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FSS Discussion Paper No. 10

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**RURAL LANDS AND EVOLVING TENURE
ARRANGEMENTS IN ETHIOPIA:**

Issues, Evidence and Policies

Tesfaye Teklu

**Forum for Social Studies
Addis Ababa
May 2003**

Recommended Citation: Tesfaye Teklu (2003), Rural Lands and Evolving Tenure Arrangements in Ethiopia: Issues, Evidence and Policies, Discussion Paper 10, Forum for Social Studies, Addis Ababa, Ethiopia.

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Financial support for the printing of this publication was provided by the ROYAL NORWEGIAN EMBASSY for which we are grateful.

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TABLE OF CONTENTS

ABSTRACT.....	i
I. Introduction.....	1
II. Access to Land.....	3
III. Area of Land Operated.....	10
IV. Inequality of Land Operated.....	17
V. Security of Tenure.....	23
VI. Land Quality and Investment.....	27
VII. Rental Land Transactions and Factor Equalization.....	34
VIII. Area of Land Operated, Quality and Tenure: Effect on Productivity.....	36
IX. Land and Poverty Correlations.....	45
X. Land Scarcity, Competition and Labor Mobility.....	50
XI. Common Property Resources Under Population and Poverty Pressure.....	54
XII. Land and Gender.....	60
XIII. Land Policy Issues and Response.....	67
XIV. Synthesis and Conclusions: Lessons for Future Policy.....	75
References.....	81

RURAL LANDS AND EVOLVING TENURE ARRANGEMENTS IN ETHIOPIA: Issues, Evidence and Policies

Tesfaye Teklu

Abstract

There are important changes in tenure arrangements and practices since 1975 but with mixed performance. Among the positive attributes of these changes is the simplification of the complex tenure systems as compared to the pre-1975 period albeit questionable if such level of homogeneity has a desirable mix of tenure arrangements. A large segment of the farm population is able to access and operate land. There is a broadening of the land distribution of the country by shifting the concentration of landholdings towards the middle and lower-sized farm categories. There are incremental policy changes that include transfer land to heirs, titling of use rights, and relaxing restriction on rental markets in some regions. The constitutionality of some of these changes is, however, questionable since the 1995 constitution still prohibits any transfer of land other than through state mandated institutions.

On the other hand, there are increasing numbers of small-sized farms. Some of these are uneconomic in size. There are growing numbers of rural households with no access to government allocated land ("landless"). Insecurity of land and tree tenure effectively reduces rights in land, reduces incentive to invest in land and grow perennial crops, and limits growth in rental markets. There is also evidence of a widespread breakdown in common property tenure arrangements such as common grazing and forestlands for lack of effective institution to economize on and efficiently use these resources. The residence requirement for having and maintaining access to government allocated land fragments land markets and

restricts migration as a strategy for diversifying income and pooling risks, and easing pressure on land.

The history of land policy sequencing since 1975 has been guided by an unbalanced policy framework with heavy emphasis on equity through administrative-based land allocation. A preferred path of policy development would have been to allow multiple channels of acquiring land, strengthen security of tenure and rights in land, promote rental markets as a main market-based mechanism, foster effectiveness of indigenous institutions to economize on scarce land resources in the commons, set norms and regulations for protecting fragile ecosystems, encourage labor mobility, and enhance development of factor markets in a context of broad-based agricultural and rural development. Public policy has an important role in the future, but it needs an informed and balanced view that emphasizes on searching for equitable but efficient and sustainable tenure arrangements that are mediated through the market place.

I Introduction

Since the 1975 proclamation of the public ownership of rural land (No. 31/1975), the country has effectively abandoned its various indigenous tenure arrangements and organized under a generalized uniform state-managed tenure system. Ownership of land was vested in the state abrogating the 1955 constitution that recognized private ownership of property. The change to state ownership was enshrined in the 1987 (No 1/1987) as well as the 1995 (No. 1/95) constitutions. The federal government issued the rural land administration proclamation (No. 89/1997) that vested power in regional states to enact regional laws for administration of rural land consistent with the principles and laws of the federal constitution.

Farmers have open-ended usufruct rights to land in peasant association (PA) or Kebele administration (KA) where they reside, but subject to a proof of permanent physical residence, and ability to farm continuously and meet administrative dues and obligations. Today the majority of the farm households have access to land through State-mandated peasant associations. However, the importance of these associations as a vehicle of access to land is on decline since their ability to meet the growing demand for land, especially their capacity to balance factor proportions at farm level, is limited.

Parallel to this system of PA-based land allocation, there are emerging rental land markets and non-market mediated means of land acquisition such as gifts and inheritance. But transacting in rental markets is gaining importance in different parts of the country, as evident from the numbers of transacting farmers. Farmers choose these markets as ways to pool resources to balance factors of production at farm level (for example, land to labor or land to oxen) and risks. Because non-land factor markets are missing or incomplete, farmers use these land markets as a substitute for missing or incomplete factor markets, such as credit, oxen and labor markets. By tying together these transactions commonly in share tenancy, these informal land markets provide a vehicle to overcome imbalances in factor proportions at farm level, access to non-land factors such as labor, oxen and credit, and potentially improve production efficiency.

This review paper focuses mainly on the state-managed tenure system (PA-land or KA-land) and the emerging rental land markets.

Whilst most African farmers hold land under indigenous communal tenure arrangements and evolve towards individualized rights in response to increasing scarcity value of land and competition, the process has been discontinued in the Ethiopian context. The debate on land issues in Ethiopia center on efficacy and efficiency of a state-controlled tenure system and its flexibility in evolving towards individualized tenure arrangements including graduating to a freehold system that is consistent with the overarching goal of equity, efficiency and sustainability of land resources.

The inclusion of the rental markets in this review is deliberate in recognition that they represent the seed of the future market-based tenure system in the country. These emerging markets provide a unique opportunity to learn and draw lessons from since the emphasis in future is more likely to be searching for equitable but efficient tenure arrangements that are mediated through the market place. Mature and competitive land markets provide an effective mechanism to signal scarcity value of land, mediate land transfers to efficient farmers, and equalize factor proportions. Public policy needs to recognize these chief functions of land markets and create the right environment and guide the process of market development.

There are fourteen thematic areas covered in this review. This introductory part states the purpose of the review and lays out its organization. Part two identifies the different modes of access to land including rental markets. Part three and four cover evidence respectively on determinants of size and inequality of land area operated. Part five presents different measures and determinants of land insecurity and its effect on command over land rights. Part six traces the trends in land degradation, perceptions and responses, and role of tenure insecurity in influencing investment decisions. Part seven and eight relate mainly to tenure effects on factor intensity, production efficiency and technological change, and consequently on agricultural productivity. Part nine focuses on these links, and also points the sufficiency of land as a consistent poverty indicator. Part ten reiterates the role of labor mobility as a way to ease land pressure, diversify income, and pool risks across geographical space. Part eleven highlights the decline in common property land resources, underlying causes and changing tenure arrangements. Part twelve links gender to land access and control, security of tenure, agricultural

productivity and poverty. Part thirteen highlights the existing land debate and policy response. The paper ends with highlights of the major findings and concluding remarks in part fourteen.

The issues covered in the review are common knowledge to students of Ethiopian land issues and this is a first attempt to present a comprehensive synthesis of existing empirical evidence, identification of knowledge gaps, and map key issues to policy responses. Since what is greatly sought among researchers is to add value to knowledge, this review takes an inventory of what knowledge exists. In addition, the review points to where analytical empirical policy research is necessary to deepen the theoretical underpinning and debate on land policy in Ethiopia. Such an effort is particularly critical at this juncture as the tenure systems that are dominated by ideology of state-control, entitlement and administrative-based allocation are evolving towards efficiency biased market-based systems.

II Access (Venue) To Land

The 1995 constitution guarantees free access of land to rural households who seek and are able to cultivate in their place of residence. Such access through the official channel is conditional on proof of permanent physical residence, ability to farm continuously, and meet administrative dues and obligations. Qualified farmers have open-ended usufruct rights to land. These use rights are inheritable but the constitution bars any other forms of land transfer including land rental. There are, however, multiple channels of acquiring agricultural land that operate in de facto and some are gaining legal recognition in some region-states albeit questions on their constitutionality (Kifle, 1999).

The majority of farm households have land obtained through peasant associations (hereafter, PA-land or Kebele land interchangeably)

Farmers are organized in peasant associations within an officially demarcated physical area that does not exceed 800-hectare¹. Within

¹ The boundaries in most cases were demarcated following topographic contour lines, such as rivers, valleys and mountains, and clan groupings and alignments (Alula and

these associations, every eligible farm household is entitled to a minimum plot of land regardless of ability to farm. The primary mandate of the peasant associations (PAs) is to ensure this safety net entitlement is realized through distribution of land 'equally' among qualified resident members within the official ceiling of 10-hectares per household. Additional factors such as gender, size of working members in a household, and ownership of assets such as traction power are considered, but are not fully factored in the determination of land allocation.

The peasant associations had carried out major land redistributions involving large number of holdings and area of PA-land in early years of the land reform that spanned over the period between 1976 and 1978 (see, for example, Alula and Tesfaye, 1980 and Dessalegn, 1984). The frequency of major land redistributions has decreased, especially since the early 1990s to reduce uncertainty in land tenure and transaction costs associated with frequent redistributions. Instead most of the PAs reallocate land and adjust plot size to accommodate new claimants. Commonly, PAs reallocate land obtained from farm households who have abandoned farming for various reasons (for example, death, permanent migration, tax default, and failure to comply with PA imposed obligatory services) and/or convert communal lands to individual holdings (for example, community grazing lands).

Although the PA-land allocation has been the main a venue for land acquisition, its importance is on decline. The pool of PA-land is fixed and land suitable for cultivation has already been distributed but there are continuous demands for land because of the natural growth in population. The demographic momentum is strong since there is large pool of people coming of age for farming. Since the physical supply of PA land is fixed, the same land has to be sub-divided among

Tesfaye, 1980). Since the boundaries were not drawn uniformly by taking into account population size and productive capacity of land, there is a wide diversity in quality-adjusted area of land relative to population among peasant associations. In areas where population density is high and land is scarce, peasant associations tend to have a large population on a small area of land. And, because of low spatial mobility of labor, these associations face a severe land constraint as the number of new claimants for land grows within their fixed physical boundaries.

eligible farmers as the size of membership in a peasant association grows. Prohibition to possess land outside residential area accentuates the competition for declining available land per capita. There is now a limit as to how much fixed supply of PA-land can thus be subdivided without reducing them to an uneconomical size. On the one hand, PA attempts to provide every one with a means of livelihood, on the other they are saddled with a fixed and unchanging land fund and a growing population (Dessalegn, 1984).

The ideal of allocating land proportional to household size has become less and less attainable. The more recent claimants of land, who were largely newly formed households, were more likely to receive smaller and less productive plots, and lack grazing land (Amare, 1998; Yared, 1995). Because of the diminishing capacity of PAs to meet the demands for land, there are a sizable number of farmers who seek but are unable to get PA-land. The modal estimate is in the 30 to 40 percent range in any peasant association, particularly in densely populated areas (see, for example, the case studies in Dessalegn 1994; Gavian and Amare, 1996; Abebe, 2000). These estimates are likely to be biased downward since new claimants to land are at times excluded from membership in peasant associations to circumvent the constitutional guaranteed right to land for registered members (Gavian and Amare, 1996).

There are increasing numbers of farmers transacting in rental land markets.

While PA-based land allocation has been the principal means for land acquisition, access to land through informal rental land markets (crop-sharing and cash rental) is gaining importance². There are four factors contributing to these increasing trends. Firstly, the ability of the peasant associations to accommodate a continuous demand for land is diminishing, as it is evident from the growing numbers of farmers with no PA-lands, especially among the newly formed young farm

² Informal land transactions cover market-mediated (rental contracts such as crop-sharing and cash rental) and non-market mediated transfers (for example, borrowing, gift). The focus of this paper is on informal rental land transactions. The terms share cropping, crop sharing and share rental are used interchangeably in this paper.

households. Secondly, matching land to largely non-traded factors such as labor and oxen and continuously correcting changes in factor proportions at farm level is beyond the capacity of administrative-based allocation. Thirdly, the policy changes that have been instituted since 1989, which include the rights to use hired labor, bequeath use rights to land and rent land, have created an enabling environment and incentive for the growth of non-PA based channels for land acquisition. Fourthly, farmers who participate in rental land markets are able to combine rental land contracts with other factor markets (e.g., labor, oxen, credit) and overcome problems associated with missing or incomplete factor markets (a second-best solution).

Within peasant associations, there are three major categories of farm households that coexist (see Tesfaye et al, 2000 for a description of these categories). The first category is the 'autarky' farm households who are fully self-provisioning in essential factor inputs. The second group is land-constrained farm households with PA-land that is insufficient to fully utilize their labor and traction power³. The third category is land abundant farm households with PA-lands that are in excess of the size they can utilize with their own labor and traction power. Transactions in rental land markets often occur between the latter two categories of farm households. The current evidence indicates that as many as 15-30 percent of farm households in different parts of the country (for example, see the studies in Dessalegn, 1994; Abebe, 2000; Gavian and Amare 1996; Bereket and Croppenstedt, 1995, EEA/EEPRI, 2002).

The demand for land comes largely from land - constrained farmers whose main objective is to increase an area of operated land. The better off farmers, who have labor, oxen, seed and cash, are more into renting land since they rarely hire out their labor. But those who are short in land, oxen and cash, especially the young and newly

³ A farm household is defined as land-constrained if officially given PA-land is insufficient to utilize its largely non-tradable factor inputs, particularly family labor and oxen. On the other hand, a land-abundant household has a given PA-land that cannot be fully utilized because of shortage of labor or oxen or finance. Such definition does not suggest that land-constrained (land-abundant) household is necessarily poor (or, better-off) since PA-land holding is not related to possession of non-farm assets. Determination of PA-land is mainly driven by consumption or safety net consideration rather than ability to produce and generate income.

formed households, either exchange their labor for land or hire out their labor. If the lessee has a reputation for trustworthiness and industriousness, he may acquire land from non-parental sources in the form of rent (Yared, 1995).

The regression estimates in Gebeyehu (1992) show that the decision on whether to rent-in land or not (i.e. the decision to assume partial or full tenancy) is related positively with the size of draft animals, the presence of working male adults, and household wealth. It is negatively related to the size of PA-land and the better quality of land. These coefficients confirm that land-constrained with working labor and non-land assets such as traction animals are more likely to rent in land. The odd of participation is also positive for landless households but may not be as strong since some of the positively contributing factors such as size of draft animals are missing or is weak.

On the supply side, there are land abundant farm households. But all land abundant farmers are not engaged in leasing out land. The better off farmers who have sufficient oxen and working capital rarely lease out their land to get labor. Instead they use their own oxen and cash to get labor to work on their farms or team up and pool resources. In some case, they lease in land to get more access and control fertile land through tying land from abundant poor households.

It is mainly the land abundant but poor households who often lease out land. These poor households are the most resource constrained among the relatively land abundant farmers. They cannot afford to hire in labor and/or oxen. Instead they share out their land in exchange for labor and/or oxen. They are also financially constrained and often seek credit to meet their obligations including food consumption. They either rent-out land for cash or mortgage land for credit or include a cash deposit as a requirement for tenants to access land. These farmers are not the commonly understood "landlords" who hold economic and social power. These include the poor, female- and elderly-headed households who rent out land due to necessity (Yared, 1995, Abebe, 2000).

The econometric evidence in Tesfaye and Adugna (forthcoming) shows that the decision to lease out land is positively correlated with the size of PA-land relative to other complementary inputs such as labor and oxen, poor quality of land, female-headship, number of

dependents in a household, poor adult nutritional status, and distance from better infrastructure and market access. Consistent with the hypothesis of subsistence pressure, as the number of dependents in a family increases, farmers lease out land in exchange for access to credit for meeting consumption needs. Families with malnourished adults are also physically constrained and hence tend to lease out more land. These transactions are more prevalent among poor female-headed households who lack resources and managerial ability to work on their farms.

But the rental land markets favor farmers with cash, farm skills and experience.

As arable land becomes scarce, conditions are getting tight in regards to rental land; the lesser demands increased output share including by-products, contribution of variable inputs, up front fee to buy the right to rent (akin to buying option in equity market), and proof of farming skills and experience. These requirements work against the poor, young and inexperienced “landless” farmers. Some are rationed or priced out because of the increasing rental rate and tightening selection criteria.

These disadvantaged farmers depend heavily on other means of getting land. As many as 77 % of the farmers with no PA-land in Debre Libanos had to obtain land through their parents and cultivate on a share basis (Yohannes, 1994). Among the farmers with no PA-land in the vicinity of Assela in Arsi region, 50 percent of the contracted fields were obtained through gifts and borrowing (Gavian and Amare, 1996). This is in contrast with landed households whose share of contracted fields through borrowing and sharing was only 14 percent. Among the young male households who have established their households after the 1975 land reform in west Gojjam, 79% worked on their parent’s plot (Yigremew, 1997). As compared to the land they obtained through peasant associations, the land through their parents was 1.3 times greater. They worked on their parent’s plot and shared the output.

