

# **Economic Impact of Social Protection Programmes in India: A Social Accounting Matrix Multiplier Analysis<sup>1</sup>**

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## **Abstract:**

Social protection consists of governments' policies and programs designed to reduce poverty and vulnerability by promoting efficient labour markets, diminishing people's exposure to risks, and enhancing their capacity to manage economic and social risks, such as unemployment, exclusion, sickness, disability and old age. In recent years, social protection programmes have found place in the agenda of many governments. Generally, what is widely discussed is the fiscal implications of social protection measures but not so much the economic impacts in terms of output, employment and income effects.

This has motivated the present study to make an attempt to evaluate the economic impact of a few major social protection programmes launched in India using Social Accounting matrix (SAM) framework. In the present exercise, a 78- sector SAM for India for year 2007-08 has been used. The households' categories are based on occupation classes.

The study has computed the output, employment and income impacts of the government expenditure made on three select social security measures by the Government of India, viz. Mahatma Gandhi National Rural Employment generation Act (MGNREGA), Indira Awas Yojana (IAY) and National Social Protection Programmes (NSPP) in 2011-12 by using SAM framework.

The exercise brings out that these programmes have significant impact on output effect across different sectors of the economy, on income of different size classes in urban and rural sectors of and employment effect across different sectors of the economy.

**Key words:** MGNREGA, Indira Awas Yojana, National Social Protection Programmes, SAM for India 2007-08, SAM Multiplier

**JEL Classification:** D57, E16, E24, E65, H53, H55, I38

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<sup>1</sup> Conference Paper, 22<sup>nd</sup> International Input-Output Association Conference, 14-18 July 2014, Lisbon, Portugal

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# **Economic Impact of Social Protection Programmes in India: A Social Accounting Matrix Multiplier Analysis**

## **Introduction**

Social protection<sup>3</sup> consists of governments' policies and programs designed to reduce poverty and vulnerability by promoting efficient labour markets, diminishing people's exposure to risks, and enhancing their capacity to manage economic and social risks, such as unemployment, exclusion, sickness, disability and old age. In recent years, social protection programmes have found place in the agenda of many governments. Many studies show that measures such as cash transfer programmes and rural employment guarantee schemes have positive impact on the poverty reduction and living standard of the people. There are many methods for the assessment of impact of social protection programmes. Since most of them do not take into account the whole economy, they have limited significance for policy analysis. Impact analysis through Social Accounting Matrix (SAM) multiplier may be the best alternative.

A SAM framework is ideally a matrix representation of the circular flow of income in an economy<sup>4</sup>. It is a single entry accounting system that represents all transactions and transfers between different sectors of production, factors of production, and institutions of the economy in a single matrix format. Probably, there are no studies, especially in Indian context, which have analyzed the impact of these programmes through SAM multiplier. Therefore, it is pertinent to have such study.

The objective of the present study is to analyze the impact of selected social protection programmes in India through SAM multiplier analysis. The SAM for India for year 2007-08 has been applied for the study<sup>5</sup>. The government expenditure on Social Protection Programmes in year 2011-12 has been considered for the study.

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<sup>3</sup> United Nations Research Institute For Social Development has defined social protection as preventing, managing, and overcoming situations that adversely affect people's well being. However, in most of the developed and developing countries, it is used address acute poverty and to maintain a certain living standard.

<sup>4</sup> For a detailed discussion, please see Annexure A

<sup>5</sup> In the present study, a SAM for year 2007-08 has been used for the impact analysis of expenditure on social protection programmes in 2011-12. The main reason for it is the availability of I-O table. The I-O table for 2007-08 is the latest available I-O table for India. It has been also assumed that the production structure and relative prices will not change during 2007-08 and 2011-12.

## Methodology

### The SAM for India for Year 2007-08

The construction of a SAM for India was initiated in the early 1980s. As per our knowledge, Sarkar and Subbarao (1981) constructed the first SAM for India. Since then, a number of researchers have constructed SAM for India. The latest available SAM for India is ‘A SAM for India 2007-08’ (Pradhan et al., 2013). It consists of 78 production sectors, five factors of production, 9 categories of households, private corporations, public enterprises, government, indirect taxes, capital account and rest of the world. The nine categories of households are based on the occupation as defined in the 66th round consumer expenditure survey by NSSO (see Table 1). The five factors of production are unskilled labourers, semi-skilled labourers, skilled labourers, capital and land. Capital account is comprised of gross fixed capital formation and change in stocks.

