

State of the Ethiopian Economy 2022/2023

Ethiopian Economics Association



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Land, Agriculture, and Finance in the Ethiopian Economy



Ethiopian Economics Association

Yeka Sub-city, Wereda 11

CMC area adjacent to St. Michael Church

Tel: +251 - (0)11 - 645 32 00, 645 30 76, 645 30 41

Fax +251 - (0)11 - 645 30 20

P.O. Box 34282, Addis Ababa, Ethiopia

Email: info@eea-et.org

Website: <http://www.eea-et.org>

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Ethiopian Economics Association



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The analysis and policy recommendations of this Report do not necessarily reflect the views of the Ethiopian Economics Association, its Executive Committee, members, and its partners. The Report is the product of the team of experts in the Ethiopian Economic Policy Research Institute and external consultants and advisors.

Inquiries should be addressed to:

Ethiopian Economics Association
P. O. Box 34282
Tel: 011 645 32 00, 3329, 3041
Fax: 011 645 30 20
e-mail: info@eea-et.org
Website: <http://www.eea-et.org>

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Foreword

The Ethiopian Economics Association published its first book on the ‘**State of Ethiopian Economy**’ in 2020/21. This is the second issue which I am very privileged to introduce. The book aims to contribute to a deeper understanding of social and economic issues; inform policy making; contribute to the design of operational programs and investment options; initiate further research and debate; and serve as an important reference on the Ethiopian economy.

The book is written at a time when the national economy is just coming out of the COVID-19 pandemic but immediately confronted by a series of domestic conflicts and the Russia-Ukraine war that disrupted global supply chain of strategic commodities such as energy, fertilizer and wheat. Although the book is more about the underlying conditions of the Ethiopian economy, it is important to acknowledge that these current affairs deepen the problem.

The theme of the book is ‘**Land, Agriculture, and Finance in the Ethiopian Economy**’ presented in five chapters selected from among a number of researches that the Association has undertaken over the last two years. The first chapter is about land - the most important factors of production with a number of unsettled issues. The second chapter focuses on agricultural finance and insurance, issues that have, hitherto, received very little attention. The third chapter deals with financial liberalization, an issue that recently attracted the attention of the government, the public and private finance sector, and the general public. The fourth chapter is about agriculture-industry linkages. The fifth chapter is about gender and women economic empowerment.

The book draws several policy implications and key messages that can encourage policy makers, programmers, investors and development partners. EEA hope that this book would be useful to all categories of readers, particularly to policy makers who often require empirical findings in the process of designing economic policies.

This book is the outcome of true partnership. The background research for the first four chapters of the book is financed by the European Union’s Civil Society Fund III Scheme while the research for the last chapter is financed by the Bill & Melinda Gates Foundation. I would like to thank them for financing the research works that are the foundation of the book. Furthermore, I also thank Friedrich Ebert Stiftung (FES) for covering the publication and dissemination of the book.

Finally, I would like to express my appreciation to economists who undertook the researches that made this book possible. These are Dr. Mintewab Bezabih, Dr. Hailu Elias, Mr. Mohammed Beshir, Dr. Fetene Bogale, Dr. Birku Reta, Mr. Shibiru Ayalew, Dr. Solomon Tsehay, Mr. Zewdie Adane, Dr. Helen Berga, Dr. Degye Goshu, Dr. Lamessa Tariku,

Dr. Abule Mehare, Dr. Adem Feto, Dr. Arega Shumetie, Mr. Demirew Getachew, and Prof. Mengistu Ketema. I also recognize the editorial team.

I hope you will enjoy reading the book while looking forward to the third edition in 2023/24.

Amdissa Teshome (PhD)

President, Ethiopian Economics Association

EXECUTIVE SUMMARY

Introduction

Land use, low productivity, macroeconomic imbalances, internal and external shocks have been the center of debate for a long time. Moreover, the Ethiopian economy has been suffering from low financial deepening, inaccessible agricultural finance and insurance, weak linkages across sectors of the economy, and gender disparities. This book on “State of the Ethiopian Economy” (SEE) presents research findings and policy recommendations that address these underlying conditions.

Given its heavy dependence on agriculture, the Ethiopian economy access to and productivity of agricultural land is critical to its development. Indeed, there is a wealth of evidence that indicates the importance of land use and land tenure systems which are at the core of the well-being of rural households. Moreover, while lacking the structural and historical significance of rural land, the issue of urban land is gaining significant traction as a key economic factor in contemporary Ethiopia. Land tenure systems that encompass land ownership and transfers have been central features of governance throughout Ethiopia’s long history of complex political systems and leaderships.

Sound financial sector with adequate supply of services to the agricultural sector is essential for sustaining the sectoral economic growth and in turn reducing poverty and food insecurity. Institutions ensure safe and productive storage of money, and in turn, guarantee excess capital channeled to its most productive use. Furthermore, in light of widespread climate and related risks in the context of rain-fed agriculture in Ethiopia, agriculture insurance helps to spread risks. More specifically, credit facilities in rural areas play positive roles in technology adoption among rural households and in turn promote diversification that generates employment, improvements in income and food security status of households. Cash savings in formal financial institutions ensures safe and productive storage of money, spread risks of agricultural players efficiently, and overcomes limitations inherent to traditional risk management and coping methods. The various demand and supply side factors of the financial services of credit, saving and insurance to farm and pastoral households have been investigated in this book.

The liberalization of financial sector is expected to carry both benefits and costs to the individuals and the country. The benefits that the liberalization may bring include speeding up foreign direct investment, reducing the population to financial sector ratio; lowering lending interest rate, economies of scale; improving consumer and mortgage credit; and ensuring a more stable source of credit. While the black side of the liberalization may comprise loss of macroeconomic stability, biased credit provision, lack of interest by foreign financial institutions to mobilize domestic capital, and volatility of capital flows. Recently, the Ethiopian government is considering the possibility of opening up its financial sector to foreign operators.

There has been strong consensus among scholars of development economics that the industrial sector, particularly manufacturing, possesses relatively a much bigger potential than other sectors in terms of sustainably absorbing large amounts of labor force and achieving successful economic structural transformation. It is evident that structural transformation cannot be achieved without strong linkages between agriculture and manufacturing particularly at the early stages of the development process. Thus, strengthening linkages between manufacturing and other sectors particularly agriculture as well as linkages within manufacturing are the key requirements in designing development plans, policies, and strategies aimed at sustainably improving employment creation and economic structural

transformation. The quest for structural transformation, sectoral linkages and employment creations are among the most primary development aspirations of Ethiopia.

Greater participation of women in economic activities is an important pathway to poverty reduction and economic development. In Ethiopia, women account about half of the labor force and possess a significant potential to contribute to the national growth. Ethiopia acknowledges the crucial role that woman empowerment plays in achieving the country's development goal as it is reflected in its legal and policy frameworks. Yet, the labor force participation of women is still far from the potential and there is notable gender gap concerning participation in measured economic activities.

Objectives

The major objectives of the book on the State of Ethiopian Economy are:

- To generate national representative and latest empirical evidence on land issues, policy options, and interventions in Ethiopia;
- To identify the major demand and supply side constraints of access to finance by rural households in Ethiopia;
- To assess the competitiveness of existing local financial institutions, determinants of performances, perceptions of the current financial market, relative positions with respect to international financial operations; expected costs and benefits of opening up the financial sector, and policy options in Ethiopia;
- To measure the nature of the agriculture-industry linkages and the role of the linkages in employment creation and structural transformation of the Ethiopian economy; and
- To analyze the status of gender gap in labor force participation and, factors that influence men's and women's decision to work and how much to work in wage and self-employment in Ethiopia.

Data and Methods

The choice of methods of data collection and analysis varied depending on the nature of topic under investigation. The analysis of trends, constraints and policy options of land issues used both qualitative and quantitative methods. The qualitative analysis comprised of review of relevant literature and collecting qualitative information from key informant interviews and focus group discussions. These helped in contextualizing the land issues and deriving testable hypotheses. Secondary data from the 2018/2019 Ethiopian Statistics Service (ESS) survey and specific information on 300 sample households were analysed using descriptive and econometric approaches that included Univariate Probit Model, Propensity Score Estimation, Average Treatment Effects, and Contingent Valuation Methods.

To identify challenges and policy options for agricultural finance required a review of both theoretical and empirical literature to establish a mathematical relationship derived from utility and profit maximization goals; and develop a conceptual framework to hypothesize the relation between the demand and supply of financial services in the context of rural Ethiopia. Both qualitative and quantitative methods were used to analyze the effect of various socio-economic and policy variables on the demand for financial services.

To assess the pros and cons of liberalizing financial sector, primary data were gathered from senior managers of banks, insurance companies and micro and financial institutions using self-administered questionnaire, and from the National Bank of Ethiopia (NBE) using unstructured interview. Over 25 years of secondary data (i.e., 1994-2020) on financial statements were obtained from NBE and multiple approaches were used to analyze the data. The financial sector competitiveness was estimated using Panzar-Rosse (P-R) model, while both static (e.g., FEM, REM) and dynamic estimation (e.g., GMM) models were used to estimate determinants of the respective financial institutions. The consequence of the financial liberalization was estimated using Autoregressive Distributed Lag Model. In addition, descriptive statistics was employed to assess perceptions and opinions.

The Hirschman index and SAM decomposition techniques are used to analyze the forward and backward linkages between agricultural and agro-processing activities. The contribution of technical change to the total change in total production of various activities is examined based on the approach and notation of Millar and Blair (2009) and Hoai et al. (2016). The SAM based analysis have been complemented by Focus Group Discussion (FGD) and Key Informant Interview (KII).

Finally, data from the recent round of the Ethiopia Socioeconomic Survey (ESS 2018/19) is mainly used for the gender balance and women economic empowerment study. The 2015/16 round of the same survey was also used for comparison purpose in the descriptive analysis section. The Heckman model and Blinder-Oaxaca (1973) decomposition technique were applied as an econometric analysis.

Key Findings

The major findings of the book are summarized as follows:

Land use

The results in the trends, constraints and policy options of land issues in Ethiopia show important results.

Access and rights to land: significant levels of tenure security towards holdings but ever-expanding rural landlessness and limited access to urban land. Overall, despite the land ownership right not being full, a very high proportion of the households perceive to have solid rights over the use of their land and bequeathing the land. In urban areas, land access and utilization are compounded by bureaucratic inefficiency and legislation loopholes leading to abuse of power.

Land Policy: the design and implementation practice issues with regards to the land policy that the study has identified include lack of proper operationalization across administrative levels, capacity limitation from federal to regions and cities, low level of awareness among the public and lack of trust in formal administration channels, conflict of interest between governance of an entity and political mandates, challenge in the synchronization between rural and urban land administration, acquisition of land for industrial parks as the process bypasses city administrations' procedures, as well as the apparent misallocation of land for public investment.

Registration and certification of Land: The 1/3 coverage of all cultivated parcels, under the Ethiopia's rural land registration program, has been found to be an indication that the rural land registration has been enthusiastically welcomed by prospective certificate holders and is found to have brought significant benefits for all users and specifically to women. Future success and sustainability require dealing with the obstacles of financial, organizational and technological nature. Certification in pastoralist regions also requires an innovative approach as tribal land ownership does not bode well

with conventional certification. A general problem with land regulation/proclamation in modern Ethiopia up to today has been that there is a gap between laws and implementation.

Expropriation and compensation of land: administration and policy challenges has been identified. The major improvement on the pre-2018 land expropriation and compensation practices has been marked by the declaration that recrafted the objective that all expropriation should meet the criteria of public purpose that includes economic and social benefits simultaneously. The general perception of the respondents is that land expropriation is not a widespread practice although some instances of it could be life-altering experience for individuals. Moreover, low and disproportionate compensation, bribe of officials and limited awareness of the law are the shortcoming in implementing the policy.

Land fragmentation: The prevalence of land fragmentation is very high among survey respondents. It is identified as a serious administrative, productivity and investment issue in terms of land use and administration. It negatively affects productivity through hindering economies of scale and uses of modern agricultural technologies.

Consolidation and commercialization of land: land consolidation process that is voluntary/consent-based and mandatory both remain very limited in coverage. Overwhelming demand for both commercialization and consolidation tools and lack of resources are the limiting factors. While ACC's contract farming is a potential instrument for consolidation, its effectiveness relies on additional provision made for farmers.

Agricultural finance

On challenges and policy options of agricultural finance and insurance in Ethiopia, the study finds that

First, household income has found to have a significant effect on a household's decision to save. A one percent increase in household income increases the probability of saving by 2.4%. However, the effect is not the same for cash (1.2%) and in-kind (3.4%) savings.

Second, trust on Formal Financial Institutions (FFIs) really matters. Increasing the outreach and financial awareness alone will not result in the intended change on households' decision to save. However, more work is required in building trust between small holder farmers and the financial service providers.

Third, in relation to the demand for credit, households with better income succeed in securing credit from the formal and the semi-formal financial institutions while the poor obtain credit from informal sources.

Forth, a difference in demand for credit across agro-ecological zones, implying that a blanket recommendation cannot solve the problem and that policy recommendations should consider variations across agro-ecological and living conditions of farm households.

Fifth, household income, trust on formal financial institutions, size of land holding, membership to local institutions and time preference were found to positively affect the probability of revealing demand for Index-Based Crop Insurance (IBCI). On the other hand, demand for crop insurance is negatively correlated with age of the head, number of livestock and being risk averse. In the context of rural Ethiopia, most pilot insurance products cease due to financial problems, huge loss due to the area-wide climate change impacts and the small pool of households who buy the insurance products.

Sixth, the KII resulted that lack of technical expertise particularly in loss adjustment is the other major problem and most insurance products are designed by consultants from abroad who have little or no knowledge of the local context.

Seventh, household income and trust variables also similarly correlate with livestock insurance as they are correlated with crop insurance.

Opening the financial sector to foreign banks

With respect to this emerging issue, the study finds a number of issues that could deepen the debate and facilitate the introduction of foreign banks into the Ethiopian financial sector. These are:

First, the current competition level of the financial sector is of monopolistic competitive nature. The bank's management efficiency or operational efficiency positively affects Return on Asset (ROA). Likewise, macroeconomic variables such as ATM per hundred thousand customers and Gross Domestic Product (GDP) growth have a positive effect on the ROA of a bank. For insurance, companies and microfinance institutions, financial performance is mainly driven by firm-specific factors.

Second, in the long run, financial liberalization positively affects GDP per capita. Financial liberalization may also improve GDP per capita growth through bigger efficiency and competition in the short run. While the potential benefit of liberalizations seems viable, it may reduce GDP per capita growth by reducing financial stability.

Third, financial operators' perception of the overall Ethiopia's financial system is unwelcoming. In general, they perceived the status of the Ethiopian financial sector to be inefficient, less competitive, unstable, less innovative, undiversified, non-inclusive, and poorly capacitated.

Fourth, the liberalization process can be more effective if implemented sequentially. Accordingly, opening up the secondary financial market should precede all activities related to liberalization of the financial sector followed by liberalization of capital account liberalization of regulations on reserve ratio and interest rate, liberalization of the domestic financial sector to foreign investors, and privatization of existing public financial institutions.

Fifth, readiness of the financial system and financial institutions is vital to take advantage of the situation when liberalization takes place. To this end, ahead of liberalization, multiple measures need to be taken such as establishing stock market, digitalization of the economy, build up global capabilities in technologies, enhance knowledge and skills, enhance efficiencies, hold adequate capital, increase foreign currency access and reserve, surge research and development budget, strengthen innovativeness and being customer focused, devise merger and acquisition strategies, improve internet network infrastructure, upsurge regulatory capabilities and develop cyber security systems.

Agriculture-industry linkage

The results in agriculture-industry linkages showed that overall, there is a weak linkage between agriculture and agro-processing sectors over the 2005 to 2016 period. More specifically, all key agricultural activities have *strong* backward linkages. However, except cereals and livestock, all other agricultural activities have *weak* forward linkages which entail that there is no strong agro-processing sector that intensively use domestically produced agricultural outputs as intermediate inputs. Some agro-processing activities notably bakery/grain, vegetable oil, dairy and alcohol have higher backward linkages while the rest of agro-processing sectors have weak forward and backward linkages. Using the SAM decomposition analysis, the study found that the closed loop (consumption effect) is quite stronger than the within effect (production linkage). The study shows that there is significant change in production of various activities in the economy between 2005 and 2016. However, the change was owing to massive increase in final demand than technical changes. The analysis further signified that the agricultural sector creates more demand to labor than the agro-processing activities. The FGD has

shown that Ethiopia's planning processes did not give much emphasis to effectively link the agricultural sector with the agro-processing sub sector during plan preparation.

Gender empowerment and transformation

The study found a number of implementable actions that could empower women and transform gender relations.

First, overall participation of women in the labor force is found to be significantly lower than men. With the exception of non-farm enterprises ownership, relative to men, women show lower participation in all economic activities considered in the study. In wage employment, women participation is lower by half compared to men and those who participate are underrepresented in top positions while dominating elementary occupations. As to ownership of non-farm enterprises, significant gender disparity is not observed. However, women owned enterprises show less achievement in terms of various business performance indicators. Particularly, women owned enterprises seem to perform less in terms of sales, business legalization, number of hired workers and firm size.

Second, women's overall participation and hour of work are also found to be lower compared to men while controlling for various individual and household characteristics. Factors that explain such differences in participation and hour of work include age, education, religion, marital status, household headship, family size, wealth, non-farm income and residence. Among these, education is found to be the main factor positively associated with women's overall participation in labor market. Marital status on the other hand is negatively associated with women participation in the labor market and work hour. Age and household headship are factors positively associated with women's decision to work and how much to work while family size is negatively associated with hours of work.

Third, similarly, the participation of women in wage employment is significantly lower than men while controlling for individual and household level predictors. Women with tertiary education show higher participation in wage employment compared to women with no such education. Age, household headship and wealth are additional factors positively associated with women's participation in wage employment. Marriage, residence in rural areas, having large family size and non-labor income are factors associated with lower participation of women in wage employment.

Forth, the participation of women in ownership of non-farm household enterprises are found to be relatively higher than men while relevant individual, household and business level characteristics are accounted. The business sales of women owned businesses are, however, significantly lower than those owned by men. Women's ownership of non-farm enterprises is negatively associated with the level of education. Though having tertiary education is negatively associated with participation in self-employment, its effect on business sales is positive. Sale is also positively associated with business license, number of hired workers and operating cost. Family size and residing in rural areas are factors associated with less participation of women in self-employment.

