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The Roles of Agriculture in the Development Process: Recent Experiences and Lessons from Ethiopia.

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Abstract: Political and economic reforms have been implemented for a number of years to alter the institutional, infrastructural and financial/economic environment in which Ethiopian agriculture operates. Changing the environment in which agriculture operates may be an intermediate goal; at the end, the question remains; have the new reforms and policies had the capacity to improve the performance of the sector and its roles in the development process of the economy? And have they contributed to the generation of positive environmental externalities? In comparison to the two decades (1970s and 1980s) that precedes the reform of the 1990s. Ethiopian agriculture has been doing better since the reform. Total production of food crops has improved and the rate at which per-capita production has been declining is narrowed. Moreover, the volume of agricultural commodities exported has slightly improved; while new non-traditional commodities like flower have joined the list of exported commodities. But all those improvement have not been sufficient to lift up agriculture's role in the development process of the Ethiopian economy nor have they brought a full and sustainable recovery to the sector. Ethiopian agriculture should still demonstrate the following desirable characteristics if it is able to serve as the engine of Ethiopian economic growth: it should grow at sufficiently higher rates over a number of years; any development in the sector should be able to improve rural labour productivity which is an important precondition to stimulate the non-agricultural sectors and transformation of the sector; the source of growth should principally originate from increased investment and efficient use of resources rather than from the use of additional scarce natural resources especially land, and; agriculture should be supported to establish strong and dynamic linkages with other sectors especially with the industry.

1. Introduction: Agriculture in the Ethiopian Economy

Ethiopia is an agrarian country where 85% of the population lives in rural areas where agriculture is the dominant economic activity. Agriculture is the largest sector in the economy¹ contributing to about 40 percent to GDP and 90 percent to the export earnings. The sector, however, has not been providing sufficient food and livelihood for the population. More than 5 million people suffer from chronic food insecurity. Most of these people live in rural areas where smallholder agriculture could not meet the challenge of providing employment and livelihood for the growing population. Moreover, farmers' income could not grow to catalyze growth in other sectors of the economy.

The long term strategic issues in Ethiopia can be reduced to three key questions that largely depend on what happen in the agricultural and rural sectors: i) how to reduce the absolute number of poor people, ii) how to reduce and eliminate chronic food insecurity and child malnutrition, and (iii) how subsistence agriculture could be transformed into a business oriented dynamic economic sector that progressively play its full role as the engine of the economy.

Despite the basic role agriculture could play in the fight against these problems, interventions that required to bring these changes should not confine to the agricultural sector or rural areas.

¹ Even though contribution of agriculture to GDP remains significant, it is decreasing. In 1991/92 it was responsible for 57% of GDP to fall to 43% in 1999/2000 fiscal year. The share of services in GDP exceeded that of agriculture for the first time in 1999/2000 as it grows at a steady pace of 8% per annum exceeding the 1.8% of agriculture over the last decade (EEA/EEPRI, 2002).

The Ethiopian government has implemented various macro and sectoral reforms to deal with the aforementioned problems. The measures have brought macro economic stability to the economy. Moreover, the new national agricultural extension program that has promoted a new technology package of high-yielding seeds and fertilizers to smallholder farmers has helped to improve national grain production. As farmers adopted the new technology and the weather cooperated, cereal output in the last half of the 1990s averaged 10 million metric tons a year, 4 million more metric tons per year than in the 1980s. Despite this seeming success, nearly 14 million Ethiopians faced starvation in 2002/03, a crisis that successfully managed by massive international food aid and improved government early warning system and efficiency in relief operations (Eleni Gebre-Medihn, 20030). However, the policy reforms were not sufficient to stabilize the food economy or reduce the role of food aid that has helped to avoid social and economic crises.

Moreover, all other performance indicators such as yield (land productivity), per capita production, and agricultural incomes indicate that the sector continues with its sluggish and highly erratic performance. With some differences among different crops, yield level of cereals at national level remains virtually unchanged and fluctuates in their historical margin of 11 to 14 quintals per hectare. The inclusion of more and more of marginal and degraded lands into cultivation which contribute both to low yield and high soil erosion explains partly the problem of low returns from increased use of fertilizers. Similarly, per capita grain production and value added in the agricultural sector have failed to improve even with a series of government interventions. The agricultural sector which has failed to transform from the present semi-subsistence, low-input, low-productivity agricultural system requires an in-depth study. This study will try to look at the recent performance of the Ethiopian agricultural sector, its structural problems, and recent policy measures taken to ratify these problems and to improve the performance of the sector. Finally the response of the sector to policy reforms will be discussed that will be followed by some conclusion and recommendations.

2. Data and Methods

Published data were the primary source of data for the study. Government statistics that indicate the trend on the performance of the agricultural sector and its role in the economy were analyzed to establish the impact of economic reforms and policy measures on identified performance indicators. Observed changes on these performance indicators were analyzed using a before-after method. The existence of structural problem in the sector was examined using time series data on employment and productivity in the sector and its linkage with the non-farm sectors.