**Table1: Household Categories Based on Occupation**

Rural		Urban	
<b>RH1</b>	Non-agricultural Self-Employed	<b>UH1</b>	Self-Employed
<b>RH2</b>	Agricultural Labour	<b>UH2</b>	Salaried Class
<b>RH3</b>	Non-agricultural Labour	<b>UH3</b>	Casual labour
<b>RH4</b>	Agricultural Self-Employed	<b>UH4</b>	Other households
<b>RH5</b>	Other households		

### SAM Multiplier

The concept of SAM may be represented in matrix form as

$$X = Z + E \quad \dots (1)$$

Where, X is total output, Z is endogenous demand and E is exogenous demand. Since, endogenous demand is proportionally related to total output, therefore, equation (1) may be written as

$$X = MX + E \quad \dots (2)$$

Where, M represents coefficient matrix. The equation (2) may be rewritten as

$$X = (I-M)^{-1}E \quad \dots (3)$$

In equation (3),  $(I-M)^{-1}$  represents SAM multiplier. The size of the multiplier depends upon number of accounts in the SAM considered as exogenous vector. The lesser the number of accounts considered as exogenous vector, the higher is the value of SAM multiplier and vice-versa. It also implies that the higher the number of accounts considered as endogenous vector, the higher is the value of SAM multiplier. In the present study, government, indirect taxes, capital account and rest of the world have been assumed exogenous vectors.

## Measurement of SAM Multiplier Effect

In an economy, any change due to the exogenous sectors has impact on the interlinked production sectors, factors and institutions. The impact may be direct, indirect or induced. The SAM multiplier effect measures the increment in the output vector  $X$  due to the change in exogenous demand. The increment in production account is termed as output effect; and the increment in households and corporate accounts is termed as income effect. Thus, the income effect is comprises of households' income effect and corporate income effect. The employment effect is obtained by multiplying output effect and employment coefficient.

The direct income effect has been measured as the amount determined by government to spend as wages and transfer payment given to households. The indirect income effect has been measured as difference of total income effect and direct income effect. The direct output effect has been measured as expenditure made by households on different commodities due to direct income effect, expenditure on construction materials and government expenditure on different commodities as administration cost under social protection programmes. The indirect output effect has been measured as difference of total output effect and direct output effect. The direct, indirect and total employment effects have been measured as multiplication of employment coefficient with direct, indirect and total output effects respectively.

## Distribution of Expenditure on Selected Social Protection Programmes<sup>6</sup> in 2011-12 in the SAM Framework

For multiplier analysis, these expenditures have been distributed in the SAM framework. The details of the expenditure on these programmes in 2011-12 are shown in table 3. The expenditure on construction materials in MGNREGA has been distributed according to the technical coefficients of materials used in the construction sector. Since, MGNREGA aims to provide employment to rural unskilled labourers, the expenditure as wage has been divided in proportion to the unskilled labourer's income of rural agricultural labourers (RH2) and rural non-agricultural labourers (RH3). The expenditure on administration has been distributed according to the proportional expenditure by government on different sectors.

The objective of the Indira Awas Yojana is to construct houses for poor people. Therefore, the expenditure on this programme has been distributed according to the technical coefficients of construction sector. As the aim of national social programme is to directly raise the income of the poor people through transfer payment, the expenditure on it has been divided as income of RH2 and RH3 in proportion to their government transfer payment. The distributed expenditure is added to obtain the total expenditure on different sectors, factors and households under SAM framework. It creates a column vector of exogenous demand. The multiplication of

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<sup>6</sup> For a detailed discussion about the selected Social Protection Programmes in India, please see the Annexure B.

this vector with SAM multiplier gives the multiplier effect of expenditure on social protection programmes.

**Table 2: Expenditure on Social Protection Programmes in 2011-12 (in Rs. Crore)**

<b>Expenditure Items</b>	<b>MGNREGA</b>	<b>IAY</b>	<b>NSPP</b>
Construction/Materials	11065.16	12926.33	
Wage	24860.91		
Administration	2108.63		
Transfer Payment			6188.67
<b>Total</b>	<b>38034.70</b>	<b>12926.33</b>	<b>6188.67</b>

Table 2 indicates that Rs. 38034.70 crore has been spent under MGNREGA in 2011-12 in which Rs. 11065.16 crore, Rs. 24860.91 crore and Rs. 2108.63 have been spent on construction materials, wages and administration respectively. Rs. 12926.33 crore has been spent on construction materials under IAY and Rs. 6188.67 crore has been spent as transfer payment under NSPP in 2011-12.

### **Findings and Analysis**

Any expenditure through social protection programmes has multi-dimensional effects on the economy. The present paper attempts to study the total impact comprising both direct and indirect output, GVA, income, revenue and employment effects of expenditure by government in 2011-12 under three select social protection programmes, namely MGNREGA, Indira Awas Yojana (IAY) and National Social Protection Programmes (NSPP).

### ***Output Effect***

Total output of the economy has increased by worth of Rs. 97712 crore, Rs. 32204 crore, and Rs. 15638 crore due to the expenditure in 2011-12 through MGNREGA, IAY and NSPP respectively (See Table 3). The total effect has been disaggregated into direct and indirect output effects. The direct effect is measured as the increase in the demand due to the direct expenditure pattern obtained as a result of the expenditure on the schemes while the indirect effect has been measured as the difference between total effect and direct effect. Due to MGNREGA, IAY and NSPP, the direct output effects<sup>7</sup> are Rs 28684 crore, Rs. 7963 crore and Rs. 4827 crore respectively while the indirect output effects<sup>8</sup> are Rs. 69028 crore, Rs. 24241 crore and Rs.

