

**SAM Multiplier Analysis of Informal Households: Application to  
an Indian Archetype Economy**

**By**

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## Abstract<sup>2</sup>

In this paper we study the effects of major policy changes on the informal output and more particularly on "informal households" through a SAM framework. The informal households are identified as they might be characterized by a sense of uncertainty they have for the future that might be reflected in their economic decisions. The concern in this study is to identify the social category of people who are outside of a formalized and therefore more secured means of livelihood. This sector then would comprise not only of people who are involved in unregistered enterprises, but also those who are involved in unregulated activities within the formal sectors. The members of this sector are the owners and workers in household enterprises, both paid and unpaid, workers in informal activities as well as casual workers in formal sectors. The classifications of households are of crucial importance in a SAM analysis. Analysis on inequality, even poverty, is usually based on subgroup averages, and thus depends very much on how the population has been subdivided. So a meaningful subdivision of population into homogenous groups is of major importance. Further, integrating distribution statistics into a SAM considerably increase their reliability as well as their relevance (SNA, 1993). The SAMs focus particularly on the distribution of income through disaggregation of household sector income and outlay. In capturing data about the informal sector, as noted household would be a composite unit providing such information through member activity. Households can be involved in any kind of economic activity in addition to being units demanding final goods as consumers. In this respect households will be more varied than any other institution whose activities would be restricted to the purpose for which they are created. Members of household play a major role in production by either operating their own unincorporated enterprises or by supplying labor to other unincorporated or corporate enterprises by providing their services to them (SNA, 1993).

The findings thorough the SAM multiplier analysis undertaken in this exercise shows that sectors like agriculture, manufactured food products, textiles, wood, leather and construction have relatively much higher informal income multiplier effect. This reflects the high informal labor contribution in these sectors apart from other indirect effects via the consumption pattern. This study thus can identify sectors that have higher interconnection with the informal sector and informal households, and can be used for simulation exercises with different policy options recognizing the effect of these on the welfare of the informal households.

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## **I. Introduction**

The new economic policies undertaken in India since the beginning of the 90s, with a thrust towards competition and opening up, has raised questions on the socio-economic implications of such policies. To provide a framework, in which the influence of policy changes or any exogenous change can be traced through different sectors and different socioeconomic classes, it would be meaningful to use a multisectoral framework such as the Social Accounting Matrix (SAM). The SAM can thus become a basis for simple multiplier analysis. Impact analysis by using a SAM can quantify the magnitude of the impact of different policies and identify those sectors, agents, etc., which get affected by a particular set of policy changes or any exogenous change affecting the economy. An industry analysis would identify growth in certain sectors as a result of exogenous changes in variables such as exports, government investment, subsidies, etc. A particular sectoral growth would naturally result in a certain factorial income generation and ultimately a certain income distribution of households. These households through their expenditure pattern would have a second round effect on the economy and so on. This would impact employment generation and household income distribution. The SAM can meaningfully be used to analyze distributional aspects, when households are disaggregated to be broken down into various homogenous groups depicting the socioeconomic characteristics of such households. The household classification reflect specific socioeconomic features of the country under consideration (Decaluwe, Patry, Savard and Thorbecke, 1999). The SAM is therefore is an appropriate framework through which socio-economic analysis could be attempted.

Informal sector in developing countries has drawn considerable interest in recent years. Specially during the process of liberalization, understanding the characteristics of the informal sector is important as there has been studies which have shown that this sector has its own dynamics to adjust with changing environment. Studies of African economies have shown that for over two decades the informal sector has been noted for its ability to create employment, income and skills out side of the formal sphere of the economy. The scope of the informal sector has been expanding with the process of the structural adjustment programmes (SAP) leading to deregulation of economic activities in these developing countries. With competition leading to a reduction in formal employment, the informal sector has been proving occupation to the new unemployed as well (Meagher and Yunusa, 1996), for example, in Nigeria since 1986 policy changes, informal activities within the urban workforce have expanded from an estimated 50 percent in the late 1970s to 65 percent by the late 1980s ( Sethuraman, 1981; ILO, 1988). The urban informal sector has been recognized as a sector that is of enormous importance as typically these accounts for a high proportion of the urban workforce in a developing country (Ranis and Stewart, 1997).

Stabilization and adjustment policies usually had wide ranging consequences for the macro economy affecting income distribution and the social sector (Stewart, 1995). Experiences of other developing countries under SAP and the ongoing economic reforms taking place in India, has made important to study the impact of such policy changes on the system of industry and income distribution. The structure of income distribution is of major significance in understanding the nature of the development process of a country. Changes in income distribution leads to changes in the expenditure pattern and this in turn influence the structure of production in the economy.

In the present work, a household is defined to belong to the informal category if most of its members are engaged in informal activities (Sinha, Sangeeta and Siddiqui, 2000). Distinctions about household structure are also made on the basis of the region to which the household belongs. We will explain this in more details in the following pages. As discussed earlier, the informal activities in which a household member is engaged might be both in formal or informal sectors. Such a dimension of the informal sector is useful in analyzing issues in a situation when the casual labour force even within a formal sector might be rising. The informal sector households might be characterized by the sense of uncertainty they have for the future, that might be reflected in their economic decisions. Duchin (1998) argues that household classification schemes should be such that they can serve as a starting point for distinguishing differences in lifestyles. She further adds that the different lifestyles in a society directly and indirectly effect the production structure of the economy. Household as a unit of analysis also provides opportunities for integrating socio-economic information of such households to the wider economy. The concept of gender also can be fitted into a household classification and such households can be analysed on the basis of their economic performance and member (female/male) balance.

It is possible to attribute the households' socio-economic entity to the overall economy of a country through SAM analysis. The primary economic functions of the households income earners and as final goods consumers can close the basic national accounting of an economy, by creating a circular flow of national income. However, the household classification system used in SAMs are more varied than classifying households only on the basis of income or any such single variable. The SAMs record the delivery of factor payments made by different sectors of the economy to institutions, such as households or companies and also expands the representation of different types of consumption of the economy. For example, it is possible to distinguish household consumption of domestically produced goods or imported goods or between goods produced by formal sector or informal sector, within a SAM framework.

The household behaviour would generally be influenced by the member occupations of a household. As informal occupation is attached with a sense of insecurity, it is important to capture the differences in the behaviour of formal and informal households, as reflected by their economic decisions. Further, it is important to see how such a large number of informal households are interlinked with the overall economy. The transformation from value added from various kinds of production activities to the factoral income distribution and corresponding consumption is a major contribution of this work in building the SAM. Nevertheless, determining the income and outlays of the private institutions, especially by households, is the hardest part of building a SAM (Sadoulet and Jauvry, 1995). The consumption surveys are generally available and taxes also can also be obtained from the government budget. To get any information of the earnings of the households, the survey should be multipurpose. In some cases, household surveys contain labour force classifications of household members, and this improves mapping of factor incomes to households. In the present work a joint expenditure and employment survey incorporating labour force participation has been used for mapping factor incomes into households.

