-state governments. The centre-state fiscal relation could be singled out as the most important relation among the shared relations. The seventh schedule of the Indian constitution deals in detail with the issue of power sharing between both levels of governments in levying and collecting tax and non-tax revenue from different sources. Even though the number of revenue generating sources assigned to the state governments outnumber than that of the central government, the power of levying and collecting revenue from the major sources (i.e. income tax, estate duty and union excise duties) lie with the central government. However the central government

⁶¹ At least four studies (Jha et al., 1999; Rajaraman and Vasishtha, 2000; Lalvani, 2002; and Karnik and Lalvani, 2005) are attempted to link intergovernmental transfers with fiscal outcomes of the Indian states. However, Rajaraman and Vasishtha (2000) and Karnik and Lalvani (2005) are state-specific studies and confined to two specific Indian states, Kerala and Maharashtra repetitively. Among the studies across the Indian states, Jha et al. (1999) links tax efficiency of 15 major Indian states with the central government's grants and Lalvani (2002) investigates the impacts of the central government's 'lump-sum grants' on the expenditure and tax revenue collection across 14 Indian states.

transfers resources to the state governments in various forms as shown in figure – 3.1.

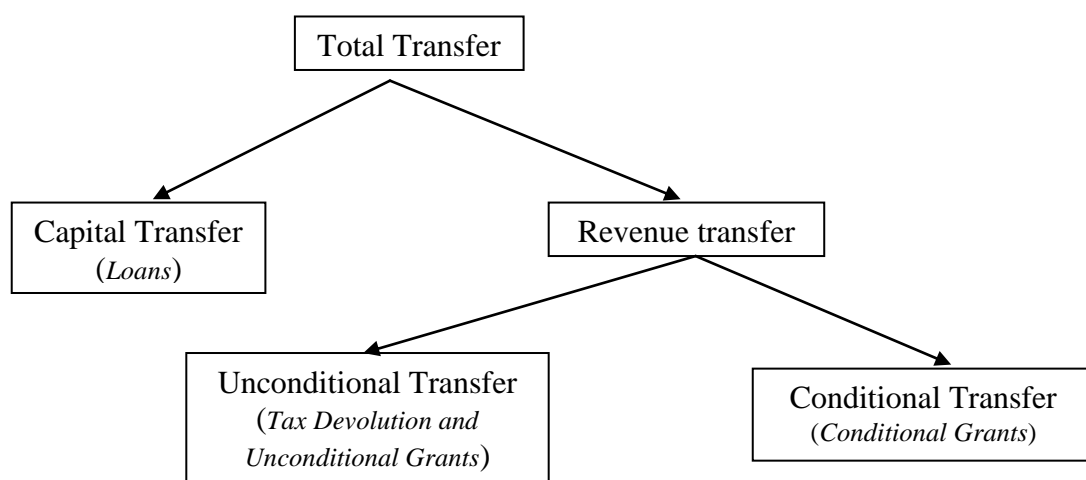


Figure – 3.1: Intergovernmental Transfers in India

One of the major reasons behind assigning a stronger role to the central government in the constitution is that the poorer Indian states are not in a position to generate enough revenues on their own to meet their expenditure requirements. Without central government's intervention the poorer states will suffer from resource scarcity and, hence, their developmental goals cannot be achieved. Therefore, the central government tries to strike a balance in the distribution of resources across the Indian states by allocating resources more favourably towards the poorer ones.

Intergovernmental transfers in India are allocated by three independent agencies such as the finance commission, the planning commission, and various ministries of the central government. The finance commission of India is a constitutional body established under article 280 of the Indian constitution and appointed by the president of India. Hence, the transfer allocated by the finance commission is also known as *statutory transfer*. Finance commissions are usually formed for a fixed tenure of five years and so far 13 such commissions are constituted since its first establishment in 1951. According to article 280, the purpose of its establishment is to allocate non-plan revenue resources between the Union and the state governments. Two of its important functions are to distribute the net tax

collections between the centre and the states and to allocate the non-plan grants to states from the consolidated fund of India. The component of tax devolution is a formula based transfer, whereas the non-plan grants are allocated to bridge the projected gap between non-plan current expenditure and post-tax devolution revenues of the states. Different commissions have used different formulas to devolve the centrally collected tax revenues. However, population and per-capita income related measures are always assigned more weights (see appendix – 3.2, table – 3.12, for details). Similarly, the planning commission of India allocates plan transfers from the centre to the states and it comprises of loans and plan grants. The planning commission is not a constitutional body. It was formed for the first time by the first prime minister of India, Jawaharlal Nehru, in 1950 to formulate five-year plans. Since the prime minister of India, an elected member of parliament, is the chairman of the planning commission, often this form of transfer is vulnerable to the ground of political influence. The planning commission uses the ‘Gadgil Formula’ to allocate its share of transfer since 1969. The formula was modified once in 1991. The major parameters used are population and per-capita income (see appendix – 3.2, table – 3.13, for details). The planning commission’s major functions are assessment of national resources, formulating five-year plans for determining priorities and allocating resources, and periodical evaluation of the progress of the plans. . The plan transfers are given with a ratio of 30:70 of grants and loans to the general category states and 90:10 is the ratio for the special category states. The last part of the transfers is allocated by various ministries of central government of India. This is the most controversial form of transfer as it is neither formula-based not constitutionally approved. This form of transfer is allocated to the states in forms of central sector and centrally sponsored schemes. Since officially, these projects are monitored by the planning commission and coordinated with the overall state plans, they are accounted under plan transfers. Central sector schemes are completely financed by the central government’s grants and the state governments’ function is just to execute the programmes, whereas the centrally sponsored schemes are cost sharing programmes between the central government and the state governments. The central assistance is given in forms of grants and/or loans. This form of transfer is allocated by the

mechanisms devised by various ministries and, hence, bureaucratic and political discretions play major roles. Hence, this form of transfer is also known as the *discretionary transfer*. Table – 3.1 shows the percentage contribution of each category of transfers to total intergovernmental transfers over the time period from 1980-81 to 2006-07.

Table – 3.1: Composition of Intergovernmental Transfers (in percentage)

Time Period	Finance Commission Transfer			Plan Transfer			Other Grants	Total
	Tax Devolution	Grants	Total	State Plan Scheme	Central Scheme	Total		
1980-81 to 1984-85	57	5	62	18	17	35	3	100
1985-86 to 1989-90	54	7	61	17	18	35	4	100
1990-91 to 1994-95	56	6	62	17	17	34	4	100
1995-96 to 1999-2000	59	6	65	19	11	30	5	100
2000-01 to 2004-05	56	8	64	18	13	31	5	100
2005-06 to 2006-07	58	7	65	19	13	32	3	100

Source: Data calculated from the Reserve Bank of India Bulletin, various issues.

3.4 Designing Intergovernmental Transfers

Traditionally, the practice of intergovernmental transfers to sub-national governments is justified on the ground of *horizontal equity*. The principle of *horizontal equity* is driven by the argument that, with the practice of equitable resource distribution, the resource deficiencies that arise across the sub-national units due to systematic and identifiable factors will cancel out. However, this strand of literature also implicitly assumes that the sub-national governments will make optimal use of the redistributed resources. Recent studies have contested this view on the ground of sub-national government's ability, effort, and incentive to use these resources productively.⁶² These studies have emphasized the designing

⁶² The practice of central governments bailing out their sub-national governments during a period of fiscal crisis unconditionally is severely criticized in the literature from the point of view of incentives of the sub-national governments in using their resources productively and managing fiscal outcomes efficiently. The major contributors to this literature are Weingast (1995), Wildasin

of intergovernmental transfers. Intergovernmental transfers are neither good nor bad by nature. All that matters is their effects on policy outcomes such as macroeconomic stability, allocative efficiency, and distributive equity. Broadly, from the policy perspective, three sets of intergovernmental transfers are discussed in the literature: conditional vs. unconditional transfers, lump-sum vs. matching transfers, and open-ended vs. close-ended transfers. Conditional transfers are sanctioned for specific purposes, whereas spending of unconditional transfers depend on the sub-national government's discretions. Lump-sum or non-matching transfers are allocated in gross amounts, whereas matching or cost-sharing transfers are allocated to serve specific purposes and the cost has to be shared by the recipient government at a pre-determined proportion. Open-ended transfers have no ceiling over the allocation of total amount, whereas there will always be a limit on the maximum amount of allocation of close-ended transfers. However, there are no hard and fast rules that strictly distinguish one set of transfers from another. For instance, lump-sum transfers could be either conditional or unconditional, whereas matching transfers could only be conditional. Similarly, lump-sum transfers are close-ended by definition, whereas matching transfers could be either close-ended or open-ended.

As mentioned earlier, the prime motive of this study is to examine whether imposition of conditions on intergovernmental transfers influence fiscal outcomes of the Indian states or not. To serve the purpose of this study, Indian intergovernmental transfers are divided into conditional and unconditional transfers. The literature suggests that the imposition of conditions on intergovernmental transfers produce different fiscal outcomes from the unconditional ones (Smoke and Kim, 2003; and Boadway and Shah, 2007). Since the national government (i.e. the donor) directs to the sub-national governments (i.e. the recipients) to spend conditional transfers on identified sectors, such transfers are expected to be used relatively more productively and purposefully in comparison to unconditional ones. However, how far the national government's purposes are served by the recipient sub-national governments by utilizing the

(1997), Oates (1999), Wibbels (2003), Boadway and Shah (2007), Facchini and Testa (2008) and Freinkman and Plekhanov (2009).

funds in the directed channels is an empirical question. It is very difficult on the part of the central government (donor) to monitor all the activities of the state governments (recipients). On the contrary, unconditional transfers are expected to be utilized for serving the recipient government's own purposes as no conditions are imposed on such transfers.

3.4.1 Effects of intergovernmental transfers on revenue collection of sub-national governments

Economic theory does not provide unique predictions about revenue responses of different forms of intergovernmental transfers. However the empirical studies suggest various possible outcomes. Often, collecting taxes and imposing duties on goods and services are considered politically unpopular government activities. Hence, the possibility that the intergovernmental transfers might be used strategically by the sub-national governments to substitute for locally generated revenues, particularly for taxes and duties, to serve their political purposes cannot be ruled out. However, the degree of substitutability of transfers would vary from one form of transfer to another. Given the nature of the transfers, the unconditional transfers are expected to be substituted for own tax revenues collection by the sub-national governments.

Revenue budget of the Indian states could be divided into two parts i.e. revenue receipts and capital receipts. Revenue receipts include taxes and duties collected by the state governments, receipts from the centre, and interests and dividends earned from its previous investments. Capital receipts include loans raised by the state from the market; loans and advances from the centre; recovery of the old loans and advances, which were previously offered to other states; and the proceeds from disinvestment. Own tax revenue is the only part of the whole revenue budget collected by a state government during a fiscal year which is under complete control of a state. Further, own tax revenue collection could be divided into revenues collected from direct taxes and indirect taxes. Own tax revenue collections and its direct and indirect tax components are the only

revenue-related fiscal outcomes considered in this study and are expected to respond differently across different forms of transfers.

3.4.2 Effects of intergovernmental transfers on expenditure allocations of sub-national governments

Economic theory does not make definite predictions about the impacts of intergovernmental transfers on public expenditure allocations of the sub-national governments. However, findings from most of the empirical studies suggest that the unconditional transfers stimulate public expenditure.⁶³ Public expenditure in turn is influenced by other political factors which then exert an influence on the way which public expenditure is used. Different types of public expenditures create different types of political incentives. Hence, the sub-national governments are expected to find it easier to divert the unconditional transfers to serve interest groups. However, the rate of diversion of different types of transfers towards different categories of expenditures is expected to be different.

The expenditure budget of the Indian states could be divided into revenue expenditure and capital expenditure. Revenue expenditure (i.e. public consumption) includes the expenses on functioning of the government departments, whereas capital expenditure (i.e. public investment) is the spending incurred by the governments to generate new assets and maintain the existing ones. State governments play an active role in fixing the size of both categories of expenditures. The total expenditure could also be divided into plan and non-plan expenditures. Plan expenditures are spent on financing programs and projects, which are pre-decided according to the plans that a state follows during an accounting year. Given the nature of plan expenditures the states governments have very little discretion in influencing it. Non-plan expenditures are spent to meet the expenditures on unforeseen and non-planned accounts. Interest payment and servicing of debts, subsidies, and repayment of market borrowings are the

⁶³ A number of studies have shown that there is a 'fly-paper effect' associated with intergovernmental transfers (See Dollery and Worthington (1996) for the survey of this literature). These studies investigate expenditure response to unconditional transfers. The broad finding of this literature is that the unconditional transfers generate a far greater stimulus effect on the spending of the sub-national governments than that from an equivalent increase in the private income.

major items that are covered under the category of non-plan expenditures. Indian state governments enjoy a greater freedom in determining the size of non-plan expenditures. Net total expenditure is obtained after excluding total intergovernmental transfer from total expenditure. It is considered to be an approximate measure of the size of a state government's own expenditure, even though not the perfect one. Evidence suggests that the size of sub-national governments own expenditure alters as they receive more transfers from their higher level governments.⁶⁴ Hence, the five types of public expenditures viz. total expenditure, net total expenditure, revenue expenditure, capital expenditure, and non-plan expenditure are taken into account and are expected to respond differently across different forms of transfers.

Subsequent sections of this study examine empirically how the selected revenue-related and expenditure-related fiscal outcomes of the Indian states respond to various types of intergovernmental transfers.

3.5 Data and Variables

Data for 14 Indian states are compiled for the time period from 1981-82 to 2006-07. Since there are no missing observations, the data set considered for this study is a balanced panel. Panel data analysis gives more informative data, lessens the possibility of collinearity among variables, increases degrees of freedom, and improves variability and efficiency. Moreover, panel data analysis suits well to the studies that deal with the dynamics of change.

Public expenditures, tax revenue collections, and their components are used as the measures of the fiscal outcomes of the major Indian states. These fiscal outcomes are used as the dependent variables in the regression and all are expressed in per-capita Indian rupees, adjusted with the base period price of 1999-2000. All independent variables are divided into two broad categories such as control variables and variables of interest. The control variables of per-capita income (PCI), primary sector's contribution (PS), literacy rate (LR), dependency rate

⁶⁴ Winer (1983) confirms such practice in case of Canadian provinces.

(DR), and the population living below poverty line (PR) are selected on the basis of their importance in the literature and availability of data in the Indian context; and the variables of interest related to central government's transfers are intergovernmental transfers (IT), asymmetry – intergovernmental transfers (AIT), conditional transfers (CT), asymmetry – conditional transfers (ACT), unconditional transfers (UT), and asymmetry – unconditional transfers (AUT). The intergovernmental transfers and its conditional and unconditional components are expressed in per-capita Indian rupees, whereas their asymmetric components are defined as:

$$A_{it} = \left[\left(\frac{T_{it} - T_{it-1}}{T_{it}} \right) \times 100 \right] \text{ if } (T_{it} < T_{it-1}) \quad (3.1)$$

$$= 0 \text{ otherwise } (i = 1, 2, \dots, 13, 14; \text{ and } t = 1981-82, 1982-83, \dots, 2006-07)$$

where T_{it} stands for different types of intergovernmental transfers for state i in time period t . The value of variable A_{it} is negative (in percentage) for the years of immediate cuts and zero otherwise. Details of the units of measure and data sources of the variables are discussed in appendix – 3.2, table – 3.11. Statistical summary of the variables is displayed in the table – 3.2.

Table – 3.2: Summary Statistics (Time Period: 1981-82 to 2006-07)

Variables	Details	Obs.	Mean	SD	Min.	Max.
OTR	Own Tax Revenue	364	1078.62	650.5	204.02	3433.69
ODTR	Own Direct Tax Revenue	364	120.91	92.41	20.48	583.1
OITR	Own Indirect Tax Revenue	364	957.71	573.79	183.57	2974.72
TE	Total Expenditure	364	2870.58	1258.09	1054.96	7610.4
NTE	Net Total Expenditure	364	1932.4	1181.67	297.97	6397.03
RE	Revenue Expenditure	364	2279.05	1059.66	704.21	5790.34
CE	Capital Expenditure	364	591.53	298.78	130.55	2243.69
NPE	Non-Plan Expenditure	364	2134.15	1086.99	660.21	6643.59
DR	Dependency Rate	364	12.78	1.34	9.99	16.53
PCI	Per Capita Income	364	14695.1	7368.48	3327	41169
PR	Poverty Rate	364	31.03	14.27	5.2	65.29
LR	Literacy Rate	364	58.11	14.16	30.11	93
PS	Primary Sector	364	34.02	10.25	11.28	55.26
IT	Intergovernmental transfer	364	646.49	246.45	227.93	1934.26
AIT	Asymmetry – Intergovernmental transfer	364	-3.77	8.3	-65.17	0
CT	Conditional transfer	364	197.92	85.93	6	548.55
ACT	Asymmetry – Conditional transfer	364	-8.46	16.6	-98.19	0
UT	Unconditional transfer	364	56.77	61.96	3.65	525.21
AUT	Asymmetry – Unconditional transfer	364	-21.08	29.26	-97.02	0

3.6 The Baseline Empirical Model

In this section the baseline empirical model of the study is discussed and the general baseline regression equation could be written as:

$$F_{it} = \alpha + \beta T_{it} + \phi X_{it} + \lambda_i + \mu_t + v_{it}; i = 1, \dots, N, \text{ and } t = 1, \dots, T \quad (3.2)$$

where subscript i stands for the Indian states and t for the time-period. F_{it} , the vector of dependent variables, represents for the set of measures of fiscal outcomes of the Indian states. Vector T_{it} represents for the variables of interest, whereas vector X_{it} stands for the group of control variables. The variables that are expressed in per-capita Indian rupees are log transformed before they are used in the regression, whereas others are used in their level forms.

The independent variables that are discussed in this study have both temporal and spatial variations. However, there are determinants which vary only in one dimension. The time-invariant and state-specific unobservable explanatory

variables like institutions, historical factors and geographical features need to be controlled for as there is ample evidence suggest that these factors play significant role in determining fiscal outcomes of an economy. Similarly, over the years, the central government of India has implemented various policies and undertaken a number of reforms to stabilize the fiscal outcomes of its states. The attempts undertaken at the central level will have same effects across all the Indian states and the impacts of such national level policies are state-invariant and time-specific. λ_i , the state-specific dummies, and μ_t , the time-specific dummies, are introduced in the baseline regression to control for the unobservable state-specific and time-specific explanatory variables respectively. Finally, the unexplained variations in the regression model will be captured by the error term v_{it} , which is assumed to be normally distributed, homoskedastic, and independent across observations.

Given the cross-sectional and time-series nature of the data set, the standard ordinary least squares (OLS) assumption of independent and identically distributed errors is unlikely to be satisfied. This study figures out that the OLS assumption made about the error term will be violated in two occasions at least. Endogeneity of the variables of interest could be the *first source* of violation.⁶⁵ In this study, the variables of interest, transfer related measures, are assumed to be exogenous in model (2). As the finance commission adopts expenditure – revenue gap filling approach, the planning commission uses Gadgil formula, and various central government ministries use project allotments to allocate intergovernmental transfers across the Indian states, there is a possibility that the expenditure requirements and the ability to collect revenues of the Indian states would be influencing these transfers. Hence, *simultaneity* seems to be the most likely source of endogeneity in the present context. A two-stage least square (2SLS) estimation method is employed to check and address the issue of endogeneity of transfers, whose first stage estimation model could be written as:

$$T_{it} = \alpha + \beta I_{it} + \phi X_{it} + \lambda_i + \mu_t + v_{it}; i = 1, \dots, N, \text{ and } t = 1, \dots, T \quad (3.3)$$

⁶⁵ The problem of endogeneity is not unidimensional. Endogeneity could be caused by various factors like measurement error, simultaneity, omitted variables and sample selection errors. Kennedy (2008) provides a detailed discussion on the issue of endogeneity.

The only difference in the notations of model (3) from model (2) is that, other set of variables remaining same, the set of variables of interest of equation (3.2) become the dependent variables in equation (3.3) and the set of instruments I_{it} takes its place in equation (3.3). Five different instruments are selected based on their importance in determining the intergovernmental transfers across the Indian states. First three instruments are economic and demographic measures and these measures are weighted more by both planning and finance commissions of India to allocate resources across the states. On the other hand, other two instruments are political variables, which have been proved to play an important role in allocating transfers across the Indian states by existing studies:⁶⁶

- (i) *State-wise Population in Percentage*: Over the years, both Finance and Planning Commissions have given a considerable amount of importance on the size of population while allocating federal resources to the Indian states. Hence, the populous states are expected to receive proportionately more resources from the centre.
- (ii) *Per-capita Income Difference*: Both commissions have attached highest weight to the income distance criterion while allocating resources across the Indian states. This criterion favours the poorer states. An index is constructed to quantify the income distance among the states (see Appendix – 3.1 for the construction of index IID). The value of the index increases as the per-capita income of a relatively poorer state diverges from the richest state. The index ranges from 0 to 100. The index is expected to be associated positively with intergovernmental transfers.
- (iii) *Index of Urbanization*: Developed states are expected to receive lesser central assistances. As the level of urbanization is considered to be an indicator of development and improved physical infrastructure, urbanized states are expected to receive relatively lesser resources from the centre.

⁶⁶ Rao and Singh (2001), Khemani (2007) and Arulampalam et al. (2009) have shown that, apart from the economic and demographic determinants, the political determinants like the electoral competitiveness of a state and the centre-state political affiliation play crucial role in allocating central government's transfers across the Indian states.

Level of urbanization is measured as the percentage of population of a state in the urban areas.

(iv) *'Swing' States*: Studies on electoral politics and voting acknowledge the fact that governments use various strategies to win elections and allocating increasing public funds to the electorally competitive states is one of the commonly observed political practices (Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Myerson, 1993; and Dixit and Londregan, 1995, 1996, and 1998). Politically competitive states are also known as the 'swing' states.⁶⁷ Studies by Khemani (2007) and Arulampalam et al. (2009) have confirmed the presence of such practices in India. An index is used to measure the degree of political swingness of the Indian state (see Appendix – 3.1 for the construction of index IPS). The index ranges between 0 and 100. Higher value in the index represents for stronger competition among the political parties in the corresponding state and the competitive states are expected to receive a favourable allocation of intergovernmental transfers.

(v) *Centre-State Political Affiliation*: The other political indicator that determines the allocation of intergovernmental transfers in a federation is the political nexus between the central government and the state governments. When a specific political party holds government at both centre and state, then that state is expected to receive increased central assistance.⁶⁸ A dummy variable is used to capture the centre-state political affiliation in this study, which takes the value *one* for the existence of nexus between the central government and a state government and *zero* otherwise.⁶⁹

Following the standard practices of the literature, Hansen's J test (i.e. also known as Sargan-Hansen overidentification test) is used to check the validity of

⁶⁷ Broadly, from the point of view of competition in an election, electoral constituencies could be divided into 'swing' or 'floating' constituencies and 'core' constituencies. A constituency will be considered politically 'swing' if it is not committed to elect a particular political party in the elections over the years, whereas 'core' constituencies always elect specific political parties time and again in the elections.

⁶⁸ Khemani (2007) and Arulampalam et al. (2009) have substantiated such political practices in India.

⁶⁹ As mentioned in earlier chapters, when coalition governments exist at either level, the political nexus between the *leading parties* of the governments is considered.

instruments and Hausman's Endogeneity test to check the endogeneity of the transfer-related variables. The null hypothesis of J test is that the instruments are valid ones jointly (i.e. uncorrelated with the error term). However, whether 2SLS estimation method would be used or not will be decided based on Endogeneity test's outcome. Rejection of the null hypothesis of the Endogeneity test would suggest that the transfer-related variables are endogenous and the 2SLS estimation method would be use. Otherwise, model (2) will be estimated by the method of feasible generalized least squares (FGLS).

Apart from the issue of endogeneity, in the presence of autocorrelation, contemporaneous correlation, and heteroskedasticity the standard OLS assumption of independent and identically distributed error term would be violated. This could be considered as the *second source* of violation of the standard OLS assumption. Since the panel datasets have both temporal and spatial dimensions, the problems of autocorrelation, contemporaneous correlation, and heteroskedasticity are most likely to arise. Assuming that these problems exist, the standard errors are corrected for heteroskedasticity and first order autocorrelation. Using instruments is one of the remedial measures to account for the problems of contemporaneous correlation in the error structure (Wooldridge, 2002). Hence, 2SLS estimation method after accounting for heteroskedasticity and first order autocorrelation is used as the remedial estimation method to deal with the issue of endogeneity of transfer-related variables.⁷⁰ Otherwise, FGLS estimation method is used as the alternative method of estimation if the variables of interest proved exogenous.⁷¹

3.7 Results

This section discusses the findings of the study. The baseline model discussed in the previous section is used to estimate results. Each category of fiscal outcome is regressed over three different forms of intergovernmental transfers. Model – I displays the results of total intergovernmental transfers, model – II and model – III

⁷⁰ All the results are estimated using STATA 10.0 software. In Stata, command *xtivreg2* with *robust* and *bw(2)* options is used to estimate the 2SLS model. *bw(2)* represents for second ordered bandwidth. Baum et al. (2003 and 2007) have discussed the command *ivreg2* in detail. The application of the command *ivreg2* could be extended to *xtivreg2*.