<sup>7</sup> The total effect may be disaggregated into direct and indirect output effects. The direct effect is measured as the increase in the demand due to the direct expenditure pattern obtained as a result of the expenditure on the schemes.

<sup>8</sup> The indirect effect has been measured as the difference between total effect and direct effect.

10811 crore respectively (See Table 3). It clearly indicates that the indirect output effects are higher than the direct output effects due to these programmes.

**Table 3: Output Effect (in Rs. Crore)**

Sector	NREGA			IAY			NSPP		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
Primary	8070 (28.14)	18704 (27.10)	26775 (27.40)	506 (6.36)	5815 (23.99)	6321 (19.63)	1937 (40.14)	3122 (28.88)	5059 (32.35)
Secondary	9355 (32.61)	22461 (32.54)	31815 (32.56)	3746 (47.05)	8290 (34.20)	12036 (37.38)	1461 (30.27)	3433 (31.75)	4894 (31.30)
Tertiary	11259 (39.25)	27864 (40.37)	39123 (40.04)	3710 (46.59)	10136 (41.81)	13847 (43.00)	1428 (29.59)	4256 (39.37)	5685 (36.35)
<b>Total</b>	<b>28684</b> <b>(100.00)</b>	<b>69028</b> <b>(100.00)</b>	<b>97712</b> <b>(100.00)</b>	<b>7963</b> <b>(100.00)</b>	<b>24241</b> <b>(100.00)</b>	<b>32204</b> <b>(100.00)</b>	<b>4827</b> <b>(100.00)</b>	<b>10811</b> <b>(100.00)</b>	<b>15638</b> <b>(100.00)</b>

Note: Values in parenthesis show percentage of the respective total.

The total output effects due to MGNREGA are Rs. 26775 crore (27.40 percent), Rs. 31815 crore (32.56 percent) and Rs. 39123 crore (40.04 percent) for primary, secondary and tertiary sectors respectively. The direct output effects due to MGNREGA are 39.25 percent, 32.61 percent and 28.14 percent of total direct output effect for tertiary, secondary and primary sectors respectively. The indirect output effects due to MGNREGA are 40.37 percent, 32.54 percent and 27.10 percent of total indirect output effect for tertiary, secondary and primary sectors respectively. The above findings for output effects due to MGNREGA indicate that this programme has highest production impact on tertiary sector followed by secondary sector.

Due to IAY, the total output effects are Rs. 6321 crore (19.63 percent), Rs. 12036 crore (37.38 percent) and Rs. 13847 crore (43.00 percent) for primary, secondary and tertiary sectors respectively. The direct output effects due to IAY are 46.59 percent, 47.05 percent and 6.36 percent of total direct output effect for tertiary, secondary and primary sectors respectively. The indirect output effects due to IAY are 41.81 percent, 34.20 percent and 23.99 percent of total indirect output effect for tertiary, secondary and primary sectors respectively. The above findings for output effects due to IAY indicate that this programme has highest production impact on tertiary sector followed by secondary sector. However, in case of direct output effect due to IAY, the highest production impact is for secondary sector followed by tertiary sector. The opposite is true in case of indirect output effect due to IAY.

The total output effects due to NSPP Rs. 5059 crore (32.35 percent), Rs. 4894 crore (31.30 percent) and Rs. 5685 crore (36.35 percent) for primary, secondary and tertiary sectors respectively. The direct output effects due to NSPP are 29.59 percent, 30.27 percent and 40.14 percent of total direct output effect for tertiary, secondary and primary sectors respectively. The

indirect output effects due to NSPP are 39.37 percent, 31.75 percent and 28.88 percent of total indirect output effect for tertiary, secondary and primary sectors respectively. The above findings for output effects due to NSPP indicate that this programme has highest production impact on tertiary sector followed by primary sector. Moreover, in case of direct output effect due to NSPP, the highest production impact is for primary sector followed by secondary sector while the highest production impact is for tertiary sector followed by secondary sector in case of indirect output effect due to NSPP.

### ***GVA Effect***

The GVA of the economy has increased by worth of Rs. 49309.86 crore, Rs. 18384.49 crore, and Rs. 7349.79 crore due to the expenditure in 2011-12 through MGNREGA, IAY and NSPP respectively (see Table 4). The factors of production have been classified into five in the SAM 2007-08 under study viz. unskilled labourer, semi-skilled labourer, skilled labourer, capital and land. Among these five, the capital has highest share in GVA (i.e. 47.77 percent, 45.85 percent 49.65 percent in case of MGNREGA, IAY and NSPP respectively; see Table 4) followed by unskilled labourer (i.e. 23.91 percent, 27.06 percent and 23.15 percent in case of MGNREGA, IAY and NSPP respectively; see Table 4). However, if all categories of labourers are added, the share of labour in GVA is higher in case of MGNREGA and IAY and lower in case of NSPP than that of capital and land taken together.

