Macro-Economic Impact of MGNREGA in India: An Analysis in CGE Modeling Framework

Abstract

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is one of the flagship programmes of the Government of India. The programme aims to deal with rural poverty and unemployment by assuring economic security to the rural poor, by providing guaranteed wage employment when other employment alternatives are scarce or inadequate. This study aims to evaluate the macroeconomic impacts of the MGNREGA on the Indian economy by running counterfactual simulations with the aid of PEP-1-1 CGE model. The findings indicate that MGNREGA has increased the output of the economy as well as household income. However, the increase in the household income is less to the bottom quintile classes though programme is targeted to the poor households. If the MGNREGA expenditure is reallocated, output of the economy as well as household income will decline.

Key words: India, MGNREGA, Unskilled Labour, GDP, Household Income, Social Accounting Matrix, CGE Modeling

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1. Introduction

India is one of the fastest growing economies in the world, but its growth has favoured certain sections of society. The high growth pattern, as witnessed in India in recent years, has widened disparities for rural and urban dwellers and among different classes of households. The rural population, dependent mainly on agriculture and allied activities, is presently trapped in poverty and deprivation. As agricultural employment is seasonal in nature, rural labourers, especially unskilled ones, remain unemployed or underemployed most of the time. Droughts and natural disasters cause rural-urban migration and add to the pressure on limited urban resources. Rural development is crucial to stimulate inclusive and sustainable growth of an economy, and the employment guarantee scheme is a policy that addresses this issue.

The National Rural Employment Guarantee Act was introduced in 2005, which was renamed as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in 2009. The Act entitles every rural household to a minimum of 100 days of paid work within a financial year at the statutory wage rate for casual employment in creating rural assets such as road building, restoration of water bodies, and land improvement.

There have been many studies on the impact analysis of the MGNREGA. Azam (2012) shows its positive impact on agricultural wages. Imbert and Papp (2013) observe that the programme's higher private earnings (indirect benefits) are almost the same as wage earnings (direct benefits). Afridi *et al.* (2013) find that women's participation in the MGNREGA has improved children's educational outcomes. The programme has had significant, positive impact on consumption expenditure, energy intake, and asset accumulation (Liu and Deiniger 2010; Ravi and Engler 2015). Thus, the MGNREGA has become a powerful instrument for inclusive growth in rural India through its impact on social protection, livelihood security, and democratic governance (Ministry of Rural Development, Government of India 2012).

We are not aware of any study that analyses the impact of the MGNREGA in a general equilibrium framework. However, Sharma *et al.* (2015) conduct a study on impact evaluation of social protection programmes within a social accounting matrix (SAM) multiplier framework. In this study, the impact of the MGNREGA expenditure, along with other programmes, in the year 2011–12 has been analysed. Due to the multiplier effect, output, income, and revenue has increased, respectively, by 109 per cent, 86 per cent, and 18 per cent of MGNREGA expenditure. In 2011–12, the MGNREGA programme generated 6.58 million person-days of employment. However, this study is not able to assess impacts on wages, prices, or long-term impact due to limitations akin to the SAM multiplier framework. Further, the SAM multiplier

analysis tends to over-estimate impacts by a factor of 3-10 times when compared to CGE based analysis. CGE models are more useful to study the impact of changes in one part of the economy upon the rest. Therefore, it would be useful to conduct a study in a CGE modelling framework where, apart from inter-sectoral linkages, price and welfare effects can also be captured.

This study aims to evaluate the macroeconomic impacts of the MGNREGA on the Indian economy by running counterfactual simulations with the aid of PEP-1-1 CGE model. Macroeconomic impacts are measured in terms of changes in government consumption, savings, and income; supply of unskilled labour; household income; and government transfers to households. Further, sectoral impacts are measured in terms of changes in government consumption of commodity, consumption prices, demand for types of labour by industry, and demand for composite labour by industry. This paper analyses the effects of two separate shocks on the economy of India, by using the comparative-static PEP-1-1 model (Decaluwé et al, 2012) calibrated to the SAM for the year 2007–08.

2. The Mahatma Gandhi National Rural Employment Guarantee Act: Overview

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), implemented by the Ministry of Rural Development, is one of the flagship programmes of the Government of India. The programme aims to deal with rural poverty and unemployment by assuring economic security to the rural poor, by providing guaranteed wage employment when other employment alternatives are scarce or inadequate.

The National Rural Employment Guarantee Act (NREGA) was notified on 7 September 2005. The Act came into force on 2 February 2006 and was implemented in phased manner. In its first phase of implementation, 200 initial rural districts were covered. It was later extended to cover the entire country since 2008 with the exception of districts that have a hundred per cent urban population. Since 2 October 2009, it has been renamed the Mahatma Gandhi National Rural Employment Guarantee Act (MGNERGA).

The MGNREGA Act aims to provide at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. It legitimises the "right to get work/employment" for all households in rural India. Its secondary objective is to strengthen natural resource management through projects that address the

causes of chronic poverty like drought, deforestation, and soil erosion, and thereby encourage sustainable development. The Act also mandates 33 per cent participation for women.

The Act provides time-bound employment guarantee within 15 days. It incentivises state governments to provide employment, as the central government pays 90 per cent of the cost of employment and state governments pay the unemployment allowance. It emphasises labor-intensive activities by prohibiting the use of contractors and machinery.

The Act is also a significant vehicle for strengthening decentralised and deepening process of democracy by giving a pivotal role to the Panchayat Raj Institution[1] concerning planning, monitoring, and implementation. The Act empowers ordinary people to play an active role in the implementation of the programme through Gram sabha's social audit[2], participatory planning, and other means.

3. Literature Review

The MGNREGA has attracted the attention of policy makers and researchers worldwide. Several studies evaluate the impacts of the MGNREGA (Singh 2008; Khera 2008; Mahapatra et al 2008; Jandu 2008; Khera and Nayak 2009; Trivedi and Aswal 2011; Jeyaranjan 2011). The programme's main objective is to provide employment to the rural poor when employment opportunities are scarce through rural asset creation, but it also has many multi-dimensional socio-economic impacts. The MGNREGA impacts not only employment in rural areas but, through indirect effects, also income distribution across households, employment in other sectors, output of commodities and revenue to government (Sharma *et al*. 2016).