Fifth, using the Blinder-Oaxaca decomposition analysis, the unconditional wage gap between men and women is estimated to be 62.7%. Of this gender wage gap, 26.2% is explained while the remaining 73.8% is unexplained. Difference in age, education, religion, marital status, household headship, wealth and occupation account the explained part of the wage gap. Likewise, the unconditional sales gap for non-farm enterprises owners is estimated at 80.6% where 36% of it is explained by model predictors. Education, religion, wealth, business license, operating cost, and residence are factors contributed to the explained part of sales gap. The 'unexplained' part represent as a measure for discrimination.

Concluding Remarks

In moving towards a tenure secure economy in the urban and rural spheres, the following pivotal actions are required. While differing in degree, the need for security of ownership in rural and urban land appears all urgent. Critical institutional actions in drawing from local knowledge and practical experience, clear links between federal and regional land legislations framework and customizing interventions in recognition of heterogeneous setting is required. As a step towards that, the certification programs, both rural and urban, would need policy actions in arenas of awareness creation, financing, capacity building and transparency and accountability in administration. Further, a robust policy action is required in ensuring effectiveness and fairness in land expropriation and compensation for the greater good of the society and for protecting individual land rights. Halting land fragmentation need to be one of the utmost agricultural policy priorities. As a move away from ad hoc activities, land consolidation and commercialization call for producing a nationally-based plan that also embeds expanding land consolidation needs in all sectors of the economy. Beyond the realm of current policy and practices, the overwhelming perception amongst the respondents in this study showed that the current land tenure system has been suboptimal. Specifically, the land access and means of securing it, as well as the utilization spectrum is increasingly limiting, compounding pre-existing problems and seemingly having no ways out on the horizon. A clear institutional pathway that leads to genuine public say on land access and utilization is required. For that, public engagement in productive discussions towards better performing land tenure system is required.

Agricultural insurance involves severe losses and reinsurers are unwilling to provide cover for direct insurers. This needs appropriate intervention by relevant stakeholders to make the sector more attractive for re-insurers. For instance, investment on digital technology is crucial to reach out pastoral and agro-pastoral areas to increase the pool, linking credit with saving and insurance can serve as an enabler or loan portfolio protection mechanism for those who apply for credit since it enables them to be creditworthy and at the same time the financier uses it to protect the loan. It can also help to promote smallholder farmers practicing in both crop production and livestock rearing on sedentary basis in agro-pastoral and highland livelihood systems. For climate change impacts and small pool of households, designing innovative insurance products and government intervention to provide subsidized insurance products (premium subsidies) for poor farmers need to be considered. Lack of knowledge on loss adjustment calls for building local technical skill/knowledge in the area of crop and livestock insurance products. Generally, the government's commitment in creating fertile grounds for insurance companies to expand crop and livestock insurance products is crucial. So far, there is no clear and full-fledged agricultural insurance policy and regulatory framework to guide and control the efforts of handful of insurance companies that strive to introduce and improve uptake of agricultural insurance products as potential feasible option to overcome agricultural shocks. This calls for appropriate action to be taken by the government.

The financial liberalization in Ethiopia contains remarkable implications for stakeholders. Building a vibrant financial system helps existing institutions and the country at large to reap benefits. This requires existing financial institutions and policy makers to work hand in hand towards that goal. Current financial institutions need to increase their capacity building efforts to enhance their human, technological, and financial capabilities. They need to increase their research and development investments to enhance their innovativeness and breadth of their financial offerings. Similarly, the policy making body (the government) needs to improve the human and technological capabilities of its regulatory body to be able to effectively manage the process that leads to a more liberal financial sector.

In addition, the government should relentlessly work to create an enabling business environment by revising its policy interventions and aligning them with the needs of the new financial environment. Furthermore, the government needs to strengthen its regulatory wing to be able to manage the risks associated with opening up the financial sector such as market instability, and capital flight. Lastly, it would be nice if both individual financial institutions and the government get the chance to share experiences of other countries (e.g., South Korea, Malaysia, etc.), and use the lesson thereof in their attempt to manage the planned change.

For employment and economic transformation in Ethiopia, coordination among sectors to match the demand and supply of respective priority activities in the agricultural and manufacturing activities during plan preparation was not exercised except the recently endorsed ten years development plan. Lack of adequate quality raw materials along the value chains of various agro-processing activities in the domestic economy is one of the salient causes of weak linkages between agriculture and agro-processing. The problem will remain an uphill to achieve sustainable development. The study recommends that the policy making should focus on improving implementation capacity to promote systemic linkages between the agricultural and the industrial sectors to improve the economy's overall productive capacity. Thus, policy makers and national planners should give more attention to improve linkages between the agriculture and the agro-processing activities by focusing on technological or technical upgrading and fixing the looseness on the value chains of each agro-processing activities.

Narrowing the gender gap in labor market participation and economic outcomes will require interventions ranging from improving the education status of women to shaping the role and responsibilities of women in the society. The importance of women education is indisputable but short-term policy measures should also focus in creating job opportunities that fit with the current education level of women in the country. Women who participate in the labor market are observed to concentrate in informal and elementary occupations. Hence, for women's labor market participation to be empowering, the quality of jobs they are involved in should be equally emphasized as the number of participations. Marriage and other social responsibilities limit women's decision and intensity of work. Thus, interventions that gradually change traditional social norms, systems that support the participation of women in productive economic activities and gender-sensitive policies are vital. Women owned enterprises should be given especial emphasis and support. Women entrepreneurs should be encouraged to legalize their business which is important for firm expansion/growth. Knowledge and skill trainings on how to build business network are also important to widen market access for inputs and their products. Other government support programs such as providing finance and working premises should also preferentially target women owned enterprises given their high well-being improving potential and yet weak performance.

CHAPTER ONE

Land Issues in Ethiopia: Trends, Constraints, and Policy Options

1.1. Introduction

1.1.1. Background

Given its heavy dependence on agriculture, the Ethiopian economy is highly intertwined with access to and productivity of agricultural land. Indeed, there is a wealth of evidence that indicates the importance of land use and land tenure systems which are at the core of the well-being of rural households living and dependent on land (Deininger et al. 2008a, Holden & Yohannes, 2002). Further, land tenure systems that encompass land ownership and transfers have been central features of governance throughout Ethiopia's long history of complex political systems and leaderships.

While lacking the structural and historical significance of rural land, the issue of urban land is gaining significant traction as a key economic factor in contemporary Ethiopia. Indeed, as the level of urbanisation is currently low but growing very quickly, it can be argued nowhere else is the issue of urban land timelier than in Ethiopia.¹ If managed properly, this provides opportunities both in terms of supporting the structural transformation agenda of the Government of Ethiopia (GoE) and building a sustainable urban environment. However, urbanization is effectively fuelled by limited access to urban land and the dividend from urbanisation requires effective urban land management.

The conventional wisdom is that design and characteristics of land tenure systems in Ethiopia and the rest of the developing world are critical to the functioning of the economy as a whole. In due recognition of this, a number of international organizations have put the issue of land tenure high on their international policy agenda (e.g. Commission for Legal Empowerment of the Poor, World Bank, Global Land Tool Network (GLTN) (Augustinus 2005; World Bank, 2006). Similarly, the issue of land tenure systems has been a national policy priority by many countries (Mekonnen et al., 2013; Deininger et al. 2008b) and a number of reforms and legislations have been passed to that effect, particularly since the 1990s (Deininger *et al.*, 2011; Ali et al., 2018).

An issue of such colossal importance, land tenure has, therefore, dominated policy, academic and socio-political discourse in countries like Ethiopia. Accordingly, the purpose of the study report is to generate country-representative and latest empirical evidence on land issues, policy options, and interventions in Ethiopia. For that purpose, the study has employed literature that have examined issues that are deemed to be relevant with respect to the objectives. The study has also focused on secondary and primary data that generated several economic and behavioural variables that would serve as key inputs into the analysis.

1.1.2. Objectives and Research Questions

The study has set out to generate country-representative and latest empirical evidence on land issues, policy options, and interventions in Ethiopia. It has, therefore, crafted specific research questions that go parallel to the objectives.

Specifically, the study aims to

- a. identify overriding land issues in Ethiopia,

¹ The percent of urban population in Ethiopia stood at 17% in 2012, according to the World Bank's Ethiopia urbanisation Review (World Bank, 2015). This is low compared to countries with similar levels of development and it is lower than the Sub-Saharan African average of 37%. But things are changing fast and the same study estimates that 30% of the population is expected to reside in urban areas as early as 2028.

- b. characterize households by their perception on land policy,
- c. investigate land tenure policy options and their likely consequences and suggest feasible interventions for relevant rural and urban land policy in Ethiopia,
- d. investigate the land expropriation and compensation laws and their implementation in rural and urban areas,
- e. identify and profile opportunities, challenges, and constraints arising from land tenure policy, and
- f. suggest short- and long-term policy interventions for land consolidation and specialization, expropriation and compensation, and efficiency of real estate markets.

Based on the objectives, the study attempted to address the following research questions.

- What are the overriding land issues expected as a bottleneck for agricultural production, productivity, commercialization and transformation in Ethiopia?
- How farmers and urban dwellers perceive the existing rural and urban land policies?
- Do farmers understand the economic consequences of land fragmentation and consolidation?
- Are land issues different across regions, areas of residence (rural-urban), land and house ownership (with and without land and/or house), ownership status (private and public), gender, livelihoods (farm and nonfarm)?
- Which policy interventions related to land are relevant to different socioeconomic settings?
- How land issues be linked to livelihoods of populations?
- How land expropriation and compensation laws and rules are exercised in rural and urban areas?
- What are the major challenges and opportunities for designing and implementing relevant land policy in Ethiopia?
- How land will be consolidated for specialization and commercialization of agriculture and efficiency of real estate markets?

1.1.3. Working Hypotheses

The testable hypotheses of the study are derived based on the research questions poised and the relevant evidence in previous literature. Accordingly, the four research questions serve as pillars for identifying the testable hypotheses.

Alternative land tenure systems

A common view is that economic entities at large will start from different perceptions on the ownership and management of land, resulting in heterogeneous preferences for alternative land tenure systems. Following this, the first hypothesis of the proposed study is stated as follows:

Hypothesis 1: Households, business entities and governance structures will have identical perceptions of a given land tenure system, leading to homogenous preferences for a spectrum of land tenure systems.

Land Issues affect major economic outcomes

As per the research question 1, economic indicators such as productivity, production, consolidation and commercialization are identified as outcome variables that are potentially impacted by land-related issues. Based on this, it is hypothesized that three sets of land-related issues can act as critical determinants of the indicators; namely land characteristics; tenure security-conditioning land policies and reform-related programs; land (rental/lease) markets and large-scale land acquisition; and supporting land related project or program interventions.

Farm household related land characteristics previous literature identifies features of land such as access to land factors that have significant powers to determine economic outcomes for individuals and communities.

***Hypothesis 2.** Land access is an insignificant determinant of land productivity and land related investment.*

Tenure security

Insecure property rights over land are considered as an important factor explaining productivity in land-related investments in the developing world (Place & Migot-Adholla, 1998; Deininger & Jin, 2006; Holden et al. 2009; Deininger et al. 2011).

***Hypothesis 3.** Tenure security is not one of the key and persistent determinants of productivity and land related investment.*

Large scale land acquisition (LSLA) LSLA's positive contributions include improved employment opportunities (Otsuka & Yamano, 2006; von Braun & Kennedy, 1994; Cotula et al. 2009; FAO, 2012); income (Alherup & Tengstam, 2016), increased labour productivity, food security, and nutrition (von Braun & Kennedy, 1994), improved access to technology, and upscaling of the physical infrastructure (Cotula et al. 2009).

***Hypothesis 4.** Land policies that range from expropriation to large scale land investment do not contribute to land consolidation.*

Land sales and land markets

Land sales and land rental markets are market-based instruments that are likely to shape the degree of consolidation and commercialization. In their study of the role of land markets in productivity in China, Deininger and Lin, (2006) and Rozelle *et al.* (2002) argue that the risk of land loss constitutes a form of transaction cost in the land rental markets, which constrains their functioning. Other studies that identify tenure insecurity as a major constraint in the land rental market include Deininger *et al.* (2008), Ghebru and Holden (2008), Lunduka et al. (2008), and Holden *et al.* (2011). By implication, improvements in tenure security are shown to lead to increased participation in the land rental market (Deininger & Jin, 2006; Holden *et al.*, 2011).

***Hypothesis 5.** Households and business entities (urban and rural) will not have significantly constrained by land market activities (both rental and sales) due to a less than full land tenure security.*

Agricultural commercialization clusters

Important interventions that create favourable conditions for land transfers/ pooling and commercialization include agricultural commercialization cluster (Ecker, 2018). The Agricultural Commercialization Cluster (ACC) initiative is one of the main policy interventions in the agricultural sector in Ethiopia. It was introduced during the first Growth and Transformation Plan (GTP I, 2010-2015) as a mechanism to integrate the Agricultural Transformation Agenda interventions along specific value chains for a limited number of priorities (or high-value) commodities, across the four major agricultural regions of the country: Amhara, Oromia, SNNP and Tigray. According to the Agricultural Transformation Agency (ATA), the ACC initiative aims to increase farmers' income, facilitate market opportunities, enhance agro-processing services, increase the volume of products and create more jobs. The Agricultural Commercialization Clusters are considered to play the role of Centres of Excellence and are being supported in expanding their production and productivity, and in integrating their commercialization activities. Therefore, these areas are meant to serve as 'models for learning' in the process of implementation of the ACC approach and scaling up of best practices across the country (Louhichi et al., 2019).

***Hypothesis 6.** Agricultural Commercialization Clusters (ACC) are instruments that do not affect commercialization directly through maximizing synergies in production of commercial nature. ACC also affect consolidation through pulling together farms into producing similar crops.*

Expropriation/ Compensation laws

While land expropriation and compensation laws exist in the Ethiopian context, the possibility is that they are incomplete.

***Hypothesis 7.** Expropriation and compensation laws are exercised in rural and urban areas to a fault.*

1.1.4. Structure of the report

The report is structured as follows. The first section of the report presents background about the study, objectives of the study, research questions, and the working hypotheses. Empirical and theoretical review of related literature is discussed in the second section. The third section is devoted to type, source, and methods of data collection tools, and the methods employed. The major findings of the study on access and rights to land; land policy; land registration and certification; land expropriation and compensation; and land fragmentation, consolidation and commercialization are separately reported in the next five sections. The last section concludes the major findings of the study and suggests major recommendations and policy implications arising from the findings.

1.2. Review of Literature

1.2.1. Overview

The broader, integrative or holistic definition of land takes into account the physio-biotic and socio-economic resources of the physical entity. Because of this, there is no one and single definition on the term land. However, the mostly popularized and very brief description given to this, which is a complete definition may therefore be the following one (already used in the documentation for the Convention to Combat Desertification) (UN, 1994). For the purpose of this paper the definition that is more widely used defines land as a physical entity in terms of its topography and spatial nature, and is often associated with an economic value, expressed in price per hectare at ownership transfer (Takele, 2015).

As per this definition, land as an economic resource, needs putting into its optimal use and the misuse of land does not only waste a scarce resource but also affects other sectors of development. The issue of land everywhere in the world is economically, politically, and socially the most sensitive and significant aspect of human beings. Since long, land has been the major source of controversies, disputes or conflicts among individuals, groups, societies, and countries. This implies that land ownership is extremely a basic state of affairs for individuals, societies and governments. In this regard, the need to tenure reform for former communist countries is in no way an issue that is left aside (Yirsaw, 2013).

The proper utilization of land requires the recording of rights over land and conditions of use and facilitating the smooth transfer, on a market principle or otherwise, to other users (Yirsaw, 2015), more so in developing countries where market and institutional-related failures are rampant. As a result, the conventional wisdom is that design and characteristics of land tenure systems in Ethiopia and the rest of the developing world are critical to the functioning of the economy as a whole. In due recognition of this, a number of international organizations have put the issue of land tenure high on their international policy agenda (e.g, Commission for Legal Empowerment of the Poor, World Bank, Global Land Tool Network (GLTN) (see Augustinus 2005; World Bank, 2006). Similarly, the issue of land tenure systems has been a national policy priority by many countries (Mekonnen et al., 2013; Deininger et al. 2008b) and a number of reforms and legislations have been passed to that effect, particularly since the 1990s (Deininger *et al.*, 2011).

Despite this, however, comprehensive account of rural and urban land policies, concepts, bottlenecks to its efficient use and transfer seems lacking. Accordingly, the purpose of this section is to survey theoretical and latest empirical evidence on land issues, policy options, and interventions in Ethiopia. The literature review will focus on examining relevant literature on contemporary rural and urban land issues in Ethiopia.

The rest of the paper is structured as follows. Section 2 will present conceptual issues on rural and urban land access, land tenure systems and land policy. Section 3 will discuss the land expropriation in terms of laws and actual practices; followed by instruments for land expropriation and commercialization, in section 4. In section 5, outstanding land tenure/use related program interventions are presented while in section 6 key empirical relationships between land tenure security and prominent variables of economic interest are discussed. Section 7 concludes the section.

1.2.2. Demand for and Supply of Land in Ethiopia

The demand for land stock derives first from the need for agricultural goods and housing, which is essentially a demand for land services. Secondly, it arises from the desire for infrastructure and environment-related projects, a demand often independent of land prices as it is determined by government objectives and other concerns. Thirdly, it takes the form of an asset demand in view of the financial asset characteristics of the land stock (Takele, 2015).

Bacry et al., (2009), also addressed that the role [of land is, therefore, very vast which is] as a hedge against inflation, as collateral for credit operations, and as a component of the diversification strategies of economic agent is subsumed in this third type of demand. The supply of land for the rural and urban sectors is determined by nature – availability, topography, soil fertility – and by the volume and quality of prior investments, including structures. Regulatory constraints affect both the demand and supply of land (Bacry Yusuf et al., 2009).

According to this study, different studies suggest that “land and real estate assets account for 45 to 75 percent of wealth in developing countries, thus playing a unique dual role of serving as inputs into production activities in as well as consumption by households and commercial entities of residential and commercial real estate and infrastructural services” (Takele, 2015).

