

# State level fiscal policy choices and their impacts

Analysis using a regional social accounting matrix for India, 2011-12

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*A. Ganesh-Kumar<sup>1</sup> and Manoj Panda<sup>2</sup>*

*1 – Professor, Indira Gandhi Institute of Development Research, Mumbai, India*

*2 – Director, Institute of Economic Growth, New Delhi*

*Report prepared for the FOURTEENTH FINANCE COMMISSION\**

October 2014

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\* This study is an outcome of the research sponsored by the Fourteenth Finance Commission, Government of India, New Delhi, under the Project titled “*Macro- Econometric Modelling*”. The authors acknowledge the research assistance provided by Tirtha Chatterjee and Aaditya Sharma. The authors thank the Members and other participants at the two seminars organised by the Commission on 22-July-2014 and 15-October-2014, for their comments and suggestions. The views expressed are of the authors only and should not be attributed to their respective Institutions or to the Fourteenth Finance Commission.

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## *Abstract*

This study aims to analyse the impacts of State governments spending a given amount of resource for current consumption versus investment in the state using a regional-SAM with base year 2011-12 and SAM multiplier model. It develops alternative scenarios wherein the resource for this expenditure is provided either by the Central government as a transfer or the State governments raise the resource internally by reducing its current interest payments.

The results on fiscal transfer to a particular state for expanding its public consumption or investment indicate substantial spillover effects across states in India. Demand for goods and services generated in a state are met from increased production in not only the concerned state but from other states as well. We find that almost all the states derive positive benefits from increased demand in a state. Similarly, when transfers are made to rural (urban) households, the urban (rural) households also benefit indirectly. The multiplier effects do generate some additional revenue for the state governments apart from direct transfer from the Centre. The gains to other states are broadly in proportion to size of the state's economy.

The magnitude of national level effects due to transfers to various states differs substantially. The national level gains in terms of changes in GDP are high when transfers take place to states such as Punjab, Kerala, West Bengal or Tamil Nadu. These are developed states with a relatively higher share of manufacturing. On the other hand, when transfers take place to states like Goa, Odisha, Madhya Pradesh and Chhattisgarh, the GDP impact is low due to small spillover effects on other states. These states have a comparatively large share of mining and quarrying, and construction within industrial sector.

Since the states with large spillover effects are also more developed states, the results in a way imply that transfers to the developed states will normally have relatively more favourable impact on GDP. Thus, if central transfers to states are visualised as an instrument of equity, then growth objective might have to be compromised in some instances such as transfers to Odisha, Madhya Pradesh and Chhattisgarh. While additions to GDP for the less developed states might be small in the short-run, such transfers would benefit the households, many of whom are poor, in these states.

## 1 Introduction

It is well known that in the federal structure of government that exists in India the State governments are constitutionally empowered to take economic policy decisions. These include powers to raise tax and non-tax revenue and undertake public expenditure for current consumption and investment, amongst others. State governments are also entitled to a share of the tax revenue raised by the Central government, and recommending the sharing formula is one of the main mandates of the Finance Commissions that are set up periodically. Besides, States also receive a significant amount of resources by way of Grants from Central government, which are essentially a transfer from Central to State governments. With these resources, State governments then undertake public expenditure as per their objectives and priorities.

The empirical macroeconomic implications of such flow of resources from the Central government to State governments and the State-level fiscal policy choices on the state's economy and the national economy are by and large not well understood in India. For instance, given a certain amount of resource, a State government can choose to spend it on current consumption or for investments in the state. The impacts under these two alternatives could be significantly different. Further, the impacts could also depend upon how the State government gets this resource in the first instance, such as a transfer from the Central government or out of its own efforts. Where it is a case of Central transfer, how the Central government raises the resource in the first instance – by cutting down its savings/investment or its current consumption, etc., – could also influence the final outcomes. Moreover, in a large country with significant variation in the structure of the economy and diversity in the households' characteristics (such as their level and sources of income, preferences that determine their consumption basket and savings, etc.) across the states, the nature of the economic linkages across sectors, across agents, and across states, also are likely to vary significantly from one state to another. Consequently, the impacts of alternate fiscal policy choices could depend upon which state makes these choices. An inadequate appreciation of the likely impacts of such policy alternatives would mean that the policy making is mostly under-informed due to which the government could end up making sub-optimal choices.

Traditional macroeconomic analysis has by and large focused on national level fiscal policy choices, which no doubt merit deep analysis. However, such national level analysis not just bypasses sub-national policy issues they could also be constrained by the aggregation problem when the diversity across states is aggregated away in national-level data.

As is evident, analysing sub-national fiscal policy issues requires a methodological framework that explicitly incorporates the sub-national dimensions. Social Accounting Matrix (SAM) based macroeconomic models such as SAM multiplier models or computable general equilibrium (CGE) models provide an analytical framework that captures in a consistent manner the various inter-sectoral, inter-agent and production-income distribution linkages in the economy. Such models are useful for undertaking policy simulations to analyse macro-fiscal interactions arising out of fiscal policy choices of the government. This analytical framework can easily be extended to incorporate sub-national dimensions provided the necessary data to construct a regional-SAM are available.

Fortunately, data sets that provide state-level information on a wide array of variables is now available, which permit carrying out analysis of state-level fiscal policy choices. Sectoral output, value added, labour employment, factor payments, household consumption, government revenue

from various sources, government's current and capital expenditure, Central-State flow of resources, etc., are some of the important variables on which state-level data are now available.

This study aims to analyse the impacts of state-level fiscal policy choices using a regional-SAM and SAM multiplier model. Specifically, it examines the impacts of State governments spending a given amount of resource for current consumption versus investing in the state. Towards this it develops alternative scenarios wherein the resource for this expenditure is provided either by the Central government as a transfer or State governments raise the resource internally by reducing its current interest payments. In the case of Central transfers too, alternative cases involving a reduction in Central savings/investment or the Central current consumption are analysed.

The regional-SAM used in the analysis has been developed by the authors. It pertains to the year 2011-12, the latest year for which state-level data on several variables are available from a wide range of official sources. As much of the available state-level information has been used here, though some major data gaps continue to persist of which the lack of data on inter-state commodity trade flows is probably the most glaring.

The analytical method adopted in this study is the SAM multiplier model. Briefly, this is essentially an economic model that assumes that all economic relationships are linear in nature, and that the prices remain fixed. Thus, in this model, there are no behavioural responses to shocks either by producers that result in a change in their input requirements or by consumers affecting their pattern of consumption and saving. Assuming constancy in the behaviour of agents, the model allows tracking the impact of various shocks to the system. Thus, the analysis is similar to that using an Input-Output model.

The rest of this report is organised as follows: Chapter 2 provides a description of the regional-SAM for 2011-12, and the SAM multiplier model used in the analysis here. The alternative scenarios developed in this study are described in Chapter 3. The results of the analysis are discussed in Chapter 4, while the last chapter provides some concluding remarks. The report also contains an Appendix that describes the data sources and the steps followed in developing the regional-SAM.

## 2 Data and methodology

The questions being addressed in this study are on the fiscal policy options of the Central and State governments, wherein transfer of resources take place from Central government to State government. Further, some of the policy options to be studied include transfer of resources to specific households (rural / urban) resident in a particular state. These policy options are expected to impact the income, consumption and savings of various agents in the economy. To the extent the consumption patterns vary across households in different states, these policy options are likely to have implications both across sectors and states where the production activities take place.

Given these considerations, it is critical that the data base used in the study distinguishes the regional location of economic activities, commodity production and consumption, households, and multi-tiered (Central and State) government, and provide details on the income, consumption, savings and investment of various spatially located agents in the economy. Similarly, the methodological framework too should be capable of capturing the impacts taking the inter-sectoral and inter-agent linkages into account. A data / methodological framework that is particularly suited for this is the Social Accounting Matrix (SAM) and SAM multiplier analysis.

### 2.1 Database – Regional social accounting matrix for 2011-12

SAM is a matrix representation of all the flows of receipts accruing to and expenditures incurred by all the agents in the economy for a particular year. The agents in the economy are typically the production sectors, households, firms, government and the foreign sector. These flows arise out of commodity transactions (buying-selling) between the agents for purposes of consumption, intermediate use, investment, etc., and by way of inter-agent transfers. SAMs have been widely used for understanding the structure of the economy and for policy analysis. SAMs are also the basic building block for developing computable general equilibrium (CGE) models.

Several researchers have constructed SAMs for the Indian economy in the past for various time points.<sup>1</sup> All these existing SAMs are all national SAM in the sense that they all consider the economy as a whole, which are suitable for analysing questions at the national-level. From the perspective of this study, national SAMs are not suitable as they lack information on the sub-national dimensions of economic activity, households, federal government structures, etc. Hence, this study is based on a “Regional-SAM” incorporating the sub-national dimensions. It constructed by us for the year 2011-12, the most recent year for which the database is available at the state level.

The “Regional-SAM” (RSAM) distinguishes 24 States / regions, 9 commodities, 7 production activities, 2 factors of production, 2 types of enterprises, and 2 types of households (Table 2.1). The production activities and households are further distinguished by their location in 24 States. Besides, the government is also distinguished into Central and State governments. It also distinguishes several inter-agent flows, various types of Central and State taxes, devolution of taxes across the Central and State government, other fiscal transfers from the Central to States, and makes a distinction of fixed capital investment by various agents.

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<sup>1</sup> Some of the noteworthy studies here are Subramanian (1993), Pradhan et al. (2001), Polaski et al. (2008), Saluja and Yadav (2006), amongst others.

**Table 2.1: Disaggregation in the Regional SAM, 2011-12**

<b>24 States / Regions</b>	AP: Andhra Pradesh, AS: Assam, BR: Bihar, CG: Chhattisgarh, GA: Goa, GJ: Gujarat, HR: Haryana, HP: Himachal Pradesh, JK: Jammu & Kashmir, JH: Jharkhand, KA: Karnataka, KL: Kerala, MP: Madhya Pradesh, MH: Maharashtra, OD: Odisha, PB: Punjab, RJ: Rajasthan, TN: Tamil Nadu, UP: Uttar Pradesh, UK: Uttarakhand, WB: West Bengal, NE: North East, DL: Delhi, UT: Union Territories
<b>9 Commodities</b>	Foodgrains, Other foods, Non-food agriculture, Mining, Manufacturing, Construction, Electricity, Transport services, Other services
<b>168 Regional Activities</b> (7 Activities X 24 Regions)	Agriculture, Mining, Manufacturing, Construction, Electricity, Transport services, Other services
<b>2 Factors</b>	Labour, Capital
<b>48 Regional Households</b> (2 Households X 24 Regions)	Rural, Urban
<b>2 Enterprises</b>	Private enterprise, Public enterprise
<b>5 Central taxes</b>	Direct tax on households, Corporation tax, Tariffs, Export tax, Domestic indirect tax
<b>48 State taxes</b>	State-wise direct tax on households, State-wise indirect tax
<b>25 Government accounts</b>	Central, 24 State Governments
<b>25 Interest payment accounts</b>	Central, 24 State Governments
<b>1 Savings account</b>	Savings by all agents (Households, Government, Rest of World)
<b>28 investment accounts</b>	GFCF by Private enterprise, Public enterprise, Central government, 24 State Governments; 1 Changes in stocks account
<b>1 RoW account</b>	Rest of world accounts

Source: Authors

The main features of the RSAM are as follows:

- It follows an activity-commodity approach to distinguish production activities at the state-level. That is, in each state various production activities take decisions on input usage and factor payments to produce a set of commodities. The commodities, however, are homogenous across states and hence national level commodity output is the sum of state-level outputs.
- Rural and Urban households in the RSAM are located in the states. They earn income from the fixed endowments of factors (labour and capital) that they own, and from various transfer payments they receive from the government and abroad. Out of this income, they pay direct taxes, consume and save. The pattern of income earned and expenditure incurred differ from one state to another.
- It distinguishes the Central and State Governments through explicit treatment of different types of taxes that they impose and the non-tax revenue that they receive from their ownership of public enterprises. Besides, the RSAM also explicitly tracks the devolution of revenue by the type of Central tax and the Grants from Central to State Governments. On the expenditure side,

consumption, savings and fixed capital formation, as well as interest and transfer payments made by Central and State Governments to households are explicitly accounted.

- The RSAM maintains consistency between the state-level and national / macro level values of all the variables.

Ganesh-Kumar and Panda (forthcoming) adopt a three stage top-down approach to develop their RSAM. In the first stage a “Macro-SAM” (MSAM) that reports the aggregates of all the flows for the economy as a whole is developed. In the second stage, a “National-SAM” (NSAM) that distinguishes production and consumption of various commodities, the production activities/sectors, factors of production, enterprises, various types of taxes, and other transfer payments, is developed. In the third stage, the RSAM that reports the state-level values of the various variables are disaggregated. This top down approach is adopted in preference to the bottom-up method commonly used in the UN System of National Accounts to ensure that the final RSAM is consistent with the published national accounts aggregates. The Appendix 2 describes in detail the structure of the RSAM, the data base and the procedure used for its construction.

## 2.2 SAM multiplier analysis<sup>2</sup>

As mentioned earlier, the study uses the SAM multiplier methodology to assess the impacts of alternative fiscal policy choices. The SAM multiplier analysis is essentially an economic model that assumes that all economic relationships are linear in nature, and that the prices remain fixed. Thus, in this model, there are no behavioural responses to shocks either by producers that result in a change in their input requirements or by consumers affecting their pattern of consumption and saving. Assuming constancy in the behaviour of agents, the model allows tracking the impact of shocks to the system. Thus, the analysis is similar to that using an Input-Output model.

SAM multiplier analysis can be used to study the impacts of shocks to the system such as changes in the exogenous demand, inter-agent transfers, etc., either singly or in some combination. These shocks typically have both “direct” and “indirect” effects on the economy. Direct effects are those that are felt by sectors / agents who experience the shock first, such as the sector witnessing a change in exogenous demand or the agent whose transfer payments / receipts change. Indirect effects are those that are felt by other sectors / agents in the economy due to the inter-sectoral and inter-agent linkages that are natural to any economy. The multiplier analysis helps measure the extent to which the direct effects are amplified or multiplied due to the prevailing linkages in the economy and provides an estimate of the total impacts of both direct and indirect effects.

When the analysis assumes that there are no limits on factor / resource availability so that any change in the demand can be met through changes in supplies, then it is called “unconstrained” multiplier analysis. Following Breisinger et al. (2010), the unconstrained multiplier can be described using matrix algebra as follows: Let a simple hypothetical SAM be as given in Table 2.2. Dividing each column of the SAM (except the exogenous demand column) by the respective column total gives the coefficients matrix, denoted **M** (Table 2.3).

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<sup>2</sup> This Section draws from Breisinger et al. (2010). For more on SAM multiplier analysis, see Pyatt and Round (1979), Defourny and Thorbecke (1984), and Round (2003).

**Table 2.2: Typical entries in a simple hypothetical SAM**

	Activities		Commodities		Factors	Households	Exogenous demand	Total
	A1	A2	C1	C2	F	H	E	
<b>A1</b>			X <sub>1</sub>					X <sub>1</sub>
<b>A2</b>				X <sub>2</sub>				X <sub>2</sub>
<b>C1</b>	Z <sub>11</sub>	Z <sub>12</sub>				C <sub>1</sub>	E <sub>1</sub>	Z <sub>1</sub>
<b>C2</b>	Z <sub>21</sub>	Z <sub>22</sub>				C <sub>2</sub>	E <sub>2</sub>	Z <sub>2</sub>
<b>F</b>	V <sub>1</sub>	V <sub>2</sub>						V
<b>H</b>					V <sub>1</sub> + V <sub>2</sub>			Y
<b>E</b>			L <sub>1</sub>	L <sub>2</sub>		S		E
<b>Total</b>	X <sub>1</sub>	X <sub>2</sub>	Z <sub>1</sub>	Z <sub>2</sub>	V	Y	E	

Source: Breisinger et al. (2010)

Notes: X<sub>1</sub> and X<sub>2</sub> are gross output of each activity; Z<sub>1</sub> and Z<sub>2</sub> = total demand for each commodity; V = total factor income (equal to household income); Y = total household income (equal to total factor income); E = exogenous components of demand (i.e., government, investment and exports).

**Table 2.3: SAM coefficients matrix-M**

	Activities		Commodities		Factors	Households	Exogenous demand	Total
	A1	A2	C1	C2	F	H	E	
<b>A1</b>			b <sub>1</sub> = X <sub>1</sub> /Z <sub>1</sub>					X <sub>1</sub>
<b>A2</b>			b <sub>2</sub> = X <sub>2</sub> /Z <sub>2</sub>					X <sub>2</sub>
<b>C1</b>	a <sub>11</sub> = Z <sub>11</sub> /X <sub>1</sub>	a <sub>12</sub> = Z <sub>12</sub> /X <sub>2</sub>				c <sub>1</sub> = C <sub>1</sub> /Y	E <sub>1</sub>	Z <sub>1</sub>
<b>C2</b>	a <sub>21</sub> = Z <sub>21</sub> /X <sub>1</sub>	a <sub>22</sub> = Z <sub>22</sub> /X <sub>2</sub>				c <sub>2</sub> = C <sub>2</sub> /Y	E <sub>2</sub>	Z <sub>2</sub>
<b>F</b>	v <sub>1</sub> = V <sub>1</sub> /X <sub>1</sub>	v <sub>2</sub> = V <sub>2</sub> /X <sub>2</sub>						V
<b>H</b>					1			Y
<b>E</b>			l <sub>1</sub> = L <sub>1</sub> /Z <sub>1</sub>	l <sub>2</sub> = L <sub>2</sub> /Z <sub>2</sub>		s = S/Y		E
<b>Total</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>E</b>	

Source: Breisinger et al. (2010)

Notes: a = technical coefficients (i.e., input or intermediate shares in production); b = share of domestic output in total demand; v = the share of value-added or factor income in gross output; l = share of the value of total demand from imports or commodity taxes; c = household consumption expenditure shares; s = household savings rate (i.e., savings as a share of total household income).

