Re-Visiting Agricultural Policies in the Light of Globalisation Experience: The Indian Context

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INDIAN SOCIETY OF AGRICULTURAL ECONOMICS

MUMBAI

RE-VISITING AGRICULTURAL POLICIES IN THE LIGHT OF GLOBALISATION EXPERIENCE: THE INDIAN CONTEXT

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INDIAN SOCIETY OF AGRICULTURAL ECONOMICS
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What is the Scale of Multiplier Impacts of MGNREGS in India?: Village Social Accounting Matrix (SAM) in Two Villages of Karnataka

I

INTRODUCTION

The National Rural Employment Guarantee Act (NREGA) enacted on 2nd February 2006 with objectives of enhancing livelihood of poor and vulnerable section by ensuring a minimum of 100 days of employment guarantee to all rural households whose members are ready to do unskilled manual work. Gradually, the program was expanded to all India level, with wider and deeper coverage at all districts of the country. In 2009, it was renamed as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and almost double funding allocation for the program in that year than that of the preceding year. MGNREGA is the first attempt of guaranteeing wage employment at all India scale with objective to ensure wage employment, and sustainable livelihood improvement, and natural resource management at local level. Besides, the MGNREGA interventions also envisage strengthening of democracy at the village and grass root levels, bringing transparency and accountability in governance by empowering the local panchayat and village level elected bodies through their active engagement in planning and execution of the local development activities.

In Karnataka, MGNREGS was implemented in three phases; the first phase (2006-07) covered five districts, the second phase, six districts, and third phase (from 2008-09) covered all the 27 districts. The MGNREGS provides not only wage employment during lean periods of agricultural year but also create durable assets with lasting effects and have a multiplier effect on different sectors of village economy, including at local economy. In this context, this study attempts to quantify both direct and indirect economic impacts of MGNREGA in a village economy, taking example from two villages in Karnataka. The direct and indirect economic impacts of MGNREGS arise in the economy due to its linkage with different sectors of the economy. That is, MGNREGS expected to produce economic multiplier effects in the local economy; measuring the various economic multiplier effects (income,

employment and output multipliers) generated from the MGNREGS intervention is the central focus of this study.

After construction of village SAM, we have also carried out policy simulation exercises using the basic village SAM and analysed impact of alternate policy measures on different sector of the local economy. This involves analy sing synergies between safety nets activities of MGNREGS and agricultural and rural development interventions; MGNREGS impacts on labour wage rate, labour scarcity (and out migration), farm production activities, and other major changes brought in the village economy by the MGNREGS program.

Specific objectives of the study: The main purpose of this study is to assess direct and indirect impact of the MGNREGS intervention in a village economy, and assess the direct impact versus total impact of the program intervention. The specific objectives of the study are:

1) to construct Village SAM of a selected village and carry out impact assessment of direct and total economic impact of MGNREGS interventions in the selected villages in Karnataka,
2) to estimate investment multiplier effects of MGNREGS considering the village wide economic effects of the MGNREGS interventions in the selected villages, and
3) based on results of the SAM, derive policy recommendations for enhancing total multiplier effect and welfare of the low economic households in the village economy.

With this background, the next section provides a review of selected SAM studies carried out in India in the recent past. Then, the third section provides methodology used data used construction of Social accounting matrix, SAM model, derivation of the multiplier effects, and description of village economies of Markabinahalli and Belladamadugu villages selected for the analysis. Then, the results and discussion out of the village SAM analyses are provided in the fourth section. To save space and shorten the paper length, we have provided detailed descriptions and results for one village (Markabinahalli), and then only the key results of the second village, but in a comparative framework. The final section provides of conclusions and implications of the result findings.

II

LITERATURE

This section provides a summary of findings of the selected previous studies on village SAM carried out in India, and in other developing countries. In fact, there are only few hand counted empirical studies on village level SAM that have been carried out in India; some of the most notable of them are Subramanian 2007, Hirway *et al.*, 2008 and Usami, 2008. Among then, the study by Hirway *et al.*, 2008 is on impact

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assessment of MGNREGA in selected sample villages in Gujarat state of India. A detailed comprehensive review on methodology used, details on activities and factors account of village SAM dealt in all of the three studies are provided in another study by the authors in Srikanthmurthy *et al.*, 2014.