The Ethiopian economy remains dominated by agriculture. In recent years, this traditional sector has accounted for about 68% of employment and 34% of GDP, but is making up a decreasing fraction of output over time. It is widely accepted that Ethiopia's agricultural growth over the past decades has been central to the economic growth of the country. Official numbers indicate that the value of agricultural production in Ethiopia has more than doubled since 2000 (FAO, 2018). Growth has been attributed to expansion of land and labor use, as well as to the increased use of modern inputs and extension services (Cheru et al., 2019).

Almost all individuals that run activities have applied to acquire land whether they are from the micro-small-scale activities or big real estate developers or the one who needs to establish a small shop, etc. The actual fact is that all activities need a place (i.e. land), which is a scarce resource (Asfaw et al., 2018).

In the past three decades, the supply of land and housing construction did not correspond to the housing needs. Therefore, there is a mismatch between housing supply and housing need by the alarming growing population, 5.5% per annum in the city. This has brought squatting to the inner city and informal acquisition of plots. Land for dwelling house construction has often been allocated far away (approximately 10 km) from the nearest service where basic infrastructure is difficult to find. Therefore, either the dwellers prefer to go to the informal land provider close to the developed area or they leave the land idle for waiting while waiting for infrastructure (Asfaw et al., 2018).

1.2.3. History of the Ethiopian Rural Land Tenure System

The overthrow of the last imperial government in 1975 abruptly instituted a series of measures that changed the political and economic landscape of the country from a feudal system to a socialist state (Kebede 2002). Among the many radical measures, the land reform proclamation of February 1975 nationalized all rural lands, announcing that all land was now owned by the state and given to farmers on right-to-use (usufruct) basis, organized via peasant associations (Kebede 2008).

Shortly thereafter, in 1975, Proclamation 31, entitled “Public Ownership of Rural Lands”, swiftly set in motion a set of sweeping land reforms that saw the eradication of the landlordism prevalent throughout the country (Rahmato, 1993; Holden and Yohannes, 2002). With only usufruct rights to land permissible, following the land redistribution to the formerly landless, all means of leasing, mortgaging, transfer, and labour hiring were prohibited (Rahmato, 1993). The farmers’ membership in the peasant associations made them *claimants*, endowed with rights such as access, some management rights, and limited exclusion rights. Per the 1975 legislation, spouses enjoyed joint ownership of the land, implying that on paper men and women were entitled to the same land rights. However, women’s rights to land depended on marriage and were not registered separately (Crewett *et al.* 2008). Tadesse and Amare (2000) note that the specific position of women also differed across various ethnic groups.

The EPRDF²-led government that overthrew the military government (Derg³) in 1991 largely maintained the land policy of its predecessor, keeping all rural and urban land under public (government) ownership (Gebreselassie, 2006). Significant changes included formal confirmation that land rights are to be granted to men and women, including the right to lease out land. However, most regions limit the period of the lease and restrict leasing rights to only a share of the farmland. While, in terms of legislation, these are important improvements in women’s land rights, divorced women still lack secure land rights, possibly due to informal constraints such as relationships with in-laws which may curtail these rights (Crewett *et al.* 2008).

Despite the dissolution of the Derg regime in 1991, little has changed in terms of overall land tenure policy, with national ownership of land and citizens’ free rights to land use remaining intact (Kebede, 2002). However, significant changes included devolution of land legislation at the regional state level, resulting in variation in land tenure administration across the country (Kebede, 2002; Holden and Yohannes, 2002).

The first federal Rural Land Administration and Use Proclamation No. 89 was promulgated in 1997 to provide an umbrella framework for the regional states in enacting rural land administration laws to which the four regional states of Amhara, Oromia, SNNP and Tigray complied (FDRE, 1997). This was followed in 2005 by the landmark revised Federal Rural Land Administration and Use Proclamation No. 456/2005/1997 that clarified rural land use rights and obligations and abolished forced redistribution of land which was the major source of tenure insecurity among the rural population. This Proclamation reaffirms ownership of rural land to the State, but it confers indefinite tenure rights to smallholders, i.e. rights to property produced on land, to land succession and to land renting (FDRE, 2005). The four regional states followed suit and revised their land laws to reflect the changes made in the federal law and in cases of Amhara and Oromia regional states, to broaden the rights of landholders. Benishangul-Gumuz and Gambella regional states also enacted their land proclamations in 2010 (Abza, 2011).

The Federal Rural Administration Proclamation in 1997, later revised in 2005, could be considered a major milestone in terms of Ethiopia’s land policy since 1975. It is based on this proclamation that the land certification program was initiated. Its implementation led to the distribution of 6 million certificates and demarcation of 20 million plots to farm households across the country, making it the largest distribution of non-freehold certification in sub-Saharan Africa (Deininger *et al.*, 2008; Adinew and Dadi, 2005). In the Amhara Region, the focus of the empirical analysis in this paper,

² EPRDF (Ethiopian People’s Revolutionary Democratic Front) is the ruling political coalition in Ethiopia.

³ A repressive communist military junta in power in Ethiopia from the 1970s through the early 1990s.

the implementation of the program was spearheaded by the establishment of the Environmental Protection, Land Administration & Use Authority (EPLUA).

A distinguishing feature of the certification program is that it is participatory and is designed to cover all the major regions in the country in a short period of time. Indeed, the very basic technological requirements of the program are conducive to its low cost and rapid implementation. The program is also democratic by design, with involvement of farmers starting in preparation and awareness campaigns, along with the formation of the Land Administration and Use Committees (LAUC). The committee is comprised of farmers and *kebele* and *woreda*⁴ officials (Adinew Dadi, 2005).

1.2.4. The Ethiopian Urban Land Tenure System and Land Lease Policy

The 1995 Ethiopian constitution draws a broad framework for land policy in the country and enshrines the concept of public land ownership and the inalienability of landholdings. The Ethiopian constitution asserts state ownership of land; there are no private property rights in land. Article 40 sub article 3 (which is about property right) states: “The right to own rural and urban land, as well as of all natural resources belongs only to the state and the people of Ethiopia. Land is an inalienable common property of the nations, Nationalities and peoples of Ethiopia and shall not be subject to sale or to other means of transfer,” (Beresaw, 2015).

The EPRDF government that took power in 1991, following the fall of the socialist government – while committed to a free-market philosophy has made important changes on policies of urban land lease holding system. It is believed that lease has been in place as a cardinal land holding system to transfer urban land to appropriate users to the extent possible in accordance with master plan. It is believed that transferring urban land by lease for a fair price, consistent with the principles of free market, will help the expansion of investment and urban land development in particular and overall economic and social development in general. It has been found necessary, arising from these circumstances, that lease has been issued as the exclusive urban land- holding system (Beresaw, 2015).

Despite the government retains the “ownership right” the right to possess, use, benefit from, and dispose of lands, a transaction can take place in a form of lease hold with the lessee having the “right to use” and “benefit from”. As Federal government’s urban land lease holding proclamation No. 80/1993, all urban land is public property and transfer will only be carried out through the lease system (Beresaw, 2015). The government of Ethiopia publicized the urban land is the state property by declaring through the proclamation of 721/2011 Urban land policy (Takele, 2018).

The Ethiopian Land Policy is ratified as per the provisions of Article 40 of the Constitution of the Federal Democratic Republic of Ethiopia that land is the property of the State and the people of Ethiopia and that its use shall be subject to specific regulation by law (Asfaw, et al., 2011). The need for Urban Land Law is necessitated by the sustained rapid economic growth registered across sectors and regions in the country, that has steadily and exponentially increased the demand for urban land, and such development requires prudent and responsive land resources management. Further, the assumptions on the prevalence of good governance are a foundational institutional requisite for the development of an efficient, effective, equitable and well-functioning land and landed property market, the sustenance of a robust free market economy and for building transparent and accountable land

⁴ Kebele is the smallest administrative unit in Ethiopia, followed by woreda.

administration system that ensures the rights and obligations of the lessor and the lessee (Beresaw, 2015).

Despite the policy measure did not enable the people to have secured land access, the government of Ethiopia had been taking urban land lease system as one of the policy measures aiming to enhance the transfer of land use rights, value the urban land and to encourage investment and the provision of social services to the residents. According to the Federal Government's urban land lease holding proclamation No. 80, 1993, all urban land is public property and transfer will only be carried out through the lease system (Beresaw, 2015).

1.2.5. The Land Expropriation and Compensation Law in Ethiopia

The power of expropriation in Ethiopia is vested in the state by virtue of Article 40(8) of the FDRE Constitution (the Constitution) which provides that “the government may expropriate private property for public purposes subject to payment in advance of compensation commensurate to the value of the property”.(FDRE, 1995) This has been amplified, in addition to bilateral investment treaties, by the following statutes: - Expropriation of Landholdings for Public Purpose and Payment of Compensation Proclamation (the Expropriation Proclamation), 2005, - Payment of Compensation for Property Situated on Landholding Expropriated for Public Purposes Regulations, 2007, - The Civil Code of Ethiopia, 1960, Articles 1460-1488, - Urban Lands Lease Holding Proclamation, 2011, Articles 26-31, - Investment Proclamation, 2012, Article 25, and - Regional rural land use and administration laws(Abdo, 2015).

The Federal government has also promulgated the Expropriation of Land Holdings for Public Purposes and Payment of Compensation Proclamation No. 455 in 2005 (FDRE, 2005) and its implementing regulation No. 135 in 2007 (FDRE, 2007) to guide regions in administering land expropriation and compensation fairly and thus enhancing tenure security. The central objective of the Expropriation Proclamation is to take land for investment activities. (FDRE, 2005) It has three main aspects: provisions relating to public purpose, compensable property, and procedural recourses. If properly formulated and implemented, the requirements of public purpose, of compensability and of procedural recourses would have the effect of disciplining government authorities since such procedures would force the state to carefully re-examine its projects, thereby serving as a buffer zone for property holders and preventing overtaking without necessarily handcuffing such authorities (Liu (2008)).

1.2.6. Land Expropriation and Compensation Practices in Ethiopia

Ethiopia is increasingly using expropriation as the single most important device to take land particularly from small landholders to supply it to corporate farmers and industrialists with a declared intention of boosting economic growth. This is happening in the context where expropriation laws are inadequate to protect peasants and pastoralists. The state is not paying cash compensation for land use rights, compensation for property on the land is paltry, and uniform rehabilitative schemes are absent. There are also no sufficient administrative and judicial mechanisms in place to restrain the government in exercising its power of expropriation. This is lax expropriation system that runs counter with the country's Constitution which pledges tenure security for small landholders (Abdo, 2015).

The trend in land expropriation implies a reordering of the land tenure system of Ethiopia increasingly in favor of capital. This implies a remaking of the extant land tenure system which is

dominated by smallholder agriculture through expropriation of land from such smallholders for ‘public purpose’ to lease it out to capital. This in turn suggests the beginning of a shift from a land tenure system dominated by subsistence farm holdings to a system whereby land is increasingly deployed to the service of commercial farmers and industrialists with a declared purpose of enhancing economic development. This shift contradicts state policies and laws that at the same time pledge to enhance the tenure security of small landholders through the ‘land for all’ narrative (Abdo, 2015).

A rise in the use of expropriation by the Ethiopian state is contrary to what has been asserted as a decline in some other jurisdictions (Daniel Weldegebriel (2009a) *infra* note 21; Girma Kassa (2011) *infra* note 21; Belachew Yirsaw, (2013) *infra* note 47; Daniel Weldegebriel (2014d) *infra* note 47; Anthony Harris (2015) *infra* note 76; Daniel Weldegebriel (2013c) *infra* note 139. 2.)

Current expropriation laws are inadequate to protect small landholders because they over-privilege economic development projects. This is related with the fact that the Ethiopian state is not legally obliged during expropriation to pay compensation for land use rights nor is it obligated (or at times not feasible) to give a substitute land. It is also argued that compensation for property on the land is inadequate and that legally and institutionally backed uniform rehabilitative schemes are not built into expropriation measures. (Abdo, 2015)

In their study of land expropriation for purposes of flower farming in the Amhara region Alamineh, A. S., & Eneyew, B. G. (2021) and Alamineh (2018) found that land expropriation was carried out without genuine public consultation, ascertaining popular consent and written notification, with compensation marred by a valuation process of uncertainty and jumping. Moreover, flower farms have negatively affected the livelihood and food security of peasants, which in turn brought violence, tenure insecurity and strained government-society relations. Further, Mohammed et al. (2021) indicated that peri-urban farmers’ evictions from their indigenous land for land re-development are the continuous process that negatively affects the livelihood of farming communities.

1.2.7. Instruments of Land Consolidation and Commercialization

This review discusses history of policies towards large scale land acquisition (LSLA), land market as instruments for land consolidation. The main land-related agricultural commercialization that we consider in this study is the Agricultural Commercialization Clusters (ACC) and land market participation.

1.2.7.1. Large scale rural land acquisition

LSLAs have been increasingly viewed as key to increased performance of the agricultural sector in developing countries, through increased flow of capital into the sector. However, the degree to which they benefit smallholder agriculture has both been controversial and understudied.

Since the mid-2000s, most African, Latin American, Central and South East Asian countries have actively responded to interests in acquiring shares of agricultural land from private and governmental investors from Western, Asian and Gulf countries (GRAIN, 2008; Mann and Smaller, 2010). The motivation from the investors’ side is said to include population growth and rising income levels, leading to increased demand for food and production of biofuels (Baumgartner et al., 2015; Haralambous 2009; Mann and Smaller 2010). Such motivation for food security in the investor countries is noted by the coincidence of the surge in LSLAs with the spike in food prices 2007–08 (Cotula, et al, 2009; Deininger et al., 2010; von Braun & Meinzen-Dick, 2009).

In Ethiopia the government has claimed to have put over 3.3 million hectares of land in a land bank meant investment, especially foreign direct investment, of which 2.3 million hectare is already allocated to over 86 national and foreign companies. MoA has been authorized by the proclamation 29/2001 of the council of people representative to administer any large-scale land deal happening in the country where the land size is more than five thousand hectare. Facilitating the transfer has been a mandate of the Agricultural Investment Land Administration Agency, established as per Council of Ministers Regulations No. 283 (2013) and Proclamation No. 29 of 2011.

This land is often found in the lowlands of the nation where sparsely populated pastoralists often live. In the highlands, especially surrounding the capital city and big cities, flower companies have taken substantial land for flora productions. Moreover, globally, several push and pull factors are involved underlying the causes of the large-scale land acquisition. Nevertheless, many problems are cropping up ranging from the way the land is identified for investment, to the manner of negotiation and lease contracts, to evictions, human rights violations, violence, empty promises of compensations, and environmental destructions (Behailu, 2015).

In the case of Ethiopia, the land acquisition takes the form of lease concessions ranging often from 30–50 years (FDRE, 2015), but in other countries outright purchase of large tracts of land is the often-resorted mechanism. Hence, land grabbing is fast becoming the concern of both the local people where the land is situated and the world at large (Behailu, 2015).

1.2.7.2. Land market participation: a tool for consolidation

The essence of land consolidation at a household/micro level is related to achieving efficiency in production by equalizing factor endowments. In line with this, Skuofias (1995) and Bezabih (2007) argue that the land market takes the upper hand (compared to other factor markets) in that role. Under conditions where factor markets are working perfectly, households would be able to hire in labor and oxen or rent out land to adjust the cultivated area to other factors of production the household possesses. This would make up for the potential inefficiency in production created by labor/oxen shortage and the resulting “excess” cultivated land in proportion to the availability of labor/oxen. However, the markets for the complementary non-land factors (i.e. labor and oxen) are characterized by notorious imperfections and, thus, cannot play effective factor adjustment roles. The land rental market is then sought as the main mechanism by which households may adjust cultivated area to their access to the semi- or non-tradable factor endowments⁵ (Deininger and Binswanger, 1982; Tikabo, 2003).

On the other hand, the extent to which land lease markets contribute to factor adjustment depends on the performance of the land market itself. Hence, the better the performance of the land market in terms of adjusting factor endowments to cultivated area, the higher the agricultural productivity per unit of land.

1.2.7.3. Agricultural commercialization clusters

The Agricultural Commercialization Cluster (ACC) initiative is one of the main policy interventions in the agricultural sector in Ethiopia. It was introduced during the first Growth and Transformation Plan (GTP I, 2010-2015) as a mechanism to integrate the Agricultural Transformation Agenda interventions along specific value chains for a limited number of priority (or high-value) commodities. The inception of the ACC lies in the ADLI strategy, agricultural commercialization

⁵ By factor endowments, we are referring to land, oxen and active labor that the household has under its possession.

cluster (ACC) approach is promoted, adapted from successful experiences of geographic approaches (also known as economic corridors or clusters) employed in Asian, Latin American and other African countries (ATA, 2016). The ACC initiative targets four regions (Amhara, Oromia, SNNPR and Tigray), which have identified a total of 29 clusters for priority commodities (9 clusters in Amhara, 8 in Oromia, 8 in SNNPR and 4 in Tigray). Priority commodities include the major cereal crops (teff, wheat, maize), horticulture crops (pepper, potato, onion), high-value crops (coffee and sesame), and livestock products (meat, cows' milk, poultry and honey) (Agricultural Transformation Agency (ATA) 2016). The ACC initiative contains clearly defined geographic clusters specializing in priority commodities across the four major agricultural regions of the country: Amhara, Oromia, SNNP (Southern Nations, Nationalities, and Peoples), and Tigray. These clusters are considered to play the role of Centers of Excellence and are being supported in expanding their production and productivity, and in integrating their commercialization activities. Therefore, these areas are intended to serve as 'models for learning' in the process of implementation of the ACC approach and of scaling up of best practice across the country (Louhichi et al., 2019).

The main aim of this initiative is to provide a strategic platform to drive greater integration and more effective execution of multiple and prioritized interventions across priority value chains in each cluster or geographic corridor. More specifically, the ACC initiative has four objectives: (1) driving specialization, diversification and commercialization of agriculture for priority commodity value chains; (2) enhancing production and productivity, quality of outputs, aggregation, value addition and market linkages; (3) providing an integrated platform to implement multiple, priority interventions across the value chains and sectors; and (4) improving focus and coordination among actors in the public sector and private sector, as well as donors and NGOs (Alemu, 2018).

According to the Agricultural Transformation Agency (ATA), the ACC initiative aims to increase farmers' income, facilitate market opportunities, enhance agro-processing services, increase the volume of products and create more jobs. The Agricultural Commercialization Clusters are considered to play the role of Centers of Excellence and are being supported in expanding their production and productivity, and in integrating their commercialization activities. Therefore, these areas are meant to serve as 'models for learning' in the process of implementation of the ACC approach and scaling up of best practice across the country (Elouhichi et al., 2019).