In terms of these coefficients, the total demand can then be written as,

$$Z_1 = a_{11}X_1 + a_{12}X_2 + c_1Y + E_1$$

$$Z_2 = a_{21}X_1 + a_{22}X_2 + c_2Y + E_2$$

The sectoral output is given by,

$$X_1 = b_1Z_1$$

$$X_2 = b_2Z_2$$

And, household income is simply,

$$Y = v_1X_1 + v_2X_2 = v_1b_1Z_1 + v_2b_2Z_2$$



Substituting the equations for output and household income in the equations for total demand, and after algebraic manipulations we get,

$$(1 - a_{11}b_1 - c_1v_1b_1)Z_1 + (-a_{12}b_2 - c_1v_2b_2)Z_2 = E_1$$

$$(-a_{21}b_1 - c_2v_1b_1)Z_1 + (1 - a_{22}b_2 - c_2v_2b_2)Z_2 = E_2$$

The above equations can be written in matrix form as,

$$\begin{bmatrix} 1 - a_{11}b_1 - c_1v_1b_1 & -a_{12}b_2 - c_1v_2b_2 \\ -a_{21}b_1 - c_2v_1b_1 & 1 - a_{22}b_2 - c_2v_2b_2 \end{bmatrix} \begin{pmatrix} Z_1 \\ Z_2 \end{pmatrix} = \begin{pmatrix} E_1 \\ E_2 \end{pmatrix}$$

Or simply,

$$(\mathbf{I} - \mathbf{M})\mathbf{Z} = \mathbf{E} \Rightarrow (\mathbf{I} - \mathbf{M})^{-1}\mathbf{E} = \mathbf{Z}$$

Where,  $\mathbf{I}$  is an identity matrix,  $\mathbf{M}$  is the SAM coefficients matrix (Table 2.3),  $\mathbf{Z}$  is the vector of sectoral output, and  $\mathbf{E}$  is the vector of exogenous demands. The above equation suggests that, taking into account all the direct and indirect effects, total demand is simply multiplier matrix times the exogenous demand.<sup>3</sup>

The above set of equations demonstrates how the impacts of a shock to the exogenous demand can be analysed. This procedure can be extended to study the impacts of various other shocks that may represent alternative policy choices. This study follows the above unconstrained multiplier analysis procedure to assess the impact of an alternative fiscal policy choices that involve shocking different transfer payments (such as from Central government to a particular State government) and/or other demand elements. The next section describes the scenarios developed to address the objectives of the study.

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<sup>3</sup> Note the similarity of this equation with the Input-Output model.

### 3 Description of scenarios

We carry out the following 5 sets of experiments as described below. The first three sets involve a reduction of Central government's savings and investment, which is then diverted for increasing current expenditure either of the government (Set 1) or of households (Sets 2 and 3). In contrast, Sets 4 and 5 study the impacts of an increase in the savings and investment of states financed either through a Central government's consumption expenditure (Set-4) or through a reduction in the state's interest payments (Set-5).

**Set-1:** In this set of experiments, the Centre cuts down its savings and investment by ₹ 1000 Crores and transfers the amount to a particular state for using this amount for additional government consumption expenditure. For instance, in Set-1-Run-AP, the Centre transfers ₹ 1000 Crores to Andhra Pradesh government, which in turn uses it to raise its consumption expenditure by the same amount. Similarly, in the next run Set-1-Run-AS, the Centre does so for Assam and so on. The experiment is carried out for all the states.

**Set-2:** In this set of experiments, again the Centre cuts down its savings and investment by ₹ 1000 Crores, and transfers this amount to a particular state that in turn transfer the amount to rural household within the state. For example, in Set-2-Run-AP, the Centre transfers ₹ 1000 Crores to Andhra Pradesh government, which in turn transfers the amount to rural household within Andhra Pradesh. Similarly, Set-2-Run-AS is for increasing transfers to rural household in Assam, and so on.

**Set-3:** This set of experiments is similar to the Set-2 experiments, except that the final beneficiary is urban household within a particular state. Thus, for instance, in Set-3 Run-CG, the Centre cuts down its savings and investment by ₹ 1000 Crores, and transfers this amount to Chhattisgarh government, which in turn transfers the amount to urban household of Chhattisgarh, and so on.

**Set-4:** In this set of experiments, the Centre cuts down its consumption expenditure by 1000 Crores, and the Centre transfers this amount to states that in turn increase their respective savings and investment. For example, the Centre transfers ₹ 1000 Crores to Odisha government in Set-4 Run-OD for increasing public investment in Odisha and so on.

**Set-5:** Here to the objective is to raise state government savings and investment, but the resource is raised by reducing the interest payment by ₹ 1000 Crores by the concerned government. The reduction in the interest payments could be due to a reduction in the rate of interest and/or through debt management that involves the retirement of some of the high cost debt. Thus, in Set-5-Run-MH, the Maharashtra government reduces its interest payment by ₹ 1000 Crores to increase its savings and investment, and so on. It must be noted that when interest payment is reduced by a particular state government, the recipients of the interest payment, viz., households, suffer a loss in income in the current period, which will have its repercussions on their consumption and savings. The reduction in household interest income is in proportion to their base values. In the RSAM, it is assumed that half of interest payment by a particular state government accrues to households within the state and another half accrues to households outside the state.<sup>4</sup>

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<sup>4</sup> Interest payment by Central government accrues to households all over the country.

## 4 Results

The results for each of these sets of experiments are first illustrated taking the run for one state, viz. RUN-BR for Bihar, as an example. Then, the results across the runs for all the states are compared for each set of experiments to draw some overall conclusions on the fiscal policy options considered here.

### 4.1 Results for Bihar

#### Set-1 results

The effect of transfer of ₹ 1000 Crores to Bihar government for raising its government consumption is documented in Table 4.1. Note that, by construction, this run essentially reflects an expenditure switch policy from centre's investment to government consumption by the concerned state government (Bihar in this case). The structures of investment and government consumption baskets differ and therefore one could expect commodity compositional effects to take place even though the volume of aggregate government expenditure might not change substantially. For example, the first round income effects of various sectoral expenditures would depend on the value added-output ratio of the sectors incurring the expenditure. Note that given the static nature of analysis, only the demand generating implications of government expenditure are captured by the analysis through a Keynesian-Leontief mechanism and the future capacity creation aspect gets ignored. The net direct demand generated in the economy in various sectors leads to indirect demand through intermediate input linkages in the production process as well as subsequent indirect demand from households. The total demand created is met by production response in various sectors both within and outside the state.

Changes in major variables such as household income and government revenue for different states are shown in Table 4.1 for Set-1 Run-BR. An increase in consumption expenditure by government of Bihar raises household income in both rural and urban areas of Bihar. But, it also has considerable spillover effects on other states. Also, a state that does not selling any good directly to Bihar may indirectly benefit from sales to another state which has considerable linkage with consumers in Bihar.

Bihar witnesses the highest increase for rural household income (₹ 214 Crores) followed by Uttar Pradesh, Andhra Pradesh and Maharashtra. Although all the states indicate positive gain, the amount is negligible for several states. In case of urban households, the second highest benefit accrues to Bihar (₹ 143 Crores) next to Maharashtra (₹ 181 Crores). Tamil Nadu, Uttar Pradesh and Andhra Pradesh are again among the top end of the beneficiaries. It may be observed from the Appendix Tables 2.5 and 2.7 that Bihar accounts for 4.6% of the national consumption and 3.1% of GDP. Even at the level of agricultural or manufacturing commodities, Bihar's consumption share far exceeds its production share

The GSDP gain figures in Table 4.1 need to be interpreted with caution. In the absence of proper inter-state trade flow data by sectors in India, equilibrium for goods market is considered at the national level. This means that while demand analysis takes into consideration variations in pattern of demand in rural and urban areas by states, supply response takes place at the national level only with different states responding to demand according to base year proportions. Thus, we do not know how much of increase in demand from a particular state is met from production within the

state and, hence, the state-level production and income impacts due to regional demand change cannot be fully captured in the analysis. While this is a serious limitation due to non-availability of data, we have to live with this problem. As we note from Table 4.1, GSDP gain in different states are broadly in proportion to the respective size of the state economy as reflected in the SAM. While the distribution of additional value added across states might be problematic due to inter-state trade flow data, this problem does not arise at the national level in assessing aggregate GDP which rises by ₹ 2370 Crores.

Being a direct beneficiary of central transfer, Bihar government's revenue obviously rises. There is revenue gain for all the states due to buoyancy effect, though the magnitudes are not large. Such indirect gain accrues to Bihar too as revenue changes by more than ₹ 1000 Crores transferred by Centre. All the states together have a revenue gain of ₹ 1213 Crores.

### **Set-2 Results**

The effect of transfer of ₹ 1000 Crores to rural households in Bihar on household income of different states is shown in Table 4.2. The rural households in Bihar directly gain ₹ 1000 Crores due to transfers to them. They spend this amount in proportion to their base year expenditure/savings pattern. The demand generated in the economy in this process is met by production response in various sectors both within and outside the state. In the process, households receive wage and non-wage income from direct and indirect production response. Table 4.2 shows that rural households in Bihar finally gain ₹ 1188 Crores, ₹ 1000 Crores directly and another ₹ 188 Crores indirectly.

Rural households in states other than Bihar too gain indirectly because part of the demand is met from production in other states since demand and supply balance of goods and services takes place at the national level. Such gains will depend on structural features such as pattern of demand and output response from various states. Table 4.2 indicates that, among other states, rural households in UP gain the maximum of ₹ 128 Crores followed by AP ₹ 77 Crores and Maharashtra ₹ 71 Crores. In about half of the states, rural households gain only marginally.

When transfers take place to the rural households, there are positive spillover effects for urban households too due to the fact that a part of the rural demand is met by production in urban areas. Table 4.2 illustrates the results corresponding to the transfers to households in rural Bihar. Urban households in Bihar benefit the most, ₹ 139 Crores. Urban households of Maharashtra benefit almost the same as Bihar followed by Tamil Nadu and Uttar Pradesh. The extent of gain again depends on the demand pattern for urban goods and spatial production pattern of those goods. But, in general states with large size of GSDP tend to gain more.

### **Set-3 Results**

In Set-3 the central transfer of ₹ 1000 Crore is used by the state to transfer the amount to *urban* households rather than to *rural* households as in Set-2. In Set-3 RUN-BR, apart from the direct gain of ₹ 1000 Crores to urban households in Bihar, the indirect gains are again spread across all states depending on the linkage with urban household demand. As Table 4.3 indicates, the major indirect benefits from the urban demand pattern in Bihar accrue to Maharashtra, Tamil Nadu, Uttar Pradesh and Andhra Pradesh. Considering gains to rural households, the major gainers are Bihar, Uttar Pradesh, Maharashtra and West Bengal.

#### **Set 4 Results**

In Set-4, the Centre cuts down its consumption expenditure to enhance public investment by state government. The results on such transfer to Bihar are documented in Table 4.4. There is no direct gain by Bihar households in this run and hence benefits to households get moderated substantially. Surprisingly, even though state investment rises in Bihar, households in Bihar do not derive the maximum benefit. Households in Uttar Pradesh (₹ 277 Crores) and Maharashtra (₹ 270 Crores) receive the maximum benefit in rural and urban areas, respectively. Households in Bihar are the second best gainers. States which contribute more to production of investment goods benefit relatively more from the first round production response which then sets off income and subsequent household demand effect.

#### **Set 5 Results**

Unlike the previous runs, Set-5 does not involve any transfer from the Centre. The Set-5 results relate to state savings and investment being raised by ₹ 1000 Crores by saving on interest payments by the state to households. As mentioned earlier, the reduction in the interest payments could be due to a reduction in the rate of interest and/or through debt management that involves the retirement of some of the high cost debt.

We assume that half of interest payment by state government to households takes place within the state and another half outside the state. Again the illustrative results for Bihar are given in Table 4.5. Households in Bihar lose ₹ 500 Crores from interest payments and households in other states together lose ₹ 500 Crores. As Table 4.5 shows the adverse income effect dominates in all states compared to the positive investment effect. The net effect on household income is a loss of ₹ 1227 Crores in rural areas and ₹ 1717 Crores in urban areas.

Table 4.6 shows how much value of commodity output of Bihar changes across the 5 scenarios for Run-BR. Output of construction contracts in the first 3 sets because of reduction in investment since construction is a pure investment good without any household consumption demand. Machinery demand<sup>5</sup> is also likely to contract due to investment fall, but we do not have a separate machinery sector. Output of manufacturing, which includes machinery, increases in sets 1-3 implying rise in consumption demand more than offsets fall in investment demand. On the other hand, investment demand expansion in set-4, causes both manufacturing and construction sectors to grow. In set-5, construction sector output again increases reflecting investment demand position, but manufacturing output falls due to stronger income effect due to reduction in interest payments receipts.

## **4.2 Comparison across runs**

We have carried out experiments for each of the 24 states/regions in the SAM for all the 5 sets. Tables 4.7 to 4.10 summarise the national level results of various state runs in Sets 1-4. Detailed results for each state for all the runs in all the sets are reported in Appendix 1. The magnitude of national level effects due to transfers to various states differs substantially. For example, the GDP (sum of GSDPs) effect is the maximum at ₹ 3928 Crores when transfers take place to Punjab in Set-1 (Table 7). Other states with high national income effect are Kerala, Union Territories, West Bengal and Tamil Nadu. On the other hand, transfer to Goa has the minimum national impact with a GDP

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<sup>5</sup> About 95% of investment goods originate from machinery (40%) and construction (55%) in India.

effect of ₹ 1509 Crores. The other states with a low GDP impact in Set-1 are North East, Odisha, Madhya Pradesh and Chhattisgarh. Similar pattern could broadly be found for household income - rural or urban- and government revenue.

One would expect that spillover effects would be high for those states which have relatively large manufacturing base such as Maharashtra or Tamil Nadu or Punjab due to their high forward linkages. But, states like Goa, Odisha or Madhya Pradesh where share of mining and quarrying, and construction is comparatively large within industry group will have small spillover effects on other states because these sectors do not produce private consumption goods. Also note that the mineral concentrated states, except for Goa, also belong to the lower end of the states in per capita income scale.

Turning to the results for Sets 2 to 4 documented in Tables 4.8 to 4.10, respectively, the comparative results across states are more or less similar to those in Set-1. Again, the transfer to Punjab, west Bengal, Union Territories, Kerala and Maharashtra have larger national impact and that to Goa, North East, Odisha and Madhya Pradesh have smaller national impact.

Table 4.11 gives the ranking and range of GDP impacts across the 24 runs for Sets 1 to 4. It is seen that the ranking of the impacts are more or less same across Sets 1 to 4. The average GDP impact is highest at ₹ 2746 Cr in Set-1 where Central transfer is used for current consumption by the states. And it is lowest at ₹ 2061 Cr in Set-2 where Central transfer is passed on to rural households within the state. The standard deviation is similar across Sets 1 to 4. However, the coefficient of variation in the GDP impact differs across Sets due to differences in the average. It is lowest in Set-1 (20.7%) and highest in Set-2 (27.6%).

Turning to Set-5, the comparative outcomes for various runs are reported in Table 4.12. This experiment was not carried out for DL and UT as in the base SAM, interest payments by DL was zero while that of UT was less than ₹ 1000 Cr. Hence, this set was carried out for the remaining 22 states only. The magnitude and direct of impacts in all the experiments in this set are similar to those of Set-5 RUN-BR discussed above. That is, there is a loss in GDP, household income and government revenue in all these runs for reasons explained earlier.

**Table 4.1: Results of Set-1 RUN-BR (selected variables), ₹ Crores**

State	Household income		GSDP	Government Revenue
	Rural	Urban		
AP: Andhra Pradesh	107	86	198	17
AS: Assam	27	7	38	6
BR: Bihar	214	143	72	1011
CG: Chattisgarh	19	12	40	5
GA: Goa	2	2	12	2
GJ: Gujarat	55	67	179	10
HR: Haryana	42	35	90	6
HP: Himachal Pradesh	14	3	19	3
JK: Jammu & Kashmir	14	7	19	6
JH: Jharkhand	20	13	44	5
KA: Karnataka	65	72	137	11
KL: Kerala	82	37	91	6
MP: Madhya Pradesh	57	39	93	13
MH: Maharashtra	101	181	359	21
OD: Odisha	31	12	66	9
PB: Punjab	47	31	76	4
RJ: Rajasthan	81	41	121	12
TN: Tamil Nadu	72	95	198	13
UP: Uttar Pradesh	179	93	201	26
UK: Uttarakhand	13	7	29	3
WB: West Bengal	79	69	161	12
NE: North East	14	7	26	9
DL: Delhi	4	48	90	3
UT: Union Territories	3	8	13	0
<b>Total over states</b>	<b>1343</b>	<b>1116</b>	<b>2370</b>	<b>1213</b>

Source: Authors' estimates.

Note: The column total for Government Revenue does not include Central Government's revenue.

**Table 4.2: Results of Set-2 RUN-BR (selected variables), ₹ Crores**

State	Household income		GSDP	Government Revenue
	Rural	Urban		
AP: Andhra Pradesh	77	64	142	12
AS: Assam	19	5	27	4
BR: Bihar	1188	139	51	1008
CG: Chattisgarh	13	9	29	4
GA: Goa	2	2	8	2
GJ: Gujarat	40	51	128	7
HR: Haryana	31	26	64	4
HP: Himachal Pradesh	10	2	14	2
JK: Jammu & Kashmir	10	5	14	4
JH: Jharkhand	13	10	31	4
KA: Karnataka	47	54	98	8
KL: Kerala	61	28	65	4
MP: Madhya Pradesh	41	29	66	10
MH: Maharashtra	71	136	256	15
OD: Odisha	22	9	47	6
PB: Punjab	34	24	55	3
RJ: Rajasthan	58	31	87	9
TN: Tamil Nadu	52	71	141	9
UP: Uttar Pradesh	128	70	144	19
UK: Uttarakhand	10	5	21	2
WB: West Bengal	57	52	115	9
NE: North East	10	5	18	7
DL: Delhi	3	36	64	2
UT: Union Territories	2	6	9	0
<b>Total over states</b>	<b>1998</b>	<b>869</b>	<b>1692</b>	<b>1155</b>

Source: Authors' estimates.

Note: The column total for Government Revenue does not include Central Government's revenue.



**Table 4.3: Results of Set-3 RUN-BR (selected variables), ₹ Crores**

State	Household income		GSDP	Government Revenue
	Rural	Urban		
AP: Andhra Pradesh	91	75	166	17
AS: Assam	23	6	32	6
BR: Bihar	199	1141	60	1012
CG: Chattisgarh	15	10	34	5
GA: Goa	2	2	10	2
GJ: Gujarat	47	59	150	11
HR: Haryana	36	30	75	5
HP: Himachal Pradesh	11	3	16	3
JK: Jammu & Kashmir	12	6	16	6
JH: Jharkhand	16	12	37	5
KA: Karnataka	55	62	115	11
KL: Kerala	71	33	76	6
MP: Madhya Pradesh	48	34	77	14
MH: Maharashtra	84	158	299	22
OD: Odisha	26	11	55	9
PB: Punjab	40	28	64	4
RJ: Rajasthan	68	36	101	12
TN: Tamil Nadu	61	83	165	13
UP: Uttar Pradesh	151	81	168	28
UK: Uttarakhand	11	6	24	3
WB: West Bengal	68	61	134	13
NE: North East	12	7	22	9
DL: Delhi	4	41	75	3
UT: Union Territories	2	7	11	0
<b>Total over states</b>	<b>1153</b>	<b>1991</b>	<b>1982</b>	<b>1221</b>

Source: Authors' estimates.

Note: The column total for Government Revenue does not include Central Government's revenue.