A Social Accounting Matrix SAM is the way of presentation of comprehensive economic flows and exchange that takes places in an economy in a matrix flow. In this sense, A SAM framework of representation incorporates the interaction among production activities, production factors, various institutions, capital accumulation, and rest of the world in an accounting framework (Osami, 2008, Taylor and Adelman, 1996). In the matrix, each row represents the receipts of the corresponding agent, and each column represents the expenditure. A SAM is also very flexible in terms of size and their dimension, which depends upon the level of disaggregation the researchers would like to carry out the analyses and the time and resources available for compilation of for disaggregated data level. Likewise, SAM can be constructed for a national level economy– macro SAM (large numbers in the past studies), regional SAM and village SAM The construction of village SAM is increasingly growing field of research, which also facilities modelling the interaction between natural resources flows and economy activities in a close economy of a village.

Using a village economy level SAM study for Kanzara village (ICRISAT project site) in Maharashtra, Subramanian (2007) analysed distributional effects of cultivation of Bt Cotton in a local economy context. The village selected for analysis, Kanzara, is also a predominantly cotton growing village in Maharashtra. He analyses impact of the technology household incomes, distributional of income across income class of households, and of farmers by farm size. He demonstrated that adoption of Bt cotton variety produced substantial rural employment, especially for hired female. While labour requirements for male labour decreased. This had a differential implication across different class of the households in the village economy. Cotton harvesting was largely carried out by hired female labourers, whose employment opportunities and returns (income) increased after adoption of Bt. Cotton. Whereas, pest control was predominantly the responsibility of male family members, by the use of Bt cotton, their employment has reduced.

Subramanian (2007) also showed that, under irrigated conditions, the return from Bt cotton was higher than with conventional varieties of cotton. Large farm households benefitted significantly from dry land Bt cotton adoption, much more than their small counterparts, this is largely due to indirect effects, especially the role of opportunity income from saved pest management time of large male farmers from the cotton field. The returns to saved management time in alternative activities appeared to be higher for large farmers than for small farmers due to different opportunities cost of saved time. He clearly demonstrated that large farmers benefitted much more from Bt adoption, when we analyse the issue in an economy-wide framework than the smallholding dryland farmers. In addition, due to scale

effect, large farmers had a bigger incentive to adopt the Bt technology than that of the smallholding farmers.

Likewise, Hirway et al., (2008) constructed comprehensive village level SAM for several villages in Gujarat for series of activities carried out undertaken under the MGNREGA program, and analysed impact of the program on key outcome indicators and gender issues in selected village in Gujarat state of India. They reported that the multiplier values will be (in terms of growth rates) of indirect effect of the NREGA interventions) in the village was 2.23, 1.17, and 1.65 per cent for output, income, and employment, respectively. That is, if Rs. 1 is spent under the NREGA activities in the village, there is total of Rs. 2.23 worth of outputs is generated in the village economy, that is, there is an indirect effect of another Rs. 1.23 Rs in the village economy. The multiplier coefficients/values reported in this study vary from 1.06 to 1.8 for output, from 0.37 to 1.23 for income, and from 0.07 to 1.19 for employment multipliers, depending upon the kind of interventions selected for the analyses (Hirway, et al., 2008). They have also estimated employment multiplier value for each of the crop production and other activities carried out in the village economy.

The multipliers derived from Hirway, et al. 2008 study were relatively smaller because of the leakages observed in the study sites. More than half of the backward and forward linkages of new demand generated were not absorbed within the village economy but were passed into nearest towns. For example, the commodities imported from outside the village were substantially high in the studied village. This study adopted static SAT, one period SAT, which would provide a snap shot of an economy. However, many of the changes brought by NGREGA intervention in the villages would also bring long-term impacts (de siltation of talk, increased water available, changes on cropping pattern due to better access to irrigation water). When a dynamic SAM is constructed, i.e., two SAMs for two different periods, which will allow to chapter such long term changes in the economy, but not by the one period static SAM.