The programme's most important feature is the self-selection criteria of beneficiaries. People who demand work at a given minimum statutory wage are eligible to get work. In this sense, it has universal coverage, though it is primarily meant for the poor. In general, only the poor and vulnerable may demand employment. Mainly, people with low educational attainment participate in MGNREGA activities, and it is mainly the poor who have low educational attainment. The negative correlation between education status and participation in MGNREGA also support it empirically (Joshi *et al.* 2014). Further, there may be variation in the participation

[1] In India, the Panchayati Raj institutions refer to a system of governance in which three-tier local administration functions. The three tiers of local administration are gram panchayat (village level, the basic unit of local administration), block samiti or panchayat samiti (block level), and zila parishad (district level). It was formalised in 1992 by the 73rd Amendment to the Constitution of India.

[2] Social audit is a process in which the details of financial and non-financial resources used by public agencies for development initiatives are shared with the people, often through a public platform. Social audits allow people to enforce accountability and transparency and provide ultimate users an opportunity to scrutinise development initiatives.

of the poor in the programme due to the local political economy, but the scheme is successful in reaching the rural poor, marginalised, vulnerable and women (Datta *et al.* 2012; Liu and Barrett 2013).

The MGNREGA has brought about a significant increase in labour participation rates, and especially of females (Azam 2012). Notably, women's participation is much longer than was envisaged in the Act (Khera and Nayak 2009), possibly because the MGNREGA pays female workers much better than other types of casual work. Further, crèches and other facilities at MGNREGA work sites make it easier for women to work there. The MGNREGA has also enhanced labour force participation from all communities/sections of society. Initially, participants in the MGNREGA came primarily from weaker sections of society (like Scheduled Castes and Scheduled Tribes), but recently even the upper-caste poor have been participating.

Many studies observe that the scheme has been successful in improving the condition of rural people (Puri 2008; Bhatia and Drèze 2006; Das 2007; Drèze 2008; Patel 2006; UNDP 2015). In a survey of 20 districts across the country, it has been observed that the scheme has significant impact on annual income, pattern of consumption, livestock and purchase of household assets (IAMR 2008). The MGNREGA has helped rural households to smoothen consumption between the agricultural peak season and the lean season in a sustained manner (UNDP 2015). The MGNREGA functions as a risk-mitigating mechanism for households, and is used more as a safety net rather than as an alternative form of employment. It has reduced inequality across households over time. Ravi and Engler (2015) have observed that the MGNREGA has improved food security, savings, and the health of participating rural households. Dasgupta (2013) has also observed that nutritional shocks in early childhood can be offset by access to the MGNREGA. The availability of work to an adult person in a household has impact on children's health and education. Studies show that the MGNREGA has positive impacts such as reducing child labour and increasing children's schooling (Islam and Sivasankaran 2014; Mani *et al.* 2013). All these findings indicate that the MGNREGA has the potential to improve human development indicators in rural areas.

Although the focus of the MGNREGA is employment generation in rural areas, permissible activities are related to agriculture and allied activities, such as land levelling, water resource management, and rural roads. Work related to well- and land-levelling under the MGNREGA has increased cropping intensity and crop productivity, decreased cultivation costs, increased income, and improved livelihoods for individual beneficiaries (Rao and Madhusudan 2013;

Bhaskar and Yadav 2015), while rural roads and community wells have positively impacted the life of the whole community.

However, these studies enquire into the performance of the MGNREGA only in terms of particular objectives like employment, income, wages, and gaps in demand and supply of employment. Except Sharma *et al.* (2015), as far as we are aware, none of these studies capture the macroeconomic impacts of the MGNREGA generated due to the inter-dependence and inter-linkages of India's economy. Further, there is a general concern that the MGNREGA has been focusing on employment at the expense of development (Mahapatra *et al.*, 2008). Health care, literacy and skills programmes, nutrition, and sanitation are alternative public works that would make a sustainable contribution to economic productivity (Holmes *et al.*, 2011). Since there are limitations to economic studies under the partial equilibrium framework, an analysis of the macroeconomic impacts of the MGNREGA in a CGE modelling framework may provide answers to many issues, including these.

A study design in macro modeling framework may evaluate impact of MGNREGA on some of the important macro-economic variables. However, even CGE modeling as we have attempted will not address many of the issues raised in various studies mentioned above. The above mentioned studies clearly indicate that there is a need to study the impact of MGNREGA under CGE modeling framework. Further, it is pertinent to explore what would be macroeconomic impacts if MGNREGA is withdrawn or the expenditure on MGNREGA is reallocated. Therefore, the present study aims to address these issues.

4. Economic Structure of the Country in 2007–08

A 32-sector SAM for India for the year 2007–08 has been used for this study. The procedure employed to construct this SAM can be found in Sharma et al (2015). The SAM of a country depicts the socio-economic structure of a country for a particular year. Based on the SAM used for this study, this section presents the economic structure of the country.

The share of service in GVA is highest for the year 2007–08 while that of agriculture and manufacturing sectors are almost same around 19 per cent (Table 1). In the service sector, the highest contribution is from other services (25.05 per cent) and trade (15.68 per cent) followed by construction (8.53 per cent). In the agriculture sector, other crops (4.13 per cent), cereals (3.93 per cent) and fruits and vegetables (3.07 per cent) are the highest contributors. Non-metallic minerals products, metals and metal products (3.21 per cent), mining (2.74 per cent)

and other manufacturing products (2.19 per cent) are the highest contributors to the GVA of the manufacturing sector.

The labour-capital ratio in the agriculture sector is 0.927 (see table 1). It is same for the all the sectors comprising agriculture sector[3]. The average labour-capital ratio in the manufacturing sector is 0.517 (see table 1). Textile and textile products, furniture and wood products, and leather and rubber products are highly labour intensive sectors as the labour-capital ratio in these sectors is higher than 1. Chemical and fertilisers and petroleum and coal tar products are highly capital intensive sectors as their capital-labour ratio is very low, i.e. around 0.2. The average capital-labour ratio in the service sector is 0.882. Among the sectors comprising services sectors, construction, educational services, and medical services are highly labour intensive as their labour-capital ratios are higher than 1. The highest capital intensive sector among services is hotel and restaurants, with a labour-capital ratio of around 0.4. The construction sector is the most labour intensive sector, while chemical and fertilisers is the most capital intensive sector among the 32 sectors of the SAM.

[3] The capital-labour ratio for all the sectors comprising agriculture sector has been taken from World KLEM data base.