⁷¹ Command *xtgls* with *panels(cor)* and *cor(psar1)* options are used to estimate the results.

display the results when total transfers are decomposed into conditional and unconditional transfers respectively. Finally, model – IV shows the results when both conditional and unconditional transfers are used together in the regression equation.⁷² The set of control variables remains same and both state-specific and time-specific effects are included in all models. The transfer variables measure the impact of an increase in transfers on revenue-related and expenditure-related fiscal measures, whereas the asymmetry variables examine the fiscal response to immediate cuts in transfers. The null hypothesis of the asymmetry variables is that the fiscal response to such cuts in transfers are symmetric (i.e. the asymmetric variable is insignificant in the regression model).

As mentioned in the previous section, 2SLS estimation method is used to deal with the issue of endogeneity as the intergovernmental transfers are suspected to be endogenous. However, checking for the validity of selected instruments is a pre-condition before using 2SLS estimation method. In this study, the null hypothesis that all selected instruments are valid (i.e. Sargan-Hansen overidentification test) is accepted all the time and it suggests that the chosen instruments are valid ones. However, the final decision to use 2SLS estimation method or not depends on the outcome of Hausman's Endogeneity test. Like the case of overidentification test, the null hypothesis of Hausman's Endogeneity test, i.e. the endogenous regressors are exogenous, is accepted all the time and it suggests that the use of 2SLS estimation method is not required.⁷³ Hence, only FGLS estimation method is used to estimate results. The results of Hausman's Endogeneity test and Sargan-Hansen overidentification test are presented in all tables.

⁷² Results of model – IV could be considered as a strategy to check the robustness of the findings of the impacts of conditional and unconditional transfers on different fiscal outcomes. If both categories of transfers maintain their original signs and significance levels (i.e. when they are used separately in the regression equation) even after regressing together, then the original results would be considered insensitive and consistent. However, this is not the only strategy used in this study to check the sensitivity and consistency of the original results of conditional and unconditional transfers. Two other strategies used to check the robustness of the original results are discussed in the next section.

⁷³ Two previous studies by Lalvani (2002) and Karnik and Lalvani (2002) have also shown that intergovernmental transfers in India are not endogenous.

3.7.1 Revenue Response

In this sub-section, the revenue responses of different forms of transfers are analysed. Three types of revenue-related fiscal outcomes: collection of own tax revenue, indirect tax revenue and direct tax revenue are considered.

Table – 3.3: Impact of intergovernmental transfers on Own Tax Revenue
Dependent Variable: OTR

	Model – I	Model – II	Model – III	Model – IV
IT	– 0.032* (0.018)			
AIT	– 0.0001 (0.0002)			
CT		0.066*** (0.018)		0.073*** (0.019)
ACT		– 0.00053** (0.00027)		– 0.0006** (0.0003)
UT			– 0.015*** (0.005)	– 0.018*** (0.006)
AUT			– 0.0001 (0.0001)	– 0.0001 (0.0001)
DR	– 0.003 (0.008)	– 0.002 (0.008)	– 0.001 (0.007)	– 0.001 (0.008)
PCI	0.295*** (0.03)	0.297*** (0.029)	0.31*** (0.03)	0.31*** (0.03)
PR	– 0.001 (0.001)	– 0.000 (0.001)	– 0.001 (0.001)	– 0.0004 (0.001)
LR	0.004*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)
PS	– 0.002*** (0.0007)	– 0.002** (0.001)	– 0.003*** (0.001)	– 0.003*** (0.001)
CONS	4.227*** (0.369)	3.552*** (0.355)	3.938*** (0.347)	3.477*** (0.368)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	260497.02***	237640.94***	193055.01***	186118.85***
Hausman’s Endogeneity test	2.625	2.105	2.124	4.09
Hansen’s J Statistics	2.06	4.74	5.424	0.007
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.3 displays the results of the impacts of different forms of transfers on own tax revenue collection of the Indian states. All control variables have maintained their respective signs and significance levels across all four models.

However PCI, LR, and PS are the only significant determinants from the group of control variables. On the contrary, the variables of interest have shown a great deal of variations across different forms of transfers in terms of their signs, magnitudes, and significance levels. Total transfer is negatively related with the tax revenue collections of the Indian states. But a different picture emerges when total transfers are divided into conditional and unconditional transfers. CT is positively associated with OTR, whereas UT has a negative association. The results suggest that both total and unconditional transfers are substituted for own tax revenue collections, whereas conditional transfers force the states to utilize all their sources of tax revenue collection more efficiently. Analyzing the results of asymmetric variables, the variable OTR responds asymmetrically only to ACT. Negative sign of ACT suggests that the cuts in conditional transfers improve the tax revenue collection of the Indian states. Results of model – IV suggest that the effects of both measures of conditional and unconditional transfer variables on own tax revenue collection of the Indian states do not change significantly whether they are used together or separately in the regression equation. Magnitudes of the coefficients have changed marginally, otherwise all variables have maintained their levels of significance and signs in model – IV.

Table – 3.4 displays the results on the effects of transfers on indirect tax revenue collection of the Indian states. PCI, LR, and PS are the only control variables that have remained significant at 1 percent across all four models. The overall results of transfer variables are not quite different from the results of own tax revenue collections as shown in table – 3.3. The only noticeable difference is that the variable IT emerged insignificant. However it holds the same sign. From the results of table – 3.4, it could be concluded that the indirect tax revenue collection of the Indian states does not respond to total transfers, but the results change significantly when total transfers are decomposed into conditional and unconditional transfers. Among the asymmetric variables, only ACT is seen significant with a negative sign. Again, the results do not vary much whether both measures of conditional and unconditional transfers are used together or separately (see model – IV, table – 3.4). The only noticeable difference is that

ACT's level of significance drops down to 10 percent from 5 Percent when both measures of conditional and unconditional transfers are used together.

Table – 3.4: Impact of intergovernmental transfers on Own Indirect Tax Revenue

	Dependent Variable: OITR			
	Model – I	Model – II	Model – III	Model – IV
IT	– 0.009 (0.019)			
AIT	– 0.0002 (0.0002)			
CT		0.047** (0.02)		0.049** (0.02)
ACT		– 0.0006** (0.0003)		– 0.0005* (0.0003)
UT			– 0.016*** (0.005)	– 0.016*** (0.006)
AUT			0.0001 (0.0001)	0.000 (0.0001)
DR	– 0.008 (0.008)	– 0.009 (0.009)	– 0.008 (0.008)	– 0.009 (0.008)
PCI	0.277*** (0.033)	0.279*** (0.032)	0.289*** (0.033)	0.291*** (0.033)
PR	– 0.001 (0.001)	0.0003 (0.001)	– 0.001 (0.001)	– 0.0004 (0.001)
LR	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)
PS	– 0.003*** (0.001)	– 0.003*** (0.001)	– 0.004*** (0.001)	– 0.004*** (0.001)
CONS	4.091*** (0.385)	3.741*** (0.386)	4.021*** (0.358)	3.707*** (0.394)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	376347.23***	316466.11***	260560.1***	281355.58***
Hausman's Endogeneity test	3.421	1.404	1.051	5.899
Hansen's J Statistics	1.482	4.508	6	0.297
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.5: Impact of intergovernmental transfers on Own Direct Tax Revenue

	Dependent Variable: ODTR			
	Model – I	Model – II	Model – III	Model – IV
IT	– 0.002 (0.035)			
AIT	0.0002 (0.0004)			
CT		0.156*** (0.032)		0.155*** (0.034)
ACT		– 0.0002 (0.001)		– 0.0002 (0.001)
UT			0.006 (0.014)	0.005 (0.013)
AUT			– 0.000 (0.001)	– 0.0001 (0.0003)
DR	– 0.006 (0.012)	– 0.001 (0.01)	– 0.006 (0.011)	– 0.002 (0.01)
PCI	0.347*** (0.068)	0.365*** (0.063)	0.366*** (0.067)	0.377*** (0.063)
PR	0.003 (0.002)	0.0035* (0.0019)	0.0034* (0.002)	0.004** (0.002)
LR	0.004 (0.003)	0.005** (0.002)	0.005* (0.003)	0.005** (0.002)
PS	0.005*** (0.0017)	0.005*** (0.0016)	0.005*** (0.0017)	0.005*** (0.0016)
CONS	1.92*** (0.742)	0.67 (0.673)	1.626** (0.706)	0.607 (0.682)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	32647.97***	25394.73***	24199.46***	22245.99***
Hausman’s Endogeneity test	4.435	3.723	4.325	3.441
Hansen’s J Statistics	3.734	3.079	3.712	1.006
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.5 shows the results of the response of direct tax revenue collection of the Indian states to different forms of transfers. Among the control variables, PCI and PS appeared significant across all regression models, whereas PR and LR came significant only when total transfers are decomposed into conditional and unconditional transfers. Conditional transfers are the only form of transfers that are observed of improving the collection of direct tax revenue (see model – II, table – 3.5). None of the asymmetrical variables appeared significant. Whether the measures of conditional transfer are used separately or together with the measures

of unconditional transfers, CT maintains its level of significance and sign (see model – IV, table – 3.5). Usually, direct tax rates remain relatively constant during a fiscal year and so is its collection. Moreover, Indian states governments collect direct taxes from very few sources as the major sources of collecting direct taxes are left with the central government. Hence, the rigid nature of the direct tax structure could be one of the possible reasons for the insignificance of most of the variables of interest in explaining the variations in direct tax revenue collection.

In a nutshell, it could be concluded that the imposition of conditions on intergovernmental transfers forces the Indian states to improve their own tax revenue collections including the collections of direct and indirect tax revenues. On the contrary, total transfers are systematically substituted for own tax revenue collection and so are the unconditional transfers for the collection of revenues from own taxes and indirect taxes. Investigating the revenue response to immediate cuts in different forms of transfers, the evidence suggests that only such cuts in conditional transfers improve the revenue collections of own taxes and indirect taxes of the Indian states. Hence, it could be deduced from the findings that the revenue responses are quite insensitive to immediate cuts in total and unconditional transfers. The findings of both measures of conditional and unconditional transfers do not change whether they are used together or separately in the regression equation.

3.7.2 Expenditure Response

In this sub-section, the expenditure responses of different forms of intergovernmental transfers are discussed. Five types of expenditure-related fiscal outcomes: total expenditure, net total expenditure, revenue expenditure, capital expenditure, and non-plan expenditure are considered.

Table – 3.6 shows the results on the impacts of different types of transfers on the size of total public expenditure of the Indian states. All the control variables hold same signs across different forms of transfers, but PCI, LR and PS are the only ones that remained significant across all four models. DR comes significant only when the conditional transfer variables are included in the regression equation,

whereas PR loses its significance only when the unconditional transfer variables are used in the equation separately. On the other hand, all three forms of transfers are observed of influencing the size of total expenditure positively and significantly. It suggests that the size of the government increases significantly irrespective of the forms of intergovernmental transfers. The null hypotheses that the responses of total expenditure to the immediate cuts in different forms of transfers are symmetric are rejected only when the total transfer is decomposed into conditional and unconditional transfers. Interestingly, ACT and AUT hold opposite signs to each other. ACT holds a negative sign and it could be interpreted as the immediate cuts in conditional transfers increase the size of the government, whereas positive sign of AUT could be interpreted as the size of the government reduces in response to such cuts in unconditional transfers. The interpretation is so because the asymmetric variables consist of zeros and/or negative numbers by definition. When both measures of conditional and unconditional transfers are included together in the equation, the only noticeable difference appears is that the variable AUT loses its significance (see model – IV, table – 3.6). AUT is significant at 10 percent when the measures of unconditional transfers are used separately in the regression equation (see model – III, table – 3.6). Sometimes marginally significant variables become insignificant when additional variables are included in the regression equation and vice versa. However, such alterations are not serious enough to turnaround the original results.

Table – 3.6: Impact of intergovernmental transfers on Total Expenditure
Dependent Variable: TE

	Model – I	Model – II	Model – III	Model – IV
IT	0.134*** (0.021)			
AIT	– 0.0004 (0.0003)			
CT		0.086*** (0.024)		0.073*** (0.023)
ACT		– 0.0007* (0.0004)		– 0.0007* (0.0004)
UT			0.029*** (0.009)	0.03*** (0.009)
AUT			0.00036* (0.00019)	0.0003 (0.0002)
DR	– 0.006 (0.007)	– 0.017** (0.007)	– 0.012 (0.008)	– 0.015** (0.007)
PCI	0.256*** (0.038)	0.276*** (0.038)	0.253*** (0.039)	0.266*** (0.037)
PR	0.003*** (0.001)	0.003*** (0.001)	0.002 (0.002)	0.0024** (0.0012)
LR	– 0.002** (0.001)	– 0.004*** (0.001)	– 0.003*** (0.001)	– 0.003*** (0.001)
PS	– 0.003*** (0.001)	– 0.003*** (0.001)	– 0.003*** (0.001)	– 0.003*** (0.001)
CONS	4.991*** (0.434)	5.343*** (0.436)	5.874*** (0.44)	5.318*** (0.421)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	227813.41***	200903.6***	218266.26***	267233.76***
Hausman’s Endogeneity test	0.216	2.231	2.914	2.073
Hansen’s J Statistics	5.468	1.778	0.503	0.265
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

The size of net total expenditure gives a rough idea about a state government’s own share of expenditure and table – 3.7 displays the results after regressing it on different forms of transfers. PCI, PR and PS are the only significant control variables that have maintained their respective levels of significance and signs across all models. Among the transfer variables, IT and UT are significantly and negatively associated with NTE. The negative signs of IT and UT suggest that the increases in total and unconditional transfers are systematically associated with the reduction of own expenditure levels of the Indian states. However, the

asymmetric component of the conditional transfer is significant with a negative sign. It suggests that the cuts in conditional transfers force the Indian states to increase their own share of public expenditure. When both measures of conditional and unconditional transfer variables are considered together, the significant variables remained significant and maintained their respective signs (see model – IV, table – 3.7).

Table – 3.7: Impact of intergovernmental transfers on Net Total Expenditure

	Dependent Variable: NTE			
	Model – I	Model – II	Model – III	Model – IV
IT	– 0.24*** (0.033)			
AIT	– 0.0003 (0.0004)			
CT		– 0.025 (0.037)		– 0.017 (0.038)
ACT		– 0.001** (0.0005)		– 0.001** (0.0005)
UT			– 0.03** (0.015)	– 0.028* (0.015)
AUT			0.0001 (0.0003)	0.0002 (0.0003)
DR	– 0.007 (0.011)	0.001 (0.012)	– 0.004 (0.012)	– 0.003 (0.012)
PCI	0.392*** (0.064)	0.409*** (0.06)	0.417*** (0.063)	0.417*** (0.061)
PR	0.006*** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.007*** (0.002)
LR	– 0.003 (0.002)	– 0.001 (0.002)	– 0.0002 (0.002)	– 0.001 (0.002)
PS	– 0.006*** (0.001)	– 0.005*** (0.001)	– 0.005*** (0.001)	– 0.005*** (0.001)
CONS	5.651*** (0.739)	3.863*** (0.704)	3.824*** (0.692)	3.925*** (0.716)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	72947.15***	98261.24***	86976.75***	102266.94***
Hausman’s Endogeneity test	0.673	0.863	3.688	3.315
Hansen’s J Statistics	2.668	3.166	3.581	2.572
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.
*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Total expenditures of the Indian states could be divided into revenue and capital expenditures. The impacts of different forms of intergovernmental transfers on revenue and capital expenditures are presented in table – 3.8 and table – 3.9 respectively. Among the control variables, PCI, PR, and LR emerged significant for RE, whereas DR, PCI, and PS are the significant control variables for CE. All significant variables have maintained their respective signs across all models of both categories of expenditures.

All three forms of transfers are associated positively and significantly with revenue expenditure (i.e. public consumption) of the Indian states. Imposition of conditions does not make any difference in the level of public consumption. Use of conditional transfers to meet consumption requirements of a government seems little unreasonable. One possible reason for such kind of practice could be that the conditional transfers are used to meet the share of plan expenditures of revenue expenditures.⁷⁴ Dividing revenue expenditure into plan and non-plan categories might make a difference. However, this is not the purpose of this study. Investigating the effects of immediate cuts in different forms of transfers on RE, only such cuts in unconditional transfers have significant effects. Positive sign of AUT suggests that immediate cuts in unconditional transfers reduce the size of public consumption. When both measures of conditional and unconditional transfers are combined together, all variables of interest held their original signs and the significant ones remained significant (see model – IV, table – 3.8).

⁷⁴ Transfers allocated by the Planning Commission of India and specific ministries constitute plan transfers.

Table – 3.8: Impact of intergovernmental transfers on Revenue Expenditure

	Dependent Variable: RE			
	Model – I	Model – II	Model – III	Model – IV
IT	0.107*** (0.023)			
AIT	0.0001 (0.0003)			
CT		0.057** (0.026)		0.041* (0.025)
ACT		– 0.0002 (0.0004)		– 0.0001 (0.0004)
UT			0.038*** (0.008)	0.039*** (0.008)
AUT			0.0004** (0.0002)	0.0004** (0.0002)
DR	– 0.0001 (0.007)	– 0.005 (0.007)	– 0.003 (0.008)	– 0.004 (0.007)
PCI	0.294*** (0.037)	0.296*** (0.04)	0.265*** (0.036)	0.275*** (0.037)
PR	0.0023* (0.0013)	0.003** (0.0014)	0.003** (0.0014)	0.0026* (0.0014)
LR	– 0.002** (0.001)	– 0.004*** (0.001)	– 0.003*** (0.001)	– 0.003*** (0.001)
PS	– 0.001 (0.001)	– 0.001 (0.001)	– 0.001 (0.001)	– 0.001 (0.001)
CONS	4.533*** (0.44)	4.978*** (0.487)	5.343*** (0.406)	5.027*** (0.449)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	127538.01***	176269.98***	106672.39***	130504.29***
Hausman's Endogeneity test	0.648	0.276	4.405	4.836
Hansen's J Statistics	3.348	2.572	1.011	0.596
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.9: Impact of intergovernmental transfers on Capital Expenditure

	Dependent Variable: CE			
	Model – I	Model – II	Model – III	Model – IV
IT	0.263*** (0.044)			
AIT	– 0.0014** (0.0006)			
CT		0.064* (0.034)		0.056 (0.036)
ACT		– 0.001* (0.0006)		– 0.0012** (0.0006)
UT			0.033 (0.022)	0.036 (0.023)
AUT			0.001** (0.0004)	0.0011*** (0.0004)
DR	– 0.075*** (0.019)	– 0.085*** (0.021)	– 0.08*** (0.019)	– 0.08*** (0.02)
PCI	0.171** (0.069)	0.192*** (0.07)	0.115 (0.073)	0.139** (0.071)
PR	0.001 (0.002)	– 0.003 (0.003)	– 0.0002 (0.003)	– 0.002 (0.003)
LR	– 0.0001 (0.003)	– 0.001 (0.003)	– 0.003 (0.003)	– 0.004*** (0.001)
PS	– 0.004*** (0.001)	– 0.005*** (0.001)	– 0.004*** (0.001)	– 0.006*** (0.002)
CONS	3.946*** (0.755)	5.33*** (0.72)	6.281*** (0.743)	5.652*** (0.735)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	18776.82***	16728.14***	14253.15***	18051.41***
Hausman's Endogeneity test	3.119	3.39	0.864	6.785
Hansen's J Statistics	3.949	4.558	9.526	0.979
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Different from revenue expenditure, capital expenditure (i.e. public investment) responds differently to each form of transfers. IT and CT are positively and significantly associated with CE. It suggests that the size of public investment of the Indian states increases significantly with increases in total and conditional transfers. One possible reason for the positive relation of IT and CT with CE could be the project-specific and region-specific nature of CE. Moreover, there is evidence that these features of capital expenditures also suit well to achieve

redistributive political objectives.⁷⁵ On the other hand, all asymmetric variables came significant, but hold different signs. Negative signs of AIT and ACT suggest that the size of public investment increases with immediate cuts in total and conditional transfers, whereas positive sign of AUT indicates that the size of CE reduces with such cuts in unconditional transfers. In the combined equation (model – IV, table – 3.9), all significant variables of interest have remained significant except CT. However CT is marginally significant in the original model (model – II, table – 3.9).

Results on the impacts of different forms of intergovernmental transfers on non-plan expenditure are presented in table – 3.10. None of the control variables flip sign across the models, but PCI and DR are the only significant control variables. Results suggest that all three forms of transfers are associated significantly and positively with non-plan expenditure. Hence, it could be concluded that nothing prevents the Indian states from diverting either forms of transfers to meet non-plan expenditures. The practice of spending unconditional transfers to meet non-plan expenditure requirements is not unexpected, but diverting conditional transfers to finance non-plan expenditures is quite unreasonable. A possible reason for the positive association between conditional transfers and non-plan expenditure could be that a significant part of conditional transfer is diverted to meet the non-plan expenditure requirements of specific projects.⁷⁶ Among the asymmetric variables, only AUT emerged significant. Positive sign of AUT suggests that the immediate cuts in unconditional transfers reduce the size of NPE. The only difference in the combined equation of both measures of conditional and unconditional transfers is that CT, significant at 10 percent in the original equation (model – II, table – 3.10), becomes insignificant (model – IV, table – 3.10).

⁷⁵ See the major studies by Ferejohn (1974), Tanzi and Davoodi (1997) and Keefer and Knack (2002) for an established theoretical background. Schuknecht (2000) finds that the political parties spend more in public investments seeking re-election in the developing countries. Khemani (2004) has confirmed the existence of such political practices in India.

⁷⁶ Various ministries sanction project-specific transfers across the Indian states and these transfers are included under the category of conditional transfers due to their purpose-specific nature.

Table – 3.10: Impact of intergovernmental transfers on Non-Plan Expenditure
Dependent Variable: NPE

	Model – I	Model – II	Model – III	Model – IV
IT	0.093*** (0.027)			
AIT	- 0.0003 (0.0003)			
CT		0.05* (0.028)		0.03 (0.028)
ACT		0.0001 (0.0004)		0.0001 (0.0004)
UT			0.037*** (0.011)	0.036*** (0.012)
AUT			0.0004** (0.0002)	0.0004* (0.00024)
DR	0.03*** (0.009)	0.028*** (0.008)	0.032*** (0.009)	0.032*** (0.009)
PCI	0.173*** (0.047)	0.183*** (0.049)	0.142*** (0.049)	0.156*** (0.049)
PR	0.002 (0.002)	0.003* (0.0016)	0.002 (0.002)	0.003 (0.002)
LR	0.002 (0.002)	0.002 (0.002)	0.001 (0.001)	0.001 (0.002)
PS	0.0001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.0003 (0.001)
CONS	5.103*** (0.52)	5.298*** (0.529)	5.856*** (0.496)	5.522*** (0.512)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	212377.81***	169878.17***	247444.62***	221313.73***
Hausman's Endogeneity test	0.297	0.336	2.072	3.044
Hansen's J Statistics	2.674	2.676	0.161	0.004
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Summarizing the responses of different components of public expenditures to different forms of intergovernmental transfers across the Indian states, it could be said that all forms of transfers are positively related with all types of expenditures except net total expenditure. On the other hand, investigating the impacts of immediate cuts in different forms of intergovernmental transfers on expenditure-related fiscal outcomes, the findings suggest that the expenditure responses vary enormously across different forms of transfers. It indicates that, unlike the revenue-related fiscal outcomes, the response of the expenditure-related fiscal

outcomes to immediate cuts in different forms of transfers is quite sensitive. The results also show that the original signs of the variables of interest remain same, but sometimes marginally significant variables are observed of becoming insignificant when the conditional and unconditional transfer variables are used together in the regression equation.

3.8 Robustness of Baseline Results

Many times original findings are observed of sensitive to minor modifications in datasets, definition of variables, and empirical specifications. Claims based on inconsistent findings could lead to erroneous conclusions. Examining whether original findings of a study is consistent or not has become a standard practice in the empirical literature. This section deals with the issue of examining the sensitivity of original findings discussed in the previous section. Two empirical strategies are used to examine the sensitivity of baseline findings of this study.

3.8.1 Modification of the forms of intergovernmental transfers

The first strategy is to check whether original findings are sensitive to a minor modification in selecting the variables of interest or not. As mentioned above, total intergovernmental transfer is a compilation of conditional and unconditional transfers. The transfers allocated by the planning commission and various ministries of the central government are considered conditional on the ground that they are purpose-specific, whereas unconditional transfers allocated by the finance commission are sanctioned to meet the current expenditure requirements of the Indian states. Among all forms of transfers, ministry specific transfers are discretionary and most controversial.⁷⁷ Sometimes ministry specific transfers are sanctioned without specific purposes, but such transfers are sanctioned occasionally and their contribution to total conditional transfers is very small.⁷⁸ However the possibility that the conditional transfers are influenced by the inclusion of such transfers cannot be ignored, even though such transfers are

⁷⁷ Evidence suggests that ministry specific transfers are purposefully sanctioned across the Indian states to serve political objectives of the incumbent central government (Arulampalam et al., 2009).

⁷⁸ Singh (2004) has discussed this issue in detail.

occasional and of small size. As a part of this strategy, transfers sanctioned by specific ministries are excluded and the conditional transfers constitute only the transfers allocated by the planning commission. Similarly, the unconditional transfers, allocated by the finance commission of India, comprises of devolution of tax revenues, collected by the central government, and unconditional grants. Devolution of tax revenues is a formula-based transfer, whereas unconditional grants are sanctioned to fill the gap between the current expenditures and collected revenues of the states. Formula-based transfers might have different impacts on fiscal outcomes than that of unconditional grants. Hence, the transfer of tax devolution is excluded from the component of unconditional transfers and only the unconditional grants are considered. With the changed definitions, the total intergovernmental transfers constitute of planning commission's conditional grants and finance commission's unconditional grants.