Likewise, a Study by Usami (2008)has suggested construction of Regional Social Accounting Matrix by extending the basic structure of village SAM and by allowing to have a separate activities (flow of activities) for Natural Resource Accounts (water uses; : Linking Village/Industry Level Data to Regional Level Studies. However, limitation of huge data needed for construction of such regional (and meso-scale) SAM is a major limitation for practitioners and analysts working on the subject.

The multipliers impact on the activity in the village economy can be enhanced by village level manufacturing activities or through selection of other works with higher employment multipliers. For example, irrigation related work would enhance water supply, which will encourage farmers to grow high value crops. If MGNREGS activities would increase production of goods and services that are consumed within the village, which may eventually happens in a long run when the income of households increased, then the value of the multipliers will also likely to increase substantially. Likewise, the larger the share of the consumption of the goods and

services produced within the village, the larger will be the values of the multipliers. The larger the increase in interactions and exports value of the commodities produced, the larger will be the values of the multipliers. In case of MGNREGS activities, to have higher economic impacts in the local economy, the activities need to be targeted to activities that would generate higher multiplier value, which will occurs when the activities generate outputs that are consumed within village or shared/exchanged more or value added at maximum level in the village.

III

METHODOLOGY AND DATA

Social Accounting Matrix (SAM) is an organised matrix representation of all transactions and transfers between different production activities, factors of production and institutions (Like households, corporate sector and government) within the economy and with respect to the rest of the world (Saluja and Yadav, 2006). In the SAM, all the transactions in the economy are presented in the form of a square matrix. Each row of the SAM gives receipts of an account while the column gives the expenditures. The total of each row is supposed to be equal to total of each corresponding column. Detailed discussions on village SAM are in Murthy et al., 2014; Hirway, et al., 2008; and in Taylor and Adelman 1996.

In this study, village SAM was constructed to quantify the impacts of MGNREGA in the rural economy. It allows to analyse interactions across activities in a village, inter-villages interactions through trade in commodities, labour migration in and out of village, and impacts of local trade by household types (institutions). A village SAM also allows us to measure the induced effects from village to local markets, and to rest of the country (Hirway et al., 2008).

Using SAM multipliers, key sectors of the village economy were identified; The SAM multipliers were obtained following Bellù (2012) methodology from the village social accounting matrix. According to this methodology, if Y is a vector of total expenditure of the different endogenous accounts (also income of same account) in the SAM, and X is the exogenous expenditure made by residents of village, then the relation between Y and X can be illustrated by using 'identity matrix" (I), and 'A' as a coefficient matrix. That is,

$$Y=AY+X \qquad \qquad ....(1)$$

This equation (1) can be rearranged as following

$$Y= (I-A)^{1}Xeq \qquad \qquad ....(2)$$

where;
'A' = The coefficient matrix prepared from the SAM by dividing each cell value by its respective column total after excluding exogenous accounts from SAM.

$(I-A)^{-1}$ = It is the multiplier matrix and X is exogenous shock vector which after multiplication with multiplier matrix provides us with multiplier effect for that exogenous shock.

Output, employment and household income multipliers are sum of all cells in $(I-A)^{-1}X$ matrix for commodity account, labour services sub account and household account, respectively. In this sense, SAM methodology is very suitable for small economies such as the village economy (or a closed economy), where most economic transactions are tractable and verifiable. Therefore, a village SAM was designed to capture the complex inter-linkages among village production activities, village institutions and the rest of the world.

3.2 *Study Area*

This study was taken up in two villages of Karnataka, viz; 1) Markabinahalli village in Basavana Bagevadi Taluka of Bijapur district, and 2) Belladamadugu village in Madhugiri Taluk of Tumkur district. The Markabinhalli is a completely dry farming village (rain fed farming) with no bore well/dug well irrigation since the ground water is saline in this village. Only few farmers supplement irrigation from the riverside, whose lands are located nearby the river that is flowing nearby the village plot. ICRISAT, under Village Dynamics Studies in South Asia (VDSA) study in Karnataka, has chosen for long term monitoring and compilation of the village and households data across the stratified random sampling.

