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Consumption, Saving, and Investment Behaviors of Successful Farmers in Ethiopia

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Ethiopian Development Research Institute

THE ETHIOPIAN DEVELOPMENT RESEARCH INSTITUTE

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Foreword

Ethiopia has recently experienced unprecedented economic growth. A large portion of this output growth is derived from the agricultural sector consistent with the country's Agriculture Development-Led Industrialization (ADLI). Significant numbers of farmers are increasingly engaged in commercial agriculture and non-farm activities. Sustainable development of the country, therefore, hinges on the proliferation of such best practices over the wider national economic space. In pursuit of Ethiopia's ambition to be a middle income country in the coming fifteen years, Ethiopian agriculture should transform itself and grow even faster. This high and sustained growth in agriculture forms the basis for industrialization and modernization of the Ethiopian economy.

Cognizant of this far-reaching importance, the Ethiopian Development Research Institute (EDRI) undertook a study on ***“Consumption, Saving, and Investment Behaviors of Successful Farmers in Ethiopia”***. The survey for the research covered 1,800 farm households in five regions, namely Amhara, Benishangul-Gumuz, Oromia, Southern Peoples, Nations and Nationalities, and Tigray. The study probed into income, saving, consumption, and investment behaviors of recognized successful farmers vis-à-vis other farmers. This report summarizes the findings of the study and outlines intervention areas that may be fostered across rural farm households for accelerated agriculture and rural development in particular and Ethiopia's economic transformation in general. I hope this reading will add insights to our understanding of Ethiopia's rural and agricultural development processes in the years ahead.

I seize this opportunity to thank all institutions that provided financial resources for the study, i.e. the African Capacity Building Foundation (ACBF), the Think-Tank Initiative of the International Development Research Centre of Canada (TTI/IDRC), and the Ethiopia Strategy Support Program II of the International Food Policy Research Institute (ESSP II/IFPRI). Many thanks are also due to the researchers, viz. Alebel Bayrau, Guush Berhane, Gebrehiwot Ageba, Tassew Woldehanna, Paul Dorosh, Fanaye Tadesse, Bethelhem Koru, and Kibrom Tafere.

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Acronyms

ACBF	Africa Capacity Building Fund
ADLI	Agricultural Development Led Industrialization
B/G	Benishangul-Gumuz
CSA	Central Statistical Authority
EDRI	Ethiopian Development Research Institute
ERHS	Ethiopian Rural Household Survey
ESSP II/IFPRI	Ethiopia Strategy Support Program Phase II/International Food Policy Research Institute
FTC	Farmers Training Center
GTP	Growth and Transformation Plan
HICES	Household Income, Consumption and Expenditure Survey
IDRC	International Development Research Centre
MFI	Micro Finance Institutions
MPCOP	Multipurpose Cooperative
PA	Peasant Association
PSNP	Productive Safety Net Program
RUSACOs	Rural Saving and Credit Organizations
SCCOP	Saving and Credit Cooperative
SNNPR	Southern Nations, Nationalities and Peoples Region
TTI	Think Tank Initiative
TV	Television

Executive summary

Project background

Ethiopia's economy has experienced rapid growth within the last seven years. Smallholder farmers have primarily contributed to this rapid economic growth. To motivate farmers and speed up the transformation of subsistence agriculture to more market-oriented production and hence reduce poverty, the Ethiopian government has been awarding farmers recognized as most successful in significantly improving their livelihoods since 2006. In responding to this government effort, the Ethiopian Development Research Institute and Ethiopian Strategy Support Program II/International Food Policy Research Institute initiated a research project to study the consumption, saving, and investment behaviors of successful farmers. Particularly, the study was initiated to understand whether the increase in incomes of the successful farmers lead to welfare improvements in rural Ethiopia. The related questions are: "To what extent do successful farmers consume local goods and services, other nationally produced goods or imports?"; "How much do they save?"; "What is their motivation to save, and in what form do they save?"; "How much do successful farmers invest in farm or nonfarm activities"? Accordingly, a household survey was conducted on 1800 successful and comparison farm households randomly selected from five regions (Tigray, Amhara, Oromiya, SNNPR, and Benishangul-Gumuz), covering 60 districts and 300 rural kebeles. The sample districts are selected based on their population size, food security status (as indicated by whether the district is under the Productive Safety Nets Program (PSNP) or not), and remoteness from the nearest district town. These five regions constitute 87.1 percent of the Ethiopian population and 91.1 percent of Ethiopian rural population (CSA 2008). The total sample size is divided into 900 farm households recognized as successful at kebele level in 2006/07, 2007/08 and 2009/10, and 900 other farm households, who are neighbors of the successful farm households, as a 'comparison' group. Thus, six farm households are randomly selected from each kebele: three farmers nominated as successful and three others who are neighbors of the randomly selected successful farmers. The three pairs are selected from near, middle, and remote villages of a kebele from the district town. The survey result is summarized as follow.

Livelihood profile

An average successful farm household head is 47.4 years old and has significantly larger family size (8.2) than his counterpart in the comparison farm households, who is 43.5 years old and has 6.5 family members. While 57 percent of the successful farmers' family members are economically active, 52 percent of family members of the comparison farm household are economically active. An average successful farm household head is more literate and educated compared to an average head of the comparison farm household. His family members have more years of schooling than members of his comparison family.

An average successful farm household owns significantly larger farm land (3.9 ha) than the comparison farm household (1.9 ha). He/she also cultivated a larger size of land in the cropping season just before the survey time. A higher proportion of successful farmers participate in land marketing (sharecropping and renting) compared to the comparison farmer. Land marketing is more common in Tigray and Amhara regions where average land size is 1.8 ha and 1.9 ha, respectively. Per capita farm land holding is significantly higher in Oromiya and SNNPR.

The mean number of economically important livestock—including ox, cow, sheep and goats, and donkeys—per household is at least three times higher for successful farm households than for comparison farm households. An average successful farm household has 4.8 oxen, compared to the comparison farm household which has 1.9 oxen. The number of livestock per holding is significantly higher in Oromiya region.

Income and income source

An average successful farm household has a total annual income of Birr 106,153, which is four times higher than the total annual income of an average comparison farm household. All farm households in the sample are engaged in some form of crop-livestock mixed farming and for the majority of them, a large proportion of the income comes from crop production (74%), about 14 percent from livestock and livestock products, about 9 percent from nonfarm business, and the rest comes from off-farm employment and other income sources.

There are, however, contrasting differences between the two groups of households with regard to income and sources of income. First, the percentage of successful farmers involved in owner-operated off-farm businesses is higher (47%) than that of comparison farmers (31%), and although this activity is the third largest contributor to total income of both groups, successful farmers earn a larger share of their income from this activity (10%) than comparison farmers (7%).

Second, the proportion of farmers having businesses is the highest among farmers in the two richest quintiles, and 80 percent of them are successful farmers. It is important to emphasize that about 6 percent of the successful farmers that fall into the top 40 percent income group have their major sources of income from businesses. In contrast, off-farm employment appears to be more important to the comparison group (it accounts for 17 percent of employment and 4.1 percent of total income) than to successful farmers (it accounts for 11 percent of employment and 1 percent of total income). About 33 percent of the comparison households that earn their living mainly from farming fall into the poorest 20 percent income group. Successful farmers have a more diversified number of income sources (about 4-6) and their per capita income increases with increase in number of income sources, where as there is no clear trend observed for comparison farmers.

Third, the overall wealth status of successful farm households, measured in current value of total crop output, livestock asset, and durable assets is significantly better than comparison farm households. The mean value of crop output for the cropping year before the survey time is four times more for successful farmers (Birr 74,438) than for comparison farmers (Birr 17,425). The difference in crop income is much higher than the difference in total land cultivated in the same year. Moreover, the mean value of livestock asset in monetary term is three times more for the successful farm households than for the comparison households. Similarly, the mean value of household assets—comprising different durable assets such as ownership to TV, radio, household items, and productive assets—is seven times higher for the successful farm households than for the comparison farm households.

In sum, it can be concluded that successful farmers are much richer, better situated for income diversification, and more entrepreneurial than the average farm household, and perhaps often in a different livelihood-cycle. This significant difference in wealth may be due to difference in households' socioeconomic characteristics, access to resources such as land and institutional services that are crucial in improving livelihood strategy.

Change in agricultural production and institutional services

Farmers were asked what the change in crop and livestock production was between the five years just before the survey time and the period previous to that period. They were also asked what the most important innovations were which contributed to the success of the farm household.

Change in crop production, measured in terms of qualitative change in yield per hectare, use of improved inputs and farming practices, is substantially improved for the majority of farm households within the previous five years compared to the years before. Our survey results indicated that, on average, value of yield per hectare is two times higher for successful farmers than for other farmers. Yield per ha is improved as a result of the adoption of improved seed, fertilizer, improved farming practices, and irrigation, as well as extension agents' advice. This improvement is perceived by 77 percent of successful and 55 percent of comparison farmers. Improvements in farming practice are perceived to result from some observed changes in ownership to agricultural productive assets—farm implements such as ploughing equipments, irrigation materials including water pumps, sprinklers, treadle pumps, etc—within the last five years compared to the five years before. Only one percent of successful farmers had had irrigation equipment five years ago while this number has improved to 7 percent for treadle pumps, 9 percent for sprinkler irrigation materials, and 11 percent for water pumps for irrigation. There are also successful farmers that reported they own tractor, though they are insignificant in proportion. Given farm households in Ethiopia are smallholders, this may be considered as a signal for the beginning of some initial structural transformations in production.

Similarly, the change in livestock production explained in terms of change in dairy, beef, honey, and poultry production is better within the last five years compared to the years before. This change is perceived by 80 percent of successful farmers and 49 percent of comparison farmers. This change is perceived to be due to the modification in the use of productivity enhancing agricultural practices such as better application of advice from extension agents, use of improved livestock breeds, better animal health services, and better farming skills acquired in farmers training centers (FTC). Honey production has improved significantly in Tigray (52%) and Amhara (51%) while dairy and beef production has improved in Oromiya, Amhara, and SNNPR. In terms of change in livestock holdings, there is no remarkable difference in the average number of animals owned within the last five years compared to the years before for both the successful and the comparison farmers' group. More importantly, the average number of oxen owned increases with increases in income. The group in the poorest quintile owns a little more than 2 oxen while the richest quintile owns about 7 oxen on average. The average comparison farmer, on the other hand, owns an average of only two oxen; before five years they owned a little less than two oxen.

Farmers also indicated that improvement in the institutional services in the agricultural sector contributed to the improvements in agricultural production. They reported extension service, in terms of number of contacts between the farmer and the development agent, has increased within the last five years compared to the years before. This change is perceived by 49 percent and 32 percent of the successful and comparison farmer, respectively. The nature of the extension service (kind of subjects advised) has also substantially improved within the same period. This considerable improvement is perceived by 47 percent of the successful farmers and 28 percent of the comparison farmers. The most common subjects that were offered to farmers at FTC include application and use of chemical fertilizers, improved seed, chemicals (pesticides and insecticides), manure, modern/improved livestock keeping (beekeeping, poultry production, etc), soil and water conservation practices.

Overall, use of irrigation, improved beekeeping technologies, natural resource conservation and investment in nonfarm business (such as small trading, flour mills, and query development) are the most important innovations that contributed to the recognition of a farmer as successful. In terms of proportion of farmers' perception, the contribution of these innovations to the success

of farm households is better for farmers in PSNP districts than in non-PSNP. As a result, a significant improvement in capital ownership (in terms of fixed and cash capital) has been observed for the successful farm households. An average successful farmer registered Birr 57,015 in cash and total capital of Birr 490,972 in the year he/she obtained an award at kebele level. An average successful farmer in SNNPR registered Birr 84,743 in cash, which is 2.5 times higher than an average successful farmer in Tigray region.

Change in welfare of farm households

As a result of the changes in the main livelihood strategies of farm households, crop and livestock production improvements have been observed in the overall living standards of farm households within the last five years compared to the years before. Some of the improvements are observed in terms of housing status, household durable assets, productive assets, and livestock ownership, as well as overall food and financial requirement of farm households, with significant variation between the two farm household categories.

Compared to five years ago, about 67 percent of the successful and 28 percent of the comparison farmers reported they live in a compound that has more than two rooms. Moreover, larger percentages of successful households have reported to have improved the materials from which their dwellings are constructed. A little more than a quarter of the successful households surveyed reported to have changed the material from which the roof of their residence is constructed.

In terms of ownership and change in durable household assets, there is noticeable improvement in the number of households entering into the information and communication technology over the last five years. Although the improvement is similar for the two groups of households in the sample, the relative percentage change is higher for the comparison group mainly because the latter has started from a relatively lower initial endowment. For example, the number of mobile phone ownership has increased 12 fold for the successful and 17 fold for the comparison households. In relation to ownership to landline telephone, TV, and radio, there are also improvements but with significant differences (in absolute terms) between the two groups of households. The number of successful farmers that owned landline phones is about 13 times higher than their respective comparison farmers. About 91 percent of the successful farmers and 63 percent of the comparison farmers owned radio. On the other hand, due to the inherent poverty in rural areas, TV sets are not common in rural Ethiopia. It is rather interesting to see from this survey that about 18 percent of the successful and 4 percent of the comparison households own TV sets. Ownership of this asset has increased in the last five years by 6 and 10 folds for the successful and the comparison households, respectively.

Other durable household assets, such as refrigerators, sofa sets, stoves, and generators, that involve relatively bigger lump sums of cash to own, have also shown some improvement within the previous five years compared to the years before. Nevertheless, only a small proportion of farm households own these assets. For both groups of households, the acquisition of sofa sets, bicycles, refrigerators, sewing machines, and ironing machines has increased by more than two folds. However, in almost all cases, the growth rate is faster for the successful households than for the comparison households. Currently, about 4 percent, 11 percent, and 11 percent of successful households and only 1 percent, 3 percent, and 2 percent of the comparison households own refrigerator, bicycle, and sofa sets.

Given this difference in welfare improvement between the two rural household groups, our survey revealed, however, that a higher proportion of the comparison farm households perceived that they are able to meet their families' requirements with their own income compared to the successful farm households. About 61 percent and 45 percent of the comparison and successful farm households, respectively, perceived that they are able to manage their families' requirements by their own income. This result may imply that there exist variations in aspirations or objective functions between the two farm households that play a key role in determining the resource allocation behaviors of the farm households. It may thus be useful to consider such variations in farm households' behavior in designing policy/programs that aim to narrow the income gap, to scale-up best practices to the wider Ethiopian rural households, as well as to improve the living standards of Ethiopian farm households.

Overall, the welfare of farm households measured qualitatively in terms of change in durable household assets, number of rooms the family dwells in, and use of information technologies (radio, TV, mobile phones, etc) is improved for more than half of the farm households within the previous five years compared to the years before. Moreover, they are not only able to regularly send children to school but they are also able to satisfy their family food requirements and financial position. It is important to note that the improvements in these welfare measures are better for the successful farm households than for the comparison households. These households reported that use of irrigation, improved beekeeping technologies, natural resource conservation, and investment in nonfarm business (such as small trading, flour mills, and query development) are the most important innovations that contributed to the farmers' success.

In addition to understanding its effect on welfare of farm households, the study investigated the multiplier-effect/trickledown-effect of the increased income as well as the behavior of farm households in allocating their income between consumption and saving. The result is briefly discussed in the next section.

Consumption behaviors

The total consumption expenditure and per capita expenditure of successful farmers is substantially higher than that of comparison farmer. Successful farmers' annual expenditure is 138 percent more than their comparison counterparts. Non-durable consumption expenditure, likewise, is considerably high at 128 percent more than comparison farmers. In per capita terms, successful farmers' per capita expenditure is 86 percent higher than that of comparable farmers. The decline in the margin of difference between the two groups of households compared to household level expenditure can be attributed to the considerably larger household size of successful farmers compared to the comparable ones. We also found that the dependency ratio of the successful farmers is less than that of the comparison farmers. The lower dependency ratio means that there is more family labor available for work, which also explains why successful farmers are richer and successful.

The successful farmers have higher food and non-food per capita expenditure, though the difference between the two groups of households is much higher for non-food items than for food items. Successful farmers' per capita food expenditure is 48 percent higher than that of comparable farmers, while the per capita non-food consumption expenditure is 155 percent more. As a result the share of food in total expenditure is higher for the comparison group than for the successful farmers, which is consistent with the consumption literature that food share declines as one become richer. The fact that successful farmers income elasticities of cereals and legumes is less than unity implies that when income increases due to the production of

cereals and legumes, there will be more marketing surplus, which will enable to have greater supply of cereals and legumes for domestic consumption and or export market.

Moreover, successful farmers have higher per capita expenditure on relatively high quality products such as butter oil, milk cheese, meat, chicken, and fruits and vegetables, as well as health and education. Since most of these items are domestically produced, increased income of successful farmers will have higher multiplier effect.

The proportion of households that spend on high value goods has grown considerably over the past five years with the growth being higher for successful farmers than comparison farmers. Accordingly, the share of successful farmers consuming meat and butter has grown from 69 percent and 79 percent, respectively, five years ago, to 91 percent and 89 percent now, while for comparison farmers, consumption of meat and butter grew from 53 percent and 64 percent to 61 percent and 66 percent respectively over the same period.

The main source of the growth in the consumption of high value goods for the two groups of households is found to be increase in income followed by increase in production. Among consumers of meat, cooking oil, and butter, 71 percent, 70 percent and 41 percent respectively reported increase in income to be the prime factor for increase in their consumption over the past five years. Yet for all three high value goods, the percentage of people reporting increase in income as the chief reason for increase is higher for successful farmers than for their comparison counterparts.

In both per capita and total expenditure, successful farmers spend more on hiring labor for both farm and domestic activities and rent on properties. The share of these expenditure items are 5 percent for successful farmers and 2 percent for comparison farmers, but income elasticity for this expenditure category is higher for the comparison than for the successful group. The implication of this is that income can trickle down to the poor (landless and female headed household who rent their land to rich successful farmers) if rural income increases further.

When looked at in terms of investment on human capital, the successful farmers invest more on human capital than the comparison farmers. Successful farmers spend two and half times more on health and education. The net enrolment ratio of successful farmers stands at 79.8, while comparison farmers send 73.6 percent of their school age children to school.

Though the absolute size of successful farmers' spending on entertainment and festivities is higher than that of comparison farmers', it amounts to a lower share of their budget compared to their comparison counterparts. We also found that as income (expenditure) grows comparison farmers are more likely to spend more (as a share of their total budget) on entertainment than successful farmers.

To see if increased income of farmers is going to increase the demand for imported products, we have examined the consumption expenditure patterns of manufactured products such as cloth, shoes, soap, cooking utensils, and bed sheets and blankets. For these products, imports account for 10 to 29 percent of consumption of manufactured items, and more than two thirds of all items are domestically manufactured.

The share of consumption of all manufactured items except for cloth is higher for comparison farmers than for successful farmers. But for the successful farmers, a substantially higher share of the consumed manufactured items originate from import , perhaps due to shortage of local products of better quality.

The variation in the origins of manufactured consumption goods between successful and comparison farmers has important policy implications. First, because demand is likely to shift from domestic manufacturing to imports, balance of payments problems could be an undesirable consequence of growth in rural income. Second, and on the contrary to the above, one can see imports as incentive goods, in which case the perception of imports as status goods may in the first place be the force that derives rise in rural income—or shift from comparison into being successful farmer.

Successful farmers appear to have relatively lower expenditure elasticities than comparison farmers for all food items. Moreover, the estimated expenditure elasticities of all food items, are less than one for successful farmers while fruits and vegetables, butter, cooking oil, cheese and milk, meat, and sugar and beverages have elasticities that are greater than one for comparison farmers. Because comparison farmers are relatively poorer, they tend to spend a bigger slice of the budget on food items and have higher consumption response to change in income (expenditure). As these items are generally considered superior goods, which the estimated elasticities confirm, poorer households spend relatively less on these. As income grows, they respond by spending a relatively larger piece of the marginal income on these relative luxuries.

On the other hand, successful farmers have higher consumption response for personal care, entertainment, and ceremonial expenses, water and energy expenses, and medical and schooling expenses. More interesting is that comparison farmers spend a relatively smaller share of their income on long-term investment such as health and schooling; they appear to have higher expenditure elasticity for transport and communication and are not far off on medical and schooling expenses either. Conversely, they have lower expenditure elasticity on personal care, entertainment, and ceremonial expenses. It appears that comparison farmers are likely to put in a relatively larger slice of any marginal income on areas that are likely to yield higher income in the future, implying that convergence or catching up is possible.

Although successful farmers spend a higher share to imported items which has relatively higher income elasticity, the absolute share of the consumption of these items is very small. Given the relatively higher share of spending on hiring labor and spending more on rent which have larger than one income elasticity, the amount of income that will trickle down to the poor will be substantial. The share of expenditure on schooling of children and health is substantial ensuring the transfer of human capital for the next generation. Therefore, improving rural income through the promotion and encouragement of successful farmers will have substantial trickledown effect and human development. To mitigate increased demand for imported products of successful or richer farmers, it is good to encourage local manufacturing industries to increase the volume and quality of their production. While improving rural income is key to development, providing sufficient attention to the promotion of industrial production will help reduce the demand for imports and make growth to have better multiplier effect and hence to be pro-poor. Given this policy implications derived from the consumption behavior of farm households, do farm households, particularly successful farmers, save part of their increased income? If they save, in what form and for what purpose do they save? These questions will be addressed as follow.

Saving behavior of farm households

The behavior of farm households in allocating their income between consumption and saving is crucial for the growth of a country as it influences capital accumulation, which is a necessary condition for economic growth. In relation to this, this study investigated the saving behavior of farmers. Accordingly, our survey revealed that the majority of farm households (88%) have cash saving, with a significant difference between successful (97%) and comparison (80%) farmers.

In terms of magnitudes of cash saving, the mean amount of cash saving is significantly higher for the successful farmers (Birr 46,291) than the comparison farmers (Birr 6,051), also with big variation within farmers' category. However, the vast majority (80%) kept their money either at home or with relative. Only 20 percent own a saving account in commercial banks, with a significant difference between the two groups of farmers (34 percent for successful farmers and 6 percent for the comparison farmers). Farm households also use the traditional community saving association such as Equb as an alternative means of saving their cash. However, only one-fifth of the farm households are members of Equb. Successful farmers are better in terms of membership to Equb (26%) and the mean value of contribution (Birr 22,536) within the previous 12 months before the survey time compared to the comparison farmers, for whom the corresponding figures are 14 percent and Birr 5,605.

The fact that only a small proportion of farm households own a saving account may be correlated to availability and/or type of financial institutions within reasonable distance from their village. Our survey revealed that Multipurpose Cooperatives, Saving and credit Association, and Micro Finance Institution (MFI) are the nearest financial institutions for farm households. Commercial banks are not easily accessible to farm households. An average farmer should travel about 21 km to reach the nearest commercial bank. An interesting finding from this survey is that distance (in km) to the nearest commercial bank is significantly shorter to farmers with a saving account.

The top three motives for cash saving of farm households are to meet emergency needs (76%), invest in nonfarm business sector (64%), and invest in human capital (cover education expense (26%)). Consumption use accounts only for a small proportion (12%) of farm households' saving motives. However, not only is there variation in the order of saving motivations, but there is also a significant variation between the two farm categories in the proportion of farmers having these motives. Saving for nonfarm investment is the top priority for 88 percent of successful farmers but only for 38 percent of the comparison farmers.

Finally, it is important to note that the findings have important implications to mobilize domestic resources for better and accelerated capital formation and thereby achieve the goal of the next five years Growth and Transformational plan of the country. It is essential to design a more innovative financial system without policy change that considers the saving behaviors of the successful and other farm households, on the one hand, and the cost effectiveness and efficient service delivery of the existing financial intermediaries, on the other hand. The next important policy questions are "What do farm households with their cash savings?", "Do they invest in farm or nonfarm business?". Our study investigated these and other related questions so as to understand the saving-investment linkage, which is fundamental from an economic development point of view. The following section provides microeconomic evidence to the investment behaviors of farm households.

Investment behavior

Quite a good proportion (73%) of the sampled farmers reported positive investments. The average investment of successful farmers is higher than the comparison farmers. The average investment during 2007/08, 2008/09, and 2009/10 was Birr 18,579, 13,679, and 15,835, respectively.

The mean and median investments of the successful farmers are much larger than those of the comparison group for all the years (2007/08, 2008/09, and 2009/10) and the difference is

statistically significant. But relative to their income (which may proxy capacity to invest out of internal funds) what they are investing is not significantly larger. The median ratio is 7.4 percent of their total income for the successful farmers compared to 7.1 percent for the comparison group.

Most of the investment is taking place outside farming with nonfarm investment accounting for more than 71 percent of the total. The mean value of nonfarm investment is substantially larger than the mean farm investment. The former is almost seven times the latter. The average nonfarm investment is about 6.6 times the average farm investment for the successful farmers and about twice for the comparison group. The ratio of nonfarm investment to total investment over the three years period (2007/08–2009/10) averaged 74 percent, also indicating that most of the investment is taking place outside farming. This is true for both successful farmers and the comparison group alike.

With respect to future plans, the vast majority (65%) plan to expand their farming activities, while others plan to diversify outside agriculture by engaging in new businesses (such as grinding mills and cars), urban housing/land, etc. Higher proportions of farm households (71 percent) intend to undertake their expansion/investment in their village/town while about 22 percent plan to move out and invest in a neighboring town/woreda or regional capital. Of those intending to diversify into engagements outside agriculture about 64 percent are successful farmers. Similarly, with respect to desired location of investment, outward orientation seems to be more common among the successful farmers with 31 percent intending to invest outside their town/village compared to only 14 percent for the others. From a national level economic efficiency perspective, a limitation of the local nature of investment is that it does not allow allocation of resources to the best investment projects since projects are selected from alternatives available locally. On the other hand, however, the desire to invest within ones woreda is good for the development of the local economy and job creation and may contribute towards balanced development.

In relation to financing the investment, the study revealed that own funds/saving is the single most important primary source to undertake investment. This is true for both successful and comparison farmers. Income from sale of crops is the first main source. On the other hand, the survey revealed that finance is the most common constraining factor on investment. Perhaps, this could be due to less access to and/or low supply of credit from financial institutions that meet their financial demand for investment. With respect to this, the survey results indicated that the most common sources of loan farmers had access to are semi-formal (including saving and credit association (36%) and MFI (23%)) as well as informal (friends or relatives (14%)). Only 3 percent of total farm households had access to credit from commercial banks. The mean value of loan obtained from all these sources is Birr 9,212, with significant variation between successful (Birr 20,284) and comparison farmers (Birr 2,107). Only 18 percent of the total sample farm households applied for loan from commercial banks within the previous twelve months before the survey time; the two most important purposes of loans application are for investment on farm and nonfarm business. There is high variation in terms of purpose of loan between the two farmers' groups. While 63 percent of the comparison farmers sought for loan for farm production, 49 percent of the successful farmers sought for loan for the same purpose. The corresponding figures for nonfarm business purpose are 14 percent and 32 percent. The low application rate, in contrast with the fact that farmers have finance constraints, could be due to the reason that the credit service from these semi-formal and informal financial intermediaries is short matured, has limited use, and is even risky and/or very expensive. Farmers stated that

availability of credit, high collateral requirements, and high cost (interest and fees) of finance are major aspects of financial constraints.

In addition to finance constraint, the survey revealed that lack of land and lack of information/knowledge regarding investment opportunities clearly stand out as the most common constraining factors on investment.

Key findings

- ❖ Measured in terms of yield per hectare, farmers reported that crop production has been substantially improved within five years before the survey time compared to the years before. Such improvement is perceived by 77 percent of successful and 55 percent of comparison farmers. Value of yield per hectare is two times higher for the successful than the comparison group. Farmers attribute these improvements to adoption of improved seed, fertilizer, use of irrigation, and technical advice from extension agents.
- ❖ On average, a successful farmer has a total annual household income of Birr 106,153, which is four fold to that of a comparison farmer. Of this, 74 percent comes from crop production, 14 percent from livestock production, and the rest from nonfarm business. Farmers use their increased income to improve their families' welfare, and to save for investment in human capital, farm, and nonfarm sectors. The successful farmer has more diversified sources of income than the comparison farmer.
- ❖ The welfare of farm households measured in terms of change in durable household assets, number of rooms the family dwell in, use of information technologies (radio, TV, mobile phones, etc), regularly sending children to school, and satisfying family food requirements and financial position of the family is improved for more than half of the farm households within the previous five years compared to the years before. As it is evidenced from the survey, the improvement in these welfare measures is better for the successful farm households compared to the comparison group.
- ❖ Successful farmers have higher per capita consumption of food items, non-food items, and high value consumption items. The proportion of households who spend on high value goods has grown considerably between 2005 and 2010 with the growth being higher for successful farmers than comparison farmers. In both per capita and total expenditure, successful farmers spend more on hiring labor for both farm and domestic activities and rent in properties more than the comparison farmers. Successful farmers spend two and half times more than the comparison farmers on human capital (health and education of children).
- ❖ The vast majority (88%) of farm households reported having cash savings but only a small proportion (20%) has a saving account in the nearby commercial bank. Cash saving is mainly used for investing on farm and nonfarm businesses as well as for emergency use. Successful farmers save mainly for nonfarm investment whereas comparison farmers save mainly for emergency use. Quite a good proportion of the sampled farmers reported positive investments (63%). Most of the investment is taking place outside farming with nonfarm investment accounting for more than 71 percent of the total. The mean value of nonfarm investment is substantially larger than the mean farm investment. The former is almost seven times the latter. The share of successful farmers that is investing is larger and the average investment is larger, relative to the

comparison group. However, relative to income (as a proxy for capacity to invest out of internal funds), the average investments of the two groups do not differ significantly. Both face lack of access to finance, lack of land, and lack of information/knowledge regarding investment opportunities as the key constraints of investment, with the proportion being constrained higher for the comparison group. Lack of finance appears to be a more serious problem for successful farmers that intend to expand their present activities, mainly due to the nature/kind of financial institutions accessible to these farmers (Micro finance, RUSACOs).

1. Project background

1.1. Project background

Agriculture is the dominant sector in the Ethiopian economy. The sector accounts for more than 40 percent of GDP, and three-quarters of merchandize export earnings, and provides key inputs into the manufacturing sectors. As a result, the sector is given utmost attention by the Ethiopian government in its effort to accelerate growth and poverty reduction in the country. This view is embodied in the Agricultural Development-Led Industrialization (ADLI) strategy in which the prior focus is growth in agricultural output, through increase in land productivity (via improved input and extension), which then is believed to spill over to lead to industrial development, and then achieve broader economic development.

In recent years, Ethiopia's economy has experienced rapid growth. The country has registered double digit economic growth for the last six years. The agricultural sector spearheads this faster economic growth. Empirical evidence on the performance of the Ethiopian economy indicated that agricultural GDP has been at level close to double digit, which mainly comes from growth in cereal production. Cereal production has increased by more than 12 percent in the country per annum in the period 2004/05 to 2007/08, which is by far the fastest growth in recent years of the country (Taffesse 2008).