**Table 4.4: Results of Set-4 RUN-BR (selected variables), ₹ Crores**

State	Household income		GSDP	Government Revenue
	Rural	Urban		
AP: Andhra Pradesh	86	70	153	18
AS: Assam	22	6	29	6
BR: Bihar	200	141	56	1011
CG: Chattisgarh	16	10	31	5
GA: Goa	2	2	9	2
GJ: Gujarat	45	55	137	11
HR: Haryana	34	29	69	6
HP: Himachal Pradesh	11	3	15	3
JK: Jammu & Kashmir	12	6	15	5
JH: Jharkhand	18	11	34	5
KA: Karnataka	51	59	106	12
KL: Kerala	63	31	71	7
MP: Madhya Pradesh	47	33	71	13
MH: Maharashtra	85	148	278	22
OD: Odisha	26	11	51	9
PB: Punjab	36	26	58	5
RJ: Rajasthan	65	34	93	12
TN: Tamil Nadu	59	78	154	15
UP: Uttar Pradesh	144	79	155	27
UK: Uttarakhand	11	6	22	3
WB: West Bengal	66	58	124	12
NE: North East	13	7	20	8
DL: Delhi	3	39	70	3
UT: Union Territories	2	7	10	0
<b>Total over states</b>	<b>1114</b>	<b>945</b>	<b>1831</b>	<b>1220</b>

Source: Authors' estimates.

Note: The column total for Government Revenue does not include Central Government's revenue.

**Table 4.5: Results of Set-5 RUN-BR (selected variables), ₹ Crores**

State	Household income		GSDP	Government Revenue
	Rural	Urban		
AP: Andhra Pradesh	-86	-127	-92	-11
AS: Assam	-20	-13	-18	-4
BR: Bihar	-300	-269	-33	-8
CG: Chattisgarh	-12	-16	-19	-4
GA: Goa	-3	-4	-5	-1
GJ: Gujarat	-55	-104	-84	-7
HR: Haryana	-33	-51	-42	-4
HP: Himachal Pradesh	-12	-7	-9	-2
JK: Jammu & Kashmir	-12	-12	-9	-4
JH: Jharkhand	-15	-21	-20	-3
KA: Karnataka	-50	-99	-64	-8
KL: Kerala	-61	-56	-42	-4
MP: Madhya Pradesh	-42	-57	-43	-9
MH: Maharashtra	-93	-257	-166	-16
OD: Odisha	-21	-19	-30	-6
PB: Punjab	-41	-50	-36	-3
RJ: Rajasthan	-61	-63	-57	-8
TN: Tamil Nadu	-61	-134	-91	-9
UP: Uttar Pradesh	-135	-142	-94	-19
UK: Uttarakhand	-11	-12	-14	-2
WB: West Bengal	-82	-118	-75	-9
NE: North East	-16	-16	-12	-6
DL: Delhi	-3	-59	-41	-2
UT: Union Territories	-2	-11	-6	0
<b>Total over states</b>	<b>-1227</b>	<b>-1717</b>	<b>-1101</b>	<b>-148</b>

Source: Authors' estimates.

Note: The column total for Government Revenue does not include Central Government's revenue.

**Table 4.6: Commodity output in Bihar across sets of scenarios for RUN-BR, ₹ Crores**

Commodity	SET-1 RUN-BR	SET-2 RUN-BR	SET-3 RUN- BR	SET-4 RUN -BR	SET-5 RUN -BR
Foodgrains	4.2	5.2	5.3	3.5	-4.6
Other food	14.5	18.0	18.4	12.2	-15.9
Non-food Agriculture	2.2	2.8	2.9	1.9	-2.5
Mining	0.0	0.0	0.0	0.0	0.0
Manufacturing	10.2	7.4	9.6	25.8	-4.0
Construction	-23.7	-25.6	-25.3	30.1	27.2
Electricity	2.3	1.6	1.8	1.2	-0.9
Transport services	8.5	6.3	8.0	6.8	-6.4
Other services	76.8	48.4	57.3	33.6	-28.6
<b>Total</b>	<b>95.1</b>	<b>63.9</b>	<b>78.0</b>	<b>115.1</b>	<b>-35.7</b>

Source: Authors' estimates.

**Table 4.7: National totals of selected variables in Set-1 experiments, ₹ Crores**

Set-1 Run	GDP	Household income		Government Revenue
		Rural	Urban	
RUN-AP	2801	1573	1334	1489
RUN-AS	2469	1350	1097	1419
RUN-BR	2370	1343	1116	1407
RUN-CG	2298	1210	948	1381
RUN-GA	1509	806	672	1242
RUN-GJ	3093	1769	1575	1553
RUN-HR	3093	1719	1456	1542
RUN-HP	2493	1432	1229	1436
RUN-JK	2298	1284	1062	1392
RUN-JH	2472	1370	1153	1425
RUN-KA	2846	1535	1251	1488
RUN-KL	3610	2115	1799	1652
RUN-MP	2242	1204	983	1376
RUN-MH	3129	1739	1494	1551
RUN-OD	2194	1200	962	1367
RUN-PB	3928	2340	2090	1722
RUN-RJ	2535	1411	1195	1438
RUN-TN	3099	1761	1481	1546
RUN-UP	2568	1428	1201	1443
RUN-UK	2649	1459	1238	1458
RUN-WB	3602	2143	1976	1663
RUN-NE	2143	1239	1055	1369
RUN-DL	2853	1398	1028	1468
RUN-UT	3603	1948	1567	1627

Source: Authors' estimates.

Note: Government Revenue column reports the total inclusive of Central Government revenue.

**Table 4.8: National totals of selected variables in Set-2 experiments, ₹ Crores**

Set-2 Run	GDP	Household income		Government Revenue
		Rural	Urban	
RUN-AP	2123	2231	1089	1383
RUN-AS	1793	2005	851	1313
RUN-BR	1692	1998	869	1300
RUN-CG	1589	1851	691	1272
RUN-GA	816	1458	422	1134
RUN-GJ	2412	2424	1328	1447
RUN-HR	2410	2375	1209	1436
RUN-HP	1797	2081	977	1328
RUN-JK	1607	1934	812	1285
RUN-JH	1791	2023	905	1318
RUN-KA	2162	2189	1003	1381
RUN-KL	2887	2752	1539	1542
RUN-MP	1554	1856	734	1269
RUN-MH	2449	2396	1248	1444
RUN-OD	1519	1857	717	1261
RUN-PB	3234	2991	1839	1614
RUN-RJ	1856	2067	948	1331
RUN-TN	2421	2419	1235	1439
RUN-UP	1897	2088	958	1337
RUN-UK	1956	2110	987	1351
RUN-WB	2937	2806	1735	1557
RUN-NE	1465	1896	809	1263
RUN-DL	2182	2062	786	1363
RUN-UT	2918	2602	1319	1520

Source: Authors' estimates.

Note: Government Revenue column reports the total inclusive of Central Government revenue.

**Table 4.9: National totals of selected variables in Set-3 experiments, ₹ Crores**

Set-3 Run	GDP	Household income		Government Revenue
		Rural	Urban	
RUN-AP	2417	1388	2212	1506
RUN-AS	2083	1162	1973	1437
RUN-BR	1982	1153	1991	1424
RUN-CG	1886	1011	1817	1396
RUN-GA	1120	619	1550	1259
RUN-GJ	2702	1581	2453	1569
RUN-HR	2706	1534	2334	1559
RUN-HP	2076	1229	2092	1451
RUN-JK	1875	1077	1923	1407
RUN-JH	2064	1171	2020	1441
RUN-KA	2480	1359	2136	1506
RUN-KL	3158	1898	2654	1664
RUN-MP	1864	1023	1866	1393
RUN-MH	2760	1563	2380	1569
RUN-OD	1818	1018	1843	1385
RUN-PB	3543	2156	2969	1739
RUN-RJ	2141	1220	2069	1455
RUN-TN	2723	1581	2362	1564
RUN-UP	2183	1242	2079	1460
RUN-UK	2254	1268	2112	1475
RUN-WB	3214	1957	2853	1680
RUN-NE	1735	1039	1921	1385
RUN-DL	2466	1212	1905	1486
RUN-UT	3184	1745	2430	1642

Source: Authors' estimates.

Note: Government Revenue column reports the total inclusive of Central Government revenue.

**Table 4.10: National totals of selected variables in Set-4 experiments, ₹ Crores**

Set-4 Run	GDP	Household income		Government Revenue
		Rural	Urban	
RUN-AP	2261	1345	1164	1472
RUN-AS	1929	1121	927	1402
RUN-BR	1831	1114	945	1390
RUN-CG	1759	982	778	1364
RUN-GA	970	578	502	1224
RUN-GJ	2553	1541	1405	1536
RUN-HR	2553	1491	1285	1525
RUN-HP	1954	1204	1058	1418
RUN-JK	1759	1055	891	1375
RUN-JH	1933	1141	982	1408
RUN-KA	2306	1307	1081	1470
RUN-KL	3070	1886	1629	1634
RUN-MP	1702	976	813	1358
RUN-MH	2589	1511	1324	1533
RUN-OD	1655	972	792	1350
RUN-PB	3389	2112	1920	1704
RUN-RJ	1996	1183	1024	1420
RUN-TN	2560	1533	1310	1528
RUN-UP	2029	1199	1031	1426
RUN-UK	2110	1231	1067	1441
RUN-WB	3062	1915	1806	1646
RUN-NE	1603	1011	884	1352
RUN-DL	2313	1170	858	1451
RUN-UT	3064	1720	1396	1609

Source: Authors' estimates.

Note: Government Revenue column reports the total inclusive of Central Government revenue.

**Table 4.11: Ranking of impacts on national GDP across various runs in Set-1 to Set-4**

Rank	Set-1	Set-2	Set-3	Set-4
1	PB	PB	PB	PB
2	KL	WB	WB	KL
3	UT	UT	UT	UT
4	WB	KL	KL	WB
5	MH	MH	MH	MH
6	TN	TN	TN	TN
7	GJ	GJ	HR	GJ
8	HR	HR	GJ	HR
9	DL	DL	KA	DL
10	KA	KA	DL	KA
11	AP	AP	AP	AP
12	UK	UK	UK	UK
13	UP	UP	UP	UP
14	RJ	RJ	RJ	RJ
15	HP	HP	AS	HP
16	JH	AS	HP	JH
17	AS	JH	JH	AS
18	BR	BR	BR	BR
19	JK	JK	CG	JK
20	CG	CG	JK	CG
21	MP	MP	MP	MP
22	OD	OD	OD	OD
23	NE	NE	NE	NE
24	GA	GA	GA	GA
Max impact ₹ Cr	3928	3234	3543	3389
Min impact ₹ Cr	1509	816	1120	970
Ave impact ₹ Cr	2746	2061	2351	2206
Std Dev ₹ Cr	569	568	568	569
CV (%)	20.7	27.6	24.1	25.8

Source: Authors' estimates.

Note: In this Table, PB in column 2 refers to RUN-PB as per the specification of Set-1 described above, and so on.



**Table 4.12: National totals of selected variables in Set-5 experiments, Rs.Crores**

Set-5 Run	GDP	Household income		Government Revenue
		Rural	Urban	
RUN-AP	-1101	-1231	-1714	-278
RUN-AS	-1101	-1229	-1715	-278
RUN-BR	-1101	-1227	-1717	-278
RUN-CG	-1086	-1224	-1709	-277
RUN-GJ	-1098	-1230	-1713	-278
RUN-HR	-1099	-1231	-1713	-278
RUN-HP	-1088	-1224	-1710	-277
RUN-JK	-1088	-1224	-1710	-277
RUN-JH	-1094	-1227	-1711	-277
RUN-KA	-1103	-1235	-1713	-278
RUN-KL	-1074	-1218	-1707	-276
RUN-MP	-1100	-1231	-1714	-278
RUN-MH	-1101	-1238	-1707	-277
RUN-OD	-1103	-1231	-1716	-278
RUN-PB	-1097	-1229	-1714	-278
RUN-RJ	-1098	-1229	-1715	-278
RUN-TN	-1102	-1235	-1712	-278
RUN-UP	-1103	-1229	-1718	-278
RUN-UK	-1094	-1228	-1712	-277
RUN-WB	-1104	-1230	-1718	-278
RUN-NE	-1095	-1226	-1712	-278

Source: Authors' estimates.

Note: Government Revenue column reports the total inclusive of Central Government revenue.

## 5 Conclusions

In this study, we analyse the macroeconomic impact of state-level fiscal policy choices in the context of fiscal transfers from the Centre to the states using a regional-SAM and unconstrained SAM multiplier model. The unconstrained SAM multiplier model is known to yield larger multiplier effects than versions with capacity constraint.

The study examines the impacts of State governments spending a given amount of resource on alternative uses such as government consumption and investing in the state with resources provided by the Centre or raised by the State governments themselves by reducing current interest payments. Towards this end, we build up a Social Accounting Matrix (SAM) for 2011-12 incorporating the sub-national dimensions. The SAM uses sectoral output, value added, labour employment, factor payments, household consumption, government revenue and expenditure data from various sources on a comparable and consistent basis.

The SAM multiplier model is then used to capture the various inter-sectoral, inter-agent and production-income distribution linkages in the economy. We carry out the analysis for 22 individual states and 2 regional aggregates (the North Eastern states and Union Territories). A major limitation that we confronted in building up of the regional SAM for India relates to lack of data on inter-state commodity trade flows.

The results on fiscal transfer to a particular state for expanding its public consumption or investment indicate substantial spillover effects across states in India. Demand for goods and services generated in a state are met from increased production in not only the concerned state but from other states as well. We find that almost all the states derive positive benefits from increased demand in a state. Similarly, when transfers are made to rural (urban) households, the urban (rural) households also benefit indirectly. The multiplier effects do generate some additional revenue for the state governments apart from direct transfer from the Centre. The gains to other states are broadly in proportion to size of the state's economy.

The magnitude of national level effects due to transfers to various states differs substantially. The national level gains in terms of changes in GDP are high when transfers take place to states such as Punjab, Kerala, West Bengal or Tamil Nadu. These are developed states with a relatively higher share of manufacturing. On the other hand, when transfers take place to states like Goa, Odisha, Madhya Pradesh and Chhattisgarh, the GDP impact is low due to small spillover effects on other states. These states have a comparatively large share of mining and quarrying, and construction within industrial sector.

Since the states with large spillover effects are also more developed states, the results in a way imply that transfers to the developed states will normally have relatively more favourable impact on GDP. Thus, if central transfers to states are visualised as an instrument of equity, then growth objective might have to be compromised in some instances such as transfers to Odisha, Madhya Pradesh and Chhattisgarh. While additions to GDP for the less developed states might be small in the short-run, such transfers would benefit the households, many of whom are poor, in these states.

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## Appendix 1: Detailed simulation results

Appendix Table 1.1: Gross state domestic product (₹ Crores) in Set-1 experiments

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	234	206	198	192	126	259	258	208	192	207	238	302	187	261	183	328	212	259	215	221	301	179	238	301
AS	45	40	38	37	24	50	50	40	37	40	46	58	36	50	35	63	41	50	41	42	58	34	46	58
BR	85	75	72	70	46	94	94	76	70	75	87	110	68	95	67	120	77	94	78	80	109	65	87	110
CG	48	42	40	39	26	53	53	42	39	42	48	61	38	53	37	67	43	53	44	45	61	36	49	61
GA	14	12	12	11	7	15	15	12	11	12	14	18	11	15	11	19	12	15	13	13	18	10	14	18
GJ	211	186	179	173	114	233	233	188	173	186	214	272	169	235	165	296	191	233	193	199	271	161	215	271
HR	106	93	90	87	57	117	117	94	87	94	108	137	85	118	83	149	96	117	97	100	136	81	108	136
HP	22	20	19	18	12	25	25	20	18	20	23	29	18	25	18	31	20	25	21	21	29	17	23	29
JK	23	20	19	19	12	25	25	20	19	20	23	29	18	25	18	32	21	25	21	21	29	17	23	29
JH	52	46	44	43	28	58	58	47	43	46	53	67	42	58	41	73	47	58	48	49	67	40	53	67
KA	162	143	137	133	87	179	179	144	133	143	164	209	130	181	127	227	147	179	148	153	208	124	165	208
KL	108	95	91	89	58	119	119	96	89	95	110	139	86	121	85	151	98	119	99	102	139	82	110	139
MP	109	96	93	90	59	121	121	97	90	97	111	141	88	122	86	153	99	121	100	103	141	84	111	141
MH	424	373	359	348	228	468	468	377	348	374	431	546	339	473	332	594	384	469	389	401	545	324	432	545
OD	78	69	66	64	42	86	86	69	64	69	79	100	62	87	61	109	70	86	71	74	100	60	79	100
PB	90	79	76	74	49	100	99	80	74	80	92	116	72	101	71	126	82	100	83	85	116	69	92	116
RJ	143	126	121	117	77	158	158	127	117	126	145	184	114	159	112	200	129	158	131	135	184	109	145	184
TN	234	206	198	192	126	259	259	208	192	207	238	302	187	262	183	328	212	259	215	221	301	179	239	301
UP	237	209	201	195	128	262	262	211	195	210	241	306	190	265	186	333	215	263	218	225	305	182	242	305
UK	34	30	29	28	19	38	38	31	28	30	35	44	28	39	27	48	31	38	32	33	44	26	35	44
WB	190	167	161	156	102	210	210	169	156	168	193	245	152	212	149	266	172	210	174	180	244	145	193	244
NE	31	27	26	25	16	34	34	27	25	27	31	39	24	34	24	43	28	34	28	29	39	23	31	39
DL	106	93	90	87	57	117	117	94	87	93	108	137	85	118	83	149	96	117	97	100	136	81	108	136
UT	15	13	13	12	8	17	17	13	12	13	15	19	12	17	12	21	14	17	14	14	19	12	15	19
<b>Total</b>	<b>2801</b>	<b>2469</b>	<b>2370</b>	<b>2298</b>	<b>1509</b>	<b>3093</b>	<b>3093</b>	<b>2493</b>	<b>2298</b>	<b>2472</b>	<b>2846</b>	<b>3610</b>	<b>2242</b>	<b>3129</b>	<b>2194</b>	<b>3928</b>	<b>2535</b>	<b>3099</b>	<b>2568</b>	<b>2649</b>	<b>3602</b>	<b>2143</b>	<b>2853</b>	<b>3603</b>

Source: Authors' estimates.

