

Population pressure and dynamics of household livelihoods in an Ethiopian Village: an elaboration of the Boserup-Chayanovian framework

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Abstract The purpose of this study is to analyse the mechanisms and effects of population pressure on rural livelihood system in South central Ethiopia from 1950 to 2004. In Sub-Saharan Africa population pressure takes two different forms: (1) a pressure on existing household to accommodate a growing number of children (change in household dependency ratio); (2) An increased demand for new livelihood positions in a situation where the total resources available for households may be constrained (change in density ratio). We blended the approaches of Boserup and Chayanov to understand how families make their living when dependency and density ratios change over time. We collected data using a life course and cohort study approaches to capture the dynamics and to compare the past with the present. We found out that livelihood strategies took different forms when both dependency and density ratios were low and when they were on the increase. When both ratios were low livelihood strategies took the form of agricultural extensification and this was due to the relative availability of land. When both ratios were on the increase, livelihood strategies took the forms of agricultural intensification and diversification.

Keywords Boserup-Chayanov · Ethiopia · Household livelihood strategy · Life course · Population pressure

Introduction

Four major livelihood strategies adopted by agricultural households in Sub-Saharan Africa have been identified. Extensification—bringing new areas not previously

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used under cultivation. Intensification—increasing output by increasing inputs per unit of land. Diversification—creating a portfolio of livelihood activities and income sources and a shift away from farm to non-farm activities. And finally, migration—members of the household leave the village and move away from home looking for employment in nearby intermediate cities, distant metropolitan areas or foreign countries.

In the literature, the adoption of these livelihood strategies is often explained with reference to a broad set of factors such as institutional change, market conditions, and increased vulnerability. In this paper, we will analyze the process of livelihood changes in Gimisie village in South-central Ethiopia from 1950 to 2004, focusing more narrowly on the role of demographic change. This is not to say that we regard markets, institutions, policies, and shocks or trends as unimportant for household decisions. Instead, our argument is that demographic factors play a fundamental role in determining the preconditions for agricultural change and that household demography strongly influences how households respond to changing external conditions.

Conceptually, the study is based on an age transition framework, a framework that has been developed in order to understand how the demographic revolution initiated by higher child and adult survival rates has influenced economic and social development across the world (Malmberg and Sommestad 2000). Age transition is the long-term effects on age structure of demographic transition. During the first phase of the transition, lower mortality in combination with stable high fertility leads to fast population growth and a rapid increase in the number of children. As the children grow up there is also an increase in the fertile, young adult age groups which, as long as fertility is not declining, leads to a rise in the number of births and so to an even more pronounced increase in the child population. Thus, during the early phases of demographic transition there will be a sharp increase in the child dependency rate and a rapid expansion of the young adult population. Recent research on macro-level data has demonstrated that high child dependency rates are associated with high poverty rates and slow per capita income growth (Bloom et al. 2003; Malmberg et al. 2004). Moreover, there is increasing macro-level, empirical evidence that rapid increases in the young adult population are a factor of change that can put great strains on existing institutional frameworks (Urdal 2004; Brunborg and Urdal 2005).

There have, however, been few micro-level studies addressing the issue of how high child-dependency rates affect the livelihood strategies of individual households. There are also only a limited number of micro-level studies that explicitly focus on the consequences to livelihood of a continuous and fast expansion of the young adult age group.

Theoretically, the analysis of child dependency can take Chayanov's theory of the peasant economy as a starting point. One of Chayanov's main claims was that changes in the production activities of peasant households was, to a large extent, a reflection of shifting dependency burdens (Chayanov 1986). In a similar way, Boserup's theory of agricultural intensification can be taken as a starting point for the analysis of the change in agricultural activities when there is a long-term increase in the adult population.

Our view is that the study of rural livelihood change needs a framework that combines Boserup's and Chayanov's approaches. Boserup adopts a macro view, where the need to increase agricultural production is primarily the reflection of a growing population, but she is relatively silent on the role of household decision-making in this process (Boserup 1965). Chayanov uses a micro perspective and sees the need to expand production as the reflection of an increase in household size. But he fails to analyze the consequences of a generalized population growth in an agricultural community.

Thus, the innovation in our study is that we will analyze changes in livelihood strategies as the results of two forms of demographic pressure. First, the pressure on existing households to accommodate a growing number of children. Second, the pressure to accommodate an increasing number of households and young adults in a situation where the total land area available for agricultural purposes may be constrained.

In order to study how these two processes interact in a local context we have carried out cohort-based, retrospective, life-course surveys of male household heads in the Gimisie village of south-center Ethiopia. By interviewing household heads from different cohorts about their life histories with a focus on productive activities, resource use and household formation, we were able to analyze both how activities have shifted in response to changing child dependency burdens and how the conditions for family formation and subsistence production have changed over time as the population in the area has increased.

Gimisie is a local administration where *enset* (*ensete ventricosum*), a banana-like perennial crop used for human food, fiber, animal forage and handicraft products, plays a crucial role for household subsistence, similar to the role played by the potato in Northern Europe. Enset has been domesticated in Ethiopia for many years and it is now an important staple crop for over 20% of the Ethiopian population living in the southern and south-western parts of the country. *Enset* is produced primarily for its large quantity of carbohydrate-rich food. *Enset* is usually grown in moist mid-altitude and highland environments at altitudes ranging between 1,400 m and 3,000 m above sea level. The *enset*-based farming system is one of the four farming systems in Ethiopia; the others are the cereal farming complex (the highlands of northern and central Ethiopia), the shifting cultivation system of lowland western and south-western Ethiopia and the pastoral complex represented by the nomadic population. Crops such as *enset*, sweet potato and yam occur in the densely populated regions of the country.

For decades Ethiopia has been characterized by rapidly increasing dependency rates and strong growth in the number of young adults wanting to form new households. The population has grown more than five times since 1900, three times since 1955 and has doubled since the early 1970s. Around 1900 the population growth rate was less than 1% per annum. By mid-century the growth rate had increased to 2% and it increased even further after 1960. Between 1960 and 1975, the population grew at an average of 2.3%. The rate of growth peaked at an average of 2.92% per annum during 1980–2000.

Figure 1 shows population growth in Ethiopia broken down by age groups. As of 1985, it was estimated that 47% of the country's population were children,

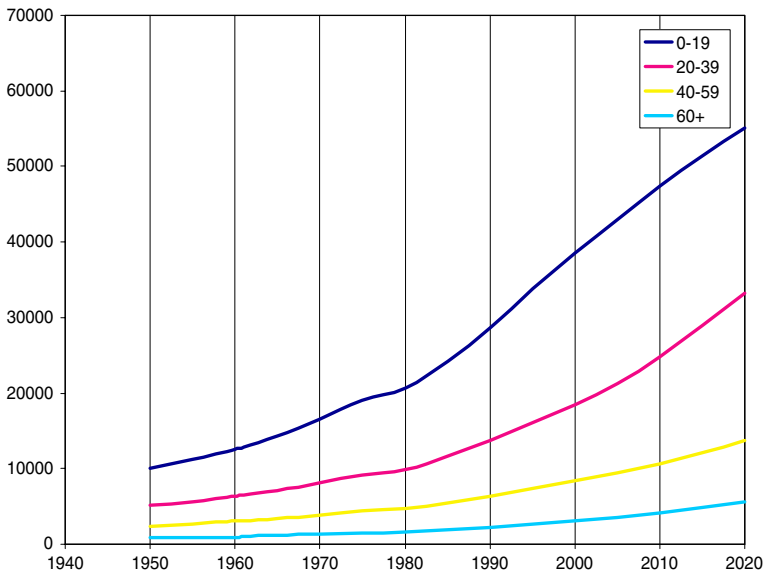


Fig. 1 Population growth in Ethiopia by age group, 1950–2020. *Source:* (United Nations 2005)

0–14 years of age, and 27% were between the ages of 15 and 29. The proportion under age 15 decreased to 44% in 2000, while the proportion of young adults (15–29), increased to 28%.