Although these are married and heads of their own households, they are not socially considered as adults and not recognized as ‘equals’ since they still depend on their parents for their livelihood

(Teferi, 1994). Instead of working on their parent's land, the children may claim land as they reach eighteen, the legal age for claiming land. There are moral and technical grounds for children to claim land of their parents. First, it is customary in the kinship/risk tenure areas for children to claim land through decent ("Gulma"). It is also a moral obligation for parents to look after their children until they are established. Second, land through PAs is based on the consideration of the number of family members. Thus, the share of land of the children is already included in their parents' land holdings at the time of the PA land allocation. So these children have a legitimate right to claim their share of land when they form their homestead.

However, such an inter-generational transfer of land through hereditary is not as widely practiced as it is in the rest of Africa. First, the legal interpretation of claim over parental land is not always without conflict. The process of land transfer between parents and children has caused social friction in areas where PA-land is scarce and/or PA-land allocation was halted (Teferi, 1994). Secondly, there is a recognition that land obtained through hereditary is small and it is not worth the damage that is caused by intra-family conflict. Hence, farmers consider land through hereditary as an unsustainable mode of land acquisition.

The institution of marriage acts occasionally as a non-market device for getting access to land and pool labor, especially between landed female-heads and landless male labor (Yared, 1995; Teferi, 1994). Where marriage enables married couples to get access to land from both parents, there is an increased localization of marriage (Yared, 1995).

To sum up, there are notable variations in the extent and trend of modes of access land in rural areas. Farmers obtain land mainly through area-based peasant associations. While this has been the main venue to access land, its importance is on decline because of the physical limit imposed by the fixed area of land and inefficiency inherent in administrative based land allocation. Instead, the venue of land access through rental land markets is gaining importance. Farmers who participate in rental land markets are able to combine rental land contracts with other factor markets (e.g. labor, oxen, credit) and overcome problems associated with missing or incomplete factor markets. But access to rental land is becoming difficult for farmers

with little farming experience and skills, and cash. These farmers either work on their parental land and/or as casual labor and/or engage in a non-farming activity.

III Area of Land Operated

According to the national survey of private peasant landholdings conducted in 1997/98 (CSA 1998), nearly 80 percent of the holdings were below 2 hectares. A quarter of the holdings were below a one-half hectare. The average land holding per holder was nearly one hectare, which constitutes areas for temporary crops (77.4%), permanent crops (6.2%), grazing (6.6%), fallow (5.6%), and other land uses (7.2%).

While farm size is small in general, there are still significant differences in distribution of holdings. This is first linked to differences in the spatial distribution of population and arable land in the country's major agroecological zones size of arable land holding (quality adjusted) tends to be small in the moisture-stressed drylands (arid and semi-arid zones) where inherent soil fertility is poor. Population density is sparse in the lowlands but available arable land is low (for example, size of land per arable holding averages 0.21 ha in Shinile, 0.64 ha in Borena and 0.58 ha in Moyale). The size of land holding is also low in highlands where land degradation is moderate to severe (for example, 0.67 ha in North Wollo).

Farm size is also small in perennial crop growing humid highland areas where land is better endowed for crop cultivation but population density is high (for example, the size of land holding averages 0.66 ha in Gurage, 0.34 in Sidama, 0.36 in Gedeo, 0.48 in North Omo, and 0.48 in South Omo). Previous studies also confirm the severity of land scarcity in these areas. Half of the households in the high population density areas of southern Ethiopia (Bolosso and Wollaita) possess half a hectare or less (Dessalegn, 1984). A peasant who works 1 to 1.5 hectare is considered as a large owner. In the 'enset' growing high population density areas of southern Ethiopia, many farmers own as little as 0.25 hectare (Sandford and Sandford, 1994).

The size of land holding is relatively larger in moderately populated cereal producing moist zones (for example, 1.54 ha in East Welega, 1.24 ha in West Gojjam, 1.5 ha in East Shewa, 1.87 ha in

Arsi, and 1.68 ha in Bale) and perennial crop growing humid highland areas such as Jimma (0.90 ha) and Illubabor (0.82 ha), particularly where population density is moderate, arable land is relatively abundant, and land degradation is not severe.

In general, land tends to be small in ecological zones where there is arable land suitable for crop cultivation but population density is high. Or, where population density is low available land is not suitable for cultivation because of inherent deficiency in the soil fertility or severe land degradation. Land size tends to be greater in ecological zones where population density is moderate, arable land is relatively suitable and land degradation is not severe.

Even within the same ecological zones, there are significant differences in land holdings at peasant association level. Part of these differences could be due to an asymmetry in the initial allocation of land at peasant association level. The boundaries of these peasant associations were not demarcated uniformly in terms of population size. Peasant associations with the same area of quality-adjusted land may have a different size of population. For example, the average area of land per member varied from a low 2.5 hectares to a high of 4.1 hectares in the ninety-seven peasant associations in the administrative area of southern Ethiopia (Alula and Tesfaye, 1980). Peasant associations with a better quality of land in general have low land per member because of the over population on a relatively small area of land. Since farmers can only claim land in peasant associations where they permanently reside, these differences in initial endowments of fixed PA land influences the area of the land they hold.

There are also variations in landholdings within peasant associations, mainly due to differences in rules of land allocation and their applications. Commonly, land is distributed in accordance to household size within peasant associations. These associations set a minimum size of land that every household is entitled to. They also set a maximum size of holding. Then they allocate land in relation to family size within the lower and upper bounds. Generally, the relation between land size and family size is positive. But it is not linear since the increment in land is often less than the increment in number of family members. The increment even approaches zero for large families (Dessalegn, 1984). There are differences between peasant

associations in the minimum and maximum size, and the unit of land that is added for each household member.

In some areas, the rules of PA-land allocation explicitly accounts for differences in the age-composition of farm households as shown in recent evidence from Tigray region (Berhanu, 1998; Bruce, Hoben and Dessalegn, 1994) and the Amhara region (Yigremew, 1997; Yeraswork 2000). For example, in Tigray region, a 'share', the amount of land that each adult should receive in a particular community, is first determined. Each adult, regardless of gender, receives one share. Children, up to a pre-set number per household, are given fractional shares (Bruce, Hoben and Dessalegn, 1994).

Land allocation tends to favor older than younger household heads, especially where land is scarce. The allocation tends to be biased towards the more experienced farmers in the 25 to 59 year age category. Because of their proven management skills, which have a high premium in an environment of land scarcity, they tend to have more access to land. The young households, because of their youth and limited farm experience, obtain less land than farmers with established farming experience. But such age-differentiation is not as strong where availability of land is not tight.

Factors other than household size and composition are occasionally considered in the allocation of PA-land. Where availability of land is not tight, upward adjustment in land is made to account for the size of livestock owned. Distance to residence is considered in some areas in dividing PA-land. Farmers in Wogda locality, northern Shewa received at least one plot of land close to the homestead –“dej meret” (Yared, 1995). Building one's house near a piece of desirable land was often a tactic successfully used to lay claim to such land (Yared, 1995). Consideration of past political and administrative status also plays a role in determining allocation of land, as evidenced from the 1996/97 allocation of land in the Amhara region. Bruce, Hobben and Dessalegn (1994) also cite spot cases of discriminatory land allocation based on ethnic and religious differences.

All PA-lands are not fully operated. Nor are all land operated is PA-land where there are active land transactions through transfers such as land rental. For those transacting in rental land markets, especially those who lease in land (“import”), size of land operated

may exceed land obtained through peasant associations. Even those who share out land but farm jointly benefit from such transactions since they are able to operate large area of land using tenant's labor. In the villages of southern Ethiopia, for example, those who shared out land and farmed jointly were able to increase the area operated from 0.16 hectare to 0.30 hectare. Those who shared in land and farmed jointly increased their area operated from 0.29 ha to 0.40 ha.

Which of these factors then have a statistically significant influence on the area of land operated at the farm level? The coefficients from a two-stage estimation of ordinary least squares regression model are presented in Table 4.1. The study draws on survey data collected in three districts of Southern Ethiopia. The dependent variable is the area of land operated at farm level, which includes land from peasant associations and net addition from transactions in rental markets. The area of land operated is specified as the function of: (1) household demographic variables (household size and composition, and gender and age of household); (2) level of education of household head; (3) level of asset ownership (livestock); (4) transaction status in land rental markets; (5) access to roads and markets; and (6) village dummy variables. The village dummy variables are included to capture variation in population density, and land quality attributes (i.e., agro-climate, soil fertility and moisture). The physical infrastructure variable represents a proxy for availability of off-farm employment opportunity outside the survey villages. Since the inclusion of a variable representing transaction status in land rental markets potentially causes a simultaneity problem, the instrumental variable method is used below in a two-stage estimation framework⁴.

The results establish four key factors in explaining the variation in the area of land operated – at least in the context of the areas where the survey villages are represented. Firstly, the village characteristics within which farmers reside, such as ecological and soil conditions,

⁴ The first stage is the estimation of a binary probit equation where the dependent variable is a decision dummy variable (1 if the households transact in rental land market and 0 otherwise). The values of the probability of transacting in land market were predicted from the probit equation and then entered in the main equation at the second stage of estimation. Three factors in particular stand out as determinants of the decision whether to transact in land market or not --ecological factors, physical access to major market place, and size of land obtained from peasant associations (PA-land).

and population density, have a significant influence on the area of land operated. Consistent with the neo-Malthusian hypothesis that rural population tends to be concentrated in areas where there is land suitable for cultivation to meet subsistence needs, and good climate and soil have a small area of land operated per capita. .

Secondly, the demographic characteristics of farm households, especially family size, have a significant influence on land allocation. Size of households have a significant positive (HHSIZE) but diminishing (HHSSQ) influence on the area of land operated. This is consistent with PA-based land allocation practices. That is, as the size of a household increases, the size of land increases but the incremental land for every additional household member decreases. As detailed in Dessalegn (1984), increase in household size beyond mutually agreed land ceiling has even zero incremental effect in some peasant associations. That is, the additional number of household has a zero effect on land size. The effect of other demographic variables – age and gender - is not as strong as the simple count of household members.

Thirdly, transacting in informal rental markets adds to the area of land operated particularly for those who lease in land and operate. These transactions are more concentrated in areas where arable land is scarce and its distribution is more unequal, and access to alternative non-farm employment exists.

Finally, the presence of a physical infrastructure has a significant influence directly on the area of land operated and indirectly through increased participation in rental land markets. Size of land operated tends to be small in areas with better infrastructure, which is often associated with more population density and better income opportunity.

To sum up, the farm size is generally small in the Ethiopian highlands, and it is declining but its size varies depending on agroecological environment and the number of venues through which a farmer acquires land. For those who access land through peasant associations, farm size is a function of land available at PA-level and allocation rules within peasant associations (for example, family size and composition, ownership of assets). Those who transact through informal rental land markets benefit from the increase in the area of

land operated per family labor. The effect of these factors determines the area of land operated at farm level.

Table 4.1: A Two-stage Estimation of Ordinary Least Squares Regression Model for Determinants of Area of Land Operated

Variable	Variable definition	Probit		OLS-IV	
		Coefficient (t-ratio)	Marginal- effect (t-ratio)	Coefficient (t-ratio)	Coefficient (t-ratio)
Constant	Intercept	-0.1373 (-0.227)	-0.0518 (-0.227)	-0.2492 (-0.589)	-0.0832 (0.198)
	Dummy for ecological zone: 1=higher elevation, 0=lower elevation (Mean=0.345, SE=0.476)	0.8961 (4.816)***	0.3388 (4.818)***	-1.2558 (-4.957)***	-1.2617 (-4.930)***
DECOL	Dummy for highland village 01: 0= lower elevation (Mean=0.07, SE=0.256)	2.1575 (4.259)***	0.8156 (4.236)***	-2.0915 (-7.857)***	-2.1581 (-8.060)***
DV1	Dummy for highland village 11: 0= lower elevation (Mean=0.249, E=0.433)	1.6102 (7.027)***	0.6087 (6.999)***	-2.0915 (-7.857)***	-3.7221 (-10.31)***
DV11	Household sex: 1=male (Mean=0.893, SE=0.309)	-0.2619 (-1.251)	-0.0989 (-1.251)	0.0648 (0.456)	0.0629 (0.438)
HHSEX	Household head age (Mean = 44.324, SE=14.383)	0.0252 (1.176)	0.0095 (1.176)	-0.0186 (-1.263)	-0.0180 (-1.210)
HHAGE	HHHAGE squared	-0.0002 (-0.711)	-0.00006 (-0.711)	0.0001 (0.749)	0.0001 (0.724)
HHAGSQ	Dummy for education of household head: 1 if greater than one year, 0=otherwise (Mean=0.213, SE=0.410)	0.3449 (1.956)**	0.1304 (1.957)**	-0.0646 (-0.533)	-0.0503 (-0.411)
DEDHH	Number of household members (Mean=6.983, SE=3.343)	-0.1123 (-1.659)*	-0.0424 (-1.659)*	0.3084 (6.945)***	0.1691 (12.200)***
HHSIZE					

Variable	Variable definition	Probit		OLS-IV	
		Coefficient (t-ratio)	Marginal- effect (t-ratio)	Coefficient (t-ratio)	Coefficient (t-ratio)
HHSQ	HHSIZE squared	0.0032 (0.3421)	0.0012 (0.950)	-0.0075 (-3.281)***	
RADULT	Ratio of adults to household size (Mean=0.498, SE=0.178)				0.3183 (1.312)
PAAREA	Land area from peasant association in ha (Mean=1.489, SE=1.228)	0.1087 (1.6490)*	0.0411 (1.957)**		
WATERI	Water logging index: 1=none, 0.25 = severe (Mean=1.448, SE=1.32)	0.1875 (2.077)**	0.0709 (2.080)**		
EROSNI	Erosion index: 1=none, 0.25=severe (Mean =1.370, SE=1.60)	-0.1503 (-1.535)	-0.0568 (-1.535)	0.0284 (0.650)	0.0337 (0.763)
VLVSTK	Value of livestock in local currency: (Mean=823, SE=744)	-0.00004 (-0.201)	-0.000008 (-0.201)	0.00005 (0.788)	0.00005 (0.765)
DROAD	Distance from road in km (Mean=7.465, SE=4.918)	-0.0874 (-2.970)***	-0.0331 (-2.959)***	0.1474 (7.898)***	0.1493 (7.913)***
PTLAND	Predicted probability of transacting land			1.0475 (4.281)***	1.0596 (4.291)***
N	Sample size	498		498	498
F statistics				25.52***	24.37***
Adjusted R square				0.3907	0.3794
Log likelihood		-272.9036		-671.6005	-676.1951
Chi-square		119.169***			

***, ** And * denote significance at $p < 0.01$, $P < 0.05$ and $P < 0.10$ respectively.

SE=Standard deviation

IV Inequality in Area Operated

One of the key elements of the 1975 land reform is the setting of a 10-hectare ceiling. This upper limit to farm size has effectively truncated the upper end of the distribution of land ownership. The overall effect of the PA based land distribution has been to shift the concentration of landholdings towards the middle and lower land-size categories. Or, as Dessalegn (1984) described it, it is a “leveling down”. This is illustrated in figure 5.1.1, which uses two national surveys and compares the cumulative distribution of land holdings before and after the land reform. Firstly, there is a truncation at about 5 hectares. All the holdings after the reform fall below 5 hectares, as compared to about 80 percent of the holdings before the reform. That is, 20 percent of the holdings that had more than 5 hectare have shifted to less or equal to 5 hectares after the reform. Secondly, the shift of the post-reform curves to the left means there are people getting less land. Farmers with larger holdings had to give up some of their land for distribution to others --to the new claimants and those with insufficient land.

Data on distribution of farm holdings from four representative localities reported in Dessalegn (1984) were used to derive the cumulative distribution of holdings. As the figures in 5.1.2- 5.1.5 show, the size distributions closely follow the national pattern. Regardless of differences in ecological zone, land quality, production systems and previous tenure arrangements; the curves are truncated at the upper end⁵, which indicates a shift towards the middle and lower ends of the distribution. Secondly, the shift towards the left occurs for the majority of the farm households. In the cases of Bolloso and Manna, however, the curves shifts to the left, but crosses at the lower end. That is, at the lower ending of the distribution, there were some farmers who got more land after the reform. In these localities, the

⁵ Dessalegn (1984) reports an upper truncation point of 1.25 ha in Bolosso in the southern region (down from pre-reform maximum of 1.5 ha), 2.5 ha in Manna in the southern west region (down from the pre-reform above 6 ha), 5 ha in Adet in the north west region (down from above 6 ha) and 3 ha in Sire in the central western region (down from pre-reform above 6 ha).

distribution process scaled up land holdings at the bottom and leveled down from the top. In all these sampled cases the process has contributed towards an equality in the area of operated land.

The degree of improved land distribution is, however, different between administrative zones (Bedassa Tadesse, 1998). For example, the estimated Gini coefficient for Ethiopia as a whole was 0.47, but there were several zones going above (e.g., South Shewa, West Shewa, North Omo) and falling below (e.g., North Gondar, South Gondar, West and East Gojjam) the national average. Explanations as to why such spatial variability exists are yet to be established.