The SAM, which is an extension of an input-output flow table, is a useful system in exploring the macroeconomic implications of policy changes as mentioned earlier. Compared to a fixed coefficient input - output model, the SAM framework allows more complete economic analysis resulting from any changes in policies. The income distribution effects can also be studied in greater detail through the use of SAM multipliers. A further objective of the SAM is to provide the statistical basis for the creation of a plausible model (Pyatt and Round, 1985). A SAM approach integrates the distributional dimension within the system of social accounts in a way that reflects the interrelationship between employment, distribution of income and the structure of production. The SAMs focus particularly on the distribution of income through disaggregation of household sector income and outlay accounts together with disaggregation of production, factors etc. The ILO, World Employment Programme, which has contributed substantially in building of SAM with distributional aspects had held that economic growth is inadequate as a policy objective unless its contents in terms of living standards of different groups within society is spelled out. The classification of households is of crucial importance in a SAM analysis.

## **II. SAM as a Conceptual Framework**

The economic transactions of all the "agents" in an economy over a defined period of time can be organized in a system defined as the Social Accounting Matrix (SAM). This matrix is square, where the column sums have to be equal to the row sums. In a SAM the sectoral interlinkages as provided in an input-output account are reconciled with the national income and product accounts. SAM is therefore an accounting system similar to the national accounting, in which

income always equals expenditure. Moreover, individually this constraint should hold in a SAM, meaning that for every actor in the economy income always equals expenditure. In a SAM the incomes are recorded along the rows and the expenditures down the columns. The first in building a systematic social system was Richard Stone, which was an extension of input-output data and analysis (see Stone, 1970, 1985 and 1986). The issue of distribution was a major in building such social accounting and in 1985 Stone pointed out that income, consumption and wealth distribution among households was not exhaustively covered in the SNAs of that period. A landmark in SAM construction of developing economies was the ILO publication of Pyatt and Thorbecke (1976). In this work the authors emphasize on the aspect of disaggregation stating that “Disaggregation of the household sector according to socioeconomic characteristics is essential if question of growth and inequality are to be understood”. Further, it was increasingly realized that the concern with growth alone would not guarantee improvement in the living standards of the population and would not at all be sufficient condition for eradication of poverty, more information on distributional issues became an important concern. Important distinctions that can be made in the SAMs are that between production activities and commodity accounts. Such distinctions would also enable analyzing the income generating role of the different types of production activities that produce the same type of commodity, like the formal and informal dichotomy. The employment and income generating possibilities of the different types of production technologies can be analysed through the use of such distinctions in a SAM (Keuning and Ruijter, 1988). In the present SAM we have not attempted to have separate commodity and activity accounts as the SAM does not include multi-commodity producing activities nor multiple activities producing the same commodity. In this structure we will be discussing in the following pages, each activity produces exactly one good, which is entirely supplied to its commodity market.

With socio-economic concern as the driving force in building of SAMs, this can be defined as a numerical representation of the national accounting with detailed distributional aspects. A SAM would show how sectoral value added would accrue to various factors of production and their institutional owners, and how these incomes are spent. The cycle is completed as the SAM traces how expenditures on various commodities lead to sectoral production and so to generation of value added. The SAMs also show all the “leakages” that takes place from this cycle, for example in the form of payment made abroad or savings. There is possibility of linking capital finance to savings, and the thus dynamics of the economy also gets reflected (Keuning and Ruijter, 1988).

The SAM can be visualized as a one-time snapshot of an economy incorporating the interdependence that exists within a socioeconomic system through a consistently organized complete data system. The objective of the SAM construction would decide the classification scheme adopted in a SAM and the level of disaggregation. For example, industries can be

differentiated into certain sectors, such as textiles, leather, agriculture, etc.; different types of skill can differentiate factors of production and households can be differentiated by certain socioeconomic classification depending on the interest of the study. Such a SAM would be able to provide useful information about significant intersectoral linkages, distribution of factor of production by sectors to different types of households on the basis of their resource endowments and other regional and external interconnections.

Once the SAM is built with all the accounts in a consistent framework this forms the transaction table providing the basis for the multiplier analysis to be undertaken. The first step is to decide which accounts are to be endogenous and which are to be kept exogenous. The framework can be used to measure the impact of changes in the exogenous accounts on the whole system. The SAM that is proposed would consist of three sets of endogenous accounts, 1) production activities, 2) factors of production and 3) households. The other accounts are considered exogenous: 1) government, 2) capital, 3) net indirect taxes, and 4) rest of the world.

Once the endogenous and exogenous accounts are decided the transaction matrix can be transformed into corresponding matrix of average expenditure propensities. This can be obtained by dividing a particular column entry in the table by the column total. The proportions obtained from the endogenous accounts are the coefficients that will be used to obtain the multipliers. The proportions that are obtained from the exogenous accounts show the leakages, i.e., the proportion of each endogenous account that leaks out as expenditure into the external accounts without any feedback. The total transformed matrix is expressed as ratios where each column adds up to one.

A schematic matrix is given below that briefly describes the SAM accounts. Here the exogenous accounts are aggregated.

TABLE II.1: A SCHEMATIC SAM

	Column	Production	Factors	Household	Exogenous	Total
Row		1	2	3	4	5
Production	1	A11	0	A13	fd1	X1
Factors	2	A21	0	0	fd2	X2
Household	3	0	A32	A33	fd3	X3
Exogenous	4	L1	L2	L3	fd4	X4
Total	5	X1	X2	X3	X4	

The above representation of the SAM (Table II.1) has accounts by various submatrices. The matrix A11 is the familiar input-output intermediate demand matrix, A13 reflects the consumption of different items by the various household groups as proportion of their total expenditures (proxy income). Likewise, A21 allocates the value added to different factors of production, A32 yields incomes by different household groups by factoral sources. The exogenous accounts representing injections are expressed as  $f_{ds}$  in column 4, similarly, the leakages are reflected as  $L_s$  in row 4.

For a better understanding of the model an algebraic specification is presented that for simplicity has only two sectors, two factors of production and two income classes.

$$\begin{pmatrix} a_{11} & a_{12} & 0 & 0 & c_{11} & c_{12} \\ a_{21} & a_{22} & 0 & 0 & c_{21} & c_{22} \\ f_{11} & f_{12} & 0 & 0 & 0 & 0 \\ f_{21} & f_{22} & 0 & 0 & 0 & 0 \\ 0 & 0 & w_{11} & w_{12} & T_{11} & T_{12} \\ 0 & 0 & w_{21} & w_{22} & T_{21} & T_{22} \end{pmatrix} * \begin{pmatrix} X_1 \\ X_2 \\ F_1 \\ F_2 \\ H_1 \\ H_2 \end{pmatrix} + \begin{pmatrix} E1 \\ E2 \\ Fe3 \\ Fe4 \\ He5 \\ He6 \end{pmatrix} = \begin{pmatrix} X_1 \\ X_2 \\ F_1 \\ F_2 \\ H_1 \\ H_2 \end{pmatrix}$$

Elements of the endogenous matrix can be defined as:

$$a_{ij} = X_{ij}/X_j \quad i, j = 1, 2 \quad \text{sectors}$$

$$c_{im} = C_{im}/H_m \quad m = 1, 2 \quad \text{types of household income, i.e., formal or informal}$$

$C_{im}$  = consumption of  $i$ th output by household type  $m$

$H_m$  = Household income of type  $m$ , i.e., formal or informal

$$f_{kj} = F_{kj}/X_j \quad \text{factor income per unit of output produced in sector } j$$

$F_{kj}$  = factor income of type  $k$  paid out in  $j$ th production sector

$w_{mk} = W_{mk}/F_k$  household income of type  $m$  by factor of type  $k$  as a percentage of total factor income

$T_{mn}$  = Transfer income from household type  $m$  to household type  $n$

$m, n$  = types of household income earners.