The structure of this paper is organized as follows. In Section “Demographic model of rural livelihood changes” the demographic model used to explain agricultural and rural changes is discussed. In Section “Framework of interpretation and relation to other studies” the study design (methodological approach and data collection methods) is discussed. In Section “Study design” the demographic determinants affecting the dependency rate and the density ratio of the area are explained. This is accomplished by studying complete life history domains and events such as mortality, marriage, fertility, family and household formation. Following this, in Section “Demographic history of the study area”, the study of the resources to which people have (or had) access as a means of coping with the various demographic events is discussed. In Section “Livelihood assets and livelihood positions in Gimisie” the dominant types of activities used to link assets and basic needs are identified. How did productive activities change as the population pressure increased over time? Section “Livelihood activities and roles in Gimisie” explains the ways and means used by households in the creation of resources as the pressure increases over time. This is about the history of livelihood activities and resource use/combination under different demographic circumstances and opportunity structures. In Section “Changes in livelihood strategies” the life transition of young adults of different cohorts is compared. In the final section, Section “Life trajectories of young adults”, interpretation of the empirical findings is presented.¹

¹ You will find the source material for the texts in Malmberg and Tegenu (2006).

Demographic model of rural livelihood changes

A number of studies on rural livelihoods have revealed that households in Sub-Saharan African countries are engaged in different and often multiple livelihood activities and strategies, including agricultural intensification, extensification, diversification and migration. While some of these livelihood strategies are not new to the rural households, the past 20 years has witnessed an increase in the intensity and relative importance of some of the activities and livelihood strategies, for example the strategy of diversification (Bryceson and Jamal 1997, Bryceson 1999a, b). The prevalence and relative importance of these clusters of livelihood options is often explained in terms of the combination of changes related to household situation (the dependency ratio and mortality) (ODI 2003; de Sherbinin 2006; Okore 1982), institutions, markets and vulnerabilities such as shocks, trends and seasonality (Bryceson 2000; Start and Johnson 2004). Typically, though, the role of increased population density and increasing dependency rates have not been systematically explored as underlying causes for these livelihood coping strategies.

Our point of departure is that in a society affected by demographic transition, the aggregate effect of an age group is significant for rural change. In a society where death and fertility are equal, or nullify each other, such factors as the market and power struggles can be more important factors affecting change. Appreciating the numerical strength of age groups, however, does not mean belittling the role of other factors. We recognize that markets, institutions, policies, shocks or trends can provide constraints or beneficial opportunities to households. But the negative or positive responses of households to such opportunities depend on their demographic size and composition.

In this study households are the units of analysis. Many classification schemes have been devised as conceptual maps to define and analyze households. In most rural studies the principles of income and wealth are used to classify households. We have considered demographic composition as an alternative principle in the classification of households. To identify the type of households we considered the following variables: marital status of the household head, age of the household head, economic activity of the household head and the spouse, presence of children younger than 14 years of age, presence of children of 15 or older, the number of other adults, and household size.

Since the permutation of these variables could result in thousands of types of households, we considered the stages in the household development cycle as criteria to identify the most typical household types. A household evolves and passes through different stages and there are four stages in the household development cycle: (a) establishment or formation stage, (b) growth stage, (c) expansion stage, and (d) disintegration stage. Accordingly, one can identify four types of longitudinal households: young couple (singles/married) households, child-rich households, labor-rich households and elderly households. The first household category can be extended to include couples without dependents and with two dependent children under 15 years old. The child-rich household includes those with three dependent children under 15 years old, and four or more dependent children under 15 years old. The labor-rich households include two or more adult children above 15 years old, households with affiliated adult relatives, married couples who have not yet established their own

households, and single parents. Extended families (households containing more than one family unit) can be included in the labor-rich household category. The elderly household type includes one person, and two or more elderly members.

In a given year and area a household can occupy any of the four states (types) along the evolution path. Because changes in household composition tend to be minor from 1 year to the next, we consider 6 years as a period in which a household moves from one state to another. Mortality, such as the death of a household worker, and migration can dramatically affect household composition. Over time, the number of a given type of household is affected by mortality, early or delayed marriage, fertility control within marriage, divorce and migration.

The advantage of looking at the household development cycle is not only to understand transition from one stage to another (dynamics of household types) but also to identify the resource needs of a given demographic type of household. Along its development life cycle, a household passes through different dependency ratios (ratio of dependents to producers). From zero, when a young couple get married, to low when they have three children, to high when they have more than four children and to lower again when the children mature and leave home. The quantity and quality of resource needs of a family change as the dependency ratio changes over time. From farmers group interview we have found that a young couple without dependent children need four *timad*² of land (a hectare), 200 *enset* plants, two adult laborers, a pair of oxen, and a given amount of cash to support the family. Families with three dependent children need five *timad* of land, 300 *enset* plants, three adult laborers, a pair of oxen and two cows, and cash to survive. Child-rich households need eight *timad* of land, more than 400 *enset* plants, four adult laborers, cattle and more cash for weddings. The physical, cash and social needs of a family increase as it moves through the household development cycle.

While the level of demand increases, the per-household supply of natural resources decreases as the number of households expands. Early household formation and the increase in the proportion of marriages multiply the number of households in a given area. Associating a particular resource need with household types (or determining the level of resource scarcity over time) is, however, difficult. This is because of the dynamics of household development and the change of status. At a given point in time one find different types of households with varying resource needs: young couple households, child-rich households, labor-rich households and elderly households. Whatever the factors of change might be, the availability of a particular asset (land, labor, cash or other asset) is affected by the type and number of households.

In an area with rapid growth in the number of children and young adults, the dominant household types are child-rich and young couple households. Since the cumulative needs (physical and cash needs) and livelihood positions of these households can be measured, the availability of a particular resource can be indicated in the density ratio (assets per child-rich and young couple households).³

² A *timad* is a local measure of land, equivalent to what an adult male can plough in a day using a pair of oxen; on average it is approximately equal to 0.25 hectares.

³ At the village level, assets can be aggregated by a category (such as the number of *enset* plant) or combination of categories (number of *enset* plant, size of *timad* land, number of adult labour, etc.).

From a time perspective, the differential changes in ratio (level of resource scarcity) can be reported using the four density ratio categories: sparse, medium, dense and very dense. The constellation of a given type of households determines the type and level of assets available to a household. In a situation where one finds a great number of child-rich families and young couples without dependent children, there may be a higher scarcity of land and labor resources in the area compared to other resources.

A household's access to different levels and combinations of assets influences the choice of livelihood strategies. But it should be clear that a household's option for a given strategy over time is not only affected by density ratios, but also by dependency ratios. The relationship between household dependency and the density ratio is the major factor influencing household options for survival. If the family size does not continually adjust to the given resource conditions, then it is forced either to intensify the existing survival strategy or adopt a new one to meet the required household needs. The kind of strategy a family adopts may reflect underlying priorities to minimize exposure to high population pressure.