In their study assessing the impacts of this initiative on the performance and livelihood of smallholder farmers in Ethiopia, Elouhichi et al. (2019) ex-ante assess the impact of scaling up, to the respective regions of Ethiopia, the productivity performance achieved by the 'model farmers' in the areas (clusters) covered by the ACC initiative, applied to a representative sample of 2,886 individual farm households spread throughout the country, showing that upscaling the ACC productivity performance to the respective regions would lead to an increase in production of the main products ranging between 1.8% and 62.6%.

1.3. Research Methodology

1.3.1. Data

The data involved two qualitative and two quantitative sets of information. Qualitative data are collected using KII and FGD. The quantitative data comprises of secondary data in the form of the Ethiopian Socioeconomic Survey (ESS) data and the primary data in the form of a household survey data collected for the purposed of this study. The Ethiopian Socioeconomic Survey (ESS) data is a standard

survey data that has enabled analyzing issues of interest in the study that tend to be covered in standard household surveys such as the productivity and investment implications of tenure security enhancing measures such as the land certification program. The rural household survey conducted for the purpose of the study has been designed to cover issues such as households' knowledge of and attitude towards the land law, hypothetical questions about willingness to accept a land rental arrangement for agricultural commercialization clusters. Below, we present brief description of the nature of data employed in the study.

Secondary Data

The data drawn from the Ethiopian Socioeconomic Survey (ESS), collected for 2018/19. The survey was conducted by Central Statistical Agency (CSA) with the support of the Living Standards Measurement Study (LSMS) – Integrated Surveys in Agriculture (LSMS-ISA) project of the World Bank. While the sampling design has been representative at the national level, as well as for rural and urban areas⁶, the analysis for this study will focus on rural households in Amhara, Oromia and SNNP regions and on urban households in Addis Ababa.

The variables employed for this particular study include household information on basic demographics; land holding history and utilization; crop harvest and utilization; and land investment, among other variables (ESS, 2019).

Sample Survey and Primary Data

The primary data collection survey covered four core components: questionnaires specific to rural households, federal and regional land administration bureaus, and ministry of agriculture, and Ministry of Urban Development.

Rural Household Survey

For the rural household survey, structured questionnaires that address objectives of the study have been developed using Ethiopian Socioeconomic Survey and similar studies on land use and land policy survey, and the objectives of the study as inputs. The household survey has been conducted on selected sample rural households of the study. During this survey household representatives/ heads have been interviewed in their homes by trained interviewers (enumerators).

The rural household survey has covered 6 woredas drawn from the three regional states (Amhara, Oromia, Southern Nations, Nationalities and Peoples (SNNPR)). A total of 300 households have been included in the survey⁷, with 50 households from each of the woredas. Table 1.1 presents the sample distribution of households across woredas and regions.

The following steps have been followed to draw sample households from sample woredas. The woreda sampling is based on randomly selecting 1 beneficiary and 1 non-beneficiary keels (for the land certification interventions). This has been followed by randomly sampling households from all the woredas using random sampling. The rural household survey questionnaire would comprise the following themes: awareness of land laws; land tenure security, land certification, agricultural commercialization clusters, and land rental markets.

⁶ The nationwide sample excludes three zones and six zones of the Afar and Somali regions, respectively.

⁷ We note that the samples could have been weighted by the population of the regions. However, given the large population size of the respective regions and the very small sample size of the actual survey samples, it was deemed more sensible to purposely pick a zone within each region, identify three woredas each and divide up the numbers of households randomly.

Table 1.1: Distribution of woredas and households by region

	Region	No. of Woredas	No. of HHs
1	Amhara	2	100
2	Oromia	2	100
3	SNNPR	2	100
4	Total	6	300

Source: Author's computations based on the primary survey results

Focus group discussion

Focus group discussions is employed to generate data on urban land issues. FGDs with households, and business owning individuals in urban areas has been designed to generate qualitative information to compliment the findings at rural household level and generate information on urban area land issues. A total of 12 FGDs have been conducted. They were distributed into 2 per town in each of the two towns in/close to the woredas where the rural household survey has been taking place. Each of the two towns have then been selected from the Amhara, Oromia, and SNNP regions. There have been six participants in each group; two such groups in each town of the three towns in each region, making a total of 12 FGD groups. Table 1.2 presents the sample distribution of focus groups across towns and regions.

In each focus group, a mix of the urban community consisting of six members diversified by land tenure characteristics has been included. Specifically, the composition of the focus group discussants was such that home owners, those who rent from the kebele or private renters as well as business owners have been included in each of the focus groups. The discussions focused on situation of the community before watershed land legislations in urban areas, as well as their perceptions towards the development of current property acquisition practices. In addition, community level facilities have been discussed.

Table 1.2: Distribution of towns, focus groups and individuals for focus group discussion by region

	Region	No. of towns	No. of individuals
1	Amhara	2	24
2	Oromia	2	24
3	SNNPR	2	24
	Total	6	72

Source: Author's computations based on the FGD results

Key Informant Interview

The stakeholders that are subjects of the key informant-based data collection include MOUD, MOA, development partners, experts on the subject of land etc. In addition, the federal land administration are also targets for the discussion. Semi-structured interviews with stakeholder individuals form the ground of the urban analysis. In the discussion, respondents' knowledge, attitude and practices related to land tenure and land acquisition issues, including real estate development and

management and land acquisition, preferences for fragmentation, property history, and utilization of various property services, property-related decision making are be discussed. The key informant interview has covered respondents across the City of Addis Ababa. The list of key informant respondents is presented in the Table 1.3:

Table 1.3: Key Informant Respondents by department and organization

Department	Institution
Land Administration Directorate	Ministry of Agriculture
Crop Improvement Directorate	Ministry of Agriculture
Land Development and Management Bureau	Ministry of Urban and Development
USAID	USAID
Feed the Future Ethiopia Land Governance Activity (LGA)/Project	USAID

Source: author's own compilation

Survey Instruments, Training and Fieldwork

The survey team comprised of 10 enumerators, 2 supervisors, a key informant interviewer, a data manager and the lead researcher. The key informant part of the qualitative survey is conducted by one facilitator along with the principal investigator who visited and conducted interviews with experts in the relevant offices in Addis Ababa. The focus group discussion part of the qualitative survey is carried out by the same team that carried out the quantitative survey (see below), in three selected towns corresponding to the three survey regions of the quantitative survey.

For all the three survey locations, two teams each consisting of supervisors and five enumerators have been deployed into survey sites. The selection of enumerators has been based on educational level, conversant of the local language, communication skills in English, past experience of the similar survey, interest to work in the study areas will be taken into consideration.

All interviews and discussions have been conducted in Amharic and Afan Oromo verbally. Ten enumerators and two supervisors have been trained for one day and on CAPI (Computer Assisted Personal Interview). The training session have had two core components—theoretical and practical sessions. The training session mainly will cover the rationale and objectives of the study, sampling techniques, and communication skills during data collection and data collection using tablets, key terminologies of the study as well as the ethical consideration of the survey.

The Principal Investigator of the study has coordinated the overall field logistics arrangements of the survey. Supervisors followed, have assisted and oversaw quality check of the day-to-day activity of the quantitative survey for completeness and consistency.

The fieldwork has taken about 20-days to administer, for a total of 300 observations. Enumerators, assisted by supervisors, synced the data every two days to the server which is directly controlled by the programmer. The programmer then exported the data to STATA files and shared it with the research lead.

1.3.2. Empirical Methods

The data analysis consists of a mix of descriptive statistics and econometric techniques that are aligned based on the mixed qualitative-quantitative nature of the primary and secondary data.

1.3.2.1. Land and household characteristics

Descriptive analysis and mean difference test are employed to assess heterogeneity across stakeholders on the following variables of interest: land access, farm size, perceptions of alternative land tenure systems, and tenure security.

1.3.2.2. Impacts of land tenure security on land productivity and land-related investments

a. The propensity scores matching method

The analysis of the impact of tenure security on variables of economic interest such as productivity and land related investments, is based on the propensity scores matching method. The main purpose of the propensity score estimation is to balance the observed distribution of covariates across households in the tenure insecure (control) and tenure secure (treatment) groups. When being part of the treatment group is independent of outcomes, given the observables, then the relevant summary statistic to be balanced between the two groups is the conditional probability of participation, called the “propensity score” (Rosenbaum and Rubin, 1983). The first step of computing a propensity score in PSM is to estimate a standard probit or logit model of probability of being certified.

$$H_{it} = \alpha + K_{it} + v_{it}, \quad (2)$$

where, for household i and year t , H_{it} is a dummy variable representing being tenure-secure or not; K_{it} is a vector of variables used as determinants of the likelihood of being tenure secure; and v_{it} is the error term. The predicted values are used to estimate the propensity score for each observation in the treatment and the control samples. The comparison group is then formed by picking the observation with similar characteristics for each participant (Jalan and Ravallion, 2003).⁸

The propensity score is given by:

$$e(x) = \Pr(w = 1|X = x) = E(w|X = x), \quad (3)$$

where w is the indicator of exposure to treatment, and x is the multidimensional vector of pre-treatment characteristics. The choice of covariates to be included in propensity score estimation is based on the principle of maintaining a balance in using common variables and at the same time meeting the common support criteria.

For each variable and propensity score, the standardized matching is computed before and after matching as:

⁸ Several matching methods have been developed to match participants and non-participants of similar propensity scores, all asymptotically yielding the same results (Caliendo and Kopeinig, 2008). In this instance, we choose the nearest kernel matching method.

$$SB(X) = 100 - \frac{\bar{X}_t - \bar{X}_{NT}}{\sqrt{\frac{\bar{V}_t(X) - \bar{V}_{NT}(X)}{2}}}, \quad (4)$$

where $\bar{X}_t$ and $\bar{X}_{NT}$ are the sample means for the treatment and control groups, and $\bar{V}_t(X)$ and $\bar{V}_{NT}(X)$ are the corresponding variance (Caliendo and Kopeinig, 2008).

The bias reduction (BR) can be computed as:

$$BR(100) = 100 - (1 - \frac{BX_{after}}{BX_{before}}). \quad (5)$$

b. Conditional expectations and treatment effects

In this section, an attempt has been made to show how to estimate the average adoption effect of tenure security on agricultural productivity and land related investment. There are three post-estimation parameters that are most commonly of interest. The first is the average treatment (tenure security) effect on the population (ATE). This is the unconditional average treatment effect, which answers the question of how, on average, the agricultural productivity/tenure security would change if everyone in the population of interest had been “treated (tenure secure)”, relative to none of them not being tenure secure. The second is the average treatment effect on the tenure secures (ATT). This is the average change in the outcome variable for the tenure secure group as a result of belonging in the group. The third is the average treatment effect on the non-treated (ATU), under the counterfactual situation where everyone who is tenure insecure had in fact become tenure secure.

In observational studies, where the investigators have no control over the assignment of the package of adaptation practices, the tenure security level is likely to be dependent on outcomes and thus a biased estimator of the ATE. However, the ATT and ATU are used to compare expected net farm income of adopters and non-adopters with the counterfactual hypothetical case that adopters did not adopt and vice versa. Following Carter and Milon (2005), the expected net farm income under the actual and counterfactual hypothetical cases are computed as follows:

Tenure security with tenure secure categories (actual):

$$E(R_{2i}|I = 1) = M_{2i}\vartheta_i + \vartheta_i\lambda_{2i} \quad (6)$$

Tenure insecure without tenure security categories (actual)

$$E(R_{1i}|I = 1) = M_{1i}\vartheta_i + \vartheta_i\lambda_{1i} \quad (7)$$

Tenure secure had they been tenure insecure (counterfactual):

$$E(R_{2i}|I = 0) = M_{2i}\vartheta_i + \vartheta_i\lambda_{2i} \quad (8)$$

Tenure insecure had they been tenure secure (counterfactual):

$$E(R_{1i}|I = 0) = M_{1i}\vartheta_i + \vartheta_i\lambda_{1i} \quad (9)$$

These expected values are used to compute unbiased estimates of the effects of tenure security on tenure secure group and on non-tenure secure group. The tenure security effect on the treatment group (ATT) is defined as the difference between Equations (6) and (7):

$$ATT = E(R_{1i}|I = 1) - E(R_{2i}|I = 1) = M_i(\vartheta_j - \vartheta_1) + \lambda_{ij}(\sigma_j - \sigma_1) \quad (10)$$

Similarly, the average effects of treatment on non-tenure secure group (ATU), i.e., the counterfactual effects of tenure security on the control if they had been treated, is computed as the difference between Equations (8) and (9):

$$ATU = E(R_{ij}|I = 1) - E(R_{i1}|I = 1) = Z_i(\vartheta_j - \vartheta_1) + \lambda_{ij}(\sigma_j - \sigma_1) \quad (11)$$

1.3.2.3. Estimating Willingness to Accept (WTA) for ACC-type land contracting

A Logit model could be applied to estimate the probability that the respondents would accept a given monetary value. The underlying model is:

$$\text{Probability(Yes)} = 1 - \{1 + \exp[A_0 - A_1(X)]\}^{-1}$$

where A_0 and A_1 are the coefficients to be estimated and X is the WTA monetary value the respondent is asked to accept. In terms of the A_1 coefficient, it not only refers to the bid amount the respondent is asked to accept but also includes the respondent's demographic information, such as age, education, revenue, etc. As such, according to Hanemann (2001), given that WTA is a random variable, the expected value of WTA can be calculated by the following formula.

$$\text{Mean WTA} = \frac{B_0}{B_1}$$

where B_1 is the coefficient on the bid amount and B_0 is the grand constant calculated as the sum of the estimated constant plus the product of the other independent variables times their respective means.

1.4. Access and Rights to Land

1.4.1. Access and Rights to Rural Land

The KII with concerned bodies regarding rural land administration revealed that rural land access is largely governed by the land administration proclamation (FDRE, 2005). The proclamation is based on the principle of access to all for the purpose of farming the land, relying on the premise that village level (re)distribution and inheritance cover for the dynamic demand for land. In practice, however, both means have exhausted their capacities in most instances, leading to an emerging generation of landless rural residents. Given the size of the rural population, it is the opinion of many of our KII discussions that the issue of landlessness is bound to go beyond being a land policy issue to become a national, political and economic issue that cannot be ignored for long.

The discussion regarding access to rural land and tenure security that are presented in the four sub sections below is based on analysis from primary rural household survey data, which we present below.

1.4.1.1. Salient aspect of land holdings

Table 1.4 presents descriptive statistics on perceptions of tenure security. Six different measures of perceptions of tenure security that have been considered in the analysis are: perceived tenure security, land ownership, use right, joint use right, ownership right, and bequeath right. 80 per cent of the households believe that parcel is not likely to be taken away from them in the next five years while 87 per cent believe to have land ownership that is either granted to them by the government, inherited or purchased. A slightly higher proportion (90 per cent) believe they have a use right and only 11 per cent have joint use right with individuals who are not members of their household. Around 87 per cent believe they have bequeathed rights. A lower percentage of households (65 per cent and 7.5 per cent respectively) perceive to have joint ownership and joint bequeath rights. Over all, despite the land ownership right not being full, a very high proportion of the households perceive to have solid rights over the use of their land and bequeathing the land.

Table 1.4: Land right and perceived tenure security indicators

Variable	Description	Observations	Proportion
Tenure security ⁹	Perceived tenure security (=1 if parcel not likely taken in the next 5 yrs.)	7103	0.80
Landownership	=1 if granted, inherited or purchased	8365	0.87
Use right	=1 if member have use right	8365	0.90
Joint use right	=1 if joint use right with nonmember	7514	0.11
Ownership	=1 if member have ownership right	7455	0.65
Joint ownership	=1 if joint ownership with nonmember	4878	0.075
Bequeath right	=1 if members have bequeath right	7451	0.87

Source: Authors' Computation from ESS, 2019

Table 1.5 shows the socioeconomic variables, perceived tenure security and land rights for perceived tenure security and land ownership groups. 16 percent of the survey households are female headed and the remaining 84 percent are male headed. Similarly, Table 1.5 has also indicated that 16 percent and 13 percent for perceived tenure security with yes and no response respectively compared to 17 percent and 10 percent of land ownership with yes and no respondent respectively. Average household size of full sample has been 5.31, with 5.30 and 5.44 for perceived tenure security for yes and no respondents as compared with 5.31 and 5.34 for yes and no respondent in land ownership groups. Further, Table 1.5 has indicated that 16 percent and 17 percent tenure secured and landowners have female households respectively. Regarding to TLU which has been a wealth indicator among the survey respondents, the non-perceived tenure secured households have around 3.25 TLU whereas the no respondent for land ownership have 3.44 TLU. In this regard, much difference was observed among land ownership group than the perceived tenure security groups. In terms of education the no respondents in both perceived tenure security and land ownership group have shown better performance in literacy than the yes respondent did.

⁹ The exact survey question used for this indicator is “How likely are you to involuntarily lose ownership or use rights to this [PARCEL] in the next 5 years?” Households are classified as tenure secure if they answer “Not at all likely”.

Table 1.5: Descriptive statistics of socioeconomic variables, by perceived tenure security and land rights

Variable	Full sample Mean	Perceived Tenure Security			Land ownership		
		Yes	No	Diff.	Yes	No	Diff.
Household Size (counts)	5.31	5.30	5.44	0.14**	5.31	5.34	0.04
Sex of the household head (1=Female)	0.16	0.16	0.13	-0.03**	0.17	0.09	-0.07***
Number of male adult members	1.91	1.91	1.95	0.04	1.92	1.83	-0.09***
Literacy status of the household head (=1 if read & write)	0.42	0.42	0.43	0.02**	0.40	0.50	0.10***
Total land holding in hectare	0.94	0.89	1.08	0.20***	0.87	1.39	0.52***
Number of oxen	3.01	3.56	1.19	-2.37	3.25	1.35	-1.90
Tropical Livestock Unit (TLU)	2.92	2.85	3.25	0.40***	2.84	3.44	0.61***
Perc. of forest-covered land in the community	14.61	14.20	15.69	1.50***	14.50	15.37	0.87**
Access to water in the community (=1 yes)	1.76	1.76	1.74	-0.02**	1.76	1.76	0.00
Distance to the nearest govt. secondary school (KM)	7.17	7.15	7.21	0.06	7.06	7.90	0.84***
Plot Distance from home (KMs)	1.97	1.67	2.25	0.58	1.60	4.46	2.85***

Source: Authors' Computation from ESS, 2019

* $P < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Except in female, male adult, literate, land holding, TLU, forest, secondary school and plot distance there is no statistically significant difference among perceived tenure security and land ownership households. There has been statistically significant difference in yes and no respondents in perceived tenure security for household size, female household head, literate, land holding, TLU, forest, water and secondary school. There have been no statistically significance difference have been observed among yes and no respondents in perceived tenure security in male adult, number of oxen, secondary school and distance to plots variables. In education, no respondents in both perceived tenure security and land ownership have shown better performance (which was 43 and 50 percent respectively) than yes respondents in both groups (which was 40 and 42 percent respectively).