The study employed a before-after approach in analyzing changes on the identified variables related to the role and performance of the agricultural sector since the reform. The major techniques used are simple descriptive statistics like index numbers, and growth rates. As there may be many factors operating simultaneously to affect the dependent variable (i.e. changes in the role and/or performance of the agricultural sector), it may be difficult to attribute observed differences to policy and institutional factors selected to be considered in the analysis. However, it is possible to say whether any policy changes (carried out since the 1990s) have been achieved or not achieved their intended objectives by comparing what happened since the introduction of the policies and institutional reforms. It is also possible to say evaluate policy measures in terms of their relevancy and adequacy.

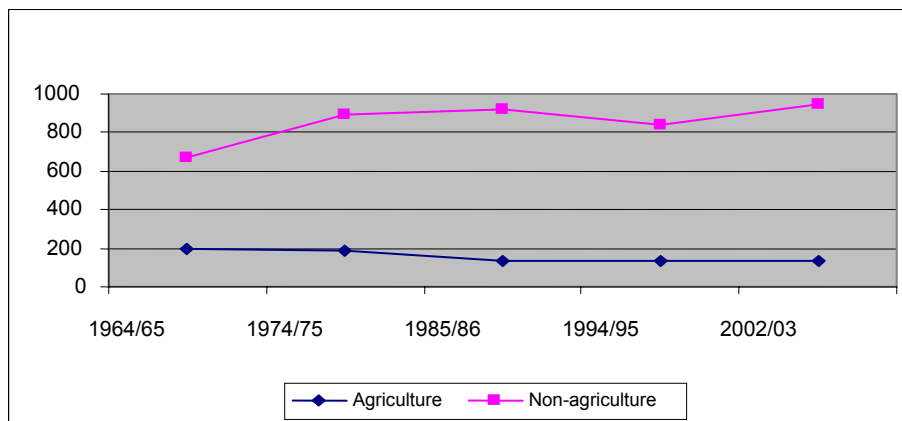
3. Structural Weakness of Ethiopian Agriculture

The Ethiopian economy is among the least urbanized economy with an estimated rural to urban population ratio of almost 9 to 1. A recent study indicates that the ratio of farmers (i.e. suppliers) to consumers is 7 to 1 (Cour, 2003). It is also a food deficit economy with 8% (5 to 6 million) of its population is chronically food insecure. Agriculture is largely subsistence oriented and the prime motive for farm production is to meet own food need². The sector is largely a non-monetized economy. In general, the supply and demand side of the food production equation is largely inseparable in Ethiopia.

The structure of the farm sector could be analyzed in terms of the trend in farm labor productivity, farm employment and linkage of the sector with the non-farm sectors and in particular to the industrial sector. The degree of monetization of the agricultural sector is also an important indicator.

The major manifestation of the structural weakness of the Ethiopian agricultural sector is the declining trend on rural labor productivity over the last four decades. A cursory look at the performance of agriculture in Ethiopia over the past four decades clearly shows that the per capita value added in the sector has been declining. By comparison, over the past four decades, the sectors that have performed reasonably well are industry and services (the non-agricultural sectors) which were growing rapidly during the same period (see figure1). This clearly reflects the relative impoverishment of the overcrowded rural economy. This is not only a result of the actual increase in productivity in the urban sector, even more worrying, it is a product of the decline in productivity in the primary sector by about 0.2% per year (Berhanu Nega, 2003). However, the decline in labour productivity in the rural sector may be more explained by the disproportionately large number of people newly added to the rural sector rather than to the actual decline in total value-added by the sector. Only about 8.2 million people were added to the urban population during the past 40 years (2002/03 and 1962/63), while the rural population increased by about 38 million during the same period². Some estimates have indicated that unless the declining trend in the performance of the agricultural sector is arrested and reversed, poverty situation in the country will rapidly aggravate as a result of which, by 2015, close to about two-third of the population will be in absolute poverty. At the same time, it was shown that with little improvement in agricultural labor productivity, poverty could be reduced substantially by 2015 (Getahun, 2003). Even a study made by the government indicates the need to find ways to rise the productivity of rural labor in general and farm labor in particular (MOFED, 2002). The declining trend in rural labor productivity together with declining per capita food production has not only indicates the structural weakness of the agricultural sector but also the sector's declining capacity to serve as the engine of the economy.

Figure 1: Per-capita value added in the agricultural and non-agricultural sector (USD)



The structural problem of Ethiopian agriculture is also clearly manifested if one looks closely at the trend of agriculture's contribution to GDP and employment. The share of agriculture in the total GDP has declined from 57.5% in 1982/83, to 53.5% in 1992/93 and more rapidly to 39.4% in 2002/03. On the other hand, agriculture's capacity to provide employment has significantly declined. In 1984, for instance, there was 13.3 million economically active people in rural Ethiopia where about 58.8% had self-employment in the agricultural sector. While in 1994, the number of economically active rural population had increased to 23 million but the share of agriculture in total employment had declined to 39.6% (Shumiye, 2003)³. In

² However, population growth rate is very high in urban areas compared to rural areas.