In the literature one finds four categories of livelihood strategies identified in terms of activity-space based typologies as suggested by Scoones (1998) and Swift (1998), and further elaborated by Ellis (2000):

1. Extensification (bringing new areas not previously used under cultivation). In a situation of low density and where land is available or where there is open access, child-rich families' first response to population growth is the use of the traditional methods of shifting cultivation (Dejene et al. 1997; Braimoh 2004). If most good land is already being farmed, extensification will take place in fragile environments where yields are low.
2. Agricultural intensification (increased output per area per unit of time). All cultivatable land is already being used so expansion is not an option. Intensification can be achieved through five methods: input intensity (addition of soil amendments, chemicals, water through irrigation, and labor), frequency of cultivation (multiple harvests on a single plot), change in crops (cultivating high-yield crops), capital investment (canals, dams, terraces) and use of different techniques/technology (crop rotation, multiple cropping, intercropping, machines). (Boserup 1965; Turner et al. 1993; Tiffen et al. 1994; Carswell 1997).
3. Diversification (creating a portfolio of livelihood activities and income sources). The term diversification refers to a multiplicity of activities and income sources (at household level) and a shift away from farm to non-farm activities (at sector level) (see Ellis 2000; Barretta et al. 2001; Davis 2003; Preston 1992, Reardon 1997; Ellis 1998; Bryceson 1999a, b).
4. Migration: When faced by lack of opportunities in their own localities, young adults move far away from home, looking for employment in nearby intermediate cities, distant metropolitan areas or foreign countries. Seasonal migration such as waged employment is not considered as migration. It is long-distant migration which is often permanent in nature that is considered as migration (Krokfors 1995; Black 2004; Siddiqui 2003).

In most rural livelihoods studies, these strategies are enumerated in a static manner. In cases where there is an attempt to explain the reason why the strategies occur (appear or disappear), the analysis becomes superficial due to the many local and external factors enumerated in the conceptual framework (Morris et al. 2002a, b). For instance, population growth is considered to be a vulnerability context (a shocking condition outside of local people control), the others being market failure, socio-political structure, climate change, ill health, natural disasters and institutional weakness. The focus on population pressure as a factor behind the dynamics of rural livelihood is not only relevant, following our assumption, but also more specific for a practical application.

Figure 2 presents the analytical model we have used to analyze the effect of changing dependency ratios and increasing population density on livelihood strategies. The model has two parts. One focuses on the pressure from increasing dependency rates and population density on assets and on activities. The second part focuses on the consequences of these pressures at the household level, at the system level, and for global policy concerns. In previous studies we have analysed the socio-economic consequence of population growth and pressure at macro level using the concept of age transition (Sommestad and Malmberg 1995; Malmberg and Sommestad 2000; Tsegaye 2004).

Since the purpose of this study is to understand the mechanisms and effects of population pressure at micro level, our focus is on the pressure part of the model. We start our discussion by analyzing how births, deaths, and migration affected the dependency and density ratios in the selected village. Against this background, we

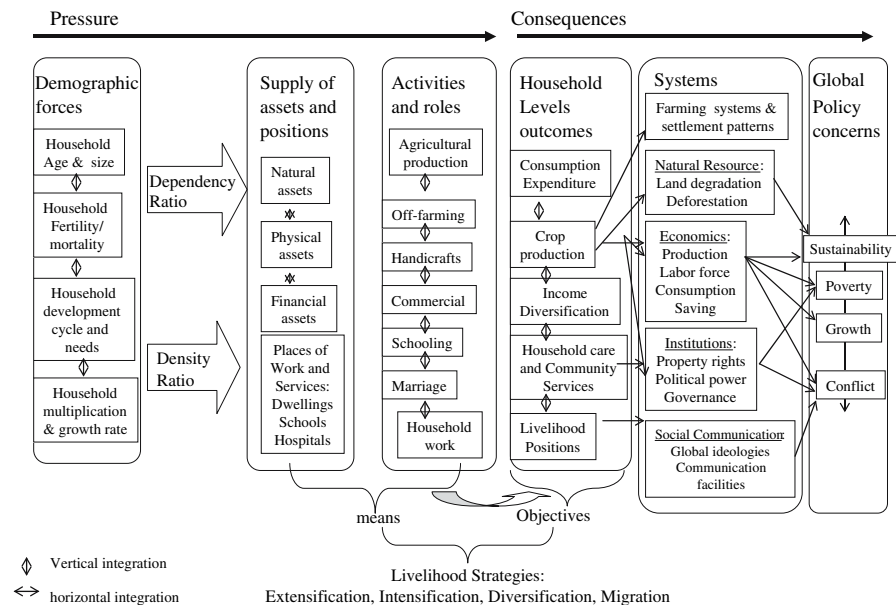


Fig. 2 Schema of population pressure and consequences

will discuss how dependency and density ratios affect the demand and supply of resources and livelihood positions in the given area.

This is followed by a section which traces the effects of dependency and density ratios on livelihood activities and roles. Livelihood activities and roles are divided into different categories: household work, child work, schooling, farming, and non-farming activities. The activities which different household types undertake change in number, composition and duration as the population pressure increases over time.

Framework of interpretation and relation to other studies

Interpretation of field findings requires revisiting of prominent studies. This exercise is relevant since it shows how the study's arguments and debates are framed. Even though we have different purpose, in varying respects, the arguments of the present study are related to established works on population pressure and agricultural intensification. Ester Boserup's book "The conditions of agricultural growth; the economics of agrarian change under population pressure" has turned out to be one of the most influential books published by a social scientists in the 1960s (Boserup 1965). The books influence can largely be explained by the empirical success of the hypothesis presented by Boserup. One early example is (Turner et al. 1977). This is a meta-study that uses information from 29 different agricultural communities to compute and index of cropping intensity. Turner et al. finds a strong positive correlation between this index and a measure of population density. A large number of subsequent case studies have reported similar findings (Conelly 1992; Netting 1993; Turner et al. 1993; Tiffen 1994; Adams and Mortimore 1997; Wiegers et al. 1999; Shriar 2002; Pfeffer et al. 2005).

This is not to say that Boserup's model has been universally accepted. Like any other successful model it has been subjected to detailed criticism on a number of points. However, as elegantly argued by (Stone 2001), the purpose of a simplified model is not to be 100% correct. Instead the model should, first, be able to account for broad empirical patterns. In this regard, Boserup's model has been a huge success: "The fact remains that the relationship Boserup described is a key element in the variability in non-industrialised agriculture. Rising 'Population Pressure on Resources' (PPR) within a constrained area frequently does force farmers to alter their production tactics, often demanding greater inputs in the process" (Stone 2001).

A good first model should provide a good starting point for a more refined analysis. Also here Boserup's approach has worked well. Researchers following in her footsteps have been able to elaborate a more comprehensive understanding of how ecological, political, and institutional factors interplay with population growth to generate different patterns of agricultural intensification. A good example is (Netting 1993) where the Boserupian mechanism are but one of the factors that shape the behavior of smallholders.

A simple test of the Boserup hypothesis does not require a statistical analysis on the household level. The typical unit of analysis is instead the local farming system (Turner and Brush 1987). However, the process of intensification is to a large extent based on decisions made at the household level (Netting 1993). We think that in a

rural society household production decision is made considering the real need for survival and demands of reproduction. In this regard we found the relevance of Chayanov's model of peasant household production. His model examines the relationship between the number of consumers each worker has to support (the consumer/worker ratio) and the amount produced per worker. The more consumers each worker has to support the more work each worker does (Sahlins 1972). According to Chayanov, family labour aims to satisfy a locally acceptable standard of consumption and once that standard has been satisfied the "self-exploitation" of the household labour ceases. In his view each household is expected to move across levels of well-being governed by the number of its producers and consumers (all else being equal). Households change their economic behavior during the family life cycle as new children arrive, grow to adulthood and leave home. Chayanov's model has been applied in different context and the result indicate that household composition is indeed a major determinant of farming practices (Carr 2004; Li 2005)

In our study we do not consider household decision to be affected only by the balance of consumers and producers. A household decision is also affected by the existing number of households in a given area. In our definition, population pressure does not refer only to the capacity to produce the necessary conditions of life (at the household level) but also to size and density (at the community level), an idea which we borrowed from Boserup.

