

The Structure of the Ethiopian Economy - A SAM-based Characterisation¹

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I. Introduction

Since 1992 the government of Ethiopia has introduced a variety of reforms aimed at improving macroeconomic stability, accelerating economic growth, and reducing poverty. Tariffs have been cut, quota constraints relaxed, licensing procedures simplified, foreign exchange controls eased, compulsory grain delivery and forced membership to cooperatives discontinued, a privatisation process begun, private banks authorised, interest rates decontrolled, and an inter-bank money and foreign exchange market introduced.

Until recently, one important departure from the past was the abandonment of planning, at least as an explicit mode of government economic policy formulation and implementation. However, beginning 2002 the Ethiopian government has adopted a development strategy centred on the principal goal of poverty reduction. This strategy is officially known as Sustainable Development and Poverty Reduction Program. In line with this Program, the government has recently launched deeper fiscal decentralisation, judicial and civil service reform, and public sector capacity building.

Two needs are highlighted by the above paragraphs. First, it is necessary to assess, in a comprehensive manner, the extent to which the reforms implemented so far have changed the Ethiopian economy. Second, it is necessary to evaluate alternative government policy interventions to facilitate reasonable selections in the context of a medium- to long-term development strategy (and poverty reduction program). Both, in turn, need to be grounded on a good understanding of the current structure of the Ethiopian economy. This note contributes towards that understanding by characterising the Ethiopian economy on the basis of a Social Accounting Matrix (SAM) built for the purpose. Although that is not its primary objective, the note also highlights some of the policy issues implied by this characterisation.

The rest of the note is organised into -- sections. Section 2

II. Economic Structure and Social Accounting Matrices (SAMs)

The structure of an economy can be described in terms of two key sets of elements.³ The first set is comprised of the types and location of economic activity and the associated technological and

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behavioural relations. It includes the relative importance of sectors in the economy in terms of production and factor use (such as sectoral shares in output and employment), rural vs. urban economic activity, input-output coefficients, openness to trade, saving and investment rates, and expenditure patterns. This set may be referred to as the 'productive' dimension of economic structure. The types of economic agents/organisations and institutions form the second set. Aspects of property rights systems (such as land tenure system, private ownership and its security, and the extent of public ownership) and behaviourally distinguishable groups (such as households, firms, farmers, wage workers, and entrepreneurs) belong to this set. This set may be considered as the 'distributional' dimension of economic structure.

SAMs are designed as a means of characterising and understanding the structure of an economy. By construction, a SAM summarises the transactions (including transfers) among economic agents, and through them activities, in an economic system within an accounting period, commonly a year (Pyatt and Round (1985), Round (2003)). First, the SAM represents a square matrix in which rows and columns denote, respectively, receipts (or incomings) and expenditures (outgoings) of the accounts that correspond to the various institutions, activities, factors and products considered. Transactions are shown in the cells, so the matrix explicitly displays the interconnections in the economy. As it is an accounting framework not only is the SAM square, but also its corresponding row and column sums must be equal. Second, a SAM is *comprehensive*, in that it spans all the economic activities of the system (consumption, production, accumulation and distribution) albeit to a varying extent of detail. Indeed, the third attractive feature of the SAM is its *flexibility*, in terms of both the degree of disaggregation and the emphasis given to different components of the economic system. In short, an appropriately constructed SAM can capture the structural features and interdependencies of an economy in an efficient and transparent manner. Moreover, such a SAM can be used as a modelling device in its own right or serve as a basis for other modelling strategies such as computable general equilibrium modelling.

The 1999/2000 Ethiopian SAM - Key Features

The 1999/2000 Ethiopian SAM is a 40x40 matrix and contains an account each for fifteen production activities, four factors of production, eight commodities, transactions costs, eight institutions, public investment, savings/investments of institutions other than the government, food aid, and the rest of the world (net of food aid). As such it captures the diverse production activities and the interdependencies among the various sectors and institutions that characterise the Ethiopian economy.

Activities.

The classification of activities reflects a combination of differences in type, location, scale, and ownership structure of production. Accordingly, activities are disaggregated into five agricultural activities (peasant farming - highland, peasant farming - lowland, peasant livestock production, private commercial farming, and public commercial farming), seven industrial activities (cottage/handicraft and small scale industry, large/medium scale agro-manufacturing - public, large/medium scale agro-manufacturing - private, large/medium scale other manufacturing - public, large/medium scale other manufacturing - private, other industry - public, and other

³ For a comprehensive characterisation of economic structure see Syrquin (1988). A related, but broader and somewhat more abstract, characterisation can be found in Tohmé and London (1997).

industry - private), two service activities (services - public and services - private), and a food-for-work activity (see annex for further details).⁴

A number of unique features are built into the activities block of the SAM. First, peasant agriculture is explicitly disaggregated into highland peasant farming and lowland peasant farming based on growth potential. The essential point of dividing 'settled' peasant farming into 'highland' and 'lowland' is to accommodate differences in agricultural potential between the long-settled (and thus more degraded) highlands and other parts of the country. As such this disaggregation captures, albeit in a rough manner, some of the diversity in physical and biological potential across regions.

Second, the desire to assess the currently substantial contribution of livestock production and its as yet to be fully tapped potential motivated the explicit and separate inclusion of a peasant livestock production activity. It is for the first time that this activity is explicitly incorporated in a SAM framework at the national level.⁵ Since the bulk of the output of this sector (especially the part exported) comes from the pastoralist areas, this inclusion also provides a handle on the impact of shocks and interventions on these relatively less understood parts of the country.

Third, a 'food-for-work' activity is introduced to capture the potentially significant role that food aid plays via such programs. As an activity it produces public infrastructure (such as roads, terraces and irrigation canals) and incomes to rural households. The demand for public goods produced counts as investment demand. There is also an enterprise account corresponding to this activity titled 'food-for-work projects'. It receives 'food aid from the rest of the world' and transfers what it thus receives and all its 'capital income', if any, to the government. A simplifying assumption, in this regard, is zero capital income with all the aid exhausted by wages. Given the reliance of such projects on labour (using largely hand implements rather than machinery), this seems to be a reasonable assumption.

Fourth, both commercial farming in agriculture as well as activities in industry and services are partitioned into privately owned and publicly owned segments. The aim is to incorporate a way of examining the state and role of the private sector in the country as well as assessing the potential impact of changes in the pattern of ownership (through privatisation, say).

Commodities

The classification of commodities is primarily motivated by the desire to have a means of exploring the effects of changes in the commodity mix that may be triggered by shocks or deliberate policy interventions. A particular emphasis, in this regard, is given to potential shifts in the export portfolio of the country.

Accordingly, eight commodity groupings are identified. These are food crops, traditional agricultural exportables (mainly livestock and livestock products, coffee, and chat), non-traditional agricultural exportables (including tea, flowers, and fruits and vegetables), other agricultural products (forest products and fisheries), agro-manufacturing products (processed food and beverages, textiles, leather and leather products, wood products), other industrial products (chemical products, non-metallic mineral products, metal products, electricity and water, construction, and mining and quarrying), public goods (education, health, public

⁴ Large/medium manufacturing firms are those employing 10 or more people. The Ethiopian Central Statistical Authority (CSA) uses this commonly adopted definition in its manufacturing surveys.

⁵ There is a regional SAM for the Somali Region, which does so in some detail. See Nin Pratt (October, 2003).

administration, and other related services), and other services (primarily trading services, transport and communications, banking and insurance).

Factors

Factors of production are grouped into four - family labour, wage labour, capital, and land. Three remarks. First, there are clearly alternative ways of categorizing labour. The specific grouping chosen largely reflects data limitations relative to what is demanded by the pattern of activity disaggregation adopted. Nevertheless, the key issue of the rural-urban divide can be dealt with in terms of the predominant location of activities and institutions. Second, capital includes the fixed capital of non-agricultural enterprises and commercial farms (including vehicles, non-residential buildings, and machinery and equipment), and sources of animal power for ploughing, trashing and transport (particularly farm oxen and dairy cows) and farm implements of peasant farms. However, lack of data meant that the capital input could not be estimated for the peasant livestock activity, thereby, in effect, lumping it with the land input of that activity. Third, the common simplifying assumption that land serves as a factor of production only in agriculture is used.

Domestic institutions.

The eight domestic institutions identified are: three types of households (farm households, wage workers, and entrepreneurs), three types of enterprises (peasant farms, private firms, and public firms), a food-for-work project, and the government.

Saving and investment

The two capital accounts record savings and investment by institutions - one for the government, another for the rest of the institutions combined.

Transactions costs

A 'transactions cost' account is included explicitly to accommodate marketing and transportation costs (or marketing margins) associated with commodity flows. Marketing margins represent the cost of moving commodities from the point of their production (for domestic output) or from/to the boarder (for imports/exports) to the point of consumption.⁶ Hence, adding a transactions cost account can widen the options in analysing the impact of alternative investment strategies. It can also provide a handle on the question of market integration.

III. Structure of domestic production and value-added

The level of Ethiopia's per capita GDP (at current factor cost), computed from 1999/2000 SAM, is US\$131 (see Table A1 in the annex). Note that this GDP figure, partly reflecting the construction of the SAM mainly on the basis of survey data, is higher than the US\$91 reported in

⁶ Note that this is a narrower characterisation of transactions costs than that adopted in transaction costs economics (see, for instance, Milgrom and Roberts (1992)).

the national accounts.⁷ However, the difference is not large enough to change the fact that Ethiopia represents one of the poorest countries in the world. It is also noteworthy that the reported level of per capita GDP hides considerable differences across economic agents. For instance, per capita GDP in urban areas is almost three times as high as rural per capita GDP (see Table A2). Among others, such differentials reflect differences in productivity across activities and relative prices.