³ Even though original data sources did not mentioned the structure of employment based on economic sectors, this study assumed the figure indicating the percentage of self-employed people in rural areas as employed in the agricultural sector. This doesn't change the reality as non-farm employment in rural

general, the contribution of agriculture to production and employment has been declining. Based on experiences of developed countries, economic literatures indicate that agriculture's role in GDP and employment has been declining in the process of economic growth. Despite this natural process of shrinking agriculture's role in a growing economy; the recent trend in agriculture's contribution to GDP and employment does not indicate any structural transformation of the sector arise due to economic growth.

Table 1: Type of employment for active labor force (percent)

Type of employment	1984		1994	
	Rural	Urban	Rural	Urban
Self employed	58.8	40.8	39.6	39
Unpaid family labor	37.5	1.5	55.0	10.5
Others	2.9	56	2.8	47.5
Employer	0.8	1.7	2.6	3

Source: CSA, 1999 (quoted from Shumiye Abuhaye (2003)).

Productivity growth in agriculture is necessary to enable agricultural income to rise faster than rural population growth – i.e., to achieve growth in rural incomes. However, given that rural populations in Ethiopia is still rising at a rate of 2-3% per year, there would need to be sustained agricultural growth of at least 5-6% per year to appreciably raise rural incomes unless rural population growth could be curbed. Rural population could be curbed either through declining birth rates and/or through rural-urban migration. Historically, sustained rural-urban migration has typically occurred through a non-farm sectors development that was able to absorb rural labor off the farm, which is manifested as the industrial revolution kick-off both in Europe during the 19th century and in China very recently. Apart from technological changes, an increase in the area cultivated per agricultural worker was one of the essential conditions of an increase in productivity. By contrast to the experience early and late industrialized countries, the non-farm sector in Ethiopia has been in malaise. Modern industry in Ethiopia remains mostly small, stagnating at around 10 – 12% of GDP between 1982 and 2002 and less than 5% employment in 1995 (EEA/EEPRI, 2003, Shumiye, 2003). Limited employment opportunities in the non-farm sector and tenure insecurity have eroded the prospect of rural-urban migration.

There is a growing recognition that high population growth and low urbanization has increasingly caused a major challenge to subsistence agriculture that could not absorb the growing labor force. In 10 years time between 1984 and 1994, rural unpaid family labor has increased by 17.5%, while the percent of self-employed family farm has declined by 19% (Shumiye, 2003). This shows the increasing trend of abandoning the practice of dividing farm lands to their working age children by Ethiopian farmers. Instead rural households are trying to challenge this increasing problem by allowing their children of working age to work together on the family land as redistributing the already small and fragmented land make impossible their preferred alternative of providing part of their land to their children. This growing trend could also indicate the absence of non-farm employment opportunities in rural areas or incentive to migrate to other areas temporarily or permanently.

Many of the problems now facing the government with respect to rural poverty and underdevelopment of the domestic markets are a direct or indirect consequence of the de facto “rural bias” of the strategies and policies followed by successive governments of Ethiopia, including the present one. The fact that the liberalization of the economy that adopted in 1991 is not yet accompanied by a parallel liberalization in population dynamics is, at least partially, due to an insufficient understanding of the mechanisms and issues involved (Cour, 2003).

The aforementioned discussions clearly demonstrate the structural problems the Ethiopian agriculture has faced. Policy reforms undertaken during the reform period were not sufficient to make agriculture a dynamic economic sector. In general, the agricultural sector is still expected to demonstrate the following

Ethiopia is negligible. Moreover, the statistics indicate that over 95% of economically active population was registered as either self-employed or unpaid family labor both in 1984 or 1994.

three or four desirable characteristics if it is able to serve as the engine of economic growth and ignite a sustainable development path to itself and to the economy

- it should grow at sufficiently higher rate over a number of years. The growth should be at least at a little higher than the growth rate of the population,
- any development in the sector should be able to improve rural labour productivity which is an important precondition to induce sustainable use of natural resources (land, soil, forest and water) and stimulate the growth of the non-agricultural sectors,
- the source of growth should principally originate from increased investment and efficient use of resources (from increased productivity) rather than from the use of additional scarce natural resources especially land (i.e. future increases in food production must exploit biological yields on existing land), and
- agriculture should be able to establish strong and dynamic linkage (both forward and backward linkages) with other sectors especially with the industry sector.

4. Agriculture and Economic Policies during the Reform Period

Since the fall of the military government in 1991, many political and economic reforms have been implemented to change the institutional, infrastructural and financial environment in which Ethiopian agriculture operates. Changing the environment in which agriculture operates may be an intermediate goal; the ultimate question, however, remains had the new reforms and policies the capacity to improve the performance of the sector and its roles in the development process of the economy? And had they contributed to the generation of positive environmental externalities? The following section will briefly discuss the political and institutional reforms undertaken during the reform period. This follows by a section that analyzes the response of the agricultural sector to the reforms.

Ethiopia has adopted different policies and institutional reforms to bring in economic recovery and dynamism to its agricultural sector. The reforms could be grouped into two: (i) those which took the form of structural adjustment program (as prescribed by the IMF and WB), and (ii) reforms that could be considered largely as home-grown or reflect thoughts firmly believed by national policy makers.