1.4.1.2. Perception of future land holdings

Farm households' perception of land tenure security is vital for long-term land related decisions like investment. Farmers' perception of land tenure security is influenced by factors such as their subjective understanding of their legal tenure status, and institutions that may be required in cases of land conflict

Table 1.6 summarizes respondents' perception on land tenure security, measures taken by households to maintain land ownership, and land conflict related issues. Respondents were asked if they have any land with holding rights. Almost all of them respond that they have land with holding rights. Further, 30 percent of the respondents feel that the land belongs to the government although they have some form of holding to the land. Table 1.6 also summarize the future expectation of respondents about their land holding. More than 75 percent expect no change in land holding, while nearly 20 percent

expect a decrease in their land holding. The main reasons cited for expecting future change in land holding are redistribution of land among family members and inheritance.

To understand the changes and driving forces of land fragmentation over time, respondents have been asked a set of questions about changes in their land size in the past and their expectation in the future. About 8 percent of the respondents' report that there has been a change in their land in the last five years.

In addition to their past experience, respondents have been asked about their future expectation about their land holding. Close to 76 percent of them do not expect a change in their land size in the future. On the other hand, about 20 percent expect a decline in their land holding in the future, and 4.6 percent expect an increase. Such expectations of future changes in land size are basically due to family redistribution, inheritance and land reallocation

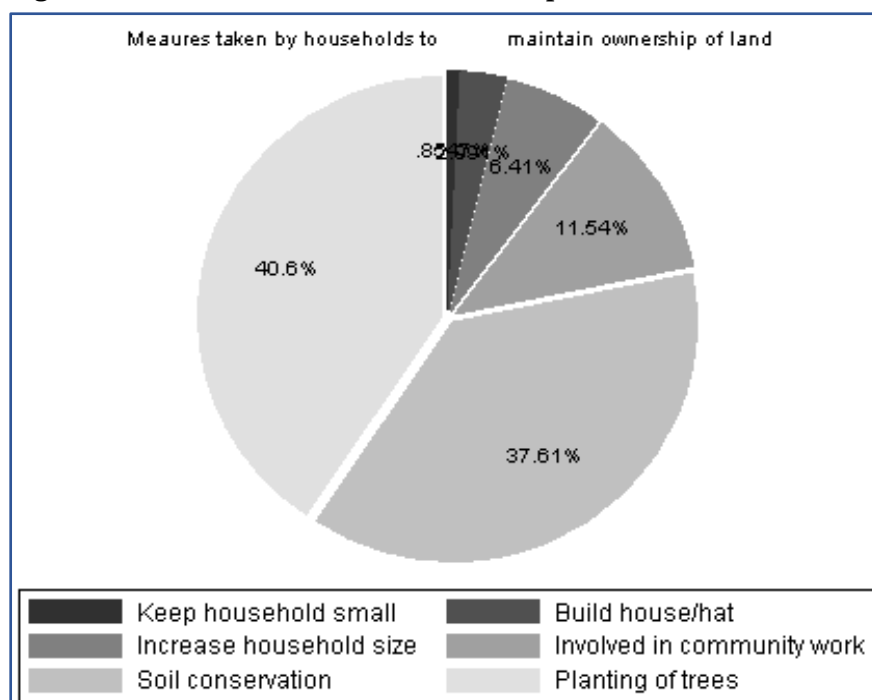
Table 1.6: Land holding and future expectations

Perceptions and expectations	Response (%)
<i>Who do you feel the land you farm belongs to? (N=299)</i>	
Yourself	67.89
Government	31.44
Other (specify)	0.67
<i>What do you expect about changes in the size of your land holdings over the next five years (N=217)</i>	
Increase	4.61
Decrease	19.82
No change	75.58
<i>What is the main reason for an expectation of change in land holding? (N=53)</i>	
Village redistribution	5.77
Land reallocation (<i>shigishig</i>)	3.85
Family redistribution	76.92
Inherited from parents	9.62
Bequest/gift to others	3.85

Source: author's computation from survey

1.4.1.3. Measures households take to maintain ownership of land

Respondents have been asked whether they take any active measures to maintain ownership of their land. About 78 percent respond that they take various measures to maintain their land. As shown in the figure below, planting trees and soil conservation activities are the main strategies used by households to maintain their ownership. Other measures include engaging in community works (11.5 %), increasing household size (6.5%) and building houses. The remaining 22 percent of the respondents do not take any measures because they believe the land belongs to either kebele or the state.

Figure 1.1: Measures to maintain ownership of land

1.4.1.4. Perceptions of land related conflicts

When they are asked whether they had faced land related conflict over the five years preceding the survey, only a small percentage of the respondents (8 %) of them have replied in the affirmative and the vast majority (92 %) reported that had not faced any land related conflict. The 24 sample respondents who reported to have faced land related conflicts have been asked to specify the causes for the conflict and their responses are summarized in Table 1.7.

Table 1.7: Distribution of Respondents by Causes of Land related conflicts (N=24)

Causes for land related conflict	percentage
Exceeding boundaries	75.00
Inheritance	8.33
Other	16.68

1.4.2. Access and Rights to Urban Land

1.4.2.1. Urban land supply and modalities to access

As per the discussion with the KII, the main access to land (modality) are two: auction/bid and administrative placement. The first system, bid, involves the business applicant having his business proposal evaluated as per the merit of the project. Bid applies for residential plots too, when the targeted plots are well above the commonly average sizes.

The guiding principle for allotment of land for large investment purposes is to match the project nature with the land availability. Any project proposal is first submitted to the city administration. The

allocation will be approved by the regional/city administration cabinet, as the case may be. The allocation will then be directed to the respective areas [City condominium (*legetafo*), industry (*gelan, dukem, sebeta*); milk and water (*sululta*)]. Exceptional projects with (*liyu hagerawi fayda*) /allocation will be directed to the respective areas. Actual processing will then take place, including compensation, expropriation, certificate and agreement signing.

The discussions with the KII and urban FGDs indicated that land supply for business and residential purposes for such needs or for the needs of the community as a whole seriously shortfalls demand. Even in plots under the custody of the holder, individuals get through a lot of hassle just to build property on their plots.

The administrative placement system has initiatives from the governing body where the city administration provides for housing for those who organized under association/*mahiber*.

For access to residential plots, the FGDs from the urban areas revealed that accessing access land/more land in the same arrangement (through lease, rent, sublet, *mahiber (association)* needs expansion to meet the massive demand. There have been efforts to get civil servants and the police force members organized into *mahiber* to grant them land access. There have also been efforts to provide *kebele* housing to the elderly, the disabled, and the orphans. However, these efforts barely scratch the surface of the ever-compounding urban housing access problems.

The opinion of the respondents in the FGD has been that land ownership could continue to be under government but there have to be rooms for utilization of land as the possessor of the land wishes buying and selling as well as inheritance. There also needs to be a policy that allows for sale or renting of a property on property built on the land. They have also opined that there needs to be a redistribution policy that enables reallocation of land from those who have excessive holdings to those who donot. This enables address equity issues and reduce landlessness.

The FGD discussants have also pointed to massive inefficiency in land use. There are so many unused *kebele* property houses or big land area enclosed that remains unused. Despite residents repeatedly lodging complaints about them being allowed to access the land or the houses, their questions are largely ignored. On the other hand, the respondents also opined that it is customary to see rich residents/investors supposedly bribing officials and acquiring land or property unused otherwise. The lopsided nature of access to land also needs correcting.

A greater proportion of the complaints aligned with administrative bottlenecks to processing any land related matters including lengthy processing times, lengthy time spent on resolving land related conflict, bad administration, keeping low-income residents from acquiring land by making the process of land acquaint cumbersome, time and resources consuming beyond their capacity. The respondents also complained of a tendency to play favoritism to richer clients and tendency to disproportionately accrue land holdings by officials. There is also lack of willingness and positive attitude towards legalizing holdings by administrative bodies, and lack of accountability and transparency and problems with the very organization of administrative tasks not being time and cost efficient.

1.4.2.2. Understanding of land laws and grievance redress mechanisms

The level to which land users exercise their rights to land depends on their grasp of the land laws. This examination using FGD has been probed along three lines: inheritance, expropriation, and land/ property rental laws. As per inheritance, the communities have exhibited a thorough understanding of relevant land laws. Regarding inheritance arrangement in their community, the respondents underlined that land owners are entitled to inherit land to their children (biological or adopted), as long as the children can verify or bring witnesses of their relationship to the inheritor. The limit to legalizing

inheritance expires within five years of the death of the inheritor. The beneficiary of inheritance is also expected to provide evidence of map and certificate of holding as well as receipt of payment of land taxes. The entitlement to inheritance also, in some instances, applies to close relatives. The respondents have stated that land could be expropriated from the owner if the owner is absent for more than 15 years. As per land rentals, rental arrangements were understood to be possible for up to three years with official contracting required if the land rental applies for longer than a three-year length.

The general attitude towards the current land policy is that it is inadequate. The policy does not give land ownership rights along with renting selling, building a property and selling it, resulting in low tenure security. It will be all round beneficial if the land policy allowed the use of land as a collateral for credit. The current policy has, for all intents and purposes, deprived the feature of land as a production capital. The policy is not conducive for private owners or even investors.

Based on this policy direction land access should include certifying holdings, there is a desperate need for land redistribution or distribution. There is a need to make use of the available land in a modern, technology backed and efficient land use system to ensure that land is used efficiently and equitably. Land certification would help increase tenure security. There is a need to build a system that purges out bribery and punish the perpetrators for it. There is a need to expropriate land that is not put to use by investors for a long period of time. There is a need to build an institution that has grievance redress mechanism as its main objective.

Respondents have been probed on the kind of support they have gotten, how was their grievances have been handled and what their views were on how future problems related to land be handled. They have stated that grievances are either largely left unattended altogether or the process is too slow. The officials in charge lack the commitment the job of grievance resolution demands; there is a high turnover of officials creating discontinuity in processing cases and requiring the issue to start all over again with the arrival of new officials. Lack of systematic and organized grievance redress mechanism lead the cases to be handed in *ad hoc* manner. Unless there is investment in modern technology baked, organized, systematic, accountable and transparent redress mechanism established in the future, we don't see improvement in handling of matters. There is a practice of lip-service and lack of genuine will to address grievance matters.

An obvious reason for this is that maladministration-in terms of misuse and misallocation- could have contributed to mismatch between land demand and supply. Attributing this to just problems with government ownership/ administration would be looking through the issue through a narrow focus.

1.5. Ethiopia's Land Policy

1.5.1. Rural and Urban Land Administration

The issue of land administration is at the heart of any land policy which, in this study, is assessed using KII from federal land administration bodies for urban and rural land.

The policy has been backed by extensive efforts to focus on capacity building with trainings at regional- and university-level. The policy also focused on provision of technology to make land administration open, efficient and transparent.

It should be noted that the Amhara and Oromia regions have started the process of merging their respective rural and urban administration systems. Tigray region had also passed a resolution to merge the administration of rural and urban lands. However, this process of merging involves intricate set of bureaucratic and administrative legwork, which is still underway.

In terms of administration, it should be noted that the Amhara and Oromia regions have started the process of merging their respective rural and urban administration systems. Tigray region has also passed a resolution to merge the administration of rural and urban lands. However, this process of merging involves intricate set of bureaucratic and administrative legwork, which is still underway.

There is a massive challenge in the synchronization between rural and urban land administration. This is despite potential benefits and good meaning attempts that have not borne much fruit. Potentially, the rural and urban cadaster can easily be synchronized into one format. However, the actual activities from the steering committee that has been formed under initiatives from USAID seemed to have faced reluctance from both bodies of administration in terms of taking real strides in the steering committee. The transfer of urban and rural land even those that are already registered has been useless when they became urban land. The regions also have the same problem: the Amhara region rural land administration bureau is more powerful leading to power imbalances with the urban bureau.

The other challenge is also with respect to synchronizing land use and utilization. The integrated land use planning project, the outputs of which has been submitted to the Plan and Development Commission is one potential for integrating rural and urban land use into one. However, the progress with it seems to have stalled.

The KII also identified the overarching institutional challenge one of which is the weakness in the institutional relationship across the relevant federal offices and between federal and regional offices. Whereas implementing institutions have strong capacity at a regional level, particularly in the Amhara region, as the region-level institutions are filled with individuals qualified for the respective posts. On the contrary, the corresponding federal level posts tend to be filled by a supposedly all-rounded individuals expected to fit into all sorts of posts. The second challenge emanates from the fact that resources at every level of MoA and the government relating to manpower are limited. There is a fast experts' turnover; there is lack of expertise matching the position and there is the sectoral challenge of experts working on land administration tend to be poached to city-based positions.

Finance is the fifth challenge where implementation of land-related legislations and initiatives has so far been project-related, thereby limiting planning. Finance for many such activities is also so limited that some woredas just get just their operating budgets. The fourth most important challenge is the rigidity of the land policy [land policy does not get updated as quickly as the legislations, understandably because it is politically sensitive]. For instance, the use of land as collateral for credit, while touted as one of the benefits of the second stage-land certification, is not incorporated into any land administration legislation. Hence the use of the land as collateral is based on the discretionary the National Bank. Partly because of this, some regions have been reluctant to use the collateral-related advantages of the land certification because the credit provisions are not exactly backed up by a clear land legislation/policy towards that.

The sixth challenge involves how policy disputes get rectified between the regional and the federal bodies. As things are the mandates of the federal and regional governments seem pretty cut out, with the federal responsible for drafting and rectifying jurisdictions and the regional responsible for drafting implementation guidelines. Any differences will be sorted prior to the rectification and mutual understanding between the two bodies. Unsettled disputes, in principle, can be taken to court.

1.5.2. Urban Lease Policy and Practice

Assessment of urban land lease policy and practice is conducted using the KII with the relevant bodies. Accordingly, under normal circumstances, the city administration values the properties, will register the land, transfer the land, the lease will register and certify the land. Except for inheritance, all transactions since the policy came into effect will be subject to lease. One thing that stands out is the industrial park issue and sub-lease concept is out of the policy. The industrial parks acquisition of the land is directly ordered by the political powers and subleasing process is handled by the industrial parks corporation. This limits city administrations' mandate to just handing over land to the respective parks. As a result, the sub lease transaction will not be captured by the city administration.

The guiding principle for allotment of land for large investment purposes is to match the project nature with the land availability. Any project proposal is first submitted to the city administration. The allocation will be approved by the regional/city administration cabinet, as the case may be. The allocation will then be directed to the respective areas [City condominium (*legetafo*), industry (*gelan, dukem, sebeta*); milk and water (*sululta*)]. Exceptional projects with (*liyu hagerawi fayda*) /allocation will be directed to the respective areas. Actual processing will then take place, including compensation, expropriation, certificate and agreement signing.

One of the challenges to the implementation of the policy has been that legal frameworks have not been properly operationalized from federal to regions and cities owing to capacity limitation from federal to regions and cities. Despite extensive capacity building efforts, staff turnover has been very high, leading to lack of efficiency and continuity in bureaucratic tasks focused on land administration. There has been a limitation in technology provision, although the efforts put into modernizing and digitizing land administration tasks have been considerable. From the users/landholders' perspective, there has been low level of awareness among the public and lack of trust in formal administration channels leading to tendency to move towards informal rather than formal means of obtaining services.

The KII expert interview also revealed that administrative problems in land use revolves around the fact that land under government administration, and not under an independent body means there is a conflict of interest between governance of an entity like land and political mandates. To solve this, an institutional innovation that borrows from countries with public land ownership systems is discussed in (Diriba, 2022). As a result, land tends to remain a political tool and government administration which makes it open for bribery and corruption. This includes favoritism through kinship; bribery; expropriating from the poor through unfair prices and a major source of commerce for government officials. The flourishing of informal settlements has also been partly associated with lack of trust and awareness on the workings of formal channels.

1.5.3. Impact of land policy variables on key economic variables of interest

1.5.3.1. Impact of tenure security on land productivity

Tenure security is a parameter that is of interest for virtually every economic policy. Accordingly, in this study, we use the ESS survey data to assess the impact of tenure security on agricultural productivity. As per Table 1.8, the PSM results revealed that perceived tenure security has negative impact on productivity while tenure security, measured by land ownership, lead to increased productivity. This indicates that, just like previous literature the impact of tenure security on agricultural productivity is ambiguous.

Table 1.8: ATT of perceived tenure security on agricultural productivity (output in kg per ha, ln)

Matching method	Perceived tenure security	Land ownership
Kernel	-0.147*** (0.0507)	0.319*** (0.0973)
NN (Caliper=0.01)	-0.159 (0.100)	0.202* (0.110)
Observations	6429	7586

Standard errors in parentheses

Source: Authors' Computation from ESS, 2019

* $P < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Author's computation from the survey

1.5.3.2. Impact of tenure security on land-related investments

Another important impact of tenure security that is important in the context of land policy is land-related investment. Consistent with the hypothesis we set out to test on the impact of tenure security on agricultural productivity, the PSM results indicated that, while in both tenure security measures enhanced land related investment overall, it leads to significantly higher investment gains in the manure and compost categories (Table 1.7). However, erosion prevention and other soil fertility measures are inconsistently impacted by tenure security

Table 1.9: ATT of perceived tenure security on land related investment

Agricultural investment	Kernel matching		NN (Caliper=0.01)	
	Perceived tenure security	Land ownership	Perceived tenure security	Land ownership
Manure	0.0832*** (0.0145)	0.204*** (0.0104)	0.0363 (0.0257)	0.133*** (0.0222)
Compost	0.0127** (0.00641)	0.0348*** (0.00322)	0.0189* (0.0107)	0.0272*** (0.00895)
Erosion prevention	-0.00347 (0.0141)	-0.0478*** (0.0180)	0.0167 (0.0184)	-0.0457* (0.0240)
Soil fertility management	0.0185 (0.0148)	0.0465** (0.0217)	0.0218 (0.0237)	0.00486 (0.0256)
Number of observations	6992	6992	6992	6992

Standard errors in parentheses

Source: Authors' Computation from ESS, 2019

* $P < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Author's computation from the survey

1.5.3.3. Impact of ACC on land productivity

Yet another land-related policy measure is the ACC which is likely to have impact on productivity. For that purpose, the study employed the ESS survey data to assess the impact of ACC on

land productivity. The propensity matching model has been used to compare observed and counterfactual farm revenues conditional on whether farm households adopted ACC. Table 1.10 compares the expected farm revenues of households that adopted ACC versus those who did not.

