E C O N O M I C S B U L L E T I N

Flow Structure in Nepal and the Benefit to the Poor

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Abstract

In this paper we use the latest Social Accounting Matrix (SAM) for Nepal and some complementary data to specify the concentration of the poor in this typical South Asian village economy. Applying SAM multipliers, we analyze the flow structure in Nepalese economy. On top of this analysis, we simulate the effects of demand injections to sectors and transfer injections to households and use Relative Distributive Measure introduced by Cohen (1988) to study the strengths of these multiplier effects with respect to their sectoral and household income shares. We conclude that in order to benefit the poorest household group most, economic restructuring is required because in the given flow structure the benefit to the poorest is only modest. Currently, even if the sectoral injections are through agriculture and transfer injections through poorer household groups, the middle income groups benefit the most.

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1. Introduction

The genesis of the Social Accounting Matrix (SAM) goes back to the pioneering work of Stone (1973) on social accounts. Pyatt and Round (1979) and Defourny and Thorbecke (1984) further formalized the SAM and showed how it could be used as a conceptual and modular framework for policy and planning purposes.

The SAM approach to modelling is a very flexible and a basic element in the tool kit of general equilibrium economists. SAMs have been used to study i) growth strategies in developing economies by Pyatt and Round (1985), and Robinson (1988), ii) income distribution by Pyatt and Round (1977), Adelman and Robinson (1978) and redistribution by Roland-Holst and Sancho (1992), iii) fiscal policy impacts by Whalley and St. Hillaire (1983, 1987), and iv) decomposition of activity multipliers that shed light on the circuits comprising the circular flow of income by Stone (1981), Pyatt and Round (1979), Defourny and Thorbecke (1984), and Robinson and Holst (1988).

Recently SAM has become increasingly popular in policy analysis; examples include Blancas (2006) for the inter-industrial linkages of Mexican economy, Tarp et al. (2002) for the growth prospects of Vietnamese economy, Stanica (2004) for the growth forecasting of Romanian transition. Likewise, Cardenete (2004) was able to demonstrate the trade off between indirect tax rates and economic activity/welfare of majority of consumers in Andalusia economy. There are also several studies on distributional aspects. Rubio Sanz and Perdiz (2003) claim to have integrated recent developments in inequality measurement and national accounting on top of the analysis of Atkinson and Bourguignon (2000) in this regard.

SAM-based multiplier analysis is another area of current research in policy making. Llop and Manresa (2004) investigated the process of income distribution in the Catalan economy, using the linear model of SAM multipliers. Vélez and Pérez-Mayo (2006) considered SAM as adequate databases for the economic modelling and emphasized the role of households in the economy. The disaggregation of households allowed SAM able to analyze income distribution pattern in more detail than other tools could do. Thaiprasert (2004), on the other, analyzed the role of agricultural growth on overall income distribution in Thai economy using multiplier analysis. The paper shows that agricultural and agricultural-processing sectors rather than manufacturing in Thailand have higher potentiality to pro-poor growth and more savings in the country.

In methodological grounds, Madsen and Jensen-butler (2005) developed a three-dimensional spatial approach (termed two-by-two-by-two) to analyze commodity and factor markets with geographical disaggregation but all consistent with and social accounts. Rodríguez Morilla and Llanes Díaz-Salazar (2005) also developed some methodological contributions in SAM construction. They presented a methodology to annual estimation the SAM. This methodology has been developed to get new SAM using available data from the National Accounts and “a priori” known SAM.

In light of these backgrounds, the objectives of this paper are two-folds. First, it gives a glimpse of the typical south-Asian village economy of Nepal using Nepal SAM and detects where the poor are concentrated. Second, we conduct a multiplier analysis to study the flow structure in Nepalese economy and explore potential strategies for the pro-poor growth in the given economic structure. Section 2 of this paper presents the salient features of Nepal SAM, which is followed by Section 3 on general outline of Nepalese economy as explained by the

SAM. Section 4 presents the theory and empirics of SAM multiplier analysis. We simulate two policy scenarios in this section: demand injection by sectors and transfer injection by household groups. Moreover, we explore how the transfer and demand injections affect income by household groups. The paper concludes in Section 5.

2. Salient characteristics of Nepal SAM 1996

Generally, most of the modellers use six main accounts in a SAM. These include factors, institutions, activities, commodities, accumulation (national capital), and the rest of the world. Each account can be further disaggregated into many sub-accounts based on the socio-economic structure of the economy and the objectives of the particular policy modelling. In our case, the factor account has been sub-divided into three main accounts namely, unskilled labor, skilled labor, and capital. Institutions have three main sub-accounts: households, firms, and government. Moreover, the household sector has four different groups: urban households, large rural households, small rural households, and landless rural households; which is based on regional attributes and other endowment characteristics. The activity account comprises four major sub-accounts: agriculture, industries, commercial services, and other services. Similar pattern follows for commodity account.