Smallholder farmers have primarily contributed to this rapid economic growth. As a result, it is now common to see farmers who are successful in improving their livelihoods and even creating wealth in some rural areas of the country. To continue this rapid growth in the years to come and thereby transform the subsistence agriculture to more market-oriented production and reduce poverty, such positive practices should be encouraged and expanded to all rural communities. In addition to increasing agricultural productivity through technologies (improved input and extension), it would be imperative to create motivations and competitive spirit among smallholder farmers across the nation through different incentive mechanisms such as awarding prizes to farmers who can be exemplary to the wider communities.

Accordingly, the Ethiopian government has been awarding farmers recognized as most successful in significantly improving their livelihoods by local governments since 2006. Award of successful farmers is done at different administrative levels: at kebele, district, regional, and federal levels; and awards provided vary accordingly, ranging from certificates to water pumps and tractor. At least three farm households are awarded at kebele level in a Farmers Festival Program organized within their kebele in the presence of all kebele people. The three most successful farmers among those awarded at kebele level are thus qualified for competitions at district levels. Of those successful farmers awarded at district level, the top few most successful farmers are qualified for regional and federal level awards. In the latter years selection has been made from four categories of farmers. The first category includes farmers that were not recognized as successful in the previous years at kebele level. The second category includes farmers who were awarded in previous years but added value to their previous capital. The third and fourth categories include youth and women farmers¹. A certain number of successful farmers are awarded each year. The total number of higher level awards varies each year. Each category has its share from the total number of farmers to be qualified for award. There are basic selection criteria common to all categories. In addition, there are other criteria that are only

¹ The award at different administrative levels also include other economic agents such as extension agents, private investors involved in the agriculture sector, farmers' cooperatives, rural saving and credit institutes, district agricultural offices, Peasant Associations (PAs), and district administrative councils. Different selection criteria are used for the different economic agents.

used for each category. Selection criteria slightly vary for woredas covered by the Productive Safety Net Program (PSNP). The federal level award program began in 2006 though it started before at both kebele and district levels. The federal level award is now organized at national farmers' festival program, and most successful farmers qualified at federal level are awarded by the Prime Minister.

1.2. Project objective

The growth path of a country is crucially influenced by the behaviors of the different economic agents in allocating economic resources. For example, the behaviors of households in the inter-temporal allocation of their income between consumption and saving is important to understand the mechanisms and interactions across consumption, saving, capital accumulation, and growth process. Therefore, understanding the level and growth of consumption, saving, and investment is fundamental to achieve sustainable growth in GDP per capita, employment, macroeconomic stability, and efficient resource allocation.

The Ethiopian government prepared the five years Growth and Transformation Plan (GTP) with the goal of achieving a GDP growth of between 11 to 14.9 percent per year, which emanates from the vision of achieving a middle income country by 2025 (Ministry of Finance and Economic Development 2010). Scaling up of best practices of successful farmers is considered as an essential component of the process towards achieving this broader objective. The fact that smallholder agriculture still takes the lion share in the Ethiopian economy and the major contributors of the rapid economic growth achieved within the last decade means that it is essential to understand the consumption, saving, and investment behaviors of these farm households towards achieving the goal of the GTP.

Accordingly, the Ethiopian Development Research Institute (EDRI) initiated a research project that aims to study the consumption, savings, and investment behaviors of farmers that are recognized as successful by local governments so as to generate evidence-based inputs for policy and strategy updates in the agricultural and rural development of the country. Particularly, the study attempts to understand such basic questions as: Does the increase in incomes of the successful farmers lead to broader economic benefits in rural Ethiopia? To what extent do successful farmers consume local goods and services, other nationally produced goods or imports? How much do they save, what is their motivation to save, and in what form do they save? How much do successful farmers invest in farm or nonfarm activities? The research output is believed to be an important input to respond to basic policy and strategy questions including how to scale-up the recent development and disseminate the best practices across the rural communities, and in improving understanding of the implications of the rapid agricultural growth on various sectors of the economy.

1.3. Methodology

1.3.1. Data type and source

The study used data generated from a farm household survey. There are good reasons to use household survey data and information on the consumption, saving, and investment behavior of successful farmers. Use of survey data is better than the alternatives of assuming 'rational expectations' or to construct proxies by combining "hard" official data with models of varying degrees of texture. Besides, survey data will quickly pick-up information on changes in

household behavior in response to changes in economic and political conditions. The available survey data in the country are also collected by focusing on understanding the pattern of consumption and income of rural households (e.g. Household Income, Consumption and Expenditure Survey (HICES) of CSA, Ethiopian Rural Household Survey (ERHS) of Addis Ababa University/IFPRI). The results of these surveys, however, cannot serve to analyze saving and investment behavior of successful farmers as using such data requires the analyst to calculate savings as income minus consumption, thereby incorporating measurement errors that may occur in both the income and consumption components of the surveys. In addition, these surveys were not conducted targeting successful farmers, and lack sufficient probing on the dimension of the consumption, saving, and investment behavior of these farmers. Therefore, it was important to conduct a survey on the behavior of these farm households for this specific research project.

Accordingly, EDRI and the Ethiopian Strategy Support Program II/International Food Policy Research Institute collected household level data using a farm household survey conducted in five regional states of Ethiopia including Tigray, Amhara, Oromiya, SNNPR, and Benishangul-Gumuz regional states. These regions cover 87.1 percent of the Ethiopian population and 91.8 percent of the Ethiopian rural population (CSA 2008). The survey covered 1800 farm households from 60 districts and 300 peasant associations in the five regional states. In addition to basic demographic characteristics, information on consumption, saving, and investment behaviors of the farm households are collected during the survey. Besides, community level information has been gathered from the sample districts and Peasant Associations (PA).

1.3.2. Sampling technique and survey procedure

Prior to deciding the sample size and sampling technique for the farm household survey, the core team members of the project conducted field visits to regional agriculture offices and rural areas to discuss with experts and successful farmers. The field visit was intended to get some insights about the profile of successful farmers and gather preliminary information that help to set sampling criteria for the farm household survey. Accordingly, rural population size, remoteness, and food security status of districts are considered in selecting sample districts. Therefore, our sample farm households come from four groups of districts, mainly PSNP–remote, PSNP–non-remote, non-PSNP–remote and non-PSNP–non-remote. We used CSA data to categorize sample districts into PSNP and Non PSNP districts as well as into remote and non-remote districts². The number of sample districts covered in each survey region under the four categories is shown in Table 1.1 below. Figure 1.1 shows the distribution of sample regions and districts based on the output of GIS mapping.

² In this study, remoteness is defined as more than 4.67 hours travel time to a city of 50,000+. Using this cutoff, 50.1% of the rural population in the five sample regions is classified as remote.

Table 1.1. Number of districts covered by the survey by region, safety net program and remoteness of the district

Region	PSNP		Non-PSNP		Total sample districts
	Remote	Non-remote	Remote	Non-remote	
Amhara	3	2	4	5	14
Oromiya	3	2	10	8	23
Tigray	2	2	2	0	6
SNNPR	4	5	3	2	14
Benshangul-Gumuz	0	0	3		3
Total	12	11	22	15	60

Notes: PSNP = Productive Safety Net Program; SNNPR = Southern Nations, Nationalities and Peoples Region

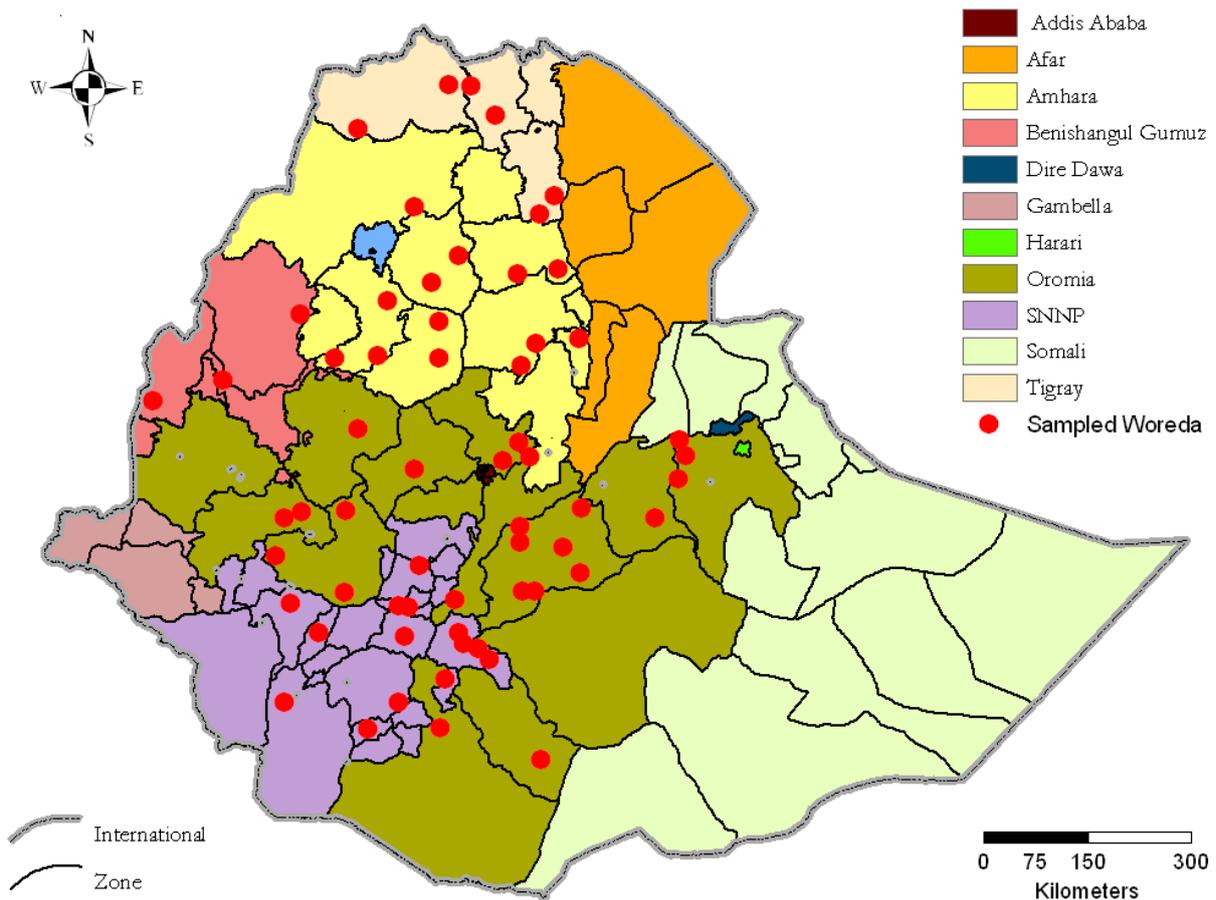
The sample size in each region and districts is determined using an approximate-farmer's population weights³. Within each district, three Peasant Associations (PAs) are covered in the survey. The three PAs are selected based on their distance from the district town: far, middle, and near to the district town based on the information obtained from the district administrative office. From each PA, the survey covered six farm households, consisting of three 'successful farmers' and three 'comparison farmers'⁴. The three successful farmers in a PA are randomly selected from a list of winners of the three periods, 2006/07, 2007/08, and 2008/09. One winner is randomly selected among winners of each period. The comparison farmers' group is selected at the PA level in such a way that it can consist of farmers that provide a good match with the PA successful farmers. Accordingly, a comparison farmer who is on the right side neighbor of the randomly selected successful farmer is selected as a comparison farmer. In case this farmer is also a successful farmer, the next right neighbor is taken as a comparison farmer.

The survey was conducted by 40 enumerators who are well experienced in household surveys. Before the main survey was conducted, the enumerators were given three days training on the details of the questionnaire. A pilot survey was conducted on farm households in Sebeta district in Oromiya region to check the questionnaire in terms of the wordings, ordering, and to determine the length of time the interview would take. After the pilot survey, a one day discussion was made with all enumerators and supervisors on the outcome of the pilot survey. The questionnaire is then finalized and prepared in three languages including in Tigrigna, Oromiffa, and Amharic. To minimize the inconsistency that might occur in interpreting the questionnaire due to language difference during the field work, the English version is used by all enumerators as a reference.

³ A little adjustment has been done in using the population weight criteria to determine sample size of each region to accommodate the small population size of Benishangul-Gumuz regional state.

⁴ Due to the technical requirement in conducting such research, which basically requires non-experimental data, the non-successful farmers are included as a comparison group.

Figure 1.1. Spatial distribution of sampled woredas



1.4. The dataset

Table 1.2 shows the distribution of the sample farm household by success (farm households' category), food security status (safety net program or productiveness of the district), and remoteness of the sample district. As can be seen from Table 1.2, our survey covered 1800 farm households, consisting of 900 from each farmers category (successful and comparison farm households). In terms of food security status, 690 farm households are covered from food in-secured or productive safety net program (PSNP) area and the rest 1190 are from food secured or non-PSNP areas. In terms of remoteness, our sample covered 1020 sample farm households from remote districts and 780 farm households from non-remote districts of the country.

Table 1.2. Distribution of sample farm households, by success, safety net program, and remoteness (number of farm households)

Region	Successful farmers	Comparison farmers	Total sample	PSNP		Non-PSNP	
				Remote	Non-remote	Remote	Non-remote
Tigray	90	90	180	60	60	60	0
Amhara	211	209	420	90	60	120	150
Oromiya	345	345	690	90	60	300	240
B/G	44	44	90	0	0	90	0
SNNPR	210	210	420	120	150	90	60
Total	900	900	1800	360	330	660	450

Notes: PSNP = Productive Safety Net Program; B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

As discussed above, in this study a successful farmer is defined at the kebele level as a farmer who is recognized as successful in improving his/her living status. However, the Ethiopian government has been awarding farmers at different administrative levels including at kebele, district, regional, and federal level since 2006/07. Accordingly, our sample covered successful farmers who were also nominated and awarded at higher levels than kebele. Table 1.3 shows level of nomination, by safety net program and remoteness of the sample district. Of the 900 sampled successful farm households, 595 were nominated to district level award and 223 for regional level award. Disaggregating the data by productive safety net and distance, of those successful farmers from PSNP and remote areas awarded at kebele level, 22 percent nominated for regional award competition whilst 34 percent of the successful farmers from PSNP and non-remote areas are nominated for regional level award competition. Similarly, about 19 percent and 29 percent of successful farmers in non-PSNP areas of remote and non-remote districts are nominated for regional level award competition, respectively.

Table 1.3. Distribution of successful farmers, by level of nomination, safety net program and distance (number of farm households)

Level of nomination of successful farmers	Safety net program/distance				Total farm households
	PSNP		Non-PSNP		
	Remote	Non-remote	Remote	Non-remote	
Kebele	181	165	329	225	900
District	117	128	217	133	595
Regional	40	57	61	65	223
Total	338	350	607	423	1718

Source: Successful Farmers Survey (2010)

Notes: PSNP = Productive Safety Net Program

Table 1.4 shows the number of successful farm households nominated and awarded at different administrative levels in the five regions covered by the survey. Of the 900 total successful farmers covered by the survey, 136 and 34 are awarded at regional and federal levels, respectively. Oromiya region takes the lion share of the award at federal level, followed by SNNPR. Our survey covered only two successful farmers awarded at federal level from Tigray and Amhara regions but none from Benishagul-Gumuz.

Table 1.4. Number of farm households nominated and awarded at different administrative levels, by region.

Region	Kebele nominated	Woreda nominated	Regional nominated	National nominated	Regional award winner	Federal award winner
Tigray	90	87	43	9	21	2
Amhara	211	142	65	18	39	2
Oromiya	345	210	58	34	45	20
B/G	44	38	8	0	3	
SNNPR	210	118	49	20	28	10
Total	900	595	223	81	136	34

Source: Successful Farmers Survey (2010)

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

1.5. Basic characteristics of farm households

This section describes the basic characteristics of sample farm households included in our survey. A comparison is made between the two groups of farmers (successful and comparison farmers) using some basic demographic and socioeconomic indicators⁵. The intention of this section is to provide some insights on farm households' socioeconomic characteristics and to lay the foundations for the next chapters.

1.5.1. Demographic characteristics of farm households

The gender and marital status of the sampled farm household head in each survey region is shown in Table 1.5. From the total of 900 successful farmers, at least 88 percent are male-headed and the remaining 12 percent are female-headed farm households. The result is the same for the comparison farm households and across the five regions. The marital status of the household head shows that the majority is married (88%). Even though there is no significant difference in terms of marital status of the two farmers' groups, it seems that polygamy is more common among successful farm household heads than among the comparison farmer households. Polygamy is more common in Benishagul-Gumuz, Oromiya, and SNNPR regions than in Tigray and Amhara region.

Table 1.5. Gender and marital status of farm household heads, by farmers' category and region (%)

Description	Successful farm households	Comparison farm households	Total sample	Region (successful farmers)				
				Tigray	Amhara	Oromiya	B/G	SNNPR
Gender of head (%)								
Male	88.22	88.22	88.22	82.78	89.05	88.41	92.22	88.57
Female	11.78	11.78	11.78	17.22	10.95	11.59	7.78	11.43
Marital status of head (%)								
Married	85.67	90.11	87.89	88.89	90.48	87.1	84.44	86.9
Divorced	1	1.56	1.28	5	2.14	0.29	0	0.71
Widowed	3.56	3.22	3.39	5	4.29	2.75	0	3.57
Unmarried	0.67	0.78	0.72	1.11	0.95	0.58	0	0.71
Polygamy	9	4.22	6.61	0	2.14	9.13	15.56	7.86

Source: Successful Farmers Survey (2010).

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

⁵ From now on, this report uses the term 'Successful' and 'Comparison' farmers/farm households to refer to farmers/farm households who are recognized as successful at kebele (local government) level and their right neighbor, respectively.

1.5.2. Family size, dependency ratio, and age composition of farm households

An average farm household head has at least 7 family members. The average successful farm household has larger family size (8.2 members) than the comparison farm household (6.5 members). The three regions in which polygamy is more common are shown to have larger family size than the two regions where polygamy is not common. As indicated in Table 1.6, farm households in Oromiya, Benishangul-Gumuz, and SNNPR regions have on average 7.7-7.8 family members. Farm households in Tigray region have smaller average family size.

Even though an average successful farm household has larger family size, it has lower number of dependents compared to its counterparts of the comparison farm household. About 57 percent of family members of a successful farm household are within working age whilst 52 percent of family members of the comparison farm households are within working age. Overall, the result revealed that the household head of a typical successful farm household tends to be older than the head of the comparison farm household. An average head of farm household in Benishangul-Gumuz region is younger than farm household heads of the other regions.

Table 1.6. Socioeconomic indicators of farm family, by farmers' category and region

Socioeconomic indicators	Successful farmers	Comparison farmers	Total sample	Region				
				Tigray	Amhara	Oromiya	B/G	SNNPR
Family size (mean)	8.2	6.5	7.4	6.2	6.7	7.7	7.7	7.9
Dependents, (age <15 and >64), (%)	43.3	48.1	45.7	45.7	41.8	48.6	48.7	44.3
Working age (15-64 year), (%)	56.7	51.9	54.3	54.3	58.2	51.4	51.3	55.7
Age of household head (year)	47.4	43.5	45.5	44.7	45.6	45.3	42.5	46.7

Source: Successful Farmers Survey (2010)

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

Table 1.7 shows the detailed age structure of members of farm families covered in our survey. While about 17 percent of the family members of a comparison farm household are within the age of 20 to 30 years old, only 5 percent from the successful farm family members have the same age structure. At least 58 percent of the household members of successful families are within the age of 41 to 60 years old.

Table 1.7. Age structure of family members, by farmers' category and region (%)

Age structure (year)	Successful farmers	Comparison farmers	Total sample	Region				
				Tigray	Amhara	Oromiya	B/G	SNNPR
20-30	5.22	16.67	10.94	11.67	10.24	11.45	16.67	9.29
31-40	25.44	32.11	28.78	26.67	27.14	31.01	28.89	27.62
41-60	58.44	42.22	50.33	53.89	52.86	47.83	47.78	50.95
>60	10.67	8.89	9.78	7.22	9.52	9.71	6.67	11.9

Source: Successful Farmers Survey (2010)

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

Table 1.8 shows the statistical difference in the age of household head between the successful and comparison farm households by region. There is a significant difference in the age of head between successful and comparison farm households in all region except in Tigray region. The difference is higher between the heads of the two groups of farm households of Benishangul-

Gumuz. The result revealed that the head of successful farm households is at least 10 years older than the comparison farm households' head. This considerable age difference between the two groups of farm households may point towards longer years of on farm experience being an important factor in explaining the success of farmers.

Table 1.8. Difference in age of household head and children (in years) between successful and comparison farm households, by region

Region	Successful farmers		Comparison farmers		Difference in age of household head
	Age of HH head	Age of children	Age of HH head	Age of children	
	A	B	C	D	E = A - C
Tigray	45.48	12.04	43.99	10.04	1.49
Amhara	47.17	13.07	43.98	11.87	3.2***
Oromiya	46.85	12.04	43.68	10.08	3.17***
B/G	47.66	12.25	37.48	8.28	10.18***
SNNPR	49.41	14.05	43.94	10.96	5.47***

Source: Successful Farmers Survey (2010)

Notes: ***, **, and * are significance levels at 1, 5 and 10 percent, respectively. B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region; HH = household

1.5.3. Education levels of farm households

Education is one of the key factors that determine the capability of an individual for survival. Thus, it is vital to investigate the education level of farm households as education contributes in improving household welfare. Accordingly, our survey asked farm households to state the level of their education of the head and its family members in terms of their literacy and years of schooling. The result revealed that about 67 percent of all family members are able to read and write at least in one language (Table 1.9). Literacy rate is less in Tigray region compared to other regions. The highest literacy rate is observed in Oromiya region followed by SNNPR. Literacy rate is higher for successful farm households than comparison families. While about 73 percent of the successful farm families are literate, about 60 percent of the comparison farm families are literate.

Table 1.9. Education level of farm households by farm household category and region (%)

Education level	Successful farmers	Comparison farmers	Total sample	Region				
				Tigray	Amhara	Oromiya	B/G	SNNPR
Illiterate	27.3	39.6	33.4	45	36.9	29.4	38.9	30.5
Literate	72.7	60.4	66.6	55	63.1	70.6	61.1	69.5

Source: Successful Farmers Survey (2010)

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

The educational status measured in terms of years of schooling of farm households appears to be one of the key factors that differentiate successful farmers from the comparison ones. As can be seen from Table 1.10, household heads of successful farmers have more years of schooling than their counterparts. A typical household head of successful farmers has 5 years of schooling while the head of comparison farmers has 4.7 years of schooling. This trend is true for all regions except Benishangul-Gumuz. Comparing the education level of heads of successful farmers across regions, Amhara and SNNPR have the highest years of schooling for both categories of households, while Tigray has the lowest. Not only do successful farmers have more years of schooling themselves, but also their children attended more years of schooling

than children of comparison farm households. Successful farmers' children, on average, have an extra year of schooling compared to the children of comparison group farmers. One possible explanation to the relatively longer years of schooling may be that successful farmers are richer, and thus can afford to cover their children's education expense, or due to the relatively higher income level, they can afford to hire wage labor and lessen the demand on their children's time for on farm activities.

Table 1.10. Difference in years of schooling of farm household head and children between successful and comparison farm household

Region	Successful farmers		Comparison farmers		Difference in schooling of household head
	Household head years of schooling	Children years of schooling	Household head years of schooling	Children years of schooling	
	A	B	C	D	
Tigray	4.8	4.7	3.9	4.1	0.953***
Amhara	5.6	4.1	4.5	3.6	1.03***
Oromiya	5.1	5.4	4.1	4.9	0.98***
B/G	4.9	4.8	3.8	4.9	1.12**
SNNPR	5.7	5.6	4.5	5.5	1.25***

Source: Successful Farmers Survey (2010)

Notes: ***, **, and * are significance levels at 1, 5, and 10 percent. B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

1.6. Organization of the report

The report is organized as follow. The next chapter presents income, income sources and the welfare of farm households. The aim of the second chapter is to provide a description of the livelihood profile of sample farm households including income and income sources. It also provides the welfare improvements of the households as a result of the increase in income. It is, therefore, divided into seven sections. The first section introduces the chapter. The second section presents the different income sources and amount of income obtained from each sources. Third section presents a detail investigation on the effect of some important socioeconomic factors on diversification of income sources. Section four presents a comparative analysis of the change in crop and livestock production as well as institutional supports provided to farmers within the last five years compared to the years before. Section five discusses the most important innovations that contributed to the success of farm households. Section six discusses the welfare improvement of farm households due to the change in their livelihood strategy. The final section presents a summary of the results discussed in this chapter.

In addition to exploring the effects of increased income on the welfare of the households, the study also analyzed the multiplier effect of the increase in income of successful farmers. The result will be discussed in the third chapter. The chapter provides answers for basic policy questions including “Do successful farm households consume all of their increased income?” or “Do they consume imported items or locally produced goods and services?” and “Does the increased income have a trickledown effect?”. The chapter is divided into three sections. The first section presents the expenditure pattern of farm households, which is followed by a discussion on expenditure elasticity of demand. The final section presents a summary and policy implications of the findings.

Chapter four presents survey results on farm households' behavior in the inter-temporal allocation of their income between consumption and saving. The aim is to explore the saving behavior of successful farmers including form of saving, method of savings, motives for saving, as well as their participation in community saving and credit associations. The effect of differences in individual socioeconomic characteristics on saving behavior is also discussed. The chapter is divided in to five sections. Section one briefly discusses concepts in saving behavior of households. Section two presents forms of household saving, followed by a discussion on purpose of savings in section three. Section four presents participation of successful farm households in community saving and credit associations. Summary and conclusions of the chapter is presented in the last section.

Chapter five fills the gap between the saving-investment linkages not discussed in previous chapters. It has six sections. The first section presents the different areas of investments and share of total income invested on farm and nonfarm businesses. Section two discusses farmers' preference in location of investment and their future plan for investment. The third section discusses sources of finance for investment. Section four discusses constraints to investment. Farmers' borrowing behavior, including access to credit, demand, and reason for loan, will be discussed in section five. Summary and concluding remarks will be made in the final section.

2. Income, income source and changes in welfare of farm households

2.1. Introduction

Rural households particularly in Africa have multiple occupations from which they derive income (Barrett et al. 2001). Most studies classify these income sources as farm and off-farm. Farm income includes crop, livestock, and crop-livestock mixed farming activities. Off-farm income often includes local off-farm wage employment, local off-farm self-employment, and migration income (Reardon 1997). Added to these, in our study there are 'other income sources', which are often categorized as non-productive sources that include private (e.g., remittances) and public (e.g., food aid and direct transfers) transfers to households⁶. The proportion and role of each income source to total rural household income varies across regions and countries. Moreover, there is no consensus as to which income source grows faster in which part of households' growth life-cycle. What seems to be more understood and received growing attention in recent years is the role that the rural nonfarm sector can play in the transformation of rural economies. In terms of employment, the rural nonfarm sector accounts for about 30 percent in Asia and Latin America, 20 percent in West Asia and North Africa, and 10 percent in Africa. Income wise, the sector contributes for about 35 percent of rural income in Africa and roughly 50 percent in Asia and Latin America (Haggblade, Hazell, and Reardon 2010).

This chapter presents a comparative analysis of the sources of income, diversification and the welfare implications of the change in income on successful and comparison households.

2.2. Income sources and diversification

The nature and diversification of income sources is often considered as an indicator of the degree of structural transformation of rural economies. From a farm household survey in Kenya, Burger (1994) notes that households seldom prosper by growing food crops only. Bevan et al. (1989, 102) indicate that the road to prosperity is to diversify into cash crops and off-farm earnings. Indeed, while some argue income diversification is not an indisputably positive phenomenon, especially if diversification is driven by stagnant agricultural growth (Haggblade, Hazell, and Reardon 2007), the conventional wisdom that favors agriculture-led development envisages structural transformation following increases in agricultural productivity and incomes, making it possible for households to first diversify income sources and eventually push labor out of agriculture (Ashley and Maxwell 2001; Ellis and Harris 2004).

Thus, whether successful farmers noticeably differ from the randomly selected comparison households in terms of not just income levels but also the structure of their economic activities may offer some insights on how policy instruments can be tuned, if possible, to replicate such successes and embark on overall structural transformation of the rural economy. It is thus essential to first examine the extent and form of rural households' participation in the different rural economic activities.

To this end, households were asked whether or not they participate in one or more of the twelve major economic activities identified in this study, and the contributions of each income source to the total income. Table 2.1 summarizes the percentage of households participating in a given income source, the percentage contribution of each income source, and the average annual income for the average household. Note that the percentages are calculated for each income

⁶ Note that in this study we treat local and non-local remittances separately from off-farm income.

source independently and thus do not add up to 100 percent. The percentage contribution of each income source to annual household income and the average income from each source is presented in Table 2.2.

Table 2.1. Percentage of households having a certain type of income source, mean of percentage contribution of income source, and mean annual income, by source of income

Income Sources	(%) Households having [the] income source		Mean income (Birr) from [the] income source		Mean difference in income
	Successful farmers	Comparison farmers	Successful farmers	Comparison farmers	
Farm					
Crop	99.7	99.0	73,542	18,008	55,535 ***
Livestock	79.1	61.2	10,593	3,258	7,335***
Animal products	57.0	37.9	4,928	1,900	3,028***
Off-farm business and employment					
Business (self-employment)	46.6	30.9	28,431	5,696	22,735***
Off-farm employment	11.4	17.1	8,340	4,970	3,369
Other sources					
Remittance from abroad	2.7	3.0	16,941	4,722	12,219
Remittance from local	4.8	4.8	48,374	66,577	-18,203
PSNP or public work	1.9	11.2	1,244	1,118	126
Food aid	2.2	6.4	439	748.2	-309*
Other gifts	0.4	0.6	2,395	568	1,827
Land rent/sharecropping	22.9	4.3	4,553	928	3,626**
Other source of income ⁷	1.8	1.3	32,097	18,071	14,026

Source: Successful Farmers Survey (2010)

Note: ***, **, and * are significance levels at 1, 5 and 10 percent

It can be observed that almost all households in the sample are engaged in crop production (Table 2.1). A typical characteristic of the structure of poor countries' rural economy, at its early stage of development, is that almost all labor is absorbed in crop production mainly to feed its own households (Tiffen 2003). This is so because at this stage, rural areas are faced with limited markets or limited infrastructure to access markets and thus are autarkic in nature, being food self sufficient. It appears that in terms of employment, there is not much difference between the two groups of households—both groups are by and large engaged in crop production. In addition, crop production is the major source of income, invariably for both groups (74 percent for successful and 73 percent for comparison) of households (Table 2.2). Clearly, in terms of their involvement in crop production as well as its contributions to total income, there is no clear distinction between the two groups of households.