Our demographic model of rural livelihood changes blends the approaches of Chayanov and Boserup. But unlike them, we do not use their concept of number and ratio to understand production increase/decrease and income inequality. We use their technical concept to understand the type of decision processes, activities and resource used by individuals/households as the number of children and young adults increased over time in a given area.

Study design

Life course and cohort studies approach

To understand the dynamics (stability and change) and to compare the past with the present we need longitudinal data on demographic events (mortality, fertility, migration, marriage, and household formation), duration and transition of livelihood activities, and resource conditions. There is no longitudinal survey to enable us to capture the changes over time, from 1950 to 2004.

This study uses the approaches of life course study in combination with a historical perspective (cohort study) as methods of collecting data on change.⁴ The concept of life course concerns changes that are positioned along the age scale, while history concerns changes along the historical time scale (see Fig. 3). Both perspectives call for longitudinal observation.

⁴ For conceptualizing and designing life course research see Giele and Elder (1998), For causal explanation and analysis in life course study see Blossfeld and Rohwer (2002).

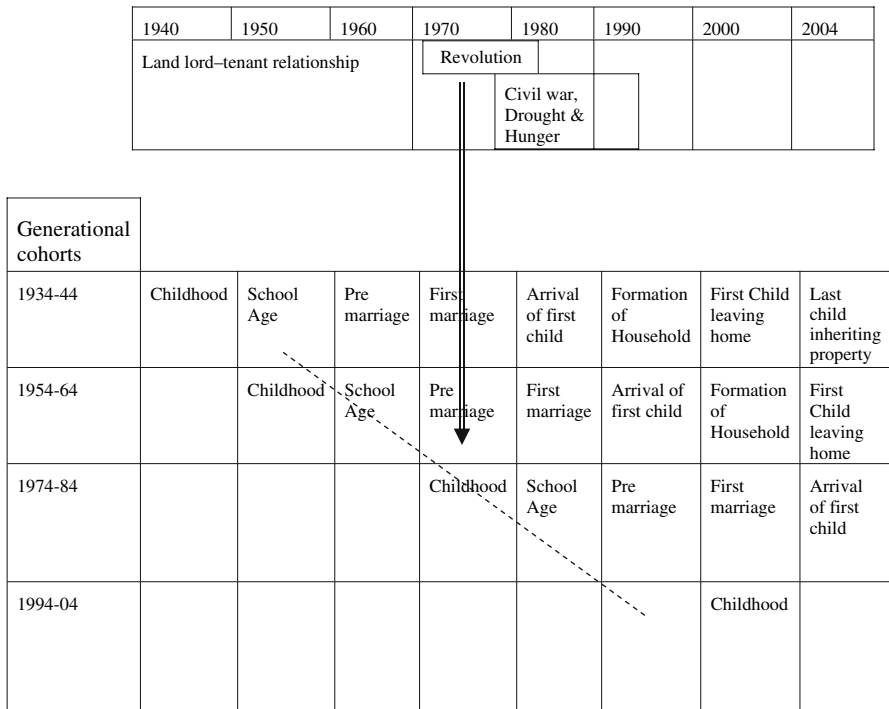


Fig. 3 Inter-cohort comparison of life phases. Calendar Year and Historical Changes (Opportunity Structures). *Note:* Inter-cohort comparisons of life phases are distinguished diagonally

In our case, life course research captures the processes by which population pressure and opportunity structures operate to influence the development and life chances of individuals and households. The purpose of the life course survey is to study the events experienced by the individual during childhood, young adulthood and the period of mature adulthood. This is done through a retrospective questionnaire which asks about the individual’s past and about his household.

A retrospective study can of course yield inaccurate results if informants cannot recall changes in farming activities well over time. On the other hand, the theory of smallholder agriculture maintains that farmers try to use information about the outcome of different farming strategies in an efficient way (Netting 1993). This would imply that they indeed have an interest in remembering how they have changed their strategies over time.

Data collection methods and sampling design

The study tries to combine different data collection methods including questionnaires, group interview, and the researchers’ own observations. Three types of survey-questionnaires were used: village history, household and individual questionnaires. The village history questionnaire was used to measure the contextual

changes relevant to the study of the dynamics of household and individual life histories. These included historical changes in settlement patterns, crop diversification, major economic activities, infrastructure development, education, health and commerce. The household questionnaire dealt with sources of household income, assets and core activities and was answered by the household head. The individual questionnaire focused on the individual life domains (such as education, marriage, family formation, and major activities), preferences and livelihood decisions.

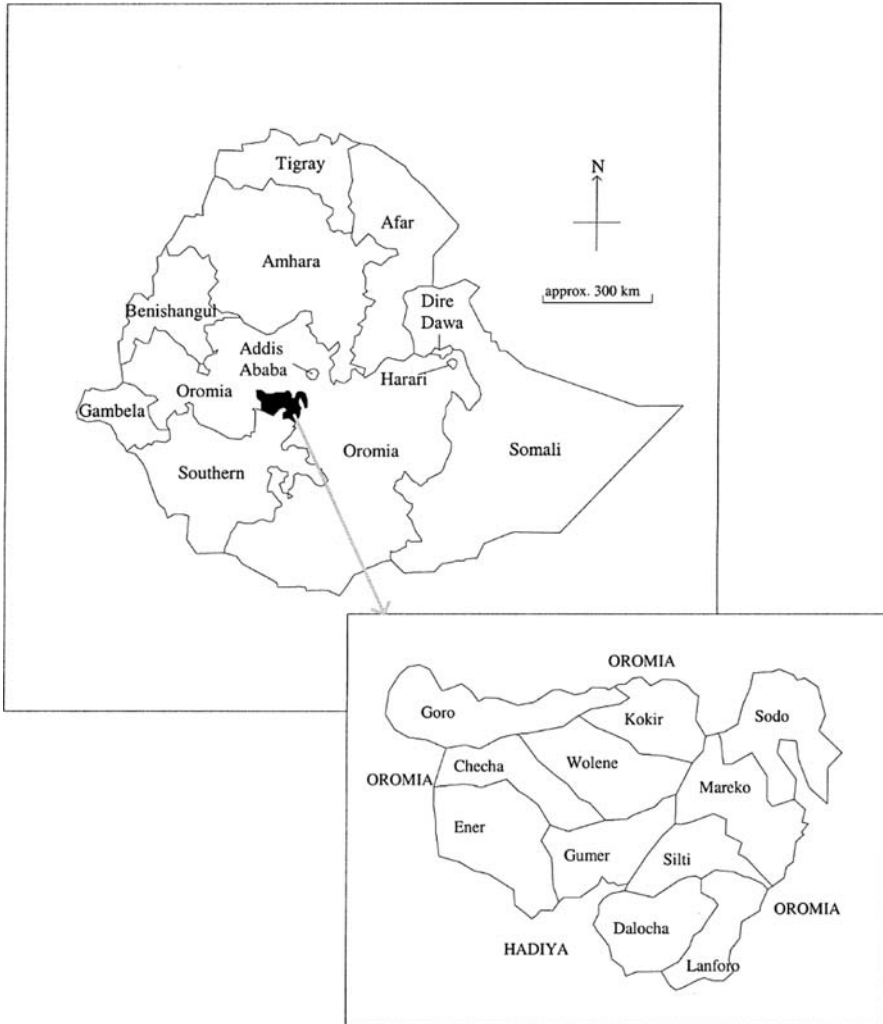
The study is qualitative, not only because of the open-ended nature of the questionnaire used to collect information. Individuals selected for retrospective life course study are not drawn randomly from the entire population of the village because there is no available database or preliminary study to define the target population. We used our judgment in selecting cohort groups belonging to three different generations (see Fig. 3): (i) the generational cohort of 1940s (hereafter referred to as the older cohort), (ii) the generational cohort of late 1950s and early 1960s (middle cohort), and (iii) the generational cohorts of the mid-1970s (younger cohort).