**Appendix Table 1.2: Rural household income (₹ Crores) in Set-1 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	240	111	107	101	68	147	142	115	104	113	128	166	101	145	97	187	116	142	118	122	175	98	123	162
AS	33	124	27	26	17	37	36	29	26	29	33	42	26	37	25	47	30	36	30	31	44	25	32	41
BR	103	89	214	82	54	116	114	92	83	90	103	133	81	116	78	148	93	114	94	98	138	78	101	131
CG	23	19	19	81	12	25	25	20	18	20	23	29	18	25	17	32	20	25	21	21	30	17	22	29
GA	3	2	2	2	35	3	3	2	2	2	2	3	2	3	2	4	2	3	2	2	4	2	2	3
GJ	67	57	55	51	35	178	74	60	53	59	66	86	52	76	50	99	61	73	61	64	94	51	62	83
HR	51	44	42	40	27	58	157	46	41	45	51	66	40	57	39	74	46	56	47	48	69	39	49	64
HP	16	14	14	13	9	19	18	141	13	14	16	21	13	19	12	24	15	18	15	16	23	12	16	21
JK	17	14	14	13	9	19	19	15	121	15	17	22	13	19	12	24	15	18	15	16	23	13	16	21
JH	24	20	20	19	12	27	27	21	19	107	24	31	19	27	18	35	22	26	22	23	33	18	23	30
KA	77	67	65	61	41	88	86	69	63	68	156	100	61	87	59	112	70	85	71	73	104	59	75	97
KL	98	85	82	78	53	111	108	88	80	86	98	355	78	110	75	141	89	108	90	93	132	75	95	123
MP	69	59	57	54	36	78	76	61	56	60	69	89	114	78	52	99	62	76	63	65	93	52	67	87
MH	122	104	101	94	64	141	136	109	97	107	121	158	95	225	91	180	110	134	111	116	170	92	114	152
OD	37	32	31	29	20	42	41	33	30	33	37	48	29	42	126	54	34	41	34	35	50	28	36	47
PB	56	48	47	44	30	64	62	50	45	49	56	72	44	63	42	298	51	61	51	53	77	43	53	70
RJ	97	83	81	76	51	110	107	86	78	85	97	125	76	109	73	140	177	106	88	92	130	74	93	122
TN	87	75	72	68	46	100	96	78	70	76	87	112	68	99	66	127	79	249	79	83	119	66	83	109
UP	215	185	179	170	114	244	238	192	173	189	215	277	169	242	163	310	194	236	290	203	290	163	208	271
UK	16	14	13	13	9	19	18	15	13	14	16	21	13	18	12	24	15	18	15	90	22	12	16	20
WB	97	82	79	74	51	112	107	87	77	85	95	125	75	110	71	143	87	106	88	92	289	73	89	119
NE	18	15	14	13	9	21	20	16	14	15	17	23	14	20	13	27	16	19	16	17	25	142	16	22
DL	5	4	4	4	3	6	5	4	4	4	5	6	4	6	4	7	4	5	5	5	7	4	5	6
UT	3	3	3	3	2	4	4	3	3	3	3	4	3	4	2	5	3	4	3	3	4	2	3	117
<b>Total</b>	<b>1573</b>	<b>1350</b>	<b>1343</b>	<b>1210</b>	<b>806</b>	<b>1769</b>	<b>1719</b>	<b>1432</b>	<b>1284</b>	<b>1370</b>	<b>1535</b>	<b>2115</b>	<b>1204</b>	<b>1739</b>	<b>1200</b>	<b>2340</b>	<b>1411</b>	<b>1761</b>	<b>1428</b>	<b>1459</b>	<b>2143</b>	<b>1239</b>	<b>1398</b>	<b>1948</b>

Source: Authors' estimates.

**Appendix Table 1.3: Urban household income (₹ Crores) in Set-1 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	217	87	86	77	55	127	117	95	83	92	102	136	80	122	75	162	96	115	96	101	157	80	89	126
AS	9	103	7	6	5	11	10	8	7	8	9	12	7	11	6	14	8	10	8	9	14	7	7	11
BR	18	14	143	12	9	22	20	16	14	16	17	23	13	21	12	28	16	19	16	17	28	13	14	21
CG	14	12	12	73	8	17	16	13	11	13	14	18	11	16	10	22	13	16	13	14	21	11	12	17
GA	3	2	2	2	35	4	3	3	2	3	3	4	2	3	2	5	3	3	3	3	5	2	2	3
GJ	83	68	67	60	43	201	92	75	65	72	79	106	62	96	58	128	75	90	75	79	124	63	69	98
HR	43	36	35	32	23	52	149	39	34	38	42	56	33	50	31	66	39	47	39	41	64	33	37	52
HP	4	3	3	3	2	5	4	130	3	3	4	5	3	5	3	6	4	4	4	4	6	3	3	4
JK	8	7	7	6	4	10	9	7	114	7	8	11	6	10	6	13	7	9	7	8	13	6	6	10
JH	17	14	13	12	9	20	19	15	13	101	16	22	13	19	12	26	15	18	15	16	25	13	14	20
KA	88	73	72	65	46	106	98	80	69	77	164	113	67	101	63	134	80	96	80	84	130	67	76	106
KL	46	38	37	33	24	56	51	42	36	40	44	288	35	53	33	71	42	50	42	44	69	35	39	55
MP	49	40	39	35	25	59	54	44	38	43	47	63	97	56	35	74	44	53	44	46	72	37	41	58
MH	224	184	181	164	117	268	248	202	175	195	215	287	170	343	160	340	202	243	203	213	330	170	191	267
OD	15	12	12	11	8	19	17	14	12	13	15	20	11	18	108	24	14	17	14	15	23	11	13	18
PB	39	32	31	28	20	47	43	35	30	34	37	50	29	45	27	277	35	42	35	37	59	29	32	46
RJ	51	41	41	36	26	61	56	46	39	44	48	65	38	58	36	78	135	55	46	48	76	38	42	60
TN	117	96	95	85	61	140	130	105	92	102	113	150	89	134	83	178	106	280	106	111	173	89	100	140
UP	116	95	93	83	60	140	129	104	90	101	111	149	87	134	82	178	105	126	199	110	174	88	97	138
UK	9	7	7	6	5	11	10	8	7	8	8	11	6	10	6	13	8	9	8	82	13	7	7	10
WB	86	70	69	61	45	106	96	78	67	75	82	111	64	100	60	135	78	93	78	82	286	65	69	101
NE	9	7	7	6	5	12	10	8	7	8	9	12	7	11	6	15	8	10	8	9	15	136	7	10
DL	58	49	48	44	31	69	65	53	46	51	57	75	45	67	42	88	53	64	53	56	84	44	52	71
UT	10	8	8	8	5	12	11	9	8	9	10	13	8	12	7	15	9	11	9	10	15	8	9	125
<b>Total</b>	<b>1334</b>	<b>1097</b>	<b>1116</b>	<b>948</b>	<b>672</b>	<b>1575</b>	<b>1456</b>	<b>1229</b>	<b>1062</b>	<b>1153</b>	<b>1251</b>	<b>1799</b>	<b>983</b>	<b>1494</b>	<b>962</b>	<b>2090</b>	<b>1195</b>	<b>1481</b>	<b>1201</b>	<b>1238</b>	<b>1976</b>	<b>1055</b>	<b>1028</b>	<b>1567</b>

Source: Authors' estimates.

**Appendix Table 1.4: Government revenue (₹ Crores) in Set-1 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
Central	231	201	195	183	118	259	255	208	188	203	231	305	179	259	176	335	208	257	210	217	309	178	223	296
AP	1020	17	17	16	10	23	23	18	16	18	21	28	16	23	15	31	18	23	19	19	28	15	20	27
AS	7	1006	6	6	4	8	8	6	6	6	7	10	6	8	5	11	6	8	6	7	10	5	7	9
BR	13	11	1011	10	6	15	14	11	10	11	13	17	10	14	9	19	11	14	12	12	18	10	12	16
CG	7	6	5	1005	3	7	7	6	5	6	7	9	5	7	5	10	6	7	6	6	9	5	6	8
GA	3	3	2	2	1001	3	3	3	2	3	3	4	2	3	2	4	3	3	3	3	4	2	3	4
GJ	12	10	10	10	6	1014	14	11	10	11	12	17	9	14	9	19	11	14	11	12	17	9	12	16
HR	7	6	6	5	3	8	1007	6	5	6	7	9	5	8	5	10	6	7	6	6	9	5	6	9
HP	4	3	3	3	2	4	4	1003	3	3	4	5	3	4	3	6	4	4	4	4	5	3	4	5
JK	7	6	6	5	3	8	8	6	1006	6	7	9	5	8	5	10	6	8	6	7	9	5	7	9
JH	6	5	5	5	3	7	6	5	5	1005	6	8	4	7	4	9	5	7	5	5	8	4	6	8
KA	13	11	11	10	6	15	15	12	11	12	1013	18	10	15	10	21	12	15	12	13	19	10	13	17
KL	7	6	6	6	3	9	8	6	6	6	7	1010	6	8	5	11	7	8	7	7	10	5	7	10
MP	16	14	13	12	8	18	18	14	13	14	16	21	1012	18	12	24	14	18	15	15	22	12	15	20
MH	25	21	21	19	12	29	28	22	20	22	25	34	19	1029	19	39	22	28	23	24	35	18	23	32
OD	11	9	9	8	5	12	12	10	9	9	11	14	8	12	1008	16	10	12	10	10	14	8	10	14
PB	5	4	4	4	2	6	6	5	4	4	5	7	4	6	4	1008	5	6	5	5	7	4	5	7
RJ	14	12	12	11	7	16	16	13	11	12	14	19	11	16	11	21	1013	16	13	13	19	11	14	18
TN	16	13	13	12	7	18	18	14	12	14	16	22	12	18	12	24	14	1018	14	15	22	12	15	21
UP	32	27	26	25	15	36	35	28	25	28	32	43	24	36	24	48	28	36	1029	30	44	24	30	41
UK	3	3	3	3	2	4	4	3	3	3	3	4	2	4	2	5	3	4	3	1003	4	2	3	4
WB	14	12	12	11	7	16	16	12	11	12	14	19	11	16	10	21	12	16	13	13	1019	10	13	18
NE	11	9	9	8	5	12	12	10	9	9	11	14	8	12	8	15	10	12	10	10	14	1008	10	14
DL	3	3	3	2	1	4	4	3	2	3	3	4	2	4	2	5	3	4	3	3	5	2	1003	4
UT	1	0	0	0	0	1	1	0	0	0	1	1	0	1	0	1	0	1	0	0	1	0	1	1001
<b>Total</b>	<b>1489</b>	<b>1419</b>	<b>1407</b>	<b>1381</b>	<b>1242</b>	<b>1553</b>	<b>1542</b>	<b>1436</b>	<b>1392</b>	<b>1425</b>	<b>1488</b>	<b>1652</b>	<b>1376</b>	<b>1551</b>	<b>1367</b>	<b>1722</b>	<b>1438</b>	<b>1546</b>	<b>1443</b>	<b>1458</b>	<b>1663</b>	<b>1369</b>	<b>1468</b>	<b>1627</b>

Source: Authors' estimates.

**Appendix Table 1.5: Gross state domestic product (₹ Crores) in Set-2 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	178	150	142	133	68	202	202	150	135	150	181	241	130	205	127	270	155	203	159	164	246	123	182	244
AS	34	29	27	25	13	39	39	29	26	29	35	46	25	39	24	52	30	39	30	31	47	24	35	47
BR	64	54	51	48	24	73	73	54	48	54	65	87	47	74	46	98	56	73	57	59	89	44	66	88
CG	36	30	29	27	14	41	41	30	27	30	37	49	26	42	26	55	31	41	32	33	50	25	37	50
GA	10	9	8	8	4	12	12	9	8	9	11	14	8	12	7	16	9	12	9	10	14	7	11	14
GJ	160	136	128	120	62	182	182	136	122	136	163	218	118	185	115	244	140	183	143	148	222	111	165	220
HR	80	68	64	60	31	91	91	68	61	68	82	109	59	93	58	122	70	92	72	74	111	56	83	111
HP	17	14	14	13	6	19	19	14	13	14	17	23	12	20	12	26	15	19	15	16	23	12	17	23
JK	17	14	14	13	7	19	19	15	13	14	17	23	13	20	12	26	15	20	15	16	24	12	18	24
JH	40	33	31	30	15	45	45	33	30	33	40	54	29	46	28	60	35	45	35	36	55	27	41	54
KA	123	104	98	92	47	139	139	104	93	104	125	167	90	142	88	187	107	140	110	113	170	85	126	169
KL	82	69	65	61	31	93	93	69	62	69	83	111	60	94	58	124	71	93	73	75	113	56	84	112
MP	83	70	66	62	32	94	94	70	63	70	84	113	61	96	59	126	72	95	74	76	115	57	85	114
MH	321	271	256	240	123	365	364	272	243	271	327	437	235	370	229	489	280	366	287	296	444	221	330	441
OD	59	50	47	44	23	67	67	50	45	50	60	80	43	68	42	90	52	67	53	54	82	41	61	81
PB	69	58	55	52	27	78	78	58	52	58	70	93	51	79	50	104	60	78	62	63	95	48	70	94
RJ	109	92	87	81	42	123	123	92	82	92	111	147	80	125	78	165	95	124	97	100	150	75	111	149
TN	177	149	141	132	68	201	201	150	134	149	180	241	129	204	126	270	155	202	158	163	245	122	182	244
UP	180	152	144	135	69	205	204	153	136	152	183	245	132	208	129	274	157	205	161	166	249	124	185	247
UK	26	22	21	20	10	30	30	22	20	22	27	36	19	30	19	40	23	30	23	24	36	18	27	36
WB	144	122	115	108	55	164	164	122	109	122	147	196	105	166	103	219	126	164	129	133	199	99	148	198
NE	23	19	18	17	9	26	26	20	17	19	24	31	17	27	16	35	20	26	21	21	32	16	24	32
DL	80	67	64	60	30	91	91	68	60	67	81	109	58	92	57	122	70	91	71	74	111	55	82	110
UT	11	10	9	9	4	13	13	10	9	10	12	16	8	13	8	17	10	13	10	11	16	8	12	16
<b>Total</b>	<b>2123</b>	<b>1793</b>	<b>1692</b>	<b>1589</b>	<b>816</b>	<b>2412</b>	<b>2410</b>	<b>1797</b>	<b>1607</b>	<b>1791</b>	<b>2162</b>	<b>2887</b>	<b>1554</b>	<b>2449</b>	<b>1519</b>	<b>3234</b>	<b>1856</b>	<b>2421</b>	<b>1897</b>	<b>1956</b>	<b>2937</b>	<b>1465</b>	<b>2182</b>	<b>2918</b>

Source: Authors' estimates.



**Appendix Table 1.6: Rural household income (₹ Crores) in Set-2 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	1210	81	77	70	38	117	113	85	74	83	98	135	71	116	68	156	87	112	88	92	146	68	94	132
AS	25	1115	19	17	9	29	28	21	18	21	25	34	18	29	17	39	21	28	22	23	36	17	24	33
BR	77	63	1188	55	28	90	88	65	57	64	77	106	55	90	52	122	67	88	68	71	112	52	76	105
CG	17	14	13	1075	6	20	19	14	12	14	17	23	12	20	11	27	15	19	15	15	24	11	17	23
GA	2	2	2	1	1034	2	2	2	1	2	2	3	1	2	1	3	2	2	2	2	3	1	2	3
GJ	52	42	40	36	20	1163	59	45	38	43	51	70	37	61	35	84	45	58	46	48	79	36	47	68
HR	39	32	31	28	15	46	1145	34	29	33	39	53	28	46	27	62	34	44	35	36	57	27	37	52
HP	13	10	10	9	5	15	14	1137	9	10	12	17	9	15	8	20	11	14	11	12	19	9	12	17
JK	13	10	10	9	5	15	15	11	1117	11	13	17	9	15	8	20	11	14	11	12	19	9	12	17
JH	17	13	13	12	6	21	20	15	12	1100	17	24	12	21	11	29	15	20	15	16	26	11	17	24
KA	60	49	47	43	23	70	68	51	45	50	1138	81	43	70	41	94	52	68	53	55	87	41	57	79
KL	77	64	61	55	31	89	86	65	58	65	76	1332	56	89	54	119	67	86	68	71	110	54	73	101
MP	52	43	41	37	20	62	60	45	39	44	52	71	1097	61	36	83	46	59	46	48	77	36	51	70
MH	93	74	71	64	34	112	106	80	68	77	92	127	65	1196	61	151	81	105	82	86	141	63	86	123
OD	28	23	22	20	10	33	32	24	21	23	28	38	20	33	1116	44	24	32	25	26	41	19	27	38
PB	44	36	34	31	17	52	49	38	33	37	43	59	31	51	30	1286	38	49	39	41	65	31	41	57
RJ	74	60	58	53	28	87	84	63	55	62	74	101	53	86	51	116	1154	84	66	68	108	51	71	99
TN	67	55	52	47	26	80	76	57	50	56	66	91	48	79	46	106	59	1229	60	62	99	46	63	89
UP	164	135	128	117	63	193	187	140	122	138	164	224	117	192	113	259	144	186	1240	152	240	113	158	220
UK	12	10	10	9	5	15	14	11	9	10	12	17	9	15	8	20	11	14	11	1086	18	8	12	16
WB	75	60	57	51	29	90	85	64	55	62	73	102	52	88	49	121	65	84	66	69	1268	51	67	97
NE	13	10	10	9	5	16	15	12	10	11	13	19	9	16	9	22	12	15	12	12	21	1138	12	18
DL	4	3	3	3	2	4	4	3	3	3	4	5	3	4	3	6	3	4	3	4	5	3	1004	5
UT	2	2	2	2	1	3	3	2	2	2	2	3	2	3	2	4	2	3	2	2	4	2	2	1116
<b>Total</b>	<b>2231</b>	<b>2005</b>	<b>1998</b>	<b>1851</b>	<b>1458</b>	<b>2424</b>	<b>2375</b>	<b>2081</b>	<b>1934</b>	<b>2023</b>	<b>2189</b>	<b>2752</b>	<b>1856</b>	<b>2396</b>	<b>1857</b>	<b>2991</b>	<b>2067</b>	<b>2419</b>	<b>2088</b>	<b>2110</b>	<b>2806</b>	<b>1896</b>	<b>2062</b>	<b>2602</b>

Source: Authors' estimates.