The structure of the Ethiopian economy is further revealed by the disaggregated information extracted from the SAM. Table 1 reports on the structure of output and value-added in the form of the shares of 14 activities and three aggregates representing agriculture, industry, and services. The disaggregated figures in the table paint a familiar structural picture albeit with some divergence.

About two-fifth of Ethiopia's output and slightly less than half of its value-added originate in agriculture (column 2 and 3 of Table 1). The corresponding shares of industry are a quarter and one-fifth, while those of services are close to a third, respectively. The contributions to value-added are higher for agriculture and industry and lower for services when compared to the corresponding shares reported in the national accounts (see Table A3 in the annex). The divergence between the two for the industrial and services sectors are particularly striking and suggest that the industrial (services) sector plays a more (less) important role in the Ethiopian economy than that implied by national accounts information. In this regard, there is some corroborating international evidence that the shares of services derived from the SAM are more in accordance with the country's level of development.⁸ It can, therefore, be argued that the reliance on data generated by surveys of activities makes the SAM estimates a more accurate decomposition of output and value-added.

Columns 4-6 of Table 1 detail value added shares for labour, capital and land across the 14 activities. Some 60% of labour value added arises in agriculture, two-thirds of which comes from peasant farming while peasant livestock production accounts for the rest. Industry (15%) and services (24%) generate the remaining two-fifth of labour value-added. Not surprisingly, capital value-added figures more prominently in these sectors and accounts for more than 70% of the value-added created. By assumption, land value-added is exclusively associated with agriculture.

⁷ Part of the explanation for this gap lies in the greater likelihood of capturing information on the substantial informal sector via survey data relative to national accounts. A recent survey of the informal sector in urban centres, (CSA (October, 2003a)), identifies about 800,000 establishments operating in this sector during 2002. These establishments engaged about one million people and generated a gross income of more than Birr 4.2 billion and value-added of Birr 750 million. As another indicator of the sector's significance, note that the value-added it produced was roughly equal to that of the combined public and private large/medium scale agro-manufacturing.

⁸ Using data from the World Bank and the OECD, Easterly et al (1994) attempt to develop an international norm for the appropriate size of services at different levels of development. They suggest that service sector shares of 50 per cent and above in GDP are appropriate for countries in the middle and upper-income countries. This implies that for low-income developing countries the size of the service sector should be lower, much lower for very poor countries like Ethiopia, than this level. This general understanding is corroborated by the share of services in the GDP in many developing countries (World Bank (2003)). Similarly, the regression results of Kongsamut, Rebelo and Xie (1999) imply that the GDP shares of the services sector of 45% reported in the national accounts correspond to the per capita GDP of close to US\$4000 - a level many times over the per capita GDP of Ethiopia in 1999/2000.

Table 1: Sectoral shares in 1999/2000 (%)

	Gross Output	Value-added (or GDP) at factor cost	Labour value-added at factor cost	Capital value-added at factor cost	Land value-added at factor cost
Peasant farming - Highland	19.83	24.98	31.10	4.05	49.50
Peasant farming - Lowland	5.77	7.55	9.38	1.22	14.93
Peasant Livestock production	10.73	13.63	17.09	0.00	31.05
Commercial farming - public	0.36	0.44	0.39	0.31	0.87
Commercial farming - private	1.47	1.84	2.24	0.38	3.65
Total Agriculture	38.16	48.44	60.21	5.96	100.00
Cottage/handicraft and small-scale industry	3.33	2.42	2.87	3.02	0.00
Large/medium Agro-manufacturing - public	3.07	1.73	0.71	4.04	0.00
Large/medium Agro-manufacturing - private	1.37	0.36	0.36	0.54	0.00
Large/medium Other manufacturing - public	1.47	0.74	0.49	1.48	0.00
Large/medium Other manufacturing - private	1.92	0.58	0.29	1.28	0.00
Other industry n.e.c - public	2.06	2.20	1.79	3.89	0.00
Other industry n.e.c - private	11.43	12.92	8.75	25.28	0.00
Total Industry	24.65	20.96	15.23	39.53	0.00
Service - public	15.17	11.46	10.01	19.28	0.00
Services - private	21.69	18.70	13.61	35.23	0.00
Total Services	36.86	30.16	23.63	54.51	0.00
Total	100.00	99.55	100.00	100.00	100.00

Source: Computed from the 1999/2000 Ethiopian SAM.

Note: n. c. e. stands for 'not classified elsewhere'.

Agriculture

The bulk of agricultural output and value-added (96%, and amounting to more a third and two-fifth of national output and value-added, respectively) is generated by peasant production, again underscoring the significance of that activity. The importance of the highland peasant farming activity comes out clearly as well. More interestingly, the contributions of peasant livestock production are clearly visible. This activity accounts for more than a quarter of agricultural output and value-added.

Despite its recorded importance to the Ethiopian economy, there is sufficient evidence to show that the potential of the agricultural sector can be expanded considerably. The sector is dominated by subsistence production with low productivity. These characteristics are, in part, explained by its high dependence on rainfall and its rather limited use of modern inputs (see Table A4 in the annex). Out of a total of more than 8 million hectares cultivated, existing irrigation schemes covers only about 161,000 hectares (or about 2%).⁹ As to the use of modern inputs, capital (most of it traditional farm implements and oxen as source of traction power) accounts for 15% of value-added on aggregate and as low as 6% in peasant farming. Indeed, even after including traditional hand implements and oxen, peasant farming is highly undercapitalised with capital per worker of US\$64. Similarly, Intermediate consumption represents about 6% of output (or cost of production) and declines to less than 3% in lowland peasant farming. Hence, expanding area under irrigation and increasing the use of modern inputs

⁹ Data on cultivated land is from CSA (March, 2003), while those on irrigation are from Ministry of Water Resources (February, 2001).

need to be part of any strategy towards modernising Ethiopian agriculture and making it a more consistent contributor to overall output and growth.¹⁰

Table 2: Sectoral Contribution to Output by Commodity Group - 1999/2000 (1992 E.C.)

	Food crops (%)	Traditional agricultural exportables (%)	Non-traditional agricultural exportables (%)	Other agricultural products (%)	Agro-manufacturing products (%)	Other industrial products (%)	Public goods/ services (%)	Other services (%)
Peasant farming - Highland	79.77	34.36	76.80	58.30	0.00	0.00	0.00	0.00
Peasant farming - Lowland	17.69	11.07	17.03	41.70	0.00	0.00	0.00	0.00
Peasant livestock production	0.00	48.24	0.00	0.00	0.00	0.00	0.00	0.00
Commercial farming - public	1.68	0.53	2.35	0.00	0.00	0.00	0.00	0.00
Commercial farming - private	0.86	5.80	3.82	0.00	0.00	0.00	0.00	0.00
Food-for-work	0.00	0.00	0.00	0.00	0.00	0.00	3.06	0.00
Cottage/handicraft and small-scale industry	0.00	0.00	0.00	0.00	39.63	2.42	0.00	0.00
Large/medium Agro-manufacturing - public	0.00	0.00	0.00	0.00	41.77	0.00	0.00	0.00
Large/medium Agro-manufacturing - private	0.00	0.00	0.00	0.00	18.60	0.00	0.00	0.00
Large/medium Other manufacturing - public	0.00	0.00	0.00	0.00	0.00	8.50	0.00	0.00
Large/medium Other manufacturing - private	0.00	0.00	0.00	0.00	0.00	11.09	0.00	0.00
Other industry n.e.c-public	0.00	0.00	0.00	0.00	0.00	11.88	0.00	0.00
Other industry n.e.c-private	0.00	0.00	0.00	0.00	0.00	66.11	0.00	0.00
Service - public	0.00	0.00	0.00	0.00	0.00	0.00	90.80	20.10
Services - private	0.00	0.00	0.00	0.00	0.00	0.00	6.14	79.90
Share of Commodity Group in national	11.85	22.24	1.98	2.09	7.35	17.30	10.88	26.30
Share of Exports in total group's output	0.00	16.63	2.44	0.00	0.92	2.92	0.00	16.85
Share of Domestic Supply in total group's	100.00	83.37	97.56	100.00	99.08	97.08	100.00	83.15

Source: Computed from the 1999/2000 Ethiopian SAM.

Note: n. c. e. stands for 'not classified elsewhere'.

An examination of the relative size and destination of output also reveals further indications of the possibility of enhancing agriculture's potential in the country. Table 2 details the contribution of activities to output of different commodity groups (recorded in columns 2-9), the share of each commodity group in gross national output (row 17), as well as the proportion of each commodity group's output exported and supplied to the domestic market (the last two rows, respectively). The most striking feature, in this regard, is how little of the country's output is exported. Even out of 'traditional agricultural exportables', which has the largest export share, less than 20% of output is actually exported. At about 3%, the export performance the 'non-traditional agricultural exportables' is unsurprisingly much worse. Both, and particularly the latter, imply that the export potential of the agricultural sector has yet to be fully realised. A more focused and multi-pronged promotion of agricultural exports is required towards realising this potential. Increasing the production and export of higher value commodities such as livestock and horticultural products would be a feasible primary target for such an effort.