Transactions in informal land markets tend to contribute towards equality in the size distribution of land areas operated, albeit seasonal and short lived. Firstly, farmers who otherwise would not have had access to land were able to get access to land and operate. Secondly, the process of equalization of land holdings means that farmers with large initial landholdings (pre-transaction) transferred land to those with lower holdings. For example, in the study of survey villages in southern Ethiopia, the share of the area of total cropped land for the bottom 30 percent of the households increased from 7 percent to 12.5 percent. The ratio of the mean operated area of the top 20 percent to the lowest 30 percent decreased from a tenfold to six fold. Transacting through informal land markets has thus the effect of broadening the distribution of land holdings.

Since the decision to transact in rental land markets is a self-selection process, comparing these two groups causes selectivity bias. Instead, Tesfaye and Bedassa (2001a) used survey data from villages in Southern Ethiopia to rank farm holdings per capita for land transacting farm households before and after transaction (Table 5.1). It is also used to estimate the Lorenz curve parameters and derive Gini coefficients. As the evidence below shows, transactions in informal land markets not only raise the area of land operated, but also contribute towards equality in the size distribution of land area operated.

Such an equalizing effect of rental markets is noted in Deininger and Squire (1998). Based on data on distribution of operational holdings from 103 countries, the authors find that the share of land rental was below 10% of the total in all developing countries, and the Gini coefficient for the distribution of operated land was lower than

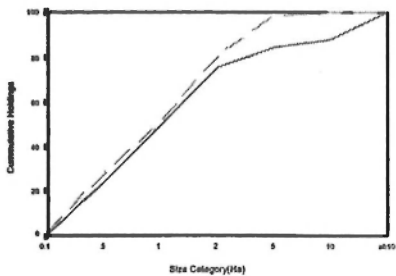
the Gini coefficient for the distribution of owned land. The lower inequality in area operated suggests that rental market contributes to more equal distribution of land. These results are also in conformity with the findings of Andre and Platteau (1998) for Rwanda, similar to Ethiopia, experience high population density, scarcity of land, low level of agricultural technology, and declining land productivity. Temporary land transfers such as land rentals and loans contributed to a moderate the impact on the inequality in landholdings in Rwanda. But the importance of these transactions declines overtime because of the disequalizing effect of land sales.

Table 4.1: Land Holdings, Lorenz Curve Parameters and Gini Coefficients for rental land -transacting farm households

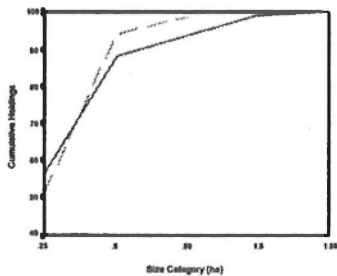
	Pre-transaction		Post-transaction	
	Mean per capita area operated (ha)	Percent of total area operated	Mean per capita area Operated (ha)	Percent of total area operated
Bottom 10 %	0.03	0.97	0.06	2.47
20%	0.08	2.55	0.09	3.48
30%	0.11	3.53	0.11	4.46
40%	0.16	4.97	0.15	5.72
50%	0.21	6.80	0.18	7.12
60%	0.27	8.68	0.23	8.94
70%	0.32	10.06	0.27	10.70
80%	0.42	13.52	0.34	13.56
90%	0.63	20.08	0.45	17.93
100%	1.27	28.84	0.75	25.61
	OLS Estimates of Lorenz Curve Parameters			
	$\alpha = 0.864(0.008)$	$\beta = 0.864(0.008)$	$\alpha = 0.9049(0.015)$	$\beta = 0.910(0.017)$
	Gini Index = 0.4819		Gini Index=0.3991	

Source: Tesfaye and Bedassa (2001a). Figures in parentheses are standard errors.

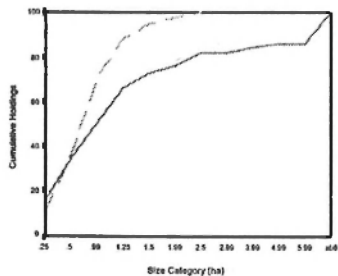
Figure 4.1: Cumulative Distribution of Land Holdings by Size Category



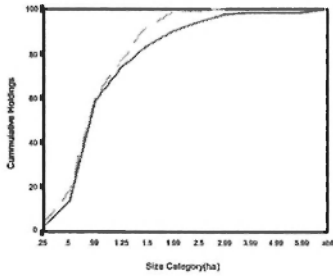
1.1: National



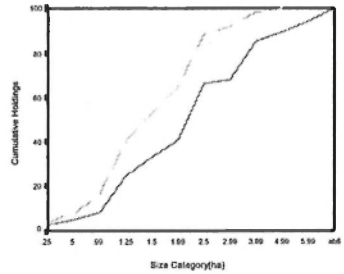
1.2: Bolosso(Wolaita)



1.3: Manna (Jimma)



1.4: Sire (Wolega)



1.5: Adet (Gojam)

Legend: ___ Post reform; ____ Pre-reform

Adjusting for land quality: There is an important caveat in these results. The size distribution of operated land above does not take into account variation in the quality of land. But quality of land enters systematically in PA-land allocation. For example, a simple two-way correlation between farm size and land degradation indicators (i.e., erosion and water logging indexes) based on survey data from Southern Ethiopia shows a systematic inverse relationship between land size and intensity of land degradation (Table 5.2). A higher index in this table means that more area of land is necessary to compensate for declining soil and water quality. For example, a one-hectare of land free from water logging quantity is equivalent to total land area of 1.87 in the 60 to 80th percentiles and 2.02 in the above 80th percentiles.

For the bottom 40 percent of land holdings, the indexes average 1.47 and 1.2 for erosion and water logging, respectively. The erosion index increases from 1.75 in third quintile to 2.02 in the top 20 percent of the holdings. For the index on water logging, it rises from 1.47 to 1.85 for the same land size categories, respectively. Increase in land size is thus associated with increase in land necessary to compensate for deterioration in land quality

Table 4.2: Farm size and Land Quality Relationships by Quintiles

Quintiles	Mean Holding Size	Mean Erosion Index	Mean Water Logging Index
1 st	0.496(0.141)	1.263(1.206)	1.506(1.419)
2 nd	0.891(0.123)	1.189(1.106)	1.402(1.221)
3 rd	1.371(0.135)	1.463(1.485)	1.742(1.977)
4 th	1.883(0.183)	1.726(1.403)	1.870(1.556)
5 th	3.358(1.617)	1.185(1.608)	2.017(1.514)
Correlation of Holding Size with		0.1505**	
0.1246*			
N=423			

* And ** denote significance at $p < 0.01$ and $p < 0.001$, respectively. Figures in parentheses are standard deviations.

Such a pattern is also confirmed in the statistically significant positive correlation of 0.15 between land and erosion index, and 0.12 between land and water logging. As farm size decreases, there is an apparent upward adjustment in land quality. This is consistent with the practice of PA-based allocation of land in some of the survey villages. Farmers with a low quality of land are often compensated with a larger area of land. Hence, farmers with small farms end up having better quality of land as compared with farmers with large farms.

The relation between land quality and rental land is inconclusive. The findings from the survey of villages in Southern Ethiopia show that farmers who lease out land tend to share out eroded land. It is probable that farmers with a large land area are selective and lease out land that is poor in quality. But this is contingent on the motive for land transaction and type of contractual agreement (Gavian and Amare, 1996). Hence, the effect of land quality can only be empirically determined.

The presence of a systematic variation in land quality attributes between PA-allocated land holdings suggests that distribution of land holdings is more equal when quality-adjusted land size is compared. Ignoring such adjustment tends to bias upward measures of land inequality such as the Gini coefficient. And it also implies that productivity differences by farm size will be exaggerated if quality attributes of land are not controlled. However, it is possible that the

neutralizing effect of land quality on inequality is weaker for land transacting households.

While the initial process of PA-land allocation brought about a general equitable distribution of holdings, the process was not to satisfaction of some farmers who viewed the process as benefiting the long established farmers who had economic resources and better connections in local communities and political networks (Yared, 1995). As access to land through peasant associations becomes scarce, distribution in land holdings has become more unequal, especially between the old established farmers, and newly formed young households. This intergenerational gap in land holdings has caused social tension in some areas, especially where the process is frozen for the young adults to assume greater access to land and social position (Teferi, 1994).

V Security of Tenure and Command Over Land Rights

The current problem of insecurity of land tenure has its origin in the 1975 land reform proclamation and the subsequent legislations. These laws provide use of rights with no defined time bound. Since land is state owned, it can be reclaimed through declaration of eminent domain without prior knowledge and consent of individual landholders. Such an open-ended tenure arrangement causes uncertainty (or lack of predictability) with respect to length of land possession and ability of farmers to capture benefits that accrue from long-term investment in land, whether in use or upon transfer.

The discussion in this section presents measures of levels of security of tenure. Since the degree of security varies between landholders, reasons for such variation are identified. Security of tenure and control over land are related, and detrimental to the extent to which rights to land are exercised.

Farmers' Perception

Farmers were asked to express their perceptions of tenure insecurity in sampled surveys in Tigray (Berhanu, 1998), Wello and north Shewa (Yeraswork, 2000), and Southern Ethiopia (Holden and Yohannes, 2001). The findings from a survey of farm households in

south central Tigray show that farmers feel more insecure about their holdings in the long run. Sixty percent of farmers responded that they felt certain that they would cultivate their plots five years from 1995 whilst 41.7 percent felt sure of being able to leave their plots to their children (Berhanu, 1998).

The farmers and community leaders who were surveyed in five Awrajas of Wello and north Shewa (Yaju, Ambassel, Dessie-Zuria, Manz, and Tagulat) strongly expressed that they had no sense of ownership of land (Yeraswork, 2000). They anticipated future redistribution of land, and a partial or complete loss of their own plot. Farmers could not plant trees, or those who planted trees opted to destroy their private trees because of the fear that they would be denied the right to dispose of their own trees when they desired. Farmers in some villages also destroyed their soil bunds since they felt they had no secure holdings. Uncertainty over the land they cultivate forced them to choose immediate benefits over long-term gains.

Holden and Yohannes (2001) surveyed 500 households in 1997-98 in 15 different sites that fairly represent diverse ecological areas in Central and Southern Ethiopia -- Debrezeit and Modjo, Zway and Meki, Arsi-Neghele, Mareko and Alaba, Wollaita and Shone, and Sidamo and Butajira. Only 17 percent of the households reported tenure insecurity. The probability model estimated to identify factors that motivated these farmers to perceive insecurity of tenure identifies three key factors. Firstly, not all farmers with larger relative farm size (as compared to community-specific average) are more tenure insecure than those with relatively less land. The relationship is instead site-specific. Holden and Yohannes (2001) speculate that some farmers with large farm size may have influence in local power structure to protect their larger holdings. Secondly, farmers renting out land feel less secure because they are not demonstrating continuous cultivation of their land, which is a key requirement for maintaining possession of PA-land. Thirdly, farmers growing perennial crops feel more secured. None of the household characteristics (age, sex, and education) and wealth indicators (livestock) were found statistically significant to explain why the 17% perceived tenure insecurity while 83% did not.

Given that family size is the basic criterion for the equitable distribution of land and most land distributions are readjustment of

plots instead of complete change of plots, Tekie (2001) hypothesized that farm households with a relatively large amount of land relative to their family size would expect to give up part of their possession as compared to those with smaller holdings relative to their family size. The author used a village-mean as a cut-off and hypothesized that households with per capita land holdings above village mean would be more tenure insecure than those with below-average holdings. Using this measure, Tekie (2001) found that the increase in household per capita holding above village mean reduces likelihood of investing in soil conservation. However, the findings in Holden and Yohannes (2001) qualify such a relationship to be location-specific.

The suggestion that farmers grow perennial crops as a strategy for improving security of land rights corroborate with findings from other African countries. The evidence from Sub-Saharan Africa generally supports that there is a positive relationship between long-term secured tenure arrangement and investment in land (Place and Hazell 1993 for Ghana, Kenya, and Rwanda; Lowry and Steinberger 1991 for Nigeria; Gavian and Fafchamps 1996 for Niger). But, as Holden and Yohannes claim, the relation is not one way; increased investment in land is also used to establish security of land tenure.

But the evidence is not conclusive in the Ethiopian context. Farmers in parts of Southwest Ethiopia, for example, deliberately converted their perennial fields to annual crops for lack of tenure security (Tessema, 1994). The opinion-based survey in Yeraswork (2000) also concludes that farmers in Wello and North Shewa either do not plant trees or destroy their private trees because of fear of losing their right to dispose of their own trees. These findings are consistent with other descriptive studies (Teferi, 1994; Yigremew, 2000; Yared, 1995; Aklilu and Tadesse, 1994). On the other hand, the findings in Holden and Yohannes (2001) suggest that farmers grow perennial crops as a strategy for securing their landholdings.

Counting the bundles of rights

Amare (1998) followed a different approach in measuring tenure insecurity. The author classified use and transfer rights into short-term

(utmost one year) and long-term (no less than one year)⁶. He then asked the farmers in Tiyo Woreda of Arsi region to identify the bundle of rights they have on each of their plots. The plots with short-term use or transfer rights only were categorized into “less secure.” Those with short as well as long term use or transfer rights were identified as “more secure.” There were more farmers who perceived the idea of more more unsecured with their long term transfer rights, as compared with long-term use rights.

Paying a premium for certainty

Tekie (2000) attempted to measure tenure insecurity by how much farmers are willing to pay to obtain a secured private ownership of land. They are willing to pay more for land with investment, but the amount decreases as land size with no investment increases. Similarly, they are willing to pay more for land close to their homestead. Families with large working adults, however, are less willing to pay since they would expect to benefit from the status quo, i.e., continuous redistribution of land. The author concludes, based on the empirical results, that there are compelling reasons for having a secured institutional arrangement for farmers in Ethiopia.

To sum up, these different measures (perceptions, counting bundles of rights) and estimation of certainty premium) provide ways of assessing the degree of tenure insecurity. This is a significant contribution towards quantifying the effect of tenure insecurity. Those holding PA-land are more secured in the short-term than the long-term both in use as well as transfer rights, particularly those with smaller land holdings. Farmers are willing to pay a premium for certainty on their PA-land. Growing perennial crops on PA-land appears to strengthen the security of tenure. Farmers are relatively more secured on PA-land than short-term rental. Hence, farmers are less willing to commit long-term investment on rental plots.

⁶ The author classified use rights into short-term (e.g. making free crop choice, fallow for one year) long-term (e.g. fallow for more than one year, planting trees, building permanent structures such as stone bunds and terraces). Similarly, transfer rights were grouped into short term (e.g. right to share out land on a short term contract) and long term (e.g. e.g. bequeathing land)

Insecurity of tenure limits the degree to which landholders exercise their land rights

Access to land is necessary but exercising rights that come with it in effect determines how much a landholder has control over land resources, either to use it or to transfer. Insecurity of tenure limits how much these legally specified rights (also socially sanctioned) are exercised. For example, a landholder who is insecure of long-term rights is less likely to commit resources into long-term investment or rent-out land on a long-term contract. Because of uncertainty into the distant future (either because of ambiguity in specification of the land rights or historical experience), some of the land rights are thus left unexercised and hence diminishing effectiveness of command over using or transferring land resources.

Even where land rights are legally permissible, transaction costs associated with enforcing land rights may be high to some landholders. Either the law or the rules of enforcement are not transparent, or the institutions are not in place to effectively enforce the rules. The transaction costs for protecting rights to use and transfer land become prohibitive and some landholders may opt either to abandon contested rights including loss of land or operate on reduced land rights. Where enforcement is dependent on one's wealth or connection with local power, the poor and socially excluded are more likely to forfeit their rights.

VI Land Quality and Investment

Land suitable for agriculture represents a small fraction of the total land mass.

About 55 percent of the total land area in Ethiopia constitutes moisture-stressed arid and semi-arid areas with less than a four-month crop growing period. The land is not suitable or marginally usable for rain-fed cultivation because of severe moisture stress. No crops are grown in most of these areas or are grown with a high-risk of crop failure. Areas with a longer and dependable period with at least 120 crop growing days are found in the remaining 45 percent of the total land area, particularly in the highlands, which account for 22 percent

of the total land area (Table 7.1). Within these highlands, however, farming is concentrated in the mid-to-high elevation zones with topography suitable for human settlement and cultivation, with areas with heavy black clay soil.

Table 6.1: Temperature and Moisture Characteristics of Major Agro-Ecological Zones (AEZs)

Moisture Regime	Length of growing days	Temperature Regimes (% of total land area)		
		Hot to Warm > 21°C	Tepid to Cool 11-21°C	Cold to very Cold < 11°C
Arid	< 45	30.95	0.55	None
Semi-Arid	46-60	3.29	0.28	None
Sub-Moist	61-120	11.66	7.62	0.42
Moist	121-180	13.06	11.20	0.64
Sub-Humid	181-240	7.45	7.64	0.47
Humid	241-300	0.90	2.48	0.54
Per-Humid	>300	0.41	0.42	None

Source: Ministry of Natural Resources and Environmental Protection

Note: The majority of the country's land area is in the lowlands with a hot-to-warm thermal zone (67.7%). The remaining areas (32.3%) are in the highlands with cool-to-cold thermal zones.