Differences arise however when households' involvement in activities other than crop production and the contributions of these other activities to total income is considered (Table 2.2). Compared to comparison households, a higher percentage of successful households are engaged in other farming activities, such as livestock production (79 percent) and livestock products sales (57 percent), which is 61 and 38 percent, respectively, for the comparison households (Table 2.1). Moreover, a good percentage of successful farmers have other activities outside of agriculture such as owner-operated (off-farm) businesses (47 percent) and

⁷ Some of the income sources that fall under the 'other source' category are pension, car rent and other activities that are not categorized as business or off-farm employment

renting out or sharecropping of their land (23 percent). These same activities are, respectively, 16 and 19 percentage points lower for comparison households. In contrast, off-farm employment is more important for comparison (17 percent) than for successful households (11 percent).

In terms of share of income derived from outside of agriculture, both successful and comparison households derive their third highest income from self-employment and businesses. Finally, it is also important to note that 18 percent of comparison households earn about 3 percent of their living from food aid and food/cash-for-work activities.

Table 2.2. Share (%) of different income sources to total household income, by farmers' category

Sources of Income	(% Contribution to total income)	
	Successful farmers	Comparison farmers
Farm		
Crop	73.75	72.69
Livestock	10.70	9.41
Animal products	2.89	2.32
Off-farm		
Business (self-employment)	9.45	7.28
Off-farm employment	1.31	4.08
Other sources		
Remittance from abroad	0.41	0.47
Remittance from local	0.29	0.63
PSNP - public work	0.11	1.62
PSNP - direct transfer (food aid)	0.05	1.00
Other transfers (gifts)	0.03	0.05
Rent/share from land cultivated by others	0.91	0.15
Other source of income (not mentioned)	0.20	0.18
Total	100.00	100.00

Source: Successful Farmers Survey (2010)

The fact that relatively higher percentage (47 percent) of successful households are engaged in owner-operated businesses and (23 percent) receive incomes from renting or sharing their land may signal that successful households diversify more than comparison households outside of agriculture and that their success may have been complimented by increased incomes from off-farm businesses (Table 2.1). It may well suggest that successful households are better placed to transform their economic activities to non-agriculture. Similar evidence, e.g., from China, indicate that farm households who preferred to work on more productive rural nonfarm sector “chose to rent their land, negotiating share-cropping arrangements or lending their land to kinsmen or neighbors who agreed to assume responsibility for the contracted grain quota” (De Janvry et al. 2005). This is interesting to the extent that the transformation of labor employment away from crop production is preceded by agricultural income increases that occurred elsewhere due to increased labor productivity.

It must be noted though that about 17 percent of comparison households earn about 4 percent of their income from employment by others (off-farm work) while only 11 percent of successful households earn negligible income (1 percent) from the same income source. This dominant importance of the off-farm wage labor, as compared to self-employment, for the comparison

groups may imply significant entry barriers to poorer households to start up enterprises outside of agriculture (Reardon 1997).

A better understanding of the nature of income source diversification can be obtained by looking into the number of income sources households are involved in across regions. As presented in Table 2.3, a higher proportion of successful farmers have a larger number of income sources—ranging from 4-6—compared to the comparison groups. This is consistently revealed in all the regions. A higher level of diversification is evident among the successful farmers. In order to further investigate whether or not per capita income increases with diversification across regions, it is important to examine average incomes across the two groups of households in the sample (Table 2.3). It is interesting to see per capita incomes of successful households increase with increases in the number of income sources while those of comparison households do not reveal any consistent trend.

Table 2.3. Mean per capita income (Birr) and number (n) of households by number of income sources, by region and by farmers' category.

Number of income sources	Tigray		Amhara		Oromiya		Benishangul-Gumuz		SNNPR	
	Success.	Comp.	Success.	Comp.	Success.	Comp.	Success.	Comp.	Success.	Comp.
1-3 (n)	10,176 (46)	4,528 (54)	10,020 (122)	4,120 (147)	11,821 (221)	5,032 (280)	5,102 (35)	3,532 (39)	9,077 (89)	3,279 (140)
4-6 (n)	7,261 (44)	2,941 (34)	13,578 (88)	3,947 (62)	17,606 (124)	8,081 (64)	4,687 (9)	5,691 (7)	21,011 (120)	4,562 (69)
7+ (n)	- -	3,036 (2)	14,414 (1)	- -	- -	5,016 -	- -	- -	36,585 (1)	- -
Total (n)	8,751 (90)	3,896 (90)	11,524 (211)	4,068 (209)	13,900 (345)	5,597 (345)	5,017 (44)	3,861 (46)	15,932 (210)	3,85 (210)

Source: Successful Farmers Survey (2010).

Notes: Averages do not add up to the total because the total gives the mean per capita income of all households irrespective of the number of income sources they have. Number (n) of households participating in each income group is given in parenthesis; SNNPR = Southern Nations, Nationalities and Peoples Region

Except for successful farmers in SNNPR, more than half of the households have 1 to 3 income sources. Especially for the comparison groups higher proportion of households have income sources varying between one and three. The percentage of households with more than seven income sources is very low for both successful and comparison farmers. This result is consistent across regions. Important variations in per capita incomes are observed across regions even within successful households.

2.3. Income source investigated

2.3.1. Farm and off-farm income sources compared

The rural off-farm sector has attracted considerable attention in recent years not only as one of the most important income sources for rural households but also as a potential alternative to agriculture in stimulating economic growth (Reardon 1997; Haggblade, Hazell, and Reardon 2010). It accounts for 35-50 percent of total income of rural households in developing countries (Haggblade et al. 2007, 3). As a potential pathway out of poverty, the off-farm sector is seen as the productive destination of surplus labor from agriculture. As such, income growth from this sector, a phenomenon evidenced in rural China in the 1980s, is considered as desirable and a signal for successful transformation of rural economy. In 2000, for example, China's average

farmer income from non-agriculture exceeded agricultural income (accounting for slightly more than 50 percent of total income) (Von Braun et al. 2009). Indeed, a good proportion of the poverty reduction effects of growth in rural areas is due to growth in the off-farm sector. Realizing potentials from this sector in the successful transformation of the rural economy is however context dependent and policies to promote the nonfarm sector therefore remain, for the most part, unclear (Haggblade, Hazell, and Reardon 2010).

Table 2.4. Shares of farm, off-farm business, off-farm employment, and other sources of income, by region and farmers' category

Regions (Sample)	Successful farmers				Comparison farmers			
	Farm	Off-farm business	Off-farm employment	Other sources	Farm	Off-farm business	Off-farm employment	Other sources
Tigray	0.81	0.13	0.03	0.03	0.69	0.12	0.10	0.08
Amhara	0.89	0.08	0.01	0.02	0.90	0.04	0.02	0.03
Oromiya	0.89	0.08	0.01	0.02	0.88	0.06	0.02	0.04
B/G	0.81	0.16	0.03	0.01	0.77	0.21	0.01	0.01
SNNPR	0.86	0.11	0.01	0.02	0.82	0.07	0.07	0.04
Total Sample	0.87	0.13	0.03	0.02	0.84	0.12	0.10	0.04

Source: Successful Farmers Survey (2010)

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

In view of this, an outstanding contextual question in our study is the extent to which this sector can play a role in transforming the rural economy of Ethiopia. Our survey is the first of its kind to provide such evidence that compares households that have been recognized by their respective local governments as moving the ladder of transformation against other households in their neighborhood which have not (yet) been recognized.

Comparing the two household groups across the total sample, the share of income derived from off-farm business is higher for successful households than for the comparison farmers, while the share of income derived from off-farm employment is higher for comparison groups (Table 2.4). This is true for all the successful farmers in almost all the regions, with the exception of Benishangul-Gumuz where the comparison farmers have a higher share of income from off-farm business than the successful farmers.

Examining the income sources of the two groups (successful and comparison) of households, by breaking down into income quintiles may shed light on the relationship between the percentage of households deriving income from the four income sources and the income quintile they belong to. Table 2.5 presents the percentages of households within an income source across quintiles.

Table 2.5. Percentage of households having certain type of income source, by farmers' category and income quintiles

Income quintiles	Farm		Off-farm business		Off-farm employment		Other sources	
	Succ'ful farmers	Comparison farmers	Succ'ful farmers	Comparison farmers	Succ'ful farmers	Comparison farmers	Succ'ful farmers	Comparison farmers
1 st	100.0	99.4	16.0	22.6	12.0	20.6	4.4	47.3
2 nd	100.0	100.0	35.7	33.1	10.7	16.5	10.5	23.3
3 rd	100.0	100.0	33.3	34.3	9.3	16.7	16.2	16.7
4 th	100.0	100.0	46.6	36.9	13.3	9.9	28.4	8.9
5 th	100.0	100.0	61.5	51.5	11.3	15.2	40.5	3.9

Source: Successful Farmers Survey (2010)

Note: 1st quintile is the poorest quintile

As can be expected, all farmers from all the income quintiles derive some amount of income from farming activity. However, what is interesting to find is that the proportion of farmers having off-farm business is the highest among farmers in the richest quintiles. The percentages of farmers engaged in business are also higher for the successful farmers. On the other hand, off-farm employment shows a mixed trend along the different quintile groups. However, one general observation is that the percentage of households engaged in off-farm employment is higher for comparison groups except for those in the 4th quintile.

We further break down the income quintile percentages by the main source from which households derive their income. Table 2.6 presents the percentage of (successful and comparison) households in the same income quintile whose main sources of income comes from farm, off-farm, or other sources. Again, while farming (crop and livestock production) remains the main source of income for the majority of both successful and comparison households, in the richest 20 percent of households about 85 percent of households are successful farmers with farming as main source of income. Surprisingly, in the poorest 20 percent of all households about 14 percent are successful farmers mainly depending on agriculture for their living. This may arise due to several reasons related to the nomination process. First, the nomination criteria are many and not necessarily similar across regions and woredas, which in itself may result in nomination errors and discrepancies. Second, some of the criteria used are forward looking (e.g., entrepreneurial experimentation, enlightenment and positive attitude towards sending children to school, etc) and all nomination may not necessarily reflect being from the highest income group during and sometime after nomination.

Table 2.6. Percentage of households with main source of income derived from farm, off-farm and other sources, by income quintiles and farmers' category

Income quintiles	Farm		Off-farm business		Off-farm employment		Other sources		Total (%)
	Succ'ful farmers	Comparison farmers	Succ'ful farmers	Comparison farmers	Succ'ful farmers	Comparison farmers	Succ'ful farmers	Comparison farmers	
1 st	13.9	74.9	0.0	3.9	0.0	4.2	0.0	3.1	100
2 nd	30.0	63.9	0.8	3.6	0.3	1.4	0.0	0.0	100
3 rd	43.3	51.9	1.4	2.5	0.3	0.6	0.0	0.0	100
4 th	65.0	29.2	4.2	1.4	0.0	0.3	0.0	0.0	100
5 th	83.6	7.2	5.9	0.8	0.3	0.3	1.4	0.6	100

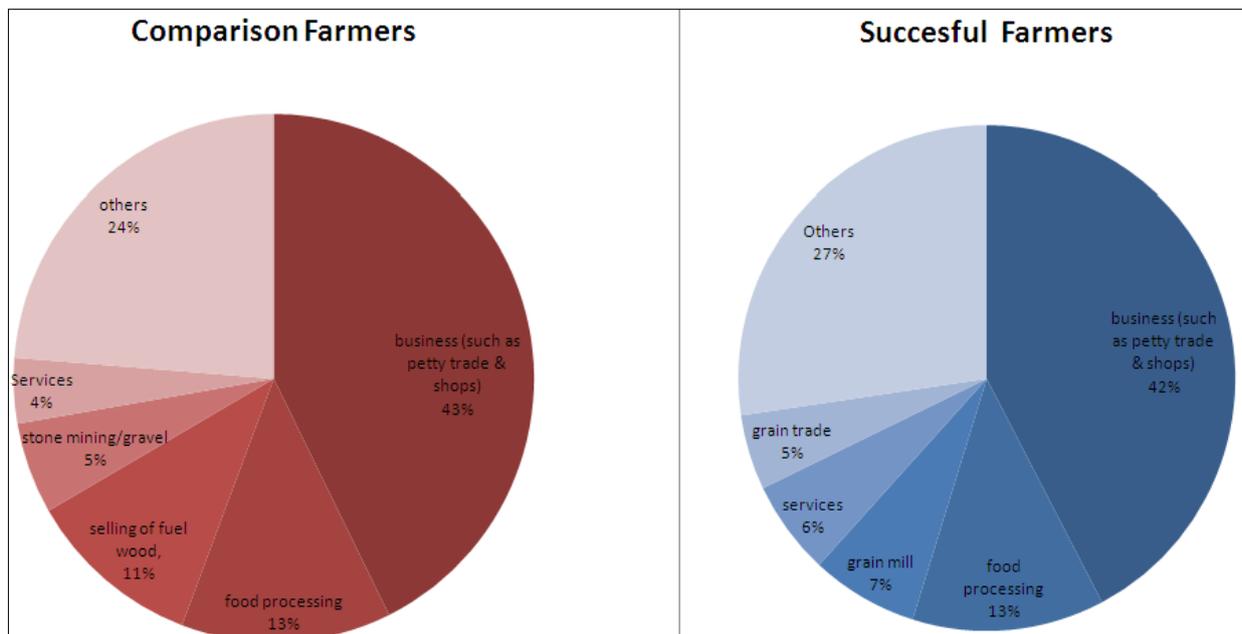
Source: Successful Farmers Survey (2010)

Note: 1st quintile is the poorest quintile

In contrast, it is interesting to note that about 6 percent of the successful households that fall into the top 40 percent income group have their major source of income from off-farm business. In the poorest 20 percent income group 75 percent are comparison households that earn their living mainly from farming, while only 14 percent are successful farmers that have farming as their main income. It can be concluded that successful farmers are much richer than the average farm household (see Table 2.7 and 2.8), and are perhaps in a different livelihood-cycle.

A further disaggregation in the income source of successful farmers and their comparison counterparts helps to understand in which specific areas of business or employment they are engaged in apart from agriculture. As can be seen from Figure 2.1, both successful and comparison farmers are mainly engaged in trade business followed by food processing. However, there seems to be a variation between the two groups of farmers when it comes to the third most common business engagement. Selling of fuel wood is the third most common business activity for farmers in the comparison group, while for successful farmers it is setting up of grain mills. The fourth and fifth most common activities also show a slight variation between the two groups of farmers. While the fourth and fifth most common activities are engagement in services and grain trade for successful farmers respectively, it is stone mining followed by services for comparison farmers. The relatively high capital requirement for establishing grain mills and engagement in grain trade could have made it difficult for comparison farmers to engage in such businesses.

Figure 2.1. Off-farm business activities by comparison and successful farmers

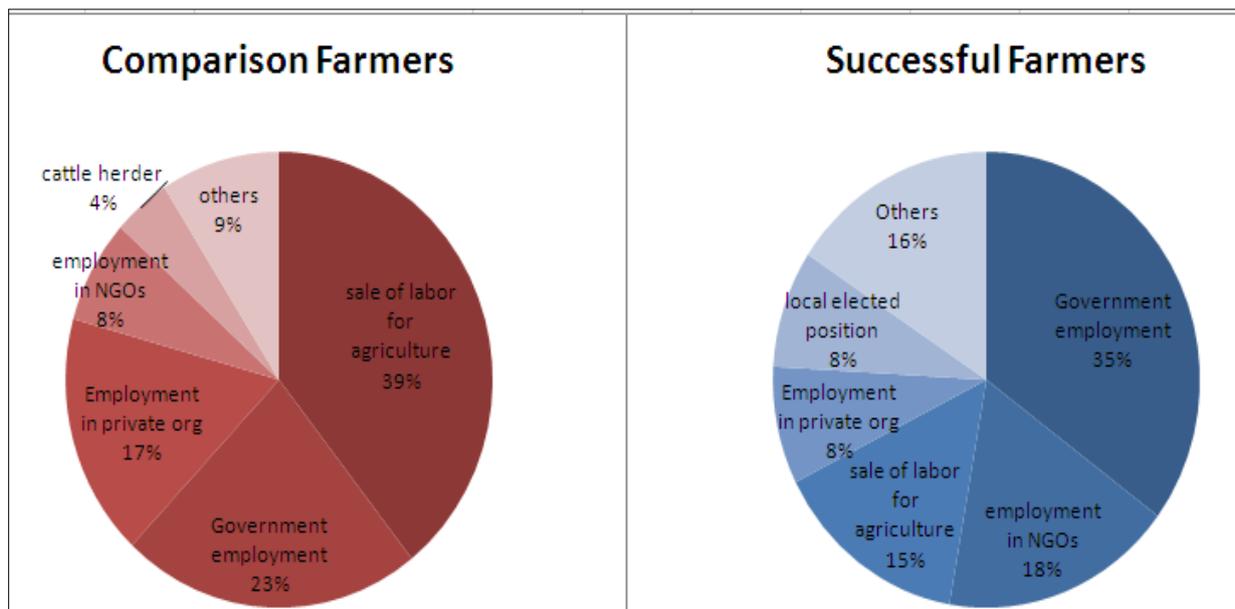


Source: Successful Farmers Survey (2010)

Similarly, source of income from off-farm employment is different for successful and comparison farmer groups (Figure 2.2). Of the successful farmers who have some sort of off-farm employment the most common employment area is government employment followed by employment in NGOs. In contrast the major source of off-farm employment for comparison farmers is supplying agricultural labor away from their farms. The engagement of successful farmers in this activity is much lower than the comparison group. Lack of sufficient income from

their farm activities could drive households to go out and be employed in different off-farm activities either in agriculture or other activities.

Figure 2.2. Off-farm employment by comparison and successful farmers



Source: Successful Farmers Survey (2010)

2.3.2. Regional comparisons of successful farmers

Thus far, we analyzed income and income sources across household groups regardless of the region they come from. Note that our sample households may not be accurate representatives of the regions they come from, particularly given the small sample size to national rural population ratio. Nevertheless, efforts were made to randomize the sample by regional population, food security status, and remoteness of woredas. It may thus be appropriate to compare household incomes across regions, particularly of those nominated as successful by their respective kebele administrations. Table 2.7 provides percentages of households from each region (in each household category) falling into the five income groups.

Among all the regions, a higher percentage of successful farmers are in the richest quintiles compared to the comparison farmers. This is especially true for SNNPR and Oromiya regions. Almost half of the successful farmers in the SNNPR fall into the richest quintile while it is 44 percent for Oromiya region. A relatively lower percentage of successful farmers fall into the highest income quintile in Tigray and Benishangul-Gumuz regions. This is not surprising given agroecological as well as infrastructural constraints in these two regions. Since the income quintiles are constructed for the total sample, this distribution shows that a relatively higher percentage of successful farmers in SNNPR and Oromiya regions are in a higher income group than those in the other regions. In contrast, a relatively lower percentage of successful farmers in Tigray and Benishangul-Gumuz regions have managed to come up to the highest income quintile group.

Table 2.7. Percentage of households by income quintile, by respondent category, and region

Income quintiles	Tigray		Amhara		Oromiya		Benishangul		SNNPR	
	Succ.	Comp.	Succ.	Comp.	Succ.	Comp.	Succ.	Comp.	Succ.	Comp.
1 st	6.7	26.7	4.7	30.1	2.0	35.9	22.7	32.6	8.1	40
2 nd	21.1	36.7	11.4	33.5	10.1	26.1	18.2	37.0	12.4	18.1
3 rd	28.9	28.9	23.7	21.5	15.7	21.2	18.2	15.2	11.4	22.4
4 th	32.2	6.7	33.7	12.0	28.1	12.8	31.8	8.7	18.1	15.2
5 th	11.1	1.1	26.5	2.9	44.1	4.1	9.1	6.5	50.0	4.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Successful Farmers Survey (2010)

Notes: percentages are calculated from respondents in the same region and farmers' category across quintiles. SNNPR = Southern Nations, Nationalities and Peoples Region

2.3.3. Income sources by gender and education levels

Many factors drive rural households' behavior towards diversifying their economic activities. Among these are household heads' characteristics, household composition, asset holding, and income (Demurger et al. 2009; McNamara and Weiss 2005; Barrett et al. 2001). In this section the difference in income diversification and average income between households with varying household head characteristics will be presented.

Table 2.8 presents the difference in the mean income between male and female, and literate and illiterate household heads. It also indicates the mean income variation between households living in remote and non-remote areas. The results displayed indicate a difference in the average income between the different categories of households. Male headed households' income is higher than their female counterparts by close to 20 percent. This is true for both successful and comparison farm households.

Similarly, an average household with a literate head earns a higher income than a household with an illiterate head in all the income categories. The only exception is with regards to income from other sources. Households with illiterate head have a higher average other income source than households with literate heads. This could indicate a higher level of public and remittance transfer to the illiterate farmers than the literate ones. With regards to location, farm households in non-remote areas earn a slightly higher level of income than those in remote areas.

Table 2.8. Mean per capita income (Birr), by income source and farmers' category

	Gender of Head		Education of Head		Location	
	Male	Female	Literate	Illiterate	Non-remote	Remote
Successful Farmers						
Farm income	10,555	9,510	11,010	9,163	12,183	9,200
Off-farm income	1,220	1,603	1,778	1,070	1,783	1,426
Other income	2,205	506	1,537	3,503	3,432	1,031
Total income	12,882	10,866	13,300	11,391	15,171	10,937
Comparison Farmers						
Farm income	3,722	2,609	3,840	3,403	3,991	3,417
Off-farm income	427	425	571	210	436	420
Other income	300	274	301	295	274	318
Total income	4,184	3,165	4,414	3,708	4,406	3,923

Source: Successful Farmers Survey (2010)

The share of each income source to the total income of households reveals the extent of diversification within households. Although the data does not give information on on-farm diversification, information on the level of earnings from off-farm and other sources sheds some light on the subject. As presented in Table 2.9 there is not that much difference in the percentage share of the income categories between male headed and female headed households among the successful farmers. As can be expected both households earn a higher share of their income from farming. The case is however different for the comparison group: the share of farm income for female headed households is much lower than for their male counterparts, while the share of the off-farm income is higher. Off-farm income is found to be relatively more important for women headed households in the comparison group with these households earning 20 percent of their total income from off-farm activities. This indicates that women headed households who have not achieved much in farming tend to support themselves by income from off-farm activities. This is in line with Loening and Imru (2009) who found that the rural off-farm sector is significantly important for women and poorer households. Women who face constraints in other areas, especially agriculture, tend to take up off-farm activities as their income source. However, the activities women are mostly engaged in are limited and usually with lower profitability.

Table 2.9. Mean percentage share of income source to total income, by farmers' category

	Gender of head		Education of head		Location	
	Male	Female	Illiterate	Literate	Remote	Non-remote
Successful Farmers						
% share of farm income	87.0	86.0	89.1	86.5	86.8	87.8
% share of off-farm business	1.3	1.7	1.0	1.4	1.6	1.0
% share of off-farm employment	9.3	10.3	7.6	10.1	9.8	9.0
% share of other income	2.0	2.0	2.3	1.9	1.8	2.3
Comparison Farmers						
% share of farm income	85.0	80.0	84.2	84.5	84.0	84.9
% share of off-farm business	3.8	6.0	4.2	4.0	4.7	3.3
% share of off-farm employment	7.2	7.6	6.4	7.8	7.6	6.9
% share of other income	4.0	5.0	4.9	3.6	3.6	4.8

Source: Successful Farmers Survey (2010)

Contribution of each income source to total income also varies with the age of household head. Older farmers tend to be more experienced in farming and hence favor on-farm diversification rather than engaging on new off-farm income earning activities (Demurger et al. 2009). Risk aversion behavior of older farmers could also contribute to their lower participation in off-farm activities. This seems to be supported by the data. The share of off-farm income is shown to be lower for the older farmers than the younger ones. In line with this, the share of farm income is the highest for households with older heads. This is clearly the case for both the successful and comparison groups. The percentage share of off-farm income is especially high for successful farmers within 20-30 age groups. In addition, the share of other income is slightly higher for those households with older heads. Clearly both public transfers and remittances are expected to be higher for such households.

Table 2.10. Percentage of households having the income source

	Age of head				
	20-30	31-40	41-50	51-60	>60
Successful Farmers					
% share of farm income	81.0	86.3	87.2	89.5	87.5
% share of off-farm income	18.1	12.1	10.9	7.8	10.0
% share of other income	0.9	1.6	1.8	2.7	2.5
Comparison Farmers					
% share of farm income	79.1	83.8	86.9	86.5	85.6
% share of off-farm income	16.1	12.8	9.3	8.1	9.2
% share of other income	4.1	3.4	3.7	5.4	5.2

Source: Successful Farmers Survey (2010)

2.3.4. Income, income sources, and technology adoption

One potential distinction of successful farm households from others could be in their willingness to adopt new inputs and methods of production. Respondents were asked if they have applied fertilizer or introduced irrigation techniques. Table 2.11 summarizes average incomes of the two household groups by the three sources and whether or not they use irrigation and their level of contact with extension agents.

Table 2.11. Mean per capita income (Birr), by type of income source, irrigation use, and contact with extension agents

Source of income	Irrigation Use		Contact hours with Extension Agents	
	No	Yes	Less than median value of the sample	Greater than median value of the sample
Successful				
Farm	10,584	10,517	9,540	11,219
Off-farm business	1,813	1,405	1,487	1,644
Off-farm employment	127	112	196	105
Other sources	778	136	308	669
Total Income	13,302	12,170	11,531	13,636
Comparison				
Farm	3,161	4,075	3,458	3,525
Off-farm business	315	265	394	278
Off-farm employment	163	88	183	93
Other sources	680	925	155	490
Total Income	4,319	5,353	4,190	4,387

Source: Successful Farmers Survey (2010)

As indicated in Table 2.11, the difference in mean per capita farm income between successful farmers who use irrigation and who do not is very slight. Actually, the total per capita income of those who do not use irrigation is higher than the ones who do. For the comparison groups the farm income for those who use irrigation is slightly higher than those who do not. To see the difference in the mean per capita income of farmers who have had a relatively higher number of

contacts with extension agents, the average hours of contact with extension agents was taken from the sample and analysis was made to compare the farmers who had contact hours larger or lower than the median value. Accordingly, the per capita income of successful farmers with higher contact hours was higher than those with lower contact hours. However, for the comparison farmers the per capita income of the two groups is almost the same. Actually, the total income is slightly higher for those with higher number of contact hours.

2.3.5. Successful farmers: regional and national winners

Up until this point, we considered households that are successful at the kebele administration level and compared them against the control households. However, as mentioned in the introductory part of this report, a few of those kebele level nominees are selected for regional and/or national level awards. These are households who won the kebele and woreda level competition for the regional awards, and kebele, woreda, and regional level competition for the national awards⁸. It is thus interesting to examine income sources and their contributions, and overall income levels for these two groups of households separately. Table 2.12 presents a summary of these three variables for the national and regional awardees.

Table 2.12. Share of households having a specific income source, contribution of each income source, and annual average income of national and regional level winners, by income sources

Sources of income	Share (%) of households having this type of income		Contribution (%) of income source to total income		Mean annual income (Birr) for an average household	
	Regional	National	Regional	National	Regional	National
Farm						
Crop	99.2	97.2	65.8	64.3	111,372	135,817
Livestock	84.3	88.9	8.1	4.4	13,742	9,309
Animal products	65.4	63.9	2.9	2.9	4,847	6,108
Off-farm						
Business	56.7	69.4	18.9	23.4	31,988	49,470
Off-farm employment	18.9	19.4	1.0	0.6	1,758	1,271
Other sources						
Remittance from abroad	0	0	0.0	0.0	-	-
Remittance from local	3.2	2.8	0.1	0.0	243	-
PSNP or public work	2.4	0	0.0	0.0	9	-
Food aid	0.8	0	0.0	0.0	-	-
Other gifts	0	0	0.0	0.0	-	-
Rent/share from land cultivated by others	32.3	33.3	1.8	1.9	3,019	4,061
Other source of income	5.5	8.3	1.3	2.5	2,234	5,351
Total			100	100	169,213	211,387

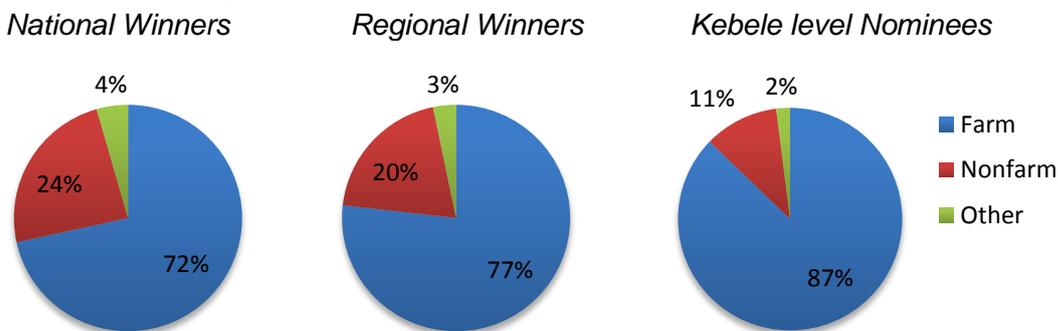
Source: Successful Farmers Survey (2010)

The overall income source structure remains much similar between the national and regional winners. For example, crop production accounts for about 64-66 percent of total income. This is about 10 percentage points lower than the average contribution of crop production for kebele level nominees (Table 2.2). The contributions of livestock and livestock products are also pretty

⁸ The caveat here is that overlapping between two or more of the groups is possible: a kebele nominee can be at the same time a woreda level as well as regional and national level prize winner

similar across the two groups. As expected, compared to the kebele level nominees, owner-operated businesses are important for the national and regional level winners. About 57 percent of the regional level winners and 69 percent of the national level winners are engaged in own businesses, which accounts for about 23 percent of their total income (compared to 12 percent for the kebele level nominees). A better picture of the comparison of the contributions of income sources across the kebele, regional, and national level winners is obtained by aggregating the income sources into the three income source groups, namely, farm, off-farm, and other sources. Figure 2.3 presents this comparative picture in percentage terms.

Figure 2.3. Percentage contribution of income sources to total income



Source: Successful Farmers Survey (2010)

Clearly, going from the kebele level to the national level winners, the contribution of farming income (crop, livestock, and livestock products) to total income declines from 87 percent to 72 percent, and conversely, the contribution of businesses and other sources increases from 11 to 24 percent and 2 to 4 percent, respectively. This is more or less consistent with expectations and observations witnessed in the literature, that as households succeed, they operate other activities above the farming activities.

As indicated in this section, farm income accounts for the lion share in households' total income. Thus, any improvement on the welfare of the household should come from improvement in agriculture production. The following section presents the changes in crop and livestock production, the two major sources of household income.

2.4. Change in agricultural production

The two major livelihood strategies employed by farm households are crop and livestock production. Farmers were asked to evaluate the qualitative change in crop and livestock production and the reason for the change between now and five years ago. The survey data are comparatively analyzed and the result is presented as follow.