Another piece of evidence for the possibility of expanding agriculture's potential is provided by the small size of, and negligible exports from, the agro-manufacturing sector. Agro-manufacturing generates about 7% of national output and exports less than 1% of its own

¹⁰ There is sufficient evidence showing that rainfall variability represents a significant source of the growth volatility observed in Ethiopia (see, among others, Weeks et. al. (July, 2003)). This impact, in turn, can be traced to the predominance of rain-fed agriculture.

output. This is despite Ethiopia's comparative advantage in, among others, leather and leather products and horticulture. Expanding local agro-manufacturing capacity (particularly textiles, leather products, and food processing), ideally located in rural areas, and accompanied by corresponding increases in exports could generate large backward linkage effects on agriculture.

Realising the possibilities noted above is critical in light of low productivity in Ethiopian agriculture, which, combined with recurrent drought and rapid population growth, engenders considerable and chronic food insecurity in the country. Increasing food production by directly boosting productivity in that activity is an important avenue of improving this dismal situation. Nevertheless, it is essential to realise that such an effort has to be an element of a broader strategy of raising overall productivity and incomes in the country. If nothing else, the requisite expansion in the supply of inputs and the demand for the output produced make such integration vital. Policy interventions, in general, and public investment choices, in particular, need to reflect this realisation.

In this regard, the key policy question is how can expanding agriculture's potential be achieved. The question, and thus any answer given, has a number of dimensions. Only three dimensions are mentioned.

- a. Reducing agriculture's dependence on contemporaneous rainfall is a key dimension. Husbanding Ethiopia's sizeable potential for irrigation towards that end is essential (see Table A5 in the annex). The net irrigation potential in the country is estimated at 2.6 million hectares (which falls to a still huge 1.9 million hectares if the controversial Abbay or Nile basin is excluded). Realising this potential should involve a combination of small to large irrigation schemes as appropriate. More specifically, the substantial potential for large-scale irrigation schemes in lowland parts of the country should be given particular and careful consideration. Bringing suspended or abandoned irrigation projects (covering 43,000 hectares) into service seems to be a good starting point.¹¹
- b. Another dimension is the role of private commercial farming, which is somewhat limited at present (row 6 in Table 1 and Table 2). Promoting the expansion of this activity is an important means of realising large potential gains in productivity and output diversification. A nationally coordinated regulatory framework would be an essential ingredient. Such a framework needs to incorporate rules for secure access to land (particularly for large-scale private operators) and focus on incentive, rather than control, mechanisms including technical and economic support (such as tax and credit incentives).
- c. A third noteworthy dimension is the level and impact of 'transactions costs'. Bringing agricultural products to the market is a costly enterprise. That this is the case is clearly indicated by the proportion of transactions costs in agricultural output, which is slightly greater than 15% (see Table A6 in the annex). This proportion is certainly an underestimate in that more than three-quarters of agricultural output does not pass through the market at all. Indeed, high transaction costs are a major explanation for the very low fraction of output being marketed. Therefore, reducing transactions costs via targeted investments in transport, communications, and market information collection and dissemination could generate considerable benefits.

¹¹ Data on irrigation cited in this paragraph are taken from Ministry of Water Resources (February 2001).

Industry

Table A7 in the annex summarises some of the features of the Ethiopian industrial sector. By far the largest industrial sub-sector is the collection of activities referred to as the ‘Other industry’ activity.¹² It accounts for about 55% of industrial output and 72% of industrial value-added. Largely explained by the monopolistic or near-monopolistic position of government-owned providers (particularly the Ethiopian Electric Power Corporation (EEPCO)), the public component of this activity is dominated by the electricity and water utilities (accounting for about 60% of both output and value-added) - see Table A8 in the annex. In contrast, the bulk of the private component of the ‘Other industry’ activity is formed by construction (producing close to 90% of both output and value-added). Mining contributes a much smaller fraction (6% or less) of output and value-added in both private and public sub-branches of the activity.¹³

With 32% and 16% of industrial output and value-added, respectively, large/medium scale manufacturing constitutes the second biggest industrial activity in the country. A number of features of this sub-sector are noteworthy.

- a. In aggregate the sub-sector accounts for about 8% and 3.5% of national output and value-added, respectively (Table 1). Agro-manufacturing dominates this sub-sector contributing about 56% of output and 61% of value-added.
- b. Publicly owned enterprises are a major player in the sub-sector. They generate 58% of output and 72% of value-added. Moreover, a large fraction (38%) of these enterprises are loss-making, and thus are a drain on the government budget. Given that a decade has elapsed since privatisation began, this is a somewhat puzzling state of affairs. Its causes need to be explored and the necessary policy actions should be taken to address them. In this regard, experimenting with mechanisms that have the potential to enhance efficiency and reduce fiscal burden, such as management contracts and performance contracts, should be appropriately deployed as an alternative to outright privatisation.
- c. The sub-sector appears to be rather undercapitalised. Estimated at about US\$6600 and US\$3600, respectively, both fixed assets per worker and machinery and equipment capital per worker are low (being of more recent vintage, private firms tend to have somewhat higher capital per worker levels than public ones). These contrasts with capital per worker levels in successful African countries. For instance, in 2000, Mauritius, Tunisia, and Morocco recorded aggregate capital per worker (i.e. for the entire economy not just manufacturing) of US\$20400, US\$14640, and US\$8120, respectively. It is unreasonable to expect capital per worker in the manufacturing sector of these countries to be significantly higher. The implications for productivity and future investments are obvious.
- d. Despite its name, the sub-sector is characterised by relatively small-sized firms. The average number of workers and potential annual output (or capacity) in a firm are, respectively, about 120 and US\$ 2.5 million. In this regard publicly owned firms tend to be considerably bigger than private ones, on average employing close 400 workers per establishment and production capacity of about US\$ 7 million per year. The corresponding figures for private enterprises are 60 workers and US\$ 1.5 million. These figures suggest that the size of manufacturing enterprises, particularly private ones, need to grow

¹² This industrial sub-sector consists of mining and quarrying, water and electricity, and construction.

¹³ Figures in this sentence and the one before are computed from data used in constructing the 1999/2000 Ethiopian SAM.

appreciably in order to enable them participate in both domestic and international markets more effectively. Encouraging consolidation through mergers provides one avenue.

- e. Capacity in large/medium manufacturing is not only small, it is also not utilised fully. Capacity utilisation in the sector is so low that actual output represented 57% and 48% of annual capacity in 1999/2000 and 2001/2002 (CSA (October, 2001), CSA (October, 2003b)).¹⁴ Out of the enterprises surveyed in 1999/2000 and 2001/2002, respectively 40% and 43% identified 'absence of market demand' as the most important reason for not operating at full capacity (CSA (October, 2001), CSA (October, 2003b)). This contrasts with the substantial importation of manufactured goods such as textiles and leather products. Systematically unravelling the underlying causes for limited capacity utilisation is thus a priority. It is likely that these causes include aging machinery, shortage of managerial and technical skills, power shortages, information problems, and weaknesses in the policy environment.¹⁵

Accounting for 13% of output and 12% of value-added, the 'cottage/handicrafts and small-scale industry' constitute the third component of the industrial sector. Traditional food and beverage processing and handicraft textiles production dominate the cottage/handicrafts sub-sector. The small-scale industrial sector is similarly dominated by grain milling which accounts for three-quarters or more of employment, gross value of production, value-added, fixed assets, and investment in fixed assets. An interesting feature of the cottage/handicrafts and small-scale industrial activity is its predominantly rural location. With two-thirds of its operations located in rural areas, this is true of the former in particular. For instance, two-thirds of the cottage/handicrafts activity's operations take place in the rural areas and generate a significant fraction of rural incomes. This situation suggests that it is possible to appreciably raise rural incomes by enhancing and scaling-up the capacity of operators in the sector and integrating them with the higher levels of the industrial value-chain.¹⁶ A well-designed promotion of co-operatives is a feasible strategy. In this regard, a lot of systematic effort has to be exerted towards avoiding the pitfalls that mired such programs during the *Derg* period. Learning from the experiences of other developing countries such as India would be particularly beneficial.¹⁷

A summary expression of the state of industry, and specifically large/medium scale manufacturing, in the country is low competitiveness. The products of most enterprises in the sector appear unable to effectively compete with imports in the domestic market or as exports on the international market. A clear evidence of that is provided by the negligible fraction of output exported by these firms. Tellingly, agro-manufacturers export about 1% of their output (Table 2). This is despite the often-mentioned considerable comparative advantage the country has in leather, textiles, and food processing. Enhancing competitiveness, partly achieved by actually facing international competition through exporting, is thus indispensable not only to overcome restricted domestic demand, but also to realise this potential with substantial productivity and

¹⁴ The rate of capacity utilisation displays considerable variation around this average rate. For further details see CSA (February, 2001) and CSA (October, 2003).

¹⁵ There is evidence that some of these constraints are stringent. For a discussion on the nature of these problems and some evidence regarding their extent see World Economic Forum (1998) and EEA/EEPRI (August, 2003).

¹⁶ Limited capacity utilisation is a major problem in this sub-branch industry as well. For instance, in 2001/2002, the average rate of capacity utilisation in the sub-sector was 36%. If this is typical, the problem may be even worse than in the large/medium manufacturing sector.

¹⁷ See UNCTAD (2002) for illustrative examples relevant to Ethiopia.

income gains. An important means of doing so is provided by the recent initiatives of the European Union (the Everything But Arms (EBA) initiative) and the United States (the Africa Growth and Opportunity Act (AGOA)). Exploiting these opportunities for exporting as well as catering for domestic demand more effectively require well-designed and targeted policy interventions aimed at augmenting the capacity of existing public and private manufactures (particularly the latter) and encouraging new domestic and foreign private investment in manufacturing.