The village SAM constructed across the two villages was based on agricultural production activities, as well as other non-farm activities done in the village, so that we can estimate multiplier effect of each of the crop production activities across the village. The major crops produced by cropping seasons are provided in Table 1.

TABLE 1. CROPPING PATTERN IN THE VILLAGES SELECTED FOR THE STUDY (2012-13)

Season	Markabinahalli	Belladamadugu
(1)	(2)	(3)
Kharif	Pigeon pea, Cotton, Onion, Sunflower	Ground nut, Paddy, Finger millet, Horse gram, Cowpea, Flowers and Vegetables, Fodder Maize
Rabi /Summer	Wheat, Chickpea, Sorghum	Paddy, Ground nut, Flowers and Vegetables, Fodder Maize
Perennial	Mango	Arecanut, Coconut, Tamarind , Mango

3.3 *Data and Sampling Design*

An exhaustive list of different occupations of the households and the sample size by village are presented in Appendix Table 1. In Markabbinahalli village, total of 48 different activities were used construction of SAM. Taking purposive sampling framework, over 50per cent of samples entities are surveyed from each of the major activities for construction of village SAM analyses. Basic economic feature of both of the villages, and the variables and data types that were compiled in each of the

villages are provided in the following section, first for Markabinhalli village (Bijapur district) followed by Belladamadugu village (Tumkur district). ICRISAT-VDSA project has compiled high frequency monthly data in both the villages from 2009-15 on labour sectors activities, and agricultural production activities (cost of production). We have also taken the same data for deriving input and output of farming related activities.

3.3.1. *Village: Markabinahalli*

For the construction of SAM, both primary and secondary source of data were collected from the village for the agricultural year 2012-13 (1st June 2012 to 31st May 2013). Using census, all of the major households' types, and business entities/traders were listed. Then, data from the households and other business entities/agents in the village were collected using the purposive sampling. The actual sample size includes over 50 per cent of the total economic entities in the village.

The farm households were classified into five strata namely, landless households, and marginal, small, medium and large land holding households. The details procedures and descriptions are in Murthy *et al.*, 2014.From each household stratum types, only five per cent of households (entities) were chosen as representative samples. They were chosen in such a way as to represent all occupations practiced villagers in this sub-category to and truly reflect the village economic conditions. Primary data were collected also from different economic agents including shops (Agricultural input shop, canteen, provision store) and service providers (tailor, barber, drivers, labourers and so on) regarding details of employment provided, receipts and expenditure by each entities. Secondary data were collected from Government institutions (Gram Panchayat, Anganwadi Centre, School, Post Office, Health Care Centre, financial institutions located in Devarhippargi and Satihal and ICRISAT-VDSA project database) and NREGA official websites http://nrega.nic.in/netnrega and http://panchamitra.kar.nic.in. Structured checklists were prepared and used to collect data from villagers and business entity. In the questionnaire information on the transaction both within and outside were recorded separately, and source- wise.

The sample households were included people belonging to different social groups like caste, religion, occupation, since the household groups have difference on their consumption pattern of foods, festival spending, expenditure on durables, etc. Both underestimation and overestimation of expenditure or income were avoided. Household consumption data were collected for one month and was multiplied by 12 to get the consumption for a year. Data on all items of consumption (durable and non-durable) was collected from representative households, and we constructed a SAM of 82 x 82 size, which was refined furthermore.

3.3.2. *Village: Belladamadugu*

The SAM for Belladamadugu village was constructed using primary data from 25 households, 21 farmers, 10 leaf plate makers, 4 luggage auto transport operators, 10 households involved in services, 22 participants of MGNREGA, and 35 non participants of MGNREGS (127 in total). Then, secondary data pertaining to village statistics and MGNREGA works undertaken in the village were obtained from panchayat, post office, government school, Anganwadi, SHGs and official website of MGNREGA. The SAM was developed to find key sectors contributing meaningfully to the village economy and to linkage of MGNREGA to the rural livelihoods.