2.4.1. Change in crop productions

Land is one of the vital resources of farm households in Ethiopia, and is the main means of livelihood. Difference in its ownership or access to its use is, therefore, a key instrument for welfare improvements of farm households. Hence, examination of the land distribution patterns between the two farm household categories gives a good insight into their success story. Our survey explores the land holding and land marketing of the two farmers' groups. In terms of land holdings, the result revealed that an average successful farm household owns a considerably larger farm land than its counterpart in the comparison farm household group: he owns 3.9

hectares of land whilst his counterpart owns 1.9 ha, which is about two times smaller (Table 2.13). The difference is not only in owned cultivated land but also in total cultivated land. The average successful farmer cultivated a total land of 5.3 ha in the cropping season before the survey time. This is due to the fact that land marketing in terms of sharecropping or renting in land is more common in successful farmers' group. At least 56 percent of the successful farm households and 39 percent of the comparison farm families sharecropped or rented in farm land in that cropping season. The result revealed that while land marketing is common in both groups of families, land sharecropping in or renting in land is more common and sharecropping out or renting out is less common with successful farmers than with its counterparts. This difference in land marketing behavior between the two farm groups could be due to differences in productive age of family members, working culture, ownership of farm oxen, or other reasons. This could be an open question that needs to be explored.

The table also shows land holding and land marketing behaviors of farm households in each of the five regions. Considerably larger farm size is observed for successful farmers in Benishangul-Gumuz followed by Oromiya and SNNPR. An average farm household in Tigray and Amhara owns 1.8 and 1.9 ha, respectively, which is 2.9 times lower than Benishangul-Gumuz region. On the other hand, land marketing is more common in Tigray and Amhara regions compared to the other regions, implying that it is a common characteristic of farmers where farm landholding is small.

Table 2.13. Land size, value of output, and land marketing characteristics of farm households, by farmers' category and region

Socioeconomic indicators	Successful farmers	Comparison farmers	Total sample	Successful famers only - Region				
				Tigray	Amhara	Oromiya	B/G	SNNPR
Mean of land size owned (ha)	3.9	1.9	2.9	1.8	1.9	3.4	5.2	3.3
Mean of total farm land size cultivated (ha) (owned + rented in + sharecropped)	5.3	2.4	3.8	2.6	2.9	4.5	5.8	3.7
Shared in/rented in land (%)	56.4	38.9	47.7	64.4	69.5	42.9	18.9	32.6
Shared out/rented out land (%)	5.8	6.9	6.3	5.56	5.7	7.3	6.7	5.7

Source: Successful Farmers Survey (2010)

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

Our survey result revealed that there is an overall improvement in crop agriculture in the study areas within the last five years compared to the years before, though the level of change varied between the two groups of farmers. While about 93 percent of successful farmers said that crop agriculture is improved compared to five years ago, this change is realized only by 71 percent of the comparison farmers (Table 2.14). About 30 percent of the comparison farmers and 7 percent of the successful farmers believed that crop agriculture either remained the same or became worse compared to five years ago. For the majorities of farmers, the improvement in crop production is explained in terms of yield per ha, land size, and use of improved farming practices. Increase in yield per hectare is stated by 66 percent of all sample farm households; with 77 percent of successful farmers and 55 percent of comparison farmers. On the other hand, 26 percent of the comparison farmers believed that yield per hectare decreased compared to five years ago.

Table 2.14. Perceived change in crop agriculture compared to five years ago, by farmers' category and safety net category (%)

Status of change in crop agriculture	Successful farmers	Comparison farmers	Successful farmers by safety net category	
			PSNP	non-PSNP
Change in crop production (Q6.18.1).				
Better	92.67	71	92.49	92.78
Worse	4.89	14	5.49	4.51
Same	2.44	15	2.02	2.71
Change in yield per hectare (Q6.19.1)				
Increase	76.67	55.33	73.12	78.88
Decrease	19.44	25.78	24.28	16.43
No change	3.89	18.78	2.6	4.69
Change in farm land size				
Increase due to land obtained	10.44	6.78	9.25	11.19
Increased from renting in	41.89	27.11	45.38	39.71
Decrease	7.22	10.11	4.62	8.84
no change	40.44	55.89	40.75	40.25
Change in skill development (Q6.19.5)				
Improved	80.67	60.89	85.55	77.62
Worse	1	2.33	1.45	0.72
Same	11	21.56	9.25	12.09
No training	6.89	14.56	3.18	9.21

Source: Successful Farmers Survey (2010)
 Note: PSNP = Productive Safety Net Program

56 percent of comparison farmers and 40 percent of successful farmers perceived no change in their farm land size. An increase in owned farm land size is perceived by only 10 percent and 7 percent of successful and comparison farm households, respectively. A large share of both successful and comparison farmers stated that the increase in farm land size comes from land renting or sharecropping.

According to farmers, yield per hectare increased due to better use of improved input technologies (fertilizer, improved seed, chemicals, etc), use of irrigation that never had been used before, and better advice from extension agents (Table 2.15). About 81 percent of successful and 61 percent of comparison farm households stated that the use of improved farming practices, due to change in skill development, contributed to the change in crop production. The difference between the two farmers' categories in perception of the causes of change in crop production (see Table 2.15) could be due to the difference in the use of these improved technologies, which presumably contributed to increase in yield per hectare.

Table 2.15. Perceived reason for increase in yield per hectare, by farmers' category and rank (%)

Farm input	First reason for increased yield/ha			Second reason for increased yield/ha			Third reason for increased yield/ha		
	Comp.	Succ'ful	Total	Comp.	Succ'ful	Total	Comp.	Succ'ful	Total
Use of improved seed	64	84	75						
Use of fertilizer	9	6	7	87	91	90			
Use of compost				6	4	5			
Use of irrigation that never had been used before							57	60	59
Applying extension advise							17	22	21

Source: Successful Farmers Survey (2010)

Notes: CF = comparison farm household; SF = successful farm household

2.4.2. Change in livestock agriculture

Livestock and livestock products are source of food and non-food items for households. They are sources of cash income, fuel for cooking, serve as input in food crop production, as well as act as wealth status of a household in a community. As a result the livestock of a farm household can have a significant impact in attaining food security and lifting the family out of poverty. Besides, because of its importance as source of income and consumption, the household can adjust its consumption and saving behavior over time by balancing its current cash needs against anticipated or unexpected future cash requirements. Therefore, because of its importance in the welfare of a farm household, our survey collects information on the livestock of the farmers so as to examine its effect on improving the welfare of the farm households. Table 2.16 shows the survey result on livestock of farm households. In terms of number of livestock, a typical successful farm household is considerably better off than its counterparts. The mean number of oxen, cows, sheep, goats, and donkeys of a successful farm household is at least three times higher than its comparison farm household.

Table 2.16. Mean number of livestock owned by farm households at the time of survey, by farmers' category and region

Livestock	Successful farmers	Comparison farmers	Total sample	Region (Successful farmers)				
				Tigray	Amhara	Oromiya	B/G	SNNPR
Number of oxen	4.8	1.9	3.4	2.5	2.6	4.2	2.1	3.4
Number of cows	13.1	4.4	8.8	4.4	4.8	10.9	6.0	11.9
Number of shoat	15.7	4.9	10.3	7.9	10.2	13.4	11.6	5.9
Number of chickens	9.8	5.1	7.5	6.0	7.2	7.5	9.9	7.8
Number of donkeys/horses/mules/camels	2.6	1.1	1.9	1.4	2.2	2.6	1.3	0.7

Source: Successful Farmers Survey (2010)

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

Likewise, livestock production shows some improvement in the study areas compared to five years ago, though the change varies across farmers' categories and regions. While 80 percent of successful farmers perceived that livestock production is better now compared to five years ago, only 49 percent of the comparison group perceived the same (Table 2.17). The same perception holds for farmers living in PSNP and non-PSNP districts as well as in all but Benishangul-Gumuz regional states. Only 32 percent of successful farmers in Benishangul-Gumuz region stated that livestock production is better. However, the level of perceived improvement is not the same for the different livestock subsectors. The survey results indicated that the perceived improvement in livestock production is relatively better in dairy production,

followed by poultry, and beef production. This trend is the same in both PSNP and non-PSNP districts. Honey production has improved considerably in Tigray (52%) and Amhara (51%) while dairy and beef production has improved in Oromiya, Amhara, and SNNPR.

Table 2.17. Perceived change in livestock production, by farmers' category and safety net category (%)

Status of change in Livestock agriculture	Successful farmers	Comparison farmers	Successful farmers by safety net category	
			PSNP	non-PSNP
Change in livestock production				
Better	80.33	48.56	79.77	80.69
Worse	10.78	26	10.4	11.01
Same	8.78	25	9.54	8.3
Change in dairy production				
Better	67.44	36.44	63.58	69.86
Worse	11.44	20.67	14.16	9.75
Same	15.44	30.22	19.08	13.18
Change in beef production				
Better	50.78	20.33	52.31	49.82
Worse	8.56	11.78	8.38	8.66
Same	22	33.67	26.3	19.31
Change in honey production				
Better	41.56	12.33	42.2	41.16
Worse	11.22	10.78	12.14	10.65
Same	21.22	31.67	21.68	20.94
Change in poultry production				
Better	52.44	35.67	52.89	52.17
Worse	15.67	20.22	15.32	15.88
Same	21.67	26.56	21.39	21.84

Source: Successful Farmers Survey (2010)
 Note: PNSP = Productive Safety Net Program

As can be seen from Table 2.18, the change in the use of improved agricultural practices—such as better application of advice from extension agents, use of improved livestock breeds, better animal health services, and better farming skills acquired in farmers training services at Farmers Training Centers (FTC)—is better for successful farmer compared to their neighbors within the last five years. Perhaps, these differences in the behavior of using improved livestock production practices could be the reason for the difference in the improvements of livestock production within the last five years.

Table 2.18. Use of improved agricultural techniques for livestock production compared to five years ago, by farmers' category and safety net category (%)

Status of change in factors of livestock production	Successful farmers	Comparison farmers	Successful farmers by safety net category	
			PSNP	non-PSNP
Use of extension agents				
Better	88.00	64.89	90.17	86.64
Worse	2.33	5.11	1.73	2.71
Same	6.44	19.67	6.07	6.68
Use of improved breed				
Better	40.33	13.44	41.62	39.53
Worse	7.89	10.00	9.25	7.04
Same	22.78	34.78	32.37	16.79
Improved animal health service				
Better	78.22	58.44	80.64	76.71
Worse	2.67	4.56	2.31	2.89
Same	14.78	25.22	13.87	15.34
Using skill developed in FTC				
Better	75.00	51.00	80.64	71.48
Worse	3.33	5.11	2.89	3.61
Same	10.11	22.11	10.12	10.11

Source: Successful Farmers Survey (2010)

Notes: PSNP = Productive Safety Net Program; FTC = Farmer Training Center

2.4.3. Change in institutional services

As described previously, for the majorities of farmers, crop and livestock production have been improved within the last five years compared to the years before. However, the level of change varies across farmers' categories and regions. Access to institutional service is an important perceived factor that contributed for better crop and agricultural production and productivity. Thus, it is imperative to examine if difference in access to institutional services contributed to the variation in level of changes in livelihood strategies between the two farmers' groups. Our survey asked farmers to evaluate the changes in institutional services provided to them within the last five years compared to the years before. The result is presented as follow.

Access to extension services and training are important institutional services provided by local public organizations in Ethiopia. Our survey asked farmers to qualitatively evaluate the change in the extent and nature of extension services provided by the local government. The survey result revealed that extension service in terms of number of contacts of the farmer with the development agent has been increased within the last five years compared to the years before (Table 2.19). Of the total sampled farm households, 88 percent perceived this improvement. When farmers were asked to rank the extent or level of this increment, 49 percent and 32 percent of successful and comparison farmers, respectively, stated that contact increased substantially. About 41 percent of successful and 44 percent of comparison farmers stated that the change in contact was increased slightly. The extent of change in extension service has substantially increased for about 59 percent and 42 percent of successful farmers from PSNP and non-PSNP districts, respectively.

In terms of the nature of the extension service (kind of subject), 47 percent of the successful farmers and 28 percent of the comparison farmers said that it has improved substantially within the last five years compared to the years before. Such change is perceived by about 56 percent and 40 percent of successful farmers living in PSNP and non-PSNP districts, respectively. The most common subjects farmers provided at FTC include application and use of fertilizers, improved seed, chemicals (pesticides and insecticides), manure, modern/improved livestock keeping (beekeeping, poultry production, etc), and soil and water conservation practices.

Table 2.19. Perceived change in extent and nature of extension service, by farmers' category and safety net category

Change in extension	Successful farmers	Comparison farmers	Successful farmers by safety net category	
			PSNP	non-PSNP
Number of contacts of the household with extension agent increased compared to five years ago	94.32	84.4	94.74	94.06
Extent of change in extension service				
Increased substantially	48.56	32.11	58.96	42.06
Increased slightly	41.33	44.89	32.37	46.93
Decreased slightly	0.56	0.56	0.87	0.36
Decreased substantially	1.78	2.78	1.45	1.99
Extent of change in nature of extension advice service (kind of subject)				
Increased substantially	46.56	28.44	56.36	40.43
Increased slightly	38.22	40.56	34.1	40.79
Decreased slightly	0.78	1	0.87	0.72
Decreased substantially	1.67	2.56	1.45	1.81

Source: Successful Farmers Survey (2010)
 Note: PNSP = Productive Safety Net Program

2.5. Farmers' innovations for their success

Farmers were asked which were the most important innovations contributing to their recognition as successful by the local government. While use of irrigation, improved beekeeping technologies, and natural resource conservation are the most important innovation contributing to the agricultural production, investments in nonfarm business are the most important innovations which contributed to their recognition as successful farmers in the nonfarm sector (Table 2.20). In addition, farmers' behavior in sending children to school and helping others to improve their livelihood through sharing of improved practices are also contributed to their recognition. These innovations vary with the productiveness of the district where the farmer lives. Success due to use of irrigated agriculture is more common among farmers living in PSNP areas than non-PSNP. The survey shows that 47 percent of successful farmers living in PSNP areas stated that their success mainly comes from use of irrigation. But in non-PSNP areas, only 27 percent of successful farmers provided the same response. Investment in small enterprises, agro-processing, and construction (e.g. quarry development) are also important innovations for the success of farmers. The result shows that 49 percent of successful farm households in PSNP and 42 percent from non-PSNP districts stated that their success is due to investments in nonfarm business. Use of improved beekeeping production system contributed for 40 percent of the successful farmers.

Table 2.20. Most important innovations that contributed to the recognition of farmers for their success, by safety net category (%)

Innovation contributed for success/award	Successful farmers	Successful farmers by safety net category	
		PSNP	non-PSNP
Use of irrigation agriculture	34.67	46.67	27.17
Increase/improvements in beekeeping	40.22	39.24	40.83
Started new investment sector (trading, agro-processing, invest in small factory (e.g. flour mill), construction, etc)	45.20	48.84	42.91
Exemplary in Conserving natural resources/terracing, etc	87.88	91.04	85.90
Sending children to school	89.24	88.27	89.84
Good exemplary for fellow farmers in helping them to improve yield/transfer knowledge or skill, etc	92.54	93.06	92.21

Source: Successful Farmers Survey (2010)
 Note: PNSP = Productive Safety Net Program

In addition to these innovations, farmers were also evaluated based on the capital they acquired as a result of the innovations they adopted. Our survey asked farmers the capital they have registered at the time of their recognition. An average successful farmer registered Birr 57,015 in cash and total capital of Birr 490,972 in the year he obtained the award at kebele level (Table 2.21). Comparing capital ownership across regions, an average successful farmer in SNNPR registered more total capital, followed by Oromiya region. Perhaps, this could be due to the fact that farmers in these regions are engaged in cash crops, such as coffee and chat, in addition to their higher land size holdings. The least capital registered is from farmers in Benishangul-Gumuz and Tigray region, where most districts are categorized as PSNP areas.

Table 2.21. Mean capital (Birr) registered by successful farmers at the time of recognition, by region

Capital	Successful farmers	Successful farmers only - Region				
		Tigray	Amhara	Oromiya	B/G	SNNPR
Fixed capital	427,588	165,945	200,000	566,624	144,296	580,713
Cash capital	57,015	34,087	39,471	63,147	10,877	84,743
Total capital	490,972	221,543	300,000	644,247	155,286	667,401

Source: Successful Farmers Survey (2010)
 Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

Examining the contribution of innovation to the success of farmers across regions, the result indicated that the contribution of irrigation for the success of farmers is better in Tigray region compared to successful farmers in other regions. Irrigation contributed the least for farmers in Benishangul-Gumuz regional state. Investment in new activities such as small trading, construction, etc is also better in Tigray region. The contribution of sending children to school for the recognition of farmers as successful is better in Oromiya and Benishangul-Gumuz regional states.

2.6. Change in welfare of farm households

So far, the report described the change in major economic activities farmers followed and the innovations contributed to the improvement within the last five years compared to the years before. The fundamental question is, then, whether this improvement in main livelihood strategy is translated or linked to improvements in well-being, i.e. answering “Do households see their

livelihood faring better over time?" is essential for at least for two reasons. First, it enables us to see if there are essential perception differences between the two groups of households regarding changes in income sources over time. Second, if such perception differences exist, that enables us to evaluate the direction of the perceived changes, which may reflect differences in the direction of future livelihoods between the two households groups. Although panel data are required to address such transitions over time, our survey can provide insights into comparative livelihood patterns across households. Therefore, this section aims to understand the welfare improvements of farm households as a result of the change in their economic activities they employed. Towards this, our survey contains information on the quantitative change in asset holdings as well as qualitative information on the change in welfare of farm families within the last five years compared to the years before. This section starts with describing the current level of wealth of households as measured by current values of crop output, livestock assets, and durable household assets. It then discusses the quantitative change in household durable assets. Finally, it discusses the overall qualitative change in welfare of the farm households within the last five years compared to the years before.

2.6.1. Current wealth status of farm households

The current wealth status of farm families is evaluated using the values of crop outputs produced during the production season just before the survey, the value of livestock assets it currently owns, as well as the monetary value of durable assets currently owned by the household. As discussed previously, crop and livestock incomes are the major components of annual total income of the households. The mean value of crop output for the cropping year before the survey time is Birr 74, 958 and Birr 17, 425 for the successful and comparison farm households, respectively (Table 2.22). An average successful farm household obtained at least six times more income from crop output than the average comparison farm household. The difference in crop income is much higher than the difference in total land cultivated in the same year. The difference between the two farmers' groups is not only in terms of annual monetary income but also in asset values measured by asset values of livestock and household durables. The mean value of livestock assets in monetary term is three times more for the successful farm households than for the comparison households. Similarly, the mean value of household assets that comprise different durable assets such as ownership to TV, radio, household items, and productive assets, is considerably higher for the successful farm households than for the comparison farm households. The difference in value of household durable assets is about seven times more for the successful farmers. This difference in wealth may be due to difference in households' socioeconomic characteristics, access to resources such as land and institutional services such as credit, extension, technology, etc, as indicated in previous sections. However, whether initial position explains the big gap in asset holdings or not is discussed in the following section where the change in asset holdings within the previous five years compared to the years before is discussed in detail.

Table 2.22. Wealth of farm households (Birr), by farm households' category and region

Wealth	Successful farmers	Comparison farmers	Total sample	Region (successful farmers)				
				Tigray	Amhara	Oromiya	B/G	SNNPR
Value of total crop output	74,958	17,425	46,192	26,350	41,802	49,780	20,413	58,571
Value of livestock asset	10,549	3,240	7,358	5,261	7,216	12,165	4,596	14,182
Value of household asset	188,147	27,817	107,982	69,950	78,475	111,031	34,924	164,801
Total annual income	106,153	26,536	66,344	36,505	52,071	73,537	28,729	89,403

Source: Successful Farmers Survey (2010)

Notes: B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

2.6.2. Asset holdings and asset building of farm households

A key characteristic of rural households is that they hold a variety of assets that serve different purposes. While some assets, like land and oxen, mainly serve as inputs in production, others like general livestock and household durables serve as pecuniary (consumption smoothing) and non-pecuniary (wealth and status symbols) savings. A fundamental empirical question is whether households starting at a certain asset position (and perhaps, choosing certain activity paths) perform better in improving their well-being and escape poverty. Researchers have thus opted to classify household well-being based on levels of asset holdings and developed asset poverty line to measure the state and dynamics of well-being over time (Carter and Barrett 2006). This approach is commonly known as the asset based approach to poverty. Carter and Barrett (2006) argue that this approach is informative not only to understand the current state of household well-being but also to predict the likely prospects of a household possessing a given asset portfolio. In this section, we try to understand whether households that relatively do well ex post (i.e., successful) are indeed endowed with better asset positions. We do this by characterizing asset holdings within and across our (i.e., successful and comparison) sample groups.

a. Housing status

Of the primary areas of improvements to which increases in household income would easily be translated to is housing, and often improvements in housing come next to improvements in food and clothing. Besides, in some parts of the country, the quantity and quality (i.e., the type of materials used) of rooms are seen as wealth and status symbols. Note that construction materials used indicate not only the durability and permanency of dwelling units but also the economic status of the household. We take advantage of this underlying behavior to see if there is substantial quantitative and qualitative difference between the two groups of households. Respondents were asked how many rooms they own in the compound where they live and if there were changes in the construction materials used. These responses are summarized in Table 2.23.

About 67 percent of the successful and 28 percent of the comparison farmers reported they live in a compound that has more than two rooms. Moreover, larger percentages of successful households have reported to have improved the materials from which their dwellings are constructed. Note also that a little more than a quarter of the successful households surveyed have reported to have changed the material from which the roof of their residence is constructed. There are evidences indicating that livelihood improvements in rural areas of

Ethiopia largely involve residence roofs being changed to corrugated sheets of iron (Berhane and Gardebroek 2011). The overall implication is far reaching: improvements in income or other measures of success are more likely to be translated to improvements in standard of living or welfare.

Table 2.23. Number of rooms owned and change in construction materials used

Number of rooms and change in materials used	Successful farmers (%)	Comparison farmers (%)	Total sample (%)
More than two room	67.3	27.6	47.4
Change in materials wall is made of	7.0	4.0	5.5
Change in materials roof is made of	26.2	21.2	23.7
Change in materials floor is made of	11.1	4.3	7.7

Source: Successful Farmers Survey (2010).

b. Household durable assets and indivisibles

Next to housing, the composition of household durables owned by rural households can be good gauges to changes in well-being. This is because improvements in well-being are primarily reflected in the way households live and thrive and a good margin of the gains is assumed to be invested in durables assets. One such example is the mobile telephone revolution reported elsewhere in rural areas of Africa. With globalization and increased need for instant local and international market information, there has been a dramatic change in ownership of mobile phones and TV sets across rural Africa. The New York Times, on its October 5, 2009 edition, reports “Africa has the fastest-growing mobile phone market worldwide”. There are anecdotal evidences pointing to a trend of increased use of mobile phones and TV sets in rural Ethiopia. It is thus interesting to explore if such evidence can be confirmed, particularly from farmers that are considered as emerging riches in rural Ethiopia. In view of this, respondents were asked if they owned one or more of the selected items, now and five years ago. Responses are summarized in Table 2.24.

Table 2.24. Percentage of households owning communication assets five years ago and now

Assets	Successful farmers		Comparison farmers	
	5 years ago (%)	2010 (%)	5 years ago (%)	2010 (%)
Radio/tape recorder	61.7	90.9	34.0	63.0
TV Sets	3.2	17.9	0.4	3.8
Mobile Phones	4.4	53.0	1.0	17.1
Landline phones	1.3	5.3	0.1	0.4

Source: Successful Farmers Survey (2010).

There are three issues to note here. First, the overall proportion of households owning such assets, particularly TV sets and mobile phone connectivity is one of lowest even in Sub-Saharan standards. For example, considering East Africa, the percent of population covered by mobile phone connectivity in 2006 was 92 percent for Kenya, 95 percent for Uganda, 56 percent for Tanzania, and 10 percent for Ethiopia (Buys et al. 2009). However, this picture appears to be very different for the successful farmers. More than half of the successful farmers covered in this survey owned at least one mobile phone per household. This is 68 percentage points higher than the comparison households and much higher than the total population prediction. Second, there is however noticeable improvement in the number of households entering into the information communication age over the last five years. Although the improvement is common to

the two groups of households in the sample, the relative percentage change is higher for the comparison group mainly because the latter has started from a relatively lower initial endowment. For example, the number of mobile phone ownership in the last five years has increased 12 folds for the successful and 17 folds for the comparison households. Third, there are still striking differences of ownership of assets (in absolute terms) between the two groups of households. For example, the number of successful farmers that owned landline phones is about 13 times higher than their respective comparison farmers. Radio sets are perhaps of the oldest technologies introduced long time ago to Ethiopia and are common in rural Ethiopia. It is thus not surprising to see about 91 percent of the successful farmers and 63 percent of the comparison farmers owned this item. Here too, there are substantial differences between the two groups of households in the sample. On the other hand, due to the inherent poverty in rural areas, TV sets were not common until recently in rural Ethiopia. It is rather interesting to see from this survey that about 18 percent of the successful and 4 percent of the comparison households own TV sets. In terms of percentages, ownership of this asset has increased in the last five years by 4 and 8 folds, respectively, for the successful and comparison households.

c. Other durable assets

As discussed earlier, purchases of such indivisible household assets as refrigerators, sofa sets, stoves and generators involve relatively bigger lump sums of cash at a time and hence prolonged period of saving is needed before they are acquired. This means that only those that can afford such big lump sum of cash at a time are more likely to own them. Households were asked about their possessions of such other household items (now and five years ago). Percentages of the two groups of households owning these assets are summarized in Table 2.25.

Table 2.25. Percentages of households owning other assets

Other asset types	Successful farmers		Comparison farmers	
	5 years ago (%)	2010 (%)	5 years ago (%)	2010 (%)
Bicycles	4.4	11.0	1.9	3.0
Sofa set	1.9	10.6	0.6	2.0
Refrigerator	0.8	4.2	0.6	1.0
Stove	2.7	4.1	1.8	2.1
Sewing machine	1.3	2.8	0.3	0.7
Ironing machine	4.6	7.2	0.6	1.1
Generator	0.2	1.1	0.0	0.0
Car/minibus/taxi	0.0	0.1	0.0	0.0
Water tanker	0.3	0.8	0.4	0.6

Source: Successful Farmers Survey (2010).

Although the proportion of households that own these assets is still small, there is some evidence that this proportion has increased in the five years considered. For example, for both groups of households, the acquisition of sofa set, bicycles, refrigerators, sewing machine, and ironing machine has increased by more than two folds. However, in almost all cases, the growth rate is faster for the successful households than for the comparison households. This is not surprising given the divisibility problem mentioned earlier. Obviously, there are clear differences in the proportion of the two groups of households owning these assets at present. For example, about 11 percent of successful households and only 2 percent of the comparison households own sofa sets.

d. Production/farm assets

Respondents were asked if they own one or more of other key production assets that are either traditionally common in rural households or are assets that are introduced in recent years by the extension program. Table 2.26 provides the summary of percentages of households owning production/farm and other durable assets.

Table 2.26. Percentage of households owning farming tools (%), in 2010 and five year ago, by farmers' category

Farm tools or equipment	Successful farmers		Comparison farmers	
	5 years ago	2010	5 years ago	2010
Set of plough equipment	85.3	91	73.9	79.8
Water pump for irrigation	1.0	11.2	0.2	1
Sprinkler irrigating materials	1.3	8.9	0.4	2.3
Treadle pump	1.2	7.7	0.6	1.6
Other types of irrigation equip	2.9	11.7	2.8	5.2
Tractor	0	0.3	0	0

Source: Successful Farmers Survey (2010).

Generally, compared to five years ago, there are some changes in the ownership of these productive farm and other durable assets. As expected, successful farmers have been relatively better adopters of, particularly, irrigation technologies, such as treadle pumps, sprinkler, and other types of irrigation equipment and water pumps. Note that these equipments are largely a recent phenomenon to Ethiopia, mainly introduced through the extension program in the last two decades. Only one percent of successful farmers have had irrigation equipment five years ago while this number has improved to 7 percent for treadle pumps, 9 percent for sprinkler irrigation materials, and 11 percent for water pumps for irrigation. However, very small percentages of successful farm households reported they own tractor (only 0.3 percent). Given that farm households in Ethiopia are smallholders, this may be considered as a signal for the beginning of some initial structural transformations in production.

e. Livestock

Livestock production serves as an important source of livelihood for many households in rural areas of Ethiopia. Livestock assets are being used either as a means of production (for example, plough, meat, milk, other products) or as capital (accumulation of wealth), or both. As such, livestock plays a crucial role in bridging gaps and store of wealth in the household. Table 2.27 presents average number of livestock assets among successful and comparison farmers.

In this regard, there is some improvement in the average number of animals owned five years ago and now for both successful and comparison group farmers. In general, the average number of livestock possessed by successful households is larger than the comparison households. The difference is more significant in the ownership of cows and shoats (sheep and goats); the successful farmer owned, on average, three times more cows and shoats than the comparison farmer.

Table 2.27. Average number of livestock now and five years ago, by farmers' category

Livestock	Successful farmers		Mean difference	Comparison farmers		Mean difference
	2010	5 yrs ago		2010	5 yrs ago	
Oxen	4.8	3.5	1.3***	1.9	1.7	0.1***
Cows	13.1	9.7	3.4***	4.4	4.0	0.4**
Shoats	15.7	12.6	3.0***	4.9	5.9	-1.0***
Chickens	9.8	10.3	-0.48	5.1	5.7	-0.6**
Others	2.7	2.0	0.7***	1.1	0.9	0.2***

Source: Successful Farmers Survey (2010).

Note: ** significance level at <5%; *** significance level at <1%

Does the size of livestock asset ownership correspond to income levels within the successful farmer group? Table 2.28 presents average livestock ownership by income quintile of successful farmers.

Table 2.28. Successful farmers: average ownership of livestock, by income quintiles

Livestock	1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile
Oxen	2.4	2.6	3.4	4.0	7.3
Cows	5.8	5.8	8.0	9.8	21.8
Shoats	5.8	7.6	10.7	12.5	24.8
Chickens	4.7	6.0	8.9	9.5	12.6
Others	0.9	1.6	2.1	2.5	3.7

Source: Successful Farmers Survey (2010)

Note: 1st quintile is the poorest quintile, 5th quintile is the richest quintile

There is some pattern of livestock ownership increase with income—i.e., the average livestock size owned increases as income quintile increases. On average, the richest farmer owns 7 oxen, 22 cows and 25 shoats, while the poorest owns a little more than 2 oxen, 6 cows, and 6 shoats. Clearly, there is a wide range of wealth variation within the successful farmer group and aggregate results must be interpreted cautiously.

2.6.3. Welfare change

We also asked farmers to qualitatively evaluate the overall changes in the welfare of their families within the last five years compared to the years before. Our survey used change in household assets, number of rooms the household live in, use of information technologies, sending children to school, and the performance of their children in school. In addition, we asked farmers to evaluate the current living status of their families in terms of ability to manage ends by own income, attaining families' food requirements, and their current financial situations. The result is presented in Table 2.29 below and discussed as follow.