A SAM is a square matrix with the same accounts in rows and columns; however, the difference is that a row shows the income flows (receipts) of the given account and corresponding column shows the expenditure flows (outlays) of the same account. For example, an element a_{ij} in a cell of the SAM shows expenditure of the j^{th} account going as an income of the i^{th} account. More importantly, every row total must be equal to its corresponding column total. In every account, one cell contains a balancing factor; for example, in a household account, household saving works as a balancing factor; whereas in rest of the world account, capital in(out)flow works as the balancing factor.

A typical household account receives income from factors of production employed in activities, transfers from the government as well as from the rest of the world. These income flows are the expenditures of activity, government and the rest of the world accounts, respectively. Likewise, household expenditure account comprises household consumption expenditure on commodities, tax to the government, and contribution to the national saving. These three expenditures flows of households are the incomes of commodity account, government account and the national capital account, respectively (see table Appendix A1). Similarly, income and expenditure flows of other accounts of the Nepal SAM can also be interpreted. For the Nepal SAM (Appendix A1), the following abbreviations have been used to different sub-accounts:

SR-HH = Small Rural Household	AGR-A = Agricultural Activities
LR-HH = Large Rural Household	IND-A = Industrial Activities
LLR-HH = Landless Rural Household	CS-A = Commercial Service Activities
U-HH = Urban Household	OS-A = Other Service (public) Activities
GOVT = Government	AGR-C = Agricultural Commodities
FIRM = Business firm	IND-C = Industrial Commodities
ROW = Rest of the World	CS-C = Commercial Service Commodities
WLSL = wage to low-skilled labor	OS-C = Other Service Commodities
WHSL = wage to high-skilled labor	YTAX = Income Tax
PROFIT = Profit to the invested capital	STAX = Domestic Indirect Tax
S-I = National Capital (Saving-Investment)	TAR = Tariff

Appendix A1 also explains the data sources to the construction of Nepal SAM.

3. Characteristics of the economy as revealed by Nepal SAM

Agriculture is still the largest sector in terms of both value added and employment. It employs more than two-thirds of the labor force, basically low-skilled, and contributes approximately 40 percent of the GDP. With modest technology, Nepalese industries, basically dominated by carpet and garment industries, employ approximately 15 percent of the labor force and contribute more than 20 percent of GDP. The industrial and service sectors, both private and public, employ majority of the high-skilled labor force. The commercial services sector, which is growing faster as compared to the other sectors, accrues almost 30 percent of GDP whereas the public service sector less than 10 percent (Table 1).

Table 1: Sectoral contribution in the economy (values in million Rupees)

Sectors	Value added	Domestic indirect tax	Import duties	Sectoral total (% share)
Agriculture	90633	1870	1069	93572 (37.6)
Industry	49506	5040	1696	56242 (22.6)
Commercial service	67909	2060	1852	71821 (28.8)
Public service	23853	715	2710	27278 (11.0)
Sub-total	231901	9685	7327	248913
% share	93.2	3.9	2.9	100.00

Source: Appendix, Table A1.

The general trend of the Nepalese macroeconomic data show that the contribution of the agricultural sector in GDP is gradually declining and that of the commercial services is increasing. The rising contribution of the latter, if the recent years' slow down by Maoist movement is ignored, is mainly due to the expansionary banking, tourism, transportation, and hotel services. Of the gross domestic income flows, value added accounts about 93 percent, domestic indirect taxes about 4 percent, and the import duties about 3 percent (Table 1). Activity accounts use intermediate imports approximately 10 percent of its total value; it is as high as 16 percent in industrial activities and as low as 7 percent in commercial services (Table A1).

For simplicity, the factors of production have been broadly classified into two categories: capital and labor, the latter into high-skilled and low-skilled types. Distribution of the compensation to the factors of production shows that profit wage ratio is approximately 1.08:1. The total compensation to low-skilled labor to high-skilled labor is in the ratio of 2.5:1, representing the abundance of low-skilled labors in the economy. In case of agriculture, capital mainly refers to land whereas in rest of the cases it includes all physical capitals including land. Disaggregation of the value added shows that commercial services and then industries are more capital intensive activities. In these sectors, profit shares respectively 66 and 61 percentages of total value added. On the other hand, public services are most labor intensive, which is followed by agriculture sector. Wage share in value added in these sectors account 93 and 52 percentages, respectively. Unskilled labors are more concentrated in agriculture whereas skilled labors in public services and industries.