Services

Trade, public administration, and transport and communications are the three major branches of the services sector - each account for slightly higher than 20%, and together more than two-thirds, of services output. They also jointly generate 60% of the sector's value-added.

As expected, public administration constitute by far the largest single component of the 'Services - public' activity accounting for more than half of both output and value-added. With 17% of value-added, education and health are a distant second (although they are third in terms of output generating 12% of the total). Transport and communications (about 18% of output and 13% of value-added) and financial intermediation (about 10% of output and value-added) are also important elements of the sub-sector. The size and significance of these latter two branches stem mainly from the monopoly or dominant position of several wholly state-owned enterprises in their respective branches. These include the Ethiopian Air Lines, the Ethiopian Shipping Lines, the Ethiopian Telecommunications Corporation, and the Commercial Bank of Ethiopia.

In contrast, trade is the biggest branch of the 'Service - private' activity. Combined with the much smaller hotel and restaurants branch, trade accounts for close to 50% of both output and value-added created in this sub-sector. By share of sub-sector output, transport and real estate are the next two largest sub-branches respectively generating 23% and 21% (the order is reversed in terms of value-added share with real estate accounting for 27% and transport 14%).

Two additional features of the services sector are noteworthy. First, it is striking that the services sector is a major exporting branch of the Ethiopian economy. Indeed, close to 17% of the 'other services' commodity produced by this sector is exported (Table 2). Its export ratio is hence even higher, albeit marginally, than that of the 'traditional exportables' group.¹⁸ More on this shortly.

Second, despite the relatively large share of the service sector in national output, the infrastructure underlying its key elements is comparatively underdeveloped.¹⁹

- Road density is low. The all-weather road network in the country consisted of 31,089 kilometres in 2001/2002, with only 3941 kilometres paved (i.e., bitumen-surfaced or tarmac roads). In a country with a surface area of about 1.1 million square kilometres, these amount to 28 km of all-weather roads and 4 km of paved roads per 1000 km² of surface area, respectively. Alternatively, the road-population ratio of Ethiopia is 0.451 for all-weather roads and 0.057 for paved roads (or 451 km and 57 km per 1 million persons, respectively).

¹⁸ This fact is usually unobserved because the data on international trade in services reported as part of the balance of payments statistics is customarily stated in 'net' (i.e., 'exports' less 'imports') terms. In contrast, statistics on international trade in goods are recoded as 'exports' and 'imports' separately.

¹⁹ The significant exception is air transportation with relatively good domestic and international networks run by the Ethiopian Airlines.

- Despite Ethiopia's considerable hydropower potential (estimated between 15,000 and 30,000 Megawatts) installed electricity generation capacity is less than 500 megawatts. Relative to current and potential demand for power, this capacity is rather small. The small generation capacity is compounded by growing unreliability of supply caused by ageing power plants, erratic rainfall and attendant variable water levels in dams, and distributional problems.²⁰
- Though expanding recently, the reach and depth of the telecommunications network remain restricted. Fixed telephone penetration is not much higher than 1% of the population and that of mobile telephony is even smaller. Corresponding penetration rates for Africa are about 3% and 6%, respectively.²¹
- The infrastructure for improved water supply is so inadequate only a quarter of the country's population has access to improved drinking water (slightly more than 80% and 10% in urban and rural areas, respectively).
- In a country of 70 million people and surface area of 1.1 million square kilometres, there are only 119 hospitals with 10669 beds, 3632 clinics, and 451 health centres. More alarmingly, there are 1301 doctors, 527 health officers, 9228 nurses, and 6260 health assistants within that part of the health system run by the Ministry of Health.
- The educational system of the country - comprised of about 13,000 schools, 93,000 classrooms and 147,000 teachers - managed to enrol 9.2 million students.²² These amounted to a teacher-pupil ratio of 63 and classroom-pupil ratio of 99. In addition, since the country is home to more than 20 million people aged 5-18 years, they meant that more than half of them were not in school.

In short, the country's infrastructure is significantly underdeveloped. Its further expansion and improvement are critical to the country's development.²³ The direct welfare gains from greater access to improved water supply as well as education and health facilities are likely to be immense. Moreover, other sectors will benefit considerably from the consequently lower service input costs and increased possibilities for greater specialisation. It is generally recognised that high transactions costs are a significant drain on economic activity. The cost of transportation, electricity, and telecommunications, with delays and unreliability factored in, are rather high. Indeed, that is a partial explanation for the large share of the services sector in national output relative to the level of development of the country. The corresponding policy implications are that Ethiopia has to continue to increase investment on its infrastructure, improve efficiency and accountability in service delivery, attempt to identify demand-side constraints to use (especially in relation to education and health), and enhance the participation of the private sector, particularly in the telecommunications and power sectors. The success of countries like Egypt, Nigeria, and Uganda in considerably increasing teledensity (particularly in mobile telephony) by opening up their telecommunications sector to competition provides an encouraging lesson, in this regard.

²⁰ The problem of unreliability in electricity supply was particularly biting in 2001/2002 and led the government to attempt to deal with it by expanding diesel-powered electricity generation.

²¹ Information on the telecommunications network is obtained from ITU (2003).

²² The data are taken from CSA (2004) and refers to 2002/2003. Institutions of higher learning and kindergartens are not included.

²³ The contribution of infrastructure to development is succinctly stated by Prud'homme (May, 2004: 2) "(Infrastructure) is a space-shrinker, it enlarges markets, and operates like the lowering of trade barriers ... thus increasing productivity and output."

IV. Incomes and Expenditures

Incomes

As expected, farm households and wage earners generate most of their income from labour, while entrepreneurs rely on capital income (Table 3). The capital income of farm households is mainly from handicrafts and cottage industries, two-third of which are located in rural areas. The shares of transfers from the Rest of the World (ROW) in household incomes clearly show how important they are. First, although food aid has a relatively small share in aggregate, it is undoubtedly critical to the food insecure fraction of the population - a fraction that is growing in size. Second, urban households generate a substantial proportion of their income from outside the country. In 1999/2000, close to 30% of this transfer took the form of cash from individuals, and there is some evidence that the magnitude of such transfers is growing in more recent years. Facilitating such transfers could thus lead to welfare gains in the short-run, by increasing household consumption, and in the long run, by raising household investment.

Table 3: Sources of Household Incomes (shares in %) - 1999/2000 (1992 E.C.)

	<i>Labour income from</i>			<i>Capital and/or land income from</i>			<i>Transfers from</i>						
	Family labour	Wage labour	<i>Total labour</i>	Private firms	Peasant Household Farms	<i>Total capital and land</i>	Farm Households	Wage earners	Entrepreneurs	Food Aid program	Government	Rest of the World	<i>Total transfers</i>
Farm households	50.98	4.69	55.67	5.03	32.89	37.92	0.00	1.98	0.84	1.61	0.11	1.88	6.41
Wage earners	0.00	86.65	86.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.09	10.27	13.35
Entrepreneurs	9.19	0.00	9.19	67.52	0.00	67.52	7.82	1.62	0.00	0.00	0.00	13.85	23.29

Source: Computed from the 1999/2000 Ethiopian SAM.

Per capita income levels can also be calculated from the SAM (see Table A2 in the annex). Rural and urban per capita incomes thus computed are US\$90 and US\$257, respectively. These per capita income levels are computed with the assumption that all wage earners and entrepreneurs are urban dwellers and using their respective shares in the urban economically active population. This may overstate the per capita income of wage earners. Also, the inclusion of the urban self-employed (many of whom are small operators in relatively low-return activities) in the entrepreneur category and the existence of a minimum wage are the most likely explanations for a lower per capita income in that category relative to that of wage earners.

These levels of per capita income also contrast with the real per capita consumption expenditure levels computed from the Household Income, Expenditure, and Consumption Survey (HICES) of 1999/2000. The latter are US\$131 and US\$191 for the rural and urban populations, respectively (MOFED (May, 2002)). Apart from respectively being in nominal and real terms (the MOFED levels are in 1995/96 prices), the two sets of estimates employ two different approaches of measuring income - the set derived from the SAM is based on the income approach, while the set obtained from the HICES adopted the expenditure approach. Although which of the two sets is more accurate cannot be determined a priori, the fact that the SAM-based estimates combine both income (from the activity accounts) and transfers information is likely to enhance their accuracy.

Expenditures

Final Demand

Final demand is composed of private consumption, government consumption, and investment. A note on definitions before proceeding any further. In the national accounts, recurrent government expenditure and current private expenditure on education and health are counted as elements of government and private consumption, respectively. However, both can and should be considered as investment on human capital.²⁴ Accordingly, they are, in the present paper, included as part of investment.

Table 4: Composition of Final Demand (% of GDP at current market prices) - 1999/2000

Expenditure Item	As percent of GDP (%)	As percent of Gross Domestic Expenditure (%)
Private Consumption	71.01	63.94
Private Consumption <i>Less</i> Expenditure on Education and Health	69.92	62.96
Government Consumption	19.21	17.30
Government Consumption <i>Less</i> Recurrent Expenditure on Education and Health	16.79	15.12
Investment	24.34	21.92
Investment <i>Less</i> Current Expenditure on Education and Health	20.83	18.76
Public Sector Investment	12.61	11.36
<i>Government Investment</i>	7.48	6.73
Government Investment <i>Less</i> Recurrent Expenditure on Education and Health	5.06	4.55
<i>Public Enterprises' Investment</i>	5.14	4.63
Private Sector Investment	11.73	10.56
Private Sector Investment <i>Less</i> Expenditure on Education and Health	10.64	9.58
Exports	11.15	10.04
<i>Goods Only</i>	5.50	4.95
Imports	22.20	19.99
<i>Goods Only</i>	16.83	15.15
Resource Balance = (Exports - Imports)	-11.06	-9.95

²⁴ This reasonable approach has been adopted in a number of studies recently. For instance, Dasgupta and Maler (November, 2001) state that:

"The creation of human capital requires investment (time and resources). ... So, the common practice in national income accounting of regarding expenditure in education as consumption is an error: the expenditure is in great part an investment activity."