Primary data were compiled from field survey by individually surveying 127 households representing different sectors of the local economy. Details are in appendix Table 1. They were chosen in such a way as to represent entities from all occupations available in the village, reflect the true village economy. In the structured questionnaire, information on the transaction, both within and outside, were recorded separately and source wise. The sampling size was chosen to take care of nearly all sectors of the rural economy. For this study, a 64 X 64 sector Social Accounting Matrix was constructed to identify the key sectors and their contribution of MGNREGA towards the village economy.

IV

RESULTS AND DISCUSSION

A village social accounting matrix was constructed for 2 sample villages of Karnataka namely Markabinahalli and Belldamadugu. Activities and service sectors of villages are identified and selected for construction of SAM, based on expenditures and receipts of the local economy, as noted in the previous section. The results from SAM analysis are summarised here, first for Markabinahalli then followed by Belldamadugu village. Discussions on SAM matrix, various assumptions used in construction of the SAM are provided in Murthy, *et al.*, 2014.

4.1. *MGNREGA Impact in Markabinahalli*

For detailed SAM analyses, an aggregated SAM of 16X16 sizes for Markabinahalli village for the agricultural year 2012-13 was constructed containing two production activities viz; agriculture and charcoal making and two service sector activities, viz., trade and others; others included tailor, barber, SHG, transport service providers and so on (Table 2, and in appendix Table 1).Likewise, institutions (Households, Panchayat and Temple) and factors of production (labour and capital services), labour services sub-account - family and hired labour-were also included. All of them constituted endogenous accounts except for exogenous accounts comprised of Panchayat, savings and investment account and rest of the world

TABLE 2. AGGREGATED SOCIAL ACCOUNTING MATRIX FOR MARKABINAHALLI VILLAGE FOR 2012-13

(value in Rs. Lakhs)

(1)	Activity					Commodity					Factor services						TOTAL
	AGRI	CHAR	MGNREGP	TRD	OTH	AGRI	CHAR	MGNREGP	TRD	OTH	LABOUR	CAPITAL	HOUSE	INST	S&I	ROW	
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
AGRI	0.0	0.0	0.0	0.0	0.0	342.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	342.4
CHAR	0.0	0.0	0.0	0.0	0.0	0.0	18.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3
NREGP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
TRD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.2
OTH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	265.4	0.0	0.0	34.0	0.0	0.0	236.0	353.3
AGRI	11.0	0.0	0.0	72.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	0.0	0.0	0.0	18.3
CHAR	0.0	0.0	0.0	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	15.0
NREGP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5	0.0	5.0	129.4	174.2
TRD	20.1	0.0	0.0	5.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	34.2	101.7	0.0	0.4	97.1	265.4
OTH	29.2	0.0	0.0	2.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	3.6	0.0	52.1	172.8
LABOUR	86.8	9.2	4.2	4.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.5	0.0	0.0	0.0	83.9
CAPITAL	36.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	167.8	0.0	48.0	46.9	60.4	27.0	619.1
HOUSE	81.9	9.2	0.0	42.3	135.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	65.1	65.6
INST	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	2.1	117.0	15.1	0.0	0.0	206.2
S&I	58.5	0.0	0.0	0.0	2.6	11.0	0.0	0.0	0.0	0.0	5.0	47.5	235.9	0.1	125.3	0.0	606.7
ROW	18.7	0.0	10.8	40.1	123.3	0.0	0.0	0.0	0.0	0.0	5.0	47.5	235.9	0.1	125.3	0.0	606.7
TOTAL	342.4	18.3	15.0	174.2	265.4	353.3	18.3	15.0	174.2	265.4	172.8	83.9	619.1	65.6	206.2	606.7	

Exchange rate: 1 USD = Indian Rs. 57.5 (annual average for the year 2012-13).

Here, AGRI.: Agriculture, CHAR: Charcoal, TRD: Trade (includes both Agro-input and commodity), OTH: Other service providers, HOUSE: Households, INSTI: Institutions (Panchayat and Temple), S&I: Savings and Investment, ROW: Rest of the World.

account. Household account was the largest of all the accounts which revealed importance of household spending in the village economy. Agriculture was the second largest account showing its dominant role. MGNREGS was treated as a separate activity to assess the multiplier effect of investment under the scheme on village economy (Details are in Table 2).