The decision to adopt ACC for all crops will lead to a gain of 6 kilos compared to the decision not to adopt the technology by the same set of households. This gain is calculated as the difference between the yields of adopting households who adopted and the same set of adopting households if they did not adopt. The t-test shows significance, indicating that the difference is statistically significant.

Table 1.10: Impact of ACC on productivity

Matching technique	Matching parameters	All crops	Cereals
Radius	Caliper=0.01	0.06 (0.04)	0.02 (0.04)
Radius	Caliper=0.05	0.07 (0.05)	0.02 (0.04)
NN	NN=3	0.07 (0.06)	-0.02 (0.06)
NN	NN=5	0.07 (0.06)	-0.02 (0.05)
Kernel	BW=0.06	0.07 (0.05)	0.02 (0.04)
Observations		9635	5004

Standard errors in parentheses

Source: Authors' Computation from ESS, 2018/19

* $P < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Author's computation from the survey

We then compared the farm income for households that adopted ACC or if they did not adopt it for various crops types in Table 1.11. This particular analysis shows that adoption of an ACC practices leads to higher yield gains except for vegetables and root crops. The implication is that while overall beneficial, ACC might not lead to synergetic gains across all crop categories.

Table 1.11: Impact of ACC on yield and value per hectare of various crops types

Matching technique	Matching parameters	Pulses	Vegetables	Root crops	Fruits	Coffee
Radius	Caliper=0.05	0.09 (0.14)	-0.07 (0.51)	-0.44 (0.55)	-0.08 (0.76)	0.08 (0.51)
NN	NN=3	0.13 (0.14)	-0.06 (0.44)	-0.57 (0.51)	0.17 (0.71)	0.27 (0.59)
NN	NN=5	0.14 (0.15)	-0.08 (0.39)	-0.35 (0.38)	0.42 (0.57)	0.22 (0.37)
Kernel	BW=0.06	0.10 (0.17)	-0.19 (0.59)	-0.48 (0.38)	-0.02 (0.56)	0.17 (0.53)
Observations		824	317	688	639	628

Standard errors in parentheses

Source: Authors' Computation from ESS, 2018/19

* $P < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Author's computation from the survey

1.6. Land Registration and Certification

1.6.1. Rural Land Certification Process

The process of land certification has been analyzed in this study based on observations from the KII. Accordingly, the second stage certification commenced in the year 2014/2015, covering four regions and has so far issued certificates to 17 million parcels with a total of 25 million registered and under the process of certificates being issued. 2nd stage certification features include Aerial photograph, Region, Name, woreda, Owner's name, Size, Day of issue, Parcel code, Photograph of owners (for Oromia, in particular).

Compared to the first stage certification, the second stage certification is primarily seen as a more solid way of issuing certificates in terms of providing exact size and physical location. There are also additional features from first stage certification which it expanded on such as communal lands, and religious institutions- that are all mapped in the second stage. A link to the first stage certification and indeed to evidence of holdings comes in the form of the first stage certificate papers, court letters, and the likes.

The actions were funded through a joint-government-donor effort. Major donor efforts have been DFID which supported the LIFT program (to be followed up by the LIFT-UP program) and the RILAS by the Finnish government (covering the Benishangul and Gambella regions).

Project based certification supports include the Sustainable Land Management Program (SLMP), RLLP-watershed based (covering watershed-focus woredas), LIFT (covering all woredas), Climate action through landscape management (the leftover woredas issuing 900 thousand certificates by itself). The government actions are covered from regular budget. Despite this, however, there are major challenges to funding as evidenced by most activities linked up to subsidiary projects making planning difficult.

The registration and certification activity has been carried out by a team of four groups including woreda steering committee, the land administration committee, the public awareness group, public awareness group, and the GIS surveyor. Woreda steering committee will oversee the land administration committee's activities and will be composed of the following: woreda administration, women's affairs, courts, justice, and woreda land administration office. The land administration committee is formed of adjacent owners, woreda coordinator and the community elders. The public awakes group is composed of local media such as school mini media and development groups operating in the area.

The first step in the certification process is rapid assessment by the regions for cost effective actions (manpower availability), followed by the identification of the woredas over the following 6 months, done by the Central Statistical Agency (CSA). Fund allotment and verification is done by the Ministry of Finance and Economic Development (MoFED). The cost of one certificate is estimated to be 8 dollars. Public awareness strategy of the second stage certification involves stakeholder awareness in the regions and woredas and kebeles using mechanisms such as mass media, brochures, and posters.

Following this, the land will be measured by the team of experts. Data entry and digitization will follow with the penultimate action of public display of the maps, constituting the second stage of the awareness strategy. The maps will be posted in the kebele walls-along with names of the owners for verification. Any information on the display that is deemed incorrect will be reported on the claimant forms for the complaints (e.g. shape, size, name misspelling). The final stage in the public awareness

strategy will be certification awareness, enabling the certificate holders be aware of the power of the certificate such as credit worthiness of the land.

In terms of the process of the demarcation, land holding clearance happens before the land certification. Any conflict will first be attempted to be resolved within the land administration committee. If it cannot be resolved, it can otherwise be taken to court.

The second stage land certification and the associated digitization and organization of information has paved way for having different types of transaction in the Rural Land Administration System (RLAS). The RLAS information system would consist of provisions for transfer for a small fee through inheritance, credit, land rental, gift for any form of transfer that is not done by the Kebele. The practice so far has been that any transfer such as rental or gift for a period of less than three years will be handled by the Kebele, free of charge.

The general perceptions of second stage land certification among the public and experts is that tenure security has increased -revenue generation has been systemized; credit access enhanced (current credit provisions are estimated to total 30-50 million birr).

1.6.2. Rural Land Certification and Policy Implementation Challenges

While the second stage certification has been implemented on the heels of a highly on-demand and largely successful first stage certification, implementation of a more stringent second stage certification is likely to be riddled with implementation challenges. The KII with the relevant bodies revealed such shortcomings that we discuss below. One of the shortcomings of the land certification program is that it does not apply for Somali and Afar regions (land belongs to specific tribes). This creates a problem/land use purpose/ for utilization. A general problem with land regulation/proclamation since the time of the emperor up to today has been that there is gap between laws and implementation. This applies in the case of land certification too where land use is still a political tool and where government administration inclines towards politicizing land administration than ensuring that its economic benefits are maximized.

There is also a considerable problem with clash of mandate, purposes and interest at Federal level: MoA; MoUD in regions land administration agency. Equally, there are several challenges of awareness creation in the process of second stage certification such as reaching those who are under-age and the elderly. Physical difficulties associated with terrain and transportation also serve as important source of bottlenecks to coordination activities.

1.6.3. Benefits of the Certification Program for Women

The first stage land certification has had many proven benefits to women in terms of issuing the certificates as proof of joint spouse ownership. By the same token, the KII has revealed that the second stage land registration has brought significant benefits the women in that it has ensured their constitutional rights to land inherit from the parents as well as the husband is now backed with proclamation and has improved the status of women. The second stage certification is thought to have had a major impact on women's assertiveness over their land. Women who lost land got it back with the certification; women who became landless became landed.

The land certification also facilitates confidence to engage in land market participation such as contract farming. Contract farming is beneficial for women in the following ways. Under the ACC, the

inputs such as fertilizer and improved seeds are accessed via the cluster which reduces the very high transaction costs of women getting it themselves by traveling and applying at the woredas to her home instead of getting seeds and fertilizer for the cluster. Similarly, market access as part of a cluster is also much easier as it reduces the transaction costs of transporting the produces themselves. Tractor rental as well as access to labor also gets easier for women because she asks as part of the cluster.

1.6.4. Awareness of Land Registration and Certification

The study has assessed the degree to which the second stage certification has been understood by the land-owning households using primary rural household survey data collected for the purpose of the study. Table 1.12 summarizes awareness and participation of respondents in land registration and certification programs. Majority of the respondents have the first stage certificate. However, half of the respondent's report that second stage land registration and certification program has not been started in their area. Most of the respondents believe that they have been not adequately informed about the second stage certification. Public meetings about land certification were reported only by 27 percent of the respondents, but in cases where there are public meetings the majority (96 percent) of the respondents participates.

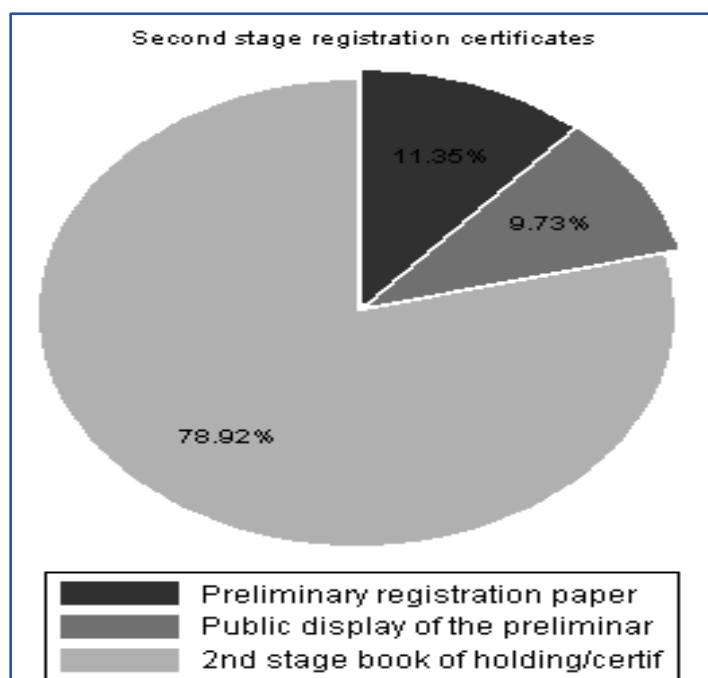
Table 1.12: Awareness of land registration

Question	Observations	Yes (%)
Do you have the first stage certificate?	300	95
Has the second stage land registration and certification started?	300	49.67
Do you believe that you were well informed about the second land registration	300	40
Were there public information meetings on land registration	300	27.33
Did you or a member of your family attend meetings about land registration	82	96.34
Are you (a member of your family) part of the land registration committee	300	5.33
Do you have a certificate to your land holdings?	300	61.67

Source: Author's computation from the primary survey data.

1.6.5. Coverage and Ownership of Land Certificates

More than 61 percent of the respondents indicate that they have certificate of land holding among which 79 percent hold second stage book of holding, and 11 percent hold preliminary registration paper. Figure 2 presents the distribution of respondents by the stage of the second stage certification they are in.

Figure 1.2: Second stage registration certificates

1.6.6. Costs of Land Certificates and Willingness to Pay

One way of assessing the worth of a certificate is investigating the costs associated with acquiring it. For that purpose, the study has employed the rural household survey data focused on the cost of certificates and a hypothetical set of willingness to pay questions. Specifically, respondents have been asked about costs related with certification and how much they are willing to pay for replacement if the certificate they hold is lost. While direct payments for the certification are non-existent, households incur various certification related costs. On average the certification related costs are 11.6 ETB. Those costs include printing and photocopy related payments that the farmers pay during the land registration and certification process. On the other hand, respondents have been asked if they are willing to pay to replace a certificate in case of loss. The median amount they are willing to pay is 17.5 ETB.

Table 1.13 summarizes willingness to pay of households to get certificate of holding. More than 96 percent Households without certificate of holding report that they want to get a land certificate. And, 97 percent of them are willing to pay if the cost is 100 ETB or less.

Table 1.13: Willingness to pay for certification

Bid values	Observations	Yes (%)
Want to obtain a certificate	115	96.52
Willing to pay for certificate	111	96.4
WTP ≥ 100	107	97.2
WTP ≥ 300	104	84.62
Qd aWTP ≥ 500	88	84.09

Source: Author's computation from the primary survey data

1.6.7. Access to Urban Land and Certification

1.6.7.1. Urban land certification background

The study has composed the background to the urban land certification program below based on the key informant discussions from the federal land administration bureau and the crop improvement department of the Ministry of agriculture and the expert interview from the USAID, which we all present below. Urban certification is motivated by the observation that there is an inherent conflict of interest in the government owning land and protecting users' rights at the same time. Further, the need to attract investment being top in the government's agenda, exorbitant bank interest rates associated with very high tenure insecurity requires urgent action.

A precursor to this has been the study by the Ministry of Urban Development in 1999EC where it was recommended that there has to be an institute conducts registrations.

From the national context, there was a legal based assessment and the rules have been drafted and then proclamation was launched. Along with the proclamation, there has been a capacity building associated with land law registry, spatial data gathering and the development of curricula, mapping development and training.

The actual registration activities have been designed in such a manner that the main pilot would be conducted in Addis and other initiatives to do registration and give certificates in Dessie, Dire Dawa, Gondar, and Adama simultaneously.

Looking forward, the registration and certification program sets out to cover 23 cities in 10 years and the whole of the country in 20 years.

1.6.7.2. Urban Certification process and challenges

As per our discussion with the KII experts, the land certification was conducted in 200 woredas and five major cities. The following steps constitute the certification process: awareness creation, women's inclusion; collecting and organizing the supporting document; desk verification of the documents; demarcation in the field; photo marking and creating a polygon with the neighbors; checking of the map overlaps with adjacent roads etc.; making corrections accordingly; and a public announcement of holding that will base the decision on whether the candidate plot of land is eligible for certification or not.

Grievance handling committee is made up of five individuals as grievances crop up all the time, particularly relating to multiple claims on a given plot.

The major source of finance for the urban land registration program has been the government's coffers. Specifically, Addis Ababa project has been an own-initiative of the administration and it has been self-financed. Pilots in other cities have been financed out of the capital budget from the federal government which covers the cost of running the project and purchase of equipment. The pilot cities have also received technical support from the federal government including contracted supports from the Ethiopian Mapping Agency and capacity building contracts.

The government has also acquired world bank-funded Alex Korea cadaster expertise. In addition, to the registration, technological support included establishment of data center such that the data structure at federal and regional levels are synchronized and the capacity building training using drone technology for data capture.

The USAID is another development partner that supported the registration process by converting paper-based work to digital format. USAID has also supported the urban land registry through supporting integrating urban and rural land registration in Oromia.

In terms of challenges, even in ‘more established and older neighborhoods’ provision of certification is met by a mismatch between the certificated holding and the actual holding. There are instances where there is holder that does not have any evidence of ownership. There is also the challenge that kebele dwellings don’t have certificate. Another common challenge is that kebele houses/roofs are conjoined so it is difficult to give boundaries.

A second challenge is the lack of certification for many public holdings. As communal areas such as parks don’t have legal documentation, and roads are also not registered, there could be a lot of overlap in holdings that poses a challenge in clearly attributing a piece of land to specified owners. Large institutions don’t have certified ownership such as schools, churches and mosques.

A third challenge is related to the difficulty in the management of the data. Specifically, the data on registry book and the paper evidence are not matched due to difficulties in digitizing paper-based evidence. Associated with this is the lack of organized body and that takes upon the complaints from applicants. This is also partly associated with been the lack of preparation. Land governance attitudes by politicians is believed to be a campaign and political work while in reality an effective land governance/registration work needs to include private sector and other relevant stakeholders. Additional challenges include gap in knowledge; lack of clarity; and multiple interests. In general, the collection of data was deemed to be very slow; and the formatting was complicated and not practical.

A fourth major challenge in the implantation of the program is that complicated and entangled tenure type’s crop up all the time. For instance, the cadaster office will carry on subsequent registry while the preexisting registration is happening at the same time. Delays in the former create duplication in markets with certified and non-certified land. This also creates a room for corruption-as there is a limited window of time for doing registration. This creates a room for bribing the certificate applicants to hasten the process of doing it sporadic adjuration is costly.

1.6.7.3. The demand for urban land certification

The views from urban residents regarding the current for land certification are captured in the FGD with the urban residents. From all the focus group discussions, it is obvious that there is an overwhelming need to have a certificate of holdings. It has emanated from the respondents’ observation that the only evidence of holding urban residents is receipt of payment of land taxes, plan of use and map of holdings. As a result, there is a massive demand for credible, reliable certification that is done with complete transparency among the community, just like the certificate of holding in rural areas.

1.7. Land Expropriation and Compensation

1.7.1. Characteristics of Land Expropriation and Compensation Laws

According to the KII with the federal land administration bodies responsible for rural and urban land, land expropriation in the past (post Derg and pre-2018) used to be areas that are deemed suitable for investment by the government, including land under farmer settlements. The normal practice has been assessing the economic benefits of the prospective investments, going into land pool/ bank and making the plot ready depending on requirements (including eviction of previous tenants in previously occupied holdings). After the deeply unpopular policy of large-scale land acquisition in the 2010s which prompted many western governments to not involve/support the action, the federal government has made changes to land expropriation actions since 2018.

The research (see above in chapter 2) on land expropriation has been used as an input into the proclamation expropriation 1161/211-772/2012. Land expropriation declaration has been designed to govern both rural and urban land. One of the major improvements on the declaration is to recraft the objective such that all expropriation should meet the criteria of public purpose [economic benefit justifies public purpose before-now it has social purpose too]¹⁰. Such social benefits include the potential purpose of the expropriated land fitting into the existing the land use plan, structural plan, and development plan.

The first step in the process of expropriation is submission of the proposal to the regional cabinet a year ahead of the expected decision. Most of the assessment will be done by the cabinet before being passed on to the woreda administration for further assessment-a body which has the final say. The second stage would involve characterizing and counting properties on the land such as: fertility size; land use; house development, tree land valuation. This second process determines the amount of compensation that goes towards the holder of the would-be-expropriated plot.