The results are recalculated based on the baseline model specification (2) after incorporating above discussed modifications in the definitions of transfer variables. New results are displayed in appendix – 3.2, tables from 3.14 to 3.21.⁷⁹ The results of this strategy is that all variables which are significant at 1 percent and 5 percent levels have remained significant, but marginally significant variables (i.e. significant at 10 percent level) have become insignificant in some cases. Similarly, marginally insignificant variables in other cases have become significant at the 10 percent level. Reversals of signs have been observed for some variables which were insignificant in the first place. However, these minor alterations are not sufficient enough to overthrow the baseline regression results. In summary, it could be concluded that the baseline results are largely immune to changes in the definitions of the variables of interest.

⁷⁹ Only the results of variables of interest are displayed in the tables. Displaying the results of control variables is avoided intentionally as these results do not hold the centre stage of the analysis. It's applicable for the results of both strategies that are used to check the sensitivity of original findings.

3.8.2 Changing the selection criterion of the fiscal years

The ultimate burden of managing the fiscal outcomes of a state is its government's responsibility. The state governments of India are democratically elected by its voters. However, the democratically elected state governments are suspended from performing day-to-day business if *president's rule* is imposed.⁸⁰ Under such circumstances the elected state governments cannot be made responsible for the fiscal outcomes of that particular period. However, the time duration of the imposition of president's rule can vary from few days to years. The fiscal years that are marginally affected by the provision of president's rule should not be ignored. As a part of this strategy, the criterion of selecting an accounting year for the analysis is that at least two-quarters of that year must be ruled by a democratically elected government. With this selection criterion, 12 observations are dropped from the analysis and the balanced panel dataset has become unbalanced.⁸¹ Model specification (2) is used to estimate the results.

The results obtained after changing the selection criterion of choosing fiscal years are displayed in appendix – 3.2, tables from 3.22 to 3.29. The results of this strategy are not quite different from the previous one. From the findings of this strategy, it could be concluded that the baseline regression findings are immune to the change in the selection criterion of the fiscal years.

3.9 Summary and Conclusion

This study empirically examines the revenue and expenditure responses to different forms of intergovernmental transfers across the Indian states. Two types of determinants related to intergovernmental transfers linking with different fiscal outcomes are discussed: first, the effects of *increases* in intergovernmental transfers on the fiscal outcomes and second, the fiscal responses to *immediate cuts*

⁸⁰ Usually, president's rule is imposed when no party or coalition of parties enjoy clear majority in the assembly to form government. Apart from this, president's rule is imposed when a state government fails to control the law and order situation within the state. During the imposition of this rule, the central government also rules at the state. Article – 356 of Indian constitution deals with the provision of imposition of president's rule in detail.

⁸¹ With this minor modification, the Indian states of Bihar, Karnataka, Madhya Pradesh, and Tamil Nadu have lost one year's observation each, Uttar Pradesh has lost two observations and Punjab has lost six observations.

in transfers. Fiscal outcomes related to tax revenue collection and public expenditure are considered both at aggregate and disaggregate levels. Similarly, intergovernmental transfers both at aggregate and disaggregate levels are considered and the effects of different forms of transfers on fiscal outcomes are investigated empirically. An annual dataset of 27 years (1980-81 to 2006-07) across 14 largest Indian states is used for the study. Standard econometric techniques are used for the analysis. Major findings of this study can be summarized as follows:

- (1) Tax revenue collections of the Indian states respond differently across different forms of transfers. Results of this study suggest that total transfers are systematically substituted only for total tax revenue collection, whereas unconditional transfers are substituted for total and indirect tax revenue collections. The findings on unconditional transfers suggest that the state governments find it easy to divert such transfers to compensate for tax revenue collections that they sacrifice to serve their own purposes. On the contrary, conditional transfers are observed to improve the collection of direct and indirect tax revenues. Immediate cuts in different forms of transfers have improved total and indirect tax revenue collections only when such cuts were in conditional transfers. The findings that imposition of conditions on intergovernmental transfers forces the states to improve their tax revenue collections would be an interesting piece of information from the policy perspective. However, the policy makers need to redesign and reduce the size of unconditional transfers so that the state governments cannot substitute these transfers for the tax revenues collected from legitimate sources.
- (2) The results on expenditure responses to different forms of intergovernmental transfers of the Indian states suggest that, irrespective of the forms of transfers, the size of total public expenditure, revenue expenditure, capital expenditure and non-plan expenditure, increases. On the contrary, these transfers are systematically substituted for own expenditure of the state governments. Imposition of conditions on transfers has failed to prevent the

Indian state governments from diverting these transfers to meet less productive expenditures such as revenue and non-plan expenditures and substitute for their own expenditure share. Hence, on the part of policy makers, it's imperative to redesign the ongoing transfers system in such a way that the state governments would be prevented from using these transfers to serve their own purposes.

- (3) Unlike the defiant revenue responses, the expenditure responses of the Indian states are observed to be quite responsive to immediate cuts particularly in conditional and unconditional transfers. The findings suggest that immediate cuts in conditional transfers force the states to increase the size of total expenditure, capital expenditure, and net total expenditure, whereas the size of less productive expenditures like revenue and non-plan expenditures do not respond to such cuts. On the other hand, immediate cuts in unconditional transfers reduce the size of all categories of expenditures except the size of net total expenditure. Hence, from the policy perspective, reducing conditional transfers more frequently makes more sense than that of unconditional transfers to draw the state governments forward to participate actively in incurring expenditures. However, encouraging the states to spend more on the accounts of revenue expenditure and non-plan expenditure is not advisable. Hence, designing appropriate transfer-related policies is very important to encourage spending in certain accounts and monitoring expenditures on less productive accounts.

Appendix – 3.1

(a) Index of Income Difference (IID):

$$\text{IID} = \frac{(Y_r - Y_i)}{Y_r} \times 100$$

Where Y_r is the per-capita income of the richest state and Y_i is the per-capita income of the individual states in a particular year. The index ranges from 0 to 100. Value is zero for the richest state and 100 when the income of a state is zero, which is improbable.

(b) Index of Political Swingness (IPS)

This index is measured as: $[100 - (\text{Percentage of seats won by the winner political party in the Parliament} - \text{Percentage of seats won by the runner-up political party in the Parliament})]$ if the winner political party is the ruling party, otherwise $[100 - (\text{Percentage of seats won by the winner political party in the Parliament} - \text{Percentage of seats won by the ruling political party in the Parliament})]$ if not. It varies between 0 and 100. Both the extreme values seem to be very unlikely outcomes.

Appendix – 3.2

Table – 3.11: List of variables and Data Sources

Variables and Descriptions	Source
<i>Own Tax Revenue</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Own Direct Tax Revenue</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Own indirect Tax Revenue</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Total Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Net Total Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Revenue Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Capital Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Non-Plan Expenditure</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Per-capita SGDP (State Gross Domestic Product) Income</i> : in real per-capita (1999-2000 Indian rupees)	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Dependency Rate</i> : percentage of the number of persons under age 15 plus the number of persons aged 65 or older for every one hundred persons 15 to 64.	Various issues of <i>Census Data, Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Poverty Rate</i> : the percent of the population living below the poverty line.	Planning Commission Estimates. (<i>Compendium of Environment Statistics, 1999</i> , Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi).
<i>Literacy Rate</i> : percentage of the literate population.	Various issues of <i>Census Data, Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Primary Sector</i> : contribution of primary sector to the SGDP (State Gross Domestic Product) in percentage.	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Intergovernmental transfer</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Asymmetry – Intergovernmental transfer</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Conditional Transfer</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.

<i>Asymmetry – Conditional Transfer</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Unconditional Transfer</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>Asymmetry – Unconditional Transfer</i> : in real per-capita (1999-2000 Indian rupees)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India)</i> , various issues.
<i>State-wise Population in Percentage</i> : in Percentage	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Per-capita Income Difference</i> : income distance among the states in percentage. See Appendix – 3.1 for more detailed description.	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi</i> .
<i>Index of Urbanization</i> : state-wise percentage of population live in urban areas	Data Compiled from the statistics released by <i>Office of the Registrar General, Government of India, New Delhi</i> .
<i>Politically ‘swing’ States</i> : degree of political swingness of the Indian state in percentage. See Appendix – 3.1 for more detailed description.	Data calculated from <i>Statistical Reports on General Elections to the State Legislative Assemblies (New Delhi, Election Commission of India (ECI), Butler et al. (1996), and Lalvani (2005)</i> .
<i>Centre-State Political Affiliation</i> : holds value <i>one</i> if the same political party holds power both at the centre and in a state during a fiscal year, otherwise its <i>zero</i> .	Data calculated from <i>Statistical Reports on General Elections to the State Legislative Assemblies (New Delhi, Election Commission of India (ECI), Butler et al. (1996), and Lalvani (2005)</i> .

Table – 3.12: Finance Commission’s Tax Devolution: Criteria and Relative Weights

Finance Commissions	Population	Income Distance	Inverse of Income	Area	Index of Infrastructure	Tax Effort	Fiscal Discipline	Poverty Ratio
8 th (1984 – 1989)	25	50	25	-	-	-	-	-
9 th (1989 – 1995)	25	50	12.5	-	-	-	-	12.5
10 th (1995 – 2000)	20	60	-	5	5	10	-	-
11 th (2000 – 2005)	10	62.5	-	7.5	7.5	5	7.5	-
12 th (2005 – 2010)	25	50	-	10	-	7.5	7.5	-

Table – 3.13: Formula for Distributing State Plan Assistance (Planning Commission)*

Criteria	Share in central plan assistance (%)	Share of grants and loans	Distribution criteria: general category states
A. Special category States	30	90:10	
B. Non-special category States	70	30:70	
1. Population (1971)			60.0
2. Per capita income, of which			25.0
a) According to the ‘deviation’ method covering only States with per capita income below the national average.			20.0
b) According to the ‘distance’ method covering all non-special category states.			5.0
3. Fiscal performance, of which			7.5
a) Tax effort			2.5
b) Fiscal management			2.5
c) National objectives			2.5
4. Special problems			7.5
Total			100.0

Note: The formula as revised in December, 1991.

Results after Modifying the Forms of Intergovernmental transfers

Table – 3.14: Impact of intergovernmental transfers on Own Tax Revenue
Dependent Variable: OTR

	Model – I	Model – II	Model – III	Model – IV
IT	– 0.031* (0.019)			
AIT	– 0.0001 (0.0003)			
CT		0.06*** (0.016)		0.078*** (0.016)
ACT		– 0.0005** (0.0002)		– 0.001*** (0.0002)
UT			– 0.012** (0.006)	– 0.014*** (0.005)
AUT			– 0.000 (0.0001)	– 0.0001* (0.00006)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	258837.51***	233215.56***	212320.79***	192720.28***
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.15: Impact of intergovernmental transfers on Own Indirect Tax Revenue
Dependent Variable: OITR

	Model – I	Model – II	Model – III	Model – IV
IT	– 0.008 (0.02)			
AIT	– 0.0002 (0.0003)			
CT		0.047*** (0.018)		0.067** (0.018)
ACT		– 0.0005** (0.0002)		– 0.001*** (0.0002)
UT			– 0.011** (0.005)	– 0.009* (0.005)
AUT			0.0001 (0.0001)	0.0001 (0.0001)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	337858.29***	311152.9***	256152.03***	250186.92***
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.16: Impact of intergovernmental transfers on Own Direct Tax Revenue

	Dependent Variable: ODTR			
	Model – I	Model – II	Model – III	Model – IV
IT	– 0.008 (0.034)			
AIT	0.0003 (0.001)			
CT		0.17*** (0.034)		0.167*** (0.035)
ACT		– 0.001 (0.001)		– 0.001 (0.001)
UT			0.001 (0.013)	0.007 (0.012)
AUT			– 0.0001 (0.0001)	– 0.0001 (0.0001)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	32474.94***	26018.99***	25896.91***	24133.18***
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.17: Impact of intergovernmental transfers on Total Expenditure

	Dependent Variable: TE			
	Model – I	Model – II	Model – III	Model – IV
IT	0.119*** (0.022)			
AIT	– 0.0004 (0.0004)			
CT		0.063*** (0.023)		0.059*** (0.022)
ACT		– 0.0007** (0.0003)		– 0.0006* (0.00034)
UT			0.032*** (0.009)	0.035*** (0.009)
AUT			0.0001 (0.0001)	0.0001 (0.0001)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	206812.28***	167560.82***	235293.09***	255368.77***
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.18: Impact of intergovernmental transfers on Net Total Expenditure
Dependent Variable: NTE

	Model – I	Model – II	Model – III	Model – IV
IT	– 0.242*** (0.032)			
AIT	– 0.001 (0.001)			
CT		0.001 (0.037)		0.012 (0.038)
ACT		– 0.0009* (0.0005)		– 0.001** (0.0005)
UT			– 0.025* (0.015)	– 0.025* (0.014)
AUT			– 0.0001 (0.0001)	– 0.0002 (0.0002)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	70270.32***	95099.08***	85834.29***	96103.14***
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.
*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.19: Impact of intergovernmental transfers on Revenue Expenditure
Dependent Variable: RE

	Model – I	Model – II	Model – III	Model – IV
IT	0.094*** (0.024)			
AIT	0.0002 (0.0004)			
CT		0.046* (0.026)		0.025 (0.025)
ACT		– 0.0002 (0.0004)		0.0001 (0.0004)
UT			0.04*** (0.008)	0.043*** (0.008)
AUT			0.0002*** (0.00007)	0.0002** (0.0001)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	127052.71***	150972.22***	117964.02***	123682.57***
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.
*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.20: Impact of intergovernmental transfers on Capital Expenditure

Dependent Variable: CE				
	Model – I	Model – II	Model – III	Model – IV
IT	0.228*** (0.044)			
AIT	– 0.0015* (0.0009)			
CT		0.03 (0.039)		0.012 (0.04)
ACT		– 0.001* (0.0006)		– 0.001 (0.001)
UT			0.05 (0.033)	0.054 (0.025)
AUT			0.001** (0.0005)	0.001* (0.0006)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	18965.09***	18542.57***	12376.24***	19429.15***
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.21: Impact of intergovernmental transfers on Non-Plan Expenditure

Dependent Variable: NPE				
	Model – I	Model – II	Model – III	Model – IV
IT	0.068*** (0.025)			
AIT	– 0.0002 (0.0005)			
CT		0.075*** (0.028)		0.052* (0.028)
ACT		– 0.0004 (0.0004)		– 0.0002 (0.0004)
UT			0.037*** (0.011)	0.036*** (0.011)
AUT			0.0002** (0.0001)	0.00017* (0.0001)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	209103.51***	173794.02***	262303.51***	224673.8***
Number of observations	364	364	364	364
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Results after Changing the Selection Criterion of the Fiscal Years

Table – 3.22: Impact of intergovernmental transfers on Own Tax Revenue
Dependent Variable: OTR

	Model – I	Model – II	Model – III	Model – IV
IT	– 0.03 (0.02)			
AIT	– 0.0003 (0.0003)			
CT		0.054** (0.025)		0.066*** (0.025)
ACT		– 0.0007** (0.0003)		– 0.001** (0.0004)
UT			– 0.017** (0.008)	– 0.022*** (0.008)
AUT			0.000 (0.0002)	0.005 (0.009)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	12129.38***	11517.48***	13865.77***	15033.88***
Number of observations	352	352	352	352
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.23: Impact of intergovernmental transfers on Own Indirect Tax Revenue
Dependent Variable: OITR

	Model – I	Model – II	Model – III	Model – IV
IT	– 0.007 (0.025)			
AIT	– 0.0003 (0.0003)			
CT		0.043** (0.021)		0.048* (0.025)
ACT		– 0.0007* (0.0004)		– 0.0007* (0.0004)
UT			– 0.019** (0.008)	– 0.022*** (0.008)
AUT			0.0001 (0.0002)	0.0001 (0.0002)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	9259.81***	9767.9***	11109.61***	11826.94***
Number of observations	352	352	352	352
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.24: Impact of intergovernmental transfers on Own Direct Tax Revenue

	Dependent Variable: ODTR			
	Model – I	Model – II	Model – III	Model – IV
IT	– 0.021 (0.056)			
AIT	0.0002 (0.001)			
CT		0.12** (0.059)		0.126*** (0.06)
ACT		– 0.0004 (0.001)		– 0.0004 (0.001)
UT			0.004 (0.021)	0.007 (0.021)
AUT			– 0.0001 (0.0004)	– 0.0001 (0.0004)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	3748.73***	3883.22***	3884.74***	4037.41***
Number of observations	352	352	352	352
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.25: Impact of intergovernmental transfers on Total Expenditure

	Dependent Variable: TE			
	Model – I	Model – II	Model – III	Model – IV
IT	0.165*** (0.032)			
AIT	– 0.001 (0.0004)			
CT		0.076** (0.033)		0.059* (0.033)
ACT		– 0.0005* (0.0003)		– 0.0005* (0.0003)
UT			0.038*** (0.012)	0.039*** (0.012)
AUT			0.0004 (0.0003)	0.0003 (0.0003)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	6658.23***	6594.63***	6307.74***	7078.2***
Number of observations	352	352	352	352
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.26: Impact of intergovernmental transfers on Net Total Expenditure
Dependent Variable: NTE

	Model – I	Model – II	Model – III	Model – IV
IT	– 0.216*** (0.046)			
AIT	– 0.0004 (0.0006)			
CT		– 0.036 (0.046)		– 0.066 (0.047)
ACT		– 0.001* (0.0006)		– 0.001* (0.0006)
UT			– 0.024** (0.01)	– 0.022** (0.01)
AUT			0.0003 (0.0004)	0.0002 (0.0004)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	4082.43***	4215.77***	4017.94***	4221.36***
Number of observations	352	352	352	352
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.
*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.27: Impact of intergovernmental transfers on Revenue Expenditure
Dependent Variable: RE

	Model – I	Model – II	Model – III	Model – IV
IT	0.131*** (0.031)			
AIT	0.0001 (0.0004)			
CT		0.044** (0.02)		0.052* (0.032)
ACT		– 0.0002 (0.0005)		– 0.0004 (0.0005)
UT			0.056*** (0.012)	0.056*** (0.012)
AUT			0.0005** (0.0002)	0.0004** (0.0002)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	6943.99***	6193.82***	7403.36***	7632.43***
Number of observations	352	352	352	352
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.
*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.28: Impact of intergovernmental transfers on Capital Expenditure

Dependent Variable: CE				
	Model – I	Model – II	Model – III	Model – IV
IT	0.239*** (0.075)			
AIT	– 0.002* (0.0011)			
CT		0.053** (0.026)		0.052* (0.031)
ACT		– 0.001** (0.0005)		– 0.002** (0.001)
UT			0.039 (0.034)	0.022 (0.035)
AUT			0.0006** (0.0003)	0.0007** (0.0003)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	651.37***	707.9***	609.59***	695.43***
Number of observations	352	352	352	352
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.29: Impact of intergovernmental transfers on Non-Plan Expenditure

Dependent Variable: NPE				
	Model – I	Model – II	Model – III	Model – IV
IT	0.14*** (0.036)			
AIT	– 0.001 (0.001)			
CT		0.078** (0.038)		0.065* (0.038)
ACT		0.0004 (0.0006)		0.0003 (0.0006)
UT			0.041*** (0.014)	0.036** (0.015)
AUT			0.0004** (0.0002)	0.00037* (0.00021)
State Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes
Wald chi-square	5349.41***	5099.98***	5264.41***	5378.61***
Number of observations	352	352	352	352
Number of groups	14	14	14	14

Note: Panel specific AR(1) standard errors are shown in parentheses.

*** $p < 0.01$; ** $p < 0.05$; and * $p < 0.10$

Table – 3.30: Selected empirical studies on fiscal responses of intergovernmental transfers

Author(s)	Econometric Method and Data	Sample	Fiscal Outcome(s)	Intergovernmental Transfer(s)	Main Results
1. Stonecash (1979)	Cross-section: 1970 and 1972	69 USA Cities	Expenditure	Intergovernmental aid	Inconclusive
2. Slack (1980)	Panel Data: 1973 and 1974	Municipalities of Ontario, Canada	Total expenditure	Conditional grants and unconditional grants	Inconclusive (Conditional grants); and Significant and positive (Unconditional grants)
3. Zampelli (1986)	Panel Data: 1974 to 1978	18 USA Cities	Expenditure and revenue	Conditional aids: federal aids and state aids	Insignificant
4. Albritton (1989)	Cross-section: 1966 to 1978	States of USA	State welfare policy	Intergovernmental welfare aid	Significant and positive
5. Grossman (1990)	Cross-section: 1982 and 1983	Virginia localities, USA	Public expenditures	Unconditional intergovernmental grants	Significant and positive
6. Marshall (1991)	Cross-section: 1986	States of USA	Public expenditures	Intergovernmental revenue	Insignificant
7. Benton (1992)	Cross-section: 1960 to 1988	States of USA	State and local government spending	Federal grant-in-aid	Inconclusive
8. Stine (1994)	Panel Data: 1978 to 1988	66 Pennsylvania Counties, USA	Own-source revenue, and real estate taxes	Asymmetric response of federal aid, state aid, and other aid	Significant
9. Dollery and Worthington (1995)	Time-series: 1981 to 1992	Australia	Public expenditure	intergovernmental grants	Significant and positive
10. Gamkhar and Oates (1996)	Time-series: 1953 to 1991	USA	Total state and local government expenditure	Asymmetric response of total federal intergovernmental grants and Unconditional Grants	Insignificant
11. Lynch (1997)	Panel: 1989 to 1993	Ohio state, USA	Public expenditures and revenue generation	Designing of intergovernmental grants	Significant
12. Islam (1998)	Panel: 1977 to 1992	Municipalities in Ontario, Canada	Expenditure response	Conditional grants	Significant and positive
13. Volden (1999)	Panel: 1965 to 1994	46 USA States	State welfare policy	Asymmetric effects of intergovernmental grants	Significant
14. Rajaraman and Vasishtha (2000)	Cross-section: 1993-94	Panchayats of Kerala, India	Own tax revenue	State-local grants	Significant and negative
15. Bastiaens et al. (2001)	Cross-section: 1994	308 Flemish municipalities	Expenditure and Tax revenue	Local unconditional grants	Significant and positive

16. Heyndels (2001)	Panel: 1989 to 1996	Flemish municipalities	Public expenditures	Asymmetric response of intergovernmental grants	Significant
17. Heyndels and Driessche (2002)	Panel: 1989 to 1996	Flemish municipalities	Tax revenue and public expenditures	Asymmetric response of intergovernmental grants	Significant
18. Lalvani (2002)	Panel: 1980-81 to 1997-98	14 Indian states	Expenditure and own tax revenue	Unconditional grants	Significant and positive
19. Melo (2002)	Panel: 1980 to 1997	Columbia	Expenditure and revenue	Intergovernmental transfers	Inconclusive
20. Levaggi and Zanola (2003)	Panel: 1989 to 1993	20 Italian regions	Public health expenditure	Intergovernmental grants	Significant and positive
21. Alderete (2004)	Panel: 1990 to 1999	Mexican municipalities	Public expenditures	Asymmetric response of intergovernmental grants	Insignificant
22. Bae and Feiock (2004)	Cross-section: 1990 to 1994	USA Cities	Public expenditure	Intergovernmental grants	Significant and positive
23. Deller and Maher (2005)	Cross-section: 1990 to 2000	Wisconsin, USA	Public expenditures	Asymmetric response of intergovernmental grants	Significant
24. Karnik and Lalvani (2005)	Panel: 1993-94 to 1998-99	Municipalities of Maharashtra, India	Expenditure and own tax revenue	Grants from state government	Significant and positive

Chapter 4

Policy Interventions of Government and Regional Inequality:

Evidence from the Indian Experience

4.1 Introduction

In previous two chapters the effects of political determinants and intergovernmental transfers, both conditional and unconditional, on revenue and expenditure fiscal outcomes of the Indian states are examined, respectively. This chapter completes the logical link between fiscal outcomes and the more general objectives of economic growth, development, and inequalities. There are two ways in which this is achieved. The first is to view the way in which fiscal powers of the Indian states (i.e. own revenue collection and expenditure allocation) were utilized to achieve the general objectives as a form of governments' fiscal intervention in economic activities. The second aspect of this link would be to incorporate the effects, if any, of the policy of decentralization adopted by the central government through the constitutional amendments.

4.1.1 Government intervention and economic performance

Growth rates and per-capita income levels vary significantly across countries. Apart from the traditional factors such as physical capital, technical progress, and human capital, the level of government intervention is also an important factor that affects economic performance of a country. Government involvement affects an economy in different ways such as producing goods and services, redistributing income through the tax system, public spending, and the regulation of economic activities. The literature which evaluates the role of government theoretically and empirically indicates that the role of a government differs from country to country, and the interventionist activity of the government influences the economic outcomes to a considerable extent.⁸² In recent years the debate has been centred on the question of what should be the optimal level of government intervention in the economic affairs of a country. In the context of this thesis, the answer to these questions is hypothesized to be dependent on the ability of the state governments to generate their own revenues and the freedom in allocating expenditures.

⁸² See for example Bardhan (2000), Tanzi and Schuknecht (1997), Tanzi (2005), and Tabellini (2005).

Larger size of the governments need not have any ill effects if government intervention was aimed at welfare enhancing activities. The problems stem from the implementation of policies rather than the policies themselves. Therefore, the qualitative aspects of government interventions rather than the size and extent of government interventions play a crucial role (Bardhan, 1990). In the LDCs, the government plays an active and important role by facilitating essential public goods and services such as education, health care, and other kinds of economic and social services to the deprived sections of the society, apart from performing its basic functions. There is substantial evidence that such services reduce poverty, illiteracy and health related hazards, and promote per-capita income and economic growth.⁸³ Hence, the scope for the interventionist role of government in an economy is more of context specific. Apart from intervening through fiscal policies related to expenditure and taxation, governments use various other policies to intervene in the economic affairs, and influence the economic outcomes of a country. The policy of decentralisation is considered as one such policy, particularly in the large federal countries.