Concentration of the poor

Only 15 percent of the total Nepalese population (National Census 2002) lives in urban areas, but they, U-HH, share about 31 percent of total household income (Appendix A1). For the

SAM year 1996, they shared 10 percent of the population. Likewise, large rural households (LR-HH) with 11 percent of the population, share 22 percent of the total household income. These two household types are better-off groups and, in average, not poor. Small rural households and landless rural households (SR-HH and LLR-HH) are the poor groups; the latter is poorest of the poor. They have 41 and 38 percentages of the total households in the country but share approximately 30 and 17 percentages of the total household incomes, respectively, as shown by the Nepal SAM[1]. They are unable to pay tax to the government because their incomes fall below the tax exemption limit. Their saving rates are also very low and average propensities to consume food/agricultural commodities are high. The distribution of factor incomes to different institutions shows that landless rural household, LLRHH, group is the most vulnerable one which has the least labor as well as the capital income.

4. The multiplier analysis

Construction of SAM multipliers requires the specification of endogenous and exogenous accounts in the SAM. Here, we follow the convention and consider the government and the ROW accounts as an exogenous block and the rest of the accounts as endogenous. We represent the vector of exogenous totals by x; the endogenous vector by y_n; and a coefficient matrix by A_n, which is average propensity of each endogenous cell calculated by dividing the same with the corresponding column total. Then, the vector of endogenous variables, y_n, can be expressed as:

$$y_n = A_n y_n + x \tag{1}$$

Equation 1 can also be written as:

$$y_n = (I - A_n)^{-1} x = M_a x \tag{2}$$

Here, M_a is the SAM multiplier matrix. If there are some impulses in the exogenous accounts, their impacts on endogenous accounts can be traced through the SAM multipliers. SAM multipliers generally study two types of impulses, demand injections to sectors and transfer injections to institutions. The impact of either impulse can be traced to the four types of endogenous accounts: expenditure by product, earning by factors, output by sectoral activity, and income by household groups. In this paper, we are interested with the last two endogenous accounts only, i.e. we analyze the effects of demand injections of one unit in the individual activity account on sectoral outputs and household incomes; and the effects of one unit transfer injections to the individual household group on sectoral outputs and household incomes. These effects can be specified in terms of output multiplier effects spread on all the four activity accounts and income multiplier effects spread on all the four household groups. Though we use only four sub-matrixes in our analysis in following paragraphs, in complete form, our SAM multiplier matrix is disaggregated with activities, commodities, households and factor types (see Appendix A2 for the full multiplier matrixes generated from SAM 1996).

Table 2 presents the size of output and income multiplier effects of demand injections on different activities and income of households. The output multiplier effects reveal that a demand injection of 1 unit in agriculture leads to an output increase in agriculture by 2.38 (this is the 1 unit plus 1.38 more), plus an output increase in industry by 0.80, in commercial services by 0.88, and in other services by 0.23. Altogether the demand injection by 1 unit in agriculture leads to a total output increase by 4.29 units. Similarly, demand injections by 1 unit in industry, commercial services and public services increase total output by 3.92, 4.09,

[1] Distributive shares of population belonging to these household types are based on Nepal Living Standard Survey 1995/96 by CBS (1996).

and 4.17 units, respectively.

Considering income multiplier effects, the total household incomes increase by a multiplier of 2.65 due to 1 unit demand injection in agricultural sector. It is composed of 0.65, 0.66, 0.86, 0.48 multipliers to U-HH, LR-HH, SR-HH and LLR-HH, respectively. The household income growth is more among SR-HH followed by LR-HH. The reason behind these differential impacts is the possession of both agricultural capital and labor income in more proportions by these two household groups as compared to other households (see Appendix, Table A1).

The ratio of income to output multiplier for demand injection is highest in agriculture at 0.62 and lowest in industry at 0.53. The high output and income multipliers of agriculture are due to the greater frequency of agricultural flows in the total circular flows of the economy. Likewise, the flows are relatively less in industrial sector but it has higher proportions of intermediate deliveries, which result in a small income output multiplier ratio (Table 2).