The vector of exogenous account can be explained as:

$X_i$  = Output of sector  $i$

$E_i$  = Other final demand (besides household consumption)

$F_{ek}$  = factor income from abroad of the  $k$ th type

$H_{em}$  = Nonfactor income from abroad to the  $m$ th type of household income earner.

In matrix form the above equations can be written as

$$X = AX + E$$

or,

$$X = (I - A)^{-1} * E$$

The inverse matrix computed consists of the multipliers that reflect the interrelationships.

For illustration, the elements of the  $(I-A)^{-1}$  matrix can be written as given below and multiplied with a vector of exogenous accounts. The vector of exogenous accounts is assumed to have unit 1 in the 5th row but zero for all other final demands.

$$\begin{pmatrix} h11 & h12 & h13 & h14 & h15 & h16 \\ h21 & h22 & h23 & h24 & h25 & h26 \\ h31 & h32 & h33 & h34 & h35 & h36 \\ h41 & h42 & h43 & h44 & h45 & h46 \\ h51 & h52 & h53 & h54 & h55 & h56 \\ h61 & h62 & h63 & h64 & h65 & h66 \end{pmatrix} X \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 1 \\ 0 \end{pmatrix} = \begin{pmatrix} h15 \\ h25 \\ h35 \\ h45 \\ h55 \\ h65 \end{pmatrix}$$

The direct and indirect effects are generated by the injections through the exogenous accounts. The exogenous vector as presented above supposes that nonfactor income from abroad (exogenous variable), coming to formal type of households, rises by one unit and there is no other injection in the system. Then output required from the formal production sector is h15 as income of the formal type of household rises. Similarly, informal sector output requirement rises by h25, labour income rises by h35 and capital income by h45. The income of household belonging to the formal activities rise by h55 and income of informal households rise by h65. The income injection would operate through consumption demand leading to output production and full circle to income generation (see Pyatt and Round, 1985).

The above analysis shows that the multipliers obtained from the SAM can be used to trace the impact of any exogenous change in the system. The illustration above reflects how the multipliers can be interpreted.

### III. Constructing the Indian SAM

In this research we have distinguished sector of production, factors of production and households by the concept of "informality". We can think of informality in the production sectors, in terms of

differences in production technologies, formal and informal in some sense, producing different ‘versions’ of similar goods. This can be considered “goods market informality”. It is possible also to distinguish factor market informality under the assumption that each sector produces a single homogenous good and that firms can substitute between formal and informal factors of production (formal and informal labour). We have also distinguished formal and informal households, which are distinguished in terms of the sources of their income and their consumption pattern. Using these concepts, we have broken up sectors, factors and households into formal and informal parts in the SAM. While breaking up sectors we had to make certain strong assumptions, as it was not possible to get data on the distinctive technology for formal and informal production process separately. At present, the purpose of the SAM exercise is to analyze the impact of exogenous changes on the demand for informal factors and eventually analyze the different trade policy impacts on income generation for households belonging to the informal sector.

With such concerns driving the present research work, the distributions from value added to factoral income and the factoral income to different household income classes are important transformations. The expenditure by the different household classes on various sectoral products is also traced through the SAM. The value added generated from the different types of production activities gets mapped into various factoral income distribution. The factors can be distinguished into different types of labour and unincorporated capital. The important transactions taking place in the economy are illustrated in Table III.1. The expenditure side of the production activities can be traced by going down the columns. The first column represents the domestic purchase of domestically produced goods.

The second column shows the purchase of domestic intermediate inputs, distribution of value added, transfer to government and import cost. The third column shows the purchase of labour and capital from households and enterprises and the fourth and fifth columns show the purchases made by households and enterprises, savings made and transfer payments if any. Next, the income side can be analyzed. The first row reflects that the commodity account receives payments from production sectors for sale of domestic intermediate input requirements, from households against private consumption of goods, and other agents that make other final demands. The intersection between household columns and commodity row might be emphasized here, which closes the

system through consumption of various domestically produced goods by different household groups.

TABLE III.1: THE SOCIAL ACCOUNTING MATRIX

	Prod-sectors	Factors of prodn	HH-formal	HH-informal	Capital	Government	Rest of world	Total
Prod-sectors	I/O flow		Cons. Expenditure	Cons. Expenditure	Investment (I/O)	Govt. Cons.	Exports	Gross Output
Factors of Prodn.	Allocation of VA to factors		Earnings from formal activities	Earnings from informal activities			Factor incomes received from abroad	Total income of factors
HH formal		Allocation of formal earnings	Transfer	Transfer	–	Transfers to HHs	Remuneration from abroad	Total formal income
HH informal		Allocation of informal earnings	Transfer	Transfer	–	–	–	Total informal income
Capital	–		Savings of organised	Savings of unorgani-sed	–	Current account deficit	Foreign capital	Total savings
Government	Indirect taxes		Direct taxes	–	–	–	–	Total receipts
Rest of world	Imports	Factor payment abroad	–	–	Import of capital goods	–	–	Foreign exchange expd.
Total	Total costs of output		Total expenditure of HH-formal	Total expenditure of HH-informal	Aggregate investt	Total govt.-expd.	Foreign exchange receipts	

The present SAM consist of three sets of endogenous accounts, 1) production activities, 2) factors of production and 3) households. Accounts considered exogenous are: 1) government, 2) capital, 3) net indirect taxes, and 4) rest of the world.

### **III a. Input-output system**

The Indian input-output table does not distinguish between formal and informal activities. It supplies intermediate flows, value added and the output information at the aggregate level. The 115 sectors 1989-90 input/output table (CSO, 1997) has been aggregated into 24 sectors for this research work (Appendix I). The aggregation is made depending on the emphasis to identify sectors that have higher informal contribution in production. The sources used to break up the input output sectors into formal and informal parts are mainly from the National Accounts Statistics, Annual Survey of Industries and Enterprise surveys. The 24 sectors are then distributed between formal and informal parts. Data on registered and unregistered value of output and net value added are used to break up the sectors. The Input Output table for 1989-90 is updated to construct the Social Accounting Matrix for 1993-94 with formal/informal break-up. The intermediate flow for both the formal and informal production units are estimated by using the formal- informal output shares. Information from the Annual Survey of Industries (ASI) gives detailed information regarding the registered manufacturing sectors. The value added generated in the 24 sectors are differentiated into formal and informal parts. The value added is distributed to the different sectors of production according to the information from the National Accounts Statistics.