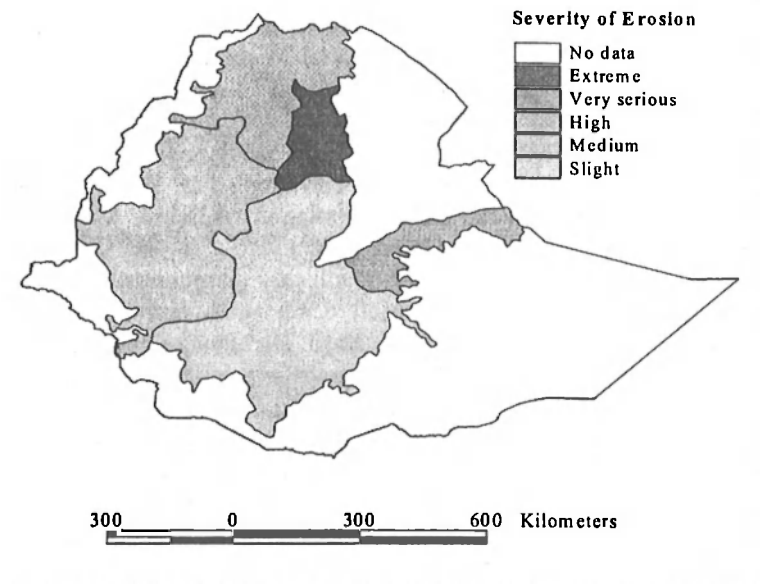
All available estimates of arable land, albeit some variations, indicate that arable land with a dependable growing period represents a fraction of the total land area (Hurni, 1988; ERS/USDA web site). Hurni estimates that only 22 percent of the total land area is arable, suitable for farming. The Government of Ethiopia reports a high percentage of 38 percent. The recent estimates in ERS/USDA show that Ethiopia has nearly 20 percent of its total land in the category of "good soils and climate." Compared to other African highlands such as Kenya (11.4%), Rwanda (36%), and Malawi (12%), the estimate for Ethiopia represents a mid-point in the range.

Not only land suitable for agriculture is small, it is degrading

About half of the highlands in Ethiopia are significantly eroded (FAO, 1986). Within the highlands, degradation is more prevalent in mid-to-high elevation areas, as compared to the lowlands. Because population is distributed within the highlands in an inverted U shape by elevation where the peak occurs in mid-elevation with hospitable climate (Aynalem, 1987; Mesfin, 1991; Muluneh, 2001), land degradation is intense in the mid-elevation due to continuous agricultural intensification under population pressure with little technological change.

Figure 6.1 shows the geographical distribution of land degradation, as measured by topsoil depth (map reproduced with permission from Professor Belay Tegene at Department of Geography in Addis Ababa University). Land degradation varies systematically across space with severe depletion occurring in highlands areas with poor climate (e.g. low and variable rainfall), mountainous topography, low inherent soil fertility, long history of population settlement, deforestation, overgrazing and intensive crop farming, and recurrent droughts and related impoverishment. The areas with extensive soil and water erosion are marked by low topsoil, declining soil fertility and increased moisture stress and water scarcity. These biophysical changes are associated with declining productivity, increased rainfall-linked production variability and failures, scarcity of land and higher rental value, out-migration, and change in attitude towards fertility and family size (Tesfaye, Belay and Dessalegn, 2002)

Figure 2.01: Severity of Soil Erosion on the Ethiopian Highlands



Farmers develop good perceptions of degradation of their fields over time

Farmers are generally aware of the severity of soil and water degradation (Berhanu 1988; Belay, 1998; Belay, 1992; Ezra, 1997; Tekie, 2001). Level of awareness tends to be high among farmers who live in areas with more degraded lands, particularly in hilly-mountainous terrain (Berhanu, 1998; Bekele and Holden, 1998; Tekie, 2001). Farmers who have plots with topographic features that are susceptible to soil erosion (for example, plots with long and steep slopes, convex or concave shapes) show greater awareness of soil erosion problems (Berhanu 1998; Tekie, 2001). Depth of farm knowledge of specific plots that is accumulated through years of cultivation enhances the level of awareness (Berhanu, 1998; Tekie, 2001). Distance of plot from homestead also has a negative effect on

level of awareness (Berhanu, 1988; Tekie, 2001). The effect of land (plot) size is mixed. Farmers with large plots appear to be more aware of soil degradation in Tigray villages (Berhanu, 1988). But, Bekele and Holden (1991) find poor farmers with low land per capita who tend to perceive greatly the threat of land degradation.

Extent of soil conservation and improvement are not commensurate with the level of awareness

As the farmers in the north-central highlands of Ethiopia reported, they even claim responsibility for improving and maintaining their lands (Mesfin 1991). But investments in land conservation and improvement are generally low, albeit cases of indigenous soil conservation practices (Belay 1992, 1998; Berhanu 1998). The econometric evidence in Berhanu (1998), Bekele and Holden (1998) and Tekie (2001) identify some of the explanations.

Perception of degradation: Farmers who are aware of the severity of land and its impact on current and future productivity are more likely to commit resources to improve the productive capacity of land (Ervin and Ervin 1992). Such a high level of perception is one of the reasons for more farmers applying indigenous conservation practices in degraded areas of Ethiopia (Belay 1992 and 1998; Berhanu, 1998; Tekie 2001). Farmers invest more in degraded sloped plots as long as it is within a gradient range where the expected yield exceeds the cost.

Farm size: Increase in farm size is positively correlated with probability of maintaining soil conservation structure (Bekele and Holden 1998; Grepperud 1996) and investing in land conservation (Berhanu 1998). Such a positive relation between farm size and investment suggests that small farmers in Ethiopia are trapped in the "Malthusian" predicament albeit their awareness of severity of soil erosion. These results for Ethiopia are contrary to the findings in studies in other countries. For example, the small farmers in Rwanda invest their labor in low-capital intensive conservation practices such as grass strips and contour hedgerows (Clay and Reardon, 1997). This increase in land investment as farm size decreases is also established in studies in Asia (Fedder et al 1988; and Templeton and Scherr, 1999).

Security of tenure: Land with secured long-term tenure provides farmers with more incentive to invest. Tenure stability is the key for farmers to have increased knowledge of specific plots and devise a long-term strategy for land improvement (Berhanu, 1998; Tekie, 2001). Farmers possessing land per capita that exceeds the average in a village are more likely to invest less since they expect their land would be taken away in near future (Tekie, 2001). Farmers with short-term leased land are more likely to discount heavily future benefit and invest less.

Number of economically dependents in a household: The econometric evidence from a study of farmers in the central highlands of Ethiopia shows that increase in household size, holding composition effect constant, reduces the probability of maintenance of conservation structure (Bekele and Holden 1998). As more dependents, relative to working labor force, increase in a family, the pressure for subsistence increases, especially among resource-constrained poor households.

Number of working adults in a household: In an environment where agriculture is the only or better income generating activity, increase in the working force is likely to be associated with the adoption of labor-intensive production and land improvement practices. For example, small farmers in Rwanda invest twice as much as large farmers in labor-intensive soil conservation investments (Byiringiro and Reardon, 1996). Farmers In Tigray region of Ethiopia who live in remote areas away from road or market places invest more labor intensively in land conservation (Berhanu, 1998).

However, where labor finds a better return outside the agriculture sector, it may not sustain the natural resource base for agriculture. As the econometric evidence from the Rwanda survey shows, increase in the agricultural wage has a positive effect on conservation investment and non-agricultural wage has a negative effect on land investments in Rwanda (Clay and Reardon, 1997). That is, switching of labor away from farming and investing in land occurs as agriculture becomes less competitive relative to returns in the non-farm sector.

Poverty and Risk have a similar disincentive effect: Improving the profitability of agriculture and its competitiveness is not enough since the incentive to invest depends on expected net incremental benefit that accrues in the future, which is a product of the level of

profitability and probability of realizing it. In an environment where the probability of realizing future benefit is low, farmers are less willing to commit resources today for an uncertain future. This probability tends to be lower for farmers who have a short time horizon due to perceived high risk (assuming these farmers are risk averse) and/or poverty. As the findings of Bekele and Holden (1998) shows, poor households are less concerned about current rates of soil erosion and its future productivity effect, and hence less willing to invest in soil conservation structures that take large areas of land out of production.

Investing in off-farm income: The effect of off-farm income on land investment follows the same logic applied to labor supply decision between farm and non-farm. In an environment where return to agriculture is low and subsistence pressure is high, income from off-farm employment is to meet consumption need than investing in land (Bekele and Holden, 1998; Tekie, 2001). On the other hand, flow of private capital is the primary source of intensive land capitalization in prospering agriculture in Machakos district in Kenya (Triffin et al, 1994). Non-farm income has also a positive effect on conservation investments in Rwanda (Clay and Reardon, 1997).

Asset Ownership: Ownership of livestock is a key asset holding in rural Ethiopia, notwithstanding the growing problem of scarcity of grazing land and pasture. Oxen power is the key input in agricultural production. Income from livestock augments consumption and production expense and also acts as a substitute for insurance, especially in time of crop failure. The evidence on the effect of livestock ownership on land investment is mixed. Livestock has a negative effect on the perception of a soil erosion threat (Bekele and Holden, 1998). The better off farmers, who are not under subsistence pressure, see less threat of soil degradation. And since grazing is communal, the cost of pasture degradation is less likely to be factored by owners of livestock. On the other hand, Tekie (2001) finds a positive but weak effect, suggesting wealthier farmers are more likely to invest in soil conservation.

To sum up, farmers in fragile degraded areas are more likely to invest in land improvements and their level of awareness is high. Land investment is greater on land holdings with stable tenure and own operated areas, as opposed to leased land, attracts more investment.

However, overcoming insecurity or instability of tenure is one of several factors that influences decisions to invest in land. There are other factors that are no less important: farm size, presence of working labor, ownership of assets, profitability of agriculture, risk and poverty, return in non-farm sector, and cohesiveness of communities.

VII Rental Land Transactions and Factor Equalization

In an environment where factor markets are functioning, household factor endowments such as size of family labor and oxen become less important in determining the level of factor use at farm level. If land and labor markets functions well, farmers transact their lands and labor to equalize their land to labor ratios across farms. The same applies to oxen markets. That is, actual land to labor ratio (land to oxen ratio) at farm level will be different from land-labor endowment ratio since farmers are able to use labor or land markets to use factor ratios different than what they are endowed with. For example, a farmer who is land constrained is able to cultivate as much land as a farmer with the same family labor if he could acquire land through the land market.

PA-based land allocation is driven largely by “equity” consideration where every eligible farm-household is provided with land, subject to PA specific allocation criteria. The common practice of allocating land in proportion to the number of household members rarely takes into consideration the ability of households to till land. Consequently, there are farmers who hold equal size of PA-land per household, but with significant variations in factor intensity, such as land per adult labor, land per oxen, and land per working capital. The technical ability of peasant associations to anticipate and correct changes in factor proportions at farm level is limited.

The emerging land markets, while still in its infancy, appears to provide such venues for equaling factor proportions through trade (Bereket and Croppenstedt, 1995; Gavian and Amare 1996). Farmers who lease in land are able to increase area of land operated per labor, relative to their pre-transaction position. On the same token, farmers who lease out and operate on smaller areas of land that matches their labor and non-land asset. There is thus a narrowing of non-

proportionality of land to labor ratio between the transacting households.

Such a process of factor equalization has been established in various studies based on the 1994 Arsi rural household survey (Gavian and Amare 1996; Gavian and Ehiu, 1996; Ahmed et al 2002). Bereket and Croppensedt (1995) also concluded from a survey of agro-ecologically differentiated sites that sharecropping is acting as a vehicle to adjust land size to factor endowments such as land and oxen.

The results presented in Abebe (2000) also show the same pattern, but the author describes the process of the land transfer as one-way from the poor to non-poor and a mechanism for creating “superfluous” labor of the poor. There is no reason, however, for the process of equalization to be systematically one way. Secondly, it is not always the case that those with more PA-land relative to own-labor are the only poor. There are both land-constrained (e.g. landless) and land-abundant households who are poor and found on both sides of the rental land markets. It is plausible though that those who lease out land are mostly found among the poor who are land abundant relative to labor.

Nevertheless, mindful of the message in Abebe’s work, the rental land market generally permits a factor equalization process that allows farmers to effectively utilize their limiting factor. In the case of land constrained households, for example, they are able to get more land to fully utilize their labor. The most illustrative case is that of the households with no PA-land but manages to get access to land through markets and have a positive ratio of land to labor. Similarly, the land abundant households are able to use the labor of tenants to have their land tilled, especially those who farm jointly with their tenants. However, the effectiveness of these land transactions in equalizing factor proportions at farm level depends on the flexibility of other factor markets to respond to changing incentive [Tesfaye, 1991]. Fragmentation of land markets, restrictions on flow of labor, and weakness in markets for oxen, credit and insurance limit the extent to which these land rental markets perform the equalization function.

VIII Area of Land Operated, Quality, Tenure and Productivity

There are different ways in which land influences agricultural production. The first is the quantity effect; more land means more to output. The second is the quality effect; land with better land quality attributes produce more output per unit of physical area of land (e.g., output per hectare of land). The third is the tenure effect that governs access, use and transfer rights. Tenure effects land productivity through intensity in factor use, technical efficiency, technological change and change in output mix. Over a long period of time, tenure also influences productivity through its impact on today's investment in land or enhancing the future productive capacity of land.

Size of land is the key limiting factor in agricultural production

Agricultural production is an outcome of a process influenced by the level of factor inputs, efficiency and technological change. These production enhancing factors may be grouped into: (1) conventional (traditional) inputs such as land, labor and capital such as animal traction, (2) technical inputs (e.g., fertilizers, improved seeds), (3) human capital (age/experience, education, nutritional/health status of farm labor), (4) land quality (e.g. soil fertility, land formation, climatic variables); and (5) institutional variables such as tenure type. The tenure effect works through these different sources of agricultural production, i.e., level and quality of factor inputs, technological change, and composition of output, such as choice of crops.

Given the low level of agricultural development in Ethiopia, conventional inputs such as land, labor and livestock dominate the sources of productivity growth (Ahmed et al 2002; Gebeyehu, 1999; Croppenstedt and Abbi, 1996; Abrar, 1996; Asefa and Heidhues, 1996). Land is by far the most limiting factor in Ethiopian smallholder agriculture. The output elasticity estimated range is between 0.32 and 0.58. As compared to labor, these elasticities are at least three times greater than labor, indicating the scarcity of land to labor in general (the multiplicative factor maybe less if peak labor is used instead of aggregate labor supply across all operations).

As farm size decreases, there is a tendency for productivity to increase, which is consistent with a widely established inverse relation. The explanation for such a relationship in the Ethiopian context is not because small farmers are markedly more efficient in production than large farms (Gebeyehu, 1999; Croppenstedt and Abbi). Nor difference in tenure arrangements (own-operated, share tenancy, fixed rental) is sizable by farm size. The most plausible explanations are differences in intensity of input use, quality of land, and unobserved inputs such as labor management. As farm size decreases, farmers tend to use their variable inputs, including using fertilizer, intensively (Gebeyehu 1999). Farm size and land quality attributes also show a negative correlation (Ahmed et al, 2002; Tesfaye and Bedassa, 2001b; Croppenstedt and Abbi).

Quality of land matters

Land quality has a significant influence on agricultural production. The studies in Abrar (1996), Croppenstedt and Abbi (1996), and Ahmed et al (2002) show that land quality attributes have a significant production effect. For example, Croppenstedt and Abbi estimated an elasticity of output with respect to land quality of 17 percent at the mean level. Ahmed et al (2002) finds land quality elasticity of 0.33 on average – considerably large. Abrar (1996) shows that production response to land quality is much stronger where the initial land quality is low such as degraded land. Belay (1992) qualifies the effect of land degradation on yield by showing a quadratic relation where yield decline at the margin reaches its peak in the moderately degraded land and then tapers off in severely degraded land where yield response approaches zero.

Another key attribute of land quality is the effect of rainfall, both its level and temporal distribution. Rainfall amount and its distribution is critical in limiting input particularly in moisture-stressed areas. However, few studies exist that establish the statistical relation between rainfall and production. As the estimated relationship in Gebeyehu (1999) shows, it is not only the amount of rainfall but also its distribution that is critical for physical growth and production.

Estimated yield equations for maize and teff crops with different land quality attributes (altitude, slope, soil type, and organic matter in

soil) are reported in Table 8.1. The estimated regression coefficients confirm the importance of land quality attributes in explaining yield differences, holding other factors including technology effect, constant. The yield for maize increases with elevation in the 1500 to 2200 meters above sea level range (ALT) but at decreasing rate (ALTSQ). The slope gradient (SLP) has a positive effect within a narrowly defined range of 1 to 10 degree gradient. Yield responses are different between soil types; higher on the nitosols (DSLU2) as compared with the andosols. Maize is grown mostly on nitosols (34%), followed by andosols (22%), and cambisols (15%). Because organic matter is highest on nitosols, the effect of organic matter that exists in soil (OM) is positive but weak. The length of the crop growing period has a significant effect on yield, holding the effect of altitude constant. The longer the growth period, the higher the yield (LCGP) but it occurs at decreasing rate (LCGPSQ).