**Appendix Table 1.7: Urban household income (₹ Crores) in Set-2 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	196	66	64	55	34	106	96	74	61	71	80	113	59	101	54	140	74	94	75	79	137	59	68	105
AS	7	101	5	4	3	9	8	6	5	6	7	10	5	9	4	12	6	8	6	7	12	5	5	9
BR	14	11	139	9	6	19	16	13	10	12	13	19	10	17	9	25	13	16	13	14	24	10	11	17
CG	11	9	9	70	5	14	13	10	8	10	11	15	8	14	7	19	10	13	10	11	18	8	9	14
GA	2	2	2	1	34	3	3	2	2	2	2	3	2	3	1	4	2	3	2	2	4	2	2	3
GJ	67	52	51	43	27	184	76	58	48	56	63	89	46	79	42	111	59	74	59	62	109	47	53	82
HR	35	27	26	22	14	43	140	30	25	29	33	46	24	41	22	57	30	38	31	32	55	24	28	43
HP	3	2	2	2	1	4	4	129	2	3	3	4	2	4	2	6	3	4	3	3	6	2	2	4
JK	7	5	5	4	3	9	8	6	112	6	6	9	4	8	4	11	6	7	6	6	11	5	5	8
JH	13	10	10	8	5	17	15	12	9	98	13	18	9	16	8	22	12	15	12	12	22	9	11	16
KA	70	55	54	46	28	87	80	61	51	59	145	94	49	83	45	115	62	78	62	65	112	49	58	88
KL	37	29	28	24	15	47	42	32	27	31	35	279	26	44	24	62	33	41	33	35	60	26	30	46
MP	39	30	29	25	15	49	44	34	28	32	37	52	86	46	25	64	34	43	34	36	62	27	31	48
MH	179	139	136	116	71	223	202	155	129	150	170	239	124	297	114	294	157	198	158	167	286	124	146	222
OD	12	9	9	8	5	15	14	10	9	10	11	16	8	14	105	20	11	13	11	11	20	8	10	15
PB	31	24	24	20	13	40	36	27	23	26	30	42	22	37	20	270	28	35	28	29	51	22	25	38
RJ	41	31	31	26	16	51	46	35	29	34	38	54	28	48	26	68	125	45	36	38	66	28	32	50
TN	93	73	71	61	37	116	106	81	67	78	89	125	65	111	60	154	82	257	83	87	149	65	76	116
UP	92	71	70	59	36	117	105	80	66	77	87	124	63	110	58	154	81	102	175	86	150	64	74	114
UK	7	5	5	4	3	9	8	6	5	6	7	9	5	8	4	12	6	8	6	81	12	5	5	8
WB	70	53	52	43	28	89	79	61	50	58	65	93	47	83	43	117	61	77	61	65	269	48	53	84
NE	8	5	5	4	3	10	9	7	5	6	7	10	5	9	4	13	7	8	7	7	13	134	5	9
DL	46	37	36	31	18	57	52	40	34	39	45	62	32	55	30	75	41	51	41	43	72	32	40	58
UT	8	6	6	5	3	10	9	7	6	7	8	11	6	9	5	13	7	9	7	7	13	6	7	123
<b>Total</b>	<b>1089</b>	<b>851</b>	<b>869</b>	<b>691</b>	<b>422</b>	<b>1328</b>	<b>1209</b>	<b>977</b>	<b>812</b>	<b>905</b>	<b>1003</b>	<b>1539</b>	<b>734</b>	<b>1248</b>	<b>717</b>	<b>1839</b>	<b>948</b>	<b>1235</b>	<b>958</b>	<b>987</b>	<b>1735</b>	<b>809</b>	<b>786</b>	<b>1319</b>

Source: Authors' estimates.

**Appendix Table 1.8: Government revenue (₹ Crores) in Set-2 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
Central	182	152	145	132	68	210	206	158	139	154	181	253	130	209	127	285	159	208	161	167	261	129	174	246
AP	1016	13	12	11	5	19	18	13	11	13	16	23	11	19	10	26	14	18	14	14	23	10	15	22
AS	6	1005	4	4	2	6	6	5	4	5	6	8	4	6	4	9	5	6	5	5	8	4	5	8
BR	10	8	1008	7	3	12	11	9	7	8	10	14	7	12	7	16	9	12	9	9	15	7	9	14
CG	5	4	4	1004	2	6	6	4	4	4	5	7	4	6	3	8	4	6	4	5	7	3	5	7
GA	2	2	2	2	1001	3	3	2	2	2	2	3	2	3	2	4	2	3	2	2	3	2	2	3
GJ	10	8	7	7	3	1012	11	8	7	8	10	14	7	11	6	16	8	11	9	9	15	6	9	13
HR	5	4	4	4	2	6	1006	4	4	4	5	7	4	6	3	9	4	6	5	5	8	3	5	7
HP	3	3	2	2	1	4	3	1003	2	3	3	4	2	4	2	5	3	3	3	3	4	2	3	4
JK	5	4	4	4	2	6	6	5	1004	5	5	8	4	6	4	9	5	6	5	5	8	4	5	7
JH	5	4	4	3	2	5	5	4	3	1004	5	6	3	5	3	7	4	5	4	4	7	3	4	6
KA	10	8	8	7	3	12	12	9	7	8	1010	15	7	12	7	17	9	12	9	9	16	7	10	14
KL	6	5	4	4	2	7	7	5	4	5	6	1008	4	7	4	10	5	7	5	5	9	4	5	8
MP	13	10	10	9	4	15	14	11	9	10	12	18	1009	15	8	20	11	14	11	12	18	9	12	17
MH	20	16	15	14	7	24	23	17	14	16	20	29	14	1024	13	34	17	23	18	18	30	13	18	27
OD	8	7	6	6	3	10	9	7	6	7	8	12	6	10	1006	13	7	10	7	8	12	6	8	11
PB	4	3	3	3	1	5	5	3	3	3	4	6	3	5	3	1007	3	5	4	4	6	3	4	6
RJ	11	9	9	8	4	13	13	9	8	9	11	16	8	13	8	18	1010	13	10	10	16	8	11	15
TN	12	10	9	8	4	15	14	10	9	10	12	18	8	14	8	21	10	1014	11	11	18	8	12	17
UP	25	20	19	17	8	29	28	21	18	21	25	36	17	29	17	41	21	29	1022	23	37	17	23	34
UK	3	2	2	2	1	3	3	2	2	2	3	4	2	3	2	4	2	3	2	1002	4	2	2	3
WB	11	9	9	8	4	13	13	9	8	9	11	16	8	13	7	18	9	13	10	10	1016	7	10	15
NE	8	7	7	6	3	10	9	7	6	7	8	12	6	10	6	13	7	9	7	8	12	1006	8	11
DL	2	2	2	2	1	3	3	2	2	2	2	4	2	3	2	4	2	3	2	2	4	1	1002	3
UT	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	1001
<b>Total</b>	<b>1383</b>	<b>1313</b>	<b>1300</b>	<b>1272</b>	<b>1134</b>	<b>1447</b>	<b>1436</b>	<b>1328</b>	<b>1285</b>	<b>1318</b>	<b>1381</b>	<b>1542</b>	<b>1269</b>	<b>1444</b>	<b>1261</b>	<b>1614</b>	<b>1331</b>	<b>1439</b>	<b>1337</b>	<b>1351</b>	<b>1557</b>	<b>1263</b>	<b>1363</b>	<b>1520</b>

Source: Authors' estimates.

**Appendix Table 1.9: Gross state domestic product (₹ Crores) in Set-3 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	202	174	166	158	94	226	226	174	157	173	207	264	156	231	152	296	179	228	183	189	269	145	206	266
AS	39	33	32	30	18	43	43	33	30	33	40	51	30	44	29	57	34	44	35	36	52	28	40	51
BR	73	63	60	57	33	82	82	63	57	62	75	96	56	84	55	107	65	82	66	68	97	52	75	97
CG	41	35	34	32	19	46	46	35	32	35	42	54	32	47	31	60	36	46	37	38	55	29	42	54
GA	12	10	10	9	6	13	13	10	9	10	12	15	9	13	9	17	10	13	11	11	16	9	12	16
GJ	182	157	150	142	85	204	204	157	142	156	187	238	141	208	137	267	162	205	165	170	242	131	186	240
HR	92	79	75	71	43	102	102	79	71	78	94	120	71	105	69	134	81	103	83	85	122	66	93	121
HP	19	17	16	15	9	22	22	17	15	16	20	25	15	22	15	28	17	22	17	18	26	14	20	25
JK	20	17	16	15	9	22	22	17	15	17	20	26	15	22	15	29	17	22	18	18	26	14	20	26
JH	45	39	37	35	21	50	50	39	35	38	46	59	35	51	34	66	40	51	41	42	60	32	46	59
KA	140	120	115	109	65	156	156	120	108	119	143	183	108	160	105	205	124	157	126	130	186	100	143	184
KL	93	80	76	72	43	104	104	80	72	79	95	122	72	106	70	136	82	105	84	87	124	67	95	123
MP	94	81	77	74	44	106	106	81	73	81	97	123	73	108	71	138	84	106	85	88	126	68	96	124
MH	365	315	299	285	169	409	409	314	283	312	375	478	282	417	275	536	324	412	330	341	486	262	373	482
OD	67	58	55	52	31	75	75	58	52	57	69	88	52	77	50	98	59	76	61	63	89	48	69	88
PB	78	67	64	61	37	87	87	67	61	67	80	102	60	89	59	114	69	88	71	73	104	56	80	103
RJ	124	107	101	96	58	138	138	106	96	106	127	161	95	141	93	181	109	139	112	115	164	89	126	162
TN	202	174	165	157	93	226	226	173	156	172	207	264	155	230	152	296	179	227	182	188	268	144	206	266
UP	205	177	168	160	95	229	229	176	159	175	210	268	158	234	154	300	182	231	185	191	273	147	209	270
UK	30	26	24	23	14	33	33	26	23	25	31	39	23	34	22	44	26	34	27	28	40	21	30	39
WB	164	141	134	128	76	183	184	141	127	140	168	214	126	187	123	240	145	185	148	153	218	118	167	216
NE	26	23	22	20	12	29	29	23	20	22	27	34	20	30	20	39	23	30	24	25	35	19	27	35
DL	91	78	75	71	42	102	102	78	71	78	94	119	70	104	68	134	81	103	82	85	121	65	93	120
UT	13	11	11	10	6	15	15	11	10	11	13	17	10	15	10	19	12	15	12	12	17	9	13	17
<b>Total</b>	<b>2417</b>	<b>2083</b>	<b>1982</b>	<b>1886</b>	<b>1120</b>	<b>2702</b>	<b>2706</b>	<b>2076</b>	<b>1875</b>	<b>2064</b>	<b>2480</b>	<b>3158</b>	<b>1864</b>	<b>2760</b>	<b>1818</b>	<b>3543</b>	<b>2141</b>	<b>2723</b>	<b>2183</b>	<b>2254</b>	<b>3214</b>	<b>1735</b>	<b>2466</b>	<b>3184</b>

Source: Authors' estimates.

**Appendix Table 1.10: Rural household income (₹ Crores) in Set-3 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	224	95	91	84	52	131	126	98	86	96	113	147	85	130	82	171	100	126	102	106	159	81	107	144
AS	28	119	23	21	13	33	32	24	21	24	29	37	21	33	20	43	25	32	25	26	40	20	27	37
BR	89	74	199	66	39	102	100	76	67	75	90	117	67	102	64	134	78	100	80	83	123	62	87	116
CG	19	16	15	77	9	22	22	17	15	16	20	25	15	22	14	29	17	22	17	18	27	14	19	25
GA	2	2	2	2	34	3	3	2	2	2	2	3	2	3	2	4	2	2	2	2	3	2	2	3
GJ	59	49	47	43	27	170	66	51	44	50	58	77	44	69	42	91	52	66	53	55	86	42	54	74
HR	45	38	36	33	21	52	151	39	34	38	45	58	34	51	32	67	40	50	40	42	63	32	43	57
HP	14	12	11	11	7	17	16	139	11	12	14	19	11	17	10	22	13	16	13	13	20	10	13	18
JK	15	12	12	11	7	17	16	13	119	12	15	19	11	17	10	22	13	16	13	14	21	10	14	19
JH	20	16	16	15	8	24	23	17	15	103	20	27	15	24	14	31	18	23	18	19	29	14	19	26
KA	68	57	55	51	32	78	76	59	52	58	147	88	52	78	50	102	60	76	61	64	95	49	65	87
KL	87	73	71	66	41	100	97	75	67	74	87	341	66	100	64	129	77	97	78	81	120	63	83	111
MP	60	50	48	45	27	69	67	52	45	51	60	78	105	69	43	90	53	67	54	56	84	43	58	77
MH	107	88	84	78	48	125	120	92	80	90	106	140	80	210	75	164	94	119	96	100	154	75	99	135
OD	32	27	26	24	14	37	36	28	24	27	32	42	24	37	121	49	28	36	29	30	45	23	31	42
PB	50	41	40	37	24	58	55	43	38	42	49	64	38	57	36	292	44	55	45	47	70	36	46	62
RJ	84	71	68	63	39	97	94	73	64	72	85	110	64	97	61	127	164	94	76	79	118	60	81	108
TN	77	64	61	57	35	89	86	66	58	65	77	100	58	89	55	116	68	239	69	72	108	55	72	97
UP	187	157	151	140	86	216	210	162	143	159	189	245	142	216	136	283	166	210	263	175	262	134	180	241
UK	14	12	11	10	6	16	16	12	11	12	14	19	11	16	10	22	12	16	13	87	20	10	13	18
WB	85	70	68	61	39	101	96	74	64	72	84	111	64	99	60	132	76	95	76	80	278	61	77	107
NE	16	13	12	11	7	18	18	14	12	13	15	20	11	18	11	24	14	17	14	15	23	140	14	20
DL	4	4	4	3	2	5	5	4	3	4	4	6	3	5	3	6	4	5	4	4	6	3	4	6
UT	3	2	2	2	1	3	3	2	2	2	3	4	2	3	2	4	3	3	3	3	4	2	3	117
<b>Total</b>	<b>1388</b>	<b>1162</b>	<b>1153</b>	<b>1011</b>	<b>619</b>	<b>1581</b>	<b>1534</b>	<b>1229</b>	<b>1077</b>	<b>1171</b>	<b>1359</b>	<b>1898</b>	<b>1023</b>	<b>1563</b>	<b>1018</b>	<b>2156</b>	<b>1220</b>	<b>1581</b>	<b>1242</b>	<b>1268</b>	<b>1957</b>	<b>1039</b>	<b>1212</b>	<b>1745</b>

Source: Authors' estimates.

**Appendix Table 1.11: Urban household income (₹ Crores) in Set-3 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	1206	76	75	65	45	117	107	84	71	81	92	123	70	112	65	151	85	105	85	90	147	69	79	114
AS	8	1102	6	5	4	10	9	7	6	7	8	11	6	10	5	13	7	9	7	8	13	6	6	10
BR	17	13	1141	11	8	21	18	15	12	14	16	21	12	20	11	27	15	18	15	16	26	12	13	19
CG	13	10	10	1072	6	16	14	11	10	11	12	17	9	15	9	20	11	14	12	12	20	9	11	16
GA	3	2	2	2	1034	3	3	2	2	2	3	3	2	3	2	4	2	3	2	3	4	2	2	3
GJ	75	60	59	51	35	1193	84	66	55	64	72	97	55	88	51	120	67	82	67	71	116	54	61	89
HR	39	31	30	27	18	48	1144	34	29	33	37	50	28	46	26	62	35	43	35	37	60	28	32	47
HP	4	3	3	2	2	5	4	1130	3	3	3	5	3	4	2	6	3	4	3	3	6	3	2	4
JK	8	6	6	5	4	9	8	7	1113	6	7	10	5	9	5	12	7	8	7	7	12	5	6	9
JH	15	12	12	10	7	19	17	13	11	1099	14	20	11	18	10	24	13	16	13	14	24	11	12	18
KA	79	64	62	55	37	96	89	69	59	67	1155	102	58	93	54	125	70	87	71	74	120	57	67	96
KL	42	33	33	29	20	52	47	37	31	36	40	1283	31	49	28	67	37	46	38	40	65	30	34	50
MP	44	35	34	30	20	54	49	38	32	37	42	57	1092	51	30	69	39	48	39	41	67	31	36	53
MH	201	161	158	139	94	245	225	176	149	170	194	260	148	1321	137	318	179	221	180	189	307	144	168	241
OD	14	11	11	9	6	17	15	12	10	12	13	18	10	16	1107	22	12	15	12	13	21	10	11	16
PB	35	28	28	24	17	44	40	31	26	30	34	46	26	42	24	1274	32	39	32	33	55	25	28	42
RJ	46	36	36	31	21	56	51	40	34	39	44	59	33	54	31	73	1130	50	41	43	71	33	37	54
TN	105	84	83	73	49	128	118	92	78	89	101	136	77	123	72	166	93	1269	94	99	161	76	88	126
UP	104	83	81	71	48	128	117	91	77	88	100	135	76	123	70	167	93	114	1187	98	162	75	85	125
UK	8	6	6	5	4	10	9	7	6	7	7	10	6	9	5	13	7	9	7	1082	12	6	6	9
WB	78	61	61	52	37	98	88	69	57	66	74	101	57	93	52	127	70	86	70	74	1278	56	61	92
NE	9	7	7	5	4	11	10	8	6	7	8	11	6	10	5	14	8	9	8	8	14	1135	6	10
DL	52	42	41	37	24	63	58	45	39	44	51	67	39	61	36	81	46	57	47	49	78	37	1045	64
UT	9	7	7	6	4	11	10	8	7	8	9	12	7	11	6	14	8	10	8	8	14	7	8	1124
<b>Total</b>	<b>2212</b>	<b>1973</b>	<b>1991</b>	<b>1817</b>	<b>1550</b>	<b>2453</b>	<b>2334</b>	<b>2092</b>	<b>1923</b>	<b>2020</b>	<b>2136</b>	<b>2654</b>	<b>1866</b>	<b>2380</b>	<b>1843</b>	<b>2969</b>	<b>2069</b>	<b>2362</b>	<b>2079</b>	<b>2112</b>	<b>2853</b>	<b>1921</b>	<b>1905</b>	<b>2430</b>

Source: Authors' estimates.

**Appendix Table 1.12: Government revenue (₹ Crores) in Set-3 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
Central	238	211	203	182	119	256	258	223	203	216	234	306	173	257	180	333	214	261	213	221	313	194	230	310
AP	1021	17	17	16	10	24	23	17	16	17	21	28	17	24	16	31	18	23	19	19	28	15	20	26
AS	7	1006	6	6	4	8	8	7	6	7	7	10	6	8	6	11	7	8	7	7	10	6	7	10
BR	14	12	1012	11	7	15	15	13	12	12	14	18	10	15	11	20	13	15	13	13	19	11	13	18
CG	7	6	5	1005	3	8	7	6	5	6	7	9	5	8	5	10	6	7	6	6	9	5	6	8
GA	3	2	2	2	1001	3	3	2	2	2	3	4	2	3	2	4	2	3	3	3	4	2	3	4
GJ	13	11	11	11	7	1016	15	10	9	10	13	18	12	16	10	21	12	15	12	12	18	8	12	15
HR	7	6	5	6	4	8	1008	5	5	5	7	9	6	8	5	11	6	8	6	6	9	4	6	8
HP	4	3	3	3	2	4	4	1004	3	3	4	5	3	4	3	6	3	4	3	4	5	3	4	5
JK	7	6	6	5	3	8	8	7	1006	6	7	9	5	8	5	10	6	8	6	7	9	6	7	9
JH	6	5	5	5	3	7	7	5	5	1005	6	8	4	7	4	9	5	7	5	6	8	5	6	8
KA	14	12	11	11	7	17	16	11	10	11	1014	19	12	17	11	22	13	16	13	13	19	9	13	17
KL	8	6	6	6	4	9	9	6	6	6	8	1010	7	9	6	12	7	9	7	7	11	5	7	9
MP	17	14	14	13	9	20	19	14	13	14	17	22	1014	19	13	25	15	19	15	16	23	12	16	21
MH	27	22	22	23	16	34	32	21	18	21	28	37	25	1034	21	44	25	31	26	26	38	17	25	31
OD	11	9	9	8	5	12	12	10	9	9	11	14	8	12	1008	16	10	12	10	10	14	8	10	14
PB	6	4	4	5	3	7	6	4	4	4	6	8	5	7	4	1009	5	6	5	5	8	3	5	6
RJ	15	12	12	11	7	17	16	13	11	12	15	19	12	17	11	22	1013	16	13	14	20	11	14	18
TN	16	13	13	13	8	20	19	13	12	13	17	22	14	20	12	26	15	1019	15	16	23	11	16	20
UP	34	29	28	27	18	39	38	30	27	29	34	45	27	39	26	50	31	38	1031	32	46	25	32	42
UK	3	3	3	3	2	4	4	3	3	3	3	4	3	4	3	5	3	4	3	1003	5	3	3	4
WB	15	13	13	12	8	18	17	13	12	13	15	20	13	18	12	23	14	17	14	14	1021	11	14	19
NE	11	10	9	8	5	12	12	10	9	10	11	14	8	12	8	15	10	12	10	10	14	1009	11	14
DL	3	3	3	3	2	4	4	2	2	2	4	5	3	4	3	6	3	4	3	3	5	2	1003	4
UT	1	0	0	0	0	1	1	0	0	0	1	1	0	1	0	1	0	1	0	0	1	0	1	1001
<b>Total</b>	<b>1506</b>	<b>1437</b>	<b>1424</b>	<b>1396</b>	<b>1259</b>	<b>1569</b>	<b>1559</b>	<b>1451</b>	<b>1407</b>	<b>1441</b>	<b>1506</b>	<b>1664</b>	<b>1393</b>	<b>1569</b>	<b>1385</b>	<b>1739</b>	<b>1455</b>	<b>1564</b>	<b>1460</b>	<b>1475</b>	<b>1680</b>	<b>1385</b>	<b>1486</b>	<b>1642</b>

Source: Authors' estimates.