TABLE III.2: DISTRIBUTION OF FORMAL- INFORMAL PRODUCTION BY 24 SECTORS

S. No.	NIC SECTORS	Total Produce	
		Formal	Informal
1	Agriculture sector including forestry, fishing etc.	3.72	96.28
2	Mining & quarrying	90.54	9.46
3	Manufacture of food products	89.62	10.38
4	Production of indigenous sugar, gur, etc.	66.66	33.34
5	Manufacture of Beverages, Tobacco and Related products	64.9	35.1
6	Manufacture of Textile products	46.76	53.24
7	Manufacture of wood and wood products; Furniture and fixtures	17.02	82.98
8	Manufacture of batteries, household electricals, etc	75.83	24.17
9	Other manufacturing industries incl. mfg of paper and paper products & printing, publishing & allied industries	39.78	60.22
10	Manufacture of watches and clocks	99.5	0.5
11	Manufacture of leather and products of leather, fur & substitutes of leather	54.2	45.8
12	Manufacture of rubber, plastic, petroleum and coal products, processing of nuclear fuels	95.54	4.46
13	Manufacture of basic chemicals and chemical products ( except products of petroleum and coal)	93.97	6.03
14	Manufacture of non-metallic mineral products	66.8	33.2
15	Iron and Steel	89.38	10.62
16	Manufacture of miscellaneous metal products	36.85	63.15
17	Capital goods and manufacture of office, computing and accounting machinery and parts	87.74	12.26
18	Manufacture of transport equipment and parts	60.59	39.41
19	Electricity, gas and water supply	93.58	6.42
20	Construction	49.51	50.49
21	Combined services	35.67	64.33
22	Health and medical services	61.65	38.35
23	Other services including transport services and storage & warehousing	53.37	46.63
24	Public administration and defence	0.00	0.00

### **III b. Factors of Production**

In case of factors of production, the 50<sup>th</sup> Round of the National Sample Survey (NSSO) has been used extensively to break up workers into formal or informal factor owners. We have worked within the national accounting framework using secondary data so far to estimate the total number of workers for the base year. The National Accounting Statistics (NAS) provide value added by registered and unregistered sectors by broad categories at 1-digit level and for certain sectors at 2-digit level. The Annual Survey of Industries (ASI) provides value added by 3-digit NIC codes for registered manufacturing sectors. These are aggregated to the required 18 manufacturing sectors of the total 24 sectors. For the unregistered part, the value-added share of the broad sector is imposed to which this manufacturing sector belongs. Moreover, the NAS also provide total workers by National Industrial Classification Scheme Codes (NIC 1998). The underlying assumption is that the value added generated in a sector is by the total number of workers employed in that sector. With the information analysed from the household survey on employment and unemployment of the 50<sup>th</sup> Round of the National Sample Survey, we get a break up by formal and informal workers within each industry sector. It is assumed that the informal part of a sector can only employ informal workers. However, the formal part of a sector employs both formal and informal workers and informality here is determined by the status of the worker, i.e., whether the worker is own account worker, helper in household enterprises casual or regular wage earner, etc. This way it is possible to map formal and informal factor owners across sectors and households.

Thus, the distribution of workers by each of the 24 sectors into different types of factors of production is computed by using the manpower matrix obtained from the employment-unemployment survey of the National Sample Survey (Round 50). We distinguish four factors of production:

1. Informal labour (Casual labour)
2. Formal labour (Regular labour)
3. Informal capital (Own Account Workers)
4. Formal capital (Employers)



TABLE III.3: DISTRIBUTION OF FACTORAL INCOME BY 23 INDUSTRY SECTORS

Sector Names		Wage income		Capital income		Total
		F	IF	F	IF	
Agriculture	F	26.62	41.14	16.65	15.60	0.92
	IF	0.00	16.24	26.22	57.53	33.67
Mining	F	35.22	25.75	24.84	14.18	1.22
	IF	0.00	4.86	20.63	74.51	0.21
Food products	F	56.66	27.56	11.44	4.34	0.70
	IF	0.00	24.50	8.96	66.54	0.13
Sugar	F	35.26	17.15	34.49	13.10	0.28
	IF	0.00	15.15	14.76	70.09	0.24
Beverages	F	17.31	17.55	36.35	28.79	0.30
	IF	0.00	12.41	0.51	87.07	0.22
Textiles	F	32.21	7.57	50.89	9.34	1.64
	IF	0.00	15.35	4.84	79.82	2.34
Wood	F	22.74	16.19	39.24	21.83	0.05
	IF	0.00	8.71	6.85	84.44	0.50
Household electricals	F	34.78	2.17	60.13	2.92	0.51
	IF	0.00	6.71	54.33	38.96	0.52
Other manufacturing	F	28.32	8.10	51.97	11.61	0.78
	IF	0.00	25.43	19.35	55.22	0.68
Watches & clocks	F	17.45	0.73	79.24	2.58	0.14
	IF	0.00	31.24	0.00	68.76	0.00
Leather	F	32.39	10.24	46.01	11.36	0.15
	IF	0.00	15.18	0.00	84.82	0.17
Rubber, plastic	F	45.74	6.77	42.56	4.92	0.94
	IF	0.00	10.99	52.05	36.96	0.10
Basic chemicals	F	28.65	5.33	57.65	8.37	2.15
	IF	0.00	10.89	33.13	55.98	0.22
Non-metallic minerals	F	22.53	12.76	44.87	19.85	0.52
	IF	0.00	15.58	10.84	73.59	0.28
Iron & steel	F	39.21	8.09	45.38	7.32	1.28
	IF	0.00	20.32	42.68	37.00	0.19
Miscellaneous Metal products	F	36.94	7.00	48.83	7.23	0.29
	IF	0.00	12.87	28.52	58.62	0.79
Capital goods	F	32.87	3.48	58.78	4.87	1.04
	IF	0.00	8.49	14.74	76.78	0.33
Transport equipments	F	39.42	1.08	58.24	1.25	0.73
	IF	0.00	17.69	14.03	68.28	0.55
Electricity, gas and water supply	F	44.35	2.23	51.40	2.02	2.07
	IF	0.00	0.00	6.82	93.18	0.22
Construction	F	10.15	65.02	4.14	20.69	2.98
	IF	0.00	70.77	4.62	24.61	3.38
Combined services	F	69.07	3.49	26.39	1.04	8.27
	IF	0.00	15.80	4.13	80.08	18.09
Health & medical services	F	83.14	1.77	14.84	0.25	0.72
	IF	0.00	86.84	3.50	9.66	0.45
Other services	F	29.16	5.72	56.46	8.65	5.48
	IF	0.00	39.05	3.26	57.69	3.56
<b>Sum</b>		<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
<b>All Sectors</b>		<b>13.77</b>	<b>17.811</b>	<b>23.81</b>	<b>44.62</b>	<b>100.00</b>