4.1. Macro reforms of the SAP

Civil war, recurrent drought and the command economic system have contributed to the poor performance of the Ethiopian economy for two decades that precedes the 1990. The end of the war in 1991 gave rise to economic reform program, which took the form of Structural Adjustment Program (SAP) under the auspices of the World Bank and IMF. The reform included the removal of substantial taxation of agriculture, market liberalization and devaluation. The restrictions on grain movements, the quota system of grain delivery (to the parastatal Agricultural Marketing Corporation) imposed on farmers and the system of fixed pricing for farm produce was abolished. The fertilizer market was liberalized, and finally fertilizer subsidy was considered undesirable in 1997 (Mulat, 1999). Collective and state farms organized based on socialist principles were also dismantled. The reform also includes the decentralization of political power to lower levels. Population policy that aims to reduce fertility rate and improve child mortality was also adopted.

These changes in macroeconomic policies were expected to correct distortions in the operation of the economy and to affect the role and performance of the agricultural sector either through their effect on relative prices between agricultural and non-agricultural, and/or tradable and non-tradable commodities and/or resource allocations/utilizations. As farming in Ethiopia is subsistence oriented and largely non-monetized (i.e., most production and consumption activities of farmers are carried out outside the market) and operate in a highly risky environment where erratic rainfall is frequently prevail, farmers' responsiveness to these changes in macroeconomic policies is expected to be very limited.

However, as the shift in policies during the reform period are not only changes in policies but also a fundamental change in orientation from a socialist economy to a market economy, it is not unrealistic to expect some concrete changes on the performance of the agricultural sector. Yet, the exercise of separating the effect of macroeconomic policies from other factors including the weather factor or deteriorating terms

of trade for exportable farm products is not a simple task. Despite such constraints, the major impacts of the macroeconomic policies undertaken during the reform period can be evaluated by identifying and measuring key performance indicators and comparing them with anticipated outcomes and intended objectives of the reforms. For example, the impact of correcting overvalued exchange rate should be reflected in increased domestic and/or farm gate prices of exportable products and improved supply of those commodities or compensating to some of the negative impact of deteriorating terms of products for primary commodities.

4.2 ‘Home-grown’ policies

There are two policy reforms that could be considered largely as home-grown or reflect thoughts firmly believed by Ethiopian policy makers. The first one is state ownership of land which is a continuation of policy adopted in 1974 during the radical land reform of the previous government. However, the pre-reform practice of frequent land redistribution was discontinued and currently the government has started to provide land certificates with the objective of improving tenure security. Despite lack of details on the rights associated with this new initiative, the certificates will not guarantee peasants the right to sell their land or use it as collateral which limits land to be used as a capital good. Other details the certificates expected to provide to peasants especially those related to the conditions and frequency of land redistribution or confiscation of rural land for public use are not yet made public. Moreover, the impact of certificates on existing land rental market which is not only undeveloped but also operates in situations where institutions required to enforce contracts or breach of contracts are either not existed or lack the laws to arbitrate. This ambiguity has led existing land rental market to concentrate to persons that are closely known to each other or living in same villages which, consequently, hinders the optimal utilization of land or lead to high transaction costs. Existing imperfections on the land rental market could also lead to short-term contracts with their expected negative impact on long-term production investments.

The other policy or development strategy that supposed to reflect the accepted wisdom of Ethiopian policy makers is the Agricultural Development-Led Industrialization (ADLI) development strategy that has been adopted in mid 1995. The ADLI strategy is among the four components of the Sustainable Development and Poverty Reduction Program (SDPRP) of the government that directly focus on economic development. The strategy acknowledges rural areas in general and agriculture in particular as having superior growth linkage among all other sectors of the economy. The ADLI strategy gives special emphasis to technical problems of the agricultural sector notably to fertilizers and improved seeds. It assumes that these technologies will not only improve agricultural productivity but also allow agriculture to be a dynamic economic sector that could serve as the engine of the economy (Berhanu and Befekadu, 2003). A new extension system which was known as Participatory Demonstration and Training Extension System (PADETES)⁴ was designed to promote these technologies. Despite some improvement in total grain production and some improvement in yield in different pocket areas, many years experience with ADLI and PADETES⁵ demonstrated that their impact on agricultural productivity and per capita production at national level was very limited (EEA/EEPRI, 2004).

Since its inception, the ADLI development strategy has been criticized by scholars both at theoretical/conceptual and empirical levels (Berhanu and Befekadu, 2003). Some of the major arguments against this development strategy are related to the overcrowded rural economy that continuously suffers from agriculture’s limitation to provide livelihood to the population that expanding very fast. On the other hand, labor mobility is either discouraged or not supported by policies or the lack of non-farm employment

⁴ Even though PADETES was not only about promotion of fertilizer and high-yielding varieties, it was extremely associated with these two technologies and a credit system designed to facilitate smallholders’ access to these technologies. The objective of PADETES, however, was to increase the supply of food, industrial and export crops, improving productivity and income, ensuring rehabilitation and conservation of the natural resource base, and in empowering farmers. To this end, it emphasizes on the package approach to agricultural development (MoA, 1994c) and nurtures the research-extension and the input-credit distribution linkage (Belay, 2003).