Table 2: SAM multipliers of demand injections in activities

		Activities			
Size of multipliers		AGR-A	IND-A	CS-A	OS-A
Activities	AGR-A	2.38	1.18	1.12	1.16
	IND-A	0.80	1.81	0.80	0.84
	CS-A	0.88	0.73	1.93	0.93
	OS-A	0.23	0.20	0.24	1.24
Sum output multiplier		4.29	3.92	4.09	4.17
Households	U-HH	0.65	0.69	0.77	0.84
	LR-HH	0.66	0.46	0.52	0.54
	SR-HH	0.86	0.60	0.70	0.64
	LLR-HH	0.48	0.31	0.35	0.43
Sum income multiplier		2.65	2.06	2.34	2.45
Income/output multiplier		0.62	0.53	0.57	0.59

Table 3: Proportional distribution of the SAM multipliers among activities and households

		Activities			
Proportional distribution		AGR-A	IND-A	CS-A	OS-A
Activities	AGR-A	0.56	0.30	0.27	0.28
	IND-A	0.19	0.46	0.20	0.20
	CS-A	0.21	0.19	0.47	0.22
	OS-A	0.05	0.05	0.06	0.30
Sum output multiplier		1.00	1.00	1.00	1.00
Households	U-HH	0.25	0.33	0.33	0.34
	LR-HH	0.25	0.22	0.22	0.22
	SR-HH	0.33	0.29	0.30	0.26
	LLR-HH	0.18	0.15	0.15	0.18
Sum income multiplier		1.00	1.00	1.00	1.00

Table 3 follows from Table 2 and it shows the proportional distribution of the multiplier effects generated from demand injection. This effect is highest to the same sector because the injection of one unit goes to the same sector; the diagonal proportion of injecting sector on receiving sector is always the highest in the column.

Table 4 presents the impacts of transfer injections to households on sectoral output and income of households. One unit of income transfer injection to U-HH, which could be initiated by government or ROW, induces 1.33 units increase in agricultural activity due to the increased food demand of this household group, among others. Moreover, this injection causes 0.81 units of growth in industrial activities, 1.05 units in commercial services and 0.25 units to other services activities. Similarly, the effects of 1 unit transfer injections to other household groups' incomes can be studied from the table. It is clear that due to the higher average propensity to food consumption as compared to other type of goods and self-propelling agricultural production, the output multiplier of agricultural activities is quite high in Nepal among all household groups. Agricultural output multiplier due to transfer injections to household group is highest (1.58) among poorest households, LLR-HH, followed by the next poor households, SR-HH (1.51). Likewise, transfer injections to LLR-HH has highest impact on total output multiplier (3.60) followed by transfer injection to SR-HH (3.59).

The effect of transfer injection to households on household income (Table 4) shows that 1 unit growth in transfer injection to U-HH income has 1 unit growth in household income as a direct impact and 0.60 units of growth by indirect impact. Likewise, 1 unit transfer injection to LR-HH, SR-HH, and LLR-HH have 0.44, 0.65, and 0.37 units of growth to their household income as an indirect impact. Overall, the total income multiplier by transfer injection is highest if it is made through LLR-HH (3.14) followed by through SR-HH (3.10). This is because these household groups have higher average propensity to consume and are producers of own consumption as well as consumption of others, which induce more production leading to overall growth of household incomes.

Income output multipliers ratio does not vary much among household groups. They are within the range of 0.86 to 0.88.

Table 4: SAM multipliers of transfer injections to households

		Households			
Size of multipliers		U-HH	LR-HH	SR-HH	LLR-HH
Activities	AGR-A	1.33	1.26	1.51	1.58
	IND-A	0.81	0.94	0.93	0.85
	CS-A	1.05	0.91	0.90	0.88
	OS-A	0.25	0.24	0.25	0.29
Sum output multiplier		3.44	3.35	3.59	3.60
Households	U-HH	1.60	0.58	0.60	0.60
	LR-HH	0.47	1.44	0.50	0.51
	SR-HH	0.61	0.58	1.65	0.66
	LLR-HH	0.33	0.31	0.35	1.37
Sum income multipliers		3.01	2.91	3.10	3.14
Income /output multipliers		0.88	0.87	0.86	0.87

Besides analyzing the levels of multipliers, it is also important to study the distribution of multiplier effects across sectors and households as well as discover the underlying structural bias in the SAM. In order to do so, we calculate the Relative Distributive Measure (RDM) from these output and income multipliers. RDM can be calculated as introduced by Cohen (1988) and it shows the direction of bias in the SAM multipliers, indicating which sectors and which household groups are more favored and less favored as a result of demand injections or transfer injections. Equations 3 and 4 define RDM for output and income multipliers (RDM_{ss},

and $RDM_{hs'}$, respectively) generated from demand injections to sectors. Likewise, equations 5, and 6, compute RDM for output and income multipliers ($RDM_{sh'}$ and $RDM_{hh'}$, respectively) generated from transfer injections to household groups. These formulations of RDMs were used by Cohen (2002) in making a comparative study of SAM multipliers among some eastern and western European economies.