Similarly, Hamilton and Clemens (1999) argue that current expenditure on education should count as what they call 'genuine savings' - strictly speaking the latter is closer as a concept to investment than to savings. In the present paper the argument is extended to cover health expenditure as well. Admittedly, the latter is more problematic conceptually, though it can be viewed as expenditure on the creation (principally preventive care) and maintenance of human capital. However, excluding both private and public recurrent health expenditure from investment reduces its share only by a percentage point.

Source: Computed from the 1999/2000 Ethiopian SAM.

Not surprisingly, private consumption is the by far the largest component of the demand side of the Ethiopian economy (Table 4). It amounted to 63% of gross domestic expenditure (GDE), or equivalent to 70% of GDP. If private expenditure on education and health are added, both these shares will rise by one percentage point. The remaining is accounted for by government consumption (15% of GDE or 17% of GDP) and investment inclusive of all expenditure on health and education (22% of GDE or 24% of GDP). Following the national accounts procedure of counting government and private recurrent expenditure on education and health as consumption will raise the share of government consumption by about two percentage points and lower that of investment by about three percentage points.

The commodity composition of final demand reveals a pattern consistent with the level of development in Ethiopia (Table 5). Expenditure on food crops came out as the largest component of final demand, followed by traditional agricultural exportables (which contain a substantial food element). In total, expenditure on agriculture goods represented slightly higher than half of final demand. The rest of final demand is shared roughly equally between industry and services. In terms of commodity groups, other industrial products and public goods stood third each accounting for 15% of final demand. That the country had to satisfy more than half of its final demand for other industrial goods with imports show that it has yet to industrialise. The high share of imports in expenditure on other services is largely due to the considerable use of international transport services.²⁵

Table 5: Commodity Composition of Final Demand (%) - 1999/2000

<i>Sector</i>	<i>Share in expenditure by sector</i>	<i>Commodity Group</i>	<i>Share in expenditure by commodity group</i>	<i>Share of imports in commodity group</i>
Agriculture	52.0	Food crops	22.7	4.1
		Traditional agricultural exportables	21.7	0.0
		Non-traditional agricultural exportables	3.9	0.0
		Other agricultural products	3.7	0.0
Industry	24.5	Agro-manufacturing products	9.3	11.2
		Other industrial products	15.1	54.7
Services	23.6	Public goods/services	14.9	0.0
		Other services	8.7	61.6

Source: Computed from the 1999/2000 Ethiopian SAM.

Private Consumption

The commodity composition of private consumption demand in Ethiopia is captured in Table 6 and reveals a pattern characteristic of economies at the early stages of modern development. (see, for example, Syrquin (1989)). Given the low level of average incomes, private consumption is concentrated on agricultural products, constituting about 73% and 37% of demand by rural and

²⁵ This phenomenon is not unique to 1999/2000. During 1995-2001, on average, transport services accounted for 60% of service imports and 50% of service exports (NBE data).

urban households, respectively. The bulk of this expenditure is made on food items.²⁶ For rural households, this leaves only slightly more than a quarter of total consumption expenditure for non-agricultural products. Urban households have spent more than 60% of the total on industrial products (47%) and services (16%). A substantial proportion of this is spent on housing construction.

Table 6: Commodity Composition of Household Consumption Expenditure - 1999/2000

	<i>Rural households</i>	<i>Urban households</i>
Food crops	0.377	0.153
Traditional agricultural exportables	0.239	0.159
Non-traditional agricultural exportables	0.054	0.043
Other agricultural products	0.063	0.014
Agro-manufacturing products	0.087	0.264
Other industrial products	0.115	0.203
Other services	0.065	0.164
Total	1.000	1.000

Source: Computed from the 1999/2000 Ethiopian SAM.

Note: Recall that household expenditure on education and health is counted as saving/investment so excluded from consumption expenditure.

The pattern of consumption expenditure briefly described in the previous paragraph suggests that Ethiopian households have a rather limited room for discretionary consumption. This is particularly true for rural households which make-up more than 85% of the population. The size of the domestic market, therefore, appears to be not big enough to stimulate and sustain rapid investment in growth-oriented sectors such as consumer durables. Greater external orientation in investment needs to be more vigorously and systematically promoted.

Investment

In 1999/2000, investment inclusive of all recurrent expenditure on health and education amounted to 24% of GDP (Table 4). This share contrasts with the gross fixed capital formation rate of slightly higher than 15% of GDP reported in the national accounts (CSA (March, 2003)). A number of factors explain the higher rate of investment computed from the Ethiopian SAM. First, the investment rate of the SAM includes, as it should, changes in inventories or stocks (or investment in inventories), while the gross fixed capital formation level does not. The changes in stocks (including estimated changes in the stock of livestock) amounted to Birr 475 million. Second investments by three major public enterprises (namely, the Ethiopian Electric Power Company (EEPSCO), the Ethiopian Telecommunications Corporation (ETC), and the Ethiopian Airlines (EAL)) do not appear to be included in the reported gross fixed capital formation figure. In 1999/2000, EEPSCO, ETC, and EAL respectively spent Birr 1.7 billion, Birr 399 million, and Birr 58 million as capital expenditure (CSA (October, 2001), (CSA (March, 2003), (CSA (January,

²⁶ Food expenditure - composed of all expenditure on food crops and parts of that on traditional agricultural exportables, non-traditional agricultural exportables, other agricultural products, and agro-manufacturing products - respectively accounted for 65% and 46% of total consumption expenditure for rural and urban households.

2004)). Third, recurrent government expenditure on education (Birr 1.34 billion) and health (Birr 402 million) are counted as investment on the argument that they actually represent investment on human capital.²⁷ Also added on the same argument are private expenditure on education (Birr 274 million) and health (Birr 513 million). The last three sets of additions represented more than 7% of GDP.

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²⁷ This reasonable approach has been adopted in a number of studies recently. For instance, Dasgupta and Mäler (November, 2001) state that:

"The creation of human capital requires investment (time and resources). ... So, the common practice in national income accounting of regarding expenditure in education as consumption is an error: the expenditure is in great part an investment activity."

Similarly, Hamilton and Clemens (1999) argue that current expenditure on education should count as what they call 'genuine savings' - strictly speaking the latter is closer as a concept to investment than to savings. In the present paper the argument is extended to cover health expenditure as well.

²⁸ The publication date on the cover of this document is stated as March 2002. However, the dates referred to inside the document (including in the Preface) and the period covered by the data reported clearly show that it came out in March 2003.

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Annex

Table A1: Gross Domestic Product (GDP) - 1999/2000 (1992 E.C.)

	GDP at current factor cost (Birr)	Indirect taxes and tariffs (Birr)	GDP at current market prices (Birr)	Mid year population	GDP at current factor cost per capita (Birr)	GDP at current factor cost per capita (US\$)	GDP at current market prices per capita (Birr)	GDP at current market prices per capita (US\$)
1999/2000 SAM	68158	3769	71927	63.5	1073	131	1133	138
National Accounts	47465		51870	63.5	747	91	817	99

Source: Computed from the 1999/2000 Ethiopian SAM. National accounts data taken from CSA (2002).

Note: The average exchange rate Birr8.2/US\$ is used (*Source:* National Bank of Ethiopia (2003))

Table A2: Rural and urban income per capita - 1999/2000 (1992 E.C.)

	Population (in millions)	Per capita income (in Birr)	Per capita income (in US\$)	Per capita GDP (in Birr)	Per capita GDP (in US\$)
Rural	54.02	736	90	689	84
Urban	9.47	2116	257	1742	212
Urban - wage earners	4.52	2508	305	2173	264
Urban - entrepreneurs	4.95	1759	214	1349	164

Source: Computed from the 1999/2000 Ethiopian SAM. National accounts data taken from CSA (2002).

Note: The average exchange rate Birr8.2/US\$ is used (*Source:* National Bank of Ethiopia (2003)).

Table A3: Shares in GDP - 1999/2000 SAM vs. National Accounts

	<i>Share in GDP - National Accounts (%)</i>	<i>Share in GDP - SAM (%)</i>
Agriculture	43.6	48.44
Industry	10.7	20.96
Services	45.7	30.16

Source: Computed from the 1999/2000 Ethiopian SAM. National accounts data taken from CSA (2002).