### **III c. Informality as a Household Characteristic**

As discussed earlier, the concept of informal sector covers a number of different issues. The experience in informal sector studies have made it obvious that the informal sector is not easily captured through statistical measurement (Hausmans, 1997). The wide range of activities that can be termed as informal has made this concept a difficult one to be quantified. In this exercise the core concern is to study the informal sector in terms of people involved in it. The data for such information is better obtained from household surveys. It is not possible to have complete coverage of informal sector workers by undertaking enterprise surveys. Many informal sector businesses are difficult to identify, as they are located in premises that cannot be easily recognized as business centers. Home based work, such as tailoring, food processing, are usually not identifiable. Further, the casual relationship that an employee might have even in a formal or modern sector cannot be captured from enterprise survey. Specially if the aim of research is to obtain information about the workers involved in informal activities, then household surveys are more useful. Data on informal sector employment in terms of number of persons involved and their characteristics can be obtained from household surveys. Information on activities such as unpaid work in small family enterprises, activities undertaken by women at or from home, activities that are very small and undeclared can be captured from household surveys. It should however be noted that there are limitations in measurement of informal sector employment using household surveys. The time dimension is not very good in such surveys as work is generally measured in relation to short reference period, which might not adequately represent the work participation, as seasonal and other factors are usually not taken into account. Further, as expected the household surveys can not be used to get an estimation of number of informal sector enterprises.

The critical part of our research is classification of households as formal or informal, which depends on the composite household information, and therefore on the nature of income the household receives. In this classification if the major share of household income comes from activities that are informal then the household can be termed as informal, this will be discussed in some detail below. The identification of households as formal or informal is of importance as we are interested in scrutinizing the behavioural difference of such households. It is felt that even in the same income or expenditure categories, the household behaviour is expected to be different as informality is related to future uncertainties. The informal nature of the members of informal households would possibly dictate different savings, and hence consumption propensities compared to their formal counterparts. It is more useful to have income sources for classifying households than income sizes in an analytical SAM. Information regarding the households such as location, possession of assets (e.g., agricultural land) and size and its composition are considered relevant in such classifications (SNA, 1993).

Households are classified as formal or informal on the basis of household composite information data compiled from the 50th round NSSO's household survey. The NSSO distinguishes 5 "Types" of rural households and 4 "Types" of urban households. The Types are formulated on the basis of composite household information. Formal informal distinction is our classification are made by certain assumptions on these type codes as explained below:

TABLE III.4: DESCRIPTION OF RURAL AND URBAN HOUSEHOLD CLASSIFICATION

RURAL:

Type (NSSO)	Description	Household classification
1	Self employed in non-agriculture	
(a)	Hires labour regularly	Formal
(b)	Does not hire labour regularly	Informal
2.	Agricultural labour	Informal
3.	Other labour	
(a)	Occupation formal	Formal
(b)	Occupation informal	Informal
4.	Self employed in agriculture	Informal
5.	If it is none of the above, i.e., for other households	
(a)	NCO formal	Formal
(b)	NCO informal	Informal

URBAN:

Type (NSSO)	Description	Household classification
1.	Self employed	
(a)	Hires labour regularly	Formal
(b)	Does not hire labour regularly	Informal
2.	Regular wage\salary earner	Formal
3.	Casual labour	Informal
4.	Others	
(a)	NCO formal	Formal
(b)	NCO informal	Informal

The broadly classified households are further broken up into more classes on the basis of per-capita expenditure of the households. The per-capita expenditure classes are formed from the fractile groups as given in the NSSO report (see Table III.5).

TABLE III.5: SCHEME FOR RURAL AND URBAN HOUSEHOLD CLASSES

RURAL: CLASS	TYPE	MPCE*
Poor: Agriculturist	Both <sup>@</sup>	L.E Rs.250
Middle: Agriculturist	Both	Between Rs.251 and Rs.650
Rich: Agriculturist	Both	Above Rs.651
Non- Agriculturist	Informal	All Groups

Note: \* MPCE stands for Monthly per capita expenditure

<sup>@</sup> For both formal and informal households.

URBAN: CLASS	TYPE	MPCE*
Poor	Both*	L.E Rs.350
Middle	Both	Between Rs.351 and Rs.750
Rich	Both	Above Rs.751

Note: \* For both formal and informal households.

Once we have classified households into different expenditure classes within rural/urban formal/informal categories, we compute their factor incomes on the basis of the member-wise factor ownership of these of households. This way value added is mapped both across sectors and households. Thus, the household composition allows for determination of factor income accruing to a household. Further, the NSSO survey data is used to get the socio-economic structure of the different types of households. Information about working status of each household member (aged above 5 years) is taken into consideration to distinguish a worker as formal or informal. Members who have stable employment like drawing a regular salary/wage or hires labor for one's own household enterprise are classified as formal workers. Rest of the working class (own account workers and casual wage laborers) is identified as informal worker. It is thus possible to break up household members as different factor owners as well as paid and unpaid workers.

The types of work that can be identified using the survey data are

1. Own account worker
2. Employer
3. Unpaid family worker
4. Regular wage earner
5. Casual wage labourer
6. Engaged in free collection of vegetable, fire wood, cattle feed etc.

The above classification of households gives the following result in the aggregate:

**In the rural sector:**

3.9% households belong to formal activities.

96.1% households belong to informal activities.

**In the urban sector**

47.0% households belong to the formal activities

53.0% households belong to informal activities.

**All India**

14.0% households belong to the formal activities

86.0% households belong to informal activities

The table depicting the composition of formal and informal households in rural and urban regions are given in Table III.6. Formal poor households, both in the rural and urban regions have high percentage of casual workers. Interestingly casual laborers are more in urban poor households than in rural poor households as the latter households have more own account workers. In case of informal poor households, most of the members are either casual workers or own account workers. In the context of agriculture, the own account workers are small land holders who work on their own land without hiring any labor.

TABLE III.6: WORKER STRUCTURE OF EACH TYPE OF HOUSEHOLD (%)

Factor of production		Regular wage laborer	Casual wage laborer	Employees	Own account workers	Total
Household type						
Rural poor	F	47.96	17.53	6.52	28.00	5009(1.24)
Rural middle	F	51.23	5.21	7.85	35.71	3364(0.83)
Rural rich	F	49.68	2.92	14.48	32.92	1065(0.26)
Urban poor	F	53.34	33.26	11.07	2.34	8526(2.11)
Urban middle	F	53.32	9.22	22.24	15.22	11338 (2.80)
Urban rich	F	47.89	2.38	35.92	13.81	5517 (1.36)
Rural poor: Agriculture	IF	1.97	38.06	5.59	54.38	218225 (53.94)
Rural middle: Agriculture	IF	4.69	10.75	5.71	78.85	34116 (8.43)
Rural rich: Agriculture	IF	4.92	6.20	8.79	80.08	6603 (1.63)
Rural non- Agriculture	IF	5.07	30.00	5.88	59.05	64736 (16.00)
Urban poor	IF	2.24	39.29	8.87	49.60	27388 (6.77)
Urban middle	IF	2.96	20.90	22.62	53.52	11031 (2.73)
Urban rich	IF	0.90	2.37	29.20	67.53	7487(1.90)

The information from the Employment-Unemployment (NSSO) survey allows us to map different types of workers in a particular type of household as classified. We can thus, look at the composition of factor ownership of the different types of households. Then by using wage rates from NSSO (Employment Report) for the different types of workers (see Appendix III for rates), we can get the proportion in which each type of factor incomes can be broken by workers in a household. The wage rates are not at the sectoral level but at the overall level. Here we assume that casual labour earnings are the informal labour incomes. Capital earnings are distinguished into formal and informal at present on the basis of information on capital ownership. In future we could use various sources for getting wage rates for certain sectors.