Ownership to durable household assets such as a sofa, dining table, TV, radio, etc., has improved in at least 84 percent of successful farm households and 43 percent of the comparison households. There is no significant variation in the change of asset ownership between successful farmers living in PSNP and non-PSNP districts. Asset ownership is improved more, in decreasing order, in Amhara (92%), SNNPR (89%), Oromiya (81%), Tigray (74%), and Benishangul-Gumuz (61%) regions. In terms of change in number of rooms for different purposes (living, kitchen, store, animal keeping, etc), the result also indicated some

improvements within the last five years. The change in number of rooms is better than the change in household asset for all kinds of respondents. The change in the use of information technologies such as telephone, TV, radio, etc has shown modest improvement within the last five years. There is also substantial variation between successful and comparison farmers in the use of information technologies. The result also shows that compared to five years ago, the behavior of parents in regularly sending their children to school is better now, though there is considerable variation between successful (89%) and comparison (68%) families. Similarly, the household head is asked to evaluate his/her children's school performance based on his/her perception. The result show that it is better now compared to five years ago for 73 percent of total sample households, and it is relatively better for children of successful families.

With regard to the current financial status of the family, higher proportion of successful farm households stated that they save more now compared to five years: 28 percent of the successful farmers save more and only 3 percent of the comparison farm households save more. Similarly, only 2 percent of the successful farmers but 16 percent of the comparison farm households stated that they are unable to cover the food requirements of their families.

A different result is observed when we compare the existing level of living of farm households of successful and comparison farmers. Even though the change in household assets, housing situation, children's school performance as well as the financial status and fulfilling their families' food requirements is better for the successful farm households, higher proportions of the comparison farm households (61%) perceived that they can manage their families' requirements by their own income. Only 45 percent of the successful farmers perceived the same. This result implies that that the two farmers' categories do not only differ in their economic status, they also differ in their objective function/aspiration. These variations suggest that it is advisable to consider the behaviors or aspirations of farm households in designing policies or programs that aim at narrowing down the gap and further improve the welfare of Ethiopia farm households.

Table 2.29. Perception of farm households on change in the welfare of their families (%)

Change in Living condition	Successful farmers	Comparison farmers	Total sample	Successful farmers by safety net category	
				PSNP	non-PSNP
Household asset					
Better	0.84	0.43	0.63	0.87	0.82
Worse	0.01	0.13	0.07	0.01	0.01
Same	0.10	0.38	0.24	0.11	0.10
Change in the number of rooms of house of farm households					
Better	0.92	0.52	0.72	0.92	0.91
Worse	0.01	0.11	0.06	0.01	0.01
Same	0.06	0.34	0.20	0.06	0.06
Change in the use of information technology					
Better	0.81	0.39	0.59	0.84	0.78
Worse	0.02	0.14	0.08	0.03	0.02
Same	0.12	0.34	0.23	0.11	0.13
Change in the behavior of farm household in regularly sending children to school					
Better	0.89	0.68	0.78	0.90	0.89
Worse	0.01	0.05	0.03	0.01	0.01
Same	0.06	0.14	0.10	0.04	0.07
Change in Children's school performance					
Better	0.85	0.61	0.73	0.86	0.85
Worse	0.08	0.04	0.2	0.03	0.2
Same	0.9	0.2	0.15	0.7	0.1
Description of present living status of the farm households					
Able to manage ends by own income	0.45	0.61	0.53	0.47	0.44
Save lot	0.28	0.03	0.16	0.28	0.28
Running in to debt or shortage of food	0.02	0.16	0.09	0.01	0.03

Source: Successful Farmers Survey (2010)

Note: PSNP = Productive Safety Net Program

2.7. Summary

An average successful farm household head is older and has significantly larger family size compared to the comparison farmer. While 57 percent of his family members are in the economically active age, 52 percent of family members of the comparison farmer are within the same age. There is no statistical difference in the age of household heads between successful farm households and the comparison group if he is from Tigray region. A successful farm household in SNNPR, Oromiya, and Benishangul-Gumuz regions has larger family size. An average successful farm household head is more literate and educated compared to an average comparison household head. His family members have more years of schooling than members of the comparison family members. An average farmer has higher years of schooling if he is living in Amhara and SNNPR but has lower years of schooling if he lives in Tigray.

An average successful farmer owns significantly larger farm size (3.9 ha) than an average comparison farmer (1.9ha). He also cultivated larger size of land in the cropping season just

before the survey time. Sharecropping or renting in of farm land is more common by successful farm households than their counterparts. Land marketing is more common in regions with smaller size of farm land. Land size is considerably smaller in Tigray and Amhara regions than other regions. An average successful farm household living in Tigray and Amhara regions has farm size of 1.8 ha and 1.9 ha, respectively. Per capita farm land holding is significantly higher in Oromiya and SNNPR. An average successful farm household has 4.8 oxen and the comparison farm household has 1.9 oxen. Livestock holding is substantially higher in Oromiya region.

The wealth status of farm households measured in terms of value of crop output, livestock assets, and durable household assets is significantly higher for an average successful farm household than his counterpart in the comparison group. The mean value of crop output for the cropping year before the survey time is Birr 70,438 for successful farm households and Birr 11,423 for comparison farm households, which is six times lower. The mean value of livestock assets in monetary term is three times more for the successful farm households than for the comparison households: the mean value of livestock assets of a successful farm household is Birr 10,549 and that of comparison farm household is Birr 3,240.6. Similarly, the mean value of household assets that comprise different durable assets such as ownership to TV, radio, household items and production assets, is considerably higher for the successful farm households than for the comparison farm households.

Key information analyzed in this chapter included household income sources, contributions of each income source, perceptions of respondents on their income patterns and their key sources, diversification of income and its determinants, as well as the welfare change as perceived by the farmers themselves.

In general, it can be concluded that all households in the sample are engaged in some form of crop-livestock mixed farming and for the majority of them, the lion's share (74%) of their income comes from crop production. This is similar across the two groups of households except that there are some differences on the extent of crop-livestock mix. There are however contrasting differences between the two groups of households with regard to the sources of income they derive outside of agriculture. First, the percentage of successful farmers involved in owner-operated off-farm businesses is higher (47%) than that of comparison farmers (31%). This activity is the third largest contributor to total income of both groups; successful farmers earn a larger share of their income from this activity (10%) than comparison farmers (7%). Moreover, the proportion of farmers having businesses is the highest among farmers in the richest income quintiles (of the 40 percent richest farmers 80 percent are successful farmers). It is important to emphasize that about 10% of the successful farmers that fall into the top 40 percent income group have their major sources of income from businesses. In contrast, off-farm employment appears to be more important to comparison (accounts for 17 percent of employment and 4.1 percent of total income) than to successful farmers (accounts for 11 percent of employment and 1 percent of total income).

Another interesting evidence is that successful farmers have a more diversified number of income sources (about 4-6) and that their per capita income increases with increases in number of income sources where as there is no clear trend observed for comparison farmers. It is interesting to note here that about 33 percent of the comparison households that earn their living mainly from farming fall into the poorest 20 percent income group, while only 6 percent of the successful farmers that earn their living mainly from farming fall in that poorest 20 percent income group.

Looking at the link between gender and income, the results indicated that the share of farm income is lower for female than male headed households, while the share of off-farm income is much higher for female headed households. This may be because women who often face constraints in agriculture tend to take up off-farm activities as their complementary income source.

The link between income and agricultural input use provides a useful insight: the per capital income of successful farmers that reported to have higher contact hours with agricultural extension agents is higher than those with lower contact hours. Surprisingly, this difference is not found for comparison farmers.

Use of irrigation, improved beekeeping technologies, natural resource conservation, and investment in nonfarm business (such as small trading, flour mills, and query development) are the most important innovations that contributed to the recognition of a farmer as successful. The contribution of these innovations for the success of farm households is better for farmers in PSNP districts than in non-PSNP. As a result, a significant improvement in capital ownership (in terms of fixed and cash capital) has been observed for the successful farm households. An average successful farmer registered Birr 57,015 in cash and total capital of Birr 490,972 in the year he obtained award at kebele level. There are also regional differences: an average successful farmer in SNNPR registered Birr 84,743 in cash, which is 2.5 times higher than an average successful farmer in Tigray region.

In relation to changes in crop production, evaluated qualitatively by farmers themselves, our result revealed that crop production has substantially changed in terms of change in yield per hectare (perceived by 77 percent of successful and 55 percent of comparison farmers) and use of improved farming practices within the previous five years compared to the years before. The farmers perceived that the yield per ha is improved as a result of progress in the use of improved seed, fertilizer, and irrigation as well as extension agents' advice.

Similarly, the change in livestock production, explained in terms of change in dairy, beef, honey, and poultry production, is better within the last five years compared to the years before. This change is perceived by 80 percent of successful farmers and 49 percent of comparison farmers. The farmers perceived that this modification is due to the change in the use of productivity enhancing agricultural practices such as better application of advice from extension agents, use of improved livestock breeds, better animal health services and better farming skills acquired in farmers training center (FTC). Honey production has improved a lot in Tigray (52%) and Amhara (51%) whilst dairy and beef production has improved in Oromiya, Amhara, and SNNPR.

Extension service in terms of number of contacts of the farmer with the development agents has been increased within the last five years compared to the years before. This change is perceived by 49 percent and 32 percent of the successful and comparison farmer, respectively. Nature of the extension service (kind of subject) has also substantially improved within the same period. This substantial improvement is perceived by 47 percent of the successful farmers and 28 percent of the comparison farmers. The most common subjects provided to farmers at FTC include application and use of fertilizers, improved seed, chemicals (pesticides and insecticides), manure, modern/improved livestock keeping (beekeeping, poultry production, etc), and soil and water conservation practices.

Overall, the welfare of farm households qualitatively measured in terms of change in durable household assets, number of rooms the family dwell in, use of information technologies (radio, TV, telephone line, etc), regularly sending children to school, and satisfying family food requirements and financial position of the family is improved for more than half of the farm households within the previous five years compared to the years before. Although the improvement in these welfare measures is better for the successful farm households, 61 percent of the comparison and only 45 percent of the successful farm households perceived that they are able to manage their families' requirements by their own income. The result implies that variation in the aspiration or life objective of the two farm households may have a role in improving welfare and resource allocation of Ethiopian farm households. It may thus be useful to note such variation in aspiration of farm households in designing policies or programs that aim at narrowing the income gap, scale-up best practices to the wider Ethiopian rural households, as well as improving the living standards of Ethiopian farm households.

To conclude, the increase in income due to the improvements in the main economic activities of farm households is transmitted to overall welfare improvements of the households. But the chapter did not discuss some basic policy questions such as "Does successful farmers have different pattern of change in consumption expenditure?", "Do they spend on local or imported products?" "Does the increased income of successful farmers have trickledown effect?", "How do successful farmer inter-temporally allocate their increased income between consumption and saving?". These and other related questions will be dealt within the following chapters.

3. Consumption behavior of farm households

3.1. Introduction

More than a third of the Ethiopian population still lives under the poverty line despite the fast economic progress of recent years. Accordingly, the level of consumption remains at an extremely low level. Malnourishment is widely prevalent in the country, especially in rural areas. With the agricultural sector being the main driver of growth of the past few years, the growth has helped gradually ameliorate the dire living conditions in rural Ethiopia. In light of this, it is essential to understand how these economic gains have transmitted into the lives of the relatively successful, but still largely poor, farmers and the not so successful farmers and how lessons can be carried forward to help improve the lives of many. A natural question would be: Has the economic progress empowered 'successful' farmers to an extent that they have seen improvements in food consumption, schooling for their children, medication and other services?

Consumption is the main indicator of welfare as it is the smoothed version of income and hence a long-term measure of income. Consumption expenditure can be considered as investment on people or human development. Spending on health and balanced diet can increase the current and future productivity of individuals and society as a whole. Ethiopian people are known for having lower consumption of high value foods such as oil, fat, meat, fruits, and vegetables. Looking at the changes in the consumption of these kinds of food could be a main indicator of changes in welfare of people.

Expenditure on health and education are one of the key investments in children, future assets of the society. Hence it is good to see the consumption behavior of successful farmers relative to the rest of the farmers in relation to improvements in welfare, measured by consumption expenditure, diet composition and investments in children. Moreover, do changes in income of successful farmers have better multiplier effect and therefore raise incomes in the rest of the economy, including the local economy?

This chapter tries to answer the following questions. (1) Do the successful farmers have different patterns of changes in consumption expenditure in general and consumption of high value products in particular? (2) Do successful farmers have more investment in children? (3) Do successful farmers have more spending on local/imported products? And (4) Does the improvement in come of farmers especially that of successful farmers trickle down to the relatively poorer section of the society such as the landless and laborers?

3.2. Consumption pattern of farm households

This section tries to see if there are substantive differences in consumption patterns between successful and comparison farm households. To that end, measures of central tendency (mean) and measures of dispersion (standard deviation and range) will be employed. Moreover, income elasticities will be estimated to explain the consumption responses of successful and comparison households to changes in income.

3.2.1. Expenditure patterns

Patterns in expenditure offer useful information on the preferences and constraints faced by successful and comparison farmers. Table 3.1 shows that the total expenditure of successful farmers is substantially higher than that of comparison farmers. Successful farmers' annual expenditure is 138 percent more than their comparison counterparts, partly because of larger family size. Non-durable consumption expenditure, likewise, is considerably high at 128 percent more than comparison farmers.

Table 3.1. Average annual household and per capita expenditure (Birr), by farmers' category

	Comparison farmers	Successful farmers	Total sample	% Difference
Consumption expenditure	15,291	34,780	25,035	128***
Food Expenditure	11,149	21,169	16,159	90***
Non-food Expenditure	6,375	20,466	13,420	222***
Total Expenditure	17,523	41,635	29,579	138***
Per capita consumption expenditure	2,477	4,378	3,428	77***
Per capita food expenditure	1,814	2,682	2,248	48***
Per capita non-food expenditure	1,001	2,546	1,774	155***
Per capita expenditure	2,816	5,228	4,022	86***
Food expenditure share (%)	73	61	65	(9.0)

Source: Successful Farmers Survey (2010)

Note: ***, **, * are significance levels at 1% 5%, and 10%

The pattern remains similar but less pronounced at per capita level. Successful farmers' per capita expenditure is 86 percent higher than that of comparable farmers. The decline in the margin of difference between the two groups of households compared to household level expenditure can be attributed to the considerably larger household size of successful farmers compared to the comparable ones. Successful farmers have an average household size of 8.2 to that of 6.5 of comparable farmers (Table 3.2). However, the pressure on consumption generated by larger household size is somehow ameliorated by lower dependency ratio.

Table 3.2. Household size and dependency ratio

		Comparison farmers	Successful farmers	Total sample
Household size	Female	6.39	7.80	7.09
	Male	6.56	8.23	7.39
	Total	6.54	8.18	7.36
Dependency ratio	Female	1.50	1.21	1.35
	Male	1.32	1.16	1.24
	Total	1.34	1.17	1.25

Source: Successful Farmers Survey (2010)

A more disaggregated analysis shows that successful farmers have higher food and non-food expenditure at both household and per capita levels, though the difference between the two groups of households is much higher for non-food items than for food items (see Table 3.1). Successful farmers' per capita food expenditure is 48 percent higher than that of comparable farmers, whereas per capita non-food consumption expenditure is 155 percent more. This is, comparable farmers being relatively poorer, because poorer households tend to spend larger share of their income on food, in line with Engle's law. The comparison farmers spend 73

percent of their expenditure on food, whereas successful farmers' food consumption share stands at 61 percent.

A regional breakdown of per capita expenditures reveals substantive variation in the per capita expenditures for both successful and comparison farmers across regions. For both set of households, it appears that SNNPR has by far the highest per capita expenditure followed by Amhara and Tigray regions, while Benishangul-Gumuz has the lowest. The difference in per capita expenditure between SNNPR and the other regions is higher for successful farmers than for the comparison ones. The difference in per capita expenditure of comparison farmers across regions is statistically insignificant⁹. Likewise, the difference in per capita expenditure of successful farmers is not significant between Tigray, Amhara, and Oromiya, but this difference is statistically significant between these regions and both Benishangul-Gumuz and SNNPR.

Table 3.3. Per capita expenditures per year (Birr), by region and by farmers' category

	Tigray		Amhara		Oromiya		Benishangul Gumuz		SNNPR	
	Comp.	Succ'l	Comp.	Succ'l	Comp.	Succ'l	Comp.	Succ'l	Comp.	Succ'l
Per capita consumption expenditure	2,548	4,042	2,635	4,071	2,280	3,734	2,033	2,190	2,710	6,349
Per capita food expenditure	2,133	2,924	1,880	2,538	1,682	2,314	1,302	1,466	1,941	3,582
Per capita non-food expenditure	697	1,872	1,050	2,263	971	2,234	1,043	1,080	1,126	3,940
Per capita total expenditure	2,830	4,796	2,930	4,801	2,653	4,548	2,345	2,546	3,067	7,522

Source: Successful Farmers Survey (2010)

Note: SNNPR = Southern Nations, Nationalities and Peoples Region

Successful farmers in SNNPR also appear to have the highest per capita food expenditure followed by those in Tigray and Amhara regions. Moreover, these cross-region differences are statistically significant. Non-food per capita expenditures reveal an identical pattern: successful farmers in SNNPR have the highest per capita non-food expenditure compared to other regions. The statistical significance of the difference in regional average per capita non-food expenditures mirrors that of total per capita expenditure: variations are insignificant between Tigray, Amhara and Oromiya, but the variations between those three regions and both Benishangul-Gumuz and SNNPR are significant.

Not only do successful farmers have higher per capita expenditure, they also are able to spend on high quality products such as animal products, and fruits and vegetables. Ethiopian rural people are known for spending less on consumption of high value foods such as oil, fat, meat, fruits and vegetables and as a result people have an in-balanced diet. Looking at the changes in the consumption of these kinds of food could be a main indicator of changes in welfare of people. Smaller spending to schooling and health means less investment on children health and education, which undermines future productivity of these children. Table 3.4 compares the per capita expenditure of successful and comparison farmers for five high value expenditure groups: fruits and vegetables, butter and oil, milk and cheese, meat (including chicken), and medical and schooling expenses. In all five items, successful farmers appear to have the upper hand. With the exception of fruits and vegetables—the group with the smallest expenditure share—

⁹ The statistical significance of two-group mean-comparison tests are given in Appendix Table 3.A.1.

successful farmers spend significantly higher sums in absolute terms as well as in the shares of their total expenditure on high value goods indicating that children will have a more balanced diet and better body growth, which is believed to be an excellent investment on children.

Table 3.4. Per capita expenditure per year (Birr) and shares (%) on high value goods, by farmers' category

	Comparison farmers		Successful farmers		Total sample		% More
	(Birr)	Share (%)	(Birr)	Share (%)	(Birr)	Share (%)	
Fruits & Vegetables	67	2.2	81	1.6	74	1.9	20*
Butter & Oil	100	3.8	173	3.8	136	3.8	73***
Milk & Cheese	114	3.9	228	4.6	171	4.3	100***
Meat & Chicken	108	3.4	263	5.6	185	4.5	145***
Medical & School Expenses	212	6.3	524	7.9	368	7.1	147***

Source: Successful Farmers Survey (2010)

Note: ***, **, * are significance levels at 1%, 5%, and 10%

The spending gap between the two sets of households appears to widen as one moves from less important to more important items in terms of household budget shares. The gap in per capita expenditure on fruits and vegetables stands at 20 percent, while that of medical and school expenses—which represents the group with the largest budget share among high value goods—is a massive 147 percent (Table 3.4).

Table 3.5. Per capita expenditure per year (Birr) on high quality goods, by income quintile and by farmers' category

Income quintile	Fruits & Vegetables		Butter & Oil		Milk & Cheese		Meat & Chicken		Medical & School Expenses	
	Comp.	Succ'l	Comp.	Succ'l	Comp.	Succ'l	Comp.	Succ'l	Comp.	Succ'l
Q1	20	35	44	89	32	89	17	103	50	120
Q2	34	49	74	123	69	139	50	192	98	201
Q3	48	57	84	155	79	210	92	237	140	252
Q4	71	88	113	199	151	284	132	319	214	466
Q5	163	176	182	298	239	417	247	465	556	1579

Source: Successful Farmers Survey (2010)

Note: Q1 is the poorest quintile

Likewise, per capita expenditure on high value goods also varies across income groups in both the successful and the comparison farmers groups. For all five high value goods groups, the per capita expenditure rises with income. Across all income groups (income quintiles) and household groups (successful/comparison), milk and cheese, meat and chicken, and medical and school expenses represent the largest outlays, in that order, on high value goods. Interestingly, Table 3.5 appears to suggest that looking at the expenditure patterns of the five income groups one can distinct two clusters. For all five consumption sets the per capita expenditure appears to rise steadily with income in the poorest quintiles before it sharply increases in the fourth and fifth quintiles. This may imply that the consumption pattern of the two richest quintiles is detached from that of the three poorest.

Table 3.6. Proportional difference (%) between successful and comparison farmers in per capita expenditure on high value goods, by quintile

Income quintile	Fruits & Vegetables	Butter & Oil	Milk & Cheese	Meat & Cheese	Medical & School Expenses
Q1	77	101	177	494	139
Q2	43	65	101	287	104
Q3	19	83	166	158	79
Q4	23	77	89	141	118
Q5	8	64	75	89	184

Source: Successful Farmers Survey (2010)

Note: Q1 is the poorest quintile

The difference between successful and comparison households in per capita expenditure on the five high value consumption goods groups declines as one moves from the poorest quintile to the richest. That is, the position in the income pyramid matters to consumption behavior: the difference between successful and comparison farmers in propensity to spend on high value goods declines in general with increasing income (Table 3.6).

In addition to the level of expenditure on high value goods by the two groups of households, it is also useful to understand the trends in consumption of these items as it informs how income growth, if any, is spent and its implication for nutrition, health, and schooling. The proportion of households that spend on high value goods has grown considerably over the past five years. However, the growth is higher for successful farmers than for comparison farmers. Especially, successful farmers consuming meat and butter have grown from 69 percent and 79 percent respectively five years ago to 91 percent and 89 percent respectively at present. The percentage of comparison farmers consuming meat and butter grew from 53 percent to 61 percent and 64 percent to 66 percent respectively over the same period (Table 3.7).

Table 3.7. Proportion of households (%) consuming high value goods, now and five years ago

	Meat		Oil		Butter	
	Now	5 years ago	Now	5 years ago	Now	5 years ago
Comparison	61	53	94	84	66	64
Successful	91	69	97	87	89	79
Total	76	61	96	85	78	72

Source: Successful Farmers Survey (2010)

Note: Q1 is the poorest quintile

The intensity of consumption of high value goods, measured in days of consumption per month, has also registered a marked increase over the five years period except in the case of meat for comparison farmers. Successful farmers' average number of meat consumption days has risen from 4.2 to 4.7, whereas that of comparison farmers has declined from 5 to 4.5. For both groups of households, the monthly number of days with oil and butter consumption is higher now than five years ago, though the growth is higher for successful farmers. Successful farmers' number of oil and butter consumption days increased from 20 to 25 and 13 to 17.3, respectively. Likewise, comparison farmers' consumption of oil and butter grew from 19.3 to 22.7 days and 11 to 12.3 days, respectively.

Table 3.8. Number of days with high value good consumption per month, now and five years ago

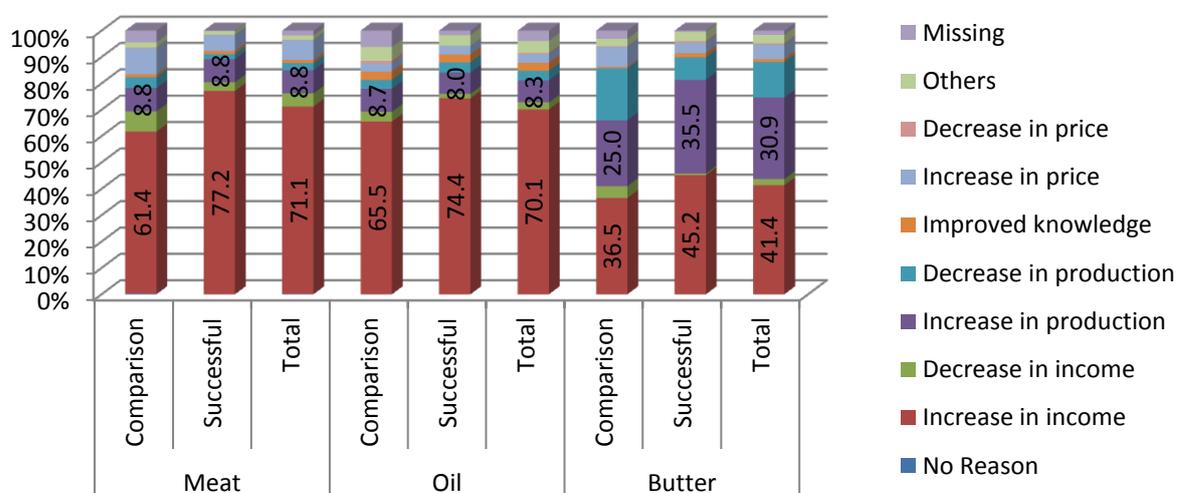
	Meat			Oil			Butter		
	Now	5 years ago	More (%)	Now	5 years ago	More (%)	Now	5 years ago	More (%)
Comparison	4.5	4.9	-0.35	22.7	19.3	3.4***	12.3	10.9	1.41***
Successful	4.7	4.2	0.51	24.9	20.0	4.95***	17.3	13.0	4.3***
Total	4.6	4.5	0.14	23.8	19.6	4.18***	15.1	12.0	3.06***

Source: Successful Farmers Survey (2010)

Note: ***, **, * are significance levels at 1%, 5%, and 10%

The main source of the growth in consumption of high value goods for the two groups of households is increase in income followed by increase in production (Figure 3.1). Among consumers of meat, oil, and butter, 71 percent, 70 percent, and 41 percent respectively reported increase in income to be the prime factor for increase in their consumption over the past five years. Yet for all three high value goods, the percentage of households reporting increase in income as the chief reason for increase is higher for successful farmers than their comparison counterparts.

Figure 3.1. Reasons for change in consumption of high value goods



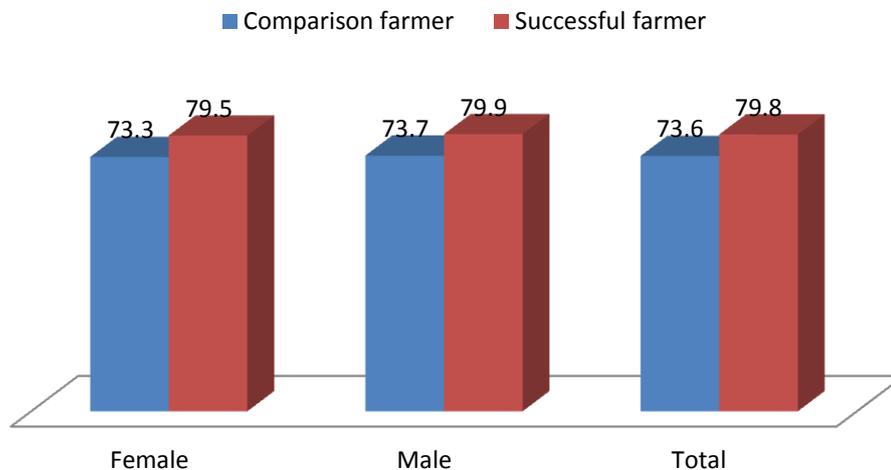
Source: Successful Farmers Survey (2010)

In both per capita and total expenditure, successful farmers spend more on hiring labor—for both farm and domestic activities—and rent on properties. The share of these expenditure items is 5 percent for successful farmers and 2 percent for comparison farmers. The implication of this is that, the income increase of the successful farmers, compared to that of comparison farmers, will trickle down more to the poor and female headed households via the labor market and renting of land.

As noted above, successful farmers spend two and half times more on medication and schooling. Focusing on schooling, it would be useful to compare the two groups of households as this is a crucial instrument for narrowing the gap between the two groups of households. Current investment in children’s schooling may help raise the household’s future stream of income and/or serves as insurance against smoothing parents’ future consumption. That is, investment on children’s schooling is like ‘inter-generational loan agreement’ (Lambertini 1998; Kochar 2002; Emerson and Knabb 2007). Accordingly, in a reflection of their superior spending

on medication and schooling, successful farmers appear to send higher fraction of their school age children to school than comparison farmers. The net enrolment ratio of successful farmers stands at 79.8 percent, while comparison farmers send 73.6 percent of their school age children to school.

Figure 3.2. Net enrolment of children in school (7 to 17 years old) (%), by farmers' category



Source: Successful Farmers Survey (2010)

In the Ethiopian context, the relatively lower enrolment of comparison farmers, who are poorer, poses a relevant threat to their survival. Lack of spending on children's schooling limits their future potential stream of income and narrows opportunities for off farm economic activity, and in addition it pushes poorer rural households further into poverty. With the single most important asset in rural areas being land, lack of schooling limits opportunities to move out of agriculture, and thus it threatens to cause further fragmentation of land since the household head usually passes on agricultural land and other assets to children who stay behind at home.

The evidence in Figure 3.2 appears to suggest that for both groups of households, there is no significant gender bias considering sending children to school¹⁰. The net enrolment of both male and female is roughly the same, though the former have marginally higher enrolment. This result is encouraging given the customary practice of giving priority to males' education amid growing literature reporting higher return to schooling for female (see for example Blau and Kahn (1997))¹¹. However, Girma and Kedir (2005) found lower returns to schooling for females in urban Ethiopia.

In light of the above, Banerjee and Duflo (2006) shed light on why poor households appear to spend less on welfare enhancing investments such as schooling. They found that poor households spend relatively high cut of their budget on entertainment and festivities. Accordingly, it is useful to study whether high expenditure on such could partly explain why comparison farmers send their children less to school (spend less on children's schooling). Overall, though the absolute size of successful farmers' spending on entertainment and festivities is higher than that of comparison farmers', it amounts to a lower share of their budget

¹⁰Basu and Van (1998) note that scarcity of resources (income) forces poor households to discriminate between children, notably through uneven distribution of schooling and child labor. Poor parents may send some of their children to work and let others concentrate on studying at school. There is no evidence of such phenomenon from Successful Farmers Survey (2010), at least not gender wise.

¹¹ For a detailed discussion of why the return to education is higher for female than male, see Dougherty (2003) and the references therein.

compared to their comparison counterparts (Table 3.9). An income quintile level disaggregation reveals substantive but subtle information: as income grows comparison farmers are more likely to spend more (as a share of their total budget) on entertainment than successful farmers. For the poorest three quintiles, successful farmers spend a higher share of their expenditure on entertainment and festivities, though marginally so for the first quintile. As one moves on to the fourth and fifth expenditure quintiles, however, comparison farmers' budget share overtakes that of the successful ones.