Table 1: Economic Structure of India based on SAM 2007–08

Sector	Sector Description	Share in Total GVA (in per cent)	Labour - Capital Ratio	Share of Factors in GVA					Export Intensity (per cent)	Import Intensity (per cent)
				Unskilled Labourer	Semi-skilled Labourer	Skilled Labourer	Labour	Capital		
S1	Cereals	3.93	0.927	0.344	0.102	0.035	0.481	0.519	4.06	0.80
S2	Pulses	0.88	0.927	0.344	0.102	0.035	0.481	0.519	0.57	4.09
S3	Fruits and Vegetables	3.07	0.927	0.344	0.102	0.035	0.481	0.519	2.24	3.93
S4	Other Crops	4.13	0.927	0.344	0.102	0.035	0.481	0.519	1.48	0.72
S5	Milk and Milk Products	2.88	0.927	0.344	0.102	0.035	0.481	0.519	0.02	0.00
S6	Other Animal Husbandry	1.05	0.927	0.344	0.102	0.035	0.481	0.519	1.15	0.43
S7	Forestry and Logging	1.78	0.927	0.344	0.102	0.035	0.481	0.519	1.29	5.09
S8	Fisheries	0.85	0.927	0.344	0.102	0.035	0.481	0.519	8.35	0.41
Agriculture (Sectors: S1-S8)		**18.57**	**0.927**	**0.344**	**0.102**	**0.035**	**0.481**	**0.519**	**2.21**	**1.57**
S9	Mining	2.74	0.484	0.108	0.102	0.116	0.326	0.674	10.73	67.43
S10	Food Products	0.90	0.678	0.228	0.108	0.068	0.404	0.596	7.13	3.71
S11	Beverages	0.16	0.678	0.228	0.108	0.068	0.404	0.596	0.59	1.19
S12	Tobacco Products	0.25	0.678	0.228	0.108	0.068	0.404	0.596	1.83	0.17
S13	Textiles and Textile Products	1.94	1.083	0.270	0.182	0.067	0.520	0.480	19.47	3.44
S14	Furniture and Wood Products	0.58	1.841	0.432	0.169	0.047	0.648	0.352	1.90	1.77
S15	Paper and Paper Products	0.44	0.751	0.088	0.150	0.190	0.429	0.571	2.26	11.95
S16	Leather and Rubber Products	0.59	1.083	0.216	0.206	0.098	0.520	0.480	14.37	5.31
S17	Plastic Products	0.30	0.256	0.085	0.081	0.038	0.204	0.796	5.08	5.51
S18	Petroleum and Coal tar Products	1.42	0.200	0.022	0.052	0.092	0.167	0.833	14.40	10.21
S19	Chemicals and Fertilisers	1.75	0.171	0.034	0.038	0.074	0.146	0.854	12.83	20.75
S20	Non-metallic Minerals Products, Metals and Metal Products	3.21	0.504	0.105	0.105	0.125	0.335	0.665	7.75	18.47
S21	Non-Electric Equipment	1.21	0.326	0.056	0.091	0.099	0.246	0.754	6.45	25.85
S22	Electronic Equipment	0.79	0.287	0.051	0.083	0.089	0.223	0.777	6.48	31.98
S23	Other Manufacturing Products	2.19	0.684	0.159	0.143	0.104	0.406	0.594	9.09	21.97
Manufacturing (Sectors: S9-S23)		**18.48**	**0.517**	**0.132**	**0.111**	**0.097**	**0.341**	**0.659**	**9.94**	**21.75**
S24	Construction	8.53	3.484	0.492	0.199	0.087	0.777	0.223	0.50	0.25
S25	Electricity	1.49	0.712	0.055	0.194	0.167	0.416	0.584	0.00	0.00
S26	Water Supply	0.20	0.712	0.060	0.237	0.119	0.416	0.584	0.00	0.00
S27	Trade	15.68	0.508	0.103	0.122	0.112	0.337	0.663	8.61	0.00
S28	Hotel and Restaurants	1.71	0.357	0.126	0.096	0.041	0.263	0.737	0.00	0.00
S29	Financial Services	5.51	0.529	0.050	0.070	0.225	0.346	0.654	1.95	1.35
S30	Educational Services	3.65	1.146	0.088	0.093	0.353	0.534	0.466	0.00	5.73
S31	Medical Services	1.57	1.146	0.043	0.116	0.374	0.534	0.466	0.00	0.07
S32	Other Services	25.05	0.912	0.104	0.147	0.226	0.477	0.523	19.32	9.72
Services (Sectors: S24-S32)		**63.40**	**0.882**	**0.148**	**0.137**	**0.183**	**0.469**	**0.531**	**9.29**	**4.15**
Total		**100.00**							**8.75**	**11.34**

At the broad sector level (i.e. agriculture, manufacturing and services), the share of labour in GVA is less than capital. However, a few sectors, namely: textile and textile products, furniture and wood products, and leather and rubber products, construction, educational services and medical services have a higher share of labour in GVA, indicating that these are labour-intensive sectors. Based on educational attainment, labour has been disaggregated into three categories—unskilled, semi-skilled, and skilled. The construction sector employs the highest proportion of unskilled labourers followed by the agriculture and allied sectors.

Export intensity of the manufacturing is highest (9.94 per cent) followed by services (9.29 per cent). Agriculture has the least export intensity (2.21 per cent). Among agriculture sectors, fisheries has highest export intensity (8.35 per cent) followed by cereals (4.06 per cent). Similarly, among manufacturing sectors, textile and textile products have the highest export intensity (19.47 per cent), followed by petroleum and coal tar products (14.40 per cent), and leather and rubber products. Among services sectors, 'other services' has highest export intensity (19.32 per cent), followed by trade (8.61 per cent).

Similar to export intensity, import intensity of manufacturing is highest (21.75 per cent) followed by services (4.15 per cent) and agriculture (1.57 per cent). Among agriculture sectors, forestry and logging has highest import intensity (5.09 per cent) followed by pulses (4.09 per cent) while milk and milk products have no import intensity. Among manufacturing products, mining has highest import intensity (67.43 per cent) followed by electronic equipment (31.98 per cent) and non-electronic equipment (25.85 per cent). Among services, other services have highest import intensity (9.27 per cent) like export intensity followed by educational services (5.73 per cent). Electricity, water supply, trade, and hotels and restaurants have no import intensity.

Table 2: Pattern of Consumption Expenditure in the Economy[4]

Sector	Sector's Description	Household Expenditure as Percentage of Household's Income									
		RH1	RH2	RH3	RH4	RH5	UH1	UH2	UH3	UH4	UH5
S1	Cereals	21.06	11.77	8.49	6.05	2.39	12.44	7.48	5.17	3.16	1.15
S2	Pulses	3.26	2.05	1.63	1.28	0.58	2.46	1.69	1.27	0.84	0.33
S3	Fruits and Vegetables	8.39	5.34	4.14	3.21	1.58	5.92	4.27	3.36	2.37	1.22
S4	Other Crops	3.92	2.70	2.22	1.81	0.86	2.94	2.19	1.64	1.09	0.46
S5	Milk and Milk Products	4.06	4.09	4.34	4.13	2.54	5.22	4.88	4.41	3.25	1.58
S6	Other Animal Husbandry	2.60	1.85	1.46	1.16	0.61	2.06	1.46	1.07	0.67	0.29

[4] The pattern of household consumption expenditure is based on the data obtained from 66th Round consumer expenditure survey of the year 2009-10 conducted by the National Sample Survey Office, Government of India.