Over last four decades, the policy of decentralization has become a common agenda in a large number of developing and transition economies in Latin America, Africa and Asia (Bardhan, 2002). The World Bank has also emphasized that the decentralization of governance responsibilities of a higher level government to its lower level governments as one of the major items on its governance reforms agenda (World Bank, 2000). Dillinger (1994) finds that most of developing countries have decentralized the fiscal responsibilities from central to sub-national governments in some form or the other. While analyzing the practice of fiscal federalism across the globe Oates (1999) observes that many developed countries are reviving the debate on fiscal decentralization.

A large body of literature argues that the practice of decentralizing governance responsibilities to sub-national governments has positive impact on economic development and growth. Musgrave (1959) and Oates (1972) argue that

⁸³ World Bank (1990) has recognized the importance of the State in the process of poverty elimination of an economy, whereas WDR – 1993 has emphasized the role of the State from the point of view of public health care facilities.

appropriate assignments of authorities to local governments in supplying the local public goods and collecting taxes can enhance the welfare of a society. Fiscal decentralization, that is, devolving the fiscal responsibilities of the central government to sub-national governments, is justified on the grounds of enhancing the levels of efficiency of the government and increasing competition among sub-national governments to deliver better quality public services (Bahl and Linn, 1992; Bird and Wallich, 1993). Over the years, empirical literature has linked decentralization with economic development and growth.⁸⁴ However, until recently, the discussion on the impact of decentralization on regional inequality was never at the forefront. In the recent years many serious attempts have been undertaken by various scholars to establish the link between decentralization and regional inequality (e.g. McKinnon, 1997; Qian and Weingast, 1997; Shankar and Shah, 2003, and Gil et al., 2004).⁸⁵

4.1.2 Government intervention and inequalities in Indian regional incomes

Reducing the level of regional income inequality has often been an important concern of governments, particularly in the large federal countries such as Australia, Brazil, Canada and the United States. In India, the per capita GDP levels across different *states* of the Union vary significantly. For example in the year 2000-01 the per capita income of *Punjab* was four and half times more than that of *Bihar*. Largely, income differences in the Indian states have been studied from the point of view of the predictions made by the neoclassical growth theory. Neoclassical growth theory predicts that the interstate income levels converge as they approach towards steady state equilibrium. Many studies have empirically examined whether the levels of per-capita income across the Indian states have

⁸⁴ The empirical literature constitutes both cross-country and country-specific studies. The major studies have focused on the impact of decentralization on fiscal policies (Gupta et al., 1997; Letelier, 2003), on the size of public sector (see Kirchgässner (2001) for the survey of corresponding literature), on corruption (Fisman and Gatti, 2002), on quality of governance (Huther and Shah, 1998; Treisman, 2000), and on economic growth (see Breuss and Eller (2004) and Rodríguez-Pose and Ezcurra (2010) for the survey of corresponding literature).

⁸⁵ See Rodríguez-Pose and Ezcurra (2009) for a comprehensive survey of theoretical arguments, and cross-country and country-specific empirical findings.

diverged or converged over the years.⁸⁶ These studies have used the differences in the levels of infrastructure and a number of macroeconomic indicators to explain the divergence of the income levels of the Indian states. However, there is very little empirical work available to assess the role of government, instrumented through policy interventions, in explaining the income differences of the Indian states, though there has been a recent debate in the public policy literature as to whether policy interventions of a government accelerates or retards the economic performance of a country.⁸⁷ The level of government intervention, which is usually measured in terms of the size of public spending and revenue collection of a country, in the Indian states has increased considerably particularly over last three decades.⁸⁸ After decades of debate on decentralization, the urban and rural local governments were assigned constitutional status by passing two constitutional amendments in 1993-94.⁸⁹ These two amendments enhanced the political status, and assigned greater fiscal responsibilities to the local governments. This is regarded as a landmark initiative in the process of India's journey towards decentralization since independence. As the result of these amendments, local governments came into existence and started intervening in the economic activities at very local level. Hence, it extends the level and extent of government intervention in the economic activities of the Indian states further.

The purpose of this study is to investigate the impacts of the level of government intervention (i.e. through fiscal and decentralization policies) on regional income inequality of the Indian states in a formal and detailed fashion. This is done by

⁸⁶ Studies by Rao et al. (1999), Kurian (2000), Nagaraj et al. (2000), Ahluwalia (2002), Sachs et al (2002) and Bandyopadhyay (2003) have found divergence of per-capita income for different samples of Indian states. On the contrary, Cashin and Sahay (1996) and Aiyar (2001) have found convergence of per-capita income, whereas Singh and Srinivasan (2002) found no clear evidence of convergence or divergence. Further, Singh et al. (2003) show that the findings are sensitive to different measures of regional inequality.

⁸⁷ Investigating the impact of the extent and quality of government intervention, captured by the index of the State as a provider of necessary goods and services, on the level of per-capita income of 17 Indian states, Dash and Raja (2009) found that the quality of governance has a positive impact, and significantly explains the variations in the per-capita income of the Indian states.

⁸⁸ See Bagchi (2003) for a detailed analysis on fiscal behaviour of the Indian states since independence.

⁸⁹ In 1991, the Congress Party government introduced the 72nd (Panchayats) and 73rd (Municipalities) Constitutional Amendment Bills and were passed in December 1992 as the 73rd (rural level local government) and 74th (urban level local government) amendments. However both amendments came into force not before 1993-94. Article 243 of the Indian constitution deal with the structures of the local governance in detail.

testing statistically whether there is a link between policy interventions of governments and income variations across the Indian states, after controlling for other potential determinants. A balanced panel dataset of 14 major Indian states spread over 27 years (from 1980-81 to 2006-07) is used for this purpose. An index based on the concept of relative per-capita income of the Indian states is used to quantify the degree of interstate income inequalities and two policy measures related to fiscal and decentralization policies have been used. The study is also conducted for three sub-samples of 14 Indian states divided according to their levels of incomes. The possibility that the receiving ends of the underdeveloped Indian states from government policies might be different from that of developed ones cannot be ignored. Hence, examining this possibility empirically is the second objective of this study.

This chapter is organized as follows. Next section reviews the theoretical and empirical literature on policy interventions of government and economic performance. Section 4.3 presents an overview of the process of policy interventions of governments in the Indian states. Section 4.4 discusses the model, descriptive statistics and the results of the impact of the Indian state governments' policy interventions on the level of their income differences. It also discusses the strategies and the findings of sensitivity analyses. Finally, section 4.5 concludes.

4.2 Literature review

A large body of literature has studied the link between economic performance and public policies, both theoretically and empirically. Following two sub-sections discuss the literature related to the impacts of fiscal and decentralization policies on economic performance in some detail.

4.2.1 Government (Fiscal) intervention and economic performance: theoretical and empirical background

Economic theory has shown how government interventions (i.e. through various types of public spending and imposition of taxes) in the economic affairs of a country may either be beneficial or detrimental to its economic outcomes.⁹⁰

(a) Arguments for government intervention

Traditionally, liberals (e.g. Keynes, 1936; and Galbraith, 1958) have advocated for increasing government intervention in the economic activities. They argue that macroeconomic policies targeted at achieving equilibrium in savings, consumption, and investment can promote economic growth, create employment opportunities in large scale, and, in turn, could redress the problems of unemployment and income inequality. From the perspective of traditional Keynesian macroeconomic ideas, scholars believe that increasing public spending can contribute positively to economic performance, through multiplier effects on aggregate demand. Increasing public spending could be met by collecting more revenues from progressive income taxes on corporate profits and individual incomes, and these public spending can be used further to create more consumer demand through various types of transfer payments such as social security and public assistance. Increased aggregate demand then creates incentives for the investors to invest more in the economy which, consequently, generates more output and new employment opportunities. Hence, in the Keynesian way, government interventions (i.e. through policies of increasing public spending and progressive taxes) help an economy in achieve the goals of economic development and growth by changing its savings, consumption, and investment decisions.

⁹⁰ Majority of the studies that examines the impacts of government interventions on economic outcomes concentrates on achieving higher economic growth. Economists strongly believe that higher economic growth for a longer time period can take care of most of the economic problems of an economy. Reinert (1999), Easterly (2001 and 2005), Easterly and Levine (2001), Helpman (2004), Tabellini (2005), and Tanzi (2005) and have reviewed this line of research in detail.

In the modern times, government interventions are justified to take care of market failures (Stiglitz, 1989; and Datta-Chaudhuri, 1990). Types of market failures associated with the provision of public goods, and the failures resulting in the control of public bads such as pollution, failure of regional development, and the lack of incentives to provide rural credit are well documented in the literature. The interventionist role of the government is advocated on the ground of using corrective taxes and regulations, aggregate demand management, price controls, government ownership, and economic planning as the measures to avoid such market failures. Particularly in the light of the requirements of underdeveloped countries, the governments in such countries play an important role by providing various necessary goods like health, education, sanitation, and banking services, which will not be provided by the market for the needy sections of society at affordable price. Market often ignores the vulnerable sections of a society and protecting these sections is an important job of a government. Over last few decades, a more active government has helped East Asian economies (including that of Japan) in achieving higher level of economic growth and development by intervening in the capital market, regulating credit allocation, establishing public development banks and other financial institutions, and promoting industrial investment (Bardhan, 2000). Similarly, the active government has also an important role in the process of improved economic performance of the Indian economy over last two decades (Rodrik and Subramanian, 2004; Panagariya, 2004; and Kochhar et al., 2006). The fact that unregulated market forces cause serious economic problems is well discussed in the literature (Kanbur, 2004). For example, sometimes certain industries have the tendency of creating space for them to enjoy benefits from monopoly power and the standard microeconomic knowledge shows that monopolistic practices reduce the welfare of a country. Moreover, for the successful operation of market in an economy, certain pre-conditions such as protection of property rights, enforcement of contracts, promotion of competition, and established infrastructural facilities are required to be in place (Friedman, 1962). In this regard, the government plays an important role by regulating, and providing ideal platform for the efficient operation of market in an economy.

(b) Arguments against government intervention

Unlike liberals, conservatives (e.g. Wanniski, 1979; and Gilder, 1984) have the view that government intervention hampers the economic progress of a country. They argue that progressive taxation and overregulation lowers productivity and reduces investment of an economy, and, in turn, causes mass unemployment, retards economic growth, upsets economic balance, and drives an economy to economic depression. Economic stagnation, increasing unemployment, and shrinking tax base dries up the revenue collection of a government and prevents it from bailing out an economy from depression. Many economists have theorized that government production is considerably less efficient and costlier than private production in a competitive market (Alchian and Demsetz, 1972; Hayek, 1945; and Friedman and Friedman, 1980). Their explanations for this include lack of price signals, centralized decision making, lack of competitive pressures, and no profit motives. In the presence of such inefficiencies, increasing government intervention will also slow down the accumulation of human and physical capital and the pace of innovation which would, thereby, retard economic performance.

In the recent times, growing evidence suggests that not only markets fail, but also governments fail (Krueger, 1990). Government intervention in the economic affairs is justified by assuming that the government is a benevolent agent of the people who maximizes the social welfare of the society without being self-interested. On the contrary, unlike normative welfare theory, recent theories based on positive ideas assume that the government, like any self-interested rational individual, maximizes its own interests rather than social welfare (Down, 1957; Buchanan and Tullock, 1962; Olson, 1965; and Mueller, 2003). Their argument is based on the idea that the governments also redistribute and appropriate the wealth instead of generating and protecting it. The government would, if given policy powers that circumvent the market, due to its self-interested behaviour fail to bring about economic development.⁹¹ This line of research recognizes the centrality of politics and political considerations in the economic policy formulation, which are usually ignored in the traditional form of research. The

⁹¹ Frey and Shleifer (1997) and Shleifer and Vishny (1998) discuss this at length.

government agents are vulnerable to corruption, capture, bureaucratic delay, and other kinds of rent-seeking activities. La Porta et al. (1999) pointed out that in practice government economic policies are used mainly to serve political goals and only occasionally coincide with social welfare. Recent failures of some transitional economies exposed the dark side of the government interventions. Kaufmann and Kraay (2003) argued that the negative impacts of the rampant bureaucratic corruption and the interest group capture due to government intervention outweigh the positive impacts. They found the evidence that the presence of rampant capture and corruption in Latin American and Caribbean countries has deteriorated their economic performance.

Majority of the studies have used the size of government spending as a proxy for government intervention. Most of the studies have used either cross-section or panel data to evaluate the impact of government intervention on economic performance, whereas time-series data is used by few.⁹² Although a large number of empirical studies have been conducted, there is no consensus on the impact of government intervention in the economic activities on economic performance. Hence, the impact of government intervention on economic performance of a country is an empirical issue.

4.2.2 Policy of decentralization and economic performance: theoretical and empirical background

Traditionally, fiscal decentralization is considered as an instrument to achieve both allocative and production efficiency and eventually enhances the level of welfare of an economy (Tiebout, 1956; Oates, 1972; and Brennan and Buchanan, 1980). Oates (1993) argues that, in principle, the policies formulated for the provision of infrastructure and human capital are more sensitive to the regional or local conditions and, hence, are more likely to be effective in enhancing economic development than the centrally determined policies that ignore the interregional geographical differences. The arguments made in favour of fiscal decentralization are based on two assumptions: (1) the sub-national governments have the

⁹² In appendix – 4.1, table – 4.11, an overview of selected empirical studies on fiscal intervention and economic performance is provided.

advantage of accessing local information and, hence, they are in a better position in comparison to a national government to identify the appropriate areas of expenditure requirements that serve the needs of the people (Hayek, 1945); and (2) the competition among the local jurisdictions (i.e. though fiscal decentralization) would force governments to represent the interests of the people and ensure efficient allocation of resources and supply of public goods (Tiebout, 1956; and Oates, 1972). However this view has been questioned in recent times.⁹³ The claim that fiscal decentralization reduces income inequality across the regions of a country has received a lot of attention particularly in the last two decades. Over these years, scholars from different disciplines have participated in the debate in this issue.

(a) Arguments against Decentralization

Cai and Treisman (2005) point out that the studies in support of decentralization implicitly assume that all regions in a country are homogenous with respect to the productivity of the factors. Unregulated competition for capital among heterogeneous regions could cause uneven distribution of capital across the regions, and the backward regions might end up with less attractive business policies and rampant corruption and rent-seeking activities. Moreover, in practice, the local units are sufficiently heterogeneous in terms of the availability of natural resources, geographical location, human capital possession and level of infrastructure. The poorer regions might not compete with the richer ones and that would exacerbate the problem of regional inequality instead of redressing it. Hence, Prud'homme (1995) argues for a powerful central government intervention to reduce the gap of availability of resources between the richer and poorer regions. From a different point of view, Cai and Treisman (2004) discuss the possibility that the increasing competition for attracting capital from other regions might cause interregional negative externalities such as exporting taxes and pollution to their neighbours. The sub-national governments will have incentives to bypass the central government's regulations and taxes to attract private investors from different regions and the costs will be inflicted on each other.

⁹³ See Bardhan and Mookherjee (2005 and 2006) for a detailed review of this point of view.

Moreover, some of the public goods might be undersupplied in the presence of interregional spillovers (Kelejian and Robinson, 1997). Hence, unregulated interregional competition and shrinking revenue collection would reduce the welfare of the society as a whole. Therefore the national government, being at the top, is in a better position to deal with these problems (Cumberland, 1981; Gordon, 1983; Rivlin, 1992; and Wildasin, 1989). Inman and Rubinfeld (2000) and Storper (2005) feel that the possibility that local governments are more likely to be captured by the regional interest groups or local elites is high. Moreover, the prosperous regions, with improved initial conditions and better institutions, of a country would be in better position to take advantage from interjurisdictional competition (Cheshire and Gordon, 1998). Drawing evidence from developing and developed countries, Rodden and Rose-Ackerman (1997) question the role of interjurisdictional competition in reducing regional inequalities and supplying national public goods efficiently. They also discuss the possibility that regional inequality might increase in the absence of redistribution policies of central government.

(b) Arguments for Decentralization

Centralization of government responsibilities is not an unmixed solution. The arguments offered above in favour of a centralized system assume that the central government is a benevolent and impartial actor. Standard economic theory suggests that monopolization of power in any sphere could cause inefficient production and distribution of resources and welfare loss to a society. Brennan and Buchanan (1980) are sceptical about the consequences of centralization of power and argue that the competition among regional governments (i.e. through fiscal decentralization) will constraint the monopoly power enjoyed by the national government with respect to imposition of taxes, expenditure allocations and unwanted regulations. Competition among regional governments may also reduce central government's incentives to distort resource allocation (Qian and Roland, 1998) and limit the possibility of governments being associated with allocative and production inefficiencies, corrupt practices and rent-seeking activities (Breton, 1996). Drawing evidence from USA, Ram (1992) and

McKinnon (1995, 1997) show that the interregional competition, introduced through decentralization, has helped the backward Southern states of USA to grow faster and regionally converge with their Northern counterparts since 1950. Based on this evidence, Qian and Weingast (1997) argue that the interjurisdictional competition can eventually reduce regional inequality without centrally-mandated policies of redistribution. Gil et al. (2004) have the view that decentralization increases the level of economic activities across the regions and eventually helps them in reducing interregional inequalities. Dillinger (2002) discusses the possibility that the politically and economically stronger regions might receive gratuitous favours in a centralized system and, if this is true, uneven distribution of resources across the regions could be the most likely economic outcome. Evidence obtained from the political studies suggests that the politically and economically powerful regions receive gratuitous favours in various forms from their higher-level governments.⁹⁴ Shankar and Shah (2003) found that, in general, federal (i.e. decentralized) countries across the globe have done well in restraining regional inequalities in comparison to unitary (i.e. centralized) countries. They have the view that the competition among regional governments could result greater regional equality in a federation due to three broad reasons: (a) widening regional inequalities could cause greater political risk in federal countries, (b) national political parties compete politically in the regions of a federation and, hence, they may have to focus more on balanced development of its regions, and (c) in a federation, relatively autonomous regional governments, which are accountable to their own local constituencies, are in greater compulsion to follow development policies in comparison to their distant central government. These arguments and evidence suggest that the centralized systems are also likely to be captured by the powerful regions and interest groups and these problems could be

⁹⁴ Romer (1975), Roberts (1977), Cox and McCubbins (1986), Lindbeck and Weibull (1987), Myerson (1993), Roell (1995), and Dixit and Londregan (1995, 1996 and 1998) have formalized various forms of redistributive political strategies that political parties follow to remain in power. On the side of empirical studies, Country specific studies by, Grossman (1994) for US, Worthington and Dollery (1998) for Australia, Jones et al. (2000) for Argentina, Rao and Singh (2001), Khemani (2007) and Arulampalam et al. (2009) for India, Johansson (2003) for Swedish municipalities, and Veiga and Pinho (2007) for Portugal, have found that the politically powerful regions play a significant role as far as the allocation of intergovernmental transfers are concerned.

redressed by introducing competition among regional governments through decentralization.

The above debate suggests that the link between decentralization and regional inequality is an empirical question. The empirical literature consists of both cross-country and country-specific studies. The empirical findings in this area of research are also ambiguous.⁹⁵ Hence, the impact of decentralization on regional income inequality of a country is neither direct nor simple; rather it is context-specific and system-specific.

4.3 The process of policy interventions of governments in the Indian states

The constitution of India ensures that it is a federation where the central government and the state governments complement each other in their functioning. Seventh schedule of the Indian constitution defines the distribution of power between the centre and the states. The power structure is divided into three lists: Union list, State list and Concurrent list. Union list consists of 97 items on which the centre has the complete authority to legislate. Major items like defence, railways, foreign trade and income tax, which hold the broader national interests, are covered under it. The State list consists of 66 items on which specific states have exclusive authority to legislate and the major items like police, public health and sanitation, local government and sales tax are covered under it. The Concurrent list is of 47 items and the major items included under it are economic and social planning, education and stamp duties. The centre and the states share authority over these items. However if any confusion arises in sharing power over the Concurrent list items, the central government's authority prevails over the state governments'. It shows that the distribution of the power structure of India is more in favour of the central government. Hence, many constitutional experts have the critical view that the federalism in India exists only in paper, whereas in practice it is a quasi-federal system. However the role of governments at the state level in India has changed over the years, particularly in recent few decades. The six decades of federalism in India can be divided into two sub-periods. First three

⁹⁵ In appendix – 4.1, table – 4.12, an overview of selected empirical studies on policy of decentralization and economic performance is provided.

decades were dominated by a strong central government at the top, where the Indian states were in a subordinate position. On the contrary, in last three decades the practice of cooperative and competitive federalism is witnessed, where the state governments are allowed to play decisive roles in setting their own as well as the central government's policies.

Table – 4.1 shows the trends of key fiscal indicators of the Indian states over the years. Expenditure and revenue indicators have increased at an increasing rate over the decades since 1970. It indicates that the level and extent of government intervention (i.e. through fiscal policies) in the economic affairs of the Indian state has increased gradually over the years.

Table – 4.1: Selected fiscal indicators (in percent)

Key Fiscal Indicators	1970-71 to 1979-80	1980-81 to 1989-90	1990-91 to 1999-2000	2000-01 to 2006-07
States' total expenditure as a percent of state gross domestic product (SGDP)	18.34	19.64	20.73	21.86
States' own revenue receipts ^a as a percent of their total revenue receipts	58.71	60.37	65.79	73.54
States' own revenue receipts ^a as a percent of their total expenditure	57.2	59.85	66.66	74.66

^a Own revenue receipts is calculated after extracting the intergovernmental transfers from total revenue receipts.

Source: Data calculated from the Reserve Bank of India Bulletin, various issues.

Apart from intervening through fiscal policies, modern governments use various public policies to intervene in the economic activities of a country. The policy of decentralization is one such policy which is used quite frequently, particularly in the large countries. However, not many policy initiatives are undertaken in India to decentralize the governance structure. The only formal attempt made to decentralize the governance structure in India is by assigning constitutional status to the local governments in 1993-94 with the help of two constitutional amendments. This is considered as the most important initiative undertaken to decentralize the governance structure in India since independence. A number of new features were introduced as a part of these two amendments. However the major ones that appear to be relevant from the perspective of this study are:

- (i) The provision of establishing local level three-tier self-governments at both rural and urban constituencies was made mandatory for the states with a population of more than two million.
- (ii) Local bodies were elected democratically and the term of these bodies cannot exceed five years. In the event of dissolution, elections are mandatory to be held within six months.
- (iii) Local governments were given freedom to prepare their plans for the economic development and social justice. The ambit of functions to be performed by the local governments were broadened.
- (iv) A Finance Commission in each state was established to determine the principles based on which adequate financial resources would be allocated to the local governments. The degree of fiscal autonomy of the local governments was increased.

As the result of these amendments, another layer of government, local governments at the rural and urban areas, came into existence in addition to the central government and the state governments at the higher level.

The process of decentralization is a multi-dimensional process. At least three forms of decentralization: fiscal decentralization (devolution of expenditure responsibilities and autonomy in generating revenues to local governments), political decentralization (devolutions of political power to a democratically elected local representative) and administrative decentralization (devolution of decision-making powers to public employees appointed at the local level) are discussed in the literature. However there are no hard and fast rules to differentiate between these three forms decentralization. The process of decentralization is often considered as a blend of all three forms. Introduction of above-mentioned features in the system gives an impression that these amendments not only added a dimension to the process of fiscal decentralization in the Indian states, few aspects of political and administrative decentralization were also introduced, which were not present in the system before.

4.4 Policy interventions of government and regional income inequalities: Empirical results

In this study, a balanced panel of 14 major Indian states spread over 27 years (from 1980-81 to 2006-07) is explored to investigate the relationship between policy interventions of governments and income inequality of these Indian states. Special attention is also paid to know how government interventions in the Indian states have influenced the level of income inequality among different income categories of states.

4.4.1 The econometric model

Measuring regional inequality and government intervention across the Indian states holds the centre stage of this study. In order to quantify the level of regional income inequalities of the Indian states, the following measure is employed:

$$RI_{it} = \left| \frac{PCSI_{it}}{PCNI_t} - 1 \right| \quad (4.1)$$

where $PCSI_{it}$ is per-capita income of the major Indian state during a year and $PCNI_t$ is the national per-capita income (i.e. average per-capita income of the major Indian states) during that year.