The generational cohorts were chosen to cover particular historical events (common exposure) that have profoundly affected their lives. The older cohort was chosen because it was one of the groups affected by the landlord–tenant relationship during the time of Haile Selassie. The middle cohort was chosen due to their pivotal role in the Ethiopian revolution of 1974. The young cohort was chosen because this was the cohort group that has affected by unprecedented hunger and famine in the country ever since the 1980s.

The idea of combining the cohort-generation method is to locate individuals temporally in relation to social change. This allows us to study the same life cycle phases but in successive periods. The study of events experienced by the cohort groups at a particular life phase, at different points in time, facilitates inter-cohort comparison of life phases. This is important for the comparison of livelihood positions and trends over time, particularly for studying the young adult life phase which is subject to frequent and radical changes. For instance, during the young adult life phase, a given cohort group may have difficulties in getting access to resources, forming a family, getting employment, going to school, etc. The primary interest in the life course of the generational cohort is not to account for types of changes in attitudes or behaviors of the cohort group. Beyond locating the change process, the cohort–generation strategy does not aim to analyze cohort effects. Rather, the attempt is to account for changes experienced in the different life phases of the individual and the responses undertaken by the individual and the households.

Demographic history of the study area

The Sodo district is situated about 90 km south of the capital city, Addis Ababa (see Map 1). It is one of the eleven districts of the Gurage zone of ethnically based government. The altitude of the district ranges from 1,740 m to 2,900 m above sea level. The annual rainfall varies from 900 mm to 2,000 mm and the annual average minimum and maximum temperature varies from 15°C to 25°C.



Map 1 Study area

The Sodo district is characterized by the following features:

- Several different farming subsystems prevail in the district (*enset* in a dominant land-use system, *enset* as a co-staple with cereals and *teff*, *enset* and perennial crops such as coffee, chat and *gesho* as minor produce; *enset* and horticulture).
- The population has increased in the past four decades.
- The district is situated near to the major towns and the city of Addis Ababa and there is a possibility of migration.

Since 1950 the population of the district had grown three times and had doubled since the early 1970s. In 1950 the population of the district was estimated to be

36,071. According to the 1984 national census, the size of the population increased to 77,517 and this number had increased to 108,280 in the 1994 census. In 2001 the total population of the district was 124,419. Of this, 116,458 lived in rural areas, while 7,961 lived in towns. According to the projection made by the district Development and Planning Office the population is estimated to grow at a rate of 2.3%.

Mortality

There has been a steady decline in child and adult mortality in the past five decades. Child mortality was high until the middle of the 1950s. Household heads belonging to the older cohort had lost most family members during their childhood. The interview indicates that 4 of 10 children survived in 1950s. Mortality had affected adults as well. Most household heads belonging to the middle cohort had already lost their fathers. Both child and adult mortality started to decline markedly after the late 1950s. While mortality for children and for middle-aged and old people declined steadily, that of infant mortality remained high in the 1970s and 1980s and this was attributed to lack of health care.

Fertility

Apparently factors such as the age at female first marriage, between 15 and 18, reduced widowhood, and the high social status attached to children favored high fertility. The fertility of women of the area is among the highest in the country. Our observation of cohort groups shows that there was an increase in fertility from an average of five children per woman in the 1950s to eight children in the 1970s and 1980s. Fertility was high among the middle cohort, a group which mainly benefited from the distribution of rural lands.

According to one informant, “women are now pressed to give birth to child soon after their marriage. In our time (1950s) married women spent a period of 10 years without giving birth. Now people have attached a high social status to high fertility. If a wife does not give birth a year after the marriage, friends advise the husband to divorce her. Now in a family you find a minimum of six and a maximum of 12 children”.

According to the inference from interview material, the most important factor of high fertility is children’s economic value. In rural areas children are considered as a reliable labor force and important helpers both in performing household duties and agricultural work. A farmer depends very much on the labor force of the household members to be able to manage daily duties. Children’s tasks include house cleaning, collecting water, preparation of food, protection of crops, fuel collection, and taking animals from the fields. The farm household therefore benefits very much from a child’s labor. Children are also important to secure access to land. In 1975 when land was nationalized by the state the size of land a family could receive depended on family size. A household which lacks able-bodied adult male labor finds it difficult to keep a farm. Children are therefore important resources in providing security for old age.

The social status and economic value factors behind the high fertility rate in the area appear to support Caldwell's wealth flow theory of fertility. According to the theory in traditional society fertility is high because of the economically rational decision to have as many surviving children as possible for each additional child adds to parents' wealth and security (Caldwell 1982). This theory is not true for all places and times. In our field study high fertility is observed only for middle cohort who benefited much from land nationalization and distribution. The younger cohort which is facing severe land scarcity have different attitude to fertility, children upbringing and future well-being. Since they see no future in farming, they are sending all their children to schools no matter the economic consequences of schooling. In this case lower fertility can be a result of families' choice of livelihood strategies for their children.

Household Multiplication

Early household formation and the increase in the proportion of marriage had multiplied the number of households in the 1980s and 1990s. Children born from one father had literally formed a cluster village (group of households) around a single family. The formation of independent households in the area is very much related to the male population in the area. Customarily, land is given to male children, not to female children. If most of the population is male, there will be land shortages, since women get married, move to another area and start living there with their husbands. That means the number of household increases as the number of male residents in the area increases. Access to land following the nationalization of the rural lands in 1975 has also increased the number of households formed. After land was nationalized farmers started to construct their own houses.

During the period of the young cohort, the changed perception regarding the allocation and use of family land is now accelerating the formation of households. Children are now given a small plot of land by their parents to work on and finance their schooling. This has encouraged a sense of ownership and provided time to prepare oneself for household formation soon after the first marriage. But a married male person who still lives with his parents is not considered as a household (*abawera*). It is only those married couples who have moved out of their parents' house and established their own houses and registered as members of the local funeral association that are considered as an independent household.

Migration

Unlike the neighboring highland areas, migration from this village was minimal, even though the village is close to towns and the city of Addis Ababa. In the 1950s and 1960s there was migration to the city and provincial towns by children of both landlords and tenants, but for different reasons. Children of landlords migrated to towns seeking government jobs and aspiring to be traders. Children of tenants,

particularly those who had relatives or some kind of connections, migrated to towns to get employment as tailors. Their parents possessed no land to divide and share between them. In the village, this type of migration halted after the nationalization and distribution of rural lands in the late 1970s. On the contrary, many of the tenant children who migrated to towns returned to their parents' area to claim and share state-owned land. At that time, migration among young adults of the area was rare, with three out of four young adults likely to stay in the village. Until very recently, people of the area believed that the rural areas are better than town life, provided that one works hard. But as access to land and other resources proved to be difficult, people began to change their attitude. Currently, most parents are sending their children to school in order to prepare them for the unavoidable migration to urban areas.