**Table 4: GVA Effect (in Rs. Crore)**

<b>Sector</b>	<b>MGNREGA</b>	<b>IAY</b>	<b>NSPP</b>
Unskilled Labourer	11788.13 (23.91)	4974.03 (27.06)	1701.43 (23.15)
Semi-skilled Labourer	6699.65 (13.59)	2687.77 (14.62)	930.90 (12.67)
Skilled Labourer	6321.43 (12.82)	2119.01 (11.53)	877.62 (11.94)
<b><i>Labour</i></b>	<b><i>24809.20</i></b> <b><i>(50.31)</i></b>	<b><i>9780.81</i></b> <b><i>(53.20)</i></b>	<b><i>3509.94</i></b> <b><i>(47.76)</i></b>
Capital	23554.89 (47.77)	8430.11 (45.85)	3649.22 (49.65)
Land	945.76 (1.92)	173.57 (0.94)	190.63 (2.59)
<b><i>Capital +Land</i></b>	<b><i>24500.66</i></b> <b><i>(49.69)</i></b>	<b><i>8603.68</i></b> <b><i>(46.80)</i></b>	<b><i>3839.84</i></b> <b><i>(52.24)</i></b>
<b>Total</b>	<b>49309.86</b> <b>(100.00)</b>	<b>18384.49</b> <b>(100.00)</b>	<b>7349.79</b> <b>(100.00)</b>

Note: Values in parenthesis show percentage of total GVA.

### *Income Effect*

Due to expenditure on these three programmes, the increment in the income is Rs. 68075.91 crore, Rs. 16203.19 crore, Rs. 12594.22 crore due to MGNREGA, IAY and NSPP respectively (See Table 5). The rise in the income of households' income is highest, almost more than 90 percent for all programmes. However, the increase in the income of Private Corporation is higher than that of public enterprises.

**Table 5: Income Effect of Social Protection Programmes in 2011-12 (in Rs. Crore)**

	<b>MGNREGA</b>	<b>IAY</b>	<b>NSPP</b>
Households	63822.45 (93.75)	14680.91 (90.61)	11935.26 (94.77)
Pvt. Corp.	3059.99 (4.49)	1095.15 (6.76)	474.07 (3.76)
Pub. Enter.	1193.46 (1.75)	427.13 (2.64)	184.90 (1.47)
<b>Total</b>	<b>68075.91</b> <b>(100.00)</b>	<b>16203.19</b> <b>(100.00)</b>	<b>12594.22</b> <b>(100.00)</b>

Note: Values in parenthesis show percentage of total income effect.

The households' income effect has been disaggregated into direct and indirect income effect (See Table 6). The direct income effect in case of MGNREGA has been observed for rural agricultural labour and rural non-agricultural labour as the programme is aimed for only unskilled rural labourer. The rural agricultural labour has higher direct income effect (i.e. 56.60 percent) than that of rural non-agricultural labour (i.e. 43.40 percent). In the indirect income effect, the rural households has higher share than that of urban households (i.e. 50.76 percent, 49.21 percent respectively). Moreover, the urban salaried class has the highest indirect income effect due to MGNREGA (23.87 percent) followed by rural non-agricultural self employed (18.76 percent) and urban self employed (17.95 percent). It may be due to the higher salary of urban salaried class and higher profit margin of rural non-agricultural self employed and urban self employed. But, the total income effect due to MGNREGA is highest for rural agricultural labour (26.37 percent) followed by rural non-agricultural labour (20.39 percent). Here, it indicates that the direct income effect has played significant role for these households.

In case of IAY, there is no direct income effect for any households as this programme aims to construct buildings in rural areas and not to give direct monetary benefit to any section of the society. Therefore, there is only indirect income effect due to IAY (See Table 6). In the indirect income effect or total income effect, the urban households has higher share than that of rural households (i.e. 50.17 percent, 49.83 percent respectively). Moreover, the urban salaried class has the highest indirect income effect due to MGNREGA (24.85 percent) followed by



urban self employed (17.93 percent) and rural non-agricultural self employed (17.45 percent). It may be due to the higher salary of urban salaried class and higher profit margin of rural non-agricultural self employed and urban self employed.