TABLE III.7: PERCENTAGE DISTRIBUTION OF FACTOR SHARES WITHIN EACH HOUSEHOLD

Factor of production		Regular wage laborer	Casual wage laborer	Employees	Own account workers	Total
Households Type						
Rural poor	F	61.42	7.47	14.06	17.06	100.00
Rural middle	F	61.59	2.08	15.90	20.42	100.00
Rural rich	F	54.77	1.07	26.90	17.26	100.00
Urban poor	F	63.38	13.15	22.16	1.32	100.00
Urban middle	F	52.74	3.03	37.06	7.16	100.00
Urban rich	F	41.37	0.68	52.28	5.68	100.00
Rural poor: Agri.	IF	3.94	25.37	18.87	51.82	100.00
Rural middle: Agri.	IF	8.47	6.46	17.37	67.71	100.00
Rural rich: Agri.	IF	8.22	3.45	24.73	63.60	100.00
Rural Non- Agri.	IF	9.56	18.81	18.67	52.95	100.00
Urban poor	IF	4.15	24.27	27.76	43.82	100.00
Urban middle	IF	4.03	9.46	51.87	34.64	100.00
Urban rich	IF	1.08	0.95	59.27	38.70	100.00

Table III.7 shows the composition of different types of households in terms of their factor earnings. The structure shows that formal households earn mainly as regular wage earners. Informal households earn casual wages as well as earnings from own account work.

Scrutinizing the different broad categories of households in terms of formal and informal distinctions depict the relative well being of such households. The following table (Table III.8) shows that within formal households, 35.5 percent are poor. In case of informal households, as high as 62 percent are poor households. This reflects the fact that poverty is more extensive in informal households.

TABLE III.8: TYPES OF HOUSEHOLDS BY FORMAL AND INFORMAL CATEGORIES

<b>FORMAL HH</b>			
	RURAL	URBAN	ALL INDIA
POOR	49.16	31.74	35.46
MIDDLE	37.76	44.99	43.44
RICH	13.08	23.28	21.10
TOTAL	100.00	100.00	100.00
<b>INFORMAL HH</b>			
	RURAL	URBAN	ALL INDIA
POOR	63.46	52.98	61.96
MIDDLE	12.56	22.91	14.05
RICH	2.44	24.10	5.55
NON AGRICULTURE	21.54	0.00	18.44
TOTAL	100.00	100.00	100.00
<b>ALL HOUSEHOLDS</b>			
	RURAL	URBAN	ALL INDIA
POOR	62.91	43.00	58.26
MIDDLE	13.54	33.29	18.15
RICH	2.85	23.71	7.72
NON AGRICULTURE	20.70	0.00	15.87
SUB TOTAL	100.00	100.00	100.00

#### III d. Sector wise Household Consumption Expenditure

It has been possible to study the consumption behavior of the different types of households using the Expenditure survey conducted by the NSSO. Data on consumption expenditure on a number of items of consumption are available from the Survey on Consumption Expenditure (NSSO, 1993-94). The items of consumption have been aggregated to have one to one correspondences with the industry sectors formulated for this study. To close the system through the expenditure side of the model the different items of expenditure are distinguished according to the production sectors. Expenditure on item X by a household immediately increases direct demand for the relevant sectors' output and starts a whole process of interaction. The income generated within informal or formal households depends on the distribution of value added of the relevant sectors, and this leads to a pattern of income distribution and differential consumption pattern that can be traced through the SAM. The classifications of items of production by NIC codes and corresponding IO codes are given in Appendix I.

#### **IV. Multiplier Analysis:**

As noted earlier, the Indian SAM built to study the impact of policy changes and other exogenous changes on the informal households have 24 sectors including agriculture. We have distinguished four factors of production: formal labor, informal labor, formal capital and informal capital. In this paper we have distinguished thirteen socio-economic categories of households with regional as well as formal/informal distinctions added to per-capita expenditure categories.

In a SAM multiplier analysis it is essential to first describe the exogenous and the endogenous accounts. It is generally useful while studying the distributional aspects to have three endogenous accounts i.e., factors, institutions and production activities and three exogenous accounts, government, capital and rest of the world. The SAM multipliers can be used to estimate effects of exogenous changes on the endogenous variables. Such analysis can be made subject to certain conditions, in particular the existence of excess capacity and surplus labor in the economy. As long as these conditions prevail, any exogenous change in demand can be satisfied through a corresponding change in output without having any impact on prices. In case of any injection anywhere in the SAM, for example a change in export demand from the textile industry or a subsidy or transfer accruing to a specific socio-economic household group, the effect will be transmitted through the interdependent SAM system. The total, direct and indirect effects of an exogenous shock to the endogenous accounts, i.e., the total outputs of various sectors of production, the total factor incomes and the total incomes of the various socio-economic household categories can be estimated through the multiplier process.

#### **IV a. Findings from Multiplier Analysis:**

Simulation exercises to examine impact of policy options on household income are carried out in this study, using fixed price multiplier analysis<sup>3</sup>. To examine the impact of higher exports on income distribution we have experimented with two labour intensive sectors, i.e., textiles and leather. The exports are increased alternatively for formal and informal part of the sectors. To study the implications of higher exports in the two sectors as mentioned, we have designed 6 simulation exercises. These simulations are:

- Simulation 1. Exports of Textiles (formal) rise by 20%
- Simulation 2. Exports of Textiles (informal) rise by 20%
- Simulation 3. Exports of Textiles (combined) rise by 20%
- Simulation 4. Exports of Leather (formal) rise by 50%
- Simulation 5. Exports of Leather (informal) rise by 50%
- Simulation 6. Exports of Leather (combined) rise by 50%

In case of simulation 1, when formally produced textile demand rises to fulfil the increased exports, the factor earnings of regular labour rises more than that of casual labour. The increase in formal capital earning is also higher than the informal capital earning. The highest rise in incomes is that of households belonging to the urban informal middle and urban informal poor class categories. In case of simulation 2, i.e., rise in exports of informal textiles sector, both regular and casual labour income rise almost equally. However, in case of capital earnings, the informal capital earnings seem to rise at a sharper rate than formal capital earning. The urban informal poor and rural informal poor and rural informal non-agriculturists are the household categories that gain the highest rise in income due to the export rise in this sector. In general however, income is lower than simulation 1. In case exports of both formal and informal textiles sectors are increased simultaneously (simulation 3), then factor earnings of regular labour rise more sharply than that of casual workers. The formal capital earnings rise more sharply compared to informal capital earnings. In simulation 4, the exports of formal leather sector are raised by 50 percent. The higher increases are that of regular wages and formal capital.