Compensation follows a cost replacement approach in principle; while in practice a mix of income approach and sales replacement approach are also followed. Holders will be compensated for the crop/property on the piece of land to be expropriated. For instance, trees, categorized by type, will be valued for what they are worth in terms of their produces, as per expert information. Similarly, for crops grown on the plot, compensation will be based on the average crop productivity multiplied by the size of the plot. The approach also follows valuing all properties on the land will be expropriated; the cost of development that already happened on the land; the values of economic loss experienced (employment; jobs, externality); and the cost of severed social ties.

The following prominent elements would be used as the basis for expropriation and compensation particularly in urban areas.

1. The compensation for eviction is calculated based on the cost of rebuilding a (demolished) house anew and the property valuation does not include location value and amenities
2. The compensation for eviction would include the losses associated with the social values of the house (access to *idir*, *iqub*) and economic losses (business)
3. In instances of mass/community eviction, the owners can be organized and be given priorities for development
4. The kebele property dwellers in mixed blocks will be given equivalent condominium or kebele houses.

The legislation also has rooms for grievance redress mechanism: there is a grievance redress committee overseen by steering committee for whom dissatisfactions over expropriation and compensation are submitted to. In instances where the committee's solution is deemed unsatisfactory by any of the parties, there are provisions for going to court. The grievance redress council (*Kireta and yigbagn semi gubae*) will be established by the community (*administered under the city's council*); will be independent (not like before where they are established by the kebele itself, thereby lacking independence, neutrality, accountability, and transparency).

The general perception among FGD respondents is that land expropriation is not widespread although there are some instances of it. Participants are in agreement that holders generally never

¹⁰ The issue of expropriation being justified based on social and not just economic benefits dates back to the 1952 expropriation law. Then, without strictly justified social benefits, the expropriation would not go through.

receive proper compensation in advance or later on if his/her land is taken for the purpose of public services. Farm land given to teachers in some towns adjacent to farm villages, for example, can be taken as case of expropriation that is not done fairly, without proper compensation.

The analysis of urban residents' perspective on land expropriation and compensation is based on the FGD of the urban respondent households. The general perception among respondents is that land expropriation is not widespread although there are some instances of it. Participants are in agreement that holders generally never receive proper compensation in advance or later on if his/her land is taken for the purpose of public services. They stated that one procedural problem with compensation is that works with 50% payment in two installments but the second installment takes a very long time to be effected. Besides, the compensation is too low, or disproportionate to the estimated value of the land. There are also rumors that the officials take bribe from investors resulting in a much lower compensation for the land holding evictees. The more severe of such instances has been the eviction of farmers with no viable alternative means of livelihood or meaningful compensation.

The study has conducted analysis of the challenges related to the practice of land expropriation and compensation based on the KII. The identified stumbling blocks include limited an awareness of the law (partly owing to the relatively short time since the legislation is put into effect). The legislation is also put into practice in a limited way, with the Amhara region getting ahead with the implementation.

The KII also pointed to one of the main problems associated with land expropriation in the past- the tendency to allot highly productive agricultural land for the purposes of building industrial parks and rather unsuitable agricultural production such as flower farms. This has been a rather extensive practice around the capital city. While the reasons for such allotment could be attributable to the need to place these investments closer to international flight hub in Addis, the problem could have been easily addressed by correcting misallocation of land for agricultural and industrial purposes.

1.8. Land Fragmentation, Consolidation and Commercialization

1.8.1. Land Fragmentation

The problem of land fragmentation in Ethiopia is so severe that there are reports of a farmer owning up to 35 pieces of fragmented land in the Benishangul Region for instance. Land fragmentation is usually influenced by factors that could potentially change land ownership including law of inheritance, heterogeneous land quality (Niroula and Thapa 2005), and land redistribution (Niroula and Thapa 2005), among others. Fragmentation negatively affects productivity through limiting possibilities of enjoying economies scale and acting as a stumbling block to the utilization of modern agricultural technologies such as irrigation and agricultural mechanization. Fragmentation also tends to affect women's rights and productivity disproportionately as mechanization resolves the oxen ploughing problem due to the taboo, they face against it¹¹.

To understand land fragmentation and its differences across regions, we computed mean number of plots and Simpson's fragmentation index given by $A = 1 - \left[\frac{\sum_i a_i^2}{(\sum_i a_i)^2} \right]$ where a_i is area of parcel i and A is fragmentation index (Ali et al. 2019; Deininger et al. 2014; Tran and Vu 2020).

¹¹ In the literature, land fragmentation is associated with various outcomes including yield, labor intensity, production cost, technical efficiency (Ali, Deininger, and Ronchi 2019; Deininger et al. 2014) and food security (Knippenberg, Jolliffe, and Hoddinott, 2017; Tran and Vu 2020).

Simpson's fragmentation index ranges between zero and one with values close to one indicating higher fragmentation¹², and it is based on the number and size distribution of plots.

Error! Reference source not found. 14 presents average number of plots and Simpson's index across the three regions. Results indicate that land holdings in the study area are highly fragmented with mean number of plots and fragmentation index of 5.24 and 0.69, respectively. The degree of fragmentation is higher compared to previous studies in sub-Saharan Africa such as Mwesigye and Barungi (2021) and other developing countries such as Tran and Vu (2020).

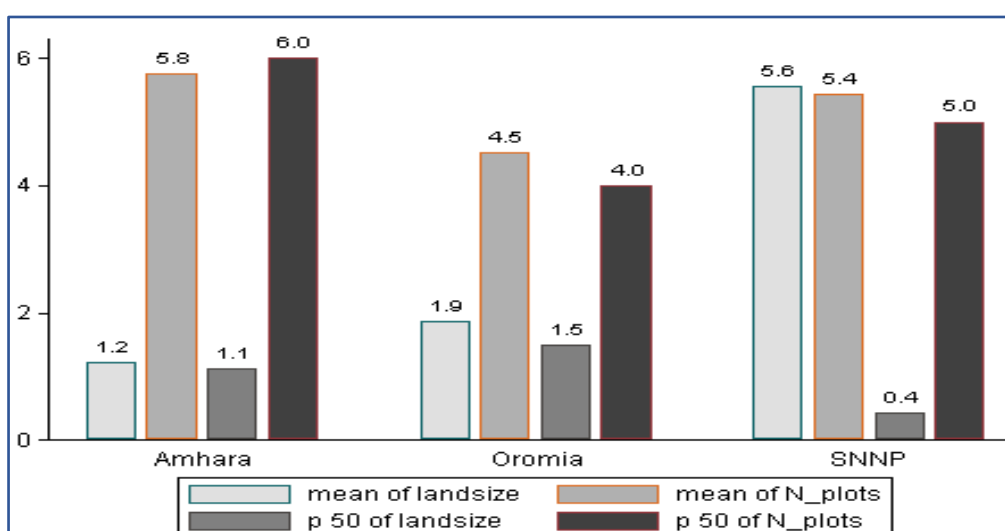
Table 1.14: Average land fragmentation across regions

Region	Fragmentation Index (mean)	Number of Plots (mean)
Amhara	0.75	5.75
Oromia	0.63	4.52
SNNP	0.70	5.43
Mean	0.69	5.24
Observations	295	295

Source: author's computation from survey

Comparing fragmentation across the three regions (Amhara, Oromia and SNNP), land holdings in Amhara region appear to be more fragmented both in terms of number of plots and Simpson's index. On the other hand, land holding in Oromia is found to be less fragmented. In Amhara, an average land size of 1.2 hectare is fragmented in to an average of 5.75 plots. In SNNP, an average of 0.6 hectares of land is fragmented in to 5.43 plots. In Oromia, the average land size is higher compared to the two other regions, and the number of plots is smaller. In the same region, on average land holding of 1, 84 is fragmented between 4.5 plots (see **Error! Reference source not found.**).

Figure 1.3: Distribution of number of plots



Source: author's computation from survey

¹² Some literature criticizes Simpson's index for not accounting for risk reduction benefit and travel time.

1.8.2. Land Consolidation and Commercialization

1.8.2.1. Policy-led efforts at land consolidation

The KII revealed that land consolidation process can take place in two ways: Voluntary- consent based and mandatory. While the consent-based option is less complicated in terms of design and administration, it remains very limited in coverage. To that effect, there is some effort in understanding what it would be like to implement the mandatory option. Accordingly, there is a pilot project going on in Koga, Durebete where land valuation is conducted on pieces of fragmented land a farmer owns and the equivalent consolidated land is identified by accounting for size, fertility, location and other amenities. Another policy effort has been to fix the minimum size to avoid further fragmentation. To that effect, there is a minimum plot size floor specified in the regional land administration that varies across regions. However, as per the discussion with the KIIs, it is worth noting that, there are political interests that go against working towards consolidation as fragmentation tends to create political dependency of constituents.

1.8.2.2. Market based efforts at land consolidation

The analysis from the KII also identifies instruments that are crafted at a policy level, that have market-based characteristics, which we discuss below.

One such tool that is now being implemented in Ethiopia is ACC's contract farming. As it is now, ACC is used for contracting farmers' land for a given period of time, tied to the provision of inputs and sale of outputs. While ACC is a potential an instrument for consolidation, our discussion with the KIIs revealed that its effectiveness relies on additional provision made for farmers. In ideal settings, there should be provisions for supporting farmers under contracting/enterprise such as whether farmers will have share owners/ employment; they will have provision for housing in instance where they are required to relocate. This indicated the need to move beyond the current provisions of the ACC.

One of the components of ACC is contract farming. Contract farming (end to end across the value chain) is jointly run by the MoA and Ministry of commerce. Examples include the 60% of smallholder land in Arsi that is under contract farming. The most successful example of contract farming is Heinken's barley contract farming. Another good example is WFP's contract farming for maize.

It emerged in our discussion with the KIIs that the ACC functions as a cluster contract farming such that within clusters, input provision, and output; sustainable intensification, project management coordination, etc. are administered. In addition to its input and market provision and risk reduction benefits to farmers, it is beneficial for the government as it reduces the administrative burden for the government as it lumps together many families/land into one unit to administer. In terms of coverage, ACC is being done on 300 out of the 940 woredas, focusing on high potential areas. Teff, malt, horticulture maize, wheat, mainly.

One of the important attributes of the ACC program is facilitating contract farming-based large scale land investment through consolidating small holder farms under a crop/commodity of specialization. As per this premise, we investigate the degree to which the process of ACC participation has been inclusive and effective.

Household evidence on process in the top panel of Table 1.15 indicates that about 40 % of the respondents live in kebeles where the program has been imitated and only 15% have participated in ACC programs. Less than half (46%) feel they have been sufficiently informed about the program. The subsequent responses also ascertain this: 28% are aware that public information meetings were held, with 8 percent receiving written materials about the program and the same percentage being part of the local ACC committee.

Table 1.15: Agriculture commercialization clusters program participation

Program participation features	Observations	Yes (%)
Has the land ACC program started in your Kebele?	300	39.67
Do you believe that you were well informed about the ACC program?	157	46.50
Were there public information meetings (regarding the ACC) held during the 6 months prior to implementation	157	28.03
Were there public information meetings (regarding the ACC program) held during the past six months	157	18.47
Did you receive any written material on the ACC program and the land law?	157	8.28
Are you or a family member part of the ACC program committee?	157	8.92
Are you part of the ACC program?	157	15.92

Source: Author's computation from the survey

In this study, ACC program participation is represented by input provision, output market participation, credit and land contracting, as presented by empirical results in Table 1.16. Engagement in ACC is very low, with less than 10% of our respondents participating in ACC program. The highest number of enjoyment is found through input provision, with 16 out of the 25 respondents reporting to have received inputs through the program. This is followed by credit receipt with 6 out of the 25 having obtained ACC credit. Only one each/ 4% indicated they are engaged in ACC output market or land contracting, indicating that this form of ACC engagement is the lowest in our sample, possibility indicating that it can only be slightly higher at a national level too.

Table 1.16: Types of ACC support

Type of ACC support	Frequency	Response (%)
Input provision	16	64.00
1st output market	1	4.00
Credit	6	24.00
Futures land contracting	1	4.00
Other (specify)	1	4.00
Total	25	100.00

Source: Author's computation from the survey

The agricultural commercialization clusters have been assessed as instruments for land commercialization and consolidation, based on our analysis of the rural household survey data collected for the purpose of this study. Specifically, we assess the impact of land contracting on land commercialization by measuring individual farmers' willingness to accept land contracting modelled after provisions for the ACC. Tables 1.17, 1.18, and 1.19 present these results.

Table 1.17: Willingness to accept land contracting: distribution of responses to bid values

Bid values	Willing to rent out land (%)	Observation
5000	32.22	90
10000	64.71	34
13000	62.57	171
16000	100.0	5
Total	54.33	300

Source: Author's computation from the survey

As per Table 1.17, the share of yes responses increases as the bid increased. Furthermore, the share of yes ranges between 0.32 and 1.00, so the bid vector seems to have been appropriate.

As per Table 1.18, having acquired the second stage certification invariably increases willingness to accept ACC participation. This could be an indication of the certification increasing confidence in the value of the land. Similarly, belonging in the ACC kebele increasing the willingness to accept value for land contracting, implying that the ACC program's land contracting is positively valued and awareness about the program increases confidence about one's land value.

Table 1.18: Average willingness to accept across ACC membership and second stage certification

ACC kebele	Have second stage certificate of land holding (ETB)		
	No	Yes	Total
No	13621.95	14282.83	13983.43
Yes	15060.61	15941.86	15697.48
Total	14034.78	15054.05	14663.33

Source: Author's computation from the survey

Table 1.19 shows the current average anticipated payment for land-the estimated mean WTP. The mean WTP without controls was Br. 9226.802, while with controls was Br. 9203.255.

Table 1.19:: Mean willingness to accept with and without controls

Statistics	Without controls	With controls
Mean	9226.802***	9203.255***
z-value	12.13	12.33
Krinsky and Robb (95 %) Confidence Interval	[7399.56, 10726.60]	[7385.23, 10600.60]
Observations	300	300

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's computation from the survey

1.9. Conclusions and Recommendations

1.9.1. Concluding Remarks

The purpose of the study report has been to generate country-representative and latest empirical evidence on land issues, policy options, and interventions in Ethiopia.

The study methodology is comprised of qualitative and quantitative data analysis, obtained from primary and secondary sources. The first half of the qualitative analysis focuses on review of relevant literature that enabled contextualizing the relevant land issues and deriving testable hypotheses. The second half of the qualitative analysis focused on collecting relevant information from key informants and focus group discussants. A total of six key informants were interviewed pertaining to policy and implementation issues on rural and urban land administration and use. The Focus group discussion was designed to collect urban users' perspectives on land policy and implementation. It was conducted with 12 focus groups, two in each of the six selected towns in the Amhara, Oromia and SNNP regions.

At par with the nature of information, qualitative and quantitative analyses were employed. The analytical methods comprise of qualitative methods for the KII and FGD. For the quantitative data the following methods are used: descriptive statistical analysis and econometric approaches such as a univariate probit model, propensity score estimation, average treatment effects, and contingent valuation methods. In terms of analytical outputs, the literature review was mainly used as a backstop against which the hypotheses of the study would be mounted. Accordingly, conceptual issues on rural and urban land access, land tenure systems and land policy were identified. The land expropriation in terms of laws and actual practices; followed by instruments for land expropriation and commercialization were also presented. Finally, key empirical relationships between land tenure security and prominent variables of economic interest are discussed.

In the chapter dealing with land access and tenure security issues, the analysis has indicated that overall, despite the land access being rather inadequate, a very high proportion of the rural landholders perceive to have solid rights over the use of their land and bequeathing the land with limited prospects of facing conflict. For urban land, the main access modalities are auction/bid and administrative placement, which are deemed to be very low and unreliable, leading to prospective holders opting for informal methods of land acquisition. The sub-chapter on analysis of rural and urban land policy identifies urban residents and rural land holders demonstrated their substantial understanding of the land laws and generally positive attitude towards the prevalent land laws although implantation gaps almost eclipse their potentials.

Analysis of the rural land certification has shown that the program has by and large addressed the gaps in tenure security, particularly with respect to reducing land conflict. Regarding urban certification, the findings identified several challenges to implementation including mismatch between the certificated holding and the actual holding.

One critical facet of the new land legislation is that it has made social benefit as a major prerequisite to expropriation instead of the previous criteria of just economic benefits. Expropriation, starting with submission and evaluation of a proposal to develop a specific plot of land would be followed by assessment of the value of the property and associated costs of removal for compensation. This includes characterizing and counting properties on the land such as: fertility size; land use; house development, valuation of property on the land, lost economic opportunities and severed social ties.

Despite this, however, insufficient awareness of the laws and procedures, inadequate compensation (or expropriation without compensation are identified) as some of bottlenecks to the policy.

The last chapter of the study dealt with land fragmentation, consolidation and commercialization. The land fragmentation issue was found to be severe, even by Sub-Saharan standards, needing urgent policy action. Remedial measures in the form of voluntary and mandatory land consolidation are at their infancy with limited prospects of having a wide scale impact. However, the study demonstrated considerable potential of land consolidation and commercialization for land market in the form of contract farming.

1.9.2. Recommendations

This section presents the policy recommendations that emanated from the assessments made and gaps identified in the previous chapters. The following key policy issues are identified and briefly discussed in the subsequent sections below.

Policy and institutional actions for enhanced tenure security and sense of land ownership

For enhanced tenure security, which has many economic benefits listed above, the following findings need to be acted upon:

- Crafting policies around the knowledge that local communities are primary custodians of the land; possess considerable knowledge and experience in dealing with land management dynamics such as investment on the land and resolution of conflict;
- Incorporating into the current federal and regional land legislations a framework that has clear and flexible mandates, communication and chain of commands.
- Factoring in localized heterogeneities, traditional knowledge and customary law in crafting policy responses and needs across settings and localities could create conducive environment for effective land administration and utilization.

More generally, however, shaping land policy in a way that ensures an optimal level of security to its holders needs to take into account the wider debate on the matter. The issue of secure rights towards the land has been one of the most long debated issues in academic, policy and unusually for other matters, in public circles in Ethiopia. For the latter, the most notable event has been the public discourse surrounding the public-vs-private ownership dichotomy that was largely sponsored by the EEA. The resulting document (EEA, 2002) has highlighted the pros and cons of the two, and is largely regarded as a blue print for discourses ahead and has largely shaped the land policy since.