Sector	Sector's Description	Household Expenditure as Percentage of Household's Income									
		RH1	RH2	RH3	RH4	RH5	UH1	UH2	UH3	UH4	UH5
S7	Forestry and Logging	6.45	3.78	2.79	1.97	0.61	2.86	1.08	0.36	0.10	0.01
S8	Fisheries	2.04	1.46	1.23	1.00	0.62	1.31	1.07	0.81	0.59	0.31
Agriculture (Sectors: S1-S8)		51.78	33.04	26.29	20.60	9.79	35.21	24.12	18.09	12.06	5.35
S9	Mining	0.04	0.03	0.02	0.01	0.00	0.14	0.06	0.02	0.00	0.00
S10	Food Products	12.57	8.56	6.83	5.27	2.86	9.70	7.02	5.41	3.94	2.48
S11	Beverages	1.43	0.75	0.76	0.72	0.48	0.94	0.73	0.66	0.49	0.45
S12	Tobacco Products	1.59	1.15	0.95	0.73	0.33	1.21	0.77	0.49	0.32	0.13
S13	Textiles and Textile Products	10.51	6.70	5.42	4.37	2.29	7.49	5.72	4.52	3.30	2.01
S14	Furniture and Wood Products	0.35	0.29	0.32	0.28	0.39	0.25	0.30	0.36	0.32	0.67
S15	Paper and Paper Products	0.51	0.44	0.40	0.40	0.31	0.58	0.63	0.67	0.58	0.40
S16	Leather and Rubber Products	1.07	0.74	0.61	0.52	0.29	0.86	0.69	0.58	0.44	0.28
S17	Plastic Products	0.64	0.52	0.57	0.52	0.33	0.44	0.56	0.50	0.41	0.22
S18	Petroleum and Coal tar Products	2.40	1.58	1.51	1.72	1.66	3.39	3.87	3.96	3.33	2.24
S19	Chemicals and Fertilisers	1.94	1.38	1.18	1.03	0.73	1.63	1.29	1.10	0.82	0.52
S20	Non-metallic Minerals Products, Metals and Metal Products	0.84	0.57	0.55	0.44	0.26	0.57	0.48	0.45	0.32	0.20
S21	Non-Electric Equipment	0.06	0.06	0.06	0.07	0.12	0.14	0.14	0.20	0.31	0.34
S22	Electronic Equipment	0.40	0.38	0.37	0.40	0.44	0.45	0.51	0.56	0.56	0.63
S23	Other Manufacturing Products	1.13	0.82	0.80	0.81	1.66	0.73	0.79	0.92	0.97	2.06
Manufacturing (Sectors: S9-S23)		35.48	23.97	20.33	17.28	12.13	28.51	23.55	20.39	16.11	12.62
S24	Construction	0.21	0.12	0.10	0.09	0.08	0.08	0.07	0.06	0.04	0.04
S25	Electricity	0.42	0.37	0.35	0.34	0.21	0.84	0.76	0.69	0.55	0.36
S26	Water Supply	0.02	0.03	0.03	0.03	0.02	0.16	0.17	0.16	0.12	0.07
S27	Trade	0.00	0.16	0.01	0.10	7.40	0.02	0.07	0.27	5.03	12.77
S28	Hotel and Restaurants	0.00	0.07	0.00	0.04	3.33	0.01	0.03	0.12	2.26	5.75
S29	Financial Services	2.82	2.08	1.86	1.65	1.32	2.30	2.03	1.92	1.72	1.61
S30	Educational Services	1.67	1.47	1.38	1.53	2.14	2.25	2.76	3.30	3.34	3.89
S31	Medical Services	1.50	1.39	1.54	1.74	2.49	1.76	1.96	2.13	2.12	1.99
S32	Other Services	8.80	7.29	7.06	6.79	5.30	35.07	31.77	29.74	25.77	22.35
Services (Sectors: S24-S32)		15.44	12.97	12.34	12.31	22.28	42.49	39.61	38.40	40.97	48.84
Total Household Expenditure as % of Household Income		102.70	69.99	58.96	50.19	44.21	106.21	87.27	76.88	69.13	66.81

Table 2 shows the pattern of consumption expenditure of households. The table indicates that bottom quintile class of rural household (RH1) spend highest proportion of its income on commodities from agriculture sector (51.78 per cent) followed by commodities from

manufacturing sector (35.48 per cent) and services sector (15.44 per cent). Among commodities from agriculture sector, households belonging to RH1 spend almost 21% on cereals. The total expenditure of RH1 is 102.70% of its income. It implies that the people belongs to RH1 are so poor that their expenditure are managed by dis-savings or borrowings[5]. The rich class of the rural households (RH5) spends only 44.21 per cent of their income on consumption expenditure. It implies that people belonging to RH5 save a significant proportion of their income. Further, the people belonging to RH2 spend highest proportion of their income on commodities from services sector (22.28 per cent) followed by commodities from manufacturing (12.13 per cent) and agriculture sector (9.79 per cent). Among urban household categories, people belonging to UH1 spend more than 106 per cent of their income on consumption of commodities. It implies that people belonging to UH1 are not able to finance their consumption expenditure by own and manage it by dis-savings or borrowings. Further, all the households in the urban areas spend highest proportion of their income on commodities from service sector, like RH5. It indicates that rural rich follows consumption pattern similar to that of urban households. Further, unlike the rural poor (RH1), the urban poor (UH1) spend a significant proportion of their income on services.

5. The Shocks and Impact Analysis

This section deals with the shocks introduced to the model and their impacts on the economy. The impacts have been analysed in terms of macro impacts and sectoral impacts. The comparative-static PEP-1-1 model (Decaluwé et al, 2012) has been calibrated to the SAM 2007-08 of India (by Sharma et al, 2015) for the simulation. The standard closure rules of PEP-1-1 model are applied. Capital and land are immobile between sectors. Current Government expenditure, current account balance, inventory change of commodity, total labour supply of skilled and semi-skilled labour, world price of imported product and world price of exported product are fixed. Total supply of unskilled labour is endogenous, to reflect the unemployed pool of unskilled workers in the country.