Livelihood assets and livelihood positions in Gimisie

As the population of the area expanded, so too did the demands for assets (natural, financial, physical and social) and livelihood positions. Assets (natural, financial, physical and social assets) are the resources upon which people base their livelihoods. "Livelihood positions" refers to stations such as places of work, schools, dwellings, institutional platforms, etc. where various activities (such as farming, crafts, education, status and power) occur, are accomplished or are effected. How did the availability (the level of supply) and access to (ability to use) assets and livelihood positions change as the situation of population pressure changed over time? How did the relationship between assets and livelihood positions change as population pressure increased over time?

Farming land

Land is one of the two major livelihood assets of the rural population, labor being the second. The availability of land depends on the number of households and the tenure system. When the old cohort established their households, in the 1950s, land was available relative to the number of users. However, tenants had less access to land due to the tenure system. Until the land reform of 1975, land was in private hands and there were big landowners. Most of the interviewed tenants had three *timad* of land then.

At a time when their first child left home, in the middle of the 1970s, the old cohort acquired a relatively considerable piece of land, an average of 12 *timad*, due to the distribution of nationalized lands. Their offspring, the middle cohort, who formed their households at the time, received the same amount of land, an average of 12 *timad*, despite the increase in the number of households in the area. Land possession decreased as the number of households and settlers continued to increase in the area. The younger cohort of the 1980s possessed an average of two *timad* of land when they formed their own households during the time of the field interview (see the section on the livelihood activities of the young cohort).

Before land reform, farmers had access to land through tribute (landownership through paying tax), as tenants, through kinship affiliation and sales. Immediately after land reform, land was accessed mainly through distribution. At present farmers have access to land through inheritance, land rental and sharecropping. Of these, land distribution through inheritance has become virtually impossible. There is hardly any share of land that can be transferred from father to each son. Now the smallest holding is a quarter of a hectare.

In the *kebele* (area) (a local self-administration unit) periodic redistribution of land was halted due to heavy population pressure and land shortages. Starting a few years back farming lands have already been expanded into areas inhabited by wildlife. As a result the number of small land holders and landless is increasing in the area, especially among the youngsters. Since nothing is left for expansion, distribution and inheritance, the government has now proposed a resettlement plan for landless people and families with very small holdings. Those affected by the land problem, however, preferred to stay behind and sell their labor in their area rather than resettling in another unknown place.

Labor

Interviewed individuals mentioned labor scarcity over time. Before land reform one finds two categories, one who hires and the one who sells labor. There was relatively much agricultural labor, and people bought labor cheaply. Once nationalized lands were distributed and people started to farm their own holdings, acquiring labor became very difficult. What land reform did was give access to land and by so doing it increased the number of people who wanted to form an independent household.

There was indeed an increase in labor but that increase was used to meet basic needs. Young adults who lived with their parents were employed on the farm to cover the physical needs of the household. Those who formed their own independent household soon found themselves in reproduction and whatever labor they possessed was used to feed the many mouths of the family.

Since land also became scarce at the same time, labor has to be used intensively to avert a decline in meeting basic ends. At the time the interviews were conducted, labor was used in farming,⁵ *enset* cultivation, as daily wage labor, for marketing, horticulture, household work and community services. The intensive use of labor at one and the same time for various purposes has created a labor scarcity and increased the cost of hiring. Currently much of the farm labor is provided by the households themselves.

Cash and credit

The decline in the labor force and per capita output had to be compensated for by increased cash. However, there is an acute shortage of cash in the area, induced

⁵ In farming, men's labor is used for plowing, sowing, weeding, harvesting and storing crops. In the *enset* land men are responsible for clearing the land, tilling soil, planting the crop and transplanting it to other plots. Women's labor is used for manuring, harvesting, preparing and storing *enset* plants.

mainly by demographic changes. The purchase of labor, payment for agricultural intensification (fertilizers), the increasing number of household formations and frequency of weddings, the sporadic nature in purchasing food for households and schooling have increased the need for cash over time. Over and above these expenses, there is normal expenditure (tax, health, etc.).

Grazing land and livestock

During the time of the older cohort, in the 1950s and 1960s, grazing land was abundant and keeping livestock was the main activity of most households. Grazing land was then private and people either had their own grazing *rist* (ancestral land) or bought grass cheaply from an owner. After the nationalization of land in 1975, farming expanded. Except for the common allocated grazing lands, all lands used for grazing were registered as uncultivated land and were distributed to households for farming. After the fall of the military regime in 1991, even those common grazing lands were reclaimed by former *rist* owners as private land and put under cultivation. Consequently, during the time of the younger cohort one cannot let cattle graze freely. Every household now has made a small enclosed area of land for grass or grazing.

Households have to rear cattle since their manure is applied as fertilizer to the *enset* cultivation. The number of livestock held by a household is very limited. Now there is no grass even if people wanted to rear cattle by selling what they have harvested. Due to lack of sufficient grazing land and feed, the livestock are physically weak and the yield is very low. Often the leaves of *enset* are used to feed the cattle. In addition, there is a disease called *alkit* which kills cattle. Because of the disease a households can lose two or three cattle per year.

Forest

The pressure of need for more crop land and firewood led to land clearance. In the 1950s and 60s, when keeping livestock was the main agricultural activity in the area, the land was covered with natural forests. With the expansion of agriculture and multiplication of households, the forest came to be gradually destroyed.

Forest lands were cleared for crop cultivation and trees were used for firewood, plowing instruments, housing construction and fencing. At present, people are planting eucalyptus trees close to their houses. Since these trees absorb much water, they are not planted near to farm areas. In some places afforestation has been tried but was unable to be effective, since people are still using forests as sources of firewood at much higher than the rate planted to replace loss.

Physical and social assets

There is no school within the *kebele*. There is a junior secondary school (grades 1–8) in the neighboring *kebele* and children have to travel 30–60 min depending on

where they live in the *kebele*. There is no health station in the *kebele*. Communicable diseases are prevalent in the area. Sick people have to travel an hour and half to reach to the nearest clinic located in the towns. Electricity, telephone, post office and banking are not available. A market is available in the nearest towns in Buki and Kella, almost an hour and half's travel distant. The police station is found in Butagira, 30 km away. There are different types of associations: *kebele* associations for administrative purposes, co-operatives for the purpose of fertilizer distribution, microfinance institutions for women at district level. There are also traditional associations such as *edir* funeral societies, Equib credit associations, and associations celebrating religious holidays.

Dwellings

The questions on the housing situation focused on the type of dwelling and occupancy ratio. Most informants of the old cohort group lived in a thatched-roof hut owned by their parents. There are no significant changes in the type and ownership of houses in the middle and cohort generation group. Tin-roofed houses, which one observes during the young cohort period, are not common in the area. With regard to the number of rooms and the number of persons in the dwelling, progress has been achieved in housing conditions. During the old cohort period some informants used to share rooms with cattle. This has changed over the years and currently there are separate rooms for people, cattle, kitchen and storing materials. However, the number of bedrooms per person has not changed basically: a room is still shared by an average number of five persons. Newly married couples, who have not yet moved out of their parents' houses, have a separate house. It seemed that the number of dwelling rooms is influenced by access to land rather than by the number of persons.

Livelihood activities and roles in Gimisie

The purpose of this section is to trace changes in livelihood activities and roles in the past five decades. Livelihood activities and roles are divided into different categories: household work, child work, schooling, farming, and non-farming activities. What was the status of each type of livelihood activity and role as the population pressure changed over time? Was there any shift in activities, for instance, from child work to schooling and from farming to non-farming activities?