Table 3.9. Expenditure on entertainment and festivities

	Comparison farmers		Successful farmers	
	Per capita expenditure per year (birr)	Share (%)	Per capita expenditure per year (birr)	Share (%)
Total	146	4.6	225	4.3
Q1	37	3.5	70	3.6
Q2	67	3.9	162	5.4
Q3	97	4.2	183	4.7
Q4	180	5.7	238	4.3
Q5	349	5.7	473	3.6

Source: Successful Farmers Survey (2010)

Note: Q1 is poorest quintile

This has an important implication to bridging the gap between successful farmers and comparison farmers, and in a more general case between the poor and the not so poor. Unless investments are made on welfare enhancing (potentially economically rewarding) reinvestments such as schooling, catch up between the two groups of households is likely to be difficult.

One of the desirable outcomes of growth in the agricultural sector is the growth it brings about in other sectors through linkages: cheaper inputs and greater demand. On the contrary, it is important to note as well that agricultural growth might result in balance of payment imbalances if the growth in demand leads to increase in imports. In light of this, understanding the trends in the origins of manufactured consumption goods in rural Ethiopia is useful to get an impression of what is likely to happen to the domestic manufacturing industry as rural income grows.

Table 3.10 shows the origins of cloth, shoes, soap, cooking utensils, and bed sheets and blankets for successful and comparison farmers. It appears that local (woreda) and region level sources account for a very small share of these consumed non-durables goods, partly due to the underdevelopment of the industrial sector in Ethiopia and partly due to the concentration of manufacturing plants around Addis Ababa. Imports account for 10 to 29 percent of the considered consumed goods¹².

¹² Note, however, that the responses about the origins of the manufactured consumption items are perceptions of respondents. It is likely they mistake imported ones for domestically manufactured and vice versa.

Table 3.10. Origin of commodities (%)

	Woreda Level			Region level			National			Foreign		
	Comp	Suc'l	Total	Comp	Suc'l	Total	Comp	Suc'l	Total	Comp	Suc'l	Total
Cloth	6.6	5.7	6.1	10.6	9.1	9.8	65.8	61.1	63.5	25.8	32.5	29.2
Shoes	3.3	2.3	2.8	9.9	7.8	8.8	75.8	68.6	72.2	16.5	26.1	21.3
Soap	1.1	0.7	0.9	5.3	5.2	5.3	87.3	85.9	86.6	9.6	10.8	10.2
Cooking utensils	10.3	7.5	8.9	14.6	11.8	13.2	74.4	69.4	71.9	11.5	16.0	13.8
Bed sheets & blankets	1.7	0.7	1.2	11.1	11.2	11.1	73.1	73.1	73.1	8.8	12.8	10.8

Source: Successful Farmers Survey (2010)

Notes: Comp = Comparison farmers; Suc'l = Successful Farmers; Total = Total Sample

Overall, a relatively larger share of the considered goods consumed by comparison farmers' appears to originate from their woreda or region compared to the goods consumed by successful farmers. A similar trend can be found at national level where for all items, except bed sheets and blankets, comparison farmers use more domestically produced items than successful counterparts. As a consequence, successful farmers get substantially higher share of their manufactured consumption items from imports. This could be due to perception that locally manufactured items are of lower quality compared to imported ones; perhaps imports could be conceived as being status goods.

The variation in the origin of manufactured consumption goods between successful and comparison farmers has important policy implications. First, because demand is likely to shift from domestically manufactured to imports, balance of payments problems could be an undesirable consequence of growth in rural income. Second, and on the contrary to the above, one can see imports as incentive goods, in which case the perception of imports as status goods may in the first place be the force that derives the rise in rural income—or shift from comparison into successful farmer. Cooksey et al. (1987), (cited in Bevan et al (1989) argue that incentive goods for farmers are basic consumer goods such as cooking oil, soap and clothing¹³.

The discussions above point to the need to conduct a detailed study on the demand responses of the successful and comparison farmers to changes in income (expenditure). The section below does just that.

3.2.2. Expenditure elasticities of demand

The empirical model applied in this study is the Working-Leser Model¹⁴ (Deaton and Muellbauer 1980). The original model was proposed by Working (1943) and Leser (1963). The model allows measurement of the consumption responses of households by taking the share of each food item as a linear function of the logarithm of total expenditure on all the food items under consideration, and can be estimated using ordinary least squares (OLS). The Working-Leser demand function can be expressed as:

$$w_i = \alpha_0 + \beta_i \log x_i + \sum_j \gamma_{ij} \log p_j + \sum_k \phi_{ik} H_k + \varepsilon_i$$

¹³ For a detailed discussion, see "Peasants and Governments: An Economic Analysis" by Bevan D., Collier P., and Gunning J. W. (1989), Oxford University Press.

¹⁴ For a thorough discussion of the Working-Leser model, see Deaton and Muellbauer (1980), Pollak and Wales (1981), and Intriligator, Bodkin and Hsiao (1996).

Where, w_i is budget share of commodity i , x_i is total expenditure on all commodities, p_j is price of commodity i , H_k stands for a set of household socio-demographic variables, and ε_i is an independently and identically distributed error term for the equation of commodity i .

An important feature of the Working-Leser demand model is that it allows the estimation of consumption responses in the absence of price data, which is the case in this study. Hence the estimated model is reduced to:

$$w_i = \alpha_0 + \beta_i \log x_i + \sum_k \phi_{ik} H_k + \varepsilon_i.$$

The expenditure elasticity can be expressed as:

$$e_i = 1 + \left(\frac{\beta_i}{w_i} \right)$$

The functional form implies that expenditure elasticity depends on budget shares. This dependency on expenditure shares allows socio-economic group specific elasticities (Clemens et al. 1979), i.e. in the context of this study, successful and comparison farmers. Group specific consumption preferences are likely to give rise to group specific expenditure shares. Accordingly, empirical computation of expenditure elasticities needs to take this variation into account. Hence, group specific elasticities.

Household income is often under-reported in household surveys due to various reasons including limited knowledge about the income of all household members, non-response, and under reporting (Paulin and Ferraro 1994; Dayal et al. 2000). This problem is likely to be more serious in developing countries. Thus, using expenditure rather than income may yield better estimates.

Successful farmers appear to have relatively lower expenditure elasticities than comparison farmers for all food items (Table 3.11). Moreover, the estimated expenditure elasticities of all food items, except other food, are less than one for successful farmers, while fruits and vegetables, butter, oil, cheese and milk, meat, and sugar and beverages have elasticities that are greater than one for comparison farmers. This is consistent with the findings in the preceding section. Because comparison farmers are relatively poorer, they tend to spend a bigger slice of the budget on food items and have a higher consumption response to change in income (expenditure). Moreover, because these items are generally considered as superior goods, which the estimated elasticities confirm, poorer households spend relatively less on these. As income grows, they respond by spending a relatively larger part of the marginal income on these relative luxuries.

Table 3.11. Budget shares (%) and expenditure (Income) elasticities of food and services, by farmers' category

	Total sample		Comparison farmers		Successful farmers	
	Budget Share	Exp. Elasticity	Budget Share	Exp. Elasticity	Budget Share	Exp. Elasticity
Cereals and legumes	0.33	0.722	0.38	0.805	0.28	0.654
Fruits and vegetables	0.02	0.931	0.03	1.175	0.02	0.905
Butter, oil, cheese, and milk	0.09	0.964	0.08	1.024	0.09	0.850
Meat of various kinds	0.05	1.210	0.04	1.511	0.06	0.828
Spices, pepper, and salt	0.04	0.576	0.04	0.604	0.03	0.540
Coffee, tea, and other stimulants	0.06	0.708	0.07	0.809	0.05	0.596
Sugar and beverages	0.04	1.096	0.04	1.163	0.05	0.946
Other food	0.04	1.327	0.04	1.614	0.04	1.294
Transport and communication	0.05	1.627	0.04	1.593	0.06	1.563
Personal care, entertainment & ceremonial expenses	0.05	0.956	0.05	0.867	0.05	0.942
Servant & maid, and rent payments	0.03	1.984	0.02	2.134	0.05	1.760
Water and energy	0.07	1.115	0.07	0.932	0.07	1.467
Medical and schooling	0.08	1.430	0.07	1.425	0.09	1.575

Source: Authors computation using Successful Farmers Survey (2010)

On the other hand, successful farmers have a higher consumption response for personal care, entertainment and ceremonial expenses, water and energy expenses, and medical and schooling expenses. More interesting is that comparison farmers, though they spend a relatively smaller share of their income on welfare enhancing activities such as medication and schooling as noted in preceding discussions, appear to have a higher expenditure elasticity for transport and communication and are not far off on medical and schooling expenses either. Conversely, they have lower expenditure elasticity on personal care, entertainment and ceremonial expenses. It appears that comparison farmers are likely to put in a relatively larger slice of any marginal income on areas that are likely to yield higher income in the future, implying that convergence or catching up is possible. While the expenditure share of servants and maids, and rent payments is higher for successful farmers than for comparison farmers, the income elasticity for this expenditure category is higher for the comparison group. For both groups the income elasticity of expenditure on servants and maids, and rent payments is close to two, implying that income can trickle down to the poor (landless and female headed household who rent their land to rich successful farmers) if rural income increases further.

Conversely, successful farmers' expenditure (income) responses of demand on durables such as footwear, clothing, television, sofa and DVD player, cooking and eating utensils, and house maintenance and repair are lower than those of comparison farmers (Table 3.12). This result may suggest that such goods are a sort of incentive goods.

Table 3.12. Budget shares (%) and expenditure elasticities of durable and non-durable items, by farmers' category

	Total sample		Comparison farmers		Successful farmers	
	Budget share	Exp. Elasticity	Budget share	Exp. Elasticity	Budget share	Exp. Elasticity
Footwear	0.03	0.763	0.03	0.722	0.03	0.689
Clothing	0.05	0.685	0.05	0.688	0.06	0.584
Linens (bed sheets & blankets)	0.01	0.969	0.01	0.919	0.01	0.946
Television, sofa & DVD player	0.01	2.865	0.01	3.06	0.01	2.579
Cooking & eating utensils	0.01	1.252	0.01	1.328	0.01	1.214
House furnishing/durables	0.01	1.917	0.01	1.759	0.01	1.873
House maintenance and repair	0.02	1.966	0.02	2.239	0.03	1.883

Source: Authors computation using Successful Farmers Survey (2010)

3.3. Summary, conclusion, and policy implications

The total consumption expenditure and per capita expenditure of successful farmers is substantially higher than that of comparison farmers. Successful farmers' annual expenditure is 138 percent more than that of their comparison counterparts. Non-durable consumption expenditure, likewise, is considerably high at 128 percent more than that of comparison farmers. In per capita terms, successful farmers' per capita expenditure is 86 percent higher than that of comparable farmers. The decline in the margin of difference in per capita expenditure between the two groups of households compared to household level expenditure can be attributed to the considerably larger household size of successful farmers compared to the comparable ones. We also found that the dependency ratio of the successful farmers is less than that of the comparison farmers. The lower dependency ratio means that labor is available for work, which also explains why successful farmers are richer and successful.

The successful farmers have higher food and non-food per capita expenditure, though the difference between the two groups of households is much higher for non-food items than for food items. Successful farmers' per capita food expenditure is 48 percent higher than that of comparable farmers, while the per capita non-food consumption expenditure is 155 percent more. As a result the share of food in total expenditure is higher for the comparison group than for the successful farmers, which is consistent with consumption literature that food share declines as one becomes richer. The fact that successful farmers income elasticities of cereals and legumes is less than unity implies that when income increases due to the production of cereals and legumes, there will be more marketing surplus, which will enable to have greater supply of cereals and legumes for domestic consumption and/or export markets.

Moreover successful farmers have higher per capita expenditure on relatively high quality products such as butter oil, milk cheese, meat, chicken, and fruits and vegetables, as well as health and education. Since these items are domestically produced, increased income of successful farmers will have higher multiplier effect.

The proportion of households that spend on high value goods has grown considerably over the past five years with the growth being higher for successful farmers than for comparison farmers. Accordingly, the share of successful farmers consuming meat and butter has grown from 69 percent and 79 percent respectively five years ago to 91 percent and 89 percent at present, while for comparison farmers, consumption of meat and butter grew from 53 and 64 to 61 percent and 66 percent respectively over the same period.

The main source of the growth in the consumption of high value goods for the two groups of households is found to be increase in income followed by increase in production. Among consumers of meat, oil, and butter, 71 percent, 70 percent and 41 percent respectively reported increase in income to be the prime factor for increase in their consumption over the past five years. Yet for all three high value goods, the percentage of people reporting increase in income as the chief reason for increase in consumption is higher for successful farmers than for their comparison counterparts.

In both per capita and total expenditure, successful farmers spend more on hiring labor for both farm and domestic activities and rent on properties. The share of these expenditure items are 5 percent for successful farmers and 2 percent for comparison farmers, but income elasticity for this expenditure category is higher for the comparison group than for the successful farmers. The implication of this is that income can trickle down to the poor (landless and female headed household who rent their land to rich successful farmers) if rural income increases further.

When looked at investment on human capital, the successful farmers invest more on human capital than the comparison farmers. Successful farmers spend two and half times more on health and education. The net enrolment ratio of successful farmers stands at 79.8, while comparison farmers send 73.6 percent of their school age children to school.

Though the absolute size of successful farmers' spending on entertainment and festivities is higher than that of comparison farmers, it amounts to a lower share of their budget compared to their comparison counterparts. We also found that as income (expenditure) grows comparison farmers are more likely to spend more (as a share of their total budget) on entertainment than successful farmers.

To see if increased income of farmers is going to increase the demand for imported products, we have examined the consumption expenditure patterns of manufactured products such as cloth, shoes, soap, cooking utensils, and bed sheets and blankets. For these products, imports account for 10 to 29 percent, and more than two thirds of all items are domestically manufactured. For all considered manufactured items, except bed sheets and blankets, comparison farmers use more domestically produced items than the successful counterparts. Thus, successful farmers get substantially higher share of their manufactured consumption items from imports. This could be due to perception that locally manufactured items are of lower quality compared to imported ones; perhaps imports could be conceived as being status goods. The variation in the origins of manufactured consumption goods between successful and comparison farmers has important policy implications. First, because demand is likely to shift from domestically manufactured to imports, balance of payments problems could be an undesirable consequence of growth in rural income. Second, and on the contrary to the above, one can see imports as incentive goods, in which case the perception of imports as status goods may in the first place be the force that derives rise in rural income—or shift from comparison into successful farmer.

Successful farmers appear to have relatively lower expenditure elasticities than comparison farmers for all food items. Moreover, the estimated expenditure elasticities of all food items, are less than one for successful farmers, while fruits and vegetables, butter, oil, cheese and milk, meat, and sugar and beverages have elasticities that are greater than one for comparison farmers. Because comparison farmers are relatively poorer, they tend to spend a bigger slice of

the budget on food items and have a higher consumption response to change in income (expenditure). As these items are generally considered as superior goods, which the estimated elasticities confirm, poorer households spend relatively less on these. As income grows, they respond by spending a relatively larger piece of the marginal income on these relative luxuries.

On the other hand, successful farmers have a higher consumption response for personal care, entertainment and ceremonial expenses, water and energy expenses, and medical and schooling expenses. More interesting is that though comparison farmers spend a relatively smaller share of their income on long-term investment such as health and schooling, they appear to have higher expenditure elasticity for transport and communication and are not far off on medical and schooling expenses either. Conversely, they have lower expenditure elasticity on personal care, entertainment and ceremonial expenses. It appears that comparison farmers are likely to put in a relatively larger slice of any marginal income on areas that are likely to yield higher income in the future, implying that convergence or catching up is possible.

Although successful farmers have a higher share of imported items, which have relatively higher income elasticities, the absolute share of the consumption of these items is very small. Given the relatively higher share of spending on hiring labor and spending on rent, which have an income elasticity larger than one, the amount of income that will trickle down to the poor will be substantial. The share of expenditure on schooling of children and health is substantial to ensuring the transfer of human capital for the next generation. Therefore, improving rural income through the promotion and encouragement of successful farmers will have substantial trickledown effect and human development. To mitigate increased demand for imported products of successful or richer farmers, it is good to encourage local manufacturing industries to increase the volume and quality of their production. While improving rural income is key to development, providing sufficient attention to the promotion of industrial production will help reduce the demand for imports and will make growth to have better multiplier effect and hence to be pro-poor.

The last two chapters showed that increase in household incomes, particularly those of successful farmers, resulted in welfare improvement for the majority of the farm households. In addition, the chapters uncovered how the increased household income changes consumption patterns and investments in human development, and they showed the trickledown effects. However, the last two chapters did not help us to understand how these farm households behave in inter-temporally allocation of the increased income. The next two chapters fill this knowledge gap.

Appendix Table 3.A.1. Significance level of difference in average per capita expenditure across regions

		Tigray		Amhara		Oromiya		B/G		SNNPR	
		Comp	Succ'l	Comp	Succ'l	Comp	Succ'l	Comp	Succ'l	Comp	Succ'l
PC total expenditure											
Tigray	Comp	-	-								
	Succ'l	-	-								
Amhara	Comp			-	-						
	Succ'l			-	-						
Oromiya	Comp			**		-	-				
	Succ'l					-	-				
B/G	Comp	*		**				-	-		
	Succ'l		***		***		***	-	-		
SNNPR	Comp					**		**		-	-
	Succ'l		***		***		***		***	-	-
PC total food expenditure											
Tigray	Comp	-	-								
	Succ'l	-	-								
Amhara	Comp	**		-	-						
	Succ'l		**	-	-						
Oromiya	Comp	***		**		-	-				
	Succ'l		***		**	-	-				
B/G	Comp	***		***		***		-	-		
	Succ'l		***		***		***	-	-		
SNNPR	Comp					**		**		-	-
	Succ'l		*		***		***		***	-	-
PC total non-food expenditure											
Tigray	Comp	-	-								
	Succ'l	-	-								
Amhara	Comp			-	-						
	Succ'l			-	-						
Oromiya	Comp			**		-	-				
	Succ'l					-	-				
B/G	Comp	*		***				-	-		
	Succ'l		***		***		***	-	-		
SNNPR	Comp					**		**		-	-
	Succ'l		***		***		***		***	-	-

Source: Authors' calculation using Successful Farmers Survey (2010)

Notes: Comp = Comparison farmers; Succ'l = Successful Farmers; B/G = Benishangul-Gumuz ; SNNPR = Southern Nations, Nationalities and Peoples Region

4. Saving behavior of farm households

4.1. Introduction

The behavior of households in the inter-temporal allocation of their income between consumption and saving is important to understand the mechanisms and interactions across consumption, saving, capital accumulation, and growth process. In Ethiopia, where smallholder agriculture takes the major share of the country's economy, household saving is the largest component of domestic saving. Therefore, from policy perspective, it is important to understand the saving behavior of farm households so as to design policies and programs that contribute to the goal of the next five years growth and transformation plan of the country, which is raising the living standards of its people.

In this study, the analysis of the saving behavior of farm households has a microeconomic foundation. Saving is narrowly defined as the net change in equity between periods. This financial definition of saving includes changes in monetary and non-monetary assets such as food, consumption and production of durables, and adjustment for changes in debt (Zeller 1997). In this report, household savings also include saving for education and health expenses since this form of saving improves the human capital of the household that could have beneficial effect on income available to the household in the future. This expansion of the concept of saving also helps to rationalize the argument for credit demand for education and health expenditure (Zeller 1997), which we will present in the next section.

A review of the theoretical and empirical literature on the microeconomics of saving indicates that there are different hypothesis on the motives of household savings. These include, but are not limited to, the life cycle hypothesis (consumption and savings behavior changes over the life cycle of an individual, with greater savings earlier in life and dis-savings later in life), permanent income hypothesis (consumption patterns are determined by permanent income, so transitory changes in income do not lead to major changes in consumption, but instead result in short-term changes in savings), and precautionary motives (savings as a hedge against adverse income shocks in the future). However, none of these and other hypothesis individually explains households' motives for savings¹⁵. Our focus here, however, is not to test any of these hypotheses, but to comparatively describe the saving behaviors of successful farm households and their neighbors using household survey.

This chapter describes the cash saving behaviors of farm households. It attempts to provide answers for questions as 'What are the different types of savings of farm households?', 'What is the magnitude of saving?', 'How are savings kept?', 'How these forms and extent of savings are changed overtime?' and so on. The survey result is presented based on a comparative analysis technique in which the saving and asset building behaviors are compared across different groups of farm households. This chapter is divided into five main sections. The next section focuses on forms of household savings, followed by a discussion on the different motives for savings in section three. Section four presents participation of farm households in community saving and credit associations. Summary and concluding remarks of the main findings of the chapter will be presented in the last section of the chapter.

¹⁵ The theoretical and empirical evidences of saving behaviors of farm households from microeconomic point of view have been reviewed extensively in Deaton (1997) and Schmidt-Hebbel et al. (1996).

4.2. Form of household savings

Households save their assets in different forms, depending on the security, liquidity, and economic return of the asset. Assets exhibit different degrees of liquidity depending on the physical characteristics of the asset and imperfections of the asset market. The most liquid asset is money that maintains flexibility in future use though it also incurs the risk of financial losses because of inflation. To avoid the inflation risk associated with money, households in developing countries often prefer to hold their savings in the form of livestock, jewellery, or other durable and non-durable physical assets. Our survey revealed that farm households save in the form of cash and physical assets. This chapter focuses on cash saving behaviors of the two groups of farm households¹⁶.

The majority of farm households have cash savings (Table 4.1). Of all respondents, 88 percent have cash savings. Cash saving behavior of successful farmers is significantly higher than of their comparison group. At least 97 percent and 80 percent of successful and comparison farmers have cash savings. On the other hand, only 20 percent of all farm households own a saving account in formal commercial banks (Table 4.1). There is also a significant difference in owning saving accounts between the two groups of farmers. While 34 percent of the successful farm households own a saving account in the nearby commercial bank branches, only 6 percent of the comparison households own a saving account. The vast majority of successful farmers from all study regions have cash savings. Successful farmers from Tigray region own saving accounts relatively better (26%) than other regions, followed by SNNPR (22%), and Oromiya (21%). Only 4 percent of the successful farmers of Benishangul-Gumuz own a saving account. Could transactions cost of using the financial system (the so-called shoe-leather cost of using financial institutions) explain this? Or distance to deposit taking financial institutions such as commercial banks, Micro Finance Institutes (MFI), etc?

Table 4.1. Cash saving behavior of farm households, by category and by region

Saving behavior	Farm Household Category				Successful farmers only - Region				
	Successful farmers (%)	Comparison farmers (%)	t-test	Total (%)	Tigray (%)	Amhara (%)	Oromiya (%)	B/G (%)	SNNPR (%)
Household owns saving account	34.00	6.33	15.6***	20.17	26.11	17.86	21.01	4.44	21.90
Household has cash saving	97.11	79.56	12.1***	88.33	87.78	90.95	90.00	94.44	81.90

Source: Successful Farmers Survey (2010)

Notes: ***, **, and * are significance levels at 1, 5 and 10 percent; B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

Table 4.2 presents the amount of cash savings of the sampled farm households. An average farm household has Birr 28,420.8 as cash saving; ranging from a minimum of Birr 100 and a maximum of Birr 900,000 with high variation among our sample households (SD = 69,729.3). There is a significant difference in mean amount of cash saving between successful and comparison farm households. An average successful farm household has Birr 46,290.9 as cash saving. The fact that only one-fifth of the total farm households have a saving account but 88 percent have cash savings revealed that the vast majority of farm households save their cash either at home or with relatives. Region wise, our survey result shows that successful farm

¹⁶ Farm households save in the forms of asset including crop (cereals), livestock, durable household items, etc. The different kinds of savings in asset form as well as the asset value and change in asset building of farm households within the last five years compared to the years before are discussed in chapter two where we discussed the welfare change. Readers who would like to get such information are kindly requested to refer to that chapter.

households of SNNPR are in a better position in terms of amount of cash savings, followed by Oromiya region. The result suggests the need to design policy instrument that mobilize this huge domestic resources for capital formation and labor productivity. In addition, the difference in cash saving behavior among farm households of different regions suggest the need to consider regional variation in designing policy instruments to enhance domestic saving mobilization in the country.

Table 4.2. Amount of cash savings (Birr), by farmers' category and by region

Farm household category	Number	Mean	SD	Minimum	Maximum
Total sample	1565	28,420.82	69,729.26	100	900,000
Comparison Farmers	695	6,051.08	22,334.70	100	480,000
Successful farm households	870	46,290.91	87,364.11	100	900,000
Cash saving of successful farmers by region					
Tigray	87	31,226.60	50,813.62	400	359,000
Amhara	209	31,498.41	62,070.88	300	640,000
Oromiya	335	49,617.35	84,975.16	200	900,000
Benshangul-Gumuz	43	12,590.07	19,622.99	100	89,440
SNNPR	196	70,459.30	122,971.30	100	769,000

Source: Successful Farmers Survey (2010)

Notes: SD = Standard Deviation; SNNPR = Southern Nations, Nationalities and Peoples Region

Socioeconomic and institutional factors such as income, age, asset holding, and access to financial institutions may affect the cash saving behavior of farm households. In relation to socioeconomic factors, we analyzed the cash saving behaviors of farmers by income and income sources, asset holdings, and demographic characteristics of the farm households. The cash saving behavior of farm households is not significance different among income sources, though households with nonfarm income have better cash saving behavior (Table 4.3). The result also shows that cash saving behavior is better for higher income groups. While 99 percent of the farmers at the highest income quintile have cash savings, only 64 percent of the households in the lowest quintile have cash savings. The survey result suggests that households' income level is more important in explaining the cash saving behavior of farm households than the source of income.

In some cases, it is the permanent income (as in the permanent income hypothesis) rather than the current income (as in the Keynesian hypothesis) that explains the saving behavior of households. Therefore, it may also be important to investigate the cash saving behavior of farmers in terms of their wealth, measured in size of farm land owned. Accordingly, the result revealed that cash saving of farm households varies with wealth status. While 85 percent of farm households who cultivated land size less than the sample mean have cash saving, 94 percent of farm households who cultivated land greater than the sample mean have cash saving. Similarly, there is a considerable difference in cash saving between households who sharecropped/rented in lands than those who sharecropped/rented out land. This shows that wealth explains saving behavior of farm households. However, one has to conduct further econometric analysis to understand the strength of the relationship between household savings and current income or wealth.

The life-cycle hypothesis is a well known hypothesis that relates age structure to saving behavior of households. Hence, we examine the saving behavior of farm households by age of the household head. The descriptive result of our survey shows that older households save less

than younger farm households (Table 4.3). The result shows that cash saving is more common between household heads whose age is between 30 and 40 years, and less for older farm household heads, suggesting that younger farmers save first and consume their savings at older age. Farm households also vary with the saving behavior due to their difference in the age composition of their family members. Our result reveals that a higher proportion of farm households with less dependency ratio in their family members has cash saving than those with higher dependency ratio. These results also imply that it is important to consider the demographic characteristics of farm households in designing policies or programs enhancing domestic saving.

Table 4.3. Cash saving status of farm households, by socioeconomic indicators

Socioeconomic indicator	Household has cash savings (%)
<i>Income source</i>	
Farm income	88.38
Nonfarm income	90.22
Other source	88.33
<i>Income quintile</i>	
1st quintile	62.78
2nd quintile	88.61
3rd quintile	93.89
4th quintile	97.22
5th quintile	99.17
<i>Land holding</i>	
Sharecrop/rent in land	93.47
Sharecrop/rent out land	78.07
Less than mean of land size in hectare	85.08
Greater than mean of land size in hectare	94.42
<i>Age category</i>	
20 – 30	87.31
31 – 40	90.35
41 – 60	87.75
>60	86.36
<i>Dependency ratio</i>	
Less than mean of dependency ratio	90.40
Greater than mean of dependency ratio	84.89

Source: Successful Farmers Survey (2010)

Note: 1st income quintile is poorest quintile

4.3. Purpose of household cash savings

Insights in the reasons of households for saving provide important information for designing efficient financial policies which enhance efficient financial services and products. Table 4.4 presents the different cash saving motives of farm households by farmers' category. The top three motives of cash saving of farm households are to meet emergency needs and to invest in nonfarm business sector and human capital (cover education expense). The survey shows that about 76 percent of all farm households save for emergency needs, 64 percent for nonfarm investment, and 26 percent to cover education expense. There is a relatively large break

between the second most important reason and the third important reason. Investment in the nonfarm business sector includes expanding existing business (27%), start new business such as grinding flour mills or buy a car (20%), or building a house in the nearby woreda town (17%). Saving motives for consumption use such as to buy durable items, finance social ceremonies, cover electric bill, etc accounts only for 12 percent. Cash saving motives to pay off debt, send cash for migrant family member, and for gaining return from deposit rate are relatively unimportant. The very low motive for gaining return from interest rate may suggest the low income and substitutions effects of interest rate¹⁷. This may be due to the low interest rate relative to inflation. As can be seen from Table 4.5, the real interest rate has been negative since 2005/06 except for the 2009/10 fiscal year.

Table 4.4. Main purpose of farm household savings, by farmers' category and literacy level (%)

Main purpose of saving	Successful farmers	Comparison farmers	t-value	Total sample	Successful farmers		Comparison farmers	
					Literate	Illiterate	Literate	Illiterate
Emergency need	70.35	82.22	-5.576***	75.75	69.42	72.88	81.67	83.27
Investment in nonfarm business	86.66	37.76		64.42	93.12	69.07	41.05	31.48
Investment on farm business	1.48	1.78		1.61	1.71	0.84	1.05	3.19
Pay for education	30.22	21.2	4.116***	26.12	32.14	25.00	23.96	15.94
Consumption	11.86	11.22		11.56	12.8	9.32	11.88	9.96
Pay for migration	4.45	3.97	0.476	4.23	4.52	4.24	4.79	2.39
Pay back debt	1.03	2.60	-2.404**	1.74	0.94	1.27	2.29	3.19
Get interest return	2.74	0.55	3.352***	1.74	1.87	5.08	0.83	0

Source: Successful Farmers Survey (2010)

Note: ***, **, and * are significance levels at 1, 5 and 10 percent

Table 4.5. Nominal and real interest rate for the years between 2005/06 and 2009/10

Year	Interest rate	Inflation rate	Real interest rate
2005/06	3.1	12.3	-9.2
2006/07	3.1	17.1	-14.0
2007/08	4.1	25.4	-21.3
2008/09	4.3	36.4	-32.1
2009/10	4.5	2.8	1.7

Source: NBE (2009/10); CSA (2009/10)

More interesting features of our survey data come to light when it is compared by farmers' categories. Saving for investment in nonfarm business is the first most important reason for successful farmers but it is the second most important reason for the comparison farmers. In addition, there is a significant difference between the two farmers' groups for such motives. While 86 percent of the first group save cash for nonfarm business, only 38 percent of the comparison farmers save for the same purpose. There is also a significant difference in cash saving motives for education and emergency between the two farmers' groups. However, there is no statistical difference in cash saving behavior for consumption use and investment in farm

¹⁷ However, as this result is not based on an in-depth analysis that controls other important variables, one has to be careful in concluding the weak link of interest rate and household saving rate in Ethiopia. It should be confirmed by a more in-depth analysis using appropriate econometric modeling.

business. At least 11 percent of farmers from each group save for consumption use whilst about 2 percent save for farm business such as buying fertilizer, livestock, or rent in land.