MGNREGA was started in February 2006. Though it was in its initial state in 2007-08, a significant amount was spent on it (INR 158.57 billion), i.e. 0.35 per cent of GDP at factor cost or roughly 2.23 per cent of the total government expenditure in the budget. Therefore, it is understood that the influence of MGNREGA has been shown in I-O table 2007-08, prepared by Central Statistical

[5] Even poorest of the poor in India incur certain expenditure out of social compulsions such as marriages, rituals associated with death and certain shocks such as sickness in family. Faced any of the shocks, the poor resort to borrowing or dis-saving in terms of disposing of whatever assets they have. This should also be pointed out that household savings as has been estimated in the SAM is just a residual of household income minus household expenditure and thus any errors in these variables also get reflected in savings.

Office (CSO), Govt. of India. Under the MGNREGA programme, the government provides employment to unskilled rural workers to participate in activities aimed at constructing rural assets. Here, rural assets comprise roads, water reservoir, houses for the poor, and land levelling in the farms of the poor. Therefore, the government expenditure on MGNREGA can by represented by a part of government expenditure on construction sector (i.e. S24). To understand the contribution of MGNREGA on the Indian economy, this study simulates the impact of withdrawal of MGNREGA expenditure. The following two shocks have been introduced:

1. Withdrawal of MGNREGA (i.e. 2.23 per cent reduction in the government expenditure)
2. Reallocate 20 per cent of government expenditure on construction sector (the direct beneficiary of MGNREGA) to "other services" sector. This second simulation attempts to understand the macroeconomic and sectoral impacts if some of the MGNREGA budget is instead reallocated to 'other services'.

Simulation 1: Withdrawal of MGNREGA

Macro Impacts

The MGNREGA provides employment to the unskilled workers. The unskilled workers will be unemployed due to the withdrawal of MGNREGA. It will reduce the value added of unskilled workers. The decline in value added will cause the reduction in GDP. Therefore, the GDP at basic prices has decreased by -0.10 per cent (Table 3) with the withdrawal of MGNREGA. Further, it will also cause the decline in the production of commodities in the economy as a result the government revenue from production taxes has reduced. The savings of the government will increase with the reduction in government consumption expenditure (i.e. withdrawal of MGNREGA). As a result, the investment expenditure has increased by 0.53 per cent. As the closure rule, inventory change in the commodity is fixed. However, due to change in purchaser prices of commodities, the value of the total change in inventory has declined. The gross fixed capital formation (GFCF) has increased by 0.61 per cent as a consequence of increase in investment expenditure by 0.53 per cent. It indicates that there is increase in investment in the economy.

Table 3: Simulation 1 and Change in Macroeconomic variables

Macroeconomic Variables	% Change
Real GDP at Basic Prices	0.01
GDP at Basic Prices	-0.09
Consumer Price Index	-0.12
Gross Fixed Capital Formation	0.61

Government Consumption Expenditure	-2.23
Government Income	0.002
Government Capital Income	-0.10
Government Revenue from Household Income Tax	-0.11
Government Revenue from Business Income Tax	-0.10
Government Revenue from Taxes on Products and Imports	0.12
Wage Rate of Unskilled Labour	0.00
Wage Rate of the Semi-skilled Labour	-0.08
Wage Rate of the Skilled Labour	-0.27

The government income has increased by 0.002 per cent due to withdrawal of MGNREGA. There are decline in government capital income, revenue from household income tax and revenue from business income tax. The government capital income has declined because rental rate of capital in most of the industries has declined. Tax revenue from household and business income has declined because household and business income has declined. However, there is increase in the government revenue from taxes on products and imports which has caused government income[6] to increase slightly.

With the withdrawal of MGNREGA, the unskilled labour will search employment in some other sectors. Since wage rate of unskilled workers is less than the skilled and semiskilled workers. Firms will try to replace skilled and semi-skilled labourers with unskilled labourers. It will cause decline in wage rate of skilled and semi-skilled labourers. Therefore, due to the withdrawal of MGNREGA, there has been decline in the wage rate of the skilled and semi-skilled labourers (Table 3). Further, the decline in the wage rate of skilled and semiskilled labourers will cause reduction in the labour income of the rich households in both rural and urban areas (Table 4). Household income comprises capital and labour income and transfers from government and abroad. Table 4 clearly indicates a reduction in the capital, labour, and transfer income of households, and a concomitant reduction in household income.[7] The reduction in household income for poor households is less due to an increase in their labour income.

[6] The government income has been defined in the model as sum of government capital income, government revenues from household income taxes, government revenues from business income taxes, government revenue from taxes on products and imports, government revenue from other taxes on production, and Government transfer income.

[7] In the model, household income is sum of labour income of households, capital income of households and transfer income of households

Table 4: Simulation 1 and Change in Households Income and government transfers to households

Households	% Change in Households Income	% Change in Capital income of Households	% Change in Labour income of Households	% Change in transfer income to households
RH1	-0.01	-0.10	0.03	-0.12
RH2	-0.04	-0.10	0.02	-0.12
RH3	-0.07	-0.10	-0.01	-0.12
RH4	-0.08	-0.10	-0.04	-0.12
RH5	-0.09	-0.10	-0.06	-0.12
UH1	-0.02	-0.10	0.01	-0.12
UH2	-0.05	-0.10	-0.03	-0.12
UH3	-0.08	-0.10	-0.07	-0.12
UH4	-0.10	-0.10	-0.09	-0.12
UH5	-0.14	-0.10	-0.17	-0.12

Sectoral Impacts

The withdrawal of MGNREGA has reduced government consumption of commodities in all sectors by almost same proportion (Table 5). It has been possible due to the Cobb-Douglas consumption function. The consumption price of almost all sectors has declined, excluding forestry and logging, plastic products, non-metallic minerals products, metals and metal products, electronic equipment, non-electric equipment, other manufacturing products, and the construction sector. The consumption price has increased for these sectors. Due to reduction in consumption price in general, the supply of the commodity to the domestic market has reduced from most of the sectors. However, the supply of commodities has increased from sectors like forestry and logging, mining, tobacco products, furniture and wood products, leather and rubber products, plastic products, chemicals and fertilisers, non-metallic minerals products, metals and metal products, electronic and non-electric equipment, other manufacturing products, construction, trade and financial services. The consumption price has increased in almost all sectors where commodity supply has increased.