All the land quality attributes for “teff” yield are also statistically significant. Yield tends to increase with elevation in the 1700 to 2600 meters above sea level (ALT) but at decreasing rate (ALTSQ). Length of crop growing variables (LCGP, LCGPSQ) is weak when estimated with altitude variables included, which suggest that altitude is strongly correlated with the length of the crop growing period. When the latter is dropped, length of crop growing period becomes statistically significant. Yield responses vary by soil type; lower on nitosols (DSLU2) as compared with vertisols (DSLU1). Teff is mostly grown on vertisols (44%) followed by nitosols (18%) and cambisols (17%). Because of low content of organic matter (OM) in vertisols, the effect of OM in soil is positive and strong on yield.

These estimated coefficients of land quality attributes thus confirm the importance of land quality in differentiating yield responses. And the effect of land quality attributes on yield remains strong even in the presence of technology variables that compensate for low soil fertility (i.e., improved seeds and inorganic fertilizers) on crop yields. That is, observed differences in crop yields due to land quality occur independent of technical change.

Table 8.1: Regression Estimates of the Yield-Quality Relationships in Ethiopia.

Variables	Variable Definition	Maize	Teff	
		Coefficient (t-ratio)	Model 1 Coefficient	Model 2 Coefficient
			Coefficient (t-ratio)	
N	Nitrogen (kg)	15.386*** (4.038)	9.319*** (13.584)	9.332*** (13.480)
NSQ	Nitrogen squared (kg)	-0.093* (-1.822)	-0.061*** (-6.597)	-0.061*** (-6.549)
P205	Phosphorous (kg)	15.344*** (4.027)	5.588*** (8.154)	5.591*** (8.093)
PSQ	Phosphorous squared (kg)	-0.117* (-2.295)	-0.043*** (-4.705)	-0.0435*** (-4.673)
N*P	Nitrogen-Phosphorous interaction (kg)	0.088 (1.625)	0.035*** (3.667)	0.035 (3.640)
OM	Organic Matter content (kg)	58.031 (1.575)	69.848*** (7.405)	66.724*** (9.150)
PLDMON TH	Planting date	-415.505*** (97.46)	-38.295*** (-2.814)	-32.285** (-2.362)
YEAR	1989 and 1990	342.037** (3.071)	3.523 (0.253)	18.419 (-1.332)
ALT	Altitude in meters above sea level	56.339*** (8.485)	3.692*** (6.508)	
ALTSQ	Altitude Squared	-0.015*** (-8.693)	-0.0008*** (-6.207)	
SLP	Slop in gradient	110.722*** (3.398)	11.834** (2.570)	13.893*** (3.004)
DSLUI1	Dummy for soils type: 1=Vertisols, 0=otherwise		9.504 (0.459)	15.569 (0.752)

Variables	Variable Definition	Maize	Teff	
		Coefficient (t-ratio)	Model 1 Coefficient	Model 2 Coefficient
			Coefficient (t-ratio)	
DSL2	Dummy for soils type: 1=Nitsols, 0=otherwise	350.551 (1.880)	- 130.132*** (-4.985)	-132.974*** (5.058)
DSL3	Dummy for soil type: 1=Cambisols, 0=otherwise	870.931*** (8.268)		
LCGP	Length of crop growing period	33.329 (1.655)	3.665 (1.193)	12.952*** (4.591)
LCGPSQ	Length of crop growing period squared	-0.113 (-2.056)*	-0.0168 (-1.543)	-0.046*** (-4.562)
NEWVAR	Dummy for new variety: 1= New, 0=local	1333.234*** (4.560)	-40.889 (-1.353)	-36.704 (-1.207)
SSHOWA	Region Dummy: 1 =South Showa, 0=otherwise		171.285*** (4.127)	143.594*** (3.765)
ESHOWA	Region Dummy: 1 =East Showa, 0=otherwise	-803.460*** (-3.257)	160.963*** (5.157)	73.806** (2.786)
WSHOW A	Region Dummy: 1 =West Showa, 0=otherwise	-1576.76*** (-9.279)	62.254** (2.759)	38.098* (1.758)
AA	Region Dummy: 1 = Addis Ababa, 0=otherwise		- 114.111*** (-3.797)	-135.788*** (-4.717)
EGOJAM	Region Dummy: 1 =East Gojjam, 0=otherwise	-315.771 (-1.781)		

Variables	Variable Definition	Maize	Teff	
		Coefficient (t-ratio)	Model 1 Coefficient	Model 2 Coefficient
			Coefficient (t-ratio)	
WGOJAM	Region Dummy: 1 =West Gojjam, 0=otherwise		-16.866 (-0.553)	-42.593(-1.579)
ARSI	Region Dummy: 1 =Arsi, 0=otherwise		67.434** (1.854)	27.327 (0.818)
CONSTANT	Intercept	-81965*** (-7.671)	- 3974.331** * (-2.992)	-1803.747 (-1.429)
R2	Adjusted R-Square	0.466	0.353	0.343
F	F-Statistics	39.00***	83.263***	87.448***
N	Sample size	827	3310	3310

Figures in parentheses are t-statistics. ***, ** and * denote significance at $p < 0.001$ or $P < 0.01$ and $P < 0.05$, respectively. The base soil type in the Maize response function is Andosols. For the Teff response function it is Cambisols.

Tenure effect

The evidence so far indicates there are small differences in productivity gap between farms held under different tenure arrangements (Gebeyehu, 1990; Gavian and Ehui, 1999; Ahmed et al 2002). For example, Gavian and Ehui (1999) found a total factor productivity (TFP) gap of 10 to 13 percent on land held under fixed rental and share contract respectively in the Arsi villages, as compared with PA-land. Ahmed et al (2002) found using the same Arsi survey data, statistically significant lower yield under share tenancy, but no appreciable difference between fixed rental and PA-land.

On Technical Inefficiency: One possible explanation for the productivity gap is differences in technical efficiency among farms under different tenures. The econometric evidence in Ahmed (2002) shows significant technical inefficiency related to share contract (10 to

15 percent lower), holding other efficiency determining factors constant such as education (Gebeyehu, 1999; Abay and Asefa, 1996), farm size (Gebeyehu, 1999), and market participation (Croppenstedt and Abbi 1996).

There are different possible explanations for lower technical efficiency in share tenancy: (1) undersupply of labor effort and/or differences in (2) crop composition, (3) quality of land, and (4) farm knowledge and skills purely related to tenancy. The findings in Gavian and Amare (1996) and Gavian and Ehui (1999) show little variation in factor intensity by tenure type, especially in the ratio of land to labor. Gavian and Ehui (1999) ascribe the sources of differences to technical inefficiency to youth, low farm experience and knowledge, and quality attributes of land of tenant farmers. However, Ahmed et al (2002) find, from the same data, a different source of technical inefficiency, i.e., under supply of seedling and weeding labor in sharecropped plots as compared to own-operated or fixed rental plots. Restrictions on input-output decisions of sharecroppers limit their level, intensity and timing of labor supply.

Whilst there exist some inefficiencies related to tenancy, the evidence on explaining sources of technical inefficiency is thus inconclusive. The explanation that tenure-related productivity difference is due to land quality cannot be conclusively established since the relation between land quality and tenure is contingent on motive for land transaction and type of land contract. Some farmers may use the rental market to “weed” out inferior quality of land and hence there exists a negative relation between land quality and rental land. However, there are also farmers who are unable to cultivate and choose to share out their best land.

It is plausible that inefficiency arises from low farm experience and knowledge as evident in Gavian and Ehui (1999). These factors may partly capture the effect of unobserved factors. But the effect of other human capital attributes such as education cannot be emphasized as explaining variation in technical inefficiency since the findings in Croppenstedt and Abbi (1996) and Gebeyehu (1990) show that there are no substantial differences in human and physical capital between tenant farmers and own-operators.

While the Marshallian inefficiency exists, as shown in Ahmed et al (2002) where share cropping is an inferior contract from efficiency

perspective, it is at least of an empirical interest to establish the extent of such inefficiency in different Ethiopian settings. Given the presence of large technical inefficiency regardless of tenure type in Ethiopia, the inefficiency that arises from share tenancy may not be as strong. Moreover, farm communities in Ethiopia choose share tenants who have knowledge of farming and a reputation for trustworthiness. While the cost of supervision is non-zero, the social penalty of labor shirking is high and hence the loss in efficiency due to undersupply of effort may not be substantial.

On Agricultural Technology: So far, the analyses of technical efficiency assumes that farmers, regardless of tenure type, face the same production frontier but operate at different points within a production frontier. If such an assumption is relaxed, then productivity differences may arise between tenure types due to variation in the adoption of agricultural technology.

Holden and Yohannes (2001) tested if tenure insecurity negatively affects intensity of purchased technical inputs (seeds, fertilizer, pesticides and herbicides) using survey data from central and Southern Ethiopia. They estimated a two-stage regression model where a Probit model estimated in stage one to predict the probability of using purchased farm inputs and then OLS was estimated with correction for selection bias. The tenure insecurity variable was not significant in the decision whether to purchase or not (stage one), as well as in the intensity model (stage two). The authors find no significant inefficiency spilling over the use of purchased farm inputs due to share-tenancy arrangement. They also conclude that effects on short-term production decisions through rental market are not significant.

Using a different and older data set from villages in Southern Ethiopia, this author estimated a Tobit regression model to test if intensity of fertilizer use differs between staple crop (maize) and cash crop (Teff in the survey villages). The regression results show that intensity of fertilizer use is positive with respect to land quality attributes (intensity is high on red/black soils and less eroded land), ownership of livestock (those unconstrained by subsistence requirement tends to apply more amount per area), use of improved seed (predicted variable), and presence of service cooperatives (where there is physical access to fertilizer). On the other hand, intensity of

fertilizer use is negative with respect to area (intensity is higher on small farms), and nutrient-grain price ratio (responsive to price effect). Farmers using rental land (a predicted variable) for Teff, the main staple crop that is commonly grown on rented plots, use fertilizer intensively as compared to maize plots. Hence the conclusion in Holden and Yohannes (2001) is generally plausible but may not hold for all crops.

On Output Mix: The studies so far do not capture the effect of crop composition on explaining productivity difference between own-operated and tenured farms since there are no appreciable differences in composition of output in predominantly cereal crop growing areas, as in the Arsi survey. However, such variation is strong in farming systems where perennial crop growing is common. Since the majority of rental contracts are short-term, farmers concentrate on annual crops. Permanent crops such as coffee, chat, and 'Enset' are rarely grown in rental lands. Hence, there are yield differences (measured in real monetary value) between farmers operating their own PA-lands where perennial crops are grown and rental lands where only annual crops dominate.

Table9.2: Tobit Regression Estimates

	Teff	Maize
	(Absolute t-coefficients in parenthesis)	
Soil type	10.13 *	2.82
(Red/Black/Sandy)	-4.48	(1.42)
Erosion index	-18.52 *	-7.56 **
	(3.98)	(2.03)
Land rented	11.11 **	-2.84
	(2.08)	(0.50)
Area cropped (ha)	2.44	-12.45 ***
	(0.54)	(1.79)
Livestock	0.01 *	0.01 *
(in TLSU)	(2.70)	(2.95)
Household head	0.94	2.95 **
Education	(0.70)	(2.26)
Household head	-0.25	0.18
Age	(1.19)	(0.94)
Amount of improved	0.79 *	0.54 *

	Teff	Maize
	(Absolute t-coefficients in parenthesis)	
seed per ha (kg/ha)	(6.65)	(4.20)
Nutrient-grain	-39.45	-81.58 *
price rate	(7.08)	(4.04)
Presence of farm	16.56 *	8.41
cooperative (1 yes)	(3.04)	(1.58)
Village effect	28.79 **	-38.82 **
	(2.06)	(2.01)
	-30.57	
Constant	(2.04)	53.69 *
		(3.23)
Sigma	38.36 *	38.19 *
	(16.61)	(20.24)

NOTE

* Significant at 1% ** Significant at 5% *** Significant at 10%

IX Land and Poverty Correlations

This section first identifies the paths connecting land to poverty. Secondly, it emphasizes that overcoming poverty requires, in addition to equitable distribution of land, improving productivity of land in such a way that incremental income is distributed more than proportionately to the poor. However, rising land rents may offset the productivity and income gains. Finally, land alone is not a sufficient predictor of poverty as evident from the determinants of poverty.

Connecting Land to Poverty

Poverty is defined here in terms of inadequacy of income or consumption of basic needs such as food. Poverty in rural Ethiopia is widespread and deep, and high even by African levels. The poor are large in household size with more dependents. They are primarily engaged in low-return self-employment, particularly in agriculture. They have an income that is largely spent on food, but is still not sufficient to meet their food requirements for a healthy and productive life. Inadequate provisioning of food also correlates with poor nutritional child and adult nutrition.

A typical income portfolio of rural households comprises of diversified income sources, but agriculture is the primary source of employment, production and subsistence. Because the majority of the poor are primarily engaged in agricultural activities, poverty in rural areas is largely related to low productivity of farm labor, which in turn is related to small farm size, poor quality of land (soil fertility in particular), low rate of application of improved technology, shortage of capita (for example, traction animal), poor health and labor supply conditions, and constrained access to agricultural markets because of weak road infrastructure and service providing institutions.

Studies on determinants of poverty largely identify these same factors as poverty determinants in rural Ethiopia confirming the dominance of agriculture in rural livelihoods. As the studies in Gobeze (1999), Deracon and Krishnan (1998), and Mekonen, Abebe, Bereket (1999) show, the probability of being poor is statistically related to subsistence farming or low-return non-farm occupations, living in marginal agroecology with poor agricultural potential, physical inaccessibility, absence of working adults with good health within households, old age, being female-headed, shortage of assets for agricultural production (land and oxen), low educational attainment, and producing mainly non-tradable staple crops. Gobeze (1999) suggests that there is a minimum land size to separate the poor from the non-poor. Mekonnen, Abebe and Bereket (1999) find that it is not land size per se but its quality such as whether the land is used for cash crops or not that explains the probability of escaping poverty.

Land connects to poverty in different ways. As the studies on rural poverty and production function establish, the major path way is through land-production-income-consumption links. Land is a limiting factor in production, both its quantity and quality. Access to land, particularly to good quality land, increases production, more strongly than other factor inputs. The effect of increase in agricultural production is passed on poverty reduction (or, more generally on welfare) through different conduits: (1) increases on-farm production and wage employment in agriculture; (2) change in food price; and (3) indirect through demand stimulus effect of agricultural growth on non-tradable non-farm sector and associated increases in employment (both self as well as wage).

Land also has a collateral value and hence enables landholders to gain access to credit or cash to meet production and consumption needs. Farm households with land are better positioned to get access to loan in informal credit markets. Or, they can use their land as a substitute for credit such as requiring a cash deposit as a condition for renting land.

The land-poor are more likely to be deprived of such basic services as educational attainment and health services. Hence, they tend to be undernourished with a high health risk. They are also poorly connected in community networks and decisions that are critical to their livelihoods. Often the burden is greater on poor women, who are disproportionately poor because of absence of working adults and assets (physical, financial and social). Relaxing land constraint thus increases the capability of poor households to gain better access to social services and community support networks.

Overcoming Poverty Requires More than the Distribution of Land

The most significant contribution of land reform policy so far has been the equitable distribution of land. More than 90 percent of farm households have access to land, albeit declining in size and quality. Countries that start economic growth from less unequal distribution of assets, land in particular, tend to grow faster than countries with more unequal land distribution (Deininger and Squire, 1998). Provided that emerging tenure systems are not inflexible for land markets to operate efficiently, Ethiopia is better positioned today for rapid broad-based agriculture-led economic growth.

However, with farm size declining, farmers have to strongly increase their level of land productivity through increased cultivation intensity, improved efficiency, and technical change. Increased productivity, particularly of food staples, goes a long way in addressing food insecurity and poverty since food security is essentially a food production problem for the majority of the farmers. Since farmers rarely consume all they produce, part of their produce is sold to convert production to improved cash income. The net income gain through such market-mediated conversion depends on the scale of their trade and profit margin (price less costs of production and transfer). For farmers to benefit from increase in productivity, it is

crucial they have physical access to markets at low transaction costs through improved marketing infrastructure and institutions that deliver inputs and finance, and market output at low cost. Reduction in costs of production and marketing through technological change and marketing infrastructure are necessary to enlarge markets and overcome problems of non-tradability and an associated sharp decline in price in time of increase in production in demand-constrained markets.

Increased productivity and real cash income need to be coupled with measures to reduce year-to-year fluctuations in production, which are recurrent in Ethiopian rain-fed agriculture, particularly in low-rainfall moisture-stressed areas. Here transitory poverty is high involving large segments of rural population entering in and out of poverty depending on the variability of their harvest. The recent trends in famine-prone areas point that there are more people getting into poverty and staying longer because of the depletion of their assets in the process of coping recurrent production failures.

As shown above for the case of increase in agricultural production through area expansion (or, greater access to cultivable land), the benefits of increase in land productivity are not limited to improved on-farm productivity. They are also channeled through the food market (i.e., change in food price) and labor market (i.e., increase in wage employment). Poverty reduction through area expansion and productivity growth is maximized if growth occurs in ways that redistributes the incremental income more than proportionately to the poor.

Rising Land Rent May Partly Offset Productivity and Income Gains

For tenant farmers who depend on rental land for cultivation, only part of the increase in agricultural output or income is shared. The net income gain due to the tenants depends on the area of land rented, increment in land productivity, and output and cost sharing arrangements. Whilst the rental land markets appear to equalize distribution of landholdings, their effect on income distribution could be disequalizing if rental rates rise to offset the gain from improved productivity.