Household work

The nature of household work, activities that maintain and reproduce the household—childcare, domestic tasks of many different types—appears to hold similar across time, despite the population change in the area. This type of activity is carried out by women. Women process and cook food, do the laundry, clean the

house and its compound, travel long distances to fetch water and firewood, nurse and care for the sick within the family.

Since the 1990s, as households multiplied and access to agricultural land was reduced, women have been pushed to participate in off-farm activities. Women are involved heavily in petty trade, marketing grain, horticultural produce, home-made food and drinks, dairy products, poultry, firewood, basketry, coffee and spices.

Child work

In the rural areas herding and fetching wood and water are the most common activities performed by children. This activity has changed greatly in nature since the late 1980s. The shift from household work to petty trade has increased the household work burden on children. As their mothers started to participate increasingly in trade, female children began to take the responsibility of caring for younger children. With the expansion of schooling, child labor has come to be used with the aim of generating an income to finance school necessities. The current school-aged children are engaged in agricultural activities to support their schooling.

Schooling

Schooling has also changed over time. Many of those who are now grandparents (those born in the 1930s and 1940s) did not attend school. There was no village school. There was only traditional church school and this was attended by very few people. The next generation—those born in the late 1950s and early 1960s—did not attend school either. They had a lot of work to do in the household and in farming and there was a limited expansion of schools.

Among the younger cohort, most of them now attend elementary school. But school has not yet become drastically disruptive of children's work; they remain familiar with day-to-day work, both inside and outside the household. In their out-of-school time and days most of them herd cattle or do farming on small plots to earn money. The earnings are used for their own needs, such as clothes, shoes and school fees.

Parents said that they do not want their children to be farmers like them, because they see no future in farming. They are determined to send their children to school, even if they may be forced to hire a worker in their place. They think that schooling is obligatory and will open better opportunities in the urban areas. In the coming decades there will probably be a shift from child work to schooling.

Farming activities

The type of farming activities has changed over the years. Initially, when there was low population pressure, in the 1950s and early 1960s, farm activity was limited to

livestock and backyard farming. Since the middle of the 1970s, particularly after distribution of nationalized land, cereal and pulse production (*teff*, sorghum, maize, wheat, millet, beans, field peas, chickpeas, vetch, *nug* and flax) became the major farm activity. This was followed by a major expansion of *enset* plant cultivation from the middle of 1980s, after drought hit the area. *Enset* is a perennial crop and can be harvested any time of the year. It is used as a co-staple food together with sorghum and maize. The *enset* land is close to the house and ranges from one *timad* to two *timad* of land (a quarter of a hectare). Concomitant with expansion of *enset* was horticulture. In earlier times the growing of vegetables was confined mainly to areas where little irrigation was possible. As the population and the number of households increased horticultural activities spread in many areas. Horticulture crops, fruits and coffee were cultivated in immature *enset* plots.

Non-farm activities

Despite population pressure there is no marked transition from farming to non-farming activities.⁶ There are few handicrafts (carpentry, spinning, basket-making, thatching and pottery) in the village. Since the local craftsmen do not have enough capacity to satisfy demand, some farmers who do not have knowledge of handicrafts are engaged in the activity just to earn money. For these farmers making handicrafts is not a full-time job. Trading is not an important activity, either. Almost all household heads of different generations are exclusively tied to farming. The development and shift to non-farming activities is a result of women being engaged in household work. Even though women had the culture of exchanging goods in the market, the non-farming activity of this group had developed significantly since the 1990s.

Changes in livelihood strategies

What did households do to meet basic and cash needs as density and dependency ratios changed over time? In rural areas there are at least five strategic options open to the households: agricultural intensification, extensification, diversification, migration and changes in property ownership. There are five interrelated methods of agricultural intensification, namely, inputs, frequency of cultivation, changes in crops, capital investment and technology/techniques. Despite the complexity of resource-activity relationships and variations in time and space, one can discern the following strategies (different yet relatively stable composition) at three moments in time.

Moment 1: Agricultural activity responses when the dependency ratio was low (moderate infant and adult mortality, high fertility, 0–3 children) and when the density ratio was low (fewer households, land available but not accessible):

⁶ Non-farm activities are separated into three main types: craft, trade, and service activities.

Livestock and backyard farming

In the 1950s and early 1960s households of the area earned their living mainly through livestock production and backyard farming. During the time of Haile Selassie, there was no large-scale farming. There was what one can call backyard farming (*guaro erisha*): people cultivating a maximum of two *timad* of land (half a hectare). Farming livestock was the major activity at that time and landowners sold grasses.

Moment 2: Agricultural activity responses when both the dependency ratio (high fertility, low mortality, 3–5 children) and the density ratio (moderate increase in household numbers, land relatively available and accessible) were on the increase:

Strategy of agricultural extensification

Farming expanded after the distribution of nationalized land in 1976, 1978/79, and 1980. The population of the area had then increased but land was also available for distribution. Farming became the primary activity of households, because of the goal of the family to attain complete self-sufficiency in food production. Households of this kind regarded food production as a livelihood and way of life, not a business for profit.

Strategy of intensification: crops substitution (*enset* cultivation)

But the 1984 drought changed the pattern of crop production in the area. People realized the importance of *enset* plantation in family food security. Most households started to substitute annual crops by perennial crops, such as the root crop *enset*. The planting of *enset* has been common in the *dega* (colder highlands) at least since the 1950s. It spread massively to the *qola* (warmer lowlands) after the 1984 drought.

Moment 3: Agricultural activity responses when both the dependency ratio (child-rich households: seven plus children) and the density ratio (the increasing number of households and land scarcity) was growing rapidly:

Strategy of agriculture extensification in a fragile environment

In the 1990s, when agricultural productivity growth did not increase in step with demand for food and other farm products, households were forced to expand production into previously unused lands. Since most good land was farmed, extensification took place in fragile environments where yields were low. Forests inhabited by wild animals were cleared for cultivation.

Strategy of intensification: integration of *enset* and cereals

Since extensification was not possible for most households, the majority focused on integrating *enset* and cereal cultivation. *Enset* is used as a co-staple food together

with sorghum and maize. Compared to *teff*, these crops require less labor. *Teff* is a cash crop, but at the same time it is the most laborious of all grains, when plowing, weeding, harvesting, crushing, collecting, and storing.

Strategy of intensification: multiple cropping and use of fertilizer

Because of the small size of land holdings and a shortage of land and because agricultural productivity growth did not keep abreast with the continued demand for food, households were forced to use methods of cultivation which could help them produce more from the same land resource. One of the methods is use of fertilizer, while the other is multiple cropping, growing two or more crops on the same field in 1 year.

Strategy of input intensification: labor intensification

Child-rich families work harder to meet the requirements of reproduction by increasing their rate of “self-exploitation”. The failure of other strategies in meeting the expected objectives is often offset by “self-exploitation”. Self-exploitation does not mean exerting more labor to the extent of damaging physical and mental conditions or under-consumption. It means the use of available family labor, kinsmen, and neighbors’ aid and unwaged labor. Labor contributions among neighborhood members are called *rebi* and *qemen*.

Strategy of diversification: horticultural production

Another farm activity which has developed since the 1980s is horticulture production. In earlier times, the growing of vegetables was confined mainly to areas where minimal irrigation was possible. Households could grow tomatoes, onions, cabbage, garlic, beets, peppers, carrots, etc. As the population and the number of households increased horticultural activities spread in many areas. The income one gets from horticulture is small, but households use it mainly for their own consumption. Fruits such as banana, avocado, papaya have also been introduced in the area in the past decade.