The multiplier effects of MGNREGS are derived, and the results are summarized in Table 3; the multiplier effect of MGNREGS in Markabinahalli village economy was only 1.85 in magnitude, which is very weaker than we expected it earlier. Of the 44 individual endogenous accounts, income multiplier value was highest for hired labour services account (0.29) followed by landless family households (0.11), small family households (0.09), marginal family households (0.07), and large family households (0.06). A multiplier value of 0.29 implies that if the final demand for MGNREGS in the economy increases by 1 Rupee the demand for hired labour services in the economy increases by 28 paise. Of these 44 accounts, 11 accounts had zero or negligible multiplier value. The multiplier value of individual account of service providers and production activities were much lower than our expectations earlier. In addition to the multiplier value, for total impact of the MGNREGS in an economy, the actual size of each account and the actual size of MGNREGS work in the economy in the surveyed year is equally critical, which in fact, widely differed by account. Thereby, the change on value of these accounts when the final demand for MGNREGS in Markabinahalli would increases by Rs. 10 lakhs (a hypothetical value) is presented in Tables 2, 3 and appendix Table 1. Maximum impact was observed in Hired labour services; the increase on individual income was very small due to low intensity of MGNREGS works and very large size of agricultural labour services (Rs. 86.8 lakhs, 50 percent of total labour receipts in the village and very weak linkages of MGNREGS with rest of the accounts.

TABLE 3. SUMMARY OF IMPACT OF RS. 10 LAKH ADDITIONAL INVESTMENTS IN MGNREGS ON MARKABINAHALLI VILLAGE ECONOMY

Particulars	Base value for agriculture	Multiplier	Impact of investment in MGNREGS	
	year 2012-13 (Rs.)	value	Rs.	Per cent change
(1)	(2)	(3)	(4)	(5)
Output multiplier	8,15,28,134	1.14	11,39,000	1.40
Employment multiplier	6,19,07,445	0.30	2,98,000	0.48
Household income multiplier	1,72,76,525	0.39	3,88,000	2.25

Exchange rate: USD 1 = Indian Rs. 57.5 (average for the year 2012-13).

This 2.9 percent impact on labour account due to MGNREGS is equal to 960 labour days per annum, or which is equivalent to providing full employment to three households in a year @ 320 days of employment in a year, or 100 days of employment for 9 households. Second largest impact was observed on small households (1.02 per cent) followed by landless households (0.95 per cent), repair and maintenance shop (0.9 per cent), PDS shop (0.8 per cent) and Private School (0.77 per cent).

Overall impact of MGNREGS on village economy was only 1.1 per cent but in labour equivalents implies for 6184 labour days, or full time employment to 19 households at the rate of 320 days of employment per year per household. This is a very weak effect of MGNREGA on employment keeping in view the objective of livelihood security within framework of MGNREGS. In essence, indirect impact of MGNREGS on labour employment was 85percentage of total impact of MGNREGA (1.14).

In Table 3, multiplier effects of Rs. 10 lakhs investment in MGNREGS are presented as output, employment and household income multipliers. Of all the three multiplier effects, output had highest value of 1.14 followed by household income (0.39) and employment (0.3), but, the highest impact was on household income, which was to the tune of 2.25 per cent followed by output (1.4 per cent) and the least impact was on employment, to the tune of 0.48 per cent.

Low Impact of MGNREGS in Markabinahalli

MGNREGS was carried out on a very small-scale in the studied village *Markabinahalli*. Total outlay spent on MGNREGS in the year 2012-13 was of Rs. 15 lakhs, which was even lesser than the total monetary value (size) of charcoal making activity in the village, which provides employment throughout the year. We also found very weak linkages of MGNREGS with other accounts. Besides, MGNREGS spent fund only on hired labour services in the village, whereas, material components were procured from outside the village. Proportion of labour component in the overall outlay for MGNREGS was just 28 per cent as against 60 per cent mandated by the national NREGA authority. This was of value of Rs. 4.2 lakhs, just 2.4 per cent of total labour income in the village economy in the surveyed year.