**Table 6: Households' Income Effect of Social Protection Programmes in 2011-12 (in Rs. Crore)**

Households Category	MGNREGA			IAY			NSPP		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
Rural Non-agricultural Self-Employed	0.00 (0.00)	3272.18 (8.40)	3272.18 (5.13)	0.00 (0.00)	1239.91 (8.45)	1239.91 (8.45)	0.00 (0.00)	481.48 (8.38)	481.48 (4.03)
Rural Agricultural Labour	14070.76 (56.60)	2759.50 (7.08)	16830.26 (26.37)	0.00 (0.00)	1087.62 (7.41)	1087.62 (7.41)	4998.77 (80.77)	390.51 (6.80)	5389.28 (45.15)
Rural Non-agricultural Labour	10790.15 (43.40)	2224.88 (5.71)	13015.03 (20.39)	0.00 (0.00)	872.97 (5.95)	872.97 (5.95)	1189.90 (19.23)	316.31 (5.50)	1506.22 (12.62)
Rural Agricultural Self-Employed	0.00 (0.00)	7310.30 (18.76)	7310.30 (11.45)	0.00 (0.00)	2561.63 (17.45)	2561.63 (17.45)	0.00 (0.00)	1135.86 (19.77)	1135.86 (9.52)
Rural Other households	0.00 (0.00)	4219.85 (10.83)	4219.85 (6.61)	0.00 (0.00)	1553.95 (10.58)	1553.95 (10.58)	0.00 (0.00)	637.59 (11.10)	637.59 (5.34)
<b>Rural Households</b>	<b>24860.91 (100.00)</b>	<b>19786.71 (50.79)</b>	<b>44647.62 (69.96)</b>	<b>0.00 (0.00)</b>	<b>7316.07 (49.83)</b>	<b>7316.07 (49.83)</b>	<b>6188.67 (100.00)</b>	<b>2961.77 (51.54)</b>	<b>9150.44 (76.67)</b>
Urban Self-Employed	0.00 (0.00)	6993.49 (17.95)	6993.49 (10.96)	0.00 (0.00)	2632.33 (17.93)	2632.33 (17.93)	0.00 (0.00)	1035.59 (18.02)	1035.59 (8.68)
Urban Salaried Class	0.00 (0.00)	9300.17 (23.87)	9300.17 (14.57)	0.00 (0.00)	3648.01 (24.85)	3648.01 (24.85)	0.00 (0.00)	1322.61 (23.02)	1322.61 (11.08)
Urban Casual labour	0.00 (0.00)	1056.48 (2.71)	1056.48 (1.66)	0.00 (0.00)	412.17 (2.81)	412.17 (2.81)	0.00 (0.00)	151.07 (2.63)	151.07 (1.27)
Urban Other households	0.00 (0.00)	1824.69 (4.68)	1824.69 (2.86)	0.00 (0.00)	672.33 (4.58)	672.33 (4.58)	0.00 (0.00)	275.55 (4.80)	275.55 (2.31)
<b>Urban Households</b>	<b>0.00 (0.00)</b>	<b>19174.83 (49.21)</b>	<b>19174.83 (30.04)</b>	<b>0.00 (0.00)</b>	<b>7364.84 (50.17)</b>	<b>7364.84 (50.17)</b>	<b>0.00 (0.00)</b>	<b>2784.82 (48.46)</b>	<b>2784.82 (23.33)</b>
<b>Total Households</b>	<b>24860.91 (100.00)</b>	<b>38961.54 (100.00)</b>	<b>63822.45 (100.00)</b>	<b>0.00 (0.00)</b>	<b>14680.91 (100.00)</b>	<b>14680.91 (100.00)</b>	<b>6188.67 (100.00)</b>	<b>5746.59 (100.00)</b>	<b>11935.26 (100.00)</b>

Note: Values in parenthesis show percentage of total income.

The direct income effect in case of NSPP has been observed for rural agricultural labour and rural non-agricultural labour as the programme is aimed for poor section of the society<sup>9</sup> (See Table 6). The rural agricultural labour has higher direct income effect (i.e. 80.77 percent) than that of rural non-agricultural labour (i.e. 19.23 percent). In the indirect income effect, similar to

<sup>9</sup> In this case it has been assumed that the rural agricultural labour and rural non-agricultural labour are the poor section of the society and therefore, the benefits of NSPP reach to them only.

the effect of MGNREGA, the rural households has higher share than that of urban households (i.e. 51.54 percent, 48.46 percent respectively). Moreover, the urban salaried class has the highest indirect income effect due to NSPP (23.02 percent) followed by rural agricultural self employed (19.77 percent) and urban self employed (18.02 percent). It may be due to the higher salary of urban salaried class and higher profit margin of rural agricultural self employed and urban self employed. But, the total income effect due to NSPP is highest for rural agricultural labour (45.15 percent) followed by rural non-agricultural labour (12.62 percent). Here, it indicates that the direct income effect has played significant role for these households.

### ***Revenue Effect***

The expenditure on these three programmes by government has impact on it revenue also. It has been observed that there is collection of taxes of Rs. 6126.12 crore, Rs. 2646.51 crore and Rs. 858.81 crore due to expenses through MGNREGA, IAY and NSPP in 2011-2012 respectively (See Table 7). Moreover, the revenue collection through direct taxes is higher than indirect taxes in case of all programmes. It indicates that the expenditure through these programmes has significant impact on the income of income tax paying class.