Following Bonet (2006) and Qiao et al. (2008), this measure is used to measure the degree of spatial income inequality of the Indian states. This measure of inequality is based on the concept of relative per-capita income of the Indian states. With perfect equality, or an ideal equity situation, the ratio of per-capita income of each major Indian state to their national average per-capita income will be one in a given year. In such a situation, the value of the regional inequality indicator will be zero for all Indian states. On the other hand, higher absolute value of the inequality indicator for a state would suggest that the level of regional income inequality has increased.⁹⁶

⁹⁶ There are other possible traditional measures to quantify regional income inequality such as coefficient variation, relative mean deviation, Gini coefficient, and Theil index. Shankar and Shah

In an empirical analysis, selecting appropriate independent variables plays important role. Since the prime motivation of this study is to investigate the link between policy interventions of governments in the economic activities and the regional income inequality of the Indian states, the policy measures of government intervention need to be discussed in some detail. Governments can intervene in the economic activities both by spending more and widening the range of sources of revenue collection. In the literature, various measures of government spending and revenue collection are used to capture the level of government intervention in the economic affairs.⁹⁷ To quantify the level of fiscal intervention of the Indian states at an aggregate level, three different fiscal measures are used in this study and they are such as:

- (i) A state's total expenditure as a percent of its SGDP (i.e. Size of government),
- (ii) Logarithm of per-capita expenditure of a state government (i.e. Log (per-capita expenditure)), and
- (iii) A state's own revenue receipts as a percent of its total expenditure (i.e. Degree of fiscal autonomy).⁹⁸

First two measures are used to capture the level of government intervention through government spending, whereas the third measure captures the revenue aspect of government intervention. Upward movements of these measures would suggest increasing government interventions in the economic activities. The idea behind using three indicators of government intervention is to capture complex

(2003) and Cowell (1995) discuss these measures in detail. However, data at a very disaggregated level is required to calculate these measures. Non-availability of required type of data at the state level of India does not allow us to use either of these measures in this study. However, conceptually these alternative measures may not superior to the measure used in this study, which fully captures what is the relative distance of per-capita income of a given region to other regions. Moreover, Bonet (2006) shows that the measure used in this study is highly correlated with the above-mentioned traditional measures of inequalities in case of Colombia.

⁹⁷ See Knowles and Garces-Ozanne (2003) for a detailed discussion on the measures of government intervention.

⁹⁸ Own revenue receipt of a state government is calculated after extracting the intergovernmental transfers from total revenue receipt. Own revenue receipt is the only part of total revenue receipts which is collected and managed by the Indian state governments with complete authority.

and multi-dimensional aspects of government intervention and avoid the sensitivity of a particular measure in use.

Sometimes specific policies seem to have far-reaching influences on economic outcomes. Impacts of such policies also need to be controlled for. Before the existence of the local governments, the state governments were the closest ones to represent the people of India. Most of the state level electoral constituencies of India have a large population (i.e. in hundred thousands). In such populous constituencies, it becomes difficult for the people to make their representatives and governments accountable and, on the other hand, it becomes difficult for distant governments to know the local preferences, and obtain the locally available information and make appropriate use of them.⁹⁹ Under such circumstances, decentralizing the governance structure further by adding another layer of government at the local level could be considered as a potential solution to address both demand- and supply-side problems, particularly in large countries like India. Hence, assigning constitutional status to the local governments in the year 1993-94 could be regarded as a pro-active measure to spur the process of decentralization in India. Although 1993-94 is the year when the constitutional amendments were carried out, the years of implementing the constitutionally mentioned features differ across the states. Hence, the year 1993-94 cannot be considered as the benchmark year. Technically, the implementation of all the constitutionally mentioned mandatory features were completed with the implementation of the state finance commissions (SFCs) directives. However the SFCs directives were not implemented directly. The suggestions made by the SFCs were further reviewed by another committee from the point of view of their applicability in a particular state. Therefore, all the constitutional formalities were full-filled officially with the passage of Action Taken thereon Reports (ATRs). However, full-fledged implementation of government policies usually takes some time. A year could be considered as a sizeable time gap between policies approved and eventually implemented. Hence, a year after the submission of ATRs (i.e. assumed as the year of implementation) is considered as the benchmark year in

⁹⁹ Literature of *Local Democracy* discusses these aspects in detail. See Bardhan and Mookherjee (2005 and 2006) for an excellent survey of this literature.

this study, which differs across the states.¹⁰⁰ Since the benchmark years of establishing local governments differ across the Indian states, there are enough reasons to believe that their impacts on economic outcomes would also differ from a state to another. A dummy variable is introduced to account for the impacts of introducing the local layers of governments on regional inequalities of the Indian states. The dummy variable differentiates between the years of pre- and post-policy implementations. For the construction of this variable, value *one* assigned for the years on and after the implementations of ATRs in a particular state and value *zero* for the years before.

A two-way fixed-effects model is employed to investigate the impact of the Indian state governments' policy interventions (i.e. through fiscal and decentralization policies) on the level of their income differences. The baseline regression equation could be written in the following form:

$$RI_{it} = \alpha + \beta PI_{it} + \Phi X_{it} + \gamma_i + \varphi_t + \varepsilon_{it}; i = 1, \dots, N, \text{ and } t = 1, \dots, T \quad (4.2)$$

where RI_{it} is the measure of regional income inequality, PI_{it} stands for the indicators of policy intervention (i.e. variables of interest) that are discussed above, X_{it} is a vector of control variables that are assumed to contribute to income inequality apart from the variables of interest, γ_i are unobservable state-specific effects, φ_t are time-specific effects common to all states, and ε_{it} is the disturbance term.

Vector X_{it} contains control variables such as logarithm of per-capita real SGDP (in Indian rupees), population size (population share of each Indian state in total population), level of urbanization (ratio of population living in the urban areas to total population), ratio of population living below poverty line (BPL) to total population, ratio of literate population to total population and ratio of contribution of secondary sector (i.e. Industry) to SGDP. These variables are chosen based on

¹⁰⁰ See page 226 of the 11th finance commission report (2000) for the details regarding the dates of ATRs and SFCs report submission. In few states, ATRs were submitted at different points of times for rural and urban local governments. The year when ATRs for both levels of governments are submitted is considered as the benchmark year in this study. However Bihar is the only Indian state, which is yet to submit its SFC report and ATR. Hence, there is no benchmark year only for the state Bihar.

the availability of reliable data and well-grounded theoretical justifications. Level of development of a region is often proxied by GDP per-capita. GDP per-capita is used as a primary variable to explain regional income differences in a country since the seminal contribution of Williamson (1965) in this branch of literature. Size of a region may influence the degree of regional inequality (Williamson, 1965). Geographically larger sized regions are expected to have larger endowment of natural resources, and implement widely different policies in comparison to their smaller sized counterparts. Population size is proxied in this study to control for the geographical size of the Indian states. Level of urbanization is also considered as another indicator of development. Usually, urbanized regions of a country are associated with better quality of physical infrastructure and thriving formal economic activities. Predominate rural regions are expected to lag behind their urban counterparts in the process of development. Similarly, the regions dominated by poorer population would fail to catch-up with the relatively richer regions at various levels of development-related activities. In the presence of mass poverty in a country, both inter and intra-state income inequalities would expand further. Role of human capital in the development process of an economy is well documented in the literature. With improved levels of human capital, literacy rate is proxied for human capital in this study, regions are expected to develop faster than their less advantageous counterparts. Level of industrialization is also expected to give a big-push to the process of development. Contribution of secondary sector (i.e. Industry) to SGDP is proxied to measure the level of industrialization in this study and the industrialized states are expected to be associated with increasing formal activities and higher level of development. However the independent variables that are discussed above have both temporal and spatial variations. There are state-specific explanatory variables like institutions, historical factors and geographical features need to be controlled for as there are ample evidence suggest that these factors play important roles in influencing the economic outcomes of an economy. A set of state-specific dummies is included in the base-line regression model to account for such unobservable state-specific attributes. Similarly, there are time-specific determinants like those that of central government's policies, whose impacts will

be homogenous across all its regions, also need to be accounted for. A set of time-specific dummies is introduced in the regression equation to control for the impacts of the central government of India's policies that are implemented over the years.

4.4.2 Descriptive Statistics

The purpose of this sub-section is to discuss some basic statistics and show how the measures of regional income inequality and policy interventions of government have fared over the years. Table – 4.2 displays the descriptive statistics. Last two rows of the table show that the averages and standard deviations of the regional inequality measure RI have increases over the years. However the story is not same about the individual states. Different states have followed different trends along the measure of RI. The changes in RI are not very large, but large enough to be explained significantly by the explanatory variables of the study as the next sub-section shows. Among three different fiscal measures of government intervention, the first measure is considered as the basic measure. Hence, only the first ones basic statistics is displayed in the table. The values show that the level of fiscal intervention has increased in most of the states. However no specific relation between the measures of regional inequality and fiscal intervention can be drawn from these basis statistics. A panel data analysis, which suits well to the studies that deal with the dynamics of change, discussed in the next sub-section and it reveals many interesting coveted links between these two measures which cannot be figured out at least from the discussions on this table. The findings are also seen to be robust.

Table – 4.2: Regional inequality and fiscal intervention in the sample of major Indian states

	Regional Inequality			Fiscal Intervention		
	1980 – 1989	1990 – 1999	2000 – 2006	1980 – 1989	1990 – 1999	2000 – 2006
Andhra Pradesh	0.13	0.07	0.11	0.19	0.21	0.22
Bihar	0.50	0.66	0.63	0.18	0.23	0.26
Gujarat	0.26	0.36	0.47	0.20	0.18	0.21
Haryana	0.53	0.65	0.77	0.20	0.20	0.19
Karnataka	0.11	0.12	0.14	0.22	0.19	0.21
Kerala	0.14	0.13	0.15	0.22	0.22	0.24
Madhya Pradesh	0.24	0.32	0.34	0.20	0.22	0.23
Maharashtra	0.41	0.65	0.62	0.18	0.16	0.16
Orissa	0.31	0.36	0.35	0.22	0.24	0.24
Punjab	0.69	0.73	0.71	0.19	0.19	0.22
Rajasthan	0.28	0.24	0.31	0.23	0.23	0.24
Tamil Nadu	0.08	0.10	0.12	0.21	0.21	0.20
Uttar Pradesh	0.29	0.38	0.51	0.20	0.21	0.21
West Bengal	0.05	0.09	0.07	0.18	0.20	0.22
Average	0.29	0.35	0.38	0.20	0.21	0.22
Standard Deviation	0.19	0.24	0.24	0.02	0.03	0.04

Note: Regional Inequality measures the relative distance of per-capita income of an Indian state from the national per-capita income. Size of government is the measure for the level of fiscal intervention. The columns show averages of three sub-sample time-periods of both measures.

Source: Data calculated from the Reserve Bank of India Bulletin, various issues.

4.4.3 Results Estimation

The purpose of this sub-section is to investigate whether there is a systematic link between regional income inequality and government intervention across the Indian states or not. First, baseline regression results estimated from equation (4.2) are discussed and then several sensitivity tests are carried out in order to check for the robustness of the baseline results.

4.4.3.A Basic Estimation

Links between regional income inequality and policy intervention of the Indian state governments is examined at different levels. First, the full sample of 14 Indian states is explored to investigate the link between regional inequality and policy interventions, and then these states are clustered into three different samples according to their income levels; higher income, middle-income and

lower income;¹⁰¹ and the same procedures are followed. The baseline model discussed earlier in this section is used to estimate the regression results. All baseline results are estimated using the ordinary least squares (OLS) estimation method. Since panel data sets have both temporal and spatial dimensions, the standard OLS assumption of independent and identically distributed errors is unlikely to be satisfied. Presence of serial correlation and heteroskedasticity are two most likely problems that are expected to encounter. Assuming that the problems of serial correlation and heteroskedasticity exist in the data set, a covariance matrix estimator that is robust to within-panel serial correlation and cross-section heteroskedasticity is employed. State-specific and time-specific fixed-effects are also included in all regression equations to account for the unobservable state-specific and time-specific explanatory variables, respectively.¹⁰²

(a) The sample of 14 states

The results estimated for the impact of policy interventions of governments on regional inequalities across 14 major Indian states are reported in Table – 4.3. All three fiscal measures of government intervention are considered. Odd numbered columns show the results when only the fiscal measures of government intervention are included in the equation, whereas even numbered ones show when both categories of policy variables are included. The same empirical strategy is also followed to evaluate the results when all Indian states are divided into three sub-samples according to their income levels.

¹⁰¹ Following the criteria of the finance commission of India, 14 major Indian states are divided into three income categories such as: high income (Gujarat, Haryana, Maharashtra, and Punjab), middle income (Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, and West Bengal), and low income (Bihar, Madhya Pradesh, Orissa, Rajasthan, and Uttar Pradesh).

¹⁰² In Stata, command *xtreg* with *robust* and *cluster(panel variable)* options is used to estimate the results. State-specific and time-specific dummies are introduced manually to account for both effects (i.e. two-way fixed-effects model).

Table – 4.3: The impact of policy interventions of government on regional inequality (14 Indian states)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Size of Government	– 0.575*	– 0.603**				
	(0.31)	(0.302)				
Log (Per-capita Exp.)			– 0.147***	– 0.142***		
			(0.049)	(0.051)		
Degree of fiscal autonomy					– 0.261**	– 0.249**
					(0.083)	(0.087)
Year of SFC		– 0.047*		– 0.038*		– 0.037*
		(0.025)		(0.021)		(0.022)
Log (Per-capita Income)	– 0.14*	– 0.123*	– 0.041	– 0.027	– 0.058	– 0.045
	(0.073)	(0.072)	(0.083)	(0.084)	(0.081)	(0.08)
Population Size	0.022**	0.023**	0.021*	0.023*	0.02*	0.021*
	(0.01)	(0.011)	(0.012)	(0.012)	(0.011)	(0.012)
Urbanization	0.149	0.206	0.412	0.458	0.262	0.312
	(0.512)	(0.478)	(0.449)	(0.425)	(0.538)	(0.502)
Poverty	0.26	0.272	0.286	0.296	0.296*	0.305*
	(0.205)	(0.192)	(0.214)	(0.206)	(0.181)	(0.176)
Literacy	0.231*	0.312*	0.255	0.319*	0.176	0.242
	(0.2)	(0.179)	(0.188)	(0.176)	(0.193)	(0.174)
Secondary Sector	– 0.153	– 0.217	– 0.247	– 0.293	– 0.296	– 0.337
	(0.321)	(0.31)	(0.342)	(0.336)	(0.362)	(0.357)
Constant	0.992	0.777	1.002	0.784	0.268	0.083
	(0.827)	(0.79)	(0.775)	(0.764)	(0.89)	(0.865)
State-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.93	0.93	0.93	0.93	0.93	0.93
Number of States	14	14	14	14	14	14
Number of Observations	378	378	378	378	378	378

***p < 0.01; **p < 0.05; and *p < 0.10

Note: t-statistics are given in parentheses. The standard errors are robust to cross-sectional heteroskedasticity and within-panel serial correlation.

Results show that both variables of interest have remained significant and maintained their negative signs across all three measures of government intervention. Negative signs of the fiscal measures of government intervention substantiate the fact that increasing fiscal intervention has helped them in reducing the interstate income inequalities of the Indian states. The result is insensitive to different measures of fiscal intervention. The coefficient of the fiscal measures of government intervention varies between 0.142 and 0.603 on an average and it suggests that the value of RI of the Indian states reduces between 0.142 and 0.603 with a unit increase in the values across different measures of fiscal intervention. Similarly, the effort that is made at the constitutional level by establishing the governance structure at the local levels has also helped the Indian states in reducing their regional inequalities, significantly. With the assignment of constitutional status to the local governments, on an average, RI has reduced by 0.04 across the Indian states. The result also suggests that the inclusion or the exclusion of the decentralization policy variable does not affect the levels of significance and the magnitude of the fiscal measures of government intervention significantly. Among the control variables, log (per-capita income), population size, poverty level, and literacy rate are the only variables that have influenced regional inequalities of the Indian states, significantly.

(b) Sub-samples of states (Income category)

14 major Indian states are divided into three income categories: high-income, middle-income and low-income states.¹⁰³ The link between government intervention and regional inequalities of the high-income states is discussed first and then that of the middle-income and low-income states, respectively.

¹⁰³ As per the criterion used by the 11th Finance Commission of India based on income, the sample of 14 major Indian states are divided into three groups. Gujarat, Haryana, Maharashtra and Punjab are categorized as high-income states; Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, and West Bengal as middle-income states; and Bihar, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh Bengal as low-income states.

Table – 4.4: The impact of policy interventions of government on regional inequality (High Income states)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Size of Government	0.213 (0.236)	0.236 (0.213)				
Log (Per-capita Exp.)			0.036 (0.047)	0.041 (0.041)		
Degree of fiscal autonomy					– 0.025 (0.059)	– 0.025 (0.059)
Year of SFC		0.007 (0.012)		0.007 (0.01)		0.002 (0.016)
Log (Per-capita Income)	1.143*** (0.107)	1.151*** (0.107)	1.104*** (0.13)	1.108*** (0.131)	1.081*** (0.17)	1.082*** (0.172)
Population Size	– 0.008 (0.018)	– 0.007 (0.017)	– 0.009 (0.018)	– 0.008 (0.017)	– 0.011 (0.018)	– 0.011 (0.018)
Urbanization	0.2 (1.285)	0.287 (1.224)	0.209 (1.265)	0.295 (1.219)	– 0.141 (1.156)	– 0.126 (1.081)
Poverty	0.062 (0.067)	0.064 (0.068)	0.068 (0.071)	0.069 (0.072)	0.078 (0.051)	0.079 (0.053)
Literacy	0.213 (0.185)	0.216 (0.179)	0.208 (0.192)	0.212 (0.187)	0.163 (0.17)	0.163 (0.17)
Secondary Sector	– 0.286** (0.117)	– 0.279** (0.113)	– 0.286** (0.114)	– 0.28** (0.11)	– 0.287** (0.122)	– 0.285*** (0.109)
Constant	– 11.677*** (1.352)	– 11.809*** (1.316)	– 11.543*** (1.396)	– 11.666*** (1.36)	– 10.803*** (2.066)	– 10.816*** (2.089)
State-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.96	0.96	0.96	0.96	0.96	0.96
Number of States	4	4	4	4	4	4
Number of Observations	108	108	108	108	108	108

***p < 0.01; **p < 0.05; and *p < 0.10

Note: t-statistics are given in parentheses. The standard errors are robust to cross-sectional heteroskedasticity and within-panel serial correlation.

Estimated results for high-income states are presented in Table – 4.4. The findings suggest that neither fiscal intervention, nor the assignment of constitutional status to the local governments has helped the high-income Indian states to reduce the income inequalities among themselves. The findings are consistent across all three measures of fiscal intervention. On the other hand, control variables; per-capita income and industrialization; appeared significant at acceptable levels of significance and they have remained significance across all three measures of fiscal intervention.

The results of middle-income states are displayed in Table – 4.5 below. As far as the findings of both variables of interest concern, they are not different from the findings of high-income states. Poverty level is the only significant control variable across all three measures of fiscal intervention. Again, the inclusion or the exclusion of the decentralization policy variable in the equation does not affect the results of sub-samples of high-income and low-income Indian states.

Table – 4.5: The impact of policy interventions of government on regional inequality (Middle Income states)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Size of Government	0.213 (0.374)	0.213 (0.376)				
Log (Per-capita Exp.)			– 0.075 (0.06)	– 0.076 (0.062)		
Degree of fiscal autonomy					– 0.087 (0.089)	– 0.087 (0.092)
Year of SFC		0.001 (0.025)		– 0.002 (0.027)		– 0.001 (0.027)
Log (Per-capita Income)	– 0.087 (0.056)	– 0.087 (0.055)	– 0.072 (0.056)	– 0.072 (0.055)	– 0.077 (0.057)	– 0.077 (0.056)
Population Size	– 0.001 (0.013)	– 0.001 (0.013)	– 0.004 (0.01)	– 0.004 (0.01)	– 0.004 (0.011)	– 0.004 (0.011)
Urbanization	0.152 (0.333)	0.152 (0.333)	0.079 (0.244)	0.079 (0.243)	0.094 (0.242)	0.095 (0.241)
Poverty	– 0.432*** (0.153)	– 0.432*** (0.154)	– 0.443*** (0.059)	– 0.444*** (0.056)	– 0.441*** (0.65)	– 0.441*** (0.66)
Literacy	0.151 (0.164)	0.151 (0.164)	0.23 (0.172)	0.23 (0.171)	0.211 (0.189)	0.211 (0.189)
Secondary Sector	0.032 (0.344)	0.033 (0.329)	0.009 (0.307)	0.006 (0.296)	– 0.014 (0.351)	– 0.016 (0.341)
Constant	0.876 (0.855)	0.874 (0.855)	1.407 (0.999)	1.416 (1.015)	0.901 (0.733)	0.905 (0.729)
State-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.59	0.59	0.60	0.60	0.60	0.60
Number of States	5	5	5	5	5	5
Number of Observations	135	135	135	135	135	135

***p < 0.01; **p < 0.05; and *p < 0.10

Note: t-statistics are given in parentheses. The standard errors are robust to cross-sectional heteroskedasticity and within-panel serial correlation.

Table – 4.6: The impact of policy interventions of government on regional inequality (Low Income states)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Size of Government	- 0.207** (0.098)	- 0.212*** (0.051)				
Log (Per-capita Exp.)			- 0.103** (0.045)	- 0.107** (0.047)		
Degree of fiscal autonomy					- 0.19** (0.086)	- 0.228*** (0.069)
Year of SFC		0.04* (0.022)		0.042** (0.019)		0.046** (0.022)
Log (Per-capita Income)	- 0.308*** (0.04)	- 0.335*** (0.051)	- 0.262*** (0.05)	- 0.287*** (0.059)	- 0.27*** (0.041)	- 0.294*** (0.047)
Population Size	0.04*** (0.015)	0.036*** (0.01)	0.034** (0.015)	0.03** (0.012)	0.039*** (0.014)	0.035*** (0.01)
Urbanization	- 0.083 (0.261)	- 0.08 (0.255)	0.545 (0.388)	0.394 (0.38)	- 0.112 (0.308)	- 0.334* (0.193)
Poverty	0.166*** (0.036)	0.127* (0.072)	0.183*** (0.039)	0.143** (0.064)	0.225*** (0.073)	0.188* (0.103)
Literacy	0.375** (0.079)	0.212*** (0.081)	0.491*** (0.047)	0.325*** (0.083)	0.394*** (0.081)	0.207** (0.103)
Secondary Sector	- 0.716 (0.448)	- 0.659* (0.389)	- 0.691 (0.437)	- 0.63* (0.365)	- 0.658 (0.452)	- 0.572 (0.384)
Constant	2.916*** (0.39)	3.295*** (0.481)	3.101*** (0.391)	3.504*** (0.404)	2.613*** (0.379)	3.008*** (0.423)
State-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.97	0.97	0.97	0.97	0.97	0.97
Number of States	5	5	5	5	5	5
Number of Observations	135	135	135	135	135	135

***p < 0.01; **p < 0.05; and *p < 0.10

Note: t-statistics are given in parentheses. The standard errors are robust to cross-sectional heteroskedasticity and within-panel serial correlation.

Estimated results of low-income states are presented in Table – 4.6. The impacts of both variables of interest on the regional inequalities of low-income Indian states are significantly different from the states of other two income categories. However both variables of interest influence the indicator of regional inequality in opposite directions. Fiscal intervention has minimized the spatial income differences among the low-income Indians states, whereas assigning constitutional status to the local governments has widened it. The idea of accelerating the development process by decentralizing the governance structures down to the level of local governments could backfire if the local level governments are captured by special interest groups, local elites and corrupt bureaucrats.¹⁰⁴ Probably, some of the low-incomes Indian states have reaped the benefits by establishing right kinds of local governance structures, whereas other have failed in the presence of dysfunctional institutions.¹⁰⁵ In the light of these possibilities, the association of assigning constitutional status to the local governments with the widening regional inequalities of the low-income Indian states could be explained. The interpretation of the coefficients could be made as it is done in case of the regression analysis of the sample of all 14 Indians states. Both variables of interest have maintained their respective signs and significance levels across all three measures of fiscal intervention. However the strength and the behaviour of the fiscal measures of government intervention do not change significantly with the inclusion or the exclusion of the policy variable in the model. It indicates that the regional inequality reducing effects of fiscal intervention operate more powerfully across the low-income Indian states than that of the opposite forces of the policy of establishing governments at the local levels. Apart from the variables of interest, all control variables came significant. However, per-capita income, population size, poverty level, and literacy rate, are the only control variables that have remained significant all the time.

¹⁰⁴ Sonin (2003) provides a model that formalizes these possibilities and Blanchard and Shleifer (2001), Lambert et al. (2000), Cai and Treisman (2004), Ponomareva and Zhuravskaya (2004), and Slinko et al. (2005) provide empirical support in the context of Russia.

¹⁰⁵ For instance, a number of case studies have shown that the establishment of local governments has helped the state of Madhya Pradesh, a low-income Indian state, immensely to address their local problems on various socio-economic issues (Behar, 2001; Behar and Kumar, 2002; Johnson, 2003; and McCarten and Vyasulu, 2004 and 2006), whereas no such evidence is documented in case of the other low-income Indian states.

4.4.3.B Sensitivity analysis and robustness check

The results based on baseline regression model are discussed in the previous sub-section. The results proved to be robust and insensitive across different fiscal measures of government intervention. The purpose of this sub-section is to continue checking the sensitivity and robustness of the basic results further. Several sensitivity analyses are carried out to check the robustness of the original results. Being the basic measure of fiscal intervention, *Size of Government* is the only measure that is used to check the sensitivity of the original results.

The original results that are analyzing in the previous section are proved insensitive to different measures of fiscal intervention. However the possibility that the baseline results would be sensitive to different measures of regional inequality cannot be ignored. A small modification is made in the original measure of regional inequality and the same estimation method is used to calculate the results. The modified measure of regional inequality is:

$$RMI_{it} = \left| \frac{PCSI_{it}}{PCMSI_t} - 1 \right| \quad (4.3)$$

where $PCMSI_t$ is per-capita income of the median major Indian state during a year. Instead of measuring the absolute per-capita income distance of the major Indian states from their national average per-capita income, as it is done in equation (1), RMI measures the absolute per-capita income distance of the same Indian states from the median major Indian states' per-capita income. The results are presented in the appendix – 4.1, Table – 4.8. The results show that the variables of interest are robust to the alternative measure of regional inequality. Hence, the outcome of this investigation proves that the original results are independent of the measurement concept of regional inequality.