In addition, the labour household income (wage) from MGNREGS wasn't so attractive in Markabbinahalli village; where agricultural wage rate was Rs. 300 per day; and non-farm wage rate was Rs. 350 per day, which are much higher than the average MGNREGA wage rate of Rs. 174 per day followed in the surveyed year. On an average, in a year, a family worked for 27 days under MGNREGS worked, 80 days in non-farm activities, and 253 days in agriculture sector. With the prevailing wage rates in different activities, the total family income of a labour household was Rs. 1,08,600 per annum. In this case, the income from MGNREGS (Rs.4698) would form only 4.32 per cent of the total annual income of the same labour household. Due to all of these factors the workers in the village were not so much attracted to MGNREGS works.

Instead of MGNREGS being demand driven, had this been driven with supply focus, then the program would be designed much effectively by the local panchayat. Since seasonal migration to nearby towns and far-off places like Solapur and Bangalore fetched higher returns to them, local people, the local leaders were not showing any significant zeal for successful implementation of the scheme. Income

flow into the village economy from temporary labour migration stood at Rs. 52.1 lakhs, 13 times higher that of labour earnings from MGNREGS.

TABLE 4. MGNREGS WORKS IN MARKABINAHALLI: 2012-13

Work (1)	Official records		MGNREGA wage (Rs/ day) (4)
	Total person days of work provided (2)	Total amount disbursed (Rs.) (3)	
RGSK construction	3996	10,07,000	155
Tree planting			
Weed removal			

1USD = Indian Rs. 57.5 (annual average for the year 2012-13).4.2. MGNREGA Impact in Belladamadugu.

Likewise, Social Accounting Matrix was constructed also for the Belladamadugu village. Then, output, employment and income multipliers of key sectors of Belladamadugu village are derived. Details results are in Table 5. Details on the Village SAM of Belladamadugu are in DVSA discussion paper no 26 (http://vdsa.icrisat.ac.in/Include/Discpapers/SEDPS_26.pdf

TABLE 5. OUTPUT, EMPLOYMENT AND INCOME MULTIPLIERS OF KEY SECTORS IN BELLADAMADUGU

Key sectors (1)	Output multiplier (2)	Employment multiplier (3)	Income multiplier (4)
Dairy (co-operative)	2.52	0.23	0.81
Milk Production	2.08	0.33	1.10
Rainfed groundnut cultivation	1.88	0.49	0.62
Paddy cultivation	1.50	0.23	0.98
Flower crops cultivation	1.50	0.28	1.03
Tamarind harvesting and processing	1.47	0.55	1.26
SHG	1.45	0.03	1.10
Leaf plate making	1.41	0.29	1.02
Sheep and goat rearing	1.39	0.42	1.12
Brick Making	1.37	0.28	0.91
MGNREGA	1.08	0.17	0.20

For Rs.1 increase in final demand of MGNREGA, this will lead to indirect impact on increasing income of households is Rs. 0.2, of which Rs 0.17 is for poor farm households and Rs. 0.03 is for middle-income households. This modest multiplier suggest MGNREGA was not able to make meaningful impact in the villages selected (Belladamadagu). However, dairy and dairy co-operative are the two key sectors exhibiting large multiplier value of 4.6. This has resulted in both efficiency and equity in income distribution. Thus, milk production and cooperative dairy together have the potential to empower economically the male farmers as well as women farmers. After that, Rainfed Groundnut cultivation was of higher multiplier effect with 1.88 values. This is followed by paddy cultivation (1.5), flower cultivation (1.5), then harvesting & processing of tamarind (1.47). MGNREGA has made a modest impact on village economy since the output multiplier is low (1.08).

Reasons for Weak SAM Multipliers for MGNREGA in Belladamadugu

The reasons for weak value of SAM multipliers of MGNREGA in Belladamadugu could be due to the same sets of factors as noted in case of Markabinahalli village earlier. Agricultural wage rate (Rs. 200 per day) and non-farm wage rate (Rs. 300 per day) in the study area are substantially higher than the MGNREGA wage rate of Rs. 174 per day by over 44 per cent. An average village family worked for 17 days under MGNREGA, 64 days in non-farm activities and 242 days in agriculture. At the current wage rates, the annual family wage income from all sources is Rs. 70,558. The wage income from MGNREGA (Rs. 2958) here forms a meagre 4.2 per cent of total annual family wage income. Therefore, even if the households were willing to work, their reservation wage to work in MGNREGA was much higher than the wage rate offered from the MGNREGS, which deters them to work for the MGNREGA activities.