**Appendix Table 1.13: Gross state domestic product (₹ Crores) in Set-4 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	189	161	153	147	81	213	213	163	147	161	192	256	142	216	138	283	167	214	169	176	256	134	193	256
AS	36	31	29	28	16	41	41	31	28	31	37	49	27	41	27	54	32	41	33	34	49	26	37	49
BR	70	59	56	54	30	79	79	60	54	60	71	94	53	80	51	104	62	79	63	65	94	49	71	94
CG	39	33	31	30	17	44	44	33	30	33	39	52	29	44	28	58	34	44	35	36	52	27	40	52
GA	11	9	9	8	5	12	12	9	8	9	11	15	8	13	8	16	10	12	10	10	15	8	11	15
GJ	169	144	137	131	72	191	191	146	131	144	172	230	127	194	123	254	149	191	152	158	229	120	173	229
HR	85	73	69	66	37	96	96	74	66	73	87	116	64	98	62	128	75	97	77	80	116	61	87	116
HP	18	15	15	14	8	20	20	16	14	16	19	25	14	21	13	27	16	21	16	17	25	13	19	25
JK	18	16	15	14	8	21	21	16	14	16	19	25	14	21	13	28	16	21	17	17	25	13	19	25
JH	42	36	34	33	18	48	48	37	33	36	43	58	32	49	31	64	38	48	38	40	57	30	44	58
KA	130	111	106	101	56	147	147	113	101	111	133	177	98	149	95	196	115	148	117	122	177	92	133	177
KL	88	75	71	68	38	99	99	76	68	75	89	119	66	100	64	131	77	99	79	82	119	62	90	119
MP	88	75	71	69	38	100	100	76	69	75	90	120	66	101	65	132	78	100	79	82	120	63	90	120
MH	343	292	278	267	147	387	387	296	267	293	350	465	258	392	251	513	303	388	308	320	464	243	351	464
OD	63	54	51	49	27	71	71	54	49	54	64	85	47	72	46	94	56	71	56	59	85	45	64	85
PB	72	61	58	56	31	81	81	62	56	61	73	98	54	82	52	108	63	81	64	67	98	51	73	97
RJ	115	98	93	89	49	129	129	99	89	98	117	156	86	131	84	172	101	130	103	107	155	81	117	155
TN	190	162	154	148	82	214	214	164	148	162	194	258	143	217	139	284	168	215	170	177	257	135	194	257
UP	191	163	155	149	82	216	216	165	149	163	195	260	144	219	140	287	169	217	172	178	259	136	196	259
UK	28	24	22	22	12	31	31	24	22	24	28	38	21	32	20	42	25	31	25	26	38	20	28	38
WB	153	131	124	119	66	173	173	132	119	131	156	208	115	175	112	230	135	173	137	143	208	109	157	208
NE	25	21	20	19	11	28	28	21	19	21	25	34	19	28	18	37	22	28	22	23	34	18	25	34
DL	86	74	70	67	37	97	97	74	67	74	88	117	65	99	63	129	76	97	77	80	116	61	88	117
UT	12	10	10	10	5	14	14	11	10	10	13	17	9	14	9	18	11	14	11	11	17	9	13	17
<b>Total</b>	<b>2261</b>	<b>1929</b>	<b>1831</b>	<b>1759</b>	<b>970</b>	<b>2553</b>	<b>2553</b>	<b>1954</b>	<b>1759</b>	<b>1933</b>	<b>2306</b>	<b>3070</b>	<b>1702</b>	<b>2589</b>	<b>1655</b>	<b>3389</b>	<b>1996</b>	<b>2560</b>	<b>2029</b>	<b>2110</b>	<b>3062</b>	<b>1603</b>	<b>2313</b>	<b>3064</b>

Source: Authors' estimates.



**Appendix Table 1.14: Rural household income (₹ Crores) in Set-4 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	218	89	86	80	47	125	121	94	82	92	107	144	79	124	76	165	95	120	96	101	153	77	102	140
AS	28	119	22	21	12	32	31	24	22	24	28	37	21	32	20	42	25	31	25	26	39	20	27	37
BR	89	75	200	68	40	102	100	78	69	76	89	119	67	102	64	134	79	100	80	83	124	64	87	117
CG	20	17	16	78	9	23	22	17	15	17	20	26	15	22	14	30	17	22	18	18	27	14	19	26
GA	2	2	2	1	34	3	2	2	2	2	2	3	2	2	1	3	2	2	2	2	3	2	2	3
GJ	57	47	45	41	25	168	64	50	43	49	56	76	42	66	40	89	50	63	51	53	84	41	52	73
HR	42	35	34	31	18	49	148	37	32	36	42	57	31	49	30	65	37	47	38	39	60	30	40	55
HP	14	12	11	10	6	16	16	139	11	12	14	19	10	16	10	22	12	16	13	13	20	10	13	18
JK	14	12	12	11	6	17	16	13	119	12	14	19	11	17	10	22	13	16	13	14	21	10	14	19
JH	22	19	18	17	11	26	25	20	17	106	22	30	17	26	16	34	20	25	20	21	31	16	21	29
KA	64	53	51	48	28	74	72	56	49	54	142	86	47	74	45	98	56	72	57	60	91	45	61	84
KL	79	66	63	59	34	92	89	69	61	67	79	336	58	91	56	122	70	89	71	74	113	56	76	104
MP	58	49	47	44	26	67	66	51	45	50	58	78	103	67	42	89	52	65	52	55	82	42	56	76
MH	106	88	85	78	48	125	119	93	81	91	105	142	79	209	75	164	94	118	95	100	154	76	98	136
OD	32	27	26	24	14	37	36	28	25	28	32	43	24	37	121	49	29	36	29	30	45	23	31	42
PB	46	38	36	34	20	54	52	40	35	39	45	62	34	53	32	288	41	51	41	43	66	33	43	60
RJ	81	68	65	61	36	94	91	70	62	69	81	109	60	93	58	124	161	91	72	76	115	58	78	106
TN	73	61	59	54	32	86	83	64	56	63	73	99	54	85	52	113	65	235	66	69	105	52	69	95
UP	180	150	144	135	79	209	202	156	138	153	179	242	134	207	128	275	159	201	255	168	254	128	172	235
UK	14	12	11	10	6	16	16	12	11	12	14	19	10	16	10	21	12	16	12	87	20	10	13	18
WB	83	68	66	60	37	99	93	73	63	71	81	111	61	96	57	129	73	92	74	78	276	59	75	105
NE	16	13	13	12	7	19	18	14	12	14	16	21	12	19	11	25	14	18	14	15	24	141	14	20
DL	4	3	3	3	2	5	4	3	3	3	4	5	3	5	3	6	4	4	4	4	6	3	4	5
UT	3	2	2	2	1	3	3	2	2	2	3	4	2	3	2	4	2	3	2	2	4	2	3	116
<b>Total</b>	<b>1345</b>	<b>1121</b>	<b>1114</b>	<b>982</b>	<b>578</b>	<b>1541</b>	<b>1491</b>	<b>1204</b>	<b>1055</b>	<b>1141</b>	<b>1307</b>	<b>1886</b>	<b>976</b>	<b>1511</b>	<b>972</b>	<b>2112</b>	<b>1183</b>	<b>1533</b>	<b>1199</b>	<b>1231</b>	<b>1915</b>	<b>1011</b>	<b>1170</b>	<b>1720</b>

Source: Authors' estimates.

**Appendix Table 1.15: Urban household income (₹ Crores) in Set-4 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
AP	202	72	70	62	40	112	102	80	67	77	86	121	65	107	60	147	80	100	81	85	142	65	74	111
AS	8	102	6	5	4	10	9	7	6	7	8	11	6	10	5	13	7	9	7	8	13	6	6	10
BR	16	13	141	11	7	20	18	14	12	14	15	21	12	19	10	27	14	18	14	15	26	12	12	19
CG	12	10	10	71	5	15	14	11	9	10	12	16	9	14	8	20	11	14	11	12	19	9	10	15
GA	3	2	2	2	34	3	3	2	2	2	2	3	2	3	2	4	2	3	2	2	4	2	2	3
GJ	71	56	55	48	31	189	80	63	53	60	67	94	50	84	46	115	63	78	63	67	112	51	57	86
HR	37	29	29	25	17	46	143	33	28	32	35	49	27	44	25	60	33	41	33	35	58	27	31	46
HP	4	3	3	2	2	5	4	130	3	3	3	5	2	4	2	6	3	4	3	3	6	3	2	4
JK	7	6	6	5	3	9	8	7	113	6	7	10	5	9	5	12	7	8	7	7	12	5	6	9
JH	15	12	11	10	7	18	17	13	11	99	14	20	11	17	10	24	13	16	13	14	23	11	12	18
KA	75	60	59	52	33	93	85	67	56	64	151	101	54	89	50	121	67	83	67	71	117	54	63	93
KL	40	31	31	27	18	49	45	35	30	34	38	282	28	47	26	64	35	44	35	37	62	28	32	48
MP	42	33	33	29	19	52	47	37	31	36	40	56	90	49	28	68	37	46	38	40	66	30	35	52
MH	190	151	148	130	84	235	214	168	142	162	182	254	136	309	126	307	169	210	170	179	297	136	158	234
OD	14	11	11	9	6	17	15	12	10	12	13	18	10	16	107	22	12	15	12	13	21	10	11	16
PB	34	26	26	22	15	42	38	30	25	29	32	45	24	40	22	272	30	37	30	32	53	24	27	40
RJ	44	34	34	29	19	54	49	39	32	37	41	58	31	51	29	71	128	48	39	41	69	31	35	53
TN	100	79	78	69	44	123	113	88	75	85	96	133	72	118	66	161	89	263	89	94	156	72	83	123
UP	101	80	79	69	45	126	114	90	75	86	96	134	72	119	67	164	90	111	184	96	159	73	82	123
UK	8	6	6	5	3	9	8	7	6	6	7	10	5	9	5	12	7	8	7	81	12	5	6	9
WB	76	59	58	50	34	95	85	67	56	64	71	100	54	89	49	124	67	82	67	71	275	54	59	90
NE	9	7	7	5	4	11	10	8	6	7	8	11	6	10	5	14	8	9	8	8	14	135	6	10
DL	49	40	39	34	22	60	55	43	37	42	48	66	36	58	33	78	44	54	44	46	75	35	42	62
UT	8	7	7	6	4	10	10	7	6	7	8	11	6	10	6	14	8	9	8	8	13	6	7	124
<b>Total</b>	<b>1164</b>	<b>927</b>	<b>945</b>	<b>778</b>	<b>502</b>	<b>1405</b>	<b>1285</b>	<b>1058</b>	<b>891</b>	<b>982</b>	<b>1081</b>	<b>1629</b>	<b>813</b>	<b>1324</b>	<b>792</b>	<b>1920</b>	<b>1024</b>	<b>1310</b>	<b>1031</b>	<b>1067</b>	<b>1806</b>	<b>884</b>	<b>858</b>	<b>1396</b>

Source: Authors' estimates.

**Appendix Table 1.16: Government revenue (₹ Crores) in Set-4 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GA	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE	RUN-DL	RUN-UT
Central	207	176	170	158	94	235	231	184	164	179	207	280	155	234	152	311	184	233	186	193	285	154	199	272
AP	1021	18	18	17	11	24	24	19	17	19	21	28	17	24	16	32	19	24	19	20	29	16	21	27
AS	7	1006	6	5	3	8	8	6	6	6	7	9	5	8	5	10	6	8	6	7	10	5	7	9
BR	13	11	1011	10	6	15	15	12	11	11	13	18	10	15	10	19	12	15	12	12	18	10	12	17
CG	6	5	5	1005	3	7	7	6	5	6	6	9	5	7	5	9	6	7	6	6	9	5	6	8
GA	3	2	2	2	1001	3	3	2	2	2	3	4	2	3	2	4	2	3	2	2	4	2	3	3
GJ	13	11	11	10	7	1015	15	12	11	12	13	18	10	15	10	20	12	15	12	13	18	10	13	17
HR	7	6	6	5	3	8	1008	6	5	6	7	9	5	8	5	10	6	8	6	6	9	5	7	9
HP	4	3	3	3	2	4	4	1003	3	3	4	5	3	4	3	5	3	4	3	3	5	3	4	5
JK	6	6	5	5	3	7	7	6	1005	6	6	9	5	7	5	10	6	7	6	6	9	5	6	8
JH	6	5	5	4	3	6	6	5	5	1005	6	8	4	6	4	8	5	6	5	5	8	4	5	7
KA	15	13	12	12	8	17	17	13	12	13	1015	20	12	17	11	22	13	17	14	14	20	11	14	19
KL	8	7	7	6	4	9	9	7	7	7	8	1011	6	9	6	12	7	9	7	8	11	6	8	10
MP	16	13	13	12	8	18	18	14	13	14	16	21	1012	18	12	24	14	18	14	15	22	12	15	20
MH	27	23	22	21	14	31	30	24	21	23	27	36	21	1031	20	41	24	30	25	25	37	20	25	34
OD	10	9	9	8	5	12	11	9	8	9	10	14	8	12	1008	15	9	12	9	10	14	8	10	13
PB	6	5	5	4	3	7	6	5	5	5	6	8	4	6	4	1008	5	6	5	5	8	4	5	7
RJ	14	12	12	11	7	16	16	13	11	12	14	19	11	16	11	21	1013	16	13	13	19	11	14	18
TN	18	15	15	14	9	20	20	16	14	15	18	23	14	20	13	26	16	1020	16	17	24	13	17	22
UP	32	28	27	25	16	37	36	29	26	28	32	43	25	37	24	48	29	36	1029	30	44	24	31	41
UK	3	3	3	3	2	4	4	3	3	3	3	4	2	4	2	5	3	4	3	1003	4	2	3	4
WB	14	12	12	11	7	16	16	13	11	12	14	19	11	16	11	21	13	16	13	13	1020	11	13	18
NE	10	8	8	7	4	11	11	9	8	8	10	13	7	11	7	15	9	11	9	9	13	1007	9	13
DL	4	3	3	3	2	5	4	4	3	3	4	5	3	4	3	6	4	4	4	4	5	3	1004	5
UT	1	0	0	0	0	1	1	0	0	0	1	1	0	1	0	1	0	1	1	1	1	0	1	1001
<b>Total</b>	<b>1472</b>	<b>1402</b>	<b>1390</b>	<b>1364</b>	<b>1224</b>	<b>1536</b>	<b>1525</b>	<b>1418</b>	<b>1375</b>	<b>1408</b>	<b>1470</b>	<b>1634</b>	<b>1358</b>	<b>1533</b>	<b>1350</b>	<b>1704</b>	<b>1420</b>	<b>1528</b>	<b>1426</b>	<b>1441</b>	<b>1646</b>	<b>1352</b>	<b>1451</b>	<b>1609</b>

Source: Authors' estimates.

**Appendix Table 1.17: Gross state domestic product (₹ Crores) in Set-5 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE
AP	-92	-92	-92	-91	-92	-92	-91	-91	-92	-92	-90	-92	-92	-92	-92	-92	-92	-92	-92	-93	-92
AS	-18	-18	-18	-17	-18	-18	-17	-17	-18	-18	-17	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18
BR	-33	-33	-33	-32	-33	-33	-32	-32	-32	-33	-32	-33	-33	-33	-33	-33	-33	-33	-32	-33	-32
CG	-19	-19	-19	-18	-19	-19	-18	-18	-18	-19	-18	-19	-19	-19	-18	-19	-19	-19	-18	-19	-18
GA	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
GJ	-84	-84	-84	-83	-84	-84	-83	-83	-83	-84	-82	-84	-84	-84	-84	-84	-84	-84	-83	-84	-84
HR	-42	-42	-42	-41	-42	-42	-41	-41	-42	-42	-41	-42	-42	-42	-42	-42	-42	-42	-42	-42	-42
HP	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
JK	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
JH	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20
KA	-64	-64	-64	-63	-64	-64	-63	-63	-63	-64	-62	-64	-64	-64	-64	-64	-64	-64	-63	-64	-63
KL	-42	-42	-42	-41	-42	-42	-41	-41	-42	-42	-41	-42	-42	-42	-42	-42	-42	-42	-42	-42	-42
MP	-43	-43	-43	-42	-43	-43	-43	-42	-43	-43	-42	-43	-43	-43	-43	-43	-43	-43	-43	-43	-43
MH	-166	-166	-166	-164	-166	-166	-164	-164	-165	-166	-162	-166	-166	-166	-165	-166	-166	-166	-165	-166	-165
OD	-31	-31	-30	-30	-30	-30	-30	-30	-30	-31	-30	-30	-31	-31	-30	-30	-31	-31	-30	-31	-30
PB	-36	-36	-36	-36	-36	-36	-36	-36	-36	-36	-35	-36	-36	-36	-36	-36	-36	-36	-36	-36	-36
RJ	-57	-57	-57	-56	-57	-57	-56	-56	-56	-57	-55	-57	-57	-57	-57	-57	-57	-57	-56	-57	-57
TN	-91	-91	-91	-90	-91	-91	-90	-90	-91	-91	-89	-91	-91	-91	-91	-91	-91	-91	-91	-92	-91
UP	-94	-94	-94	-92	-93	-93	-93	-93	-93	-94	-91	-94	-94	-94	-93	-93	-94	-94	-93	-94	-93
UK	-14	-14	-14	-13	-14	-14	-13	-13	-14	-14	-13	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14
WB	-75	-75	-75	-74	-75	-75	-74	-74	-74	-75	-73	-75	-75	-75	-75	-75	-75	-75	-74	-75	-74
NE	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
DL	-41	-41	-41	-41	-41	-41	-41	-41	-41	-41	-40	-41	-41	-41	-41	-41	-41	-41	-41	-41	-41
UT	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6
<b>Total</b>	<b>-1101</b>	<b>-1101</b>	<b>-1101</b>	<b>-1086</b>	<b>-1098</b>	<b>-1099</b>	<b>-1088</b>	<b>-1088</b>	<b>-1094</b>	<b>-1103</b>	<b>-1074</b>	<b>-1100</b>	<b>-1101</b>	<b>-1103</b>	<b>-1097</b>	<b>-1098</b>	<b>-1102</b>	<b>-1103</b>	<b>-1094</b>	<b>-1104</b>	<b>-1095</b>

Source: Authors' estimates.