In the land-constrained environment of Ethiopia, rental rate rises with the increase in land scarcity. For example, rental rate has historically increased from one-third to 50:50 in output shared. As land becomes scarce, those who lease out land demand tenants to contribute a large share of variable inputs. In some instances cash advance is required to get access or to continue farming. To the extent that the tenants start from a low-income position and rising rents redistribute income to renters, the net income gain from agricultural production and productivity growth is diminished.

Land alone is not a sufficient predictor of Poverty

Whilst land and poverty is negatively correlated, such a relation may not always hold because of the nature of land distribution, the tenancy arrangement, and meaning of landless in rural Ethiopia as commonly used. Using PA-land alone, for example, has a limited use in identifying poor households. There are today “PA-land abundant” households who possess land but who are income or consumption poor because they lack labor, oxen, and finance. If PA-land size alone is used to identify the poor, it is plausible that a land abundant widow without family labor, farming experience and physical and financial assets maybe classified as non-poor. Similarly, there are also land-constrained farmers with adequate non-land resources (labor, oxen and access to credit) who may be classified wrongly as poor.

The conventional association of poverty with tenancy is not quite applicable to the Ethiopian context. Unlike the Asian countries where there exists a wage labor-tenant-owner operator ladder that systematically mirrors poverty rankings in descending order, there is a reverse type of tenancy in the Ethiopian context. It is because the tenants are not the commonly characterized economically disadvantaged who are located at the bottom of labor-tenant-owner operator ladder. Some of those who rent in land are land-constrained but not in size of working labor, assets and ability to finance. These “tenants” often seek more land area to operate through exchanging their labor or oxen or advancing credit. And those who are efficient producers are likely to improve their living standards and move up on the social mobility ladder. The “landowners” possess large land because they have large family size but some may not possess the

ability to farm because of lack of assets. They are not the ones that command economic and social power in rural areas.

While in a majority of cases rural households without PA-land (the “landless” as often referred to in Ethiopian literature may fall into the category of the poor, there are emerging young entrepreneur part-time farmers who are not poor. In South Wollo, for example, some of the newly established young families are engaged in non-farm activity to generate cash to build farm capital such as oxen and cash for renting land. Some grow high-value crops by combining seasonally differentiated farming and non-farming activities, and manage to escape poverty and move upward.

The econometric based studies on rural poverty confirm that land is only one of several factors. This is also confirmed in community-based opinion surveys where farmers were asked to identify poverty indicators in their communities (see, for example, Aklilu and Dessalegn, 2002; Abbute, 2001). They relate their physiological and social deprivations to a variety of interacting factors, i.e., physical environment (climate, land formation, soil type), poor nutrition and health, lack of adequate physical and financial capital, particularly land, oxen and finance, little economic access to adopt and use new agricultural technology, and lack of a market outlet. Paradoxically, there are no better routes for these poor farmers to escape out of poverty other than farming.

X Land Scarcity, Competition and Labor Mobility

The competition for scarce agricultural land has physical, economic and social expressions. A common physical expression is the diminution of quality-adjusted land holdings. Other physical expressions of land scarcity are, for example, decline in the carrying capacity of land, change in land cover from grazing and forestlands to cropland, decline in area under common property resources, and the increased distance to forest or water points. The economic expression is in terms of rising rental value of land such as increased cash rental, increased output share of lesser and/or lowering share of variable inputs and/or tightening conditions to right to lease land such as cash deposit or providing guaranteed labor in time of the peak farm season. The social dimension takes such forms as the increased work burden

on women to fetch water and forest products and migration. This brief section dwells on the migration dimension of land scarcity and competition since this historically important mechanism for easing land distribution is glossed over in the current literature in Ethiopia.

Population tends to concentrate in areas where climate and land are suitable for living and subsistence production

The majority of the population is rural and located mainly in the highlands (>1500masl), which account for 34 percent of the total land area but home for more than 85 percent of the total population. Within the different highland ecosystems, the population is vertically distributed (Mesfin, 1991). The population concentration is highest in the middle-elevation zone (“Woina Dega” agro-climatic zone), which, as in the case of Table 11.1, lies in the 1800-2600 masl with 67 percent of the population occupying close to 32 percent of the total land area. This zone has the most hospitable climate with land resources suitable to grow a large variety of crop and livestock species (Mesfin, 1991).

Table 11.1: Vertical distribution of the Ethiopian population in 1984

Altitude zone (masl)	Percent of area	Percent of population
Above 2600	5.8	10.4
1800-2600	31.8	67.1
1400-1800	28.1	11.5
1000-1400	13.4	8.2
Below 1000	21.5	2.8
Total	100.0	100.0

Source: Aynalem, 1987

Location specific studies, especially the findings in Mesfin (1991) detail the vertical distribution of the population in northern Shewa and Southern Wello, and correlate it with farming practices, intensity of land degradation and the migration pattern. In the “Woina Dega” zone, population density and crop diversity reach their maximum and then taper off in the “Dega zone”.

The same pattern of vertical distribution of the population is reported in Western Gurageland (Muluneh, 2001). As the table below shows, the population in West Gurageland is concentrated in the “Woina Dega” agro-climatic zone (1700-2400 masl) and “Dega” zone (2400-3200 masl), which jointly account for 80 percent of the total land area and 92 percent of the population. The respective population densities are 285 and 310 persons per square kilometer.

Table 11.2: Vertical distribution of the Population of West Gurageland in 2000

Altitude zone (masl)	Percent of area	Percent of population	Population density Persons per km ²
Above 3200	1	2.3	495
2400-3200	32	41.9	319
1700-2400	48	50.5	285
Below 1700	19	5.2	67

Source: Muluneh, 2001

Out-migration is a way to ease population pressure on land and spread livelihood risk across geographical space

According to the latest 1994 population census, most of the migration is rural, and rural to rural migration accounts for 49 percent of the total migrants. The history of migration shows that regions in the north, northwest, northeast, and central-south (i.e., the densely populated “enset” growing areas) are areas of net out-migration. On the recipient end are the regions in southwest, southeast and central. Ethiopia in most cases these are economic migrants pushed by land degradation and under population pressure and poverty.

In addition to such a migration involving traversing long-distances, people migrate short-distances. The findings in Mesfin (1991), which cover the administrative regions of Shewa and Wello, show a vertical distribution of population that increases with elevation. It reaches its maximum in the 2600-2800 m zone, which accounts for 20 percent, and then tapers off. Despite the fact that the climate in the 2200-2600 m zone is moderate and favorable for human

population and suitable to grow a large variety of crops, population density is higher in the colder, 2600-3000 m belt. Farmers are slowly abandoning the elevation zone 2000-2400m as they find the landscape rugged, and the land dissected and suffers from severe gully and water erosion. They move upwards (2600-3000m) where there are more flat and undulating plateaus that are suitable for cultivation. Some migrate to the lowlands in spite of problems of low and erratic rainfall, and a high risk of drought.

The population in South Wello is growing at a rate of 3 percent per annum with the density averaging from 150 to 350 persons per square kilometer. The rapid population growth and declining availability of arable land is pushing an increasingly number of the population in the highlands to reside in very fragile and marginally productive land with slopes exceeding 30 percent, very shallow soils, and short growing seasons (Belay, 2000b). In addition, some travel from the degraded highlands to the adjacent lowlands. The geographical space that is often encroached upon is the interface between the highlands and the lowlands; space that customarily has been used or claimed by pastorlist and communities.

Distant migration has diminished in recent years because of the constrained mobility of labor. For most farmers, the cost of migration is high relative to expected employment opportunity and return. Secondly, the permanent residency requirement of the land policy closes the option of migrating for work away from place of origin. Thirdly, the current aggregation of people by ethnicity and drawing administrative boundaries further restrict mobility of labor because of territorial claim and restriction of access to land by ethnicity and associated conflicts.

The deceleration of labor mobility means that the important role of migration as a way to ease land pressure by equalizing factor proportionality between land and people is missed. Such a role is important since land is immobile and the only way to equalize land holdings across geographical space is through migration. As labor mobility is restricted, using migration as a way to pool climatic risk through spatial diversification of livelihood also diminishes. This is particularly an important income smoothing strategy for people in drought-prone areas, who, without long-migration, are confined to local income sources that often co-vary positively.

It is also a fact that economic growth in rural areas is bound to occur at different rates between regions. Growth is likely to occur more in regions with better climate, natural resources and developed markets. Growth spreads between regions through commodity trade and labor mobility. Labor moves where better employment opportunity exists and thereby equalizes wage (or, income) across space. The regions lagging in growth are likely to benefit from the lowering of food prices, improved local wages, and transfer of income from migrant labor. The current tendencies towards restricting labor mobility and pushing rural growth in low-potential areas at high social cost are devoid of economic rationality from inter-temporal perspective.

XI Common Property Resources Under Population And Poverty Pressure

Aside from individualized landholdings, there are key land resources that are largely common property: pasture, water sources (rivers, streams and lakes), and forests. These are the main resources for grazing, water and fuel. In addition, these environmental goods are important sources of household assets such as housing and cash income from sale of collected grass and forest products. The rural households at large benefit from these environmental goods and services, but the poor are disproportionately more dependent.

These resources are collectively owned (or, held) and managed. The use of these resources is not excludable (or, its cost relative to its return is high to define boundaries akin to privately owned property). However, it follows, unlike public goods, that the use of the resource by one member subtracts its availability by others (the law of subtractibility). In addition, as in the case of the rangeland where the variability of production is large, the boundaries need to be defined over a large geographical space with a flexibility to allow mobility to pool climatic risk.

Within the boundaries of the commons, the rights to common resources are vested in groups or communities that claim legitimacy to statutory and/or customary laws. There are rules for members that govern access, modality of utilization, distribution of benefits, and

transfer of use rights. Non-members are excluded except where there is a negotiated reciprocal arrangement.

Per capita availability of common property resources is on decline both in quantity and quality

Quantity dimension: The overall trends albeit some recovery indicate considerable declines in areas under common property resources. For example, studies on the history of land cover change show expansion of cropland and shrinkage in pastureland and natural forests over the last 30 to 40 years (Belay, 2002; Engdawork, 2000; Gete, 2000; Kebrom and Hedlund, 2000; Muluneh, 1994 and 2000; Solomon, 1994). However, the extent and intensity of the land cover change vary between geographical areas with a different history of population settlements, agro-ecological characteristics, farming systems and paths of agricultural growth (or lack of it).

In the northern highlands where crop cultivation has a long history, the deforestation process was more or less completed before the 1950s or earlier and there is little vegetation cover to be removed now. There is very little land for expansion of crop cultivation as every piece of land with some soil has already been converted long time ago (Mesfin, 1991; Belay, 2002; Kebrom and Hedlund, 2000). The completion of the process of increases in cropland and decline in vegetation cover has a relatively recent history in the northwestern highlands. As of the 1980s all land suitable for cultivation has been converted (Gete, 2000; and Gete and Hurni, 2001). The remaining natural forest areas are located primarily in the south and southwest of the country. However, the expansion of agriculture and settlements have caused disturbance to closed high forests in these parts of the country (Reusing, 1998).

Quality dimension: As grazing land shrinks in relation to the size of livestock population, the pressure on pastureland mounts. Farmers change their livestock management practices in response to the contraction of pastureland such as adjusting stock size, splitting their herds and sending some to distant areas, and overgraze existing pastureland. Overgrazing and moving to marginal areas exposes land to greater erosion risk and deterioration of common pastures. The process of deforestation also raises erodibility of soil since the

functions of plant roots to physically bind soil particles and stabilize soil, enhance water conservation by creating pores in soil surface to enable water infiltration, and vegetative cover to intercept and dissipate raindrop and reduce velocity of surface runoff weaken as tree and vegetative cover declines.

Conversion to crop cultivation has increased soil erodibility since soil loss is significantly higher on cultivated land as compared to land under perennial crops and woody vegetation (Hurni, 1988). And, as arable land becomes scarce, poor farmers are increasingly reducing crop diversity with increased emphasis on cereal crops as sources of food and cash to farm households. Such switching from perennial crops and pasture to annual crops raises risk of soil erodibility since such crops require intense tillage that often occurs during the rainy season when crop fields are devoid of vegetative cover.

The explanations for declining trends are often sought in their correlates

The declining trends in quantity and quality of common-pool resources are correlated with the biophysical environment (topography, climate, soil type), population growth and its distribution, paths and sources of agricultural development, evolving tenure arrangements, and change in public policy.

- *Increased aridity, frequent droughts and degradation of natural resource effectively reduce the availability of common pastures and water resources, particularly in arid and semi-arid areas where extensive and mobile pastoral livelihood systems prevail.*
- *Rapidly growing population and labor force:* Rapid population growth increases demand for food, fiber and energy while at the same time lowering cost of labor relative to land. In an environment of low agricultural technology, increase in agricultural production occurs through expanding land frontiers by pushing cultivation onto marginal areas including encroachment of pastoral lands for farming, converting permanent pastures and forest lands into intensive croplands, and intensifying land use.
- Forest products, especially fuel wood, are the main sources of household energy consumption. 85% of the total energy comes from biomass. With the increase in population that is poor and

dependent on natural resources for livelihood, national high forests and plantations are encroached upon and cleared for fuel wood and charcoal production for home consumption and cash generation, and grazing.

- Erosion of indigenous common property resource management systems, decline in collective action for sustainable use of common grazing and water resources, deterioration into open access akin to the prediction of the “tragedy of the commons” (e.g., widespread destruction of community forests in most parts of the country during 1991-93 as shown in Yeraswork, 2000 and Pankhurst, 2001).
- Deliberate government land tenure and use policy such as the individualization of common pool resources (for example, *ye wel meret klfilfil* in the Amhara region as a way to meet the dual objectives of providing land to individual claimants and an incentive to conserve natural resources).
- Failed state in provision of better substitutes for indigenous institutions for effective and sustainable management of common property resources, conflict prevention and resolution, and protecting the interests of competing land users particularly the pastoral population.
- *Poverty and livelihood insecurity*: Poor farmers are less likely to invest in soil conservation and improvement in an environment where poverty is widespread and serious. Even if farmers are aware of the effect of soil erosion, their incentive to invest is low because of their low valuation of a future income stream. Such a discounting of the future is particularly heightened in common-pool resources where tenure arrangement for the commons is weak.

Changing tenure arrangements and efficacy

Managing common property resources was vested in indigenous tenure arrangements that pre-existed the 1975 land reform, which transferred ownership of land to the state and land administration to state functionaries. The indigenous tenure systems managed common pool resources through the delineation of defined boundaries, restricting access to members with legitimate ancestral claims,

enforcing customary rules and practices in the use of commons and sharing benefits, excluding non-members except through negotiated reciprocal arrangement, and prevention and resolution of conflicts. These indigenous tenure systems have eroded over the years and newly state-mandated institutions are emerging. These new institutions face shrinking common pool resources amidst increased production risk that call for a system that economizes and allocates scarce resources equitably and efficiently, manages risk effectively, enhances conditions for collective action, and avoids conflict over claims to resources.

There are three dominant types of tenure arrangements today that co-exist in rural Ethiopia: (1) unrestricted common pool resources akin to an open access; (2) restricted common pool resources (e.g., restricted grazing and forest areas in the sedentary highlands and rangelands in pastoral area), and (3) individualization of hillsides and enclosed areas. In the agro-pastoral system, which is a transition zone between the sedentary to pastoral systems, the sedentary farmers are engaged in a variety of reciprocal arrangements with the pastoral population. In the Afar areas, for example, some of the animals are sent to the Afar land in the wet season when community-based grazing lands are closed. The Afar returns the animals at the end of the wet season and they are allowed to graze in the community pasture during the dry season.

The unrestricted tenure arrangement is prevalent under conditions where properties characterizing common property resources are absent (e.g. defined boundaries, rules of access and exclusion, and enforcement) or ineffective (i.e., individuals act independently to maximize utility or benefit without regard to externality effect). The widespread deforestation in 1991-93 or the deterioration of the indigenous pastoral systems is an example of open access akin to Harding's "tragedy of the commons".

The restricted common property resources exist in different forms: restricted grazing area, community forestry, and rangelands in pastoral areas. Although the restricted areas are accessible to defined community members and penalties are imposed for breaking the rules, there is some degree of flexibility in the use of the resources. Typically, no grazing is allowed in the wet season in enclosed areas except for some preferential access to members. Non-members are

strictly excluded. However, seasonal switching of tenure regime occurs in dry season under a variety of arrangements such as open access to members only, negotiated access to non-members, and open access to all.

These are either under customary management that claims its legitimacy to kinship or territory or state-controlled area-based management. Examples of the customary arrangements are the traditional forest management system narrated in Yeraswrok (2000) or the clan-based pastoral systems that exist in de facto today but are weakening. For example, among the Afar pastoral population in northeast Ethiopia, pastoral lands are traditionally delineated into clan lands and managed by clan elders (Getachew, 2001). Clan members have rights to access to clan land, use in accordance to established customary practices, and transfer to their heirs. The clan leaders are entrusted to exclude non-clan members save through negotiated reciprocal agreement, and prevent or resolve conflicts.