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<sup>3</sup> Multiplier matrix available in Sinha, Sangeeta and Siddiqui, 2000.

Comparing with textiles sector, it may be noted that the impact of leather sector on income generation is lower. The findings reflect the fact households belonging to urban informal middle experience the highest rise in income. In case exports of informal leather sector (simulation 5) rises by 50 percent, the factor earnings of casual workers rise more compared to regular workers and the rise in capital earning is more for informal capitalists than their formal counterpart. In case of household incomes, this simulation shows that in general, as in the case of Textiles, gain in income is lower in this case than that generated due to increase in exports in formal leather sector. The highest gain through this simulation accrues to rural informal poor and non-agriculturists households. In simulation 6, exports of both formal and informal leather sectors are raised by 50 percent. The impact analysis using the multiplier matrix shows that regular labour and informal capital gain the higher growth rates. In case of formal households urban poor experience the highest growth rate. In case of informal households, similar to simulation 5, rural informal poor and non-agriculturists households have highest growth rates, which are marginally higher than urban informal poor and middle income households. The analysis shows that in case there is an increase in demand of informal part of a sector, this generates marginally higher income for the "poor" category within the informal households, indicating that they are the ones who are more inter-linked with such production process.

TABLE IV 1 : IMPACT OF EXPORTS GROWTH IN TEXTILES

(Unit:Rs. 10 million)

				INCOME	INCOME	INCOME	INCOME
				BASE	SIM 1	SIM 2	SIM 3
FOP		Regular labour	F	88100	0.49	0.28	0.77
		Casual labour	IF	113931	0.36	0.28	0.65
		Formal capital	F	152334	0.53	0.32	0.85
		Informal capital	IF	285498	0.44	0.39	0.83
INSTITUTIONS	RURAL	Poor	F	17595	0.35	0.22	0.57
		Middle	F	15619	0.29	0.18	0.47
		Rich	F	11033	0.14	0.09	0.23
	URBAN	Poor	F	30981	0.37	0.22	0.60
		Middle	F	54697	0.35	0.21	0.56
		Rich	F	61385	0.17	0.10	0.28
	RURAL	Poor: Agr.	IF	296529	0.44	0.34	0.78
		Middle: Agr.	IF	57817	0.41	0.32	0.73
		Rich: Agr.	IF	23864	0.21	0.16	0.37
		Non-Agriculturist	IF	95363	0.44	0.34	0.78
	URBAN	Poor	IF	40453	0.44	0.34	0.78
		Middle	IF	22908	0.46	0.33	0.79
		Rich	IF	29283	0.29	0.20	0.49

TABLE IV 2 : IMPACT OF EXPORTS GROWTH IN LEATHER:

(Unit:Rs. 10 million)

				INCOME	INCOME	INCOME	INCOME
				BASE	SIM 4	SIM 5	SIM 6
FOP		Regular labour	F	88100	0.37	0.20	0.57
		Casual labour	IF	113931	0.30	0.21	0.51
		Formal capital	F	152334	0.39	0.23	0.62
		Informal capital	IF	285498	0.36	0.30	0.66
INSTITUTIONS	RURAL	Poor	F	17595	0.27	0.16	0.43
		Middle	F	15619	0.22	0.13	0.35
		Rich	F	11033	0.11	0.06	0.17
	URBAN	Poor	F	30981	0.28	0.16	0.44
		Middle	F	54697	0.26	0.15	0.41
		Rich	F	61385	0.13	0.07	0.20
	RURAL	Poor: Agr.	IF	296529	0.35	0.26	0.61
		Middle: Agr.	IF	57817	0.33	0.24	0.57
		Rich: Agr.	IF	23864	0.17	0.12	0.29
		Non-Agriculturist	IF	95363	0.35	0.26	0.61
	URBAN	Poor	IF	40453	0.35	0.25	0.60
		Middle	IF	22908	0.36	0.24	0.60
		Rich	IF	29283	0.22	0.15	0.37

## V. Concluding Remarks

This study attempts to build up a macroeconomic framework incorporating the informal sector. Mainly the informal sector is distinguished in terms of factors of production and households. Though we have also distinguished production into informal and formal part, this does not take into account the distinctive production structure of the sectors. It should be noted, therefore, that the strength of this study lies in household classification through the use of all India sample survey data and linking these households to the overall macro set-up. Such an exercise enables impact analysis of macro policies on the factors and households as distinguished in this study.

In building the SAM in this exercise the production sectors are initially distinguished as formal and informal by using published data from the CSO. Factors of production are then broken down first into labour type (formal and informal) and capital type (formal and informal). At the next level labour is broken down according to sectors of employment, occupation and status and further broken down into rural versus urban. Then we identify four types of households i.e., formal/informal distinguished further by rural and urban regions. The households are classified through a system in which the industry and occupation code of the head of the household is given importance in certain informal sectors, mainly in agriculture. For other sectors a "Type code" defined by the Indian National Sample Survey Organisation (NSSO) is analysed which reflects the occupation of majority of the members in a household. Next these households, i.e., Rural/Urban by Formal/Informal households are subdivided into four to five per capita expenditure categories using percapita expenditure information taken from the household survey of the NSSO. Therefore, the break up of these households is on the basis of expenditure classes. Lastly to complete the SAM structure, three exogenous accounts are defined, i.e., the government, the capital account and the rest of the world.

The findings show that a large section of the Indian population belong to informal households. There are certain sectors, which have more of informal activities than others. Apart from the usual agriculture and livestock related activities we find that activities like other manufacturing industries, manufacture of miscellaneous metal products and, combined services also have substantial informal share in production.

The consumption behaviour of formal and informal households show that on the average informal households spend more on indigenously produced items and vice versa (see Appendix II). Of the total consumption of rural formal households, 59 percent is spent on formally produced items and alternatively rural informal households spend 64 percent of their total consumption on informal produce. In the urban region, formal households spend a higher share of 63 percent on formal outputs and informal households spend a lower share of 58 percent on informal products.

We have used the findings as shown in this study and have built the SAM with formal informal distinction. The SAM analysis here consists of interpreting the coefficients and the multipliers. An extension of the study is the simulation exercises carried out through hypothetical changes in exogenous variables resulting in different levels of factor and household level earnings. In the case of two types of production activities i.e. formal and informal, the SAM multipliers can provide a comparison of the differential impact if exogenous demand for a particular type of product increases. For example, such an analysis would be able to trace which household would suffer in terms of lower value added distribution, if government reduced certain types of expenditures. If government increases investment in construction, households that earn as labourers from construction would have more income/employment. The increased income going to the informal labourers can be estimated. At the same time the overall impact on overall output and income and savings can also be quantified through the multiplier analysis of the SAM. If government provides loans to cottage and small enterprises (within some broad sectors) their investment would increase which would again generate whole series of interactions and the sectoral and overall impact can be measured. Policy decisions can be taken based on such simulation exercises. In this study we have designed 6 simulation exercises and studied the relative impact on different types of factor and household earnings. The results confirm that expansion in informal sector production generate more informal factor income as compared to an increase in formal sector production. Moreover, informal poor households receive marginally higher income as production rises in informal textiles and leather sectors.