V

CONCLUSIONS AND IMPLICATIONS

We have constructed a village level SAM for tracking direct and indirect impact of MGNREGS and other activities done in the two villages in Karnataka. The methodology and adopted in this study are different than most of the other studies dealing with impact of MGNREGS. The focus of here is on anlaysing direct and indirect impacts of the MGNREGS interventions, and quantify the multiplier effects of the MGNREGS in the village economy, taking together all other major economic activities (over 30-40) being taken in the village.

The village economy-wide multiplier value of MGNREGS and other activities (interventions), as estimated in one of the study village (Belladamadagu),was highest for dairy cooperative and dairy activities (4.6), and followed by rainfed ground nut cultivation (1.88), paddy cultivation (1.5), flower cultivation (1.5), and tamarind harvesting and processing (1.47) and so on. The output multiplier for MGNREGA was a very modest 1.08, which indicates that MGNREGA is yet to make an economic impact in the village economy of Belladamadagu. Almost same results were also obtained in another village of Markabinahalli.

SAM multiplier analysis indicated that in water starved dryland village of Belladamadagu, dairy and dairy co-operative have the highest potential to generate income for all categories of farmers followed by activities such as rainfed groundnut cultivation, paddy cultivation, flower cultivation, and followed by tamarind harvesting and processing, and so on.

At the two villages of Karnataka selected here, MGNREGA is yet to make economic impact in the village economy, as reflected in its poor multiplier effects. The role of MGNREGA should be certainly in different mode and different form these villages with the higher market wage rates. A different strategy on implementation of MGNREGA is needed than the standard methods of MGNREGS

implementation as practiced all over the country. For example, the Procedural complexities in MGNREGA implementation may also need to be simplified to reduce the transaction costs in its implication, and to increase the number of working days per year undertaken in a village under the MGNREGS. Mission mode culture needs to be inculcated to improve MGNREGA operation in the village. The additional local village expenditure on activities like supports for groundnut cultivation (may be thorough improving access to water), flower cultivation, tamarind processing and leaf plate making, would have higher output multiplier values than that of the output multiplier value of MGNREGA.

The works to be selected under the scheme need to address issues related to creating better community asset, improving quality of life and increasing farm productivity, including inter alia, better sanitation, improving rain water harvesting, tree planting, supply of good drinking water, rural connectivity, rejuvenation of traditional water bodies and land improvement on individual farms. Ensuring good quality in work execution and financial transparency would go a long way in motivating the local villagers to make the best use of MGNREGS and further strengthen the inter linkages and feedback effect of MGNREGS in the village economy.

Multiplier effects (feedback effects estimated using SAM) of MNGREGS on the villages of Markabinahalli and Belladamadugu was very weak. This is also due to leakage and use of more percentage of materials under the MNREGS activities than labor allocated under the schemes, these materials and machines were brought from outside of the village economy, which were leakage in the village economy). The village wide assessment of impacts and construction of village SAM contributes in the applied economic studies in India. This study provides policy measures for enhancing multiplier effects of the MGNREGS interventions in the local economy.

In addition, on a positive note, MGNREGA is playing the role of Social Safety Nets for some of the labourers who would not get observed by the normal labor markets such as ages women members, age male members in the village. In that sense, MGNREGS might have played a crucial role in providing the downward threshold for the wage rate, increasing the wage incomes for rural households. The low participation of labour for MGNREGS lead to weak MGNREGA output multipliers. With the higher wage earning from other activities compared with MGNREGA activities, the MGNREGA has limited effect in the village where the average rural wage rate is substantially higher than the MGNREGA wage rate. The methodology adapted validated for village SAM analyses in this study can be adapted to other villages and these analytical tools can be used for comparative assessment of several alternate government interventions in the village economy. This tools and methodology validated here would be also very useful to graduate students interesting to do research on quantifying direct, indirect, and total impact of large-scale public intervention in local and regional economy.

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