The effectiveness of these indigenous tenure systems, however, has been undermined by policies of state ownership of land and supplanting the traditional land administration and authority by state controlled functionaries, and processes of encroachment of pastoral areas and individualization of the commons. Whilst the pastoral territory is contracting, conditions of aridity and decline in vegetation are causing an increased variability in range production. These two forces call for greater protection of customary rights to clan lands, enhanced utilization of scarce pastoral resources, and enforcement of flexibility in application of rules of non-exclusion that allows mobility of the pastoral population. The conflicting objectives between the demands of the pastoral population for greater precision and enforcement of pastoral areas and the processes of encroachment of the pastoral areas often translate into frequent conflicts between the pastoral population and the state, between herders, and herders and farmers.

These different tenure systems represent a continuum of arrangements that could have a profound effect on the performance and sustainability of the common property resources. Questions that arise, for example are why these systems co-exist in the same geographical area? How effective are these different tenure arrangements in terms of equitable access to resources, efficient

utilization, and sustainability? What happens to the poor and socially excluded individuals when common property resources become scarce under these arrangements? What are the conditions for effective collective action?

The empirical evidence is generally thin in addressing these basic questions. The exceptions are the works in Yeraswork (2000) and Berhanu et al (2000a and 200b), which shed some insights on favorable conditions for collective action. In explaining the reasons for survival of natural forests amidst widespread destruction of community forests in 1991-93, Yeraswork (2000) identifies at least four factors favorable for collective action: (1) presence of simple and transparent rules that govern access and use of common pool resources that are rooted in traditions and have evolved over time; (2) flexibility in rules to changing scarcity condition; (3) homogeneity of community members (boundaries are easily defined, greater assurance and low incidence of shirking, and easily adaptable to changing conditions); and (4) low access to markets and commercialization. The case studies in Berhanu et al (2000a and 200b) qualify the effect of population size on collective action, i.e., it follows an inverse U relationship where both small or large population sizes are not favorable for collective action. Other conditions that are not favorable for collective action are wealth heterogeneity, low social capital, and openness to trade and market access. These studies suggest that common property resources are bound to diminish in importance as rural areas become more open and commercialized, population size enlarges, wealth differentiation increases, and tenure arrangements are not flexible to changing scarcity conditions.

XII Land and Gender

It cannot be assumed that land issues are gender-neutral, albeit scarcity of empirical evidence, especially in relation to land access and control, dependency on rental markets, security of tenure, agricultural productivity, and poverty. There are different levels of disaggregating gender. Often, the focus is on comparing male-headed and female-headed household heads. The latter may be categorized into de jure and de facto female-headed households. Such a level of analysis fails to capture potential gender differentiation within households. As

pointed out in Zenebework and Yared (2001), there is very little research-based information on intra-household issues in general, and gender in particular.

In addition, the quantitative analysis linking gender to land is often based on bivariate analyses. For example, comparing land size to family size without controlling for other conditioning factors that are wrongly captured by a gender variable may yield erroneous conclusions. But there are only few studies based on a regression framework. A caution is thus in order in reading existing evidence and attributing cause and effect relations.

Female households face fewer modes of access to land

PA lands in most parts of the country are commonly allocated to head of households but not to individual members. In most of the cases, household heads are male and they receive PA-land as representatives of their families. In principle, husband and wife are jointly responsible for the use and transfer of rights in PA-land. Generally, ease of access to PA-land by female-headed households is conditional on availability of land for male-headed households. Where supply of land is tight, access to land appears to be easier for male-headed households than female-headed farm households. The percentage for female holders increases only where the supply of land is less constrained.

There are exceptions though. For example, in Tigray region, a 'share', the amount of land that each adult should receive in a particular community, is first determined. Each adult, regardless of gender, receives one share. Children, up to a pre-set number per household, are given fractional shares (Tigray Regional State Council, Negarit Gazette, 1997; Bruce, Hoben and Dessalegn Rahmato 1994). The same principle was followed in the redistribution of land in the Amhara region in 1997 (Yigremew, 2001).

Other than the official channel, farm households acquire land informally through gift, renting, loaning, and possibly through purchase and mortgaging. In addition, they access common property resources. However, the modes of access are fewer and restricted for female-headed households. The explanations are rooted in perception

that female labor is less critical than male labor (Zenebework and Yared, 2000; Yigremew, 2001).

Female-headed households rarely rent-in land since they often lack the resources that a tenant farmer brings to acquire access to land: labor for undertaking all farm operations (female-labor rarely engages in plowing), farming skills, oxen, and seeds. In an environment where land is scarce, competition for land works to the disadvantage of those without resources. Such restricted access to land prevails despite evidence of unmet demand for land by women farmers. For example, current evidence suggests a disproportionate presence of female-headed households among the landless households, who are rationed out from getting land through officials channel including common pool resources.

Female-headed households are disproportionately more on the supply side of rental markets

Holding land by women, a desirable social goal by itself, does not often translate into own-cultivation particularly in plow-based farming systems. In most cases, they hold a small size of land but, in accordance to the definition used through out this paper, they are labor-abundant because they lack key complementary resources to fully utilize the land, particularly male-adult labor, oxen and finance. A woman-household head has four options: (1) call on friends and kin to cultivate her land; (2) rent out land either in fixed or share-rental; (3) hire in labor, if able to finance and supervise; and (4) abandon farming. Generally, wage labor is the less preferred option as compared to rental contracts since the full risk of crop failure is borne by households hiring wage labor and it also costs to supervise labor since labor effort is not observable. Fixed rental is preferred by fewer but is least desirable for the risk-averse lessee. A more likely compromise is share a tenancy.

The rental markets offer them choices of getting into share tenancy arrangements or renting for fixed cash. The evidence points out that the proportion of female-headed households who lease out land among all female-headed households is higher than the proportion in male-headed households, especially among the poor. Even controlling for factors of low-asset holding, male labor and

oxen, female-headed households are disposed more towards renting out land because of unobservable characteristics (e.g. managerial capacity or cultural norm). The choice for tenancy is particularly advantageous for poor households who often demand for interlocking with other factors to overcome resource constraints including access to credit for financing consumption needs.

Weak security of tenure limits the extent to which women farmers exercise their land rights

The evidence so far indicates that the perception and degree of insecurity of tenure vary between farmers. There are two questions pertinent to women's landholdings. Are female-controlled farms more or less secured than male-controlled farms? To what extent are women farmers able to protect and maintain their access to lands? If holding land is desirable for bringing social justice, then access to land is not sufficient without effective control (Zenebework and Yared, 2000).

Households holding PA-land, regardless of gender of headship, are entitled legally to a set of use and transfer rights. With these rights come obligations: paying tax, meeting environmental standards, and relinquishing land holding right if it is deemed by the government necessary⁷. But, in practice, female-headed households are not secured and exercise fewer rights. The explanations are threefold. Firstly, rights that are legally recognized are not fully and clearly specified and/or some are not considered socially legitimate. Secondly, institutions enforcing these rights are weak or non-transparent. Thirdly, the cost of enforcing is high, particularly if such a cost is systematically related to wealth status. The degree of command on

⁷ These rights are in principle jointly exercised by married women in male-headed households. But married women in male-households bear high risk of losing control of land in case of separation. First, these women forfeit their rights to hereditary land and access to official land in their natal localities because of the practice of verilocal residence at marriage (Zenebework and Yared, 2000; Yigremew, 2001). Second, they often start from a weak asset position at the time of marriage. Third, they tend to lose in time of divorce. Some region states such as Tigray spreads the risk of losing control through distribution of land irrespective of marital status.

land is even less in informal land markets where both legal recognition and social legitimacy are deficient. The burden of enforcing these contracts falls heavily on poor households, particularly poor female-households. Because they are dependent on male-labor for farming, and are economically weaker to bear the high cost of enforcement, and are socially disadvantaged; they are the most vulnerable to lose their rights in land and move to non-farm pursuits.

Whilst the empirical evidence is generally scarce, there are a few pointers that indicate that female-headed households are less secured in effectively controlling their land rights than male-headed households. Firstly, they practice fewer long-term rights such as growing trees or bequeathing land. Secondly, they are more vulnerable to lose an area of land overtime because of the failure to meet continuous cultivation and residency requirements, high costs of protecting land rights, and abandoning farming for lack of resources. Thirdly, long-term investment in land as a way of protecting land right or investing because of security of tenure is weak. Finally, female-headed households show a greater propensity to abandon farming and move to non-farm business as source of livelihood, which is indicative of the low commitment to farming under prevailing social norms and customs.

There are explainable gender-related productivity differences

The empirical evidence, albeit scarce, indicates statistically lower return on female-managed farms compared to male-managed farms, which is largely related to gender-differentiated yields in field crops (Dejene, 1994; Addis et al, 2000; and Yigremew, 2001). These differences are related to input intensity (land, labor and capital), quality of land, and access to improved technology. The regression estimates in Addis et al (2000) show significant gender differences in the gross value of output due mainly to lower intensity of factor inputs, particularly land, labor, capital and fertilizer, as evident from differences in input elasticities between female-managed and male-managed crop fields.

The elasticity of production with respect to female-managed land is stronger than male-managed land, which is consistent with the smallness of land held by female-headed households. Smallness in

PA-land in turn correlates with low adult labor content, farming skills and ownership of farm assets such as oxen, and constrained access to finance. A question of interest is whether male-headed households with the same characteristics (i.e., same demographic and resource constraints) obtain larger PA-land than female-headed households. There is no conclusive and robust evidence yet to demonstrate smallness is merely a gender phenomenon independent of these correlates. Access to land is gender differentiated, but it is probably linked to systematic differences in determinants of access to land. If there is systematic bias by gender after controlling for these conditioning factors, the bias maybe found in social norms and customs that are characteristics of a male-dominated society (for example, Yigrēmew, 2001; Zenebework and Yared, 2000).

How important is the quality of land in explaining gender differences in productivity? The evidence generally points out. that PA-land controlled by female households tends to be of lower quality on average⁸. Whilst it is speculative, it is more likely that investment in land conservation and improvement is low on female-controlled plots since the factors that affect investment decisions negatively are more prevalent among female-headed households: small farm size and subsistence orientation, large presence of dependents and less working adults, low asset ownership, insecurity of tenure, off-farm income destined mainly for subsistence, and marked poverty.

Other than the intensity of input use and quality of land, low productivity of female-managed farms could be linked to inefficiency and lower technological change. Addis et al (2000) simulated the productivity of female-headed farms using the average levels of inputs applied on male-headed households and concluded no significant gender-differentiated productivity differences. Such a conclusion is not consistent with some prevailing narrations; for example, women's fields are not planted or cultivated on time, high prevalence of tenant or hired labor shirking, and weak enforcement of share tenancy. In

⁸ However, the literature review in Dejene (1994) suggests such generalization is not applicable to backyard crops where female farmers have comparative advantage because production on these plots does not require plowing, and the demand for farm labor is met with little displacement of labor required in other activities.

addition, the robustness of the estimated elasticities in Addis et al (2000) is questionable since the econometric estimation does not account for land quality and tenure effect, and potential bias associated with some of the included endogenous variables. Hence, the issue whether female-managed farms are less or more efficient remains unsettled.

In short, gender differences exist in crop productivity. Such differences are mainly linked to differences in intensity of factor inputs, particularly land, adult labor and traction power. Whilst the evidence is not conclusive, the other explanations are lower technical efficiency and technology adoption. And investing in improving land quality is less likely on women controlled farms.

Feminization of poverty is in part linked to land endowment and its returns

Generally female-headed households represent a smaller share of the rural population, but their percentage is disproportionately higher among the poor. The econometric evidence in Deracon and Krishnan (1998) find, among others, old age, female headship with no working adults, and living in remote areas with poor rainfall contribute to high odds of being poor. Mekonnen, Abebe and Bereket (1999) also find the probability of falling into poverty is slightly higher for female-headed households in rural areas.

For women farmers who depend on land as their primary source of livelihood, poverty is related mainly to a low return in agriculture, which in turn is related to low production due to a small area of land operated and low productivity. For those who depend on renting out land, women's weak bargaining position in setting terms of contracts, particularly in influencing output sharing, and enforcing contracts diminishes return on leased land. Even when women start from favorable access to land, as compared to male, they are unable to effectively control and utilize it. (Yigremew, 2001).

Female-headed households without working adult labor are not necessarily worse off because of their entry in rental markets. Given the gender-differentiated division of labor and low asset position of these households, they have to either abandon cultivation or enter into rental arrangement. In an environment where land is getting scarce

and land rental is on the rise, those female-headed households on the supply side of the market should benefit in principle by renting out land. However, the smallness and fragmentation of these informal markets and associated high transaction costs work to the disadvantage of the poor, especially to women farmers whose social legitimacy in farming and economic position is weak.

XIII Land Policy Issues and Response

The history of land policy sequencing since 1975 has been guided by an unbalanced policy framework with heavy emphasis on equity through administrative-based land allocation. The land reform proclamation of 1975 and the subsequent constitutions vested land ownership in the state. Pre-existing tenure systems were abolished and major land redistributions were undertaken to provide “land to the tillers” in accordance to a need as expressed in the allocation of land proportional to household size. A drive towards agrarian collectivization was embarked in most of the 1980s but reversed in late 1980s. In the 1990s, the constitutionality of state ownership was re-affirmed and the region states under the federal structure were granted with powers to enact laws and administer. The recent policy moves are towards slowing or halting the redistribution of land, certification of long-term use rights to land, individualization of commons with conditional land contracts, instituting a land use policy, and establishing land administration at local level.

However, as the evidence in the preceding sections informs us, there are still formidable challenges ahead, especially in dealing with problems of landless, diminution of farm size, correcting imbalances in factor proportions at farm level, insecurity of tenure and weak land rights, depreciation of the productive capacity of the land, and distress land rental or sale. These problems are rooted in the growing gap between demand for and supply of land, rigidity in land policy to adjust to evolving land “pressure factors”, and legal and institutional failures. Informed and flexible public policy has an important role in shaping and strengthening tenure arrangements that move the society towards attaining the primary goals of “equity, efficiency and sustainability” in the Ethiopian context

A preferred path of policy development would have been to allow multiple channels of acquiring land, allow process of factor equalization and land transfer towards optimum economic size, strengthen security of tenure and rights in land, set norms and regulations for protecting fragile ecosystems, promote rental markets as main market-based mechanism, encourage labor mobility, and enhance the development of factor markets. Instead there have been mishaps in the sequencing of land policies. The current policies restrict ways of accessing land, emphasize on administrative-based land allocation, weak in provision and protection of land rights, restrict development of rental markets and mobility of labor, and limit indigenous institutions to develop to economize on scarce land resources, especially the commons.

This brief section reiterates the main land issues, highlight the empirical evidence, maps to current policies, and comments on the efficacy of these policies. The effectiveness of land policy is judged by how much it moves towards promoting in a balanced framework the trio goals of “equity, efficiency and sustainability”. Its efficiency is conditional on the extent to which these goals are achieved at low economic and environmental costs.

Expand ways to acquire land and facilitate an efficiency-enhancing land transfer

The empirical evidence shows growing trends in the numbers of rural households without access to government allocated land, which is contrary to the constitution that guarantees free access to land. Reinterpretation of the empirical evidence suggests that land size is declining to a level where farmers cannot produce enough food to meet their physiological need. Some interpret the latter as equivalent to uneconomic land size. The policy implications of not having land to produce enough and uneconomic size are different; the first can be handled through land-augmenting technology while the latter requires a consolidation of land.

The regression results for determinants of land size and demand characteristics of households transacting in the rental market indicate that the demand for land will continue to outstrip supply as family size increases, labor force within households grows, farmers acquire more

farm assets relative to land, and the quality of land depreciates. The government intervention and public policy accentuates the demand and supply imbalances. Firstly, farmers are not permitted to hold land outside their places of residence. Secondly, land available for “free” distribution is fixed within peasant associations of their places of origin. Thirdly, the numbers of claimants for land are increasing because of a strong population momentum and returnees to their place of origin. Fourthly, the residency requirement for maintaining use rights to land restricts mobility of labor as a way to ease pressure on land. Fifthly, the emphasis on the principle of equal land for equal sized households, regardless of capacity to utilize land efficiently, leaves non-proportionality in factors of production that cannot be corrected through administrative-based land allocation.

It is desirable that individuals seeking to farm have access to land that is an economic optimum so that they use land efficiently. The desirable policy objectives from the perspective of the goal of creating “equitable, efficient and sustainable” tenure system are threefold: (1) small but optimal economic size; (2) minimum loss of efficiency; and (iii) transfer of land to efficient producers. The current emphasis on halting or slowing land redistribution or adjustment, individualization of commonly held land resources, and controlling diminution of land size may not be sufficient and sustainable (it even contradicts with the principle guaranteed access to land as enshrined in the constitution). A more long-term policy framework is desirable that: (1) allows farmers to acquire land through different channels; (2) strengthens rental land markets that provide additional venue to access land, corrects imbalances in factor proportions and permits land consolidation; and (3) reduces demographic pressure through relaxing constraints that restrict mobility of labor and holding land away from the place of residence.

Enhance secured control in land rights

All measures of insecurity of tenure make farmers face different degrees of insecurity particularly uncertainty of holding their plots for a long period of time. Insecurity of tenure is heightened among farmers operating large farm sizes (relative to family size), operating rental land and living in villages with a history of frequent land

redistributions. Growing perennial crops tend to strengthen the security of landholding.