Table A4: Factor composition of sectoral value-added in 1999/2000 (%)

	Labour value-added	Capital value-added	Land value-added	Ratio of value-added to output (%)	Ratio of intermediate consumption to output (%)
Peasant farming - Highland	59.88	5.59	34.53	93.63	6.37
Peasant farming - Lowland	59.88	5.59	34.53	97.43	2.57
Peasant Livestock Production	60.31	0.00	39.69	94.49	5.51
Commercial farming - public	42.00	23.95	34.05	90.67	9.33
Commercial farming - private	58.43	7.08	34.49	89.49	10.51
Total Agriculture	59.78	15.41	24.81	94.45	5.55
Cottage/handicraft and small-scale industry	56.93	43.07	0.00	54.03	45.97
Large/medium Agro- manufacturing - public	19.57	80.43	0.00	42.02	57.98
Large/medium Agro-manufacturing - private	48.24	51.76	0.00	19.49	80.51
Large/medium Other manufacturing - public	31.34	68.66	0.00	37.67	62.33
Large/medium Other manufacturing - private	23.81	76.19	0.00	22.42	77.58
Other industry n.c.e-public	39.00	61.00	0.00	79.69	20.31
Other industry n.c.e-private	32.53	67.47	0.00	84.10	15.90
Total Industry	34.94	65.06	0.00	63.27	36.73
Service - public	42.00	58.00	0.00	56.22	43.78
Services - private	35.00	65.00	0.00	64.16	35.84
Total Services	37.66	62.34	0.00	60.89	39.11
Total	48.08	39.91	12.01	74.40	25.60

Source: Computed from the 1999/200 Ethiopian SAM.

Note: n. c. e. stands for 'not classified elsewhere'.

Table A5: Net Irrigation Potential by Region and by River Basin (in Hectars)

Region	Abbay	Awash	Ayasha	Baro Akobo	Dankil	Genale Dawa	Mereb	Ogaden	Omo-Gibe	Rift Valley	Tekeze	Wabe shebele
Afar		117500			300							
Amhara	348553	30000			24395						82000	
Benshangul	158361											
Dire Dawa												
Gambella				483000								
Harar												
Oromiya	204086	58900				60000			38100	26500		30000
SNNPR									310000	20000		
Somali			Scant			206000		Scant				92000
Tigray					64351		38000				220000	
Total	711000	206400	Scant	483000	89046	266000	38000	Scant	348100	46500	302000	122000

Source: "Table 5: Net Irrigation Potential by Region and by River Basin," in Ministry of Water Resources (February 2001). *Water Sector Development Programme: Sector Review Report, page 16-IRR.*

Table A6: Ratio of transactions costs to output (%) - 1999/2000

Sector	Ratio of transactions costs to output (%)
Agriculture	15.31
Industry	21.42
Services	8.12
Total	14.12

Source: Computed from the 1999/2000 Ethiopian SAM.

Table A7: Structure of the Industrial Sector - 1999/2000

	Share in industrial (%)			Share in large/medium manufacturing (%)		
	<i>Value-added</i>	<i>Intermediate consumption</i>	<i>Output</i>	<i>Value-added</i>	<i>Intermediate consumption</i>	<i>Output</i>
Cottage/handicraft and small-scale industry	11.55	16.93	13.52			
Large/medium Agro- manufacturing - public	8.28	19.67	12.46	50.79	33.69	39.24
Large/medium Agro-manufacturing - private	1.71	12.17	5.55	10.49	20.84	17.48
Large/medium Other manufacturing - public	3.55	10.12	5.96	21.79	17.33	18.78
Large/medium Other manufacturing - private	2.76	16.43	7.78	16.93	28.15	24.50
Large/medium Manufacturing - total	16.29	58.39	31.75			
Other industry n.c.e - public	10.50	4.61	8.34			
Other industry n.c.e - private	61.66	20.08	46.38			
Other industry n.c.e. - public + private	72.16	24.69	54.72			

Source: Computed from the 1999/2000 Ethiopian SAM.

Note: 'n.c.e.' stands for 'not classified elsewhere'.

Table A8 - Composition of output and value-added in 'Other industry n.c.e.' - 1999/2000.

	<i>Value-added</i>	<i>Intermediate consumption</i>	<i>Output</i>
Electricity - private	0.00	0.00	0.00
Water - private	7.84	7.85	7.84
Construction - private	88.59	88.62	88.59
Mining - private	3.57	3.57	3.57
Electricity - public	41.93	41.88	41.90
Water - public	19.60	19.63	19.60
Construction - public	32.60	32.72	32.55
Mining - public	5.93	6.02	5.95

Source: Computed from the 1999/2000 Ethiopian SAM and the corresponding database.

Note: 'n.c.e.' stands for 'not classified elsewhere'.

Table B1: Activities and Commodities

	Activities	Commodities
Agriculture	<i>Peasant farming - Highland</i>	Food crops
		Traditional agricultural exportables
		Other agricultural products
	<i>Peasant farming - Lowland</i>	Food crops
		Traditional agricultural exportables
		Other agricultural products
	<i>Peasant livestock production</i>	Traditional agricultural exportables
	<i>Commercial farming</i>	Food crops
		Traditional agricultural exportables
		Other agricultural products
Non-traditional agricultural exportables		
<i>Food-for-work</i>	Public goods	
Industry	<i>Cottage/handicraft and small-scale industry</i>	Agro-manufacturing products
		Other industrial products
	<i>Large/medium Agro- manufacturing - public</i>	Agro-manufacturing products
	<i>Large/medium Agro-manufacturing - private</i>	Agro-manufacturing products
	<i>Large/medium Other manufacturing - public</i>	Other industrial products
	<i>Large/medium Other manufacturing - private</i>	Other industrial products
	<i>Other industry n.c.e. -public</i>	Other industrial products
<i>Other industry n.c.e. -private</i>	Other industrial products	
Services	<i>Services - public</i>	Public goods
		Other services
	<i>Services - private</i>	Other services
		Public goods

<i>Large/Medium Manufacturing Activities Industrial Group</i>	<i>Activity Classification</i>
Food Products and Beverages	
Production, processing and preservation of meat and meat products	Agro-manufacturing
Vegitable and animal oils and fats	Agro-manufacturing
Dairy products	Agro-manufacturing
Grain mill products	Agro-manufacturing
Prepared animal feed	Agro-manufacturing
Bakery products	Agro-manufacturing
Sugar and sugar confectionery	Agro-manufacturing
Macaroni and spaghetti	Agro-manufacturing
Other food products (Not Classified Elsewhere (N.C.E.))	Agro-manufacturing
Distilling,rectifying and blending of spirits	Other manufacturing
Wines	Agro-manufacturing
Malt liquors and malt	Agro-manufacturing
Soft drinks and mineral waters	Other manufacturing
Tobacco Products	Agro-manufacturing
Textiles	
Preparation and spinning of textile fibers; weaving of textiles	Agro-manufacturing
Cordage, rope, twine and netting	Agro-manufacturing
Knitting mills	Agro-manufacturing
Wearing Apparel; Dressing and Dving of Fur	
Wearing apparel, except fur apparel	Other manufacturing
Tanning and Dressing of Leather, Manufacture of Luggage, Handbags, Saddlery, Harness and	
Tanning and dressing of leather, Luggage and handbags	Agro-manufacturing
Footwear	Agro-manufacturing
Wood and Products of Wood and Cork, except Furniture; Articles of Straw and Plaiting Materials	Agro-manufacturing
Paper, Paper Products and Printing	
Paper and paper products	Agro-manufacturing
Publishing and printing services	Other manufacturing
Chemicals and Chemical Products	
Basic chemicals, except fertilizers and nitrogen compounds	Other manufacturing
Paints, varnishes and mastics	Other manufacturing
Pharmaceuticals, medicinal chemicals and botanical products	Other manufacturing
Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	Other manufacturing
Chemical products N.C.E.	Other manufacturing
Rubber and Plastic Products	
Rubber products	Other manufacturing
Plastic products	Other manufacturing
Other Non-metalic Mineral Products	
Glass and glass products	Other manufacturing
Structural clay products	Other manufacturing
Cement, lime and plaster	Other manufacturing
Articles of concrete, cement and palster	Other manufacturing
Non-metalic mineral products N.C.E.	Other manufacturing
Basic Iron and Steel	Other manufacturing
Fabricated Metal Products, except Machinery and Equipment	
Structural metal products, tanks, reservoirs and containers of metal	Other manufacturing
Cutlery, handtools, and general hardware	Other manufacturing
Other fabricated metal products	Other manufacturing
Machinery and Equipment N.C.E.	
Pumps, compressors, taps an d valves	Other manufacturing
Ovens, furnaces and furnace burners	Other manufacturing
Other general purpose machinery	Other manufacturing
Accumulaters, primary cells and primary batteries	Other manufacturing
Motor Vehicles, Trailers and Semi-trailers	
Bodies for motor vehicles	Other manufacturing
Parts and Accessories for Motor Vehicles and their Engines	Other manufacturing
Furniture; Manufacturing N.C.E.	Agro-manufacturing