**Table 7: Revenue Effect of Social Protection Programmes in 2011-12 (in Rs. Crore)**

<b>Taxes</b>	<b>MGNREGA</b>	<b>IAY</b>	<b>NSPP</b>
Direct Taxes	3942.38 (64.35)	1438.41 (54.35)	599.68 (69.83)
Indirect Taxes	2183.74 (35.65)	1208.10 (45.65)	259.13 (30.17)
<b>Total Taxes</b>	<b>6126.12</b> <b>(100.00)</b>	<b>2646.51</b> <b>(100.00)</b>	<b>858.81</b> <b>(100.00)</b>

Note: Values in parenthesis show percentage of total taxes.

### ***Employment Effect***

The employment effect of multiplier effect has been measured in terms number of people get job due to multiplier effect and has been obtained by multiplication of sector-wise employment coefficient and output increment. The increase in employment due to expenditure through MGNREGA, IAY and NSPP are 52042 hundreds, 13944 hundreds and 9287 hundreds respectively (See Table 8). In general, it has been observed that the employment generation due to these programmes is highest in primary sector followed by tertiary sector. It may be due to the higher employment coefficient of these sectors.

**Table 8: Employment Effect of Social Protection Programmes in 2011-12 (values in hundreds)**

Sector	No. of Persons Get Job		
	NREGA	IAY	NSPP
Primary	38772 (74.50)	9154 (65.64)	7326 (78.89)
Secondary	3840 (7.38)	1453 (10.42)	591 (6.36)
Tertiary	9431 (18.12)	3338 (23.94)	1370 (14.75)
<b>Total</b>	<b>52042</b> <b>(100.00)</b>	<b>13944</b> <b>(100.00)</b>	<b>9287</b> <b>(100.00)</b>

Note: Values in parenthesis show percentage of total employment.

### A Comparative Analysis of the Impact of Social Protection Programmes

It has been observed from above discussion that there are variations in the impact of different social protection programmes. The objectives of all social programmes and the expenditure on these by government agencies are different. Therefore, the variation in their economic impact is inevitable. But, the SAM multiplier effect coefficients of these programmes may be used for comparative analysis of the impacts. Table 9 shows that the increment in output will be 2.57 times, 2.49 times and 2.53 times of the expenditure on MGNREGA, IAY and NSPP respectively. It infers that if the government aims to increase output through these programmes, it may focus on MGNREGA. The increment in GVA will be 3.87 times, 3.91 times and 3.71 times of the expenditure on MGNREGA, IAY and NSPP respectively. It indicates that if the government aims to increase GVA through these programmes, it may focus on IAY. The increment in households' income will be 1.68 times, 1.14 times and 1.93 times of the expenditure on MGNREGA, IAY and NSPP respectively. It implies that if the government aims to increase households' income through these programmes, it may focus on NSPP. The increment in revenue will be 0.16 times, 0.20 times and 0.14 times of the expenditure on MGNREGA, IAY and NSPP respectively. It suggests that if the government aims to increase revenue come through these programmes, it may focus on IAY. Moreover, it is also clear that all programmes have their own advantage in terms of different economic measures. Therefore, it is upto policy makers to select specific programme, given the requirement of the economy.

**Table 9: SAM Multiplier Effect Coefficients of Social Protection Programmes in 2011-12**

	MGNREGA	IAY	NSPP
Primary Sectors Output	0.70	0.49	0.82
Secondary Sectors Output	0.84	0.93	0.79
Tertiary Sectors Output	1.03	1.07	0.92
Total Output	2.57	2.49	2.53
GVA	3.87	3.91	3.71
Households Income	1.68	1.14	1.93
Revenue	0.16	0.20	0.14

## Conclusion

Impact of social protection programmes is multidimensional. The application of SAM multiplier analysis for such study is one of the most appropriate methods. It captures direct as well as indirect effect on the economy due to changes in exogenous demand. The present study captures mainly economic impacts. Since, the objectives of all social programmes and the expenditure on these are different; therefore, the variation in their economic impact is inevitable.

The output effect of all programmes is highest in tertiary sectors. The indirect output effects are higher than the direct output effects due to these programmes. The income effect is highest for households than that of private corporations and public enterprises for all programmes. Among households category, the total income effect for rural agricultural labour is highest followed by rural non-agricultural labour. Among the rural and urban households, the highest income effect has been obtained for rural households. The share of labour (i.e. all three types of labour taken together) in GVA is higher in case of MGNREGA and IAY and lower in case of NSPP than that of capital and land taken together. The revenue collection through direct taxes is higher than indirect taxes in case of all programmes. The employment impact of the programmes is highest in the primary sectors.

All programmes have their own advantage in terms of different economic measures like MGNREGA for output increment, IAY for GVA and revenue increment and NSPP for households' income increment. In general, it may be concluded that the total impact of these programmes on the economy is multidimensional and many times higher than the amount of expenditure spending through these programmes.