Concerns with insecurity of tenure are foremost related to stability of tenure and restricted applications of land rights. The evidence is relatively thin on effect of tenure insecurity on adoption of agricultural technology but strong on disincentive effect on investing in land conservation and improvement.. Fear of losing government-allocated land and insecurity of holding land for long periods also restricts contractual choices in rental markets. Contracts in rental markets are short-term with more restrictions on use and transfer rights as compared to PA-land.

The desirable policy objectives are to create stable and secured tenure systems that permit farmers to fully exercise rights in land at low enforcement and transaction costs. Public responses so far involve granting bequeathing use rights to land, halting or slowing redistribution of land to create a climate of stability, titling use rights in some region states, and accepting in principle compensation for added value in land in case of government expropriation.

These policy measures are the types necessary towards enhancing the goal of an “equitable, efficient and sustainable” tenure system, especially the titling of use rights. However, the provision of full legal entitlement to privately owned use rights that are tradable would further strengthen security of tenure and improve liquidity of rental markets. Compensation fully at market value in time of land acquisition by the government is assuring if a transparent institutional mechanism exists to implement and enforce such measures.

Sustaining or improving productive capacity of land is a key land policy objective

It is not only the quantity but also the productive capacity of land which is falling. This is manifested in different ways. Soil fertility is declining due to depletion of essential nutrients and water moisture. Crop yields are declining in response to depletion of nutrients. Crop diversity is diminishing thereby restricting crop and variety choices. The relation between rainfall and production is stronger than ever and hence slight decline in rainfall causes a considerable fall in production. Farmers are aware of land degradation. However, their

response in terms of investing in land improvement, particularly in the capitalization of land, has been constrained by a set of factors: high demographic burden, small number of working adults, low and uncompetitive returns in agriculture, poverty, and insecurity of tenure.

The key policy objectives are to slow down or arrest land degradation and recover land that is out of production if economically feasible. Public policy has a pivotal role in: (i) developing a comprehensive agro-ecological mapping and land use plan for the whole country; (ii) developing a long-term national soil fertility program that promotes good land husbandry practices and generation of soil-improving technologies; (iv) promoting soil and water conservation structures within the farming systems, especially community-based conservation activities; (v) establishing and promoting land resource information to land users; and (vi) protecting fragile eco-systems.

Whilst the empirical evidence indicates an improved security of tenure it is not sufficient by itself to overcome farmers' unwillingness to capitalize their farmlands, it has a key role to play. The aforementioned policies, particularly the provision of full legal entitlement to privately owned use rights that are tradable and fair value compensation, create incentives for millions of farmers to invest in land.

Permit tradable (rental) land rights and reduce transaction costs

The advantages of rental markets over sales markets in an environment where other factor markets (credit, insurance) are missing or incomplete are well known: low transaction cost, low capital requirement to access land, and low incidence of distress land sales. The empirical evidence from case studies in Ethiopia so far points out that rental land markets have beneficial effects of providing alternative access to land, enabling farmers to pool resources, and equalizing factor proportions and equalizing distribution of landholdings. Although the evidence on productive efficiency and technology adoption is not conclusive, the tenure effect on productivity is not sizable particularly when the risk and resource pooling benefits are accounted for.

Notwithstanding these benefits, however, transactions in these markets are localized because of a prohibition to transact outside place of residence, and restrictions on contracts and rights. The markets are fragmented and operate in low volume at high transaction cost. They also function in a legal environment with no enforceable mechanisms. Policy changes are necessary to relax the current restrictions on land rental markets such as the size of land, duration, and rental rate. With more choices of contracts, farmers are able to find alternative venues to access land and correct imbalances in factor proportions at farm level. Providing a legal status to these informal contracts is an important step so that they operate in an environment where contracts are legal and enforceable.

Improve management of common resources and collective action

With the exception of agricultural lands, the major land resources (i.e., pasture, water and forests) are held and managed collectively under a variety of tenure regimes. Under prevailing conditions of low productivity and variability in production, particularly in the case of extensive rangelands in the arid and semiarid areas, collective arrangements that allows mobility over an expansive rangeland is the most cost-effective arrangement. Cooperative collective action becomes desirable as these resources become increasingly scarce. Privatization is not a cost-effective option because of high transaction costs relative to return on these resources and a high risk factor.

The existing empirical evidence points to declining trends in these resources both in quantity and quality. Despite the need for a more cohesive and cooperative collective action to economize and effectively utilize scarce resources while allowing flexibility in defining boundaries and mobility, there are forces that are working towards weakening collective action. Indigenous institutions are breaking down because of adverse public policies, territorial contraction through encroachment, and conflict over scarce resources. Public policy, instead of strengthening these institutions and enhancing conditions that are favorable towards privatization (e.g. increase productivity and return on these resources, lower transaction costs, and reduce risk conditions), it is hastening the erosion of these institutions. Consequently, there are cases of an institutional vacuum

and open access where widespread destruction of common property resources has occurred.

There is no uniform policy that is applicable to the different types of common property resources. However, there are important elements of public policy and action that are commonly applicable. Firstly, enhance the effectiveness of indigenous institutions where socioeconomic parameters and risk conditions dictate continuation of collective action. Secondly, strengthen indigenous mechanisms for conflict resolution arising from violation of boundaries and encroachment. Thirdly, promote conditions that improve productivity of collective resources and reduce costs. Fourthly, institute devices to manage risk that are not adversely affecting incentives for conservation and improvement of collective resources. Fifthly, restrain from pushing privatization of the commons under conditions where the need for an expansive boundary is strong to allow spatial mobility, costs of delimiting private boundaries and enforcing are considerably high, and private returns are low. Finally, learn from the different tenure arrangements on their efficacy and efficiency and develop informed public policies that are consistent with equity, efficiency and sustainability of collective resources.

Enhance women's legal rights and translate them into practices

Whilst the empirical evidence is sparse, there is an apparent gender-differentiation in access to land including common pool resources, effective control of land rights, utilization and sustenance of land resources, and welfare outcomes related to land. The fundamental issue is the prevailing social norms and customs in regard to recognition of woman as able farm operators and managers. Under the prevailing gender differentiated division of labor where adult male support is a key constraint in crop farming (exceptions are backyard plots and farming systems where hoe-technology is the dominant technology), the focus needs to be placed more on woman as managers than as owner cultivators.

The issues and policy orientation than addresses inequities in access to land, strengthening security of tenure and effective land rights, and improving participation and bargaining positions in land markets. Public policy needs to enhance access to land through

inheritance, administrative allocation and markets. Having access is not sufficient without effective land control, which calls for enforceable legal rights, enhanced social acceptability, lowering costs of enforcement. Holding land is not good on its own unless women are able to farm or to transfer land to efficient farmers through markets. The policy recommendations above for opening up land markets and operate at low cost are applicable here but with a special emphasis that women enter into these markets from disadvantaged economic and social conditions.

Remove political and administrative restrictions on mobility of labor

The important role of labor mobility as a vehicle for matching land and labor and spreading benefits of economic growth such as employment and wage is often neglected in the land debate in Ethiopia. The current land policy restricts access to land in places of origin and hence discourages labor mobility for an extended period of time. In addition, ethnic-based aggregation, laxity in protection of minority rights and conflicts discourage labor mobility.

Heightened insecurity of land begets undesirable land use practices such as clearing land that could be considered idle and underutilized to preempt land confiscation. Conflicts over land resources threaten insecurity and uncertainty over land rights. It also pushes people to their birthplaces and thereby accentuates competition for land, landlessness and conflicts. There is thus a need to relax the current restrictions on mobility of labor so that farmers are able to transact land outside their residential boundaries.

Set land policies in a pro-poor agricultural growth framework

The country needs to push for sustainable rapid agricultural growth in a balanced economic growth framework but centered on smallholder agriculture. The mandate of agriculture in the context of a pro-poor growth framework is larger than improved production performance (productivity, profitability and competitiveness). Its performance is also judged by how much it contributes to the improvement in human welfare (i.e., reducing poverty, food and nutrition insecurity).

For the growth process to be pro-poor, it is necessary that it: (1) captures large segments of the population through the provision of secured access to land, opening physical and market access, (2) economizes on and increase productivity of scarce factors such as land and fully and effectively utilizes the abundant factor (e.g. off-season labor); (3) lower costs of transactions through investing in infrastructure, markets and innovative institutions; (4) invests in human resources, reduces demographic burden and fosters demographic transition; and (5) improves management of scarce and fragile natural resources. Since agricultural income sources tend to be risky, managing risk is a key component of such an agricultural growth strategy.

The major land distributions since 1975 have in effect created favorable conditions for initiating a broad-based growth process. Land policies that focus on efficiency-enhancing land transfer, secured control in land rights, unimpeded growth in land markets in conjunction with other factor markets, and maintenance and improvement of land resources are consistent with pro-poor agricultural growth policies and strategies. These policies have to be complemented by investments in research and technology generation to enhance agricultural productivity and reduce costs of production, and physical infrastructure and institutions including markets to reduce transaction costs.

XIV Synthesis and Conclusions: Lessons for Future Policy

There are important changes since 1975 in tenure arrangements and relations that affect modes of land access, rights to land, size and distribution of landholdings, efficiency and technological change in agricultural production, investment in land and future productivity, and living standards of millions of Ethiopians, rural as well as urban. Public policy has had an important role in evolution of these tenure arrangements that has had a material effect on equity, efficiency and sustainability.

The majority of farmers today have land holdings obtained through government land allocation (PA-land allocation). They have open-ended usufruct rights as long as they are able to cultivate

continuously and meet the physical residency requirement. These use rights are inheritable.

Although the PA-land allocation has been the main venue for land acquisition, its importance is on the decline. Instead, there are multiple informal channels that are non-market based (borrowing, gifts, transfer to heirs) as well as market based (fixed rent, share tenancy). The numbers of farmers transacting in rental land markets are particularly increasing albeit a questionable constitutional and legal cover. Administrative-based land allocation is gradually giving way to rental markets where what matters is not mere household size but farming skills, knowledge, available working labor, and capital.

Whilst farm size is small in general, its size as well as quality is declining. There are, however, significant differences in landholdings with areas of land operated at farm level statistically related to village level fixed-effects (population density, topography, soil type, proximity to urban or market centers), household demography (household size, age, and gender), and access to rental land. The fact that the area of land operated depends mainly on household land and labor endowments indicates that the markets for land and labor are not fully functioning to obviate the need to depend on their initial endowments.

The administrative based land allocation has contributed towards shifting land holdings towards the middle and lower ends of the distribution. But the effect of such an equalization through compression has increased the number of people holding land than increase in area of land. The process of equalization has been reinforced through rental land markets, which is consistent with the global evidence in Deininger and Squire (1998) and the African case of Rwanda (Andre and Platteau, 1998) with similar characteristics of high population density, land scarcity, and low agricultural productivity. Unlike the PA-allocation, such equalization has been accompanied with factor equalization at farm level and increased area of land operated by initially land-constrained households.

At the lower end of the land distribution, however, there are disquieting developments. Firstly, as land becomes scarce, the constitutional right of “guaranteed land entitlement” and the principle of “equal-sized land to equal-sized households” are failing as evident from growing landlessness and the diminishing size of farm that new

claimants acquire through the official channel. The numbers of farmers without land are rising amidst a depressed rural economy with no alternative livelihoods to escape poverty. Secondly, land size is approaching uneconomical size where increases in farm inputs have diminishing marginal effects on production. Thirdly, smallness tends to be compensated for by the allocation of higher quality soils in a government-land allocation system, but this cannot be substantiated in rental transactions. And smaller farmers are not investing as much in land conservation and improvement because of subsistence pressure.

Production-based studies establish land as the dominant factor input in Ethiopian smallholder agriculture. It enters into production function in three ways: pure quantity effect, its quality attributes, and tenure effect. Land is getting scarce because of the declining land supply with rising slopes due to increasing economic and environmental costs, growing demand for land, and failure of institutions to economize on scarce land resources. As land size gets smaller, the production and land relations are getting tighter because of undeveloped production and conservation technologies to ease land constraint. The tenure effect on production works through its incentive on input intensity and technical inefficiency, on change in composition of crops, and on adoption of technological change. The evidence so far indicates that productivity gaps exist between farms under different tenure arrangements mainly arising from the composition effect and technical inefficiency, especially on shared plots. The empirical evidence on explaining the sources of tenure related technical inefficiency is, however, thin and at times speculative.

Land tenure also has a long-term consequence on productivity through its effect on land investment. The empirical evidence shows that the productive capacity of arable land is eroding. Farmers do recognize the severity of soil degradation on their farm plots, particularly those plots under long tenure. Some employ labor-intensive indigenous land conservation practices, especially in areas with a history of severe land degradation. However, the extent of land conservation and improvement, and their capital intensity are limited relative to the extent of land degradation due to smallness of land size, demographic burden, insecurity of tenure, low and uncertain return to farming, and poverty.

Insecurity of land tenure is not felt equally among all farm households. It tends to heighten among farmers living in villages with a history of frequent land redistribution, holding large land relative to available family labor, and cultivating rental land. Farmers growing perennial crops tend to feel more secured on their holdings. In addition to negatively affecting investment in land, insecurity of tenure also affects the functioning of rental land markets. The explanations for preponderance of short-term rental contracts, emphasis on annual crops, and low volume of rental transactions are mainly rooted in lack of long-term security on government allocated lands.

Land connects to poverty, as measured by the deprivation of basic needs and especially food mainly through its effect on agricultural productivity, which is the main livelihood for millions of Ethiopian farmers. Increasing productivity goes a long way in reducing poverty and undernutrition. There are, however, three qualifiers. Firstly, it is not land size per se but also the quality of land that matters in explaining poverty. Secondly, land is one of the determinants of poverty and hence it is not sufficient by itself to identify the poor consistently, particularly in Ethiopian context where holding government-allocated land does not mean households are economically better off. Thirdly, overcoming poverty requires more than the distribution of land; improved productivity of land and lowered marketing costs to convert increased productivity into higher real farm income. For poor tenant farmers, however, rising rental rate may partly offset the gains in productivity and income, and hence growing out of poverty is a slower process.

Issues of land access, farm size, land productivity and investment, and land-linked poverty are not gender-neutral albeit scarce empirical evidence. Modes of access to land are fewer and restricted for female-headed households. Farm size tends to be among these households, which is apparently related to low adult labor content, non-land assets, and farming skills. Rights in land are fewer and effective command is weak. Productivity is lower on women-managed fields, which is related to lower factor intensity, land quality, technical inefficiency and technological change. For women farmers who depend on land, poverty is related to low return to agriculture and/or land rental. In an environment where land is scarce and land

rental is on the rise, female-headed households should benefit in principle by renting out land. However, because of their weak command on exercising their rights in land, they are unable to set and enforce favorable terms and conditions, and hence return to these markets.

Evolving past and present policies are guided by the ideology of public control of land, entitlement of a minimum guaranteed land free to all, and a great fear that opening land markets provides inroads for involuntary dispossession of land from poor and vulnerable peasants. These prevailing thoughts are enshrined in the constitution and translated into policies and laws that: (i) claim to guarantee universal access to land in places of residence; (ii) restrict choices of tenure arrangements; (iii) perpetuate insecurity of tenure and thereby reduces effectiveness of land rights and investment in land; (iv) inhibit development of indigenous institutions that have been particularly effective in managing the commons; (v) limit labor mobility; and (vi) fail to recognize that land is linked to poverty in major ways and growing out of poverty requires balanced policies that advance equitable but efficient farming systems that are also sustainable.

There have been some policy changes over the years in some region states to overcome some of these limitations but with mixed efficacy. The current emphasis on halting or slowing land redistribution or adjustment may reduce land fragmentation, diminution of farm size, and insecurity of tenure. But such a policy in a context of restricted tenure choices and labor mobility negates the universal guarantee to land and is insufficient to set an effective process of land transfer and the consolidation of farms. The move towards titling use rights in some regions is in the right direction but it would be even more effective if long-term tradable privately owned use rights were provided. Individualization of the commons as a way to reverse land degradation in the commons requires a careful testing since cooperative collective action maybe a cost-effective option under prevailing conditions of low productivity and variability in production in the commons, particularly in the arid and semi-arid areas. The policy towards legal recognition of rental land markets and its functioning in some region states is a desirable move, but the attempt to manage these markets through administrative control calls firstly for a careful experimentation and understanding of the

functioning and effect of these markets. Nurturing and fostering rental land markets is a necessary intermediary process towards a fully developed land market in tandem with the development of other missing or incomplete factor markets. Public policy has thus an important role in the future, but it needs an informed and a balanced view that emphasizes on searching for equitable but efficient and sustainable tenure arrangements that are mediated through the market place.

Finally, land reform is one of the basic requirements for agriculture and rural development. Smallholder-led agricultural development that builds on existing broadly distributed land assets is pivotal for growing out of poverty and undernutrition. At the core of such strategies are consolidation of uneconomic farms; improving productivity of land through improved efficiency, technological change and land management; reducing transaction costs through building infrastructure and markets; and creating institutions that provide a vehicle for the poor to voice their priorities, deliver agricultural inputs and finance, and market their produce at competitive prices. Land reform by itself is not sufficient without addressing these other growth movers.

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