**Appendix Table 1.18: Rural household income (₹ Crores) in Set-5 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE
AP	-323	-86	-86	-85	-87	-86	-85	-85	-86	-87	-85	-86	-88	-86	-86	-86	-87	-87	-86	-87	-86
AS	-20	-267	-20	-19	-20	-20	-19	-19	-19	-20	-19	-20	-20	-20	-20	-20	-20	-20	-19	-20	-19
BR	-58	-57	-300	-57	-58	-58	-57	-57	-57	-58	-57	-57	-59	-57	-57	-58	-58	-58	-57	-58	-57
CG	-13	-12	-12	-261	-12	-12	-12	-12	-12	-12	-12	-12	-13	-12	-12	-12	-13	-13	-12	-13	-12
GA	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
GJ	-56	-55	-55	-55	-295	-56	-55	-55	-55	-56	-55	-56	-57	-55	-56	-56	-56	-56	-57	-55	-56
HR	-34	-33	-33	-33	-34	-279	-33	-33	-33	-34	-33	-33	-34	-33	-33	-33	-34	-34	-33	-34	-33
HP	-12	-12	-12	-12	-12	-12	-260	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
JK	-12	-12	-12	-12	-12	-12	-12	-260	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
JH	-15	-15	-15	-15	-15	-15	-15	-15	-262	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15
KA	-50	-50	-50	-49	-50	-50	-49	-49	-49	-293	-49	-50	-51	-50	-50	-50	-50	-50	-49	-50	-49
KL	-62	-61	-61	-61	-62	-61	-61	-61	-61	-62	-303	-62	-63	-61	-61	-61	-62	-62	-61	-62	-61
MP	-43	-42	-42	-42	-43	-43	-42	-42	-42	-43	-42	-287	-43	-43	-43	-43	-43	-43	-42	-43	-42
MH	-95	-93	-93	-93	-94	-94	-93	-93	-93	-94	-93	-94	-326	-93	-94	-94	-95	-95	-93	-95	-93
OD	-22	-21	-21	-21	-22	-22	-21	-21	-21	-22	-21	-22	-22	-269	-22	-22	-22	-22	-21	-22	-21
PB	-41	-41	-41	-40	-41	-41	-40	-40	-41	-41	-40	-41	-42	-41	-284	-41	-41	-41	-41	-41	-41
RJ	-61	-61	-61	-60	-61	-61	-60	-60	-61	-61	-60	-61	-62	-61	-61	-302	-61	-62	-61	-62	-61
TN	-62	-61	-61	-60	-61	-61	-60	-60	-61	-61	-60	-61	-62	-61	-61	-61	-301	-62	-61	-62	-61
UP	-136	-134	-135	-133	-135	-135	-134	-133	-134	-136	-133	-135	-138	-135	-135	-135	-136	-366	-134	-136	-134
UK	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-259	-11	-11
WB	-83	-82	-82	-81	-83	-82	-81	-81	-82	-83	-82	-82	-85	-82	-82	-82	-83	-84	-82	-316	-82
NE	-16	-15	-16	-15	-16	-16	-15	-15	-15	-16	-15	-16	-16	-15	-16	-16	-16	-16	-15	-16	-262
DL	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
UT	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
<b>Total</b>	<b>-1231</b>	<b>-1229</b>	<b>-1227</b>	<b>-1224</b>	<b>-1230</b>	<b>-1231</b>	<b>-1224</b>	<b>-1224</b>	<b>-1227</b>	<b>-1235</b>	<b>-1218</b>	<b>-1231</b>	<b>-1238</b>	<b>-1231</b>	<b>-1229</b>	<b>-1229</b>	<b>-1235</b>	<b>-1229</b>	<b>-1228</b>	<b>-1230</b>	<b>-1226</b>

Source: Authors' estimates.

**Appendix Table 1.19: Urban household income (₹ Crores) in Set-5 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE
AP	-346	-126	-127	-126	-128	-127	-126	-126	-126	-128	-126	-127	-131	-126	-127	-127	-128	-129	-126	-129	-126
AS	-13	-259	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13
BR	-26	-26	-269	-26	-26	-26	-26	-26	-26	-26	-26	-26	-27	-26	-26	-26	-26	-26	-26	-26	-26
CG	-16	-16	-16	-262	-16	-16	-16	-16	-16	-16	-16	-16	-17	-16	-16	-16	-16	-16	-16	-16	-16
GA	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
GJ	-106	-104	-104	-103	-328	-104	-103	-103	-104	-105	-104	-104	-108	-104	-104	-104	-106	-106	-103	-106	-104
HR	-51	-50	-51	-50	-51	-288	-50	-50	-50	-51	-51	-51	-52	-51	-51	-51	-51	-52	-50	-52	-50
HP	-7	-7	-7	-7	-7	-7	-255	-7	-7	-7	-7	-7	-8	-7	-7	-7	-7	-7	-7	-7	-7
JK	-12	-12	-12	-12	-12	-12	-12	-259	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
JH	-22	-21	-21	-21	-21	-21	-21	-21	-266	-21	-21	-21	-22	-21	-21	-21	-21	-22	-21	-22	-21
KA	-100	-98	-99	-98	-100	-99	-98	-98	-98	-325	-98	-99	-102	-98	-99	-99	-100	-101	-98	-100	-98
KL	-57	-56	-56	-56	-57	-56	-56	-56	-56	-57	-292	-57	-58	-56	-56	-57	-57	-58	-56	-57	-56
MP	-58	-57	-57	-57	-58	-57	-57	-57	-57	-58	-57	-293	-59	-57	-57	-57	-58	-58	-57	-58	-57
MH	-261	-256	-257	-255	-260	-258	-255	-255	-256	-260	-257	-258	-446	-257	-258	-259	-261	-263	-256	-262	-256
OD	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-20	-264	-19	-19	-19	-19	-19	-19	-19
PB	-51	-50	-50	-50	-51	-50	-50	-50	-50	-51	-50	-50	-52	-50	-288	-51	-51	-51	-50	-51	-50
RJ	-64	-63	-63	-62	-64	-63	-62	-62	-63	-63	-63	-63	-65	-63	-63	-297	-64	-64	-63	-64	-63
TN	-136	-134	-134	-133	-136	-134	-133	-133	-134	-135	-134	-135	-139	-134	-134	-135	-352	-137	-133	-137	-134
UP	-144	-142	-142	-141	-144	-142	-141	-141	-142	-143	-142	-143	-148	-142	-143	-143	-144	-357	-141	-145	-142
UK	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-259	-12	-12
WB	-120	-118	-118	-117	-120	-119	-117	-117	-118	-119	-118	-119	-123	-118	-119	-119	-120	-121	-118	-338	-118
NE	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-17	-16	-16	-16	-16	-16	-16	-16	-261
DL	-60	-59	-59	-59	-60	-59	-59	-59	-59	-60	-59	-59	-61	-59	-59	-59	-60	-60	-59	-60	-59
UT	-11	-11	-11	-10	-11	-11	-10	-10	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
<b>Total</b>	<b>-1714</b>	<b>-1715</b>	<b>-1717</b>	<b>-1709</b>	<b>-1713</b>	<b>-1713</b>	<b>-1710</b>	<b>-1710</b>	<b>-1711</b>	<b>-1713</b>	<b>-1707</b>	<b>-1714</b>	<b>-1707</b>	<b>-1716</b>	<b>-1714</b>	<b>-1715</b>	<b>-1712</b>	<b>-1718</b>	<b>-1712</b>	<b>-1718</b>	<b>-1712</b>

Source: Authors' estimates.

**Appendix Table 1.20: Government revenue (₹ Crores) in Set-5 experiments**

State	RUN-AP	RUN-AS	RUN-BR	RUN-CG	RUN-GJ	RUN-HR	RUN-HP	RUN-JK	RUN-JH	RUN-KA	RUN-KL	RUN-MP	RUN-MH	RUN-OD	RUN-PB	RUN-RJ	RUN-TN	RUN-UP	RUN-UK	RUN-WB	RUN-NE
Central	-129	-131	-130	-127	-127	-128	-131	-131	-131	-128	-128	-126	-127	-129	-127	-129	-129	-129	-129	-129	-132
AP	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
AS	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
BR	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8
CG	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
GA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
GJ	-7	-7	-7	-8	-8	-8	-7	-7	-7	-8	-7	-8	-8	-7	-8	-7	-8	-8	-7	-8	-7
HR	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
HP	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
JK	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
JH	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
KA	-8	-7	-8	-8	-8	-8	-7	-7	-7	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-7
KL	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
MP	-9	-9	-9	-10	-10	-10	-9	-9	-9	-10	-9	-10	-10	-10	-10	-10	-10	-10	-9	-10	-9
MH	-16	-16	-16	-17	-17	-17	-16	-16	-16	-17	-17	-17	-17	-17	-17	-16	-17	-17	-17	-17	-16
OD	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6
PB	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
RJ	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8
TN	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
UP	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19
UK	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
WB	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
NE	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6
DL	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
UT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>-278</b>	<b>-278</b>	<b>-278</b>	<b>-277</b>	<b>-278</b>	<b>-278</b>	<b>-277</b>	<b>-277</b>	<b>-277</b>	<b>-278</b>	<b>-276</b>	<b>-278</b>	<b>-277</b>	<b>-278</b>	<b>-278</b>	<b>-278</b>	<b>-278</b>	<b>-278</b>	<b>-277</b>	<b>-278</b>	<b>-278</b>

Source: Authors' estimates.

## Appendix 2: Regional Social Accounting Matrix for India, 2011-12

As mentioned earlier, the “Regional-SAM” (RSAM) by Ganesh-Kumar and Panda (forthcoming) distinguishes 24 States / regions, 9 commodities, 7 production activities, 2 factors of production, 2 types of enterprises, and 2 types of households (Appendix Table 2.1). The production activities and households are further distinguished by their location in 24 States. Besides, the government is also distinguished into Central and State governments. It also distinguishes several inter-agent flows, various types of Central and State taxes, devolution of taxes across the Central and State government, other fiscal transfers from the Central to States, and makes a distinction of fixed capital investment by various agents.

**Appendix Table 2.1: Disaggregation in the Regional SAM, 2011-12**

<b>24 States / Regions</b>	AP: Andhra Pradesh, AS: Assam, BR: Bihar, CG: Chhattisgarh, GA: Goa, GJ: Gujarat, HR: Haryana, HP: Himachal Pradesh, JK: Jammu & Kashmir, JH: Jharkhand, KA: Karnataka, KL: Kerala, MP: Madhya Pradesh, MH: Maharashtra, OD: Odisha, PB: Punjab, RJ: Rajasthan, TN: Tamil Nadu, UP: Uttar Pradesh, UK: Uttarakhand, WB: West Bengal, NE: North East, DL: Delhi, UT: Union Territories
<b>9 Commodities</b>	Foodgrains, Other foods, Non-food agriculture, Mining, Manufacturing, Construction, Electricity, Transport services, Other services
<b>168 Regional Activities</b> (7 Activities X 24 Regions)	Agriculture, Mining, Manufacturing, Construction, Electricity, Transport services, Other services
<b>2 Factors</b>	Labour, Capital
<b>48 Regional Households</b> (2 Households X 24 Regions)	Rural, Urban
<b>2 Enterprises</b>	Private enterprise, Public enterprise
<b>5 Central taxes</b>	Direct tax on households, Corporation tax, Tariffs, Export tax, Domestic indirect tax
<b>48 State taxes</b>	State-wise direct tax on households, State-wise indirect tax
<b>25 Government accounts</b>	Central, 24 State Governments
<b>25 Interest payment accounts</b>	Central, 24 State Governments
<b>1 Savings account</b>	Savings by all agents (Households, Government, Rest of World)
<b>28 investment accounts</b>	GFCF by Private enterprise, Public enterprise, Central government, 24 State Governments; 1 Changes in stocks account
<b>1 RoW account</b>	Rest of world accounts

Source: Authors

Ganesh-Kumar and Panda (forthcoming) adopt a top down approach to construct the RSAM for 2011-12 in preference to the bottom-up method commonly used in the UN System of National Accounts. Such a procedure ensures that the RSAM is consistent with the published national accounts aggregates. Under this approach, the RSAM is developed in three stages.



In the first stage a “Macro-SAM” (MSAM) that reports the aggregates of all the flows for the economy as a whole is developed. The structure of the macro SAM and the value of various flows for the year 2011-12 are reported in Appendix Table 2.2. The main data sources used to construct the macro SAM are the National Accounts Statistics-2014 (NAS) and the latest available Input-Output (IO) Table for 2007-08 both of which are prepared by the Central Statistical Organization (CSO), Government of India. Here, it may be noted that in the government account, the cell Government-Government reports a value ₹ 193154 Crores. This amount refers to the total Grants from the Central government to all the State governments. This information is sourced from the report titled "STATE FINANCES A STUDY OF BUDGETS OF 2013-14" published by the Reserve Bank of India. This entry is normally not included in a typical SAM, since it appears as both a row and column entry in the Government account and to that extent overstates the total receipts / outlay of the government. However, in the present context of developing a regional SAM for India, this is an important element in the finances of the Central and State governments that would be disaggregated later on.

In the second stage, a “National-SAM” (NSAM) that distinguishes production and consumption of various commodities, the production activities/sectors, factors of production, enterprises, various types of taxes, and other transfer payments, is developed. At this stage, all accounts in the SAM are “national” in the sense that they are aggregates over the country as a whole. The primary data sources used at this stage are (a) National Accounts Statistics-2014, and (b) the 68<sup>th</sup> Round surveys on Consumer Expenditure and Employment / Unemployment for 2011-12 conducted by the National Sample Survey Organization (NSSO).

The NAS provides detailed information on sectoral output, value added, factor payments, commodity consumption, trade flows, various entries in the balance of payments, household income, consumption and savings, government revenue, consumption, transfer payments, public savings, fixed investments, changes in stocks, etc. Information on these variables for 2011-12 is used here. Here it may be noted that the NAS-2014 distinguishes three types of factor payments, viz., Compensation to employees (CE), Operating surplus/Mixed income (OS/MI) and Consumption of fixed capital (CFC). In the SAM, CE is treated as payments to LABOUR factor, while OS/MI and CFC are treated as payments to CAPITAL factor.

The NSSO Employment/Unemployment survey data are used to work out (a) labour endowment across rural and urban households, and (b) the demand for labour in different production activities. The NSSO Consumer Expenditure survey data are used to work out the distribution of consumption of various commodities across rural and urban households.

The above mentioned data sources are supplemented with calibration techniques to bridge various data gaps and balance the various accounts in the SAM. One such major data gap is with regard to the cost structure of various sectors, in particular the input-output flows. Typically, such information would be available in the IO Table. The latest available IO Table is for 2007-08, which is somewhat dated. Hence the IO Table is used only in a limited way here. It is used to provide an initial estimate of the structure of the input-output flows in the economy for the calibration procedure.

In the third stage, the various accounts in the NSAM are regionally disaggregated. The main data sources used here are (a) State-wise estimates of value of output from agriculture and allied activities published by the CSO, (b) Annual Survey of Industries (ASI) 2011-12, published by CSO, (c) data on gross state domestic product (GSDP) sourced from the EPW Research Foundation, (d) NSS 68<sup>th</sup> Round surveys on Consumer Expenditure and Employment / Unemployment for 2011-12, (e)

Reserve Bank of India data on State Finances, 2013-14, and Combined Finances of Central and State governments, 2013-14.

These data sources provide detailed information on the state-wise values of several variables. For instance, the ASI data provides information on the state-wise output, payments to labour, payments to capital (rents, interest, profits), total cost of raw materials, etc. Implicit in the ASI data, the cost structure of various industries differs from one state to another.

The EPW Research Foundation data on GSDP gives information on sectoral value added in each state. The NSS 68<sup>th</sup> Round employment/unemployment survey provides information on labour employment by sector, wage rates, and endowment of labour with rural and urban household in each state. The NSS data are used to work out the distribution of labour employment across states across sectors. Combining this with the GSDP data allows us to work out the employment of capital across sectors across states. The NSS 68<sup>th</sup> Round consumer expenditure survey provides detailed information on the consumption of various goods by rural and urban households in each state. The RBI data on State Finances reports the transactions of the state governments. This along with the information in the Combined Central and State Government Finances are used to disaggregate the government accounts into Central and State government accounts.

Some of the major data gaps faced during this regional disaggregation are with regard to the distribution of services output, the cost structure of the services sector in each state, ownership of capital by rural and urban households across states, commodity-wise consumption expenditure by Central and State governments, commodity-wise demand for fixed capital formation, distribution across households of transfer payments by Central and State governments, distribution across households of interest payments by Central and State governments, savings of the Central and State governments, etc.

With regard to services sector, it is assumed that the cost structure of various services sector is uniform across country and is as worked out in the NSAM earlier. With this assumption, the GSDP data are used to first distribute value added in services sectors across states. Then, using the value added to output ratio, the gross output of services in each state is worked out. Finally, the input requirements of the services sector in each state are also worked out using national level coefficients. With regard to government consumption, it is assumed that the commodity-wise consumption expenditure is same across Central and State governments. Then the commodity-wise shares in the total government consumption implicit in the NSAM is used to disaggregate the commodity-wise government consumption expenditure by Central and State governments. Similar simplifying assumptions and calibration techniques are used to bridge the various data gaps. Ganesh-Kumar and Panda (forthcoming) provide a complete documentation of all the assumptions and calibration techniques used at various states in the development of the RSAM. Appendix Tables 2.3 to 2.8 provide the values of some of the key variables in the RSAM.