$$RDM_{ss'} = \frac{(M_{a,ss'} - d_{ss'})}{(\sum_s M_{a,ss'} - 1)} / \frac{Output_{s,0}}{\sum_s Output_{s,0}} \quad (3)$$

$$RDM_{hs'} = \frac{M_{a,hs'}}{\sum_h M_{a,hs'}} / \frac{Income_{h,0}}{\sum_s Income_{h,0}} \quad (4)$$

$$RDM_{sh'} = \frac{M_{a,sh'}}{\sum_s M_{a,sh'}} / \frac{Output_{s,0}}{\sum_s Output_{s,0}} \quad (5)$$

$$RDM_{hh'} = \frac{(M_{a,hh'} - d_{hh'})}{(\sum_h M_{a,hh'} - 1)} / \frac{Income_{h,0}}{\sum_h Income_{h,0}} \quad (6)$$

where $M_{a,ss'}$ and $M_{a,hs'}$ represent output multipliers and income multipliers, respectively, generated from demand injections to sectors. Likewise, $M_{a,sh'}$ and $M_{a,hh'}$ are the output multipliers and income multipliers generated from transfer injections to households. Here, s and h represent sector and household group, respectively. These multipliers are component blocks of the SAM multiplier matrix (M_a) in the Appendix Table A2. In these equations, $M_{a,ss'}$ is divided by the column sum of multipliers of *s* after deducting the initial injection. Here $d_{ss'}$ stands for the Kronecker symbol that equals 1 if *s=s'* and 0 in other cases. Similar is the case for $M_{a,hh'}$. We take $d_{hh'}$= 1 if d = d'. These subtractions are to remove the direct impacts of demand (transfer) injections to the same sector or household. Furthermore, for the output multiplier, the result is divided by the recorded (actual) output share of sector *s* in year 0 as found in the SAM. Similarly, for income multiplier, the result is divided by the recorded (actual) income share of that household group h in the recorded year 0. For values of RDM >1, <1, and = 1, there are positive, negative and neutral redistributive effects. For instance, values of $RDM_{ss'}$ = 1 mean that sectoral injections would reproduce exactly the same sectoral distribution pattern of the recorded year. An endogenous variable with RDM above unity enjoys a favored position, and below unity the disfavored position. Likewise, similar interpretations can be made for the three other RDMs.

Applied to Nepal SAM 1996, Table 5 shows demand injection in activities; they resulted in a favorable bias towards agriculture. Moreover, the own effect is always positive to every sector, except in case of industry. Overall, sectoral injections do give more favor to agricultural growth, followed by commercial services. Industry and public services get disfavored redistributive effects from every demand injection. The importance of the agricultural contribution in the economy is very vividly shown by the RDM.

Turning to household income effects, a demand injection to agricultural activities has positive redistributive effects for all rural households, RDM>1, and a negative redistributive impact to urban households, U-HH, where $RDM_{hs''}$ = 0.78. A demand injection to the industrial sector does have negative redistributive impact to both SR-HH and LLR-HH. Likewise, a demand injection to commercial services has negative redistributive impact to LLR-HH and that of public services has negative impact to the SR-HH. Overall, impact of demand injections on household income shows neutral or positive redistributive impacts on all household groups

except the poorest. The poorest group of households, LLR-HH, is disfavored with an average RDM of 0.96, but if the demand injections are restricted to agriculture then LLR-HH is among the most favored, RDM = 1.06.

Table 5: RDM of demand injections in activities

		RDM by activities				
RDM		AGR-A	IND-A	CS-A	OS-A	average
$RDM_{ss'}$	Activities					
	AGR-A	1.29	1.24	1.11	1.12	1.19
	IND-A	0.77	0.88	0.82	0.84	0.83
	CS-A	1.03	0.96	1.15	1.12	1.06
	OS-A	0.70	0.69	0.78	0.76	0.73
$RDM_{hs'}$	Households					
	U-HH	0.78	1.07	1.05	1.09	1.00
	LR-HH	1.12	1.01	1.00	0.99	1.03
	SR-HH	1.10	0.99	1.02	0.89	1.00
	LLR-HH	1.06	0.88	0.88	1.03	0.96

Taking up the sectoral redistributive impacts of transfer injections to household groups, the agricultural sector gets a positive redistributive impact in all cases (Table 6). However, the RDM for agriculture is higher from transfer injections to poor rural household groups than to rich groups because of the greater linkages in production, income and consumption between the rural poor and the agricultural sector. Transfer injections to U-HH and LR-HH have positive redistributive impacts to commercial services. Transfer injections to all household groups have negative redistributive impacts to industry and public services.