Small-scale Manufacturing Activities by Industrial Group	Activity Classification
Food Products except Grain Mill Services	
Production, processing and preservation of meat and meat products	Agro-manufacturing
Vegitable and animal oils and fats	Agro-manufacturing
Grain mill products	Agro-manufacturing
Bakery products	Agro-manufacturing
Cocoa, chocolate and sugar confectionery	Agro-manufacturing
Other food products (Not Classified Elsewhere (N.C.E.))	Agro-manufacturing
Grain Mill Services	Agro-manufacturing
Textiles	
Preparation and spinning of textile fibers; weaving of textiles	Agro-manufacturing
Made-up textile articles, except apparel	Other manufacturing
Knitted and crocheted fabrics and articles	Other manufacturing
Wearing Apparel; Dressing and Dying of Fur	
Wearing apparel, except fur apparel	Other manufacturing
Luggage, Handbags, Saddlery, Harness and Footwear	
Luggage, handbags and the like, saddlery and harness	Agro-manufacturing
Footwear	Agro-manufacturing
Wood and Products of Wood and Cork, except Furniture; Articles of Straw and Plaiting Materials	
Sawmilling and planing of wood	Agro-manufacturing
Builders' carpentry and joinery	
Wooden containers	Agro-manufacturing
Other products of wood, articles of cork, straw and plaiting materials	Agro-manufacturing
Paper and Paper Products	Agro-manufacturing
Publishing, Printing and Reproduction of Recorded Media	Other manufacturing
Chemicals and Chemical Products	
Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	Other manufacturing
Other Non-metallic Mineral Products	
Glass and glass products	Other manufacturing
Non-structural, non-refractory ceramic ware	Other manufacturing
Structural, non-refractory clay and ceramic products	Other manufacturing
Articles of concrete, cement and plaster	Other manufacturing
Cutting, shaping and finishing of stone	Other manufacturing
Fabricated Metal Products, except Machinery and Equipment	
Structural Metal Products	Other manufacturing
Treatment and coating of metals, general mechanical engineering on fee or contract basis	Other manufacturing
Cutlery, handtools, and general hardware	Other manufacturing
Machinery and Equipment N.C.E.	
Ovens, furnaces and furnace burners	Other manufacturing
Other general purpose machinery	Other manufacturing
Machinery for food, beverage and tobacco processing	Other manufacturing
Parts and Accessories for Motor Vehicles and their Engines	Other manufacturing
Furniture; Manufacturing N.C.E.	
Furniture	Agro-manufacturing
Jewelry and related articles	Other manufacturing

Cottage/Handicraft Activities Industrial Group	Activity Classification
Food Products and Beverages	
Production, processing and preservation of meat and meat products	Agro-manufacturing
Vegitable and animal oils and fats	Agro-manufacturing
Dairy products	Agro-manufacturing
Animal feed	Agro-manufacturing
Bakery products	Agro-manufacturing
Cocoa, chocolate and sugar confectionery	Agro-manufacturing
Other food products (Not Elsewhere Classified (N.E.C))	Agro-manufacturing
Distilling,rectifying and blending of spirits; ethyl alcohol production from fermented materials	Agro-manufacturing
Malt liquors and malt	Agro-manufacturing
Tobacco Products	Agro-manufacturing
Textiles	
Preparation and spinning of textile fibers; weaving of textiles	Agro-manufacturing
Made-up textile articles, except apparel	Other manufacturing
Carpets and rugs	Agro-manufacturing
Cordage, rope, twine and netting	Agro-manufacturing
Knitted and crocheted fabrics and articles	Agro-manufacturing
Wearing Apparel; Dressing and Dying of Fur	
Wearing apparel, except fur apparel	Other manufacturing
Articles of fur	Agro-manufacturing
Tanning and Dressing of Leather, Manufacture of Luggage, Handbags, Saddlery, Harness and	
Tanning and dressing of leather	Agro-manufacturing
Luggage, handbags and the like, saddlery and harness	Agro-manufacturing
Footwear	Agro-manufacturing
Wood and Products of Wood and Cork, except Furniture; Articles of Straw and Plaiting Materials	
Sawmilling and planing of wood	Agro-manufacturing
Builders' carpentry and joinery	Agro-manufacturing
Wooden containers	Agro-manufacturing
Other products of wood, articles of cork, straw and plaiting materials	Agro-manufacturing
Publishing, Printing and Reproduction of Recorded Media	Other manufacturing
Chemicals and Chemical Products	
Pharmaceuticals, medicinal chemicals and botanical products	Other manufacturing
Chemical products N.C.E.	Other manufacturing
Other Non-metallic Mineral Products	
Glass and glass products	Other manufacturing
Non-structural, non-refractory ceramic ware	Other manufacturing
Structural, non-refractory clay and ceramic products	Other manufacturing
Articles of concrete, cement and palster	
Cutting, shaping and finishing of stone	Other manufacturing
Fabricated Metal Products, except Machinery and Equipment	
Structural Metal Products	Other manufacturing
Treatment and coating of metals, general mechanical engineering on fee or contract basis	Other manufacturing
Cutlery, handtools, and general hardware	Other manufacturing
Furniture; Manufacturing N.C.E.	
Furniture	Agro-manufacturing
Jewelry and related articles	Other manufacturing

Notes on the Construction of the Ethiopian Social Accounting Matrix 1999/2000

I. General remarks

1. Agriculture

Altitude has been the common way defining highland and lowland areas in the agricultural sector. In Ethiopia, farmers living in an area of over 1,500 meters above sea level are classified as highland farmers while lowland farmers live below this altitude. However, such classification does not adequately capture the growth potential of the agricultural sector in different agro-ecological zones. Recently, a study by the International Food Policy Research Institute (IFPRI) (2004)²⁹ used the “length of growing period” method developed by FAO to classify administrative zones in the country into highland and lowland areas. This method of disaggregating the agricultural sector is adopted in the construction of the SAM. On the basis of this classification, zonal level information from the agricultural sample census conducted by the Ethiopian Central Statistical Authority (CSA) is used to derive the output and value-added estimates.

The division of the value added into the return to labour and operating surplus of the peasant sector is made based on the study by Ministry of Economic Development and Cooperation on ‘National Economic Parameters and Conversion Factors for Ethiopia (1998)’. The ratio of factor rewards obtained from the study is applied to the value added to estimate the rewards of each factor of production of the peasant sector. According to the study, about 60% of the value of agricultural output is the return to labour, while the remaining, after accounting for intermediate inputs, is the return to capital and land (or operating surplus). This operating surplus is apportioned to capital and land based on the coefficient obtained from the 1987 SAM for Ethiopia.

The activities of public and private commercial farms are estimated based on the information obtained from the public enterprises supervising Authority, the respective enterprises, as well as production of selected cash crops by peasant farmers.

2. Manufacturing industries

A series of surveys of the manufacturing sector are available. The 1999/2000 report on large and medium-scale manufacturing activities (for both public and private) provides information on the value of intermediate inputs (value of raw materials), gross value of output, value added, number of employees, acquisition of capital goods (for investment purposes), transaction costs (transport and advertising expenses), and indirect taxes.

There are, however, only two surveys for cottage and small-scale manufacturing: for the years 1995 and 2001. Hence, actual information is not available for the year 1999/2000. Information for the base year (1999/2000) has been generated by computing the growth rate between the two data points and interpolate (backward) starting from the latest information (2001/2002). This implicitly assumes that

²⁹ Refers to the paper titled ‘Agricultural Growth Options and Investment Strategies in Ethiopia.’

recent information is better collected and recorded than earlier ones. Information on grain mill services is available for the year 2001/2002 only and data for the year 1999/2000 has been generated based on the share of these services in the former year and the growth rate of small-scale manufacturing in the intermediate period.

3. Other Industries

Included in 'other industries' are mining and quarrying, water and electricity, and construction. Survey of quarrying activities by the CSA and information from mining enterprises (public and private) are used to estimate the sector's inputs use and corresponding output.

Output and value added in electricity sector is estimated based on the financial statements of the Ethiopian Electric and Power Company (EEPSCO) - the sole producer and distributor of electricity in the country.

Water output is estimated based on the information from Addis Ababa Water Sewerage Authority, other municipalities and welfare monitoring survey (for rural water).

Government budgetary revenue and expenditure accounts and information from public enterprises are used to estimate output of government construction. The various establishment surveys of CSA, information from the Ethiopian Investment Authority, and data from Disaster Preparedness and Prevention Commission (DPPC) on the construction activities undertaken by NGOs are used to derive the private sectors' construction output. The report on the survey of contract construction activities of CSA (1999/2000) is the main source of information on the cost structure of the sector, which in turn is used to classify the intermediate inputs by commodity groups.

4. Services

The service sector comprises the activities of trading, hotels and restaurants, transport and communications, financial intermediation, real estate and business, public administration, education, health and domestic and other services. This sector is divided into two activities. The first, referred to as 'Services - public', produces education, health, public administration, and other related services. It also produces private goods such transport and trade services. The output of the latter type of services is allocated to the commodity group 'other services'. The second is called 'Services - private'. This activity primarily produces distributive services. However, the growing provision of education and health by the private sector is also included here. This provision is added to the output of 'public good/services' commodity group since it represents private provision of public goods/services. The rest of the activity's output is classified as part of 'other services'.

A wide range of sources of information is used to estimate the output and inputs of the sector.

a. Trade, Hotels and Restaurants

The 1994 EFY (or 2002) Report on Distributive and Service Trade Survey of CSA is used to derive the output and value added of trade, hotels and restaurants and business service sectors. The survey provides information on production, intermediate cost and value added. Data for the year 1999/2000 are computed backward based on the 2002 survey report. Note that the growth rate of the sector is obtained from the national income accounts statistics.

b. Transport and Communication

The data used in estimating output and input (by commodity type) from transport and communications are mainly the income and expenditure statements of respective enterprises.