**Appendix Table 2.2: Macro SAM at Market price, 2012-12, ₹ Crores**

	Commodity	Activity	Factors	Households	Enterprises	Taxes	Government	Interest	Savings	GFCF	CSTK	ROW	Total
<b>Commodity</b>		9601717		5354815			1025895			3030037	170596	2150326	21333386
<b>Activity</b>	17993408												17993408
<b>Factors</b>		8391691										2187	8393878
<b>Households</b>			6738279				238429	374904				304902	7656514
<b>Enterprises</b>			1246376										1246376
<b>Taxes</b>	618031			246962	322864								1187857
<b>Government</b>			330206			1187857	193154						1711217
<b>Interest</b>							374904						374904
<b>Savings</b>				2054737	923512		-153790					376174	3200633
<b>GFCF</b>									3030037				3030037
<b>CSTK</b>									170596				170596
<b>ROW</b>	2721947		79017				32625						2833589
<b>Total</b>	21333386	17993408	8393878	7656514	1246376	1187857	1711217	374904	3200633	3030037	170596	2833589	

Source: Authors' calculations based on data from National Accounts Statistics, 2014, and Input-Output Transactions Table 2007-08.

Notes: GFCF: Gross fixed capital formation; CSTK: Changes to stocks; ROW: Rest of world. Interest row / column pertain only to interest paid by / received from government.

**Appendix Table 2.3: Commodity supply and demand in 2011-12, ₹ Crores**

Commodity	Output at factor cost	Tax on domestic production	Imports	Tariffs	Total supply	Intermediate demand	Household demand	Government demand	Gross fixed capital formation	Changes to stocks	Exports	Total demand
Foodgrains	391827	1760	9382	157	403125	7929	365089	8607	0	-3428	24929	403125
Other food	1053714	5021	4691	78	1063504	59216	927367	5798	0	0	71123	1063504
Non-food Agriculture	446385	5794	9382	157	461718	286725	93642	1	0	-728	82079	461718
Mining	284496	17282	827973	18431	1148182	1108394	0	1211	0	-2146	40723	1148182
Manufacturing	6894782	240859	1494105	97403	8727149	4602377	1414078	110797	1178026	176898	1244973	8727149
Construction	2007845	75043	0	0	2082888	367520	0	24581	1690787	0	0	2082888
Electricity	330526	3314	0	0	333840	226460	72914	34467	0	0	0	333840
Transport services	1420226	35587	94103	0	1549917	470339	804316	61270	62962	0	151030	1549917
Other services	5163607	117145	282310	0	5563062	2472759	1677408	779164	98262	0	535469	5563062
<b>Total</b>	<b>17993408</b>	<b>501805</b>	<b>2721947</b>	<b>116226</b>	<b>21333386</b>	<b>9601717</b>	<b>5354815</b>	<b>1025895</b>	<b>3030037</b>	<b>170596</b>	<b>2150326</b>	<b>21333386</b>

Source: Authors' calculations based on data from National Accounts Statistics, 2014, and Input-Output Transactions Table 2007-08.

**Appendix Table 2.4: Distribution of commodity output across States in 2011-12 (%)**

State	Foodgrains	Other food	Non-food Agriculture	Mining	Manufacturing	Construction	Electricity	Transport services	Other services	Total
AP: Andhra Pradesh	8.6	11.4	9.8	11.9	6.2	8.7	11.2	9.4	7.7	7.8
AS: Assam	1.9	2.6	0.9	5.0	1.0	1.5	1.0	1.5	1.5	1.4
BR: Bihar	3.6	4.7	1.7	0.1	1.8	4.7	1.7	2.2	3.3	2.8
CG: Chattisgarh	3.2	1.9	0.8	8.6	1.4	2.0	4.6	1.3	1.2	1.6
GA: Goa	0.1	0.2	0.0	3.9	0.3	0.3	0.3	0.9	0.3	0.4
GJ: Gujarat	3.5	6.2	14.9	9.0	17.6	5.8	10.3	6.7	6.2	10.8
HR: Haryana	6.8	3.2	3.8	0.1	5.0	3.6	1.8	4.5	3.5	4.1
HP: Himachal Pradesh	0.7	1.0	0.2	0.1	0.6	1.1	3.9	0.5	0.6	0.7
JK: Jammu & Kashmir	0.6	1.2	0.6	0.1	0.3	1.1	3.5	0.4	0.9	0.7
JH: Jharkhand	1.3	1.8	0.9	10.5	2.2	1.8	0.5	1.6	1.4	1.9
KA: Karnataka	5.6	5.9	3.8	2.5	3.1	6.4	7.3	5.6	6.2	4.9
KL: Kerala	0.3	2.8	4.9	1.4	3.2	6.0	2.7	5.5	4.3	3.9
MP: Madhya Pradesh	6.2	3.1	8.0	6.4	3.2	4.9	5.3	2.9	3.4	3.7
MH: Maharashtra	7.6	8.7	15.8	3.0	17.5	11.1	15.0	14.9	17.1	15.4
OD: Odisha	3.4	3.3	1.1	14.1	1.8	3.1	3.3	3.4	2.2	2.5
PB: Punjab	10.3	3.8	3.0	0.0	2.8	2.4	3.3	2.5	2.8	2.9
RJ: Rajasthan	6.5	5.0	11.4	11.2	2.4	5.6	5.1	3.4	4.3	4.0
TN: Tamil Nadu	3.3	8.2	3.5	2.7	11.1	10.4	3.0	8.9	8.8	9.4
UP: Uttar Pradesh	17.8	12.7	8.4	2.9	8.4	8.1	2.5	9.9	7.5	8.5
UK: Uttarakhand	0.9	1.1	0.4	0.6	1.3	1.2	2.1	1.1	1.2	1.2
WB: West Bengal	6.5	9.2	5.1	4.8	6.2	5.1	7.0	7.9	7.4	6.7
NE: North East	1.4	1.5	0.5	1.3	0.2	1.7	2.2	0.7	1.1	0.8
DL: Delhi	0.1	0.3	0.0	0.0	1.5	2.8	2.0	3.9	6.4	3.1
UT: Union Territories	0.1	0.2	0.1	0.0	0.6	0.6	0.4	0.4	0.8	0.6
<b>Total (Rs.Crores)</b>	<b>391827</b>	<b>1053714</b>	<b>446385</b>	<b>284496</b>	<b>6894782</b>	<b>2007845</b>	<b>330526</b>	<b>1420226</b>	<b>5163607</b>	<b>17993408</b>

Source: Authors' calculations based on data from National Accounts Statistics, 2014.

Notes: NE: North-East is an aggregate of Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura;

UT: Union Territories is an aggregate of Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Lakshadweep and Puducherry.

**Appendix Table 2.5: Distribution of gross state domestic product in 2011-12**

State	Rs.Crores				Percentage share in All India			
	Agriculture	Industry	Services	Total	Agriculture	Industry	Services	Total
AP: Andhra Pradesh	142616	176155	381737	700508	9.5	8.2	8.0	8.3
AS: Assam	31527	34148	68808	134484	2.1	1.6	1.5	1.6
BR: Bihar	63162	46838	147866	257866	4.2	2.2	3.1	3.1
CG: Chattisgarh	27940	51651	63565	143157	1.9	2.4	1.3	1.7
GA: Goa	2169	19543	18901	40612	0.1	0.9	0.4	0.5
GJ: Gujarat	110388	216591	300719	627698	7.4	10.1	6.3	7.5
HR: Haryana	63363	83119	170551	317032	4.2	3.9	3.6	3.8
HP: Himachal Pradesh	11905	21396	33994	67295	0.8	1.0	0.7	0.8
JK: Jammu & Kashmir	13800	12675	41780	68256	0.9	0.6	0.9	0.8
JH: Jharkhand	22412	69181	65950	157542	1.5	3.2	1.4	1.9
KA: Karnataka	72412	121157	290674	484243	4.8	5.6	6.1	5.8
KL: Kerala	46898	69757	208498	325153	3.1	3.2	4.4	3.9
MP: Madhya Pradesh	82364	84110	161208	327682	5.5	3.9	3.4	3.9
MH: Maharashtra	146151	328858	796608	1271617	9.7	15.3	16.8	15.2
OD: Odisha	36447	83336	113751	233534	2.4	3.9	2.4	2.8
PB: Punjab	73189	62942	130938	267070	4.9	2.9	2.8	3.2
RJ: Rajasthan	119154	107168	199056	425378	7.9	5.0	4.2	5.1
TN: Tamil Nadu	85530	209830	408579	703940	5.7	9.8	8.6	8.4
UP: Uttar Pradesh	195401	151472	363268	710140	13.0	7.0	7.7	8.5
UK: Uttarakhand	13081	33648	56403	103132	0.9	1.6	1.2	1.2
WB: West Bengal	115895	97284	355429	568608	7.7	4.5	7.5	6.8
NE: North East	19054	21017	51804	91875	1.3	1.0	1.1	1.1
DL: Delhi	2762	36335	280313	319410	0.2	1.7	5.9	3.8
UT: Union Territories	1478	10486	33496	45460	0.1	0.5	0.7	0.5
<b>Total</b>	<b>1499098</b>	<b>2148696</b>	<b>4743897</b>	<b>8391691</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Authors' calculations based on data from National Accounts Statistics, 2014.

Notes: NE: North-East is an aggregate of Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura;

UT: Union Territories is an aggregate of Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Lakshadweep and Puducherry.

**Appendix Table 2.6: Household income, consumption and savings in 2011-12, ₹ Crores**

State	Household income			Household consumption			Household savings		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
AP: Andhra Pradesh	382827	282660	665487	251307	213924	465232	129362	49550	178912
AS: Assam	100645	24323	124968	66069	18408	84477	34009	4264	38273
BR: Bihar	322749	47229	369978	211869	35744	247613	109061	8279	117340
CG: Chattisgarh	71068	39157	110226	46653	29635	76288	24015	6864	30879
GA: Goa	6928	7513	14441	4548	5686	10234	2341	1317	3658
GJ: Gujarat	194107	217716	411824	127422	164773	292195	65591	38165	103757
HR: Haryana	150703	116736	267439	98929	88349	187278	50924	20464	71388
HP: Himachal Pradesh	49236	9163	58399	32321	6935	39256	16637	1606	18244
JK: Jammu & Kashmir	50522	21230	71752	33165	16067	49232	17072	3722	20794
JH: Jharkhand	78217	44997	123213	51345	34055	85400	26430	7888	34318
KA: Karnataka	229787	240819	470606	150844	182258	333102	77648	42215	119863
KL: Kerala	288063	123371	411434	189099	93370	282469	97340	21627	118967
MP: Madhya Pradesh	209280	132177	341457	137382	100035	237417	70718	23170	93889
MH: Maharashtra	366007	601735	967742	240266	455409	695675	123679	105483	229162
OD: Odisha	116148	41917	158066	76246	31724	107970	39248	7348	46596
PB: Punjab	161833	101902	263735	106236	77122	183358	54686	17863	72549
RJ: Rajasthan	290852	134212	425065	190930	101575	292506	98283	23527	121810
TN: Tamil Nadu	259558	316814	576372	170387	239773	410160	87708	55537	143245
UP: Uttar Pradesh	646337	312360	958697	424288	236402	660691	218406	54756	273162
UK: Uttarakhand	49024	22459	71483	32182	16997	49179	16566	3937	20503
WB: West Bengal	280209	223545	503754	183944	169185	353128	94686	39187	133874
NE: North East	53393	23083	76476	35050	17470	52520	18042	4046	22089
DL: Delhi	14850	161831	176681	9748	122478	132226	5018	28369	33387
UT: Union Territories	9560	27661	37221	6276	20934	27210	3231	4849	8079
<b>Total</b>	<b>4381905</b>	<b>3274609</b>	<b>7656514</b>	<b>2876506</b>	<b>2478309</b>	<b>5354815</b>	<b>1480703</b>	<b>574034</b>	<b>2054737</b>

**Source:** Authors' calculations based on data from National Accounts Statistics, 2014, and National Sample Survey Organisation 68<sup>th</sup> Round 2011-12.

**Notes:** NE: North-East is an aggregate of Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura;

UT: Union Territories is an aggregate of Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Lakshadweep and Puducherry.

**Appendix Table 2.7: Distribution of household commodity demand across States in 2011-12 (%)**

State	Foodgrains	Other food	Non-food Agriculture	Manufacturing	Electricity	Transport services	Other services	Total
AP: Andhra Pradesh	8.6	8.6	8.2	8.4	6.5	8.2	9.4	8.7
AS: Assam	2.8	2.1	2.3	1.6	2.0	1.3	1.0	1.6
BR: Bihar	8.3	5.9	6.0	5.2	6.3	2.1	3.7	4.6
CG: Chattisgarh	1.9	1.4	1.8	1.8	1.8	1.1	1.1	1.4
GA: Goa	0.1	0.2	0.1	0.2	0.1	0.3	0.2	0.2
GJ: Gujarat	4.6	5.9	5.7	5.6	6.0	6.3	4.8	5.5
HR: Haryana	1.9	3.5	2.8	3.4	3.0	4.0	3.8	3.5
HP: Himachal Pradesh	0.6	0.7	0.7	0.8	0.7	0.8	0.7	0.7
JK: Jammu & Kashmir	1.0	1.0	0.8	1.0	0.9	1.1	0.7	0.9
JH: Jharkhand	2.6	1.7	1.9	1.7	2.0	1.3	1.3	1.6
KA: Karnataka	5.4	5.7	5.3	5.6	4.8	6.8	7.0	6.2
KL: Kerala	2.8	4.3	3.3	7.1	2.9	5.7	4.8	5.3
MP: Madhya Pradesh	5.2	4.5	5.7	4.8	5.7	4.3	3.9	4.4
MH: Maharashtra	10.7	11.8	10.9	11.9	11.7	14.5	14.4	13.0
OD: Odisha	3.5	2.2	2.8	2.1	2.9	1.3	1.8	2.0
PB: Punjab	2.0	3.1	3.7	3.5	4.2	4.1	3.5	3.4
RJ: Rajasthan	4.4	6.1	6.9	5.4	6.5	6.0	5.0	5.5
TN: Tamil Nadu	6.4	7.1	5.8	6.8	5.5	9.2	8.5	7.7
UP: Uttar Pradesh	14.5	12.5	13.3	12.1	14.2	10.7	12.6	12.3
UK: Uttarakhand	0.9	0.9	0.9	1.0	0.9	0.9	0.9	0.9
WB: West Bengal	8.8	7.1	7.4	6.6	7.9	4.7	6.7	6.6
NE: North East	1.3	1.2	1.4	1.0	1.1	1.0	0.8	1.0
DL: Delhi	1.3	2.0	1.9	2.0	2.2	3.7	2.9	2.5
UT: Union Territories	0.3	0.4	0.3	0.5	0.3	0.7	0.6	0.5
<b>Total (Rs.Crores)</b>	<b>365089</b>	<b>927367</b>	<b>93642</b>	<b>1414078</b>	<b>72914</b>	<b>804316</b>	<b>1677408</b>	<b>5354815</b>

Source: Authors' calculations based on data from National Accounts Statistics, 2014.

Notes: NE: North-East is an aggregate of Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura;

UT: Union Territories is an aggregate of Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Lakshadweep and Puducherry.



**Appendix Table 2.8: Government revenue and expenditure in 2011-12, ₹ Crores**

	Government revenue									Government expenditure				
	Tax revenue						Non-tax revenue			Total revenue	Consumption	Transfers to households	Interest	Savings
	Central taxes					State taxes		Factor returns	Central grants to states					
	Direct tax on households	Corporation tax	Central Indirect tax	Tariff	Export tax	Direct tax on Households	State indirect tax							
Central Government	95758	222096	37994	71832	151803			181456		760939	61174	35753	96567	341666
State governments														
AP: Andhra Pradesh	3576	6987	4110	3078		6510	24848	17440	10825	77374	79267	17189	22960	-42043
AS: Assam	1870	3654	2150	1610		701	3515	4275	7667	25441	24582	4852	3990	-7983
BR: Bihar	5628	10996	6468	4843		2090	5836	1327	9883	47071	39721	12081	8774	-13504
CG: Chattisgarh	1273	2488	1464	1096		1405	4533	6053	4776	23087	22522	2905	1880	-4220
GA: Goa	137	268	158	118		240	1215	3448	3982	9565	5122	635	1346	2462
GJ: Gujarat	1566	3063	1802	1349		8138	18089	7869	5650	47526	50011	9507	23773	-35765
HR: Haryana	540	1056	621	465		3495	8603	7042	2755	24576	28876	4957	8157	-17415
HP: Himachal Pradesh	403	787	463	347		216	1976	2856	6521	13568	11470	3430	3857	-5190
JK: Jammu & Kashmir	800	1562	445	688		254	2432	2985	14541	23707	19984	5100	4200	-5577
JH: Jharkhand	1444	2822	1660	1243		566	3034	4531	5257	20558	18839	3553	5057	-6892
KA: Karnataka	2231	4359	2565	1920		6797	21472	6095	8168	53607	62402	8411	10904	-28110
KL: Kerala	1207	2358	1387	1039		3925	11929	3866	3709	29420	37362	13461	10730	-32133
MP: Madhya Pradesh	3670	7171	4219	3159		6119	11348	11159	9929	56775	50307	6790	9293	-9616
MH: Maharashtra	2680	5236	3120	2307		21438	35668	12181	12167	94797	111205	16251	36882	-69540
OD: Odisha	2464	4813	2832	2120		1429	6192	9609	8152	37611	31941	7335	3945	-5610
PB: Punjab	716	1399	823	616		3868	8204	2088	2441	20155	25347	8753	12628	-26573
RJ: Rajasthan	3017	5895	3468	2597		3787	11373	13683	7482	51302	47751	9159	13726	-19334
TN: Tamil Nadu	2562	5005	2944	2205		8323	26779	8476	7286	63580	72192	19489	18344	-46445
UP: Uttar Pradesh	10144	19819	11659	8730		10239	22827	15130	17760	116308	110680	21857	29519	-45748
UK: Uttarakhand	577	1128	664	497		683	2531	1694	4074	11849	11823	1756	3454	-5185
WB: West Bengal	3745	7316	4304	3223		6283	9926	1999	13889	50684	55253	15573	36796	-56938
NE: North East	1334	2586	1522	1146		226	1467	4027	23249	35557	24754	9173	7697	-6067
DL: Delhi	0	0	0	0		2792	8694	687	1961	14134	20201	0	0	-6067
UT: Union Territories	0	0	0	0		98	670	229	1031	2027	3107	458	424	-1963
<b>Total of States</b>	<b>51584</b>	<b>100768</b>	<b>58846</b>	<b>44394</b>	<b>0</b>	<b>99620</b>	<b>253161</b>	<b>148750</b>	<b>193154</b>	<b>950278</b>	<b>964721</b>	<b>202676</b>	<b>278337</b>	<b>-495456</b>
<b>Total (Central + States)</b>	<b>147342</b>	<b>322864</b>	<b>96840</b>	<b>116226</b>	<b>151803</b>	<b>99620</b>	<b>253161</b>	<b>330206</b>	<b>193154</b>	<b>1711217</b>	<b>1025895</b>	<b>238429</b>	<b>374904</b>	<b>-153790</b>

Source: Authors' calculations based on data from National Accounts Statistics, 2014, and Reserve Bank of India State Finances Data, 2013-14

Notes: NE: North-East is an aggregate of Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura;

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