Table 6: RDM of transfer injection to households

		RDM by household groups				
RDM		U-HH	LR-HH	SR-HH	LLR-HH	average
$RDM_{sh'}$	Activities					
	AGR-A	1.19	1.15	1.29	1.35	1.24
	IND-A	0.75	0.89	0.83	0.75	0.80
	CS-A	1.17	1.04	0.96	0.94	1.03
	OS-A	0.73	0.72	0.70	0.81	0.74
$RDM_{hh'}$	Households					
	U-HH	0.95	0.97	0.91	0.89	0.93
	LR-HH	1.05	1.04	1.07	1.07	1.06
	SR-HH	1.03	1.03	1.05	1.05	1.04
	LLR-HH	0.97	0.95	0.98	1.02	0.98

Table 6 associates $RDM_{hh'}$ also. It is interesting to note here that the middle income household group LR-HH and SR-HH are able to secure positive redistributive impacts from transfer injections to households, scoring an average RDM of 1.06 and 1.04, respectively. In contrast, the richest and poorest household groups experience greater leakages, ending up with an average RDM of 0.93 and 0.98, respectively.

5. Conclusion

The disaggregated Nepal SAM consists of four activities, four commodities, four households,

and three factor accounts in addition to an account to each of government, corporate sector, national capital, domestic direct tax, domestic indirect tax, custom duties, and the rest of the world.

Landless rural household is the most vulnerable group which has the least labor as well as the capital income. They constitute approximately 38 percent of the total households in the country; however, they draw only 17 percent of the total household income. Next to this, small rural households are also mostly poor; approximately 41 percent of the households share about 30 percent of the total household income. The rest two, urban and large rural households are relatively richer household categories. They constituted about 10 and 11 percent of the total households in the country but used to share 31 and 22 percents of the total household incomes. Relatively well-off situation of these households is also reflected by their contribution in the income tax to the government (Table A1). In Nepal, many large rural households are mainly big landlords; rental income from land capital is their main factor income. Likewise, urban households possess other capitals, especially used in industrial and commercial services. Poverty has been concentrated in Nepal among the landless rural households and small rural households.

More importantly, landless rural households and small rural households use approximately half of their consumption expenditure on food. This figure is quite low among urban and large rural households, approximately 38 percent. Likewise, from the perspective of saving capacity, the large rural households have the highest average propensity to save (34% of their income) followed by urban households (7%). This ratio is lowest among landless rural households (2%). Therefore, from every perspective, the landless rural households and small rural households are the poorer households in general; whereas the former is the poorest of the poor.

RDM analysis shows that demand injections through agricultural activities have bigger impacts in Nepalese economy and it favors middle income groups more. Conversely, transfer injections to households favor agricultural sector more than other sectors. This impact is biggest if the injection is through the poorest household group. In order to benefit the poorest household group most, economic restructuring is essential because in the given flow structure the benefit to the poorest is only modest; the middle income household groups benefit the most.

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Appendix:

Table A1: Disaggregated social accounting matrix of Nepal 1996 *(values in million Rupees)*

	Activities				Commodities				Factors			Households				FIRMS	GOV	S-I	YTAX	STAX	TAR	ROW	Total
	AGR-A	IND-A	CS-A	OS-A	AGR-C	IND-C	CS-C	OS-C	WLSL	WHSL	PROFIT	U-HH	LR-HH	SR-HH	LLR-HH	FIRMS	GOV	S-I	YTAX	STAX	TAR	ROW	
AGR-A					124996																		124996
IND-A						120442																	120442
CS-A							100103																100103
OS-A								38079															38079
AGR-C	15035	21517	14	74								22948	11597	29165	19573			10344				5769	136035
IND-C	228	22704	4713	4460								9522	7526	15988	6626			38223				33708	143697
CS-C	8830	5009	15432	5416								24695	8403	10793	5399			16814				15928	116720
OS-C	792	2660	5252	1219								5443	3406	5067	5318		23018	2637				0	54811
WLSL	39905	10204	17482	12637																			80229
WHSL	7599	8809	5407	9565																			31380
PROFIT	43129	30493	45020	1651																			120293
U-HH									21139	12328	35609						284					510	69869
LR-HH									11277	8563	28821						250					456	49367
SR-HH									28038	6679	28384						1266					1120	65488
LLR-HH									19775	3809	10705						1187					2380	37856
FIRMS											16774						5688						22462
GOV																			10881	9685	7327	4825	32718
S-I												4692	16083	4475	940	16503	1025					24299	68017
YTAX												2569	2352	0	0	5960							10881
STAX					1870	5040	2060	715															9685
TAR					1069	1696	1853	2710															7327
ROW	9478	19046	6783	3057	8101	16520	12704	13307															88996
Error																-1							
Total	124996	120441	100103	38079	136035	143697	116720	54811	80229	31380	120293	69869	49367	65488	37856	22462	32718	68017	10881	9685	7327	88996	