For air, water, and rail transport and telecommunications the only service providers are government enterprises. Output and inputs are estimated directly from the income and expenditure statements of the enterprises. On the other hand, road transport (both passenger and freight) in Ethiopia is mainly carried out by private operators who do not have income statements. As a consequence, results from studies carried out on the sector are used to establish coefficients on average load factor, distance covered per day, working days and intermediate costs for each type of vehicle and carrying capacity. Applying the ratios and using the number of vehicles in 1999/2000 give the total passenger-km and freight ton-km covered. Multiplying these with average charge per passenger-km and per freight-ton-km gives the value of output. The intermediate inputs used are also estimated in the same way.

c. Financial Intermediation

Information in the form of income and expenditure statements as obtained from respective institutions is used to estimate the output and inputs used.

d. Public Administration

The expenditure and revenue performance report of the Ministry of Finance and Economic Development is used to derive the output as well as the inputs used in the sector. Since the services of government have no market value, output and value added are estimated based on the cost of providing such services. Gross output of the sector is equal to the sum of employees' salaries and cost of inputs (purchase of goods and services).

e. Education

For government education services, gross output and value added are computed by the cost approach in the same way as the public administration. For the services of non-government education and night school, estimates of output are made by multiplying the number of students in each program, obtained from Ministry of Education, with the annual tuition fee of each school program. The cost structure of government schools is used to determine the inputs used in non-governments schools.

f. Health

Similar to education sector, the major provider of the health service is government. The output of health services by government is estimated based on the budgetary revenue and expenditure report of the Ministry of Finance and Economic Development. In the case of private health services, output and inputs per establishment are estimated for hospitals, medium and higher clinics and small clinics based on a preliminary survey and multiplied with the respective numbers of private health institutions in 1999/2000.

g. Domestic Service

This class includes the activities of private households employing all kinds of domestic personnel. Value added from this sector is estimated by multiplying the number of persons engaged in these activities (obtained from the labor force survey) with average earning per person (obtained from CSA retail price). There is no intermediate cost involved on the provision of domestic service and hence value added for the sector is equal to output.

h. Import and Export

The import and export of goods and services is estimated based on the balance of payment statistics of the National Bank of Ethiopia and the Customs Authority.

II. Specific remarks

1. Wages refer to total wages and salaries paid to both local and foreign workers. Remuneration to family labour and unpaid apprentices has been imputed based on the average wage rate the respective activity.
2. Transaction costs records transport and trade margins.
3. Both payments for industrial and non-industrial services are recorded under other services. Non-industrial service costs include payments to professional services, postage, telephone, insurance, and rental payments. And industrial service payments are made to services such as contract work, repair and maintenance performed by others (CSA, 2001).
4. Infrastructural capital includes vehicles and other fixed assets other than buildings and other construction works.
5. Other capital includes machinery and equipment and non-residential buildings and other construction works.
6. Wood and wood products such as log and plank are recorded other agricultural products.
7. Capital income for farm household is mainly from small-scale and handicraft/cottage industries.
8. Wage earners do not receive any dividends - a realistic assumption in a country where there is no stock market.
9. Transfers from the rest of the world accrue to rural and urban households according to the data on the proportions of income they generate from such transfers reported in the HICES (1999/2000). The share of rural households go to farm households, while that of urban households is divided between wage earners and entrepreneurs according to their share in the urban economically active population.
10. The remittances from a domestic household group are divided among all such groups according to their share in the economically active population.
11. Private transfers from the ROW are taken from the BOP statistics of NBE. These transfers are appropriated to farm households and entrepreneurs according to the share of remittance received from abroad as obtained from HICE. Note that transfers from NGOs (non-profit institutions serving households as per the 1993 SNA) are equally distributed to all households.
12. Both NGOs and government transfers can take the form of food-for-work activities in both rural and urban areas. However, lack of data meant that only the food-for-work program coordinated by the government are included in the SAM. The rest of food aid is assumed to flow to households as a direct transfer.
13. Pension and social security payments are government transfers to farm households and wage earners.
14. Entrepreneurs also obtain income in the form of profits from cottage and small-scale industries, private large and medium-scale agro-industrial and other industrial activities.

15. Direct taxes, foreign trade taxes (import tariff and export taxes) and government consumption expenditure are taken from the government revenue and expenditure accounts.
16. Household Income, Consumption and Expenditure Survey 1999/2000 (HICES) is the main source for household expenditure on goods and services.
17. Government income in the form of dividend and residual surplus are obtained from the revenue and expenditure accounts. Government receives dividends and residuals from different public enterprises according to the size of their operating surplus.
18. It is assumed that dividends from urban private enterprises accrue solely to entrepreneurs.
19. Urban consumption expenditure is divided between wage earners and entrepreneurs according to their expenditure share.
20. The output of food-for-work activity is essentially public investment on infrastructure. It enters the capital account:
 - a. as transfer to the government. Since the consumer of all collective goods and services is government, the output of food-for-work projects is also assumed to be consumed by government. However, since government does not pay for the consumption of food-for-work goods, government receives transfer from the food-for-work project amounting the value of the output;
 - b. as an investment in infrastructural capital.

The output of the food-for-work activity is valued as the sum of the value of cereals, oil, and wheat flour allocated to it. The following imputations are used for the purpose.

- a. Cereals are valued at the national average wheat price since wheat is the main cereal involved.
- b. Oil is valued at the national average retail price of imported oil.
- c. Others (mainly consisting of wheat flour) are valued at the national average retail price of "white" wheat collected by CSA.

The most complete information on food-for-work is available only in G.C. which is not consistent with the Ethiopian budget year. Thus, assuming that the flow of food aid is uniform, an average of two consecutive calendar years (i.e. 1999 and 2000) has been used.

21. Infrastructural capital in the peasant farming activity:
 - a. The role of irrigation is included via infrastructural capital as input in production.
 - i. cultivated area under irrigation is taken from CSA agricultural census;
 - ii. the value of the irrigation structures is estimated using the information on costs in the World Bank report (ETHIOPIA: World Bank Rural Development Policy Note - Water Sector and Irrigation - 2003).
 - b. Assume that the bulk of other infrastructural capital (soil conservation structures) for peasant farming is accumulated through food-for-work. Assume also that the reported quantity of 'output' of the food-for-work activity one year before (1998/99 in this case) represents the total stock of this form of capital accumulated over previous years. Then

value the quantity of food aid spent on the corresponding food-for-work activities - this approximates the available stock of infrastructural capital, in value terms, for 1999/2000;

- c. the total stock of infrastructural capital is calculated as the sum of the values computed in (a) and (b) above.
- d. the return to capital is decomposed into infrastructural and other capital by applying the share of each in the value of total capital.

23. Consumption expenditure

- a. Calculate disposable income for each institution other than government as the sum of factor income and inter-institution transfers less direct taxes. Direct taxes are obtained from government accounts.
- b. Saving is estimated by applying the saving rate (obtained from HICES) on the household disposable income for rural and urban households separately. The saving rate of urban households is further decomposed into saving by wage earners and entrepreneurs. It was assumed that the saving rate of entrepreneurs is relatively higher than the wage earners. Accordingly, the saving rate of entrepreneurs is estimated at one standard deviation higher than the average saving rate of different urban centres while that of wage earners is one standard deviation less than the same average rate.
- c. The remaining disposable income of households is apportioned among commodity groups according to the corresponding expenditure share from HICES.

24. Education and health expenditures

Current government and household expenditure on education and health services are taken as investment on public goods. Entries on the current expenditure and capital account of households and government are adjusted accordingly.

For the government, the adjustment involved subtracting current expenditure on education and health from government consumption and adding these expenditures to government investment on public goods. The same amount is also included in government saving. For households, expenditure shares of education and health services obtained from HICES is applied on disposable income of households to determine the levels of expenditure on these services. These are then deducted from household consumption expenditure and added to households' saving/investment.

25. Household demand for education and health services provided by the private sector is estimated on the basis the relative shares of these services in household expenditures that are computed from HICES data. In other words, total private output on education and health services is distributed among households according to these relative shares.

26. Intermediate Consumption

The intermediate consumption of manufacturing industries is disaggregated by commodity groups based on detailed input data obtained from CSA.

The major activity in small-scale industries is the activities of grain mills. As the grain that is milled in the mills is not the property of the establishments, food grain cannot be taken as input in these enterprises.

27. Indirect taxes

Activity outputs are measured before-tax. They have to be adjusted downwards by the amount of indirect taxes.

28. Investment

The value of commodities used for investment was initially estimated based on information obtained from different establishment surveys of CSA and data from the Ethiopian Investment Authority. This procedure appears to result in double-counting since the estimated investment demand for 'other industrial products', representing the bulk of investment demand, considerably exceeded the total supply of these commodities. As a result, it was deemed better to estimate investment demand for 'other industrial products' as a balancing item.

29. Trade

'Trade and transport' are classified under the 'Other Services' activity and its output (trade and transport margin) is included in the SAM accordingly. The output of the sector, however, can only be seen as a component (in the form of transactions costs) in the prices of commodities used in intermediate or final consumption. Accordingly, the output of trade and transport is distributed in the commodities account as payment by the commodities to the 'other services' commodity. This will also ensure the balance between supply and use. More specifically:

- i the values of trade and transport are added to 'other services' account and the value added of the sector has been adjusted accordingly.
- ii the value of transaction cost corresponding to each activity is added to the 'other services' account.
- iii the value of trade and transport margin (ITM), after accounting for intermediate inputs, is apportioned to each commodity account.

30. The output of forestry, which is included in the 'other agricultural products' commodity group, is estimated on the basis of consumption data from an energy study (reference?). The latter study gives a more reasonable estimate of forestry consumption compared to HICES (HICES believed to overstate the actual forestry consumption in the country). Hence, production is equal to the consumption estimate thus obtained and household consumption adjusted accordingly.

31. Like many other household budget surveys, the 1999/2000 HICES of CSA is believed to have underestimated the value of household expenditure on alcohol and tobacco. This has resulted in an imbalance in the supply and use of agro-industrial products (i.e. supply being significantly higher than demand). For instance, alcohol consumption by households was about Birr 152 million in 1999/2000 which is less than total sales of Meta Ambo Brewery Factory. Because data on output of these products is relatively more reliable, the household consumption of these items should be estimated based on the value of output after deducting the value of intermediate inputs and exports.