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## Appendix A

### Framework of a SAM<sup>10</sup>

A Social Accounting Matrix (SAM) is a single entry accounting system that represents all transactions and transfers between different sectors of production, factors of production, and institutions of the economy in a single matrix format. The framework of a SAM is a square matrix, where each row represents the receipts and each column stands for the expenditure of the respective account. The SAM framework extends the input-output model<sup>11</sup> by including information on income distribution and final demand. An I-O table has information on payment of incomes to factors of production by sectors, but not by institutions. Therefore, there is lack of information on the distribution of income among owners of these factors. A SAM contains both information on the distribution of income among factor owners but also on their payments from other sources, such as transfer payments from government and remittances from abroad. In addition, a SAM has information on direct taxes while an I-O table has information on indirect taxes only.

The construction and application of SAM attained popularity through the pioneering works of Sir Richard Stone<sup>12</sup> and his colleagues. Moreover, after publication of a book that described in detail the SAM for Sri Lanka by Pyatt and Roe in 1977, the SAM has been used to study many issues such as income distribution, regional development, growth strategies in developing economies, technological and environmental concerns pertaining to economic development, etc (Santos 2005:1).

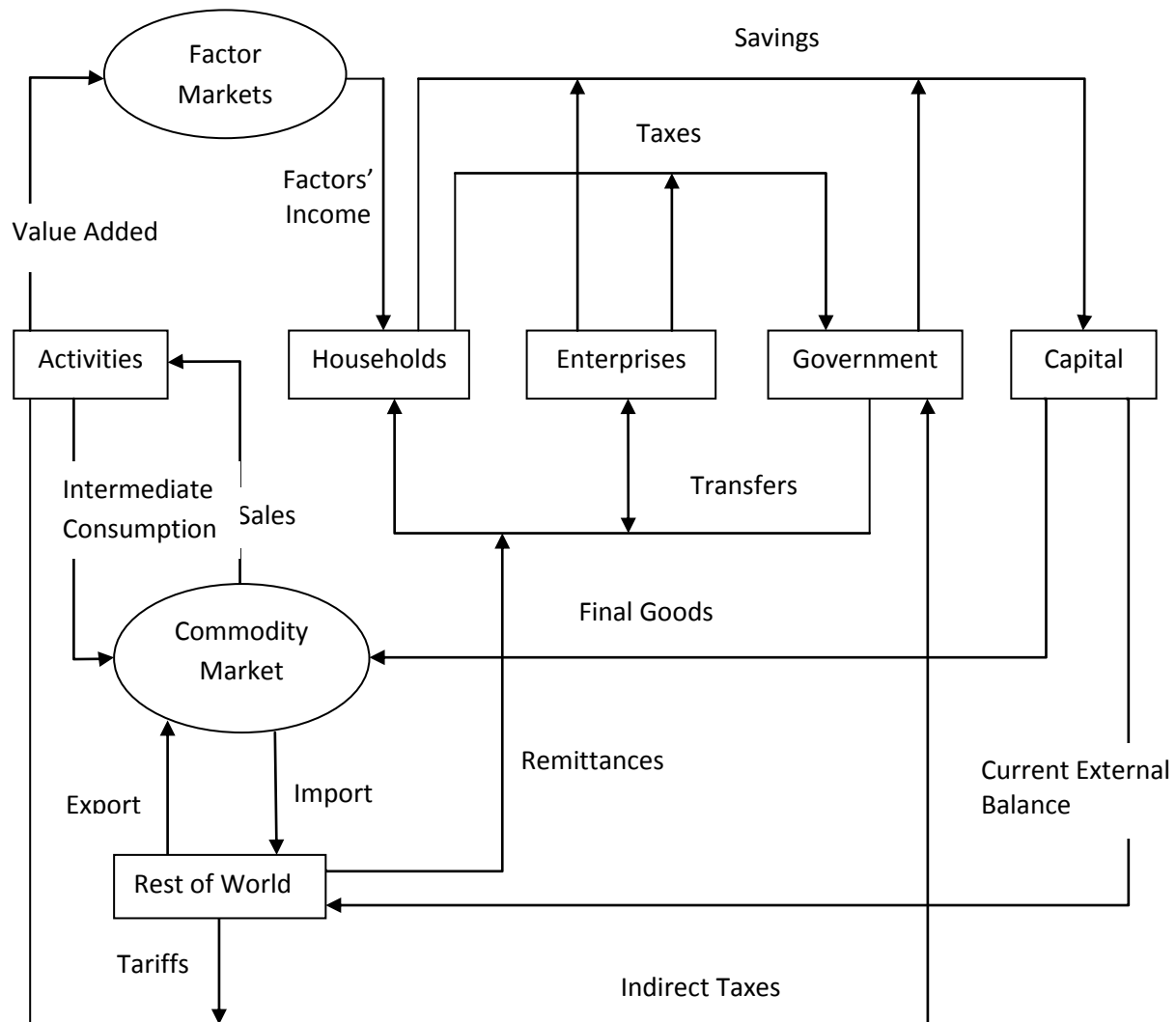
A SAM is based on the circular flow of goods, services, and income in an economy (Figure A1). The production of goods and services requires intermediate inputs and factors of production, e.g. labour, capital and land. Intermediate goods are made available as inputs from different sectors. Institutions contribute factors of production and receive factor payments as value added. The other sources of income of institutions are transfer payments from the government, interest on public debt, and remittances from the rest of the world. The income is spent on goods and services and on taxes; the remaining is saved. The saving is channelized through financial institutions and used as investment. The excess demand for savings is met from the rest of the world (ROW). The excess demand of goods, services, and factors of production is harmonized by imports and exports.