⁵ ADLI first appears in the government development agenda during the 1994 election campaign. Consequently, PADETES formulated and implemented for a number of years.

opportunities. Moreover, despite ADLI's recognition of the importance of investment in the agricultural sector where returns per unit of resource is believed to have either wider impact or/and a higher return, it doesn't supported by adequate public or private investment. The strategy overlooks the issue of wealth creation and capital accumulation in rural areas or does not facilitate capital mobility to rural areas.

The government policy of and commitment to poverty reduction may overshadow the role of capital and modern management that could lead to economic growth and poverty reduction through other redistributive channels. Therefore, rural credit and finance should get adequate attention from policy makers. In addition to facilitating farm investment, adequate emphasis should also be given to deal with factors that threaten the profitability and sustainability of farm investment. It is also important to recognize the problem of Ethiopian subsistence oriented agriculture which accommodates too much unemployed or underemployed people that reinforce the possibility of poverty perpetuation and diminish any minuscule chance of capital accumulation within the rural sector.

In general, ADLI is overemphasized on technological problems of the Ethiopian agriculture and has poorly addressed concrete issues behind the vicious cycle of low productivity, low income and poverty that has been characterize the Ethiopian subsistence agriculture. Technology is one element, but rural finance and market, population growth and labor mobility and the development of non-farm sectors should be the major ingredients in the fight against rural poverty.

5. Agriculture's Response to Recent Policies and Institutional Reforms

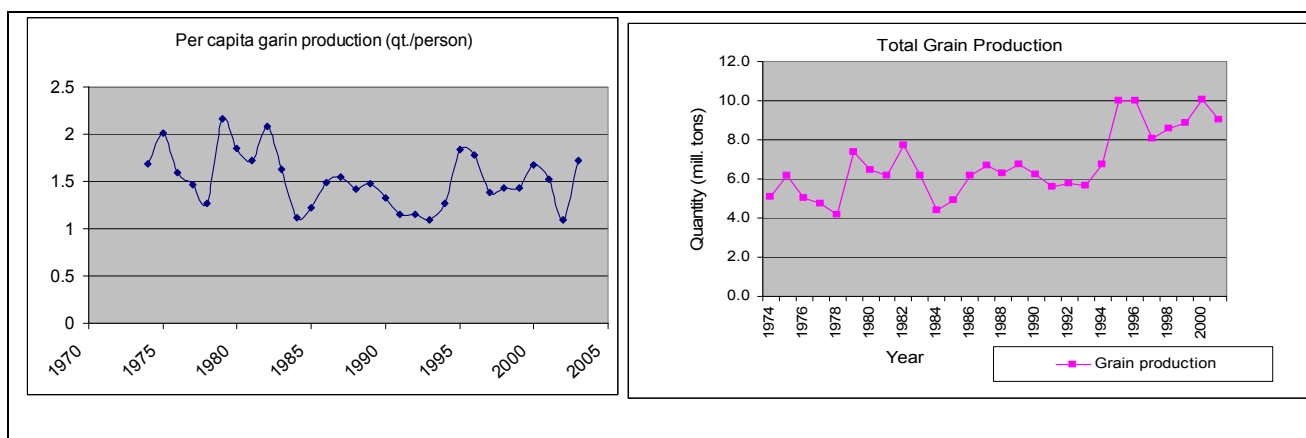
5.1 Food production and food security role of agriculture

Transforming agriculture and expanding its productive capacity is the prerequisite for sustained economic growth in Sub-Saharan Africa. It is impossible to stabilize the macro economy without stabilizing the food economy. Food prices are so important in the overall welfare of consumers and producers that some reasonable degree of stability is essential. Faster agricultural growth increases supply and stock building of food, hence restraining and stabilizing local price of food staples. The main beneficiaries of lower prices are poor households who spend 40 to 60 percent of their income on food items. Moreover, agriculture is often more labor intensive and faster agricultural growth is expected to generate more employment for landless and near landless groups. It has been reported that poor households in Africa have been most seriously harmed by the negative growth in real farm output per person (Lipton, 1998; Timmer, 1993, cited by Mulat, 1999).

In Ethiopia total food crops production has been improved and the rate at which per-capita production has been declining is narrowed since the 1990s reform. This trend has still continued with some interruptions associated to the recurring problems of drought and output markets. However, food production is still too little to improve the level of per capita production and consumption to any desired level. The country, for instance, produced only 162 kg and 148 kg of grains in 2000/01 and 2001/02 *mehr* season, respectively, on per capita basis. Even the 2003/04 record level production of 117.5 million quintals of grains is still a modest improvement when looked in terms of per capita production (i.e. 165.3 kg./person) which, together with the level of per capita income, indicates the progress or the lack of progress towards realizing the objective of food security. In general, average per capita grain production in Ethiopia fluctuates between 106 and 165 kilogram in the past decade which on average indicates a deficit of 60 to 100 kilogram of grain per person⁶.