A potential problem while investigating the link between regional inequalities and fiscal intervention could be the presence of endogeneity: fiscal intervention may determine regional inequalities and, in turn, might be determined by them. OLS estimation method does not hold well in the presence of endogeneity. Instrumental Variables (IV) estimation method is employed to tackle the problems of

endogeneity, where first lag of the first fiscal measure of government intervention is used as the instrument. Equation (4.2) is estimated by using the IV estimation method and the results are displayed in the appendix – 4.1, Table – 4.9. The original findings of the variables of interest proved robust also for this procedure.

The era of sweeping reforms began in India in the latter half of 1980's when Rajiv Gandhi became the Prime Minister after the general election of 1984-85. The seeds of the major reforms like privatization, disinvestment, and power devolution were planted during this period and in the years of 1990's, the intensity of undertaking these reforms were accelerated further. It is quite possible that the original results of this study would suffer from a time-period selection bias. The findings might have driven by the inclusion of the years of early 1980's in the sample, when the initiatives for these major reforms were yet to be undertaken. To make the sample period more reform-specific, the time-period of this study is reduced to 22 years (from 1985-86 to 2006-07), instead of the original time-period of 27 years (from 1980-81 to 2006-07). Results of the truncated sample period are presented in the appendix – 4.1, Table – 4.10. The results of this strategy also support all the original findings.

The overall conclusions that could be drawn from the outcomes of these strategies is that the findings of baseline regression model are quite insensitive to minor modifications and the claims that are made based on these findings hold well.

4.5 Summary and Conclusions

This study has examined the relationship between policy intervention of governments and regional income inequality across the 14 major Indian states. An index based on the concept of relative per-capita income of the Indian states is used as a measure of regional inequality and three fiscal measures are used to quantify the levels of government intervention. In addition to the fiscal measures of government intervention, a dummy variable is used to account for the impacts of the policy of introducing three-tier local governments on the levels of regional inequalities. The possibility that the impacts of these policy measures of fiscal intervention and decentralization might be different on the levels of regional

inequalities of the developed states than that of the underdeveloped ones is also explored. To investigate this possibility, the sample of 14 Indian states are divided into three different groups such as high-income, middle-income, and low-income states according to their income levels. To examine these objectives, a balanced panel data set of 27 years (from 1980-81 to 2006-07) is deployed and a two-way fixed-effects model is employed to estimate the results.

The findings suggest that increasing fiscal intervention and the introduction of local governments at the bottom of governance structure have reduced the level of regional inequality of the Indian states. However, when the states are divided according to different income categories, the results suggest that both policy measures have significant impacts only on the levels of regional inequalities of the low-income Indian states. Increasing fiscal intervention has reduced the levels of regional inequalities among the low-income states, whereas it has widened with the establishment of local governments. Perhaps some of the low-income Indian states have succeeded in establishing right kinds of local governance structures, whereas other have failed in the presence of dysfunctional institutions and, in turn, these differences explain the positive association between the establishment of local governments and regional inequalities of these states. However the findings suggest that the negative effects of increasing government intervention through fiscal policies on regional inequality of low income Indian states are insensitive to and stronger than the positive effects of the policy of establishing local governments. Surprisingly, no significant relation between the level of regional inequality and both policy measures is found among the groups of high-income and middle-income states. These findings are robust to various forms of sensitivity analyses. The finding that increasing fiscal intervention helps the Indian state governments, particularly to the underdeveloped ones, in reducing the regional inequality among them could be helpful from the point of view of the policy makers. Similarly, the policy makers of low-income Indian states would be required to contemplate on different mechanisms of making the local governments accountable to the people and striking efficiency and transparency in their operation.

Appendix – 4.1

Table – 4.7: List of variables and Data Sources

Variables	Source
Regional Income Inequality	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi.</i>
Size of Government	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India),</i> various issues.
Log (per-capita expenditure)	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India),</i> various issues.
Degree of fiscal autonomy	Data calculated from <i>Reserve Bank of India Bulletin (Mumbai, Reserve Bank of India),</i> various issues.
Year of Establishing local government	Data calculated from <i>11th Finance Commission Report (2000-2005), Government of India, New Delhi.</i>
Log (per-capita income)	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi.</i>
Population Size	Data Compiled from the <i>Office of the Registrar General, Government of India, New Delhi;</i> and the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi.</i>
Urbanization	Data Compiled from the <i>Office of the Registrar General, Government of India, New Delhi.</i>
Poverty	Planning Commission Estimates. (<i>Compendium of Environment Statistics, 1999, Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi.</i>)
Literacy	Various issues of <i>Census Data, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.</i>
Industrialization	Data Compiled from the statistics released by <i>Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, Government of India, New Delhi.</i>

Notes: See the main text for further details on the definition of the variables.

Table – 4.8: An alternative measure of regional inequality

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Size of Government	– 0.563** (0.275)	– 0.581** (0.28)	– 0.334 (0.266)	– 0.449 (0.4)	– 0.159 (0.196)	– 0.159 (0.205)	– 0.281*** (0.106)	– 0.284** (0.123)
Year of Establishing Local Govt.		– 0.03* (0.018)		– 0.038 (0.035)		– 0.012 (0.008)		0.027* (0.015)
Log (Per-capita Income)	– 0.159*** (0.047)	– 0.148*** (0.053)	0.619*** (0.059)	0.577*** (0.075)	– 0.035 (0.022)	– 0.036* (0.021)	– 0.123** (0.057)	– 0.14** (0.06)
Population Size	– 0.015 (0.016)	– 0.014 (0.016)	– 0.039*** (0.012)	– 0.04*** (0.008)	– 0.005 (0.013)	– 0.006 (0.013)	0.014 (0.014)	0.011 (0.013)
Urbanization	– 0.492 (0.597)	– 0.455 (0.599)	3.055 (2.718)	2.611 (2.272)	0.222 (0.181)	0.224 (0.179)	– 0.014 (0.244)	– 0.095 (0.29)
Poverty	– 0.025 (0.355)	– 0.018 (0.346)	0.797 (0.593)	0.789 (0.58)	0.175 (0.145)	0.173 (0.148)	– 0.122 (0.175)	– 0.148 (0.186)
Literacy	0.183 (0.17)	0.236 (0.161)	0.845 (0.565)	0.828 (0.565)	– 0.127 (0.156)	– 0.127 (0.159)	0.292*** (0.11)	0.182* (0.108)
Secondary Sector	0.67* (0.397)	0.629 (0.389)	0.697** (0.311)	0.661** (0.278)	– 0.036 (0.25)	– 0.053 (0.257)	0.004 (0.233)	0.042 (0.223)
Constant	2.023** (0.795)	1.883** (0.825)	– 7.636*** (1.355)	– 6.959*** (1.129)	0.565 (0.457)	0.604 (0.466)	1.471** (0.643)	1.725*** (0.662)
State-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.93	0.93	0.85	0.85	0.73	0.73	0.96	0.96
Sample	All states	All states	High Income	High Income	Middle Income	Middle Income	Low Income	Low Income
Number of States	14	14	4	4	5	5	5	5
Number of Observations	378	378	108	108	135	135	135	135

***p < 0.01; **p < 0.05; and *p < 0.10

Note: t-statistics are given in parentheses. The standard errors are robust to cross-sectional heteroskedasticity and within-panel serial correlation.

Table – 4.9: Test for endogeneity (IV estimation method)
Instrument for Per-capita expenditure share (Net): First lag

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Size of Government	– 1.258*** (0.404)	– 1.386*** (0.405)	0.034 (0.357)	0.048 (0.41)	0.022 (0.448)	0.022 (0.447)	– 1.401* (0.787)	– 1.253* (0.716)
Year of Establishing Local Govt.		– 0.051*** (0.018)		0.003 (0.021)		0.001 (0.021)		0.04** (0.019)
Log (Per-capita Income)	– 0.188*** (0.041)	– 0.176*** (0.041)	1.103*** (0.098)	1.108*** (0.116)	– 0.098*** (0.034)	– 0.098*** (0.034)	– 0.372*** (0.054)	– 0.39*** (0.057)
Population Size	0.017** (0.008)	0.018** (0.008)	– 0.009 (0.019)	– 0.009 (0.019)	– 0.005 (0.007)	– 0.005 (0.007)	0.052*** (0.016)	0.047*** (0.015)
Urbanization	– 0.084 (0.268)	– 0.042 (0.268)	– 0.73 (1.266)	– 0.33 (1.274)	0.124 (0.253)	0.124 (0.253)	– 0.166 (0.458)	– 0.313 (0.441)
Poverty	0.256** (0.121)	0.27** (0.121)	0.096 (0.158)	0.097 (0.158)	– 0.526*** (0.143)	– 0.526*** (0.143)	0.04 (0.179)	0.019 (0.167)
Literacy	0.21 (0.132)	0.302** (0.135)	0.181 (0.209)	0.184 (0.216)	0.182 (0.176)	0.182 (0.176)	0.216 (0.154)	0.067 (0.154)
Secondary Sector	– 0.231 (0.164)	– 0.301* (0.166)	– 0.255 (0.159)	– 0.253 (0.156)	0.149 (0.174)	0.149 (0.168)	– 0.386 (0.309)	– 0.361 (0.296)
State-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Endogeneity Test	4.434**	5.65**	0.341	0.3	0.247	0.25	3.823**	3.161*
Centred R-square	0.37	0.38	0.93	0.93	0.37	0.37	0.76	0.79
Sample	All states	All states	High Income	High Income	Middle Income	Middle Income	Low Income	Low Income
Number of States	14	14	4	4	5	5	5	5
Number of Observations	364	364	104	104	130	130	130	130

***p < 0.01; **p < 0.05; and *p < 0.10

Note: t-statistics are given in parentheses. The standard errors are robust to cross-sectional heteroskedasticity and within-panel serial correlation.

Table – 4.10: Reform-specific time-period (1985-86 to 2006-07)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Size of Government	– 0.713*** (0.261)	– 0.748*** (0.249)	0.267 (0.17)	0.26 (0.198)	0.482 (0.343)	0.482 (0.345)	– 0.404*** (0.137)	– 0.412*** (0.086)
Year of Establishing Local Govt.		– 0.05* (0.026)		– 0.003 (0.017)		0.001 (0.02)		0.039* (0.023)
Log (Per-capita Income)	– 0.161** (0.066)	– 0.141** (0.065)	0.922*** (0.117)	0.918*** (0.104)	– 0.106 (0.073)	– 0.106 (0.072)	– 0.311*** (0.049)	– 0.341*** (0.062)
Population Size	0.014 (0.011)	0.016 (0.012)	0.017* (0.009)	0.017* (0.01)	– 0.004 (0.012)	– 0.004 (0.012)	0.037** (0.017)	0.037*** (0.014)
Urbanization	0.059 (0.52)	0.16 (0.511)	– 0.822 (0.909)	– 0.846 (0.851)	0.519 (0.382)	0.519 (0.383)	– 0.364 (0.332)	– 0.392 (0.392)
Poverty	0.027 (0.184)	0.046 (0.179)	– 0.415*** (0.112)	– 0.416*** (0.121)	– 0.4 (0.314)	– 0.4 (0.315)	0.09 (0.158)	0.011 (0.203)
Literacy	0.235 (0.223)	0.344 (0.244)	0.773** (0.313)	0.779** (0.336)	0.041 (0.2)	0.041 (0.203)	0.307 (0.206)	0.132 (0.159)
Secondary Sector	– 0.196 (0.329)	– 0.275 (0.333)	– 0.133 (0.128)	– 0.133 (0.132)	0.296 (0.249)	0.298 (0.237)	– 0.693 (0.438)	– 0.631 (0.406)
Constant	1.442 (0.761)	1.155 (0.783)	– 9.506*** (1.688)	– 9.455*** (1.526)	0.978 (1.023)	0.973 (1.019)	3.164*** (0.41)	3.529*** (0.508)
State-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-specific Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.94	0.94	0.94	0.94	0.57	0.57	0.97	0.97
Sample	All states	All states	High Income	High Income	Middle Income	Middle Income	Low Income	Low Income
Number of States	14	14	4	4	5	5	5	5
Number of Observations	308	308	88	88	110	110	110	110

***p < 0.01; **p < 0.05; and *p < 0.10

Note: t-statistics are given in parentheses. The standard errors are robust to cross-sectional heteroskedasticity and within-panel serial correlation.

Table – 4.11: Selected empirical studies on fiscal intervention and economic performance

Author(s)	Econometric Method and Data	Sample	Government Intervention Measure(s)	Economic Performance	Main Results
1. Landau (1983)	Cross-section: 1961 to 1976	104 countries	Government consumption expenditure and transfer payment/welfare expenditure	Growth	Significant and negative (government consumption expenditure) and Insignificant (Welfare expenditure)
2. Korpi (1985)	Panel: 1980 to 1987	OECD countries	Transfer payment/welfare expenditure	Growth	Significant and negative
3. Landau (1985)	Panel and cross-section: 1952 to 1976	16 OECD countries	Transfer payment/welfare expenditure	Growth	Insignificant
4. Ram (1986)	Cross-section: 1960 to 1980	115 countries	Government size	Growth and Factor Productivity	Significant and positive
5. Weede (1986)	Panel and cross-section: 1960 to 1982	19 OECD countries	Transfer payment/welfare expenditure	Growth	Significant and positive
6. Barth and Bradley (1988)	Cross-section: 1971 to 1983	16 OECD countries	Public investment	Growth	Insignificant
7. Barro (1989)	Cross-section: 1960 to 1985	72 countries	Public investment	Growth	Significant
8. Grier and Tullock (1989)	Panel: 1950 to 1981	115 countries	Government consumption expenditure	Growth	Significant and negative
9. Koester and Kormendi (1989)	Cross-section: 1970 to 1979	63 countries	Marginal tax and average tax rates	Growth	Insignificant
10. Romer (1989a)	Cross-section: 1960 to 1985	94 countries	Government consumption expenditure	Growth	Significant and positive
11. Romer (1989b)	Cross-section: 1960 to 1985	112 countries	Government consumption expenditure	Growth	Significant and positive
12. Alexander (1990)	Panel: 1959 to 1984	13 OECD countries	Government consumption expenditure	Growth	Significant and negative
13. Romer (1990b)	Cross-section: 1960 to 1985	90 countries	Government consumption expenditure	Growth	Significant and positive
14. Barro (1991)	Cross-section: 1960 to 1985	98 countries	Government consumption expenditure and public investment	Growth	Significant and negative (government consumption expenditure) and Insignificant (public investment)

15. Weede (1991)	Panel: 1960 to 1985	19 OECD countries	Transfer payment/welfare expenditure	Growth	Significant and positive
16. Dowrick (1992)	Cross-section: 1960 to 1985	OECD countries	Income taxes and Corporation taxes	Growth	Significant and negative
17. Engen and Skinner (1992)	Cross-section: 1970 to 1985	107 countries	Taxes	Growth	Significant and negative
18. Easterly and Rebelo (1993b)	Cross-section: 1970 to 1988	100 countries	Income taxes	Growth	Significant and negative
19. Persson and Tabellini (1994)	Cross-section: 1960 to 1985	14 OECD countries	Transfer payment/welfare expenditure	Growth	Significant and positive
20. Cashin (1995)	Panel: 1971 to 1988	23 OECD countries	Total taxation	Growth	Significant and negative
21. Gallaway and Vedder (1995)	Time-series: 1947 to 1994	USA	Government size	Private sector Output and Income	Significant and negative
22. Devarajan et al. (1996)	Panel: 1970 to 1990	14 developed countries	Health, transport, communication, defense, and education	Growth	Health, transport, and communication significant positive; defence, education significant negative
23. Mendoza et al. (1996)	Panel: 1965 to 1991	11 OECD countries	Capital, consumption and labour tax	Growth	Insignificant
24. Yi and Kocherlakota (1996)	Time-series: US and UK	USA and UK	Tax measures	Growth	Insignificant individually
25. Guseh (1997)	Panel and time-series: 1960 to 1985	59 Countries	Growth in government size	Growth	Significant and negative
26. Karras (1997)	Panel and cross-section: 1950 to 1990	20 European countries	Government size	Marginal productivity of government services	Significant and negative
27. Nazmi and Ramirez (1997)	Time-series: 1950 to 1990	Mexico	Transfer payment/welfare expenditure	Growth	Significant and positive
28. Gwartney et al. (1998)	Cross-section: 1960 to 1996	60 countries	Government size	Growth	Significant and negative
29. Kneller et al. (1999)	Panel: 1970 to 1995	22 OECD countries	Taxation and Productive government expenditure	Growth	Significant and negative (Taxation) and Significant and positive (Productive government expenditure)

30. Bassanini and Scarpetta (2001)	Panel: 1971 to 1997	OECD countries	Taxation and Government expenditure	Growth	Significant and negative (Taxation); and Significant and positive (Government expenditure)
31. Heitger (2001)	Panel: 1960 to 2000	OECD Countries	Government consumption spending and government investment spending	Growth	Significant and negative (government consumption spending); and Significant and positive (government investment spending)
32. Dar and AmirKhalkhali (2002)	Panel: 1971 to 1999	19 developed countries	Government size	Factor accumulation and growth	Significant and negative
33. Pevcin (2004)	Panel: 1950 to 1996	12 European countries	Government size	Growth	Significant and negative
34. Sáez and García (2006)	Panel:	EU countries	Government spending	Growth	Significant and positive
35. Afonso and Furceri (2008)	Cross-section: 1970 to 2004	OECD and EU countries	Size and volatility of government revenue and spending	Growth	Significant and negative
36. Cooray (2008)	Cross-section: 1996 to 2003	51 developing countries	Government size and Quality of the government	Growth	Significant and positive
37. Davies (2009)	Panel: 1975 to 2002	154 countries	Government consumption spending and government investment spending	Human Development Index	Significant and positive (government consumption spending); and Significant and negative (government investment spending)

Table – 4.12: Selected empirical studies on policy of decentralization and economic performance

Author(s)	Econometric Method and Data	Sample	Decentralization Measure(s)	Economic Performance	Main Results
1. Davoodi and Zou (1998)	Panel: 1970 to 1989	46 Countries	Fiscal	Growth	Insignificant
2. Zhang and Zou (1998)	Panel: 1980 to 1992	28 Provinces of China	Fiscal	Growth	Negative and significant
3. Woller and Phillips (1998)	Panel: 1974 to 1991	23 Less Developed Countries (LDCs)	Fiscal	Growth	Insignificant
4. Xie et al. (1999)	Time-series: 1948 to 1994	USA	Fiscal	Growth	Positive and significant

5. Lin and Liu (2000)	Panel: 1970 to 1993	28 Provinces of China	Fiscal	Growth	Positive and significant
6. Zhang and Zou (2001)	Panel Data: China (1987 to 1993) and India (1970 to 1994)	29 Provinces of China and 16 Indian States	Fiscal	Growth	Negative and significant (China) and Positive and significant (India)
7. Akai and Sakata (2002)	Cross-section and Panel: 1988 to 1996	50 States of USA	Fiscal	Growth	Positive and significant
8. Kim et al. (2003)	Time-series: 1971 to 1997	Korea	Policies	Regional Inequality	Positive and significant
9. Thießen (2003)	Cross-section and Panel: 1973 to 1998	26 countries	Fiscal	Growth	Hump-shaped relationship
10. Gil et al. (2004)	Panel:	17 OECD Countries	Fiscal and Political	Regional Inequality	Negative and significant
11. Iimi (2005)	Cross-section: 1997 to 2001	51 Countries	Fiscal	Growth	Positive and significant
12. Stansel (2005)	Cross-section: 1960 to 1990	314 USA Metropolitan Areas	Fiscal	Growth	Positive and significant
13. Bonet (2006)	Panel: 1990 to 2000	33 Colombian Departments	Fiscal	Regional Inequality	Positive and significant
14. Lessmann (2006)	Panel: 1980 to 2001	17 OECD Countries	Fiscal	Regional Inequality	Insignificant
15. Thornton (2007)	Panel: 1980 to 2000	19 OECD Countries	Fiscal	Growth	Insignificant
16. Ezcurra and Pascual (2008)	Panel: 1980 to 1999	12 European Countries	Fiscal	Regional Inequality	Negative and significant
17. Qiao et al. (2008)	Panel: 1985 to 1998	Provinces of China	Fiscal	Growth and Regional Inequality	Positive and significant
18. Baskaran and Feld (2009)	Panel: 1975 to 2001	23 OECD Countries	Fiscal	Growth	Negative and significant
19. Calamai (2009)	Panel:	Provinces of Italy	Fiscal	Regional Inequality	Negative and significant
20. Rodríguez-Pose and Ezcurra (2010)	Panel: 1990 to 2005	21 OECD Countries	Fiscal, Political, and Administrative	Growth	Negative and significant
21. Rodríguez-Pose and Ezcurra (2009)	Panel: 1990 to 2006	26 Countries (19 Developed and 7 Developing)	Fiscal and Political	Regional Inequality	Insignificant

Chapter 5

Summary and Conclusions

Summary and Conclusions

This thesis begins with a review of the literature which studies the role of a government in the process of achieving the goals of economic development and growth in an economy. Existing literature suggests that governments use a wide range of public policies to achieve these goals. In recent times, fiscal policies have received increasing attention. Both theoretical and empirical findings document that fiscal policies related to taxation, debt management, and expenditure allocation influence the economic outcomes of an economy to a large extent. The question arises whether the design of fiscal policy is strictly dictated by considerations of growth, development and welfare or do other factors play a role which does not necessarily focus on the larger interests of the society. A growing body of literature discusses various types of determinants of fiscal policies. In this line of research, contribution made by public choice theory adds a new dimension. Based on positive ideas, this branch of literature assumes that politician are rent-seekers and they use fiscal policies as the instruments to maximize their private welfare (i.e. holding power and staying in office), instead of maximizing the welfare of the society. Strategic interactions between political parties, political parties and voters, and governments are identified as very important ingredients in public choice models.

This thesis hypothesizes that different types of political considerations influence the fiscal policies before these policies determine the economic outcomes of an economy. Given this analytical framework, this thesis makes a detailed empirical analysis of the political-economic background on which fiscal decisions related to revenue collection and expenditure allocation of the Indian states are undertaken before these decisions affect the economic outcomes of these states and tests the validity of the hypothesis in the Indian context. This study has identified political factors at two different levels, intragovernmental (i.e. vote bank politics at state level to hold power and stay in office) and intergovernmental (i.e. strategic use of intergovernmental transfers at state level to serve political objectives), that operate across the Indian states. Subsequently they are linked with the revenue collection and expenditure allocation in two chapters (chapter 2 and 3). Finally, the impacts

of policy interventions of governments (i.e. through fiscal and decentralization policies) on income inequality of the Indian states are investigated. A panel dataset of 14 major Indian states spread over 27 years (from 1980-81 to 2006-07) is explored for the purpose this thesis and standard panel data estimation methods are used to arrive at the results.

Traditionally it is believed that the fiscal outcomes of an economy are determined by the economic and demographic determinants such as income level, growth rate, population size, geographical structure, and trade participation rate. However, recent literature on determinants of fiscal outcomes documents that, apart from the traditional determinants, the political discretions play decisive roles in shaping the fiscal outcomes. The existing empirical literature on the determinants of fiscal outcomes has largely focused on traditional determinants and the few studies that have investigated the impacts of political determinants of fiscal outcomes are confined the OECD countries. Inspired by the facts of scanty country-specific empirical works and limitations of cross-country empirical research in ignoring country-specific important information, chapter 2 of this thesis aims at examining the impacts of government-specific political characteristics on fiscal outcomes of the Indian states. Five forms of endogenous political determinants: forms of governments (single party government verses coalition government), ideology of the government (ideologically left-wing government verses right-wing government), electoral cycle years (years just before elections), strength of the opposition (strong opposition verses weak opposition), and majority of the government (simple majority verses super majority), are identified and a number of indices are constructed to capture each of the above-mentioned government-specific political characteristics. Two sets of hypotheses are developed by linking these political determinants with aggregated and disaggregated fiscal outcomes related to own revenue collections and expenditure allocation. The results of this chapter suggest that the political determinants are systematically and significantly linked with tax revenue collections, internal debt generation, and expenditure allocation of the Indian states even in the presence of the traditional determinants. These findings have proved to be insensitive to three different robustness

strategies such as introducing a new variable of interest, changing the selection criterion of the fiscal years, and using an alternative estimation method.