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<sup>10</sup> This section is adopted from Pradhan et al. (2013)

<sup>11</sup>The input-output table, developed by Wassily Leontief, is a matrix representation of accounting for an economy, which depicts interdependencies between different sectors of the economy. An I-O table shows the flow of goods and services from each sector of an economy over a specific period. Its origin may be traced to Quesnay's *Tableau Economique*.

<sup>12</sup>For his contributions to the development of national and social accounts systems, Stone was awarded the Nobel Prize in Economic Sciences in 1984.

**Figure A1: Circular flow of income in an economy**

Note: The arrow in above diagram shows the direction of payments. Source: Chung-I Li (2002)

Figure 1 clearly indicates that the financial flows in an economy must be balanced for a given period. The SAM framework is ideally a matrix representation of this circular flow of income in an economy. According to Pyatt et al. (1977), the SAM framework serves to satisfy two basic rules: first, for every row there is a corresponding column; and second, every entry is a receipt in a row and expenditure in a column (Pradhan et al. 2006:71). Keeping these rules in view, a schematic structure of a SAM has been presented in Table A1.

**Table A1: Schematic Structure of a SAM**

	Production Activities	Factors	Institutions	Capital Account	Rest of the World	Total
Production activities	Intermediate Consumption		Institutions' consumption	Gross fixed capital formation	Exports	Aggregate demand
Factors	Value added				Net factor income from abroad	Factor income
Institutions	Taxes on intermediary goods		Taxes, transfer payments and interest on public debt	Taxes on investment goods	Net current & capital transfer from abroad, taxes on exports	Institutions' total income
Capital account		Depreciation	Institutions' savings	Foreign savings	Gross savings of the economy	
Rest of the world						Foreign exchange payments
Total	Total cost of production	Total factor endowments	Institutions' total expenditure	Aggregate investment	Foreign exchange receipts	

Source: Pradhan et al. (2013)

It has five major accounts: production, factors, institutions, capital, and rest of the world. The institutions are classified into households, private corporations, public enterprises, and government. The indirect tax account is separated from the government account to simplify the presentation of the detailed structure of taxes (see Pradhan et al. (2006) for a detailed discussion on the schematic structure of a SAM).

The schematic structure portrays that a SAM is an important tool for creating a macroeconomic dataset for an economy from different sources in a consistent framework. It is used to bring together national income, social accounts, and input–output (I–O) accounts within a unified matrix framework and to analyze inter-sectoral linkages and socio-economic aspects.



## Appendix B

### Social Protection Programmes

Social protection consists of governments' policies and programs designed to reduce poverty and enhancing their capacity to manage economic and social risks. In recent years, social protection programmes have found place in the agenda of many governments. Indian government has also launched such programmes, for example MGNREGA, Indira Awas Yojana, etc. In the present study, only three social protection programmes, namely MGNREGA, Indira Awas Yojana and National Social Protection Programme, have been considered because of non availability of data on other programmes.

**Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA):** It refers to the world's largest welfare program, run by the Government of India. It is a job guarantee scheme for rural Indians. It was enacted by legislation on 25 August 2005. It aims at enhancing the livelihood security of people in rural areas by guaranteeing hundred days of wage-employment in a financial year to a rural household whose adult members volunteer to do unskilled manual work.

**Indira Awaas Yojana:** It is a social welfare programme, created by the Indian Government in 1985, to provide housing for the rural poor in India. It is one of the major flagship programs of the Rural Development Ministry to construct houses for BPL population in the villages. Under the scheme, financial assistance worth Rs.35,000/- in plain areas and Rs.38,500/- in difficult areas (high land area) is provided for construction of houses. The houses are allotted in the name of the woman or jointly between husband and wife. The construction of the houses is the sole responsibility of the beneficiary and engagement of contractors is strictly prohibited.

**National Social Protection Programme:** The National Social Protection Programme (NSPP) or National Social Assistance Programme (NSAP) is a flagship welfare program of the Government of India initiated on 15 August 1995. Article 41 of the Indian Constitution directs the State to provide public assistance to its citizens in case of unemployment, old age, sickness and disablement and in other cases of undeserved want within the limit of its economic capacity and development. The scheme is a "giant step" towards achieving the directive principle in the Constitution. The scheme is administered by the Ministry of Rural Development, Government of India although the beneficiaries could hail from either urban or rural areas.