Figure 2: Trend in per capita and total grain production in Ethiopia.

⁶ This estimate is based on the assumption that all energy requirement comes from grain (cereals, pulses and oil crops) consumption which largely reflects the reality especially in most parts of central and northern Ethiopia. The minimum daily calorie requirement per person used to compute the food balance sheet is 2100 kcal.



On the other hand, improved government support has helped to raise the use of modern inputs during the reform period. The use of fertilizers, for example, grew from 152,658 metric ton in 1992 to 313,387 metric ton in 2003/04. Similarly, the amount of improved seeds used increased from 11,843 quintals in 1995 to 177,783 quintals in 1999. During the same period, the amount of credit extended to small farmers rose from 8.1 million to 150.2 million Birr, and the number of farmers participated in the new extension system (PADETES) rose from 31,256 to 3,731,217 (MoA, annual performance reports).

This opposite trend in the use of modern farm inputs and stagnant food production (on per capita basis) indicates the existence of problems that has not addressed or the incompleteness of reforms implemented so far. The reforms could not address some of the basic problems of the Ethiopian rain-fed agriculture, notably the issue of high population pressure, erratic weather conditions and low and declining labor productivity. High population pressure coupled with low labor mobility or migration not only contribute for high level of rural poverty but also induced the cultivation of marginal and degraded lands that neutralize any gain resulted from increased use of fertilize in some areas.

Moreover, sufficient productivity growth in food crops production should be achieved, otherwise the price of food will remain high and the opportunity of diversifying into non-food cash crop production (i.e. the commercialization of agriculture) and non-farm activities that will encourage the overall process of structural transformation will not be realized. In view of the population explosion, it is likely that cultivated area per worker will further decline in Ethiopia, implying that rapid technological change has a continued role in raising labor productivity. In general, along technological intervention, non-farm employments and labor mobility should be supported and encouraged.

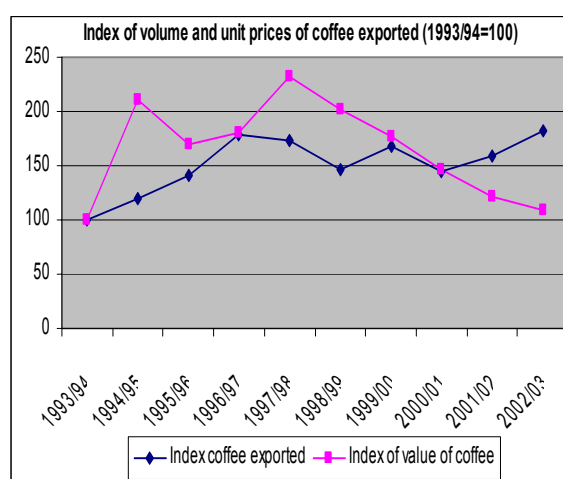
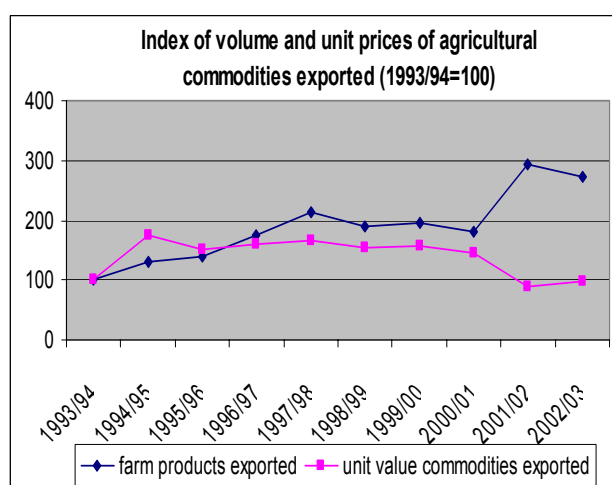
5. 2. Agriculture and the export sector

A few unprocessed agricultural products (e.g. coffee around 40%) contribute for over 80% of the country's foreign exchange earning. The performance of the agricultural sector has, therefore, a direct and significant impact on the performance of the export sector. For instance, 52.8% of the 8.1% growth in the total value of export in 1999/00 could be attributed to the agricultural sector. Similarly, a 3.9% decline in the value of agricultural export had a 55.9% share in the 4.9% decline in the growth rate of total value of export in 2001/02 (EEA/EEPRI, 2004). These data indicate the high dependence of the economy on a few and industrially unprocessed agricultural products⁷ and the vulnerability of the economy to the volatile international price of primary agricultural commodities.

⁷ Processed agricultural products like leather and leather products were not considered as agriculture's contribution to the export sector. However, non-agricultural exports (with the exception of Gold) are processed agricultural products.