Detailed investigation of the saving behavior of farmers by education level shows that there is a considerable difference between literate and illiterate successful farmers. Cash saving motives for nonfarm investment as well as for covering education expenses is higher for literate than illiterate successful farmers. On the other hand, illiterate successful farm households are more interested to save for emergency needs compared to literate. A similar pattern can be observed between literate and illiterate comparison farmers, except for farm investment (see Table 4.4). The result revealed the influence of education on saving behavior.

4.4. Access to financial intermediaries

Through mobilizing domestic savings, efficient financial market plays a key role in capital formation, which is generally recognized as a necessary condition for economic development (McKinnon 1973; Shaw 1973). As mentioned previously, only one-fifth of the total farm households have saving accounts in formal financial institutions such as commercial banks. This low level of saving accounts is common in developing countries as documented by Rutherford (2000). This could perhaps be due to lack of awareness, or less access to financial institutions within reasonable distance from farmers' residence, or other economic reasons. Tables 4.6 and 4.7 present the cash saving behavior of households by distance to the nearest financial institutions. Generally, Multipurpose Cooperatives are the nearest financial institutions for farmers, followed by saving and credit cooperatives (SCCOP), MFIs. Commercial banks are less accessible to farmers compared to other financial institutions. On average (median), a farmer should travel 21.5 km to reach to the nearest commercial bank branch (Table 4.6).

Table 4.6. Average (median) distance to the nearest financial institutions, by farmers' categories and by region.

Farmers' category Or Region	Distance to the nearest commercial bank (km)	Distance to the nearest MFI (km)	Distance to the nearest SCCOP (km)	Distance to the nearest multipurpose cooperative (km)
Comparison farmers	22	9	6	5
Successful farmers	21	9	7	5
Total sample household	21.5	9	6	5
Tigray	14.5	12	6	2
Amhara	20	9	6	3
Oromiya	24	10	7	6
Benshangul-Gumuz	72	20	15	12
SNNPR	21	7	7	4

Source: Successful Farmers Survey (2010); figures for regions are only for successful farmers.

Notes: SNNPR = Southern Nations, Nationalities and Peoples Region; MFI = Micro Finance Institute; SCCOP = saving and credit cooperative

Average distance (mean) in kilometers to the nearest commercial bank branch from farmers' residential area is shorter for farmers who have cash savings compared to those who do not have cash savings. The survey result shows that a successful farmer with cash savings needs to travel 33.7 km, on average, to reach the nearest bank branch whereas, those who do not have cash savings should travel 40.6 km (Table 4.7). Regional comparison on access to financial institutions revealed that Oromiya farmers have better access to commercial banks.

The role of financial intermediaries in the saving behavior of farm households can easily be demonstrated when the data is disaggregated by income groups (Table 4.7). Difference in mean distance to the nearest commercial bank branch is significantly different between successful farmers with and without cash savings for the fifth income quintile, who are more likely to have cash saving. But this result did not hold for other financial institutions such as MFI for the farmers within this income quintile. The low rate of savings in commercial banks is an indication of a missing financial market for the vast majority of Ethiopian farm households. This missing market may result in reduced investment because of a reduced supply for loanable funds. Therefore, it is important to design an innovative financial system that provides efficient financial service enhancing domestic resource mobilization. In addition, it is advisable to consider the socioeconomic status of farm households and regional variations in designing such financial system.

Table 4.7. Cash saving behavior of farm households and distance in km to the nearest financial institutions, by farmers' category and by income quintile

Income group	Mean distance (km) to commercial bank branch				Mean distance (km) to MFI branch			
	Successful farmers		Comparison farmers		Successful farmers		Comparison farmers	
	Cash saving status		Cash saving status		Cash saving status		Cash saving status	
	Yes	No	Yes	No	Yes	No	Yes	No
1st quintile	51.1	68.1	37.1	36.7	17.0	61.8	20.6	16.8
2nd quintile	44.6	31.8	30.9	33.0	21.1	14.1	14.9	11.3
3rd quintile	30.5	21.5	32.9	33.1	15.4	11.8	15.9	8.5
4th quintile	31.6	16.3	31.3	40.6	15.2	9.3	13.7	8.8
5th quintile	31.1	48.5	32.9	18.0	16.1	7.0	12.3	18.0
Total	33.7	40.6	33.2	35.7	16.4	27.6	16.3	14.6

Source: Successful Farmers Survey (2010)

Note: 1st quintile is poorest quintile

4.5. Participation in saving and credit association

A low rate of access to saving accounts appeared to be characteristic for farm households in Ethiopia. As a result, farm households use different strategies to deal with savings such as organizing community savings and credit associations. Equb is common means of saving in Ethiopia in which each person contributes a certain agreed amount of cash per lot/share per specific period (a week, a month, etc).

Our survey result shows that about one-fifth of the farm households are members of a credit association in the name of at least one member of its family (Figure 4.1). While about 25 percent of the successful farmers are member of a credit association, at least 17 percent of the comparison farmers join any form of credit association. Region wise, it seems that membership to credit association is more common among successful farmers of the Amhara region (46%) than the other regions, followed by Benishangul-Gumuz. This form of saving is less common in Oromiya region (13%). Membership to credit association by income groups of farm households shows that it is more common by households in the third income quintile and is less observed in the poorest income quintile (Table 4.8). There is no considerable difference in such behavior between the two farmers' categories though it is less common in the comparison group. Membership to credit association is also more common with successful farmers' household

heads within the age of 20 to 40 than the heads of comparison farm households within the same age categories. Membership to any form of credit is less observed among household heads above 60 years old (Table 4.8).

Figure 4.1. Membership to any form of credit association, by farmers' category (%)

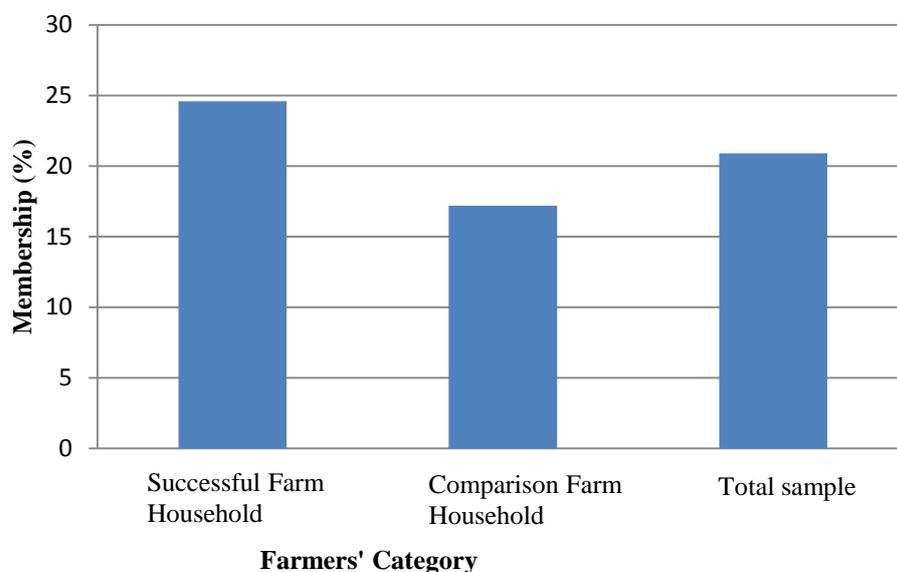


Table 4.8. Membership to credit association, by income group, age group, and farmers' category (%)

	Successful Farm Household	Comparison Farm Household	Total sample
Income group			
1 st quintile	18.00	11.94	12.78
2 nd quintile	25.89	20.97	22.50
3 rd quintile	28.40	20.71	24.17
4 th quintile	24.90	18.92	23.06
5 th quintile	22.94	12.12	21.94
Age group			
20 - 30	29.79	14.00	17.77
31 - 40	29.26	20.76	24.52
41 - 60	23.95	17.89	21.41
> 60	14.58	6.25	10.80

Source: Successful Farmers Survey (2010)
 Note: 1st quintile is poorest quintile

While participation in Equbs is not as high as may be expected given the generally ubiquitous nature of Equbs in Ethiopia, for those participating, the amount involved is relatively high. Our survey gathered more detailed information on membership to Equb. The survey result indicates that farmers' behavior in using Equb as means of saving is not different from any other form of credit associations. Tables 4.9 to 4.11 show farmers' behavior in using Equb. Membership to Equb is observed only by one-fifth of the total farm households (Table 4.9). However, there is

significant difference in the behavior of farmers towards membership to Equb between successful and comparison groups. While 26 percent of the former are members of Equb, only 14 percent of the latter group are members to Equb. It is more common by successful farmers of SNNPR (37%) than other regions. It seems that successful farmers of Benishangul-Gumuz prefer to use any other form of credit association (21%) to Equb (6%).

An average farm household contributed Birr 16,688 for Equb within the previous 12 months before the survey time (Table 4.9). This contribution notably varies between successful and comparison farm households. While a successful farm household contributed Birr 22,536, on average, its counterpart contributed Birr 5,605 within the same period. It means that the former contributed about four times more than the latter. The mean contribution of successful farmers of SNNPR is the highest, followed by Oromiya region. The least contribution is observed in Tigray regional state, in which most of the districts are categorized as PSNP districts. On average, farmers contributed to Equb 3.8 times per month, which means that Equb in rural Ethiopia is formed on a weekly contribution base. This does not differ by farmers' category but the arrangement differs across the different regions. While SNNPR, Oromiya, and Amhara regions have a weekly arrangement, Tigray and Benishangul-Gumuz have different arrangements. An average successful farmer has 5.97 lots per Equb. The corresponding figure for the comparison group is 2.89. The value of one lot of Equb differs not only between the two farmers' group but also across the different study regions.

Table 4.9. Membership to Equb and value of contribution, by farm households and by region, within 12 months before survey

	Succ'ful farmers	Compar. farmers	t-value	Total sample	Successful farmers only - Region				
					Tigray	Amhara	Oromiya	B/G	SNNPR
Member to Equb (%)	26.44	13.78	6.7851	20.11	17.78	15.24	15.51	5.56	36.67
Mean of total contribution to Equb within last 12 months (Birr)	22,536.36	5,604.73	3.7971	16,688.11	2,847.69	12,978.32	12,711.81	85,560.00	21,616.20
Mean number of contributions per month	3.80	3.14	-0.75	2.89	2.91	3.76	3.79	2.80	3.50
Mean of share/lots per Equb	5.87	2.83	-0.73	4.82	1.13	1.60	11.88	22.20	1.40

Source: Successful Farmers Survey (2010)

Notes: ***, **, and * are significance levels at 1, 5 and 10 percent; B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

Disaggregating the data by income quintile, the result revealed that Equb is used extensively by the richest income quintile of farmers (Table 4.10). At least 40 percent of the successful and 48 percent of the comparison farm households used Equb as means of saving. There is big gap in proportion of farmers using Equb between the richest income quintile and the other income groups in both farmers' category. Use of Equb is less common by the lowest income quintiles in both categories of farmers. Similarly, use of Equb is most common with heads of successful farm households whose age is 31 to 40 years (34%) (Table 4.11). Household heads within the age of 20 to 30 years or 41 to 60 years used Equb more commonly (26 percent and 25%, respectively) than those above 60 years old (19%). A similar pattern is observed among the different age categories of the comparison farm household heads.

Investigating the arrangement of Equb (value, frequency of contribution, and value of share) by income and age categories, the result shows that number of contribution per month and number of lots per Equb are generally better for higher income quintile households, regardless of farmers' category (Table 4.11). Similarly, successful farm households within the age of 30 to 40 years have better arrangement of Equb compared to the other age groups. The mean value of number of contributions per month and number of lots per Equb is relatively better for successful farm household heads within this age. This result suggests that socioeconomic characteristics of farm households play a vital role in their saving behaviors.

Table 4.10. Membership to Equb and value of contribution, by income quintiles for the two farmers' category

	Successful Farmers					Comparison Farmers				
	1st quintil	2nd quintil	3rd quintil	4th quintil	5th quintil	1st quintil	2nd quintil	3rd quintil	4th quintil	5th quintil
Member to Equb (%)	10.0	16.9	17.9	22.1	39.8	7.4	12.9	16.2	18.9	48.5
Mean number of contributions per month	3.2	3.4	3.8	3.5	4.0	3.6	3.16	2.9	2.7	3.5
Mean # lots per Equb	1.0	1.1	3.1	10.5	5.3	5.7	1.4	1.1	1.2	7.3

Source: Successful Farmers Survey (2010)
Note: 1st quintile is poorest quintile

Table 4.11. Membership to Equb and value of contribution, by age of household head for the two farmers' category

	Successful farm households				Comparison farm households			
	20-30	31-40	41-60	>60	20-30	31-40	41-60	>60
Member of Equb (%)	25.53	33.62	24.90	18.75	16.00	16.26	12.11	7.50
Mean number of contributions per month	3.67	4.54	3.38	3.72	3.33	3.15	2.98	2.67
Mean number of lots per Equb	1.17	8.53	5.42	1.06	4.04	1.04	4.30	1.00

Source: Successful Farmers Survey (2010)

Reason for using Equb

It is important to understand the reason why farm households use Equb as means of saving since such information is believed to have important implications. Farm households may have different reasons or motives to use Equb as form of saving. However, empirical findings reveal that the main reason for joining community based saving and credit associations such as Equb is not necessarily that it provides credit free of interest but that it is more reliable. Because once the member (farmer) takes the collected money from the lot to use it for his purpose, he must have the discipline to save, namely by paying back the remaining cash/loan throughout the period of the Equb.

Though our survey did not ask farmers why they join Equb and not other formal financial institutions, it gathered information on their motives to join Equb. Table 4.12 presents the different reasons by farmers' category and region. Generally, the result revealed that farmers join Equb mainly for undertaking investments in farm and nonfarm businesses, for consumption

as well as to save money. More than half of the total farm households (54%) joined Equb to undertake investment in nonfarm business. This includes starting new nonfarm business (e.g. petty trading) (12%), expand existing business (16%), build or buy a house in town (18%), or improve the house (8%). Investment in farm business is the other reason for joining Equb, stated by 15 percent of farm households. This includes buying oxen for farming (6%), buying farm machinery (5%), or covering fertilizer cost and other farm working capital (4%). The third most important reason for joining Equb is to cover consumption expenditures such as buying durable items (10%) and to cover ceremonial expenses and help relatives/friends (5%). About 12 percent of the farm households join Equb for saving cash and very few (4%) stated that they join to cover educational expenses.

However, these motives vary with farmers' category and regions. While 55 percent of successful farmers join Equb for investment in nonfarm business, 51 percent of comparison farmers join Equb for the same purpose. Joining Equb for investment in farm business is more common among comparison farmers (17%) than among successful farmers (14%). A similar pattern between the two farmer groups is observed in the consumption motive for joining Equb. About 13 percent of the successful farmers join Equb for saving cash and about 9 percent of the comparison farmers join for the same reason.

Table 4.12. Main reason for joining Equb, by farmers' category and region (%)

Main reason for joining Equb	Successful farmers	Comparison farmers	Z-value	Total Sample	Successful farmers only - Region				
					Tigray	Amhara	Oromiya	B/G	SNNPR
investment in nonfarm business	55.30	51.08		54.00	62.07	54.39	46.59	50	60.01
investment in farm business	14.15	17.27		15.10	10.35	14.03	12.50	0	16.31
consumption	13.81	17.27		14.89	6.90	22.81	10.23	50	13.33
to repay debt	0.32	0.72	0.0457	0.44	3.45	0	0	0	0
for schooling	3.54	5.04	-0.81	4.00	3.45	3.51	1.14	0	5.19
to save	12.86	8.63	-3.704***	11.56	13.79	5.26	29.55	0	5.19

Source: Successful Farmers Survey (2010)

Notes: ***, **, and * are significance levels at 1, 5 and 10 percent; B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

While there is some difference in the most important motives for joining Equb between successful and comparison groups, the data also reveal some difference in the motives for joining Equb when it is broken down by region, income quintiles, and age structures for the successful farm households. As can be seen in Table 4.12, investment in nonfarm business is the first most important reason for joining Equb in all regions. However, there is some difference in the second important reason among successful farmers by region. While cash saving is the second most important reason for joining Equb for successful farmers of Tigray and Oromiya, cover future consumption expenditures, such as buying durable items, and investment in farm business are the second most important reasons for successful farmers in Amhara and SNNPR regions, respectively.

Table 4.13 presents the motives for joining Equb by income quintile for the successful farmers. The result shows that the motives for joining Equb ranges from satisfying basic/single needs like buying oxen for farming to multiple and higher needs such as to start a new business and buy

durables¹⁸. With income increase the proportion of successful farmers that joins Equb for an investment in a nonfarm business increased, whereas the proportion that joins for a farm investment decreases. As can be seen from the table, 33 percent and 64 percent of successful farmers in the poorest and richest income quintile, respectively, join Equb to invest in nonfarm business. On the other hand, while 30 percent of the farmers in the poorest income quintile join Equb for farm investment, only 14 percent of farmers in the richest income quintile join Equb for the same purpose. There is no difference in the proportion of households that join Equb to save among the different income quintiles except that it is higher for farmers in the third income quintile¹⁹. Overall, our data show that as income grows, the level of motives for joining Equb also change from satisfying basic needs to higher level.

Table 4.13. Major reason for joining Equb for successful farmers, by income quintile (%)

Main reason for joining Equb	1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile
investment in nonfarm business	33.33	53.44	37.31	52.63	63.50
investment in farm business	30.00	13.78	20.89	10.53	13.50
consumption	16.66	18.96	16.42	21.06	10.00
to repay debt	0	0	0	1.05	0.50
for schooling	10.00	5.17	5.97	3.16	2.50
to save	10.00	8.62	19.40	11.58	10.00

Source: Successful Farmers Survey (2010)

Note: 1st quintile is poorest quintile

Some interesting points can also be observed when we analyse the motives for Equb by age structure of the head of successful farm households (Table 4.14). While younger household heads (between 20 to 30 years old) join Equb to start new business (36%), the older group (between 31 to 40 years) joins to expand existing business (21%). Moreover, those within the age of 31 to 40 years join Equb to start new business (13%) while those within the age of 20 to 30 years join to expand their business (14%). About 18 percent of the successful farm household heads within the age of 30 to 40 years are also motivated to join Equb to buy or build a house in town. Our qualitative information also shows that successful farmers in some regions (e.g. Oromiya) started to invest in the service sector (e.g. hotel) in bigger regional towns such as Adama town. The motivation for building or buying a house in town increases with age of the successful farm household head.. Generally, our data show that the motive for joining Equb to invest in nonfarm business sector decreases with age of the farm household heads in both farmers' category. However, investment in the farm sector increases (decreases) with the age of heads of successful (comparison) farm households. On the other hand, the motive for joining Equb for covering future consumption expenditures decreases with age of successful farm household heads and increases with age of the comparison farm households heads (Table 4.14).

¹⁸ Motives for saving can be conceptualized in such a way that it can be organized in a hierarchy, and that individuals move up the hierarchy as lower-level motives are satisfied. Boeree (1998, 2006) and Devaney et al. (2007) proposed that the savings motives in the hierarchy are (from low to high) physiological (basic), safety, security, love/societal, esteem/luxuries, and self-actualization.

¹⁹ Looking into the micro level of the data the result revealed that to buy oxen for farming is the first most important (perhaps the only) reason for farmers in the lowest income quintile. For farmers in the second quintile, to build or buy house in town and pay for education is the two most important reasons. To buy farm implements such as irrigation equipments, for cash saving and expand existing business are the three most important motives for joining Equb for farmers in the third quintile. For the fourth quintile, expanding existing business, cash saving that can easily be available to use it for any purpose and to buy consumer durables such as jewellerys are the three most important motives for Equb. For successful farmers at the highest income quintile, saving in Equb serves for multiple of purposes including to buy or build house in town, start new business, expand existing business, and even for cash easily available for any purpose.

Table 4.14. Reason for joining Equb, by farmers' category and age category of household head

Main reason for joining Equb	Successful farm households				Comparison farm households			
	20 – 30	31 – 40	41 – 60	Above 60	20 – 30	31 – 40	41 – 60	Above 60
investment in nonfarm business	57.14	60.37	52.69	50.00	55.55	52.83	47.06	33.34
investment in farm business	0	7.55	18.56	20.84	22.23	15.10	17.65	16.67
consumption	28.57	16.04	10.18	20.83	14.81	16.98	17.64	33.34
to repay debt	0	0	0.60	0	3.70	0	0	0
for schooling	0	0.94	5.39	4.17	0	1.89	11.76	0
to save	14.29	15.09	12.57	4.17	3.70	13.21	5.88	16.67

Source: Successful Farmers Survey (2010)

4.6. Summary and conclusion

The households' inter-temporal allocation between consumption and saving is crucial for the growth of a country as it influences capital accumulation, which is a necessary condition for economic growth. In relation to this, our survey revealed that the majority of farm households (88%) have cash savings, with a significant difference between successful (97%) and comparison (80%) farmers. In terms of magnitudes of cash savings, the mean amount of cash savings is significantly higher for the successful farmers (Birr 46,291) than the comparison farmers (Birr 6,051), with big variation within both farmers' categories. However, the vast majority (80%) kept their money either at home or with relative. Only 20 percent own a saving account in commercial banks, with a significant difference between the two groups of farmers (34 percent for successful farmers and 6 percent for the comparison group). Farm households also use the traditional community saving association such as Equb as an alternative means of saving their cash. However, only one-fifth of the farm households are members of Equb. Successful farmers are better in terms of membership to Equb (26%) and the mean value of contribution (Birr 22,536) within the previous 12 months before the survey time compared to the comparison farmers, for whom the corresponding figures are 14 percent and Birr 5,605.

The fact that only a small proportion of farm households own a saving account may be correlated to the availability and/or type of financial institutions within reasonable distance from their village. Our survey reveals that Multipurpose Cooperatives, Saving and credit Association and MFI are the nearest financial institutions for farm households. Commercial banks are not easily accessible to farm households. A farmer should travel in average 21 km to reach the nearest commercial bank. An interesting finding from this survey is that distance (in km) to the nearest commercial bank is significantly shorter to farmers with a saving account.

Overall, the cash saving behavior of farm households vary with farmers' category, income and income source, wealth, age category of household head, dependency ratio, and regions. The likelihood of saving assets in money increases with income. Occupation or source of income also play an important role in cash saving behavior since our data show that farmers with nonfarm income source save more than those with farm income source.

Another interesting finding of the survey is that the top three motives of cash saving of farm households are to meet emergency needs (76%), invest in nonfarm business sector (64%), and invest in human capital (cover education expense (26%)). Future consumption, as a motive to save, accounts only for a small proportion (12%). However, not only is there variation in the

order of saving motivations, but there is also a significant variation in the proportion of farmers having these motives between the two farm categories. Saving for nonfarm investment is the top priority for 88 percent of successful farmers but only for 38 percent of the comparison farmers. Among successful farm households education plays an important role in the motivations for saving, particularly for nonfarm investment.

Finally, it is important to note that the findings have important implications to mobilize domestic resources for better and accelerated capital formation and thereby achieve the goal of the next five years Growth and Transformational plan of the country. It is essential to design a more innovative financial system (not necessarily policy change) that considers the saving behaviors of the successful and other farm households, on the one hand, and the cost effectiveness and efficient service delivery of the existing financial intermediaries, on the other hand. This chapter dealt with understanding of the saving behavior of farm households. This is only one side of the story in saving-investment linkages, which is crucial from an economic development point of view. It is also essential to analyze questions such as “What farm households do with their cash savings?”, “Do they invest in farm or nonfarm business?”, etc. Investigating these basic questions is also fundamental to understand the saving-investment linkages. The following chapter provides microeconomic evidence to such linkages by examining the investment behaviors of successful farmers and comparison farmers.

5. Investment, financing, and constraints

5.1. Investment

The sampled farm households were given a list of specific investment items and asked whether they invested, the amount invested per year, as well as the three main sources of finance used to undertake the investment(s). These may be categorized as farm and nonfarm investments. The former includes farm implements/equipment, irrigation development, land improvement, and animals for fattening/rearing/milking, while the latter includes investment in urban house/land/real estate, purchase of vehicle(s) for business/farm, grinding/flour mill, agro-processing, trade (wholesale, retail, or petty), shares, and other micro and small businesses. They were also asked to indicate, from a given list of constraints, their three main constraints to undertake investment and rank them in terms of their importance.

About 63 percent reported positive investments: 77 percent of the successful farmers reported positive investments compared to only 50 percent among the comparison group. In terms of absolute magnitude, the amount invested during 2000, 2001, and 2002 averaged Birr 18,579, 13,679, and 15,835 respectively (Table 5.1).

Table 5.1. Average total investment (Birr) of sampled smallholder farmers for the period 2000–2002

	Total sample		Successful farmers		Comparison farmers	
	Mean	Median	Mean	Median	Mean	Median
Total invest 2000	18,579 (53,117)	3,095	27,415 (2,512)	5,890	5,030 (13,039)	1,500
Total invest 2001	13,679 (44,808)	2,724	20,498 (56,592)	4,190	3,503 (7,375)	1,500
Total invest 2002	15,835 (61,496)	2,500	23,698 (77,430)	4,000	3,542 (8,881)	1,125

Source: Successful Farmers Survey (2010)

Note: Figures in parentheses are standard deviations

The investment data are skewed (have large measures of skewness and kurtosis) suggesting that the median is a more appropriate measure of central tendency since the former could be heavily influenced by the presence of some extreme outliers in the data²⁰. As shown in Table 5.1, the median investment is substantially lower than the arithmetic mean investment.

The mean total investments (in terms of both the mean and median) of the successful farmers are much larger than those of the comparison group for all the years (2000, 2001, and 2002) and the difference is statistically significant. On average, successful farmers tend to invest more. However, the *variability* in invested amounts is also substantially larger for this group (see standard deviations in parentheses) showing large differences in terms of investment among the successful farmers.

To get a better sense of the magnitude of investments involved, we need a relative measure. One important determinant of investment is the capacity to invest from own sources (i.e. self-finance). As shown earlier, the two groups of farmers differ significantly in terms of their average total income, which is Birr 103,096 for successful farmers compared to Birr 26,932 for comparison farmers. We therefore looked at investments relative to the farmers' total income

²⁰ Note the large differences between the means and median investments for the whole sample as well as the sub-samples for the different years.

(using total income to proxy availability of internal finance). From the average ratio of total investment to total income in 2002 (the year for which we have income data), there is no significant difference between the two groups: the median²¹ ratio is 7.4 percent of their total income for the successful farmers compared to 7.1 percent for the comparison group (again with large variability within both groups). In other words, although successful farmers invest substantially more in absolute terms, what they are investing relative to their income is not significantly larger than that of the comparison group (the comparison group is not doing bad in terms of investment given income).

But where is the investment taking place? It is striking that in terms of *composition*, most of the investment by the smallholder households is nonfarm investment. The mean nonfarm investment is substantially larger than the mean farm investment. The former is almost seven times the latter. Similarly, the average nonfarm investment is about 6.6 times the average farm investment for the successful farmers and about twice for the comparison group. This could be partly because nonfarm investment activities require larger investment outlays. The ratio of nonfarm investment to total investment over the three years period (2000–2002) averaged 74 percent also indicating that most of the investment is taking place outside farming. This is true for both successful farmers and the comparison group: nonfarm investment accounted for 73.2 percent of the total investment for the successful farmers and 73.7 percent for the other households. In terms of magnitude, the average nonfarm investment is substantially larger for the successful farmers group (see Table 5.2).

In general, farmers seem to be venturing outside their traditional areas of operation and activity (i.e. farming). There could be several reasons for this. One is that profitable investment opportunities in farming may have already been exhausted forcing them to look for opportunities elsewhere. Alternatively, farmers may be seeking opportunities to diversify their activity out of agriculture given the generally high risks and in search of more profitable opportunities. Still another possibility is that they are being lured by the attractions of a city environment. Unfortunately, we do not have information to be able to discern between these possible explanations. But whatever the explanation, related important questions are whether this represents a desirable trend in view of the policy objective to commercialize smallholder agriculture and what is the implication of this for the micro and small enterprise sector?

²¹ In terms of the arithmetic mean, the ratio is 20 percent of income for the successful group and 18 percent for the comparison group while the overall mean is 19.2 percent.

Table 5.2. Break down (farm and nonfarm) of investments of sampled farmers

Investment	Average farm and nonfarm investments (Birr)					
	Total sample		Successful farmers		Comparison farmers	
	Mean	Median	Mean	Median	Mean	Median
Farm investment 2007/08	4,541 (12,636)	1,880	5,853 (15,686)	2,500	2,575 (4,916)	1,000
Farm investment 2008/09	4,414 (10,898)	1,800	5,995 (13,634)	2,500	2,068 (3,186)	950
Farm investment 2009/10	3,728 (7,653)	1,500	4,995 (9,429)	2,200	1,731 (2,073)	800
Nonfarm investment 2007/08	33,967 (71,761)	10,000	41,650 (80,306)	13,000	10,278 (20,352)	2,050
Nonfarm investment 2008/09	24,871 (62,782)	5,000	32,270 (72,416)	7,200	6,023 (11,835)	2,000
Nonfarm investment 2009/10	29,035 (86,353)	4,200	37,771 (100,108)	6,000	6,590 (13,811)	1,500

Source: Successful Farmers Survey (2010)

Note: Figures in parentheses are standard deviations

5.2. Investment plan of farm households

Farmers were also asked whether they have any plan/intension to expand their current economic activity and if so what they intend to do and where they intend to undertake the activity/investment. Table 5.3 summarizes the responses.

With respect to future plans, it is interesting to note that an overwhelming majority of the sampled farmers have high ambitions as could be inferred from their desire to expand their economic activities. More than 82 percent have plans to expand their economic activity in different ways. Most (65 percent) want to expand their farming activity while others are planning to diversify outside agriculture by engaging in new businesses (such as grinding mills and cars), urban housing/land, etc. Generally, their orientation in terms of desired location of investment tends to be largely local. That is, a significant proportion (71 percent) intends to undertake their expansion/investment in their village/town, while about 22 percent plan to move out and invest in a neighboring town/woreda or regional capital. There may be various reasons behind such local orientation including better awareness of opportunities available locally; lack of/limited information about investment opportunities in faraway places and of the processes involved to exploit identified opportunities; resource capacity limitations; etc.

Table 5.3. Plans for expansion/investment and desired location, by farmers' category

	% planning to expand/invest	Desired location for expansion/investment (%)		
		Same village	Neighboring town/woreda	Regional capital
Total sample	82	71.0	19.9	1.6
Successful farmers	96	67.6	28.3	3.0
Comparison group	88	85.4	13.9	0.3

Source: Successful Farmers Survey (2010)

In this respect, there are some noticeable differences between the two groups of farmers. 96 percent of the successful farmers reported having plans to expand/invest compared to 88 percent for the other group. Of those intending to diversify into engagements outside agriculture about 64 percent are successful farmers. Similarly, with respect to desired location of investment, outward orientation seems to be more common among the successful farmers with 31 percent intending to invest outside their town/village compared to only 14 percent for the others. The question is which one is more desirable from policy perspective—investing locally thereby creating jobs and developing the local economy or investing wherever returns are higher? From a national level economic efficiency perspective, a limitation of the local nature of investment is that it does not allow allocation of resources to the best investment projects since projects are selected from among alternatives available locally. On the other hand, however, the desire to invest within ones woreda is good for the development of the local economy and job creation and may contribute toward balanced development.