In a federation, the central government and its provincial governments complement each other by sharing relations at different levels. Vertical sharing of fiscal powers between different levels of governments could be singled out as one of the most important shared relations in a federation. As a part of this, upper level governments allocate intergovernmental transfers in various forms to strike a balance in the distribution of resources across the provinces horizontally. Traditionally, the practice of allocating intergovernmental transfers is justified on the ground that the poorer provinces of a federation are not in a position to generate enough revenues on their own to meet their expenditure requirements and without these transfers their developmental goals cannot be achieved. However, it implicitly assumes that the sub-national governments will make optimal use of the redistributed resources. Recently, scholars of fiscal federalism have questioned this view on the ground of sub-national government's ability, effort, and incentive to use these resources productively. The idea here is that intergovernmental transfers alter the budget constraints of the sub-national governments and these transfers could be used by sub-national governments to make adjustments in the fiscal outcomes to serve their own political purposes. In this context, the possibility that the intergovernmental transfers might be used strategically by the sub-national governments to substitute for locally generated revenues and divert to meet increasing spending requirements of different interest groups, since collecting taxes and imposing duties on goods and services are considered politically unpopular government activities and spending more on populist policies create different types of political incentives, cannot be ruled out. Intergovernmental transfers in India could be divided into conditional and unconditional transfers. Empirically examining how far the imposition of conditions on intergovernmental transfers has prevented the Indian states from using these transfers to serve their own purposes is the objective of Chapter 3. Two types of transfer related measures are linked with aggregated and disaggregated fiscal outcomes related to own tax revenue collections and expenditure allocation. The first measure aims at investigating the impacts of

increases in different categories of transfers on different types of fiscal outcomes of the Indian states, whereas the second measure examines how these states adjust their fiscal outcomes to immediate cuts in different forms of transfers. The findings on unconditional transfers suggest that the state governments find it easy to divert such transfers to compensate for tax revenue collections, whereas conditional transfers are observed to improve the collection of direct and indirect tax revenues. Immediate cuts only in conditional transfers improve total and indirect tax revenue collections. The results on expenditure responses suggest that imposition of conditions on transfers has failed to prevent the Indian state governments from diverting these transfers to meet less productive expenditures. Unlike the defiant revenue responses, the expenditure responses of the Indian states are observed to be quite responsive to immediate cuts in conditional and unconditional transfers. These findings have proved to be proved insensitive to two different robustness strategies such as modification of the forms of intergovernmental transfers and changing the selection criterion of the fiscal years.

In recent years, a vast literature has emerged on the relationship between public policies and economic development and growth. The policy of decentralization is one of the public policies, which has received increasing attention over the years. Traditionally, it is argued that the practice of decentralizing fiscal responsibilities to sub-national governments has positive impacts on economic development and growth. However, these views are questioned in recent times on the ground of fiscal decentralization's efficacy in reducing regional disparities across the regions of a country. The theoretical debate on the link between fiscal decentralization and regional inequality does not arrive at definite conclusion. So are the empirical studies, which consist of both cross-country and country-specific studies. Hence, the impact of decentralization on regional disparity of a country is neither direct nor simple; rather it is context-specific and system-specific. Over last three decades, the level of government intervention, measured in terms of the size of public spending and revenue collection of a country, in the Indian states has increased considerably. Apart from this, the policy of decentralization has extended the level of government intervention in the Indian states further by

enhancing the political status, and assigning greater fiscal responsibilities to the local governments. Chapter 4 of this thesis investigates whether there is a link between these policy interventions of governments and income inequality across the Indian states. An index based on the concept of relative per-capita income of the Indian states is used to quantify the degree of interstate income inequality and two policy measures related to fiscal and decentralization policies have been used. The first set of measures capture the level of government intervention through fiscal policies. Three different fiscal measures of government intervention related to expenditure and revenue are used to capture complex and multi-dimensional aspects of fiscal intervention and avoid the sensitivity of a particular measure in use. Constitutional status was granted to the local governments in 1993-94 with the help of two constitutional amendments. A policy dummy is introduced to account for the impacts of this policy of decentralization on income variations of the Indian states. Decentralization policy dummy is the second measure. The findings suggest that both policy measures have reduced the level of regional disparity. The study is also conducted for three sub-samples of 14 Indian states divided according to their levels of incomes. Increasing fiscal intervention has reduced the levels of regional inequality among the low-income states, whereas it has widened with the establishment of local governments. However the findings suggest that the negative effects of increasing government intervention through fiscal policies on regional inequality of low income Indian states are insensitive to and stronger than the positive effects of the policy of establishing local governments. Surprisingly, no significant relation between the level of regional inequality and both policy measures is found among the groups of high-income and middle-income states. These findings are robust to various forms of sensitivity analyses.

This thesis concludes that politics go hand in hand with public finance management of the Indian states. From the point of view economic performance, the findings suggest that policy interventions of governments (i.e. through fiscal and decentralization policies) have helped reducing income inequality of the Indian states. Some of the findings of this thesis confirm existing presumptions, while others are in contradiction to existing notions.

Bibliography

- Afonso, A. and D. Furceri (2008). Government size, composition, volatility and economic growth. Working Paper Series No 849, European Central Bank.
- Ahluwalia, M. (2002). State level performance under economic reforms in India. In Anne Krueger, ed., *Economic policy reforms and the Indian economy*, New Delhi: Oxford University Press, pp. 91–122.
- Aiyar, S. (2001). Growth theory and convergence across Indian states: a panel study. In Callen, T., P. Reynolds and C. Towe, eds, *India at the crossroads: sustaining growth and reducing poverty*, Washington: International Monetary Fund, pp. 143–169.
- Akai, N. and M. Sakata (2002). Fiscal decentralization contributes to economic growth: Evidence from state-level cross-section data for the United States. *Journal of Urban Economics*, 52: 93–108.
- Albritton, R. B. (1989). Impacts of intergovernmental financial incentives on state welfare policymaking and interstate equity. *Publius: The Journal of Federalism*, 19(2): 127–141.
- Alchian, A. A. and H. Demsetz (1972). Production, information costs, and economic organization. *American Economic Review*, 62(5): 777–795
- Alderete, J. C. (2004). Asymmetric responses of local expenditures to changes in intergovernmental grants. SIEPR Discussion Paper No. 03–15.
- Alesina, A. and E. Spolaore (1997). On the number and size of nations. *Quarterly Journal of Economics*, 112(4): 1027–1056.
- Alesina, A. and R. Wacziarg (1998). Openness, country size and government. *Journal of Public Economics*, 69(3): 305–321.
- Alexander, W. R. (1990). Growth: Some combined cross-sectional and time series evidence from OECD countries. *Applied Economics*, 22(9): 1197–1204.
- Alt, J. E. and R. C. Lowry (1994). Divided government, fiscal institutions, and budget deficits: Evidence from the states. *The American Political Science Review*, 88(4): 811–828.
- Alvarez, M., J. A. Cheibub, F. Limongi, and A. Przeworski (2000). *Democracy and development: Political institutions and well-being in the world, 1950–90*. Cambridge, UK: Cambridge University Press.
- Arulampalam, W., S. Dasgupta, A. Dhillon and B. Dutta (2009). Electoral goals and centre-state transfers: a theoretical model and empirical evidence from India. *Journal of Development Economics*, 88(1): 103–119.
- Ashworth, J. and B. Heyndels (2001). Political fragmentation and the evolution of national tax structures in the OECD. *International Tax and Public Finance*, 8: 377–393.
- Austin, G. (2003). *Working a democratic constitution: a history of the indian experience*. New Delhi: Oxford University.
- Bae, S. and R. Feiock (2004). The flypaper effect revisited: intergovernmental grants and local governance. *International Journal of Public Administration*, 27(8-9): 577–596.
- Bagchi, A. (2003). Rethinking federalism: changing power relations between the centre and the states. *Publius: The Journal of Federalism*, 33(4): 21–42.

- Bahl, R. and J. Linn (1992). *Urban public finance in developing countries*. New York: Oxford University Press.
- Balassone, F. and R. Giordano (2001). Budget deficits and coalition governments. *Public Choice*, 106: 327–349.
- Bandyopadhyay, S. (2003) Convergence club empirics: some dynamics and explanations of unequal growth across Indian states. STICERD—Distribution Analysis Research Program Papers 69.
- Bardhan, P. (1990). Symposium on state and economic development. *Journal of Economic Perspectives*, 4(3): 3–7.
- Bardhan, P. (2000). Understanding underdevelopment: Challenges for institutional economics from the point of view of poor countries. *Journal of Institutional and Theoretical Economics*, 156(1): 216–235.
- Bardhan, P. (2002). Decentralization of governance and development. *Journal of Economic Perspectives*, 16(4): 185–205.
- Bardhan, P. and D. Mookherjee (2005). Decentralization corruption and government accountability: an overview. In Susan Rose-Ackerman, ed., *Handbook of economic corruption*, Cheltenham: Edward Elgar, pp. 161–188.
- Bardhan, P. and D. Mookherjee (2006). Decentralization and local governments in developing countries: a comparative perspective. Cambridge, MA: MIT Press.
- Barro, R. (1989). A cross-country study of growth, saving, and government. NBER Working Paper No. 2855.
- Barro, R. J. (1990). Government Spending in a Simple Model of Endogenous Growth. *Journal of Political Economy*, 98(5): 103–125.
- Barro, R. J. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics*, 106(2): 407–443.
- Barro, R. J. (1998). *Determinants of Economic Growth: A Cross Country Empirical Study*. Cambridge, MA: MIT Press.
- Barro, R. J. and X. Sala-i-Martin (1995). *Economic growth*. New York: McGraw Hill.
- Barth, J. R. and M. Bradley (1988). The impact of government spending on economic activity. Mimeo, The National Chamber Foundation, Washington D.C.
- Baskaran, T. and L. P. Feld (2009). Fiscal decentralization and economic growth in OECD countries: Is there a relationship?. CESIFO Working Paper No. 2721.
- Bassanini, A. and S. Scarpetta (2001). The driving forces of economic growth: panel data evidence for the OECD countries. OECD Economic Studies No. 33/ 2, pp. 9–56.
- Bastiaens, E., B. De Borger and J. Vanneste (2001). Expenditure and taxation effects of local public debt and unconditional grants: evidence from Flemish municipalities. *Cahiers économiques de Bruxelles*, 171: 71–89.
- Baum, C. F., M. E. Schaffer and S. Stillman (2003). Instrumental variables and GMM: estimation and testing. *Stata Journal*, 3(1): 1–31.

- Baum, C. F., M. E. Schaffer and S. Stillman (2007). Enhanced routines for instrumental variables/generalized method of moments estimation and testing. *Stata Journal*, 7(4): 465–506.
- Bawn, K. and F. Rosenbluth (2006). Short versus long coalitions: electoral accountability and the size of the public sector. *American Journal of Political Science*, 50(2): 251–265.
- Beck, N. and J. Katz (1995). What to do (and not to do) with time series-cross sectional data. *American Political Science Review*, 89(3): 634–47.
- Beck, N. and J. Katz (2004). Time series-cross section issues: dynamics. Working Paper: New York University.
- Behar, A. (2001). Madhya Pradesh: Gram swaraj: experiment in direct democracy. *Economic and Political Weekly*, 36(10): 823–826.
- Behar, A. and Y. Kumar (2002). Decentralisation in Madhya Pradesh, India: from panchayati raj to gram swaraj (1995-2001). Working Paper 170, London: Overseas Development Institute (ODI).
- Benton, J. E. (1992). The effects of changes in federal aid on state and local government spending. *Publius: The Journal of Federalism*, 22(1): 71–82.
- Bergstrom, T. C. and R. P. Goodman (1973). Private demands for public goods. *American Economic Review*, 63(3): 280–296.
- Bird, R. and C. Wallich (1993). Fiscal decentralization and intergovernmental relations in transition economies: towards a systematic framework of analysis. Country Economics Department Working Paper, World Bank, Washington DC.
- Black, D. (1958). *The theory of committees and elections*. Cambridge: Cambridge University Press.
- Blais, A., D. Blake and S. Dion (1993). Do parties make a difference? parties and the size of government in liberal democracies. *American Journal of Political Science*, 37(1): 40–62.
- Blanchard, O. and A. Shleifer (2001). Federalism with and without political centralization: China versus Russia. *IMF Staff Papers*, 48(2): 171–179.
- Bloom, D. E., D. Canning and J. Sevilla (2001). The Effect of Health on Economic Growth: Theory and Evidence. NBER Working Paper No. 8587.
- Boadway, R. and A. Shah (2007). Intergovernmental fiscal transfers: principles and practice. World Bank, Washington: DC, USA.
- Bonet, J. (2006). Fiscal decentralization and regional income disparities: evidence from the Colombian experience. *Annals of Regional Science*, 40: 661–676.
- Borcherding, T. E. and R. T. Deacon (1972). The demand for the services of non-federal governments. *American Economic Review*, 62(5): 891–901.
- Borrelli, S. A. and T. J. Royed (1995). Government strength and budget deficits in advanced democracies. *European Journal of Political Research*, 28(2): 225–260.
- Brass, P. R. (1977). Party systems and government stability in the Indian states, *American Political Science Review*, 71(4): 1384–1405.
- Brennan, G. and J. Buchanan (1980). The power to tax: analytical foundations of a fiscal constitution. New York: Cambridge University Press.

- Breton, A. (1996). *Competitive governments: an economic theory of politics and public finance*. Cambridge, MA: Cambridge University Press.
- Breuss, F. and M. Eller (2004). Fiscal decentralization and economic growth: is there really a link?. CESifo DICE Report, *Journal of Institutional Comparisons*, 2(1): 3–9.
- Buchanan, J. M. and G. Tullock (1962). *The Calculus of consent: Logical Foundations of Constitutional Democracy*. Ann Arbor: University of Michigan Press.
- Butler, D., A. Lahiri and P. Roy (1996). *India Decides, Elections 1952-1995*. New Delhi, India: Living Media India Limited.
- Cai, H. and D. Treisman (2004). State corroding federalism. *Journal of Public Economics*, 88(3), 819–843.
- Cai, H. and D. Treisman (2005). Does competition for capital discipline governments? Decentralization, globalization and public policy. *American Economic Review*, 95(3): 817–830.
- Calamai, L. (2009). The link between devolution and regional disparities: evidence from the Italian regions. *Environment and Planning A*, 41(5): 1129–1151.
- Cameron, D. (1978). The expansion of the public economy: a comparative analysis. *American Political Science Review*, 72(4): 1243–1261.
- Cashin, P. (1995). Government spending, taxes and economic growth. *IMF Staff Papers*, 42(2): 237–269.
- Cashin, P. and R. Sahay (1996). Internal migration, centre-state grants, and economic growth in the states of India. *International Monetary Fund Staff Papers*, 43(1): 123–171.
- Castles, F. G. (1998). *Comparative public policy: Patterns of postwar transformation*. Northampton, MA: Edward Elgar.
- Chaudhuri, K. and S. Dasgupta (2006). The political determinants of fiscal policies in the states of India: an empirical investigation. *The Journal of Development Studies*, 42(4): 640–661.
- Chen, S. and M. Ravallion (1997). What Can New Survey Data Tell Us About Recent Changes in Distribution and Poverty?. *World Bank Economic Review*, 11(2): 357–382.
- Cheshire, P. C. and I. R. Gordon (1998). Territorial competition: some lessons for policy. *Annals of Regional Science*, 32(3): 321–346.
- Chhibber, P. and I. Nooruddin (2004). Do party systems count? The number of parties and government performance in the Indian states. *Comparative Political Studies*, 37(2): 152–187.
- Cohen, J. P. (2002). Reciprocal state and local airport spending spillovers and symmetric responses to cuts and increases in federal airport grants. *Public Finance Review*, 30(1): 41–55.
- Cooray A. (2008). Economic growth and the size and quality of the government. Presented at the 120th Annual Meeting of the American Economic Association, New Orleans, January.
- Cowell, F. (1995). *Measuring inequality*. LSE Handbooks in Economics. London: Prentice-Hall.

- Cox, G. and M. McCubbins (1986). Electoral politics as a redistributive game. *Journal of Politics*, 48(2): 370–389.
- Cumberland, J. H. (1981). Efficiency and equity in interregional environmental management. *Review of Regional Studies*, 10(2): 1–9.
- Dalen, H. P. and O. H. Swank (1996). Government spending cycles: ideological or opportunistic?. *Public Choice*, 89(1-2): 183–200.
- Dar, A. A. and S. AmirKhalkhali (2002). Government size, factor accumulation, and economic growth: evidence from OECD countries. *Journal of Policy Modeling*, 24(7-8): 679–692.
- Dash, B. B. and A. V. Raja (2009). Institutions and the quality of governance: an empirical study on interstate differences in economic development in India. *Asia-Pacific Development Journal*, 16(1): 1–26.
- Datta-Chaudhuri, M. (1990). Market failure and government failure. *Journal of Economic Perspectives*, 4(3): 25–39.
- Davies, A. (2008). Human development and the optimal size of government. *Journal of Socio-Economics*, 38(2): 326–330.
- Davoodi, H. and H. Zou (1998). Fiscal decentralization and economic growth: a cross-country study. *Journal of Urban Economics*, 43: 244–257.
- De Haan, J. and J. E. Sturm (1994). Political and institutional determinants of fiscal policy in the European community. *Public Choice*, 80(1-2): 157–172.
- De Haan, J. and J. E. Sturm (1997). Political and economic determinants of budget deficits and of government spending: A reinvestigation. *European Journal of Political Economy*, 13(3): 739–750.
- De Haan, J., J. E. Sturm and G. Beekhuis (1999). The weak government thesis: Some new evidence. *Public Choice*, 101: 163–176.
- Deller, S. C. and C. S. Maher (2005). A model of asymmetries in the flypaper effect. *Publius: The Journal of Federalism*, 36(2): 213–229.
- Devarajan, S., V. Swaroop and H. Zou (1996). The Composition of Public Expenditure and Economic Growth. *Journal of Monetary Economics*, 37: 313–344.
- Dillinger, W. (1994). Decentralization and its implications for urban service delivery. Discussion Paper 16, Urban Management Program, World Bank, Washington, DC.
- Dillinger, W. (2002). Brazil: issues on fiscal federalism. Report 22523-BR, Brazil Country Management Unit, World Bank, Washington, DC.
- Dixit, A. and J. Londregan (1995). Redistributive politics and economic efficiency. *American Political Science Review*, 89(4): 856–866.
- Dixit, A. and J. Londregan (1996). The determinants of success of special interests in redistributive politics. *Journal of Politics*, 58(4): 1132–1155.
- Dixit, A. and J. Londregan (1998). Ideology, tactics, and efficiency in redistributive politics. *Quarterly Journal of Economics*, 113(2): 497–529.
- Dollar, D. and A. Kraay (2001). Growth Is Good for the Poor. World Bank Policy Research Working Paper No. 2587.

- Dollery, B. E. and A. C. Worthington (1995). Federal expenditure and fiscal illusion: a test of the flypaper hypothesis in Australia. *Publius: The Journal of Federalism*, 25(1): 23–34.
- Dollery, B. E. and A. C. Worthington (1996). The empirical analysis of fiscal illusion. *Journal of Economic Surveys*, 10(3): 261–297.
- Downs, A. (1957). *An Economic Theory of Democracy*. New York: Harper and Row.
- Dowrick, S. (1992). Estimating the impact of government consumption on growth: Growth accounting and optimising models. Mimeo, Canberra: Australian National University.
- Drukker, D. M. (2003). Testing for serial correlation in linear panel-data models. *Stata Journal*, 3(2): 168–177.
- Dua, B. D. (1979). Presidential rule in India: a study in crisis politics. *Asian Survey*, 19(6): 611–626.
- Dutta, B. (1996). Coalitional governments and policy distortions: the Indian experience. Mimeo, Indian Statistical Institute, New Delhi.
- Easterly, W. (2001). *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*. Cambridge, MA: MIT Press.
- Easterly, W. (2005). National Policies and Economic Growth: A Reappraisal. In Aghion, P. and S. Durlauf, eds., *The Handbook of Economic Growth*, Amsterdam: North-Holland, Elsevier Science, pp. 1015–1059.
- Easterly, W. and R. Levine (2001). It's not factor accumulation: Stylized facts and growth models. *World Bank Economic Review*, 15(2): 177–219.
- Easterly, W. and S. Rebelo (1993a). Fiscal policy and economic growth: An empirical investigation. *Journal of Monetary Economics*, 32(3): 417–458.
- Easterly, W. and S. Rebelo (1993b). Marginal income tax rates and economic growth in developing countries. *European Economic Review*, 37: 409–417.
- Easterly, W., C. A. Rodriguez and K. Schmidt-Hebbel (1994). *Public Sector Deficits and Macroeconomic Performance*. New York. The World Bank and Oxford: Oxford University Press.
- Eleventh Finance Commission Report (2000-2005), Government of India, New Delhi.
- Elgie, R. and I. McMenemy (2008). Political fragmentation, fiscal deficits and political institutionalisation. *Public Choice*, 136: 255–267.
- Engen, E. and J. Skinner (1992). Fiscal policy and growth. NBER Working Paper No. 4223.
- Ezcurra, R. and P. Pascual (2008). Fiscal decentralization and regional disparities: evidence from several European Union countries. *Environment and Planning A*, 40: 1185–1201.
- Facchini, G. and C. Testa (2008). Fiscal decentralization, regional inequality and bail-outs: lessons from Brazil's debt crisis. *Quarterly Review of Economics and Finance*, 48(3): 333–344.
- Ferejohn, J. (1974). *Pork barrel politics: rivers and harbors legislation, 1947-1968*. Stanford, CA: Stanford University Press.

- Fischer, S. (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics*, 32(3): 485–512.
- Fisman, R. and R. Gatti (2002). Decentralization and corruption: evidence across countries. *Journal of Public Economics*, 83(3): 325–345.
- Flug, K., A. Spilimbergo and E. Wachtenheim (1998). Investment in Education: Do Economic Volatility and Credit Constraints Matter?. *Journal of Development Economics*, 55(2): 465–481.
- Frankel, J. A. and D. Romer (1999). Does trade cause growth?. *American Economic Review*, 89(3): 379–399.
- Freinkman, L. and A. Plekhanov (2009). Fiscal decentralization in rentier regions: evidence from Russia. *World Development*, 37(2): 503–512.
- Friedman, M. (1962). *Capitalism and freedom*. Chicago and London: The University of Chicago Press.
- Friedman, M. and R. D. Friedman (1980). *Free to choose: A personal statement*. New York: Harcourt Brace Jovanovich.
- Fyre, T. and A. Shleifer (1997). The invisible hand and the grabbing hand. *The American Economic Review*, 87(2): 354–358.
- Galbraith, J. K. (1958). *The affluent society*. Boston: Houghton and Mifflin.
- Gallaway, L. and R. Vedder (1995). The impact of the welfare state on the American economy. Joint Economic Committee of Congress Study, Washington D.C.
- Galli, E. and F. Padovano (2002). A comparative test of alternative theories of the determinants of Italian public deficits (1950–1998). *Public Choice* 113: 37–58.
- Gamkhar, S. (2000). Is the response of state and local highway spending symmetric to increases and decreases in federal highway grants?. *Public Finance Review*, 28(1): 3–25.
- Gamkhar, S. and W. Oates (1996). Asymmetries in the response to increases and decreases in intergovernmental grants: some empirical findings. *National Tax Journal*, 49(4): 501–512.
- Gavin, M. and R. Hausmann (1998). Macroeconomic Volatility and Economic Development. IEA Conference Volume No. 119. London: Macmillan, pp. 97–116.
- Gil, C., P. Pascual and M. Rapún (2004). Regional economic disparities and decentralization. *Urban Studies*, 41(1): 71–94.
- Gilder, G. (1984). *The spirit of enterprise*. New York: Simon and Schuster.
- Gordon, N. (2004). Do federal grants boost school spending? Evidence from Title 1. *Journal of Public Economics*, 88(9-10): 1771–1792.
- Gordon, R. H. (1983). An optimal taxation approach to fiscal federalism. *Quarterly Journal of Economics*, 98(4): 567–586.
- Gramlich, E. (1987). Federalism and federal deficit reduction. *National Tax Journal*, 40(3): 299–313.
- Grier, K. and G. Tullock (1989). An empirical analysis of cross-national economic growth, 1951-80. *Journal of Monetary Economics*, 24(2): 259–276.

- Grossman, P. J. (1990). The Impact of federal and state grants on local government spending: a test of the fiscal illusion hypothesis. *Public Finance Quarterly*, 18: 313–327.
- Grossman, P. J. (1994). A political theory of intergovernmental grants. *Public Choice*, 78(3-4): 295–303.
- Gupta, S., K. Honjo and M. Verhoeven (1997). The efficiency of government expenditure: experiences from Africa. IMF Working Paper WP/97/153.
- Guseh, J. (1997). Government size and economic growth in developing countries: A political-economy framework. *Journal of Macroeconomics*, 19(1): 175–192.
- Gwartney, J., R. Lawson and R. Holcombe (1998). The size and functions of government and economic growth. Joint Economic Committee, Washington, D.C.
- Hahm, S. D. (1996). The political economy of deficit spending: a cross comparison of industrialized democracies, 1955-90. *Environment and Planning C: Government and Policy*, 14(2): 227–250.
- Hahm, S. D., M. S. Kamlet and D. C. Mowery (1996). The political economy of deficit spending in nine industrialized parliamentary democracies. *Comparative Political Studies*, 29(1): 52–77.
- Hallerberg, M. and J. Hagen (1999). Electoral institutions, cabinet negotiations, and budget deficits in the European Union. In *Fiscal institutions and fiscal performance*, eds. James Poterba and Jurgen von Hagen, Chicago: University of Chicago Press.
- Harrinvirta, M. and M. Mattila (2001). The hard business of balancing budgets: a study of public finances in seventeen OECD countries. *British Journal of Political Science*, 31(3): 497–521.
- Hayek, F. A. (1945). The use of knowledge in society. *American Economic Review*, 35(4): 519–30.
- Heitger, B. (2001). The scope of government and its impact on economic growth in OECD countries. Kiel Institute of World Economics; Kiel Working Paper No. 1034.
- Helpman, E. (2004). *The Mystery of Economic Growth*. Cambridge, MA: Harvard University Press.
- Heyndels, B. (2001). Asymmetries in the flypaper effect: empirical evidence for the Flemish municipalities. *Applied Economics*, 33(10):1329–1334.
- Heyndels, B. and F. V. Driessche (2002). How municipalities react to budgetary windfalls. *Economics of Governance*, 3(3): 211–226.
- Huther, J. and A. Shah (1998). Applying a simple measure of good governance in the debate on fiscal decentralization. World Bank Policy Research Working Paper no. 1894.
- Imi, A. (2005). Decentralization and economic growth revisited: An empirical note. *Journal of Urban Economics*, 57: 449–461.
- Inman, R. P. and D. L. Rubinfeld (2000). Federalism. In Bouckaert, B. and G. de Geest, eds., *The encyclopedia of law and economics*, Cheltenham: Edward Elgar, pp. 661–691.