The present study has certain limitations, as the multiplier analysis carried out in this exercise assumes the existence of excess capacity in an economy, which ignores any supply constraint and consequent change in prices. However, in the short run such an exercise may be considered valid. The major strength of the study is to build up a database and identifying the data limitations, so that in future steps might be taken to improve such data sets. To provide a complete framework, in

which the influence of policy changes or any exogenous change can be traced through different sectors and different socio-economic classes, it would be meaningful to use a general equilibrium model with endogenous determination of price, in which we explicitly track informal transactions and “agents”. It is possible to think informality in the production process. Secondly, it is possible to distinguish informality in factors of production and that firms can substitute between formal and informal factors of production (formal and informal labour). Finally we can think of formal and informal households which are distinguished in terms of the sources of their income and their consumption pattern.

As we are interested in the effects of major policy changes on the informal output and more particularly on the informal households, we could design simulations to study such impacts. The fixed price multiplier analysis shows that sectors like agriculture, manufactured food products, textiles, wood, leather and construction have high informal income multiplier effect. This reflects the high informal labor contribution in these sectors apart from other indirect effects via the consumption pattern. This study thus can identify sectors that have higher interconnection with the informal sector and informal households, and can be used for simulation exercises with different policy options recognizing the effect of these on the welfare of the informal households.

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APPENDIX I: AGGREGATION SCHEME FOR 24 INDUSTRY SECTORS

S. No.	Sectors	NIC	IO89-90
1	Agriculture sector including forestry, fishing etc.	000 - 069	000 - 022
2	Mining & quarrying	100 - 199	023 - 032, 058 - 059
3	Manufacture of food products	200 - 219 ([-]207 )	035,036, 038
4	Production of indigenous sugar, gur, etc.	207	033 - 034
5	Manufacture of Beverages, Tobacco and Related products	220 - 229	037,039, 040
6	Manufacture of Textile products	230 - 269	041 - 049
7	Manufacture of wood and wood products; Furniture and fixtures	270 - 279	050 - 051
8	Manufacture of batteries, household electricals, etc	363 - 369	086-088, 090
9	Other manufacturing industries incl.mfg of paper and paper products & printing, publishing & allied industries	280 - 289, 380 - 389 ([-]382)	052, 053, 083, 098
10	Manufacture of watches and clocks	382	097
11	Manufacture of leather and products of leather, fur & substitutes of leather	290 - 299	054-055
12	Manufacture of rubber, plastic, petroleum and coal products, processing of nuclear fuels	310 - 319	056-057
13	Manufacture of basic chemicals and chemical products (except products of petroleum and coal)	300 - 309	060 - 068
14	Manufacture of non-metallic mineral products	320 - 329	069 - 071
15	Iron and Steel	330 - 339	072 -075
16	Manufacture of miscellaneous metal products	340 - 349	076 -077
17	Capital goods and manufacture of office, computing and accounting machinery and parts	350-362,390- 399	078-082,084 ,085, 089
18	Manufacture of transport equipment and parts	370 - 379	091 - 096
19	Electricity, gas and water supply	400 - 439	100 - 102
20	Construction	500 - 519	099
21	Combined Services	600-691 750 - 759 800-854 920 - 922	107, 108 106 109 - 111 112
22	Health and medical services	930 - 931	113
23	Other services including transport services and storage and warehousing	700 - 749,830,890- 899,940-990	103 - 105, 114
24	Public administration and defence	900 -910	115

## APPENDIX II. SECTORAL CONSUMPTION PROPORTION BY FORMAL AND INFORMAL HOUSEHOLDS

Sector Names		FORMAL HOUSEHOLDS		INFORMAL HOUSEHOLDS	
		RURAL	URBAN	RURAL	URBAN
Agriculture	F	0.174	0.051	1.522	1.040
	IF	4.156	1.210	36.446	24.909
Mining	F	1.610	1.542	0.231	0.094
	IF	0.378	0.359	0.055	0.022
Food products	F	16.625	12.675	5.383	7.352
	IF	1.720	1.161	0.577	0.761
Sugar	F	1.429	3.970	1.761	1.010
	IF	0.274	0.760	0.337	0.193
Beverages	F	1.844	1.035	1.193	0.671
	IF	0.805	0.451	0.521	0.293
Textiles	F	6.284	2.699	5.300	5.377
	IF	8.797	3.891	7.405	7.527
Wood	F	0.018	0.010	0.031	0.065
	IF	0.199	0.113	0.342	0.709
Household electricals	F	2.608	1.814	0.713	0.719
	IF	1.266	0.881	0.346	0.349
Other manufacturing	F	0.158	0.622	0.737	1.680
	IF	0.073	0.288	0.341	0.778
Watches & clocks	F	0.545	1.738	0.065	0.264
	IF	0.001	0.004	0.000	0.000
Leather	F	0.698	0.054	0.275	0.005
	IF	0.986	0.076	0.389	0.007
Rubber, plastic	F	2.759	0.417	0.440	0.011
	IF	1.492	0.225	0.238	0.006
Basic chemicals	F	0.263	2.755	0.603	0.676
	IF	0.063	0.585	0.154	0.161
Non-metallic minerals	F	0.726	0.359	0.225	1.003
	IF	0.434	0.214	0.135	0.600
Iron & steel	F	0.000	0.000	0.000	0.000
	IF	0.000	0.000	0.000	0.000
Miscellaneous Metal products	F	0.700	1.146	1.000	0.981
	IF	0.846	1.459	1.200	1.186
Capital goods	F	0.024	0.000	0.000	0.011
	IF	0.001	0.000	0.000	0.000
Transport equipments	F	1.595	0.430	0.314	0.048
	IF	1.487	0.401	0.293	0.044
Electricity, gas and water supply	F	0.828	12.374	0.561	0.596
	IF	0.082	1.294	0.045	0.059
Construction	F	0.000	0.000	0.000	0.000
	IF	0.000	0.000	0.000	0.000
Combined services	F	8.050	13.958	8.783	11.424
	IF	11.692	20.442	12.734	16.593
Health & medical services	F	5.492	1.823	0.934	2.269
	IF	3.422	1.136	0.582	1.414
Other services	F	6.994	4.147	5.796	6.766
	IF	2.405	1.426	1.993	2.326
<b>Total</b>		<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

APPENDIX III. PER DAY WAGE RATE FOR LABOURERS BY REGION AND GENDER

Sector	Casual Labour: AGRICULTURE		Regular Labour: AGRICULTURE		Casual Labour: OTHERS		Regular Labour: OTHERS	
	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>
Rural	14.96	21.30	22.83	27.47	17.08	29.66	36.23	61.93
Urban	16.28	25.19	46.66	51.40	18.98	33.20	64.05	81.09
<b>A India</b>	<b>15.62</b>	<b>23.25</b>	<b>34.75</b>	<b>39.44</b>	<b>18.03</b>	<b>31.43</b>	<b>50.14</b>	<b>71.51</b>