Recognizing this fact, the government has provided various support and incentives to exporters and producers of export products to export more and more of their products to compensate lost foreign exchange earnings due to decline in world prices. The government has adopted new policies (e.g. trade liberalization and currency devaluation) which have contributed to the competitiveness of small farmers by improving the domestic price of these products and farmers' share in world price. But policy instruments in the hands of the government have very limited capacity to counterbalance the continued decline in world price. For instance, the contribution of agriculture to the export sector has been declining due to the continued decline in price of coffee. For example, agriculture's share in the total value of exports declined from 84% in 1999/00 to about 74% in 2001/02. The major contributing factor for the decline in the value of agricultural export is the decline in world price of coffee which has lost 40.2% of its value in four years' time between 1998/99 and 2001/02.

Figure 3: Index of volume and unit value of agricultural commodities exported.



The government has continued to support the export sector in various forms to compensate the negative effect of the continued decline in the world price of coffee. Government support has yield some positive results including the recent boom in the export of flower, a non-traditional commodity, and some progress in the volume of traditional export commodities like coffee. However, despite a continuous decline in the price of primary commodities which has an inelastic demand and a potential of increased supply other competing countries, adding value to these exported primary commodities through processing should get more emphasis. To this end, the long-term strategy should be to improve the linkages of agriculture and industry through the expansion of industries that could process primary export products. Otherwise, the vulnerability of Ethiopian farmers and economy to the volatile international prices could not be managed by tariff reductions and other incentives that promote the export of these unprocessed commodities. The economy needs some interventions that protect it from undesirable trend in the price of primary commodities in international market.

In parallel, effort should be made to improve the productivity of the food sector that will help to reduce food price and, consequently, will improve the profitability of the production of cash crops and non-farm products relative to food crops and contribute to the transformation of the agricultural sector.

5.3 Agriculture and industry in the development process of Ethiopia

The purpose of the ADLI development strategy has been to make the agricultural the sector the engine of growth for industrialization and the overall development process of the economy. The ADLI intends to increase in productivity and income of small farmers, which makes the great majority of the rural

population, that will lead to an increase in the demand of manufactured goods and a demand led industrialization process. Improvement in the productivity of agriculture has also assumed to make easy labor mobility from rural areas to serve as cheap labor for industry (The Government of the Federal Democratic Republic of Ethiopia, 2001). This is the logic behind the ADLI strategy. It has the argument that industrialization depends on agricultural improvements. Yet, despite its too much emphasis to the idea on demand lead industrialization, the strategy also recognizes the potential role the non-agricultural sector (industrial development) has in the development of the agricultural sector. However, its understanding on the mechanisms and issues involved to realize this objective and improve the linkage of the agricultural and industrial sectors was not sufficiently pointed out in the document.

Ethiopian agriculture linkage to the other economic sectors is very low. The sector is more linked to the rest of the world economy than to the domestic economic sectors. Recent developments in the economy have unable to reverse this undesirable trend. There are three explanations for this continued trend: (i) the agricultural sector has increased its consumption of imported inputs especially fertilizer, (ii) declined rural labor productivity due to high population growth and low labor mobility that diminish the chance of agriculture to provide farmers access (i.e. enough purchasing power) to local manufactured consumption goods, and (iii) increased access of cheap imported consumption goods has also reduced the competitiveness of local industries. In short agriculture's capacity to provide employment and market for the local industries and other sectors depends on the level and improvement in farm income, the degree of commercialization of the sector, and the type and strength of the linkage between the farm and non-farm sectors. Moreover, the trade liberalization policy could contribute to this trend by exposing domestic industries to unfair competition from foreign industries.

Value-added per agricultural worker in Ethiopia stands at 180 US\$, which is less than half of the SSA average of 392 US\$ (EEA database, 2003). Average rural per capita income has also continued to decline. In general, farm income is too low to allow Ethiopian farmers to engage into the cash economy and stimulate the linkage of the farm and non-farm sectors. State ownership of land that lead to high fragmentation of farm holdings and tenure insecurity has contributed their share to the continued subsistence mode of production. The land policy has made technologies less profitable and sustainable and long-term rural-urban (or rural-rural) migration a risky and less preferable options (EEA/EEPRI, 2002). Moreover, government unrealistic assessment of agricultures' capacity to provide employment to the ever-growing labor on the one hand and the underestimation of the role of the non-farm sectors to the development of the farm sector on the other hand are contributing to the continued non-monetization of the sector and its poor linkage with the non-farm sectors.

Of the total manufactured demand required by agriculture – this includes modern technology inputs such as fertilizer, insecticides, pesticides, improved seeds, etc - domestic manufacturing supplies only 1.8 percent, literally negligible. Of the total inputs demanded by manufacturing, agriculture supplies 29.2 percent. In general, policy measures taken since 1990 are not sufficient to improve the structural weakness of the agricultural sector (EEA/EEPRI, 2004).

Table 2: Sectoral inputs flow in the Ethiopian economy

Economic sector	Agriculture	Manufacturing	ROW (export)
Agriculture	68.1	29.2	80.2
Manufacturing	1.8	23.4	19.8
Mining	0	2.8	--
ROW (import)	30.1	44.6	--
Total inputs demand	100	100	100

Source: EEA/EEPRI, 2004.