Strategy of diversification: agricultural wage employment

Some of the young adults who are cultivating marginal holdings or who became landless as a result of the decline in access to land have become agricultural wage laborers. Young adults who have not yet formed their family but who are permanently attached to labor-rich families have also become agricultural laborers. Agricultural waged labor is mostly conducted on smallholder farms in individuals’

own villages. There are no private commercial farms. The proportion of wage laborers in the village is small and those laborers available are expensive.

Strategy of diversification: cash crop production (tradable food crops)

Access to a cash income had grown rapidly as the population increased over time. Cash is needed for the purchase of fertilizer, hospitalization of children, wedding and holiday expenses, for tax payments, for contributions to the *edir* (funeral association), etc. Cash is obtained in different ways: by renting land, selling horticultural produce, loans, petty trade, etc. In the study area the most important means of getting cash is cultivation of a tradable food crop, particularly *teff*. More than 50% of the fertilizer is used on this crop. Cash crops such as coffee and chat are not developed in the area. Livestock and keeping small animals like goats and sheep are considered as a long-term investment.

Strategy of resource transfer: sharecropping and land rent

Under the conditions of rising population and continued land fragmentation, land rent and sharecropping have become the most important means of accessing farming land. In the local understanding both forms of arrangements were called ‘helping one another’. Older people usually rented out land for 1 year in return for a fixed payment, ranging from 80 to 120 *birr* per *timad* of land. The contract was renewed by the end of the agreed period. People who needed cash also rented out their land. In the area, land rental started in the 1990s. Those people who were not interested in getting cash entered into another form of arrangement called sharecropping. Under this arrangement they received a share of the agricultural output produced which they used for household consumption. The sharecropper provided labor, oxen and other inputs. Among the people who leased out their land for sharecropping were those who were tired of taking care of degraded land. For these people, increasing use of fertilizer became very expensive. These farmers did not have more than two *timad* of land.

Life trajectories of young adults

This section of the paper describes, compares and interprets the life trajectories of young adults belonging to different generational cohorts. The study of the life trajectories of young adults is a study of the livelihood positions and life transitions belonging to early life stages or the young adult phase of life.

While livelihood positions refer to states which an individual occupies at a point in time, life transition refers to the sequence of events that brings about a change in states. Aspects of the livelihood positions are discussed in Section “Framework of interpretation and relation to other studies” in connection with the availability of resources. In this section a comparison is made concerning life transition of events belonging to the early life stage experienced by young adults.

Conceptually, the markers of life transition include events such as ending schooling, starting work, leaving home, first cohabitation, first marriage, and first birth. In a rural society dominated by the child phase, there seem to be a typical pattern in the sequence of events or a transition to adulthood: end of child work and/or schooling, start of farming, getting married, first birth and household formation. The timing and duration of these events and, in some cases, the sequences of these events differ over time, depending on opportunity structures.

Transition to farming

Most young adults belonging to the 1960s and early 1970s cohort were herders when they were of school age. They started farming at an average age of 15. Often, first-born male children started farming earlier, at the age of 13, either helping or replacing their fathers. The states of transition changed somewhat in the 1980s and 1990s. When they were of school age, most young adults attended school for an average of four or 5 years. Attending school did not, however, change the age of starting farming. Just like the ones who preceded them, the young adults of the 1980s and 1990s started farming at the age of 15. This is particularly true for the first- and last-born male children, since they have the traditional responsibility of supporting the household or taking care of the family property.

Getting married and first birth

Inter-cohort comparison shows that there was some fluctuation in the age at marriage. The older cohort, those born in the 1940s, married in their middle or late twenties. This was mainly due to loss of parents or mobility to make careers in towns. Those who happened to lose their fathers could not get married because there was no one who could arrange and cover wedding expenses. Those children of tenants who migrated to towns looking for jobs had to wait for marriage until they could settle.

After the nationalization and distribution of rural lands in the late 1970s, the pattern of age at marriage changed. There appears to be a decrease in the age at marriage. Among males, the age at first marriage fell to between 18 and 20. One observes a slight increase in the age at marriage among the current young cohort. Most males got married in their early 20s and this change was due to the growing lack of access to resources. Yet the proportion of those marrying seemed to be on the increase since most males and females preferred to stay in the area.

The remarriage pattern appears to be similar for all cohorts. There were remarriages after the death of a spouse, and divorce. Most males were either remarried or had two partners.

Household formation

The main determinant of household formation was the family's economic situation. In the older cohort group, married couples stayed in their parents' house for almost

5 years before they formed their own household. There was no pressure for married couple to leave their parents' house. Tenant parents had no land to provide for couples to form their own household.

The pattern changed after the nationalization and distribution of rural lands in the late 1970s. Parents were able to share family lands among male children. Married couples stayed a maximum of 2 years in their parents' house before establishing a household of their own. The 2 years after marriage was just to give them time to prepare and accumulate materials necessary for the formation of an independent household. (There is also an advantage to the parents since they get their labor in the meantime.)

Conclusions

The period 1950–2004 can be considered as a time of intensive reproduction and unceasing struggle for survival. When we look at the period from the dimension of reproduction, the inter-cohort comparison illustrates that similar demographic behavior is shared by different age groups, despite differences in time. All cohort members reproduce at the same pace and manner as they age over time. There is an early marriage, high fertility, quick transition to adulthood and low migration. The changing conditions and the severe situation of the supply of resources did not alter the demographic behavior of the groups. For instance, the young cohorts, who are theoretically supposed to have economically oriented behavior, are themselves in the business of high reproduction, with an average of seven children per family.

When we look at the survival aspect, we see the predominance of the strategies of agricultural intensification and diversification. In our study we find out that intensification and diversification are not results of economic growth (specialization and division of labor). They are results of the scarcity of resources and households' varied efforts at "self-improvement" to meet basic needs during the period of continuous population pressure. We found dependency and density ratios to be the mechanisms of intensification and diversification at the household level.

Even if we have not quantitatively measured each strategy as it increases production and income, there seems to be a pattern in the variation of household livelihood strategies. Livelihood strategies took different forms when both dependency and density ratios were low and when they were on the increase. When both ratios were low livelihood strategies took the form of agricultural extensification and this was due to the relative availability of land. When both ratios were on the increase, livelihood strategies took the forms of agricultural intensification (land improvement, shortened fallow cycle, placing of organic matter such as *Enset* leaves and manures, multiple cropping, etc.), and diversification (mainly off-farm activities).

Whatever the variation, livelihood strategies are not the results of change in the interest and objectives of production (for instance, market pull/marketing changes and behaviors). The objective of livelihood strategies is to meet basic needs and ensure self-sufficiency and the causes for change are related to a household's demographic size, composition and access to different levels and combinations of

assets. Risks and vulnerability which are claimed to be behind livelihood strategies are not unique phenomena. They have always been there in a farming society, while population growth is a relatively new phenomenon.

When we look at the causes of population growth, the case study shows that households' access to different types and levels of assets (land in the case of Ethiopia) provide fuel to the momentum of population reproduction. Economic and institutional reforms by themselves (such as land reforms or expansion of markets/rural business) do not arrest population growth. On the contrary, they may even accelerate the rate of population increase. The field study shows that economic and institutional reforms aimed at improving the quality of life of the households and addressing issues of inequality, can be used as a means of coping with the various demographic events. This sounds like Malthus (increased production will trigger population growth). His view holds true if the given population continues to have unchanged fertility and demographic behaviors. A decrease in population is a function of fertility behavior. Early marriage and the high economic value given to children are factors affecting fertility in rural areas. Unless reforms address such types of fertility-induced economic needs, the mere introduction of agricultural technology in rural areas may maintain the momentum of population growth.

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