Table 5: Simulation 1 on the Change in Government consumption of commodities, supply of commodities, and consumption prices

Sector	Sector's Description	% Change in Government Consumption of Commodity i	'Supply of commodity i by sector j to the domestic market	% Change in Consumption Price
s1	Cereals	-2.13	-0.11	-0.10
s2	Pulses	-2.16	-0.06	-0.08
s3	Fruits and Vegetables		-0.02	-0.05

Sector	Sector's Description	% Change in Government Consumption of Commodity i	'Supply of commodity i by sector j to the domestic market	% Change in Consumption Price
s4	Other Crops	-2.14	-0.09	-0.09
s5	Milk and Milk Products	-2.16	-0.05	-0.07
s6	Other Animal Husbandry	-2.14	-0.10	-0.09
s7	Forestry and Logging	-2.26	0.12	0.03
s8	Fisheries		-0.02	-0.05
s9	Mining	-2.23	0.09	0.00
s10	Food Products	-2.14	-0.05	-0.09
s11	Beverages	-2.15	-0.02	-0.08
s12	Tobacco Products		0.04	-0.05
s13	Textiles and Textile Products	-2.14	-0.02	-0.09
s14	Furniture and Wood Products	-2.21	0.09	-0.02
s15	Paper and Paper Products	-2.11	-0.19	-0.13
s16	Leather and Rubber Products	-2.19	0.14	-0.04
s17	Plastic Products	-2.23	0.14	0.00
s18	Petroleum and Coal tar Products	-2.19	-0.01	-0.04
s19	Chemicals and Fertilisers	-2.19	0.02	-0.05
s20	Non-metallic Minerals Products, Metals and Metal Products	-2.28	0.32	0.05
s21	Non-Electric Equipment	-2.30	0.27	0.07
s22	Electronic Equipment	-2.26	0.21	0.03
s23	Other Manufacturing Products	-2.24	0.23	0.01
s24	Construction	-2.24	0.51	0.01
s25	Electricity	-2.12	-0.05	-0.12
s26	Water Supply	-1.62	-0.84	-0.62
s27	Trade	-2.19	0.07	-0.05
s28	Hotel and Restaurants	-2.09	-0.10	-0.14
s29	Financial Services	-2.07	0.01	-0.17
s30	Educational Services	-1.83	-0.48	-0.41
s31	Medical Services	-1.99	-0.23	-0.24
s32	Other Services	-2.04	-0.22	-0.20

The reduction in the supply of commodities from different sectors has impacted the demand for labour (Table 6). The demand for unskilled labour has declined in all sectors except forestry and logging, mining, tobacco products, furniture and wood products, leather and leather products, plastic products, chemicals and fertilisers, non-metallic minerals products, metal and metal products, electronic equipment, non-electronic equipment, other manufacturing products,

construction, and trade. The demand for semi-skilled labour has also declined in general but it has increased for almost 15 sectors. The demand for skilled labour has increased in most of the sectors except cereals, other animal husbandry, paper and paper products, electricity, water supply, hotels and restaurants, educational services, medical services, and other services. It is linked to the changes in the wage rates of the different types of labourer. The wage rate of the unskilled labour has remained unchanged (by assumption of endogenous labour supply and fixed wage) while it has declined for semi-skilled and skilled labour (Table 3). The fall in the wage rate of the skilled labour is the significant in magnitude which has caused increase in demand for skilled labour in most of the sectors. As a consequence of the changes in the demand for different types of labour, the demand for composite labour in most of the industries has declined.

Table 6: Simulation 1 and Change in Demand of Labour

Sector	Sector's Description	% Change in Demand for Types of Labour by Industry			% Change in Demand for Composite Labour in Industry
		Unskilled Labour	Semi-skilled Labour	Skilled Labour	
s1	Cereals	-0.25	-0.19	-0.03	-0.22
s2	Pulses	-0.15	-0.09	0.07	-0.12
s3	Fruits and Vegetables	-0.08	-0.02	0.14	-0.05
s4	Other Crops	-0.21	-0.15	0.01	-0.18
s5	Milk and Milk Products	-0.13	-0.07	0.08	-0.10
s6	Other Animal Husbandry	-0.23	-0.17	-0.01	-0.20
s7	Forestry and Logging	0.22	0.28	0.43	0.25
s8	Fisheries	-0.06	0.00	0.15	-0.03
s9	Mining	0.16	0.22	0.38	0.26
s10	Food Products	-0.15	-0.09	0.06	-0.10
s11	Beverages	-0.09	-0.03	0.13	-0.04
s12	Tobacco Products	0.05	0.11	0.26	0.10
s13	Textiles and Textile Products	-0.04	0.02	0.17	0.01
s14	Furniture and Wood Products	0.10	0.16	0.32	0.13
s15	Paper and Paper Products	-0.54	-0.48	-0.32	-0.42
s16	Leather and Rubber Products	0.20	0.26	0.41	0.26
s17	Plastic Products	0.59	0.65	0.80	0.66
s18	Petroleum and Coal tar Products	-0.15	-0.09	0.06	-0.02
s19	Chemicals and Fertilisers	0.09	0.15	0.30	0.21
s20	Non-metallic Minerals Products, Metals and Metal Products	0.81	0.87	1.02	0.90
s21	Non-Electric Equipment	0.89	0.95	1.11	1.00

Sector	Sector's Description	% Change in Demand for Types of Labour by Industry			% Change in Demand for Composite Labour in Industry
		Unskilled Labour	Semi-skilled Labour	Skilled Labour	
s22	Electronic Equipment	0.75	0.81	0.96	0.86
s23	Other Manufacturing Products	0.45	0.51	0.66	0.52
s24	Construction	0.62	0.68	0.84	0.66
s25	Electricity	-0.23	-0.17	-0.02	-0.12
s26	Water Supply	-2.11	-2.05	-1.90	-2.02
s27	Trade	0.11	0.17	0.32	0.20
s28	Hotel and Restaurants	-0.43	-0.37	-0.22	-0.38
s29	Financial Services	-0.11	-0.05	0.10	0.04
s30	Educational Services	-1.05	-0.99	-0.84	-0.90
s31	Medical Services	-0.59	-0.53	-0.38	-0.43
s32	Other Services	-0.41	-0.35	-0.19	-0.30

Summary

The withdrawal of MGNREGA has decreased the GDP at basic prices. It implies that MGNREGA has potential to increase the out in the economy. It is consistent with the findings of Sharma et al (2015, 2016). The decline in consumer price implies that MGNREGA has inflationary tendency. It is also consistent with the few arguments against MGNREGA. There is also decline in household income due to withdrawal of MGNREGA. It infers that MGNREGA increases the household income. However, MGNREGA will increase income of the rich household more than that of the poor household. This is in contrast with the findings of Sharma et al (2015, 2016) which show that income of the poor household has increased more due to the MGNREGA. In most of the sectors, supply of the commodity and consumption prices have declined. Further, there is reduction in the demand for composite labour in most of the industries. Therefore, the findings of simulation 1 infer that MGNREGA is more beneficial to the economy as well as the households' income.