5.4 Agriculture and environment

Agriculture and environment are interrelated in fundamental ways, each affecting the other. Agriculture sustains life and in return depends on natural resources (fertile soil, bio-diversity, fresh water, etc). In

addition to producing tangible products, agriculture also produces environmental externalities that are not accounted for or transmitted by market price or difficult to identify the polluter that lead mostly the society to pay the cost. Ethiopian subsistence agriculture have huge implication to environment mainly due to its low and declining labor productivity that lead to increased but unsustainable exploitation of the environment. Soil erosion and deforestation are the major environmental externalities generated primarily by agricultural activities and the inability of the sector to provide livelihood for the increased rural population. Rate of erosion is very high and the average soil erosion is estimated at 42 tons per hectare per year (Hurni, 1998, cited by Pender et al, 2001). However, deforestation is even worse with an estimated 150,000-200,000 ha of natural forest lost every year due to agricultural clearance and cutting for construction and domestic energy (EFAP, 1994).

Land degradation has contributed to high depletion of soil nutrients that play a role for the continued low level of productivity (i.e. a little higher than one ton grain per hectare and milk yields only about one-fourth of the average of all developing countries) and reinforce the cycle of low productivity, poverty and environmental degradation. There are also some off-site effects like siltation in some hydropower dams (e.g. KOKA dam) which reduces power generation capacity of the dam.

The cause of these problems, however, may not only originate within the agricultural sector but also in the broad socioeconomic environment of the rural sector (i.e. from the interaction of agriculture and other economic activities within the rural sectors). Most literatures look at the problem of land degradation in terms of population growth, technology and their interaction within the rural sector. Other factors that may be important in influencing land management and its impacts on resources and human welfare include low and uncertain rainfall in much of the highlands, limited market access and market development, land tenure insecurity, credit constraints, farmers' limited education or limited awareness of technological opportunities, poverty, and government policies and programs affecting these factors (Bojo and Cassells 1995; cited by Pender et al. 2001). Despite lack of study on the impact of such factors and possible strategies for overcoming land degradation especially at national level, there are studies conducted in some localities. For instance, a study by Pender et al in northern Ethiopia supports the Malthusian perspective of the negative impacts of population growth on natural resource conditions and human welfare; while population growth has had limited impact on investments in land improvement. By contrast, better market access and some credit and technical assistance programs have largely positive impacts on land improvement, resource and welfare conditions. In general, available evidence indicates that population growth and poverty that limits access to market and finance reinforce the survival strategy of the poor and contribute to the process of land degradation in Ethiopia (Pender et al, 2001).

6. Conclusion and Recommendation

In comparison to the decade that precedes the reform of the 1990s; Ethiopian agriculture has been doing better. Total production of food crops has been improved and the rate at which per-capita production has been declining is narrowed. The volume of agricultural commodities exported has been slightly improved despite depressed world prices. Moreover, new non-traditional commodity like flower has joined the list of exported commodities. On the other hand, the use of fertilizers and improved seeds has been improved. But all those improvement have not been sufficient to lift up agriculture's role in the development process of the Ethiopian economy nor have they brought a full and sustainable recovery to the sector.

Ethiopian agriculture is still in bad shape to play its role in the development process of the economy. The sector has been badly affected by government policies and exogenous factors. Government policies have not been comprehensive and able to address the structural problems of the sector that hinders its commercialization and linkage with the non-farm sectors. For instance, government policy has ignored to deal with and reverse the low and declining rural labor productivity that creates a favorable environment for the overexploitation of natural resources (soil and forests) and eroded agriculture's capacity to establish a positive linkage with non-farm sectors and environment. In addition to technological problems of the agricultural sector, Ethiopian policy makers should give adequate attention to institutional and structural problems of the sector. Moreover, effort should be made to counterbalance the negative effect of declining world prices for Ethiopia's agricultural export commodities through providing various incentives for

investments that process and export agricultural commodities. To mitigate the problem of drought that frequently hit the country, attention should also be given to large scale irrigation.

In general, second generation policy reforms are required to address some of these problems. The policies should look at reducing population pressure on land, encouraging and supporting migration, improving urbanization and rural labor productivity and non-farm employments and investment on land and water utilization. To achieve these objectives, the food economy (food prices) has a critical role. Therefore, policy instruments that have been discouraged by multilateral institutions like the IMF (may be WTO too) should be reconsidered. This may include subsidies (e.g. on fertilizer, etc.) and price interventions in grain markets that simultaneously improve food prices to producers but also subsidies targeted consumers.

Parallel effort should be made to support farmers in a better way. This includes measures to increase investment in production enhancing modern inputs and guarantee the minimum return from such investments. Farmers need some predictable return to their investment or insurance against any extreme risk of loss. Such interventions should be specifically targeted to regions and farmers having different potential. Similar effort to fight widespread rural poverty should be strengthened to minimize the process of environmental degradation.

In general, the structural problem of the agricultural sector should be tackled along the existing effort of technology promotion. This implies that the existing development strategy (ADLI) of the government should be revisited to find the right balance between the various growth factors both in the demand and supply side of the development equation.

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