Note: The construction of Nepal SAM 1996 basically follows the Input-Output Table (IOT) prepared by National Planning Commission of Nepal (NPC, 1992). The domestic demands for domestically produced goods were estimated deducting the export values from the total output. The estimation of household savings, firm saving, and government savings were from Nepalese central Bank (NRB, 1994) and Central Bureau of statistics (CBS). The trade statistics were from the Trade Promotion Centre. Data on household income and consumption flows have been based on Nepal Living Standard Survey (NLSS) CBS (1996). The data from this survey became very much instrumental to derive the consumption matrix (Sapkota, 2001).

Table A2: Multipliers generated from SAM 1996 Continued…

		Activities				Commodities				Return to factors			
		AGR-A	IND-A	CS-A	OS-A	AGR-C	IND-C	CS-C	OS-C	WLSL			
										AGR-A	IND-A	CS-A	OS-A
	AGR-A	2.38	1.18	1.12	1.16	2.18	0.99	0.96	0.80	1.46	1.42	1.44	1.44
	IND-A	0.80	1.81	0.80	0.84	0.73	1.52	0.69	0.58	0.90	0.88	0.87	0.86
Activities	CS-A	0.88	0.73	1.93	0.93	0.81	0.61	1.66	0.65	0.92	0.95	0.94	0.94
	OS-A	0.23	0.20	0.24	1.24	0.21	0.16	0.21	0.86	0.26	0.25	0.26	0.27
	AGR-C	1.50	1.28	1.22	1.26	2.38	1.08	1.04	0.87	1.59	1.54	1.56	1.56
	IND-C	0.95	0.97	0.95	1.00	0.87	1.81	0.82	0.69	1.07	1.05	1.03	1.02
Commodities	CS-C	1.03	0.85	1.09	1.09	0.95	0.72	1.93	0.76	1.07	1.11	1.10	1.10
	OS-C	0.33	0.28	0.35	0.34	0.31	0.24	0.30	1.24	0.37	0.36	0.38	0.38
	AGR-A	0.76	0.38	0.36	0.37	0.70	0.32	0.31	0.26	1.47	0.45	0.46	0.46
WLSL	IND-A	0.07	0.15	0.07	0.07	0.06	0.13	0.06	0.05	0.08	1.07	0.07	0.07
	CS-A	0.15	0.13	0.34	0.16	0.14	0.11	0.29	0.11	0.16	0.17	1.16	0.16
	OS-A	0.08	0.06	0.08	0.41	0.07	0.05	0.07	0.29	0.09	0.08	0.09	1.09
	AGR-A	0.14	0.07	0.07	0.07	0.13	0.06	0.06	0.05	0.09	0.09	0.09	0.09
WHSL	IND-A	0.06	0.13	0.06	0.06	0.05	0.11	0.05	0.04	0.07	0.06	0.06	0.06
	CS-A	0.05	0.04	0.10	0.05	0.04	0.03	0.09	0.04	0.05	0.05	0.05	0.05
	OS-A	0.06	0.05	0.06	0.31	0.05	0.04	0.05	0.22	0.06	0.06	0.07	0.07
	AGR-A	0.82	0.41	0.39	0.40	0.75	0.34	0.33	0.28	0.50	0.49	0.50	0.50
Profit	IND-A	0.20	0.46	0.20	0.21	0.19	0.38	0.17	0.15	0.23	0.22	0.22	0.22
	CS-A	0.40	0.33	0.87	0.42	0.37	0.28	0.75	0.29	0.41	0.43	0.42	0.42
	OS-A	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01
	U-HH	0.65	0.69	0.77	0.84	0.60	0.58	0.66	0.58	0.78	0.94	0.94	0.95
Households	LR-HH	0.66	0.46	0.52	0.54	0.60	0.39	0.45	0.37	0.61	0.64	0.63	0.64
	SR-HH	0.86	0.60	0.70	0.64	0.79	0.51	0.60	0.44	1.14	0.99	0.81	0.72
	LLR-HH	0.48	0.31	0.35	0.43	0.45	0.26	0.30	0.30	0.54	0.46	0.68	0.75
	FIRMS	0.14	0.16	0.26	0.14	0.13	0.13	0.22	0.10	0.15	0.15	0.15	0.15
	S-I	0.43	0.36	0.47	0.39	0.39	0.30	0.40	0.27	0.45	0.46	0.45	0.45