- Islam, N. M. (1998). Fungibility of matching conditional grants to local governments. *Papers in Regional Science: the Journal of the RSAI*, 77(4): 361–373.
- Jha, R., M. S. Mohanty, S. Chatterjee and P. Chitkara (1999). Tax efficiency in selected Indian states. *Empirical Economics*, 24(4): 641–654.
- Johansson, E. (2003). Intergovernmental grants as a tactical instrument: empirical evidence from Swedish municipalities. *Journal of Public Economics*, 87(5-6): 883–914.
- Johnson, C. (2003). Decentralisation in India: poverty, politics and panchayati raj. Working Paper 199, London: Overseas Development Institute.
- Jones, M. P., P. Sanguinetti and M. Tommasi (2000). Politics, institutions and fiscal performance in a federal system: an analysis of the Argentine provinces. *Journal of Development Economics*, 61(2): 305–33.
- Kanbur, R. (2004). On obnoxious markets. In Cullenberg, S. and P. Pattanaik, eds., *Globalization, culture and the limits of the market: Essays in economics and philosophy*, Oxford University Press.
- Karnik, A. and M. Lalvani (2005). Urban local governments and the flypaper effect: evidence from Maharashtra, India. *Publius: The Journal of Federalism*, 35(2): 273–295.
- Karras, G. (1997). On the optimal government size in Europe: Theory and empirical evidence. *The Manchester School of Economic & Social Studies*, 65(3): 280–294.
- Kaufmann, D. and A. Kraay (2003). Governance matters. World Bank, Mimeographed document, Washington, DC, US.
- Keefer, P. and S. Knack (2002). Boondoggles and expropriation: rent-seeking and policy distortion when property rights are insecure. Policy Research Working Paper 2910. World Bank, Washington, DC.
- Kelejian, H. and D. Robinson (1997). Infrastructure productivity estimation and its underlying econometric specification: a sensitivity analysis. *Papers in Regional Science*, 76(1): 115–131.
- Kennedy, P. (2008). *A guide to econometrics*. Cambridge, MA: MIT Press.
- Keynes, J. M. (1936). *The general theory of employment, interest and money*. London: Macmillan.
- Khemani, S. (2004). Political cycles in a developing economy: effect of elections in the Indian states, *Journal of Development Economics*, 73(1): 125–154.
- Khemani, S. (2007). Does delegation of fiscal policy to an independent agency make a difference? Evidence from intergovernmental transfers in India. *Journal of Development Economics*, 82(2): 464–484.
- Kim, E., S. W. Hong and S. J. Ha (2003). Impacts of national development and decentralization policies on regional income disparity in Korea. *Annals of Regional Science*, 37: 79–91.
- Kirchgässner, G. (2001). Effects of fiscal institutions on public finance: a survey of the empirical evidence. CESifo Working Paper no. 617.
- Kneller, R., M. F. Bleaney and N. Gemmel (1999). Fiscal policy and growth: evidence from OECD countries. *Journal of Public Economics*, 74: 171–190.

- Knight, B. (2002). Endogenous federal grants and crowd-out of state government spending: theory and evidence from the federal highway aid program. *American Economic Review*, 92(1): 71–92.
- Knowles, S. and A. Garces-Ozanne (2003). Government intervention and economic performance in East Asia. *Economic Development and Cultural Change*, 51(2): 451–477.
- Kochhar, K., U. Kumar, R. Rajan, A. Subramanian and I. Tokatlidis (2006). India's pattern of development: what happened, what follows?. *Journal of Monetary Economics*, 53(5): 981–1019.
- Koester, R. and R. C. Kormendi (1989). Taxation, aggregate activity and economic growth: Cross-country evidence on some supply-side hypothesis. *Economic Inquiry*, 27(3): 367–386.
- Kontopoulos, Y. and R. Perotti (1999). Government fragmentation and fiscal policy outcomes: Evidence from OECD countries. In J. Poterba and J. Von Hagen (Eds.), *Fiscal institutions and fiscal performance*, 81–102: Chicago: University of Chicago Press.
- Korpi, W. (1985). Economic growth and the welfare system: Leaky bucket or irrigation system?. *European Sociological Review*, 1(2): 97–118.
- Kraan, D. J. (1996). *Budgetary decisions - A public choice approach*. Cambridge, MA: Cambridge University Press.
- Krueger, A. O. (1990). Government failures in development. *Journal of Economic Perspectives*, 4(3): 9–23.
- Kurian, N. J. (2000). Widening regional disparities in India: some indicators. *Economic and Political Weekly*, 35(7): 538–550.
- La Porta, R., F. Lopez-De-Silanes, A. Shleifer and R. Vishny (1999). The quality of government. *Journal of Law, Economics and Organization*, 15(1): 222–279.
- Laakso, M. and R. Taagepera (1979). Effective number of parties: a measure with application to West Europe. *Comparative Political Studies*, 12(1): 3–27.
- Lalvani, M. (2002). The flypaper effect: evidence from India. *Public Budgeting and Finance*, 22 (3): 67–88.
- Lalvani, M. (2005). Coalition governments: fiscal implications for the Indian economy, *American Review of Political Economy*, 3(1): 127–163.
- Lambert, A., K. Sonin and E. Zhuravskaya (2000). Capture of bankruptcy: Theory and evidence from Russia. CEPR Working Paper No. 2488.
- Landau, D. (1983). Government Expenditure and Economic Growth: A Cross Country Study. *Southern Economic Journal*, 49(3): 783–792.
- Landau, D. (1985). Government expenditures and economic growth in the developed countries: 1952-76. *Public Choice*, 47(3): 459–477.
- Landau, D. (1986). Government and Economic Growth in Less Developed Countries: An Empirical Study for 1960-1980. *Economic Development and Cultural Change*, 35(1): 35–75.
- Lessmann, C. (2006). Fiscal decentralization and regional disparity: evidence from cross-section and panel data. *Environment and Planning A*, 41(10): 2455–2473.

- Letelier, L. (2003). Explaining fiscal decentralisation. Institute of Public Affairs, University of Chile, <http://www.eclac.org/ilpes/noticias/paginas/6/13526/LeonardoLetelier.pdf> (accessed on August 03, 2010).
- Levaggi, R. and R. Zanola (2003). Flypaper effect and sluggishness: evidence from regional health expenditure in Italy. *International Tax and Public Finance*, 10(5): 535–547.
- Levine, R., N. Loayza and T. Beck (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, 46(1): 31–77.
- Lijphart, A. (1994). *Electoral systems and party systems: a study of twenty seven democracies, 1945-1990*. New Haven, CT: Yale University Press.
- Lijphart, A. (1999). *Patterns of democracy: government forms and performance in thirty-six countries*. New Haven, CT: Yale University Press.
- Lin, J. Y. and Z. Liu (2000). Fiscal decentralization and economic growth in China. *Economic Development and Cultural Change*, 49(1): 1–21.
- Lindbeck, A. and J. W. Weibull (1987). Balanced-budget redistribution as the outcome of political competition. *Public Choice*, 52(3): 273–297.
- Lucas, R. E. (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics*, 22(1): 3–42.
- Lynch, F. L. (1997). The effects of state intergovernmental transfers on local area's provision of public mental health services. *Administration and Policy in Mental Health*, 24(4): 279–299.
- Marshall, L. (1991). New evidence on fiscal illusion: the 1986 tax “windfalls”. *American Economic Review*, 81(5): 1336–1344.
- McCarten, W. and V. Vyasulu (2004). Democratic decentralisation and poverty reduction in Madhya Pradesh: searching for an institutional equilibrium. *Development in Practice*, 14(6): 733–740.
- McCarten, W. and V. Vyasulu (2006). Democratic decentralization in Madhya Pradesh: neither big bang nor gradualism. In Smoke, P., E.J. Gomez and G. Peterson, eds., *Decentralization in Asia and Latin America: a comparative interdisciplinary perspective*, London: Edward Edgar, pp. 136–163.
- McKinnon, R. (1995). Intergovernmental competition in Europe with and without a common currency. *Journal Economic of Policy Modeling*, 17(5): 463–478.
- McKinnon, R. (1997). Market-preserving fiscal federalism in the American Monetary Union. In Blejer, M. and T. Ter-Minassian, eds., *Macroeconomic dimensions of public finance: essays in honour of Vito Tanzi*, Routledge: London, pp. 73–93.
- Melo, L. (2002). The flypaper effect under different institutional contexts: the Colombian case. *Public Choice*, 111(3-4): 317–345.
- Meltzer, A. and R. Scott (1983). Tests of a rational theory of the size of government. *Public Choice*, 41(3): 403–418.
- Mendoza, E., G. Milesi-Ferretti and P. Asea (1997). On the effectiveness of tax policy in altering long-run growth: Harberger's superneutrality conjecture. *Journal of Public Economics*, 66(1): 99–126.

- Milesi-Ferretti, G. M. and N. Roubini (1998). Growth Effects of Income and Consumption Taxes. *Journal of Money, Credit and Banking*, 30(4): 721–744.
- Milesi-Ferretti, G., R. Perotti and M. Rostagno (2002). Electoral systems and public spending. *Quarterly Journal of Economics*, 117(2): 609–657.
- Mueller, D. C. (2003). *Public Choice III*. Cambridge, MA: Cambridge University Press.
- Mukherjee, B. (2003). Political parties and the size of government in multiparty legislatures: examining cross-country and panel data evidence. *Comparative Political Studies*, 36(6): 699–728.
- Musgrave, R. A. (1959). *Theory of public finance: a study in public economy*. New York: McGraw.
- Musgrave, R. A. and P. B. Musgrave (1989). *Public finance in theory and practice*. McGraw-Hill, New York
- Myerson, R. (1993). Incentives to Cultivate Favored Minorities under Alternative Electoral Systems. *American Political Science Review*, 87(4): 856–869.
- Nagaraj, R., A. Varoudakis and M.A. Veganzones (2000). Long-run growth trends and convergence across Indian states. *Journal of International Development*, 12(1): 45–70.
- Nazmi, N. and M. D. Ramirez (1997). Public and private investment and economic growth in Mexico. *Contemporary Economic Policy*, 15(1): 65–75.
- Nordhaus, W. D. (1975). The political business cycle. *Review of Economic Studies*, 42(1): 169–190.
- Oates, W. E. (1972). *Fiscal federalism*. New York: Harcourt Brace Jovanovich.
- Oates, W. E. (1993). Fiscal decentralization and economic development. *National Tax Journal*, 46(2): 237–243.
- Oates, W. E. (1999). An essay on fiscal federalism. *Journal of Economic Literature*, 37(3): 1120–1149.
- Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- Oxley, L. (1994). Cointegration, causality, and Wagner's Law: a test for Britain 1870–1913. *Scottish Journal of Political Economy*, 41(3): 286–298.
- Padovano, F. and L. Venturi (2001). Wars of attrition in Italian government coalitions and fiscal performance: 1948-1994. *Public Choice*, 109(1): 15–54.
- Panagariya, A. (2004). Growth and reforms during 1980s and 1990s. *Economic and Political Weekly*, 39(25): 2581–2594.
- Perotti, R. and Y. Kontopoulos (2002). Fragmented fiscal policy. *Journal of Public Economics*, 86(2): 191–222.
- Persson, T. and G. Tabellini (1994). Is inequality harmful for growth?. *American Economic Review*, 84(3): 600–621.
- Persson, T. and G. Tabellini (1999). The size and scope of government: comparative politics with rational politicians. *European Economic Review*, 43(4-6): 669–735.

- Persson, T. and G. Tabellini (2000). *Political economics: explaining economic policy*. Cambridge, MA: MIT Press.
- Persson, T. and G. Tabellini (2003a). *The economic effects of constitutions*. Cambridge, MA: MIT Press.
- Persson, T. and G. Tabellini (2003b). Do electoral cycles differ across political systems?. Innocenzo Gasparini Institute for Economic Research (IGIER), Università Bocconi, Working Papers 232.
- Pevcin, P. (2004). Economic output and the optimal size of government. *Economic and Business Review*, 6(3): 213–227.
- Pommerehne, W. W. and F. Schneider (1978). Fiscal illusion, political institutions, and local spending. *Kyklos*, 31(3): 381–408.
- Ponomareva, M. and E. Zhuravskaya (2004). Federal tax arrears in Russia "Liquidity problems, federal redistribution or regional resistance?. *The Economics of Transition*, 12(3): 373–398.
- Poterba, J. and J. Von Hagen, (Eds.) (1999). *Fiscal institutions and fiscal performance*. Chicago: University of Chicago Press.
- Poterba, J. M. (1994). State responses to fiscal crises: The effects of budgetary institutions and politics. *The Journal of Political Economy*, 102(4): 799–821.
- Prud'homme, R. (1995). On the dangers of decentralization. World Bank Policy Research Working Paper 1252.
- Qian, Y. and B. Weingast (1997). Federalism as a commitment to preserving market incentives. *Journal of Economic Perspectives*, 11(4), 83–92.
- Qian, Y. and G. Roland (1998). Federalism and the soft budget constraint. *American Economic Review*, 88(5): 1143–1162.
- Qiao, B., J. Martinez-Vazquez and Y. Xu (2008). The trade-off between growth and equity in decentralization policy: China's experience. *Journal of Development Economics*, 86(1): 112–128.
- Rajaraman, I. and G. Vasishtha (2000). Impact of grants on tax effort of local government. *Economic and Political Weekly*, 35(33): 2943–2948.
- Ram, R. (1986). Government Size and Economic Growth: A New Framework and Some Evidence from Cross-Section and Time-Series Data. *American Economic Review*, 76(1): 191–203.
- Ram, R. (1987). Wagner's hypothesis in time-series and cross-section perspectives: evidence from 'real' data for 115 countries. *Review of Economics and Statistics*, 69(2): 194–204.
- Ram, R. (1992). Interstate income inequality in the United States: measurement, modelling and some characteristics. *Review of Income and Wealth*, 38(1): 39–48.
- Rao, G. M. and N. Singh (2001). The political economy of center-state fiscal transfers in India. Department of Economics, University of California at Santa Cruz (mimeo).
- Rao, M. G., R. T. Shand and K. P. Kalirajan (1999). Convergence of incomes across Indian states: a divergent view. *Economic and Political Weekly*, 34(13): 769–78.

- Reinert, E. S. (1999). The role of the state in economic growth. *Journal of Economic Studies*, 26(4-5): 268–326.
- Ricciuti, R. (2004). Political fragmentation and fiscal outcomes. *Public Choice*, 118(3): 365–388.
- Rivlin, A. M. (1992). *Reviving the American dream: the economy, the states, and the federal government*. Washington, DC: Brookings Institution Press.
- Roberts, K. (1977). Voting over income tax schedules. *Journal of Public Economics*, 8(3): 329–340.
- Rodden, J. and S. Rose-Ackerman (1997). Does federalism preserve markets?. *Virginia Law Review*, 83(7): 1521–1572.
- Rodríguez-Pose, A. and R. Ezcurra (2009). Does decentralization matter for regional disparities? A cross-country analysis. *Journal of Economic Geography*, E-pub: 22 September 2009, doi:10.1093/jeg/lbp049.
- Rodríguez-Pose, A. and R. Ezcurra (2010). Is fiscal decentralization harmful for economic growth? Evidence from the OECD countries. *Journal of Economic Geography*, E-pub: 6 July 2010, doi:10.1093/jeg/lbq025.
- Rodrik, D. (2000). Growth versus Poverty Reduction: A Hollow Debate. *Finance & Development*, 37(4): 8–9.
- Rodrik, D. and A. Subramanian (2004). From “Hindu Growth” to productivity surge: the mystery of the Indian growth transition. IMF Working Papers 04/77, International Monetary Fund.
- Roell, A. (1995). Voting over Nonlinear Income Tax Schedules. London School of Economics, London, UK, and ECARE, Brussels, Belgium, Working Paper.
- Rogoff, K. and A. Sibert (1988). Elections and macroeconomic policy cycles. *Review of Economic Studies*, 51(1): 1–16.
- Romer, P. M. (1989a). What determines the rate of growth and technological change?. World Bank Working Papers.
- Romer, P. M. (1989b). Capital accumulation in the theory of long-run growth. In Barro R., ed., *Modern Business Cycle Theory*, New York: Blackwell.
- Romer, P. M. (1990a). Endogenous Technological Change. *Journal of Political Economy*, 98(5): 71–102.
- Romer, P. M. (1990b). Human capital and growth: theory and evidence. *Carnegie-Rochester Conference Series on Public Policy*, 32: 251–286.
- Romer, T. (1975). Individual Welfare, Majority Voting, and the Properties of a Linear Income Tax. *Journal of Public Economics*, 4(2): 163–185.
- Roubini, N. and J. D. Sachs (1989a). Government spending and budget deficits in the industrialized countries. *Economic Policy*, 8(1): 99–132.
- Roubini, N. and J. D. Sachs (1989b). Political and economic determinants of budget deficits in the industrial democracies. *European Economic Review*, 33(5): 903–938.
- Sachs, J. D., N. Bajpai and A. Ramiah (2002). Understanding regional economic growth in India. CID Working Paper No 88, Harvard University, March.

- Sáez, M. P. and S. A. García (2006). Government spending and economic growth in the European Union countries: an empirical approach. Working Paper Series, University of Cantabria, Department of Economics.
- Schady, N. R. (2000). The political economy of expenditures by the Peruvian social fund (FONCODES), 1991-95. *The American Political Science Review*, 94(2): 289–304.
- Schaltegger, C. A. and L. P. Feld (2009). Do large cabinets favor large governments? Evidence on the fiscal commons problem for Swiss Cantons. *Journal of Public Economics*, 93(2): 35–47.
- Schuknecht, L. (2000). Fiscal policy cycles and public expenditure in developing Countries. *Public Choice*, 102(1-2): 115–130.
- Shankar, R. and A. Shah (2003). Bridging the economic divide within countries: a scorecard on the performance of regional policies in reducing regional income disparities. *World Development*, 31(8): 1421–1441.
- Shi, M. and J. Svensson (2006). Political budget cycles: do they differ across countries and why?. *Journal of Public Economics*, 90(8–9): 1367–1389.
- Shleifer, A. and R. Vishny (1998). *The grabbing hand: Government pathologies and their cures*. Cambridge and London: Harvard University Press.
- Singh, N. (2004). India's system of intergovernmental fiscal relations. http://sciie.ucsc.edu/workingpaper/2004/FFCSouthAfrica_Aug04.pdf
- Singh, N. and T. N. Srinivasan (2002). Indian federalism, economic reform and globalisation. Paper prepared for CREDPR project on Globalisation and Comparative Federalism.
- Singh, N. and T. N. Srinivasan (2006). Federalism and economic development in India: an assessment. MPRA Paper No. 12452, University Library of Munich, Germany.
- Singh, N., L. Bhandari, A. Chen and A. Khare (2003). Regional inequality in India: a fresh look. *Economic and Political Weekly*, 38(11): 1069–1073.
- Slack, E. (1980). Local fiscal response to intergovernmental transfers. *Review of Economics and Statistics*, 62(3): 364–370.
- Slinko, I., E. Yakovlev and E. Zhuravskaya (2005). Laws for sale: evidence from Russian regions. *American Law and Economics Review*, 7(1): 284–318.
- Sonin, K. (2003). Provincial protectionism. William Davidson Institute Working Paper No. 557, University of Michigan Business School.
- Stansel, D. (2005). Local decentralization and local economic growth: A cross-sectional examination of US metropolitan areas. *Journal of Urban Economics*, 57: 55–72.
- Stata Press (2007). *Longitudinal/Panel data reference manual, Release 10*.
- Stiglitz, J. E. (1989). Markets, market failures, and development. *The American Economic Review*, 79(2): 197–203.
- Stine, W. (1994). Is local government revenue response to federal aid symmetrical? Evidence from Pennsylvania county governments in an era of retrenchment. *National Tax Journal*, 47(4): 799–817.
- Stonecash, J. (1979). Intergovernmental aid and local response patterns: a refocusing of aid impact studies. *Publius: The Journal of Federalism*, 9(3): 101–117.

- Storper, M. (2005). Society, community and economic development. *Studies in Comparative International Development*, 39(4): 30–57.
- Taagepera, R. and M. S. Shugart (1989). *Seats and votes*. New Haven: Yale University Press.
- Tabellini, G. (2005). The Role of the State in Economic Development. *Kyklos*, 58 (2): 283–303.
- Tanzi, V. (1995). Fiscal federalism and decentralization: a review of some efficiency and macroeconomic aspects. *World Bank Research Observer*, 10(2): 295–316.
- Tanzi, V. (2005). The economic role of the state in the 21st century. *Cato Journal*, 25(3): 617–638.
- Tanzi, V. and H. Davoodi (1997). Corruption, public investment and growth. IMF Working Paper. WB/97/139. International Monetary Fund, Washington, DC.
- Tanzi, V. and L. Schuknecht (1997). Reconsidering the fiscal role of government: The international perspective. *American Economic Review*, 87(2): 164–168.
- Tavares, J. (2004). Does right or left matter? Cabinets, credibility and fiscal adjustments. *Journal of Public Economics*, 88(12): 2447–2468.
- Thießen, U. (2003). Fiscal decentralisation and economic growth in high-income OECD countries. *Fiscal Studies*, 24(3): 237–274.
- Thornton, J. (2007). Fiscal decentralization and economic growth reconsidered. *Journal of Urban Economics*, 61: 64–70.
- Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of Political Economy*, 64(5): 416–424.
- Treisman, D. (2000). Decentralization and the quality of government. University of California at Los Angeles, Department of Political Science, Preliminary draft, November 2000.
- Veiga, L. G. and M. M. Pinho (2007). The political economy of intergovernmental grants: evidence from a maturing democracy. *Public Choice*, 133(3-4): 457–477.
- Volden, C. (1999). Asymmetric effects of intergovernmental grants: analysis and implications for U.S. welfare policy. *Publius: The Journal of Federalism*, 29(3): 51–73.
- Volkerink, B. and J. de Haan (2001). Fragmented government effects on fiscal policy: New evidence. *Public Choice*, 109(3-4): 221–242.
- Wallis, J. J. and W. E. Oates (1988). Decentralization in the public sector: an empirical study of state and local government. In: H.S. Rosen, Editor, *Fiscal federalism: quantitative studies*, Chicago: University of Chicago Press.
- Wanniski, J. (1979). Taxes, revenues, and the Laffer curve. In Laffer, A. B. and J. P. Seymour, eds., *The economics of the tax revolt*. New York: Harcourt Brace and Jovanovich, pp. 7–12.
- Weede, E. (1986). Sectoral reallocation, distributional coalitions and the welfare state as determinants of economic growth rates in industrialised democracies. *European Journal of Political Research*, 14(5-6): 501–519.

- Weede, E. (1991). The impact of state power on economic growth rates in OECD countries. *Quality and Quantity*, 25: 421–438.
- Weingast, B. R. (1995). The economic role of political institutions: market-preserving federalism and economic development. *Journal of Law, Economics, and Organization*, 20(1): 1–31.
- Wibbels, E. (2003). Bailouts budget constraints and leviathans: comparative federalism and lessons from the early United States. *Comparative Political Studies*, 36(5): 475–508.
- Wildasin, D. E. (1989). Interjurisdictional capital mobility: fiscal externality and a corrective subsidy. *Journal of Urban Economics*, 25(2), 193–212.
- Wildasin, D. E. (1997). Externalities and bailouts: hard and soft budget constraints in intergovernmental fiscal relations. Working paper No. 1843, World Bank, Washington.
- Williamson, J. G. (1965). Regional inequality and the process of national development: a description of the patterns. *Economic Development and Cultural Change*, 13(4): 3–83.
- Winer, S. L. (1983). Some Evidence on the effect of the separation of spending and taxing decisions. *Journal of Political Economy*, 91(1): 126–140.
- Woller, G. M. and K. Phillips (1998). Fiscal decentralization and IDC economic growth: An empirical investigation. *Journal of Development Studies*, 34(4): 139–148.
- Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press.
- World Bank (1990). *World Development Report 1990. Poverty*. Washington, DC. The World Bank and Oxford: Oxford University Press.
- World Bank (2000). *World Development Report 1999/2000. Entering the twenty-first century*. Washington, DC. The World Bank and Oxford: Oxford University Press.
- Worthington, A. C. and B. E. Dollery (1998). The political determination of intergovernmental grants in Australia. *Public Choice*, 94(3-4): 299–315.
- Xie, D., H. Zou and H. Davoodi (1999). Fiscal decentralization and economic growth in the United States. *Journal of Urban Economics*, 45: 228–239.
- Yi, K. and N. Kocherlakota (1996). Is there endogenous long-run growth? Evidence from the U.S. and the U.K.. *Federal Reserve Bank of New York*, December, 17.
- Zampelli, E. M. (1986). Resource fungibility, the flypaper effect, and the expenditure impact of grants-in-aid. *Review of Economics and Statistics*, 68(1): 33–40.
- Zhang, T. and H. Zou (1998). Fiscal decentralization, public spending and economic growth in China. *Journal of Public Economics*, 67: 221–240.
- Zhang, T. and H. Zou (2001). The growth impact of intersectoral and intergovernmental allocation of public expenditure: With applications to China and India. *China Economic Review*, 12: 58–81.