5.3. Financing of investment

It is argued in the literature (Hartarska and Mai 2008, 3-5) that availability of nonfarm income has an important role as a source of internal funds for farm investment especially under constrained access to finance. As described in chapter two, farm households reported various sources of income including nonfarm income ranging from nonfarm employment to business income, remittance, and aid. In this section we try to understand how farmers finance their investment. Are farmers using external finance or is investment being self-financed therefore dependent on the availability of own finance?

Farmers were asked to indicate the primary, secondary, and tertiary sources used to finance the various farm and nonfarm investment items. The single most important primary source of investment finance used to undertake the investments is own funds/saving. This is true for both successful farmers and the comparison group alike. This is consistent with the finding by Schmidt-Hebbel et al (1996) that “retained earnings as an internal fund for households and firms in developing countries is important in financing the bulk of private investment in general”. High dependence on internal finance could be due to availability of such funds or due to constrained access to external finance (discussed in next section) or both.

Those mainly depending on own funds/savings as the primary source to finance their investment were probed further by asking them about the main source(s) of own funds/saving used. Income from selling crops comes out as the most important. Of those who reported using own funds/savings to (fully or partly) finance their investment, 97.7 percent cited income from selling crops as the first main source. Other agricultural income (incomes from selling livestock/poultry, fruits/vegetables, milk/milk products, etc.) and off-farm income (income from nonfarm business, employment, remittances, etc.) rank very low as sources of investment finance. Income from livestock/poultry and fruits/vegetables show up as second and third main sources respectively for 33 percent and 15.6 percent of the investing households that used own funds. The relative importance of these sources of investment finance is similar for both groups of farmers.

5.4. Constraints to investment

Finance, lack of land, and lack of information/knowledge regarding investment opportunities clearly stand out as the most common constraining factors on investment. Quite a large proportion of the farmers identified them among their three main constraints. The identification

seems to be based on real felt need (rather than mere perception) since 92 percent of these are farmers who have plans to expand their farming activity, engage in new business, and/or acquire urban land/house.

They are common constraints for both the successful farmers and the comparison group. However, the proportions reporting them as constraints are higher for the latter. In particular, financial constraint seems to be more common among the comparison group, being cited by about 77 percent of them (compared to 55 percent for the successful farmers) which may be expected given the lower average incomes. The other important constraints identified include lack of good investment opportunities, lack of market, and profitability risk (see Tables 5.4 and 5.5 for more details).

Table 5.4. Main constraints to investment, by farmers' category

Constraints	% citing [...] as constraint		
	Total sample	Successful farmers	Comparison farmers
Lack of information on investment opportunities	46.8 (842)	45.6 (410)	47.9 (432)
Lack of good investment opportunities	29.3 (527)	31.1 (280)	27.3 (246)
Finance	66.0 (1188)	55.2 (496)	76.8 (692)
Lack of knowledge of rules/regulation	15.8 (285)	17.7 (159)	14.0 (126)
Restrictive rules/regulation	7.0 (126)	9.1 (82)	4.9 (44)
Taxes	5.2 (94)	7.0 (63)	3.4 (31)
Lack of market	23.2 (417)	28.0 (252)	18.3 (165)
Profit risk	18.4 (331)	20.0 (180)	16.8 (151)
Lack of land	53.0 (954)	51.8 (466)	54.2 (488)
Other	14.1 (253)	17.0 (153)	11.1 (100)

Source: Successful Farmers Survey (2010)

Note: Figures in parentheses are number of household.

Farmers were also asked to rank the three main constraints in their order of importance or severity. The rankings indicate that these same factors show up as key constraints; a large proportion (44 to 57 percent) of those who cited them as constraints also ranked them as 'first main constraints'. Finance constraint has various aspects. It may relate to its availability, the ease/difficulty of, the cost involved (interest, collateral and transaction costs), or the size and maturity period of loans relative to the borrowers needs. It may also relate to tendency of some lenders to tie credit to specific purposes. Those citing finance as a constraint were thus probed further as to what aspect(s) of finance (i.e. access, interest, collateral, size, purpose of loan, or other terms and conditions of credit) constitute the key problem(s). They identified availability of credit, high collateral requirements, and high cost (interest and fees) of finance, in that order. Small size of loans relative to their needs and purpose-specific nature of loans were also cited.

Table 5.5. Ranking of constraints to investment (% ranking as constraint), by farmers' category

Constraints	Total sample			Successful farmers			Comparison farmers		
	1 st main constraint	2 nd main constraint	3 rd main constraint	1 st main constraint	2 nd main constraint	3 rd main constraint	1 st main constraint	2 nd main constraint	3 rd main constraint
Lack of information on invest opportunity	27.8	30.5	41.7	32.7	29.0	38.3	23.1	31.9	44.9
Lack of good invest opportunity	24.9	39.3	35.7	22.9	45.7	31.4	27.2	32.1	40.7
Finance	57.0	27.6	15.3	50.4	26.2	21.6	60.5	28.6	10.8
Lack of knowledge of rules/regulation	17.5	41.8	40.7	17.6	45.3	37.1	17.5	37.3	45.2
Restrictive rules/regulation	15.9	42.8	41.3	17.0	43.9	39.0	13.6	40.9	45.4
Taxes	16.0	31.9	52.0	14.3	34.9	50.6	19.3	25.8	54.8
Lack of market	25.2	37.2	37.6	27.8	42.1	30.1	21.2	29.7	49.1
Profit risk	21.9	39.0	40.0	26.1	38.3	35.6	15.2	39.7	45.0
Lack of land	43.6	39.6	16.8	48.9	34.5	16.5	38.5	44.5	17.0
Other	45.9	32.0	22.1	45.1	30.7	24.2	47.0	34.0	19.0

Source: Successful Farmers Survey (2010)

Note: Figures in this column should not add up to 100% because of multiple answers

5.5. Credit access to farm households

As described in the last section, own-income, which mainly comes from the saving of the income obtained from crop production, is the prime source of financing investment for farm households. On the other hand, the survey reveals that finance is the most common constraining factor for investment. This raises fundamental policy question such as that “is the economic choice of (successful) farmers constrained by the financial market environment?” This and other related questions will be discussed in this section. It focuses on understanding the borrowing behavior of farm households, which is important for designing financial products and systems that can efficiently address demand for financial services of the farm households.

5.5.1. Loan application

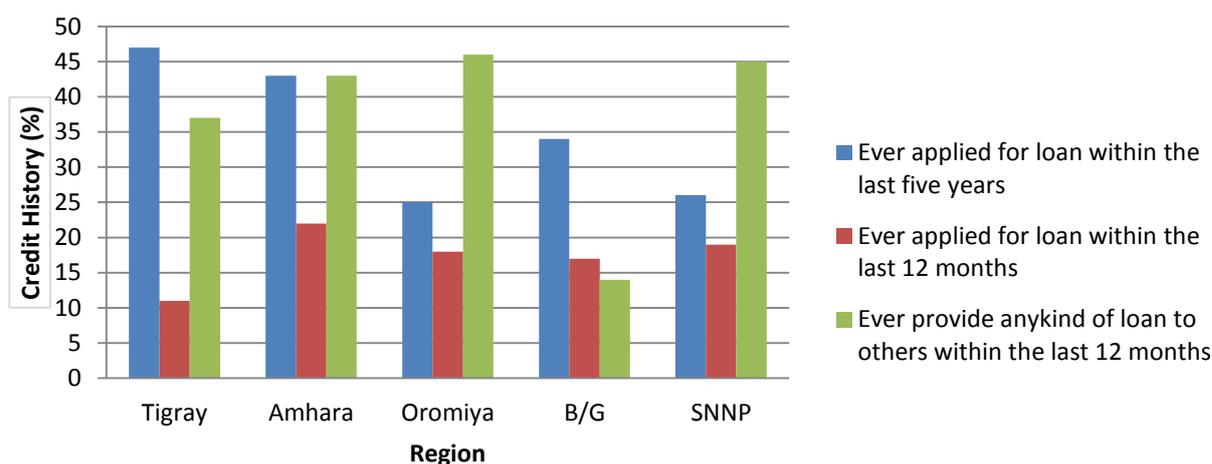
Table 5.6 presents the borrowing behavior of farm households by farmers' category. Farm households had better demand to credit within the last five years compared to the previous twelve months before the survey time. While 32 percent of all farm households had applied for a loan within the last five years, only 18 percent applied within the previous twelve months before survey time. There is a significant difference in loan application between successful and comparison farmers. Loan application is more common by the comparison group compared to successful farmers. Unlike their behavior for credit demand within the last five years, successful farmers of Tigray region are the least in searching for demand within the previous twelve months before the survey time (Figure 5.1). Demand for credit within the previous twelve months before the survey time is better in Amhara (22%), followed by SNNPR (19%), Oromiya (18%), and Benishangul-Gumuz (17%).

Table 5.6. Loan application and provision of farm households, by farmers' categories

Loan application status	Succ'ful farmers	Comparison farmers	t-value	Total sample
Ever applied for loan within last five years	27.11	37.00	-4.5179***	32.06
Ever applied for loan for the last 12 months	14.44	22.44	-4.3966***	18.44
Given any kind of loan to others within the last 12 months	62.78	22.33	19.0052***	42.56

Source: Successful Farmers Survey (2010)

Figure 5.1. Credit behavior of successful farmers (%), by region



Source: Successful Farmers Survey (2010)

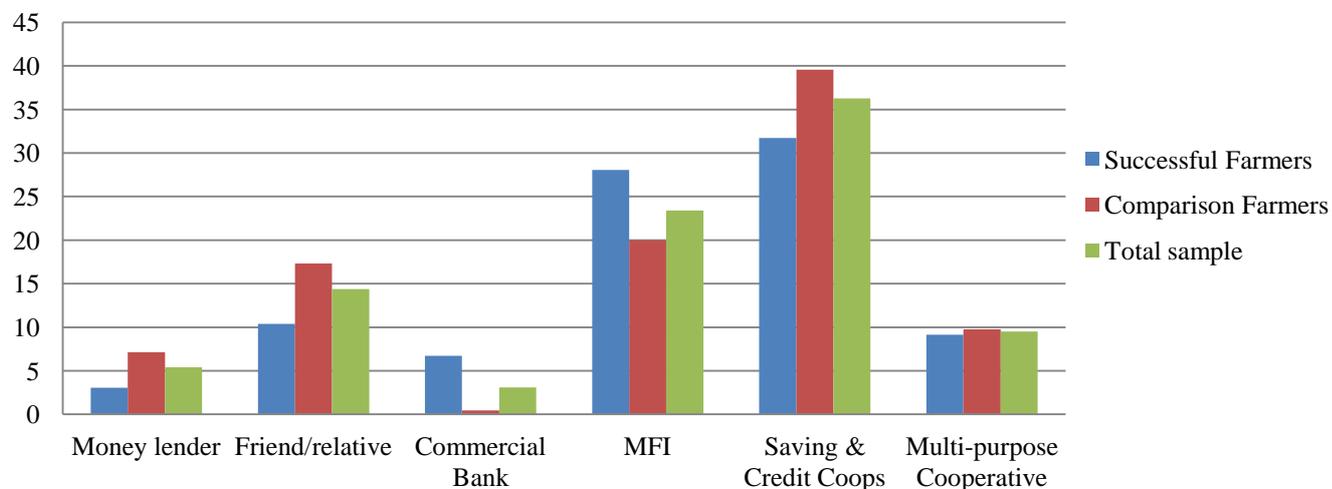
Notes: B/G = Benishangul-Gumuz; SNNP = Southern Nations, Nationalities and Peoples Region

Our survey also gathered information on the lending behavior of farm households. The survey result shows that about 43 percent of sampled farm households provided loan(s) to other persons within the previous twelve months before the survey time. Unlike credit demand, loan provision is more common by successful farm households (63%) compared to the comparison group (22%).

Of those farmers who applied for loan within twelve months before the survey time, our data reveal that about 94 percent obtained the loan. Sources of credit for farm households include commercial banks, MFI, saving and credit associations, multipurpose cooperatives, money lenders, and friends/relatives. As it is common in developing countries, credit from formal financial institutions such as commercial banks is not common in our sampled farm households. Only 3 percent of all farm households obtained loan from formal financial institutions such as commercial banks (Figure 5.2). The vast majority used semi-formal or informal credit sources to borrow money. The most common sources of loan for farm households in the study areas are saving and credit association (36%) and MFI (23%). At least 14 percent of farm households obtained credit from friends or relatives, 10 percent from multipurpose cooperatives, and 5 percent from individual money lenders. Comparing sources of loan by farmers' category, the result shows that there is no significant difference in proportion of farmers obtaining credit from MFI and multipurpose cooperatives between the two farmers' categories. However, saving and credit associations are more accessible to comparison farm households (40%) than to successful farmers (32%). On the other hand, commercial bank is source of credit for 6 percent

of successful farmers but only for less than 1 percent of the comparison farmers. About 17 percent and 7 percent of comparison farmers obtain loan from friends/relatives and moneylenders, respectively. The corresponding figures for the successful farmers obtaining credit from these sources are 10 percent and 3 percent.

Figure 5.2. Sources of credit, by farmers' category (%)



Source: Successful Farmers Survey (2010)
Note: MFI = Micro Finance Institute

The mean value of total loan obtained by a farm household within twelve months before the survey time is Birr 9,212 with standard deviation of Birr 44,071, indicating the presence of high variation among farm households in their loan demand (Table 5.7). On average, loan duration has a maturity of 6.2 months. About 24 percent of the loan was made based on an interest rate agreed per month and 70 percent was agreed per year. There is a significant difference (at p-value less than 1%) in the mean value of loan taken between successful and comparison farmers. An average successful farmer obtained a loan of Birr 20,284 but his counterpart obtained Birr 2,107. The highest mean value of loan is obtained from commercial bank, followed by from saving and credit association (e.g. Equb). Comparing the value of loan obtained by successful farmers by region, the survey result reveals that an average farmer from Tigray region obtained higher mean value, followed by Oromiya and SNNPR regions. While the loan obtained by an average comparison farmer has a loan duration of 4.7 months (with standard deviation of 4.9), the figure for the successful farmer is 8.0 months (with SD of 17.9).

Table 5.7. Value of loan taken (Birr) by farm households within 12 months before the survey and loan duration (months), by farmers' category and region

	Farm household category			Successful farmers only - Region				
	Succ'ful farmers	Comparison farmers	Total	Tigray	Amhara	Oromiya	B/G	SNNPR
Amount of loan taken (Birr)	2,106.56 (2,431.27)	20,284.44 (69,153.13)	9,211.93 (44,070.98)	20,925.88 (71,960.03)	3,780.67 (7994.94)	12,434.8 (54,554.57)	1,853.33 (48,271.29)	9,710.13 (48,271.29)
Loan duration (months)	4.7 (4.9)	8.0 (17.9)	6.0 (12.2)	10.2 (14.4)	6.9 (9.9)	12.4 (27.0)	6.1 (4.9)	2.97 (2.82)

Source: Successful Farmers Survey (2010).
Note: Figures in parenthesis are standard deviations

Access to loan by income quintiles of farm households is shown in Table 5.8. Mean value of total loan obtained by household increases with income. The difference among the first three income quintiles in mean value of loan taken is not that big (the 3rd quintile borrowed 1.5 time the amount the 1st quintile borrowed). However, the difference increases dramatically after the third income quintile. This fact is true among income quintiles of successful farmers but not among the comparison group. The difference in mean value of loan between two income groups of the comparison farm households does not exceed 1.13. In relation to loan duration, our survey result shows that there is no systematic difference among the different income levels of farm households though it is generally higher for higher loan value.

Table 5.8. Mean value of loan taken (Birr) and loan duration (months), by farmers' category and income quintile

Income quintile	Successful Farmers		Comparison Farmers	
	Value of loan taken (Birr)	Loan duration (months)	Value of loan taken (Birr)	Loan duration (months)
1st income quintile	1,751.1 (1,637.8)	6.8 (5.2)	1,470.0 (1,357.7)	4.9 (5.8)
2nd income quintile	2,057.6 (1,515.5)	4.5 (4.1)	1,964.8 (2,283.6)	4.6 (4.5)
3rd income quintile	2,745.6 (2,129.3)	7.9 (17.3)	1,934.6 (1248.70)	4.5 (4.1)
4th income quintile	13,192.9 (50,640.13)	5.9 (5.9)	2,287.5 (2019.19)	4.4 (4.3)
5th income quintile	94,814.5 (370,295.3)	10.9 (25.7)	2,934.3 (1,922.6)	4.1 (5.4)

Source: Successful Farmers Survey (2010).

Notes: Figures in parenthesis are standard deviations. 1st quintile is poorest quintile

Table 5.9 presents the value of loan taken by farm households by age of the household head. The result shows that younger successful farm households obtained lower value of loan and have lower loan duration. Farm households within the age of 31 to 40 have better access in terms of total value of loan they obtained. This result holds also for comparison farm households. An average farm household head above the age of 60 years obtained the lowest loan value. Perhaps, the demand for loan at this age level is lower.

Table 5.9. Value of loan taken (Birr) and loan duration (months), by farmers' category and age group

Age group	Successful Farmers		Comparison Farmers	
	Total loan taken (Birr)	Loan duration (months)	Total loan taken (Birr)	Loan duration (months)
20-30 years	3,040.0 (1,353.9)	1.0 (0)	1,703.6 (1,392.5)	3.8 (4.2)
31-40 years	42,383.9 (104,432.2)	12.6 (28.6)	2,104.2 (2,409.2)	5.1 (5.7)
41-60 years	42,084.7 (299,144.4)	6.3 (10.5)	1,703.8 (1,232.3)	4.5 (4.6)
Above 60 years old	2,518.3 (2,085.9)	6.3 (5.3)	619.6 (509.8)	7.6 (6.1)

Source: Successful Farmers Survey (2010).

Note: Figures in parenthesis are standard deviations

5.5.2. Purpose of loan

Farm households demand credit for different purposes. The first most important purpose is for farm production. Farm households demand credit for buying farm implements, irrigation pump, farm inputs (improved seed, fertilizer, and pesticides), and farm oxen. Next to this, farm households applied for loan for investment in nonfarm business sectors including for petty trading, buying taxi, etc. Only one-tenth of the total farm households applied for loan to cover their food needs (Table 5.10). The purpose of credit demand varies between the successful and comparison farm households (Table 5.10). While 63 percent of the comparison farmers sought for loan for farm production, only 49 percent of the successful farmers sought for loan for the same purpose. On the other hand, 32 percent of the successful farmers and 14 percent of comparison farmers sought for loan for nonfarm investment including buying/building house in town, start new business, or expand existing business. The proportion of successful farmers that sought for loan for consumption use is three times less than that of the comparison farm households. At least 7 percent and 5 percent of successful and comparison farm households demand credit to cover health and education expenses. The purpose of loan demand also varies among the study regions. About 29 percent of successful farmers in Tigray, 34 percent in SNNPR, and 21 percent in Oromiya region sought loan for nonagricultural business. Loan for health and education is mainly sought by households of SNNPR region.

Table 5.10. Purpose of loan application, by farmers' category and region (%)

Most important reason for loan application	Farmers Category			Successful farmers only - Region				
	Successful farmers	Comparison farmers	Total sample	Tigray	Amhara	Oromiya	B/G	SNNPR
Invest in nonfarm business	31.71	13.78	21.34	28.56	12.84	21.34	0	33.69
Invest in farm business	49.39	62.66	57.07	61.90	76.13	54.00	70.59	35.86
For consumption use	5.49	15.11	11.05	9.52	6.42	11.33	11.76	16.3
For emergency needs	1.83	2.22	2.06	0	1.83	2.67	5.88	1.09
Investment in human capital	7.32	5.34	6.17	0	2.75	4.67	11.76	13.05
Other	4.27	0.89	2.32	0	0	6.00	0	0

Source: Successful Farmers Survey (2010)

Notes: ***, **, and * are significance levels at 1, 5, and 10 percent. B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

The type of financial institution accessible to farm households determines the reason for loan demand. Formal financial institutions such as commercial banks do not provide loan for consumption as well as for agricultural production due to problem of information asymmetry (Hoff and Stiglitz 1990), lack of suitable collateral, and the resulting high transaction cost (Zeller et al. 1997). As a result, semi-formal or informal financial markets are used as a substitute (Binswanger, McIntire and Udry 1989). This is a typical feature of the sampled farm households. Table 5.11 shows the purpose of loan application by sources of credit. Our survey reveals that farm households' source of loan varies with the purpose of the loan they are sought for. Farm households used multiple source of loan for farm business. They used mainly semi-formal financial institutions such as MFI, SCCOPs, and multipurpose cooperatives as source of loan for farm production including buying farm implements and irrigation pumps, purchasing inputs (seed, fertilizer, pesticides, etc), as well as for livestock production. Farmers also used these institutions for starting new business or expanding the existing ones. There are few cases where farmers used commercial banks for buying farm implements and for nonfarm investment.

Table 5.11. Reason for borrowing, by source of loan (%)

Reason for borrowing	Sources of Loan					
	money lender	friend/relative	Commercial Bank branch	MFI	SCCOP	MPCOP
Invest in nonfarm business	9.52	12.50	58.34	34.06	18.45	5.41
Invest in farm business	19.05	25.00	33.33	53.85	71.64	81.08
Invest in human capital	19.05	19.64	0	4.40	1.42	2.70
Consumption	47.62	33.93	0	5.50	5.68	2.70
Pay rent/taxes	4.76	3.57	0	2.20	1.42	2.70
Emergency needs	0	5.36	8.33	0	1.42	5.41

Source: Successful Farmers Survey (2010)

On the other hand, farm households use friends/relatives or money lenders to cover working capital expenses such as paying for hired farm labor and pay land rent/tax. Farm households also used these sources of loan for consumption purpose (e.g. buy consumer durables and cover food requirements) as well as to cover health and education expenses. Comparing use of loan sources by farmers' category, it seems that the saving and credit association, money lenders, and friends are more commonly used by the comparison farm households whereas MFI and commercial banks are mainly used by successful farmers. The difference could be due to differences in the purpose for which the loan is sought.

Most financial institutions require collateral to provide credit to households. Our survey shows that of all loan offered, only 16 percent did not need collateral. Farm households used different collaterals including land, personal assets of movable property, personal guarantors, cash, and others. However, the type of collateral required varies with loan sources depending on its credit policy. Money lenders used land, personal assets, and personal guarantors as collateral. Loan from friends or relatives used personal guarantor as main collateral. Commercial banks used personal assets as main collateral. Semi-formal financial institutions such as MFI, Saving and Credit Cooperatives, and Multipurpose cooperatives used all forms of collaterals except equipments and movable properties.

5.5.3. Loan rejection rate

Table 5.12 shows the loan rejection rate of farm households in our survey area. As can be seen from the table, of the total loan applications, about 2 percent were completely rejected. On the other hand, our survey result reveals that at almost 5 percent of the farm households who applied for loan did not get the total amount they requested or their loan was completely rejected or they did not apply since they think that their application may be rejected. These results vary by farmers' category, region, and age of farm household head. There is no statistical difference in loan rejection rate between the two farmers' category,

Table 5.12. Credit rationing, by farmers' category and region (%)

	Succ'ful farmers	Comparison Farmers	t-value	Total sample	Successful farmers only - Region				
					Tigray	Amhara	Oromiya	B/G	SNNPR
The loan was completely rejected	1.83	2.22	0.269	2.06	0	0	4.92	0	0
Loan completely rejected or not obtained total amount requested or did not apply since they think that their application may be rejected	6.32	12.24	4.4249***	4.85	2.22	3.65	7.20	10.87	8.26

Source: Successful Farmers Survey (2010)

Notes: ***, **, and * are significance levels at 1, 5, and 10 percent; B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

A number of reasons are stated by farmers whose applications have been rejected (Table 5.13). The most common reasons stated by farm households are bad credit record or default (20%) and lack of collateral (20%). Unpaid loan from previous credit is the second reason stated by 16 percent of the farm households. While there is no significant difference in bad credit record between the two farmers' categories, there is a statistical difference in other reasons. It seems that collateral requirement constrains the comparison farmers more than the successful farmers.

Table 5.13. Reasons for loan rejection, by farmers' category and by region (%)

Reason for rejection of applied loan	Farmers' category				Successful farmers only - Region				
	Comparison farmers	Successful farmers	t-value	Total sample	Tigray	Amhara	Oromiya	B/G	SNNPR
Bad credit record	15.79	33.33	0.4478	20	33.33	28.57	18.18	0	0
Unpaid loan from previous credit	21.05	0	2.0022**	16	33.33	14.29	9.09	25	25
Insufficient collateral	26.32	0	2.2392**	20	33.33	0	27.27	25	25
Business ideas were rejected	10.53	0	1.415	8	0	28.57	0	0	0
Deferred for next time	15.79	16.67	1.0011	16	0	28.57	18.18	0	0
Rejected for unknown reason	10.53	50	-0.4478	20	0	0	27.27	50	50
Others	15.79	33.33	0.4478	20	33.33	28.57	18.18	0	0

Source: Successful Farmers Survey (2010)

Notes: ***, **, and * are significance levels at 1, 5, and 10 percent; B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

As mentioned previously, loan application rate is very low in our study areas. The vast majority of farm households (82%) did not apply for loan within the previous twelve months before the survey²². What is more interesting however is the reason for not applying. Theoretically, some may not apply because they have no need for credit while others may be discouraged from asking for loans (i.e. refrain from applying because they feel they cannot get it for various reasons). Surprisingly, our result reveals that about 60 percent of the sample households did not

²² This low level of loan application requires detail investigation as it could be due to lack of access to financial institutions, credit policy of the easily accessible institutions, or the different borrowing behaviors of farm households that is closely related to their socioeconomic characteristics.

apply for loan as they did not want (Table 5.14). This reason is stated by 46 percent of the comparison farm households and 72 percent of the successful farmers. Next to this, households did not apply for loan due to the fear of risk of being in debt (13%), and high transaction cost of the credit process (7%). Other reasons stated by a small proportion of sampled households are high interest rate, already in debt, absence of credit supplier in the community, lack of collateral, and did not think that the household would get the credit.

Table 5.14. Reason for the households (%) not to apply for a loan within 12 months before survey time, by farmers' category and by region

Reason for not applying for loan	Farmers' category				Successful farmers only - Region				
	Successful farmers	Comparison farmers	z-value	Total sample	Tigray	Amhara	Oromiya	B/G	SNNPR
Did not need any credit	72.33	46.27	-10.673***	59.96	34.62	74.68	62.29	71.62	51.51
Do not want to incur debt	9.31	17.61	3.7852***	13.25	21.79	10.76	8.44	17.57	18.37
Borrowing process too difficult	6.88	7.91	0.202	7.37	1.28	2.85	9.94	4.05	11.14
Afraid I may not be able to repay	1.08	6.87	5.2505***	3.83	5.77	1.58	6.57	1.35	1.2
Lack of collateral	1.75	7.46	6.6473***	4.47	2.56	4.43	3	4.05	7.83
Already heavily indebted	1.62	4.63	2.9327***	3.05	23.72	1.27	0.19	0	0.3
Interest rate and other costs too high	2.56	3.13	0.3198	2.83	2.56	1.27	5.07	0	1.51
No lender in my locality	2.02	2.84	0.6926	2.41	0.64	0.63	2.44	1.35	5.12
Did not think I would get	0.40	1.64	2.1465**	0.99	0.64	0.32	1.69	0	0.9
Other reasons	2	1.65		1.83	6.41	2.22	0.38	0	2.1

Source: Successful Farmers Survey (2010).

Notes: ***, **, and * are significance levels at 1, 5, and 10 percent. Figures do not add up to 100 since the other reasons are not included in the table. B/G = Benishangul-Gumuz; SNNPR = Southern Nations, Nationalities and Peoples Region

5.6. Summary

Quite a good proportion of the sampled farmers reported positive investments. A larger proportion of these are successful farmers. In absolute terms, successful farmers invested more on average relative to the comparison group. But relative to their income (which may proxy capacity to invest out of internal funds) what they are investing is not significantly larger. Most of the investment is taking place outside farming with nonfarm investment accounting for more than 71 percent of the total. Again, in terms of magnitude the average nonfarm investment is substantially larger for the successful farmers.

Quite a large proportion of the farmers expressed intention/plan to expand their current economic activities. Most (65 percent) want to expand their farming activity. Many also plan to diversify outside agriculture but still mostly within their village/town or neighboring woreda rather than venturing beyond. Such local orientation of investment may be good for the local economy (using local resources and creating jobs) and balanced development but the investments may not necessarily be the best ones at a national level.

Dependence on internal funds (own funds/savings) to finance investment is high for both groups of farmers alike. Income from selling crops is the most important primary source with 'other

agricultural income' as distant second source, while off-farm income is of minor importance (consistent with its small share in total income). Farmers face a host of constraints on investment, the key ones being finance, lack of land, and lack of information/knowledge regarding investment opportunities. While both groups of farmers identified them as key constraints, the proportion being constrained is higher for the comparison group. The key finance related problems are lack of availability of credit, high collateral requirements, and high cost (interest and fees) in that order.

Despite finance is the most common constraining factor in investment, credit demand, defined as the proportion of farm households that applied for loan, is very low among farm households. Only 18 percent of the total farm households applied for loan within 12 months before the survey time. Of the total loan applications, about 2 percent are completely rejected and 6 percent obtained credit less than what they requested. Of those that not applied, about 60 percent stated that they do not need any credit; and the rest stated fear of risk of being indebted, high transaction cost for loan application, already heavily indebted, lack of collateral, and absence of credit source. Bad credit history is the most important reason for the rejection of loan application, stated by those that applied with their loan rejected.

Semi-formal financial institutions such as MFI, Saving and Credit Associations and Multipurpose Cooperatives, and informal credit sources such as friends/relatives and money lenders are the main source of loan for farmers. Formal financial institutions such as commercial banks play little role in credit market of the farm households. Only about 3 percent of the farm households obtained credit from commercial banks.

Farm households do not have single purpose for credit. Multiple reasons are stated for loan applications. The most important reasons are investment for farm and nonfarm businesses (start business, house building, etc) and cover health and consumption expenses. While 49 percent of the successful farm households sought for loan for agricultural production (buy farm implements, seed, fertilizer, and for livestock production), 63 percent of the comparison farm households sought loan for the same purpose. On the other hand, 32 percent and 14 percent of the successful and comparison farm households sought credit for nonfarm investment, respectively. Credit for nonfarm investment and health is better in SNNPR region. Farm households use semi-formal financial institutions for farm production and nonfarm investment purposes, while they use friends/relatives and money lenders for farm working capital (such as pay labor cost, land rent and tax) as well as for health and education expenses. Commercial banks are used for investment though in small proportion. In general, households use multiple credit sources for single credit purpose.

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