Simulation 2: Reallocation of 20 per cent of government expenditure on construction sector (the direct beneficiary of MGNREGA) to "other services" sector[8].

Macro Impacts

The construction sector has more linkages than the 'other services' sector. Therefore, the 20 per cent reduction in the government expenditure on the construction sector and reallocating the same amount to "other services", will declined the output in the economy. Further, it will cause decline in government revenue from production taxes. Therefore, it has caused reduction in the GDP at basic prices (Table 7). Since, the reduction of the 20 percent of the government expenditure on construction sector and it reallocation to the 'other sector' has very small negative impact on the output, it has no impact on the consumer price index. However, it will cause decline in investment expenditure and therefore, it has caused reduction in the gross fixed capital formation by 0.01 per cent.

Table 7: Simulation 2 and Change in Macroeconomic variables

Macroeconomic Variables	% Change
Real GDP at Basic Prices	-0.01
GDP at Basic Prices	-0.01
Consumer Price Index	0.00
Gross Fixed Capital Formation	-0.01
Government Consumption Expenditure	-0.03
Government Savings	0.00
Government Income	-0.02
Government Capital Income	0.00
Government Revenue from Household Income Tax	-0.01
Government Revenue from Business Income Tax	-0.00
Government Revenue from Taxes on Products and Imports	-0.03
Wage Rate of Unskilled Labour	0.00
Wage Rate of the Semi-skilled Labour	-0.02
Wage Rate of the Skilled Labour	0.02

The government consumption expenditure has declined by 0.03 per cent as a result of the shock. There is no change in government savings while government income[9] has declined by 0.02 per cent. The government income has declined because of decline in government revenue from household income taxes (-0.01 per cent) and government revenue from taxes on products

[8] In this simulation, government expenditure is not fixed.

[9] The government income has been defined in the model as sum of government capital income, government revenues from household income taxes, government revenues from business income taxes, government revenue from taxes on products and imports, government revenue from other taxes on production, and Government transfer income.

and imports (-0.03 per cent). However, government revenue from household income taxes has reduced due to the decline in the households' income (Table 8).

The unskilled workers engaged in construction sector will seek employment in other sectors due to the shock. There is no change in the wage rate of the unskilled labour. Given the low wage rate of the unskilled workers in comparison to the semiskilled workers, the unskilled workers can replace semi-skilled workers. As a result, the wage rate of the semi-skilled labour has reduced by 0.02 per cent. However, the 'other services' provides employments to the skilled workers in general. The reallocation of the expenditure to the 'other services' will raise the demand of skilled workers. Therefore, the wage rate of the skilled labour has increased by 0.02 per cent.

Table 8: Simulation 2 and Change in Households Income and government transfers to households

Households	% Change in Households Income	% Change in Capital income of Households	% Change in Labour income of Households	% Change in government transfers to households
RH1	-0.04	0.00	-0.06	0.00
RH2	-0.03	0.00	-0.05	0.00
RH3	-0.02	0.00	-0.04	0.00
RH4	-0.01	0.00	-0.04	0.00
RH5	-0.01	0.00	-0.03	0.00
UH1	-0.04	0.00	-0.05	0.00
UH2	-0.02	0.00	-0.04	0.00
UH3	-0.02	0.00	-0.03	0.00
UH4	-0.01	0.00	-0.02	0.00
UH5	0.00	0.00	0.00	0.00

Table 8 indicates that there is decline in labour income of households due to the 20 per cent reduction in government expenditure on the construction sector and its reallocation to the 'other services'. . The wage rate of skilled labour has increased, but that of semi-skilled labour has declined. The wage rate of the unskilled workers has remained unchanged. These factors have resulted in decline in labour income of households. There is no change in capital income of households and government transfer to households. Therefore, as a consequence of decline of labour income of households, the households' income has decreased.

Sectoral Impacts

In general, there is a decline in the government consumption of commodities due to the reduction in 20 per cent government expenditure on construction sector and its reallocation to

the 'other services' (Table 9). There is decline in supply of commodities to the domestic market by all sectors except leather and rubber products, petroleum and coal tar products, electronic equipment, non-electronic equipment, other manufacturing products, hotels and restaurants and others services. In fact, there is increase in supply of commodities from leather and rubber products, hotels and restaurants and other services. The reduction in supplies of most commodities is caused by a decline in their consumer prices. The consumer price of other services has increased therefore its supply has increased. Similarly, there is no change in the consumer price of the leather and leather products, and hotels and restaurants and as a result there is increase in their supply by 0.01 per cent.

Table 9: Simulation 2 on the Change in Government consumption of commodities, supply of commodities, and consumption prices

Sector	Sector's Description	% Change in Government Consumption of Commodity i	'Supply of commodity i by sector j to the domestic market	% Change in Consumption Price
s1	Cereals	-0.02	-0.01	-0.01
s2	Pulses	-0.03	-0.01	-0.01
s3	Fruits and Vegetables		-0.01	-0.01
s4	Other Crops	-0.03	-0.01	-0.01
s5	Milk and Milk Products	-0.03	-0.01	-0.01
s6	Other Animal Husbandry	-0.03	-0.01	-0.01
s7	Forestry and Logging	0.00	-0.06	-0.03
s8	Fisheries		-0.01	-0.01
s9	Mining	-0.03	-0.01	0.00
s10	Food Products	-0.03	-0.01	-0.01
s11	Beverages	-0.03	-0.01	-0.01
s12	Tobacco Products		-0.01	-0.01
s13	Textiles and Textile Products	-0.03	-0.01	0.00
s14	Furniture and Wood Products	-0.02	-0.04	-0.02
s15	Paper and Paper Products	-0.03	-0.01	0.00
s16	Leather and Rubber Products	-0.03	0.01	0.00
s17	Plastic Products	-0.03	-0.01	-0.01
s18	Petroleum and Coal tar Products	-0.03	0.00	0.00
s19	Chemicals and Fertilisers	-0.03	-0.01	-0.01
s20	Non-metallic Minerals Products, Metals and Metal Products	-0.01	-0.07	-0.02
s21	Non-Electric Equipment	-0.03	0.00	0.00
s22	Electronic Equipment	-0.03	0.00	0.00