		Return to factors				Factors				Households					National Capital
		WHSL				Profit				U-HH	LR-HH	SR-HH	LLR-HH	FIRMS	S-I
		AGR-A	IND-A	CS-A	OS-A	AGR-A	IND-A	CS-A	OS-A						
	AGR-A	1.41	1.40	1.35	1.35	1.41	1.28	1.24	1.33	1.33	1.26	1.51	1.58	0.85	1.16
	IND-A	0.90	0.87	0.85	0.87	0.90	0.86	0.88	0.81	0.81	0.94	0.93	0.85	0.85	1.16
Activities	CS-A	0.91	0.95	1.00	0.97	0.91	0.94	0.88	1.05	1.05	0.91	0.90	0.88	0.66	0.90
	OS-A	0.26	0.26	0.25	0.25	0.26	0.23	0.22	0.25	0.25	0.24	0.25	0.29	0.15	0.21
	AGR-C	1.54	1.52	1.47	1.47	1.53	1.39	1.35	1.45	1.45	1.37	1.65	1.72	0.92	1.26
	IND-C	1.08	1.04	1.02	1.04	1.08	1.02	1.05	0.97	0.97	1.12	1.11	1.02	1.01	1.38
Commodities	CS-C	1.06	1.11	1.16	1.14	1.06	1.10	1.03	1.22	1.22	1.06	1.05	1.02	0.77	1.05
	OS-C	0.37	0.37	0.35	0.35	0.37	0.33	0.32	0.36	0.36	0.34	0.36	0.42	0.22	0.30
	AGR-A	0.45	0.45	0.43	0.43	0.45	0.41	0.40	0.42	0.42	0.40	0.48	0.50	0.27	0.37
WLSL	IND-A	0.08	0.07	0.07	0.07	0.08	0.07	0.07	0.07	0.07	0.08	0.08	0.07	0.07	0.10
	CS-A	0.16	0.17	0.17	0.17	0.16	0.16	0.15	0.18	0.18	0.16	0.16	0.15	0.12	0.16
	OS-A	0.08	0.09	0.08	0.08	0.09	0.08	0.07	0.08	0.08	0.08	0.08	0.10	0.05	0.07
	AGR-A	1.09	0.09	0.08	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.09	0.10	0.05	0.07
WHSL	IND-A	0.07	1.06	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.08
	CS-A	0.05	0.05	1.05	0.05	0.05	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.04	0.05
	OS-A	0.06	0.06	0.06	1.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.04	0.05
	AGR-A	0.49	0.48	0.47	0.47	1.49	0.44	0.43	0.46	0.46	0.43	0.52	0.55	0.29	0.40
Profit	IND-A	0.23	0.22	0.22	0.22	0.23	1.22	0.22	0.21	0.21	0.24	0.24	0.22	0.22	0.29
	CS-A	0.41	0.43	0.45	0.44	0.41	0.42	1.40	0.47	0.47	0.41	0.40	0.39	0.30	0.41
	OS-A	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.01	0.01	0.01	0.01	0.01	0.01	0.01
	U-HH	0.71	0.95	1.25	1.09	0.69	1.11	0.85	1.60	1.60	0.58	0.60	0.60	0.44	0.60
Households	LR-HH	0.85	0.73	0.63	0.74	0.88	0.57	0.60	0.47	0.47	1.44	0.50	0.51	0.32	0.43
	SR-HH	0.91	0.77	0.79	0.85	0.87	0.76	0.84	0.61	0.61	0.58	1.65	0.66	0.42	0.57
	LLR-HH	0.56	0.58	0.33	0.33	0.59	0.31	0.30	0.33	0.33	0.31	0.35	1.37	0.22	0.30
	FIRMS	0.15	0.15	0.15	0.15	0.14	0.31	0.40	0.16	0.16	0.15	0.14	0.14	1.11	0.15
	S-I	0.51	0.48	0.46	0.49	0.51	0.55	0.61	0.43	0.43	0.66	0.43	0.39	0.99	1.34