Sector	Sector's Description	% Change in Government Consumption of Commodity i	'Supply of commodity i by sector j to the domestic market	% Change in Consumption Price
s23	Other Manufacturing Products	-0.03	0.00	0.00
s24	Construction	-20.01	-0.22	-0.03
s25	Electricity	-0.02	-0.02	-0.01
s26	Water Supply	-0.01	-0.03	-0.02
s27	Trade	-0.01	-0.02	-0.02
s28	Hotels and Restaurants	-0.04	0.01	0.00
s29	Financial Services	-0.02	-0.02	-0.01
s30	Educational Services	-0.03	-0.02	0.00
s31	Medical Services	-0.03	-0.01	0.00
s32	Other Services	0.72	0.09	0.04

The 20 per cent reduction in government expenditure on the construction sector has affected the demand for labour (Table 10). In general, the composite demand for labour has declined in all sectors except leather and leather products, petroleum and coal tar products, non-electronic equipment, other manufacturing products, hotels and restaurants, and other services. There is decline in demand for unskilled labour by 0.28 per cent in the construction sector. The decline in supply of commodities by most of the sectors (Table 9) has caused decline in demand for unskilled labour, semi-skilled labour and skilled labour in most of the sectors. However, the decline in demand for skilled labour is higher due to the increase in the wage rate of the skilled labour.

Table 10: Simulation 2 and Change in Demand of Labour

Sector	Sector's Description	% Change in Demand for Types of Labour by Industry			% Change in Demand for Composite Labour in Industry
		Unskilled Labour	Semi-skilled Labour	Skilled Labour	
s1	Cereals	-0.02	-0.01	-0.04	-0.02
s2	Pulses	-0.01	0.00	-0.03	-0.01
s3	Fruits and Vegetables	-0.02	0.00	-0.03	-0.01
s4	Other Crops	-0.01	0.00	-0.03	-0.01
s5	Milk and Milk Products	-0.01	0.00	-0.03	-0.01
s6	Other Animal Husbandry	-0.01	0.00	-0.03	-0.01
s7	Forestry and Logging	-0.12	-0.11	-0.14	-0.12
s8	Fisheries	-0.02	0.00	-0.03	-0.01
s9	Mining	-0.02	0.00	-0.03	-0.02
s10	Food Products	-0.02	-0.01	-0.04	-0.02
s11	Beverages	-0.02	-0.01	-0.04	-0.02
s12	Tobacco Products	-0.03	-0.02	-0.05	-0.03
s13	Textiles and Textile Products	-0.02	-0.01	-0.04	-0.02
s14	Furniture and Wood Products	-0.06	-0.05	-0.08	-0.06
s15	Paper and Paper Products	-0.02	-0.01	-0.04	-0.02
s16	Leather and Rubber Products	0.01	0.03	0.00	0.02
s17	Plastic Products	-0.03	-0.02	-0.05	-0.03
s18	Petroleum and Coal tar Products	0.00	0.02	-0.01	0.00
s19	Chemicals and Fertilisers	-0.04	-0.03	-0.06	-0.05
s20	Non-metallic Minerals Products, Metals and Metal Products	-0.18	-0.16	-0.19	-0.18
s21	Non-Electric Equipment	0.00	0.01	-0.01	0.00
s22	Electronic Equipment	-0.01	0.00	-0.03	-0.01
s23	Other Manufacturing Products	0.00	0.01	-0.02	0.00
s24	Construction	-0.28	-0.27	-0.30	-0.28
s25	Electricity	-0.05	-0.03	-0.06	-0.05
s26	Water Supply	-0.08	-0.07	-0.10	-0.08
s27	Trade	-0.06	-0.04	-0.07	-0.06
s28	Hotel and Restaurants	0.05	0.06	0.03	0.05
s29	Financial Services	-0.06	-0.04	-0.07	-0.06
s30	Educational Services	-0.02	-0.01	-0.04	-0.03
s31	Medical Services	-0.02	0.00	-0.03	-0.02
s32	Other Services	0.15	0.17	0.14	0.15

Summary

The construction sector is the direct beneficiary of the MGNREGA programme. There is decline in real GDP at basis prices due to reduction of a part of the government expenditure on construction sector and its reallocation to the 'other services'. It implies that the reallocation has decreased welfare of the economy. Further, reallocation of the government expenditure has less impact on the GDP in comparison to withdrawal of MGNREGA (i.e. Simulation 1). The decline in household income due to reallocation of the government expenditure implies that expenditure under MGNREGA programmes increases household income while expenditure under 'other sectors' decreases the household income. The increase in the income of the bottom quintile classes is higher than that of the other classes due to reallocation of the government expenditure. It infers that MGNREGA programme has higher potential to increase the income of rich classes which are not targeted under the programme.

6. CONCLUSION

MGNREGA is one of the flagship programmes of the government of India aiming to provide guaranteed 100 days employment at minimum statutory wages to rural unskilled workers while creating rural assets. The present study analyses the macroeconomic impact of MGNREGA under general equilibrium framework. PEP-1-1 model has been calibrated with a 32-sector SAM for India for the year 2007-08 for analysis. We run two simulations namely withdrawal of MGNREGA and reallocation of 20 per cent of government expenditure on construction sector to 'other services' sector.

The withdrawal of MGNREGA has negative impact on the GDP at basic prices. The consumer price index has declined. Supply of unskilled labour has increased. Households' income, capital income of households and transfer income to households have declined. Supply of commodities to the domestic markets and consumption prices has declined for most of the sectors. However, composite demand for labour in industries has increased in most of the sectors. Therefore, the findings of simulation 1 infer that MGNREGA is beneficial to the economy as well as the households' income.

Due to the reallocation of the government expenditure on construction sector to the 'other services', the real GDP at basic prices has declined. There is no change in the consumer price index. Household labour income and household income have declined. The decline in household income is more for the bottom quintile classes. Supply of commodities to the domestic market has declined in general. The composite demand for labour has declined in

most sectors. Therefore, the findings of simulation 2 infer that reallocation of government expenditure on construction sector to the 'other services' has decreased welfare of the economy as well as income of the household.

Therefore, it may be concluded that MGNREGA has increased the output of the economy. It has increased the household income. However, the increase in the household income is less to the bottom quintile classes though programme is targeted to the poor households. If the MGNREGA expenditure is reallocated to the 'other services', output of the economy as well as household income will decline. Therefore, the clear policy implication is that MGNREGA should be continued and magnitude of expenditure under the programme should be increased.

As far as know to us, this is the first study in terms of the impact evaluation of MGNREGA under CGE modeling framework. Therefore, this study clearly adds to the existing literature on MGNREGA. However, studies with more simulations are required to clearly understand the counterfactuals of the programme under study i.e. the MGNREGA.

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