While the discussion has evolved in the two decades since, it has largely shaped towards ensuring as much security as possible for holders within the realms of public ownership of the land. What has transpired in this study, however, is the fact that landholders, and indeed officials overtly and covertly question whether land is truly public without actually having a body that administers the land that is free from political interference, an institutional mechanism that mediates litigations between members of the public and custodian of the land, the government, a mechanism that ensures land administration, allocation and utilization is wholesomely serving the public interest. A move towards making land truly public would start off by addressing these. Accordingly, it is worth considering the recommendation in Diriba (2022).

Policy and institutional actions for effective land registration and certification

The certification program can be thought of as a semi-secure ownership provision action that is suitable for the public land ownership structure. The rural certification action is deemed more successful than the urban one both in speed of implementation and coverage as well as in increasing the sense of tenure security among land owners.

There are several policy lessons to be learnt from the higher success of the rural certification program. These include extensive public awareness work prior to the commencement of registration; securing robust finance that matches with the resource requirements of the registration and certification task; capacity building actions that are required to handle the complex tasks; putting in place mechanisms for sorting the tangled, complex and largely informal property and land holding patterns associated with urban land beforehand; establishing solid grievance redress mechanisms; and establishing a transparent and accountable handling of the process of registration and certification as well as grievances arising from that.

The impacts of the certification program in Ethiopia in enhancing tenure security, land market participation, and land related investment have been documented in this study and other similar studies. However, it is worth noting that the certification program, as a stand-alone, cannot bring about a desired level of change in all these economic variables. Indeed, complementary interventions such as provision of credit and insurance for investment is critical for reigniting market and investment activities in resource-degraded and destitute settings whose residents make do with very little enough for survival.

Actions to be taken to improve land expropriation and compensation laws and practices

Ethiopia has put in place a number of laws, legislations and procedures aimed at ensuring effectiveness and fairness in land expropriation and compensation for the greater good of the society and for protecting individual land rights. However, Ethiopia's largely land-centered economy, weak institutions, economic and security challenges make such activities flawed in design and practice. Indeed, expropriation and compensation actions by the government are very much short in engagement, participation, mutual agreement as well as fairness. Therefore, such efforts admittedly require improvement in terms of crafting coordinated, efficient, and robust land expropriation and compensation policy and actions at a federal level and integration at a regional and local level.

Policy actions regarding land consolidation and commercialization

From the findings of the study and other similar studies, there is little disagreement over the alarming level land fragmentation is standing at. While this calls for aggressive land consolidation action, at a policy level, such efforts are limited to ad hoc activities, which lack national or sectoral guidance. As a result, it is high time to produce a nationally-based plan that also embeds expanding land consolidation needs in all sectors of the economy. One way of doing this is developing a land consolidation framework based on successful practices in sub-Saharan African countries and other low-income countries, as well as learning from important failures attempting at consolidation.

As an alternative to policy-based and mandatory consolidation actions, the study has assessed opportunities and challenges in land market participation as a way of enhancing land consolidation through market-based tools. Given the active engagement of rural land holders in land markets, this indicated a great potential of the tool. However, the study did not indicate to agricultural commercialization clusters as a huge step that can be taken to consolidation and commercialization. Hence, the importance of expanding the two tools both in scale and scope to increase their effectiveness cannot be overstated.

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CHAPTER TWO

Agricultural Finance and Insurance in Ethiopia: Challenges and Policy Options

2.1. Introduction

2.1.1. Background and Rationale

In the past decade, the Ethiopian government has been allocating 10% of its budget to the agricultural sector (WB, 2021). The lion's share of the budget was allocated to scale up agricultural extension and provide rural infrastructure, including rural finance. This effort has been translated to agricultural growth in output and productivity, where growth in the value of cereal production and productivity was the major driver in the improvement of agricultural GDP (Bachewe et al., 2019).

Despite the past effort to improve agricultural output and productivity, the country still faces a large yield gap (Bachewe et al., 2019; Amare et al., 2016; Cepheus R & A, 2021). One of the major explanations for this gap is low technological adoption rate and intensity of use among smallholder farmers. For instance, only 30–40% of Ethiopian smallholders apply fertilizer, and of those who do, the application rate is only 37–40 kgs per hectare, which is far below the recommended rates (Amare et al., 2016). Smallholder farmers who produce nearly 90% of the country's agricultural production are resource-poor, which limits their investment in productivity-enhancing inputs (Bachewe et al., 2019; Spielman et al., 2013; Belissa et al., 2019). The financial offerings to agricultural sector players face gaps in terms of financial access, quantity and quality of financial products (CIMMYT, 2015). Most financial institutions are concentrated in urban areas. As a result, only a few financial institutions serve nearly 80% of the country's rural population, limiting access to formal financial institutions. In terms of product quality, gaps exist for all major product categories, including credit, saving, insurance and payments for all major agricultural players, including farmers, traders, and manufacturers. In terms of product quantity, the supply of rural finance is far short of demand. For instance, CIMMYT (2015) shows that about 80% of the potential rural demand for loans are still unmet. Furthermore, rural households' saving culture in formal financial institutions is low (Mirach & Hailu, 2014; Temam & Feleke, 2018; PSI, 2018; Negeri, 2018; Addis et al., 2019) since they opt to save in kind or save cash under the mattress and informal institutions such as 'Equb'. Uptake of agricultural insurance fails to take off (Amare et al., 2019; Hill et al., 2013; Tadesse et al., 2016; Ahmed et al., 2020; Bishu et al., 2018) though it has a great potential to spread agricultural risks efficiently across different actors. Rather, rural households resort to traditional risk management and coping methods such as the use of savings (Tadesse et al. 2016; Yilma et al. 2014), reliance on social networks such as iddir (Tadesse et al. 2016; Dercon et al. 2014), government social safety net programs (Tadesse et al. 2016), and reduction of non-food expenditure (Asfaw & Braun, 2004).

A sound financial sector with an adequate supply of services to the agricultural sector is essential for sustaining the sectoral economic growth and reducing poverty and food insecurity. More specifically, credit facilities in rural areas play a positive role in technology adoption among rural households (Abate et al., 2016; Njagi et al., 2017; Bedru et al., 2020), startup of new businesses (Bedru et al., 2020) and in turn promote diversification that generates employment, improvements in income and food security status of households. Cash Savings in formal financial institutions ensures the safe and productive storage of money and in turn, guarantee excess capital channeled to its most productive use (Karlan & Morduch, 2009). Furthermore, in light of widespread climate and related risks in the context of rain-fed agriculture in Ethiopia, agriculture insurance helps to spread risks of agricultural players efficiently (Bridle et al., 2020) and overcomes limitations inherent to traditional risk management and coping methods. The various demand and supply side factors of the financial services of credit, saving and insurance to farm and pastoral households have been investigated in an isolated

manner without focusing on agro-ecologies and livelihoods. Since all these gaps require closer examination, this study gauges the demand for and the supply of financial services available in terms of credit, saving and insurance across agro-ecologies and livelihoods.

2.1.2. Objectives and research questions

This study aims to:

- Characterizing farm households by their perception of formal and informal financial institutions and their services;
- Measuring current demand for and supply of credit, saving and insurance for small holder farmers.
- Identifying the major demand and supply side constraints of access to finance by rural households
- Identifying the major agricultural risks and traditional risk management and coping mechanisms practiced by smallholder farmers in crop and livestock sub-sectors and in the major agro-ecologies;
- Assess feasible options and models of financing and insuring the country's smallholder farming activities and production in crop and livestock sub-sectors and in the major agro-ecologies.

Accordingly, the research questions of this study are:

- How financial services are provided in agriculture and rural areas?
- What is the level of demand for financial services to farm households and businesses?
- What is the current supply of micro financial services in agriculture?
- Which rural and agricultural activities are bankable and non-bankable?
- Which financing models are suitable to farmers operating at different scales and
- What is the level of risk involved in agricultural activities?
- Which traditional risk management practices are adopted by farmers?
- Which agricultural risks are insurable and non-insurable?
- Which insurance products are relevant to smallholder farmers and businesses operating at different scales and settings?

2.2. Review of the literature

2.2.1 Theories on access to finance

There are several evidences that support strong and positive linkage between accesses to financial services economic welfare of smallholder farmers. Hence, the key challenge for governments and policy makers is how to improve access to financial services. Awunyo-vitor (2018) suggests that the attempt to overcome this challenge should start from sorting out the dimensions of access to finance. He claims that access to finance has two dimensions; demand and supply side dimensions. The demand side of access examines the choice made by individuals with regard to services provided by financial institutions, while the supply side of access relates to financial services provision or financial intermediation. Farmers' decision to enter the financial market by farmers to access financial services

depends on both supply and demand aspects (Stijn, 2005; Karlan & Morduch, 2009; Awunyo-vitor, 2018). In Economic literature, there are a number of theories related to decision making, such as rationality theory, bounded rationality theory, prospect theory, inter-temporal theory, delegated monitoring theory, information asymmetry theory, and transaction cost theory (Scholtens & Wensveen, 2003). To select the relevant demand and supply sides theories applicable to the current study, it is essential to understand the context of decision making by smallholder farmers. Accordingly, farmers operate farm activities in the shadow of potential risk threats, especially climate-related risks, since the country's agricultural activities depend on erratic rainfall as water source. In most cases, these risks and subsequent shocks are not adequately managed and withstood by existing mechanisms. Hence, farmers face uncertainty about their agricultural production, income, and consumption expenditure. As a result, rational choice theory which assumes a decision under certainty, cannot be taken as a candidate. Rather, expected utility theory (EUT), formally developed by Von Neumann & Morgensten (1944) provides very good starting point for explaining decision under uncertainty. In our context, EUT postulates that people maximize their expected utility in their decisions to participate in financial markets. This decision is driven by the curvature of their utility function, which determines the level of risk aversion. For instance, risk averse individuals who prefer outcomes that are certainly known to uncertain outcomes will have low demand for credit and high demand for insurance. However, recent studies by Clarke (2016) & Hill et al (2019) claim that sometimes there are inconsistencies in the above beliefs. For instance, the demand for index-based insurance by risk-averse individuals initially increases with risk aversion up to a point and starts declining thereafter. As a result, they recommend using prospect theory since it overcomes the above inconsistencies via emphasizing behavioral factors following the work of Kahneman & Tversky (1979). Loss and ambiguity aversions are the pool of behavioral factors that affect farmers' perception of the probability of shock happening, the valuation of losses by shocks, and difficulty to analyze the possible benefits and costs of various financial products (Nshakira-Rukundo et al., 2021). Therefore, at the core of prospect theory, it is necessary to account for these behavioral aspects and their impact on households' decision making. Hence, in this study, we rely on both expected utility and prospect theories to explain the demand aspect of access to finance by smallholder farmers.

In Ethiopia, the provision of agricultural finance requires covering dispersed geographical area and administering smaller loan transactions, potentially increasing transaction costs for service providers. As a result, formal financial institutions often lose the appetite for serving rural households, especially those located in remote areas (Gashayie & Singh, 2015; Amha & Peck, 2010). Moreover, lumpy cash flow that overlaps demand for funds by savers and borrowers at a time and high covariance across borrowers in rural areas (Amha & Peck, 2010) are among the impediments to the supply of adequate credit for the agricultural sector. These evidences guide us to anchor on information and transaction cost theories to explain the supply aspect of access to finance in Ethiopia. The information asymmetry theory postulates that imperfect information results in an information problem. The consequences of information problems within the financial market can be classified as either ex-ante or ex-post. The ex-ante problems associated with information within the financial market result in adverse selection, while information problems that relate to ex-post lead to assurance services or expensive compliance verifications and moral hazard risks. According to information and transaction cost theories, financial service provision attempts to overcome these problems, at least partially, through improved access to information and use of different schemes of installments, collateral requirements etc. (Awunyo-vitor, 2018).

2.2.2. Empirical literature review

2.2.2.1. Agricultural finance: The supply and demand for credit

A. Supply of agricultural credit: institutions, determinants and constraints

In Ethiopia, Financial cooperatives and microfinance institutions (MFIs) are the two major formal credit sources. The microfinance industry is mainly dominated by the top five government-owned MFIs (i.e. ACSI, DECSI, OCSSCO¹, ADSCI and OMO) operating in the four major regions of the country and in Addis Ababa city. Financial cooperatives and microfinance institutions (MFIs) account for about 80% of the total credit provided to rural households (CIMMYT, 2015).

A study by Dejene (2003) showed that informal sources of credit in Ethiopia include relatives and friends, moneylenders, neighbors, Iddir, Iqqub and Mahiber. Every year, over 20 percent of the total credit is supplied by the informal sector (Amha & Peck, 2010; CIMMYT, 2015) of which friends and relatives (66 percent), moneylenders (14 percent) and Iddir (7 percent) are the major suppliers. Informal credit has the advantage of flexible borrowing terms and screening techniques, and they impose little restriction on how the loan being used (Braverman & Guasch, 1986; Saqib et al., 2018). However, Bardhan & Udry (1999) and Tang et al (2010) argue that with rapid economic growth, informal credit supply may not be sufficient to meet the increased demand for relatively larger amounts of credit as farmers start to engage in more diversified and capital-intensive economic activities. But, according to Karlan & Morduch (2010), examining the mechanics of the informal market is crucial for two reasons. First, the strength of the informal market is important for measuring and predicting how effective specific formal sector interventions will be. Second, lessons learned in the informal markets can help shape policy in the formal markets. Group lending, for example, is based largely on lessons learned from observing risk-sharing, credit and savings associations in informal markets.

In addition to existing modalities of agricultural credit, in the past decade, new and innovative models of financing the Usury agricultural sector have been recommended by experts and implemented by governments and other stakeholders in various countries. These models aim to provide sufficient funds to the agricultural sector by overcoming some of the inherent characteristics of agriculture that impede efforts. Cognizant to this, CIMMYT (2015) has suggested four innovative financing models as potential and relevant options of financing rural households' credit demand in the context of Ethiopia; (a) direct smallholder lending with collateral of equipment finance and tight market value chain finance (VCF); (b) indirect lending through cooperative with leasing collateral and lose VCF with output buyer; (c) emerging farmers finance with collateral of infrastructure finance and VCF with input supplier; and (d) saving account linked input finance with collateral management and factoring. The new models of financing, which are brought from their record of promising performance in other sectors, have little scale of implementation so far, which is mainly challenged by lack of detailed assessment regarding the legal, economic (e.g. infrastructure ...etc.), and technological requirements that facilitate implementation (Gashayie & Singh, 2015). For example, warehouse receipt finance (i.e one of the variants of value chain financing) requires a warehouse receipt system, a legal environment that ensures easy enforceability of the security, and makes warehouse receipts a title document; reliable and high-quality warehouses that are publicly available; a system of licensing, inspection, and monitoring of warehouses.

¹ Recently, some of these MFIs became banks.

B. Demand for agricultural credit: determinants and constraints

Classic works by de Janvry (1991), Woutersen & Khandker (2013), and Adjognon et al (2017) ascertain that improving credit access through policies that mitigate supply-side constraints may not necessarily increase uptake and underlined the importance of overcoming demand side constraints. Credit access can potentially be impaired by lack of collateral, risk aversion behavior of a household, ill-suited financial products and high transaction costs associated with complex loan application procedures. For example, Berhane and Abay (2019) found that more than half of the respondents are not borrowing due to risk of default (i.e. fear of being in debt or distress of losing assets in case of default). Moreover, households may not demand credit because they have sufficient cash to expend. Cognizant of this, Mamuye (2021) reviewed several studies conducted in Ethiopia with the main aim of identifying the socio-economic determinants of credit demand and access by rural households. However, further policy inputs aim to improve credit demand and access by rural households through the inclusion of behavioral aspects (Karlan & Morduch, 2010; Zhao, 2021) such as loss and ambiguity aversion, where so far, empirical evidences in Ethiopia are rarely present.

2.2.2.2 Agricultural Finance: rural Savings

For Ethiopia, the saving rate was 14.1% in the year 2008/09, and it has been increasing at an average rate of 7.2% per annum in the last 10 years to reach 24.3% in 2018/19 (NBE, 2020). The contribution of new saving products such as GERD bonds, house savings and pension contributions was significant (MoFED, 2015; FDRE PSRC, 2018). Even though saving rate has increased in recent periods, most past studies on rural household savings in Ethiopia found that the saving culture, especially cash saving in formal financial institutions, is low (Mirach & Hailu, 2014; Temam & Feleke, 2018; PSI, 2018; Negeri, 2018; Addis et al, 2019). This is partly due to substantial saving in kind, cash saving under the mattress & informal institutions such as 'Equb'. Saving in kind and cash saved in informal institutions may not be channeled to entrepreneurs or deficit units in the financial system with feasible business or project ideas and as a result, such types of savings are mostly less efficient compared to saving in cash and in formal financial institutions (UNCTAD, 2007). Hence, any effort aimed at elevating domestic savings in formal financial institutions by rural households in Ethiopia should address why the saving culture is low among rural households in Ethiopia and what can be done to help farm households to save more in cash and in formal financial institutions than saving in-kind and in informal methods.

In relation to the first issue, studies by Addis et al (2019), Fenta et al (2017) & Negeri (2018) and PSI (2018) have assessed saving culture (i.e decision to save) and the amount of saving among rural households in Ethiopia and they found that level of education of heads positively correlates with decision to save and/or amount of saving. Economic variables such as household income (PSI, 2018; Temam & Feleke, 2018; Mirach & Hailu, 2014; Teshome et al, 2013), amount of land holdings (Temam & Feleke, 2018; Addis et al., 2019) and remittance (Addis et al, 2019) found statistically and positively correlated with saving decision and/or amount of saving by rural households. Furthermore, almost all past studies showed that poor access to formal financial services negatively & statistically correlated with saving practices and/or amount of saving.

However, there is a lack of prior studies that address why farm households often save in-kind and in informal methods across agro-ecologies.

2.2.3. Agricultural risks, risk management and coping mechanisms

Duong et al (2019) have systematically reviewed more than 197 previous studies conducted in the area of agricultural risks and coping methods. They have classified agricultural risks in to price or market risk (output and input price fluctuation, market shocks), weather-related risk (drought, flood...etc), pests and diseases (biosecurity threats), institutional risk (regulations, legal environment and tax policy), human resource risk (physical and mental health), and political risks (unrest, crime...etc). Farmers in different geographies experience these agricultural risks in differing degrees, and more than half (55%) of the studies reviewed by Duong et al reported that farmers perceived weather and climate change as the main risk to their farm enterprises, followed by bio-security threats (48%), human risk (35%), and market risk (27%).

Risks can also be classified in to covariate and idiosyncratic based on the number of households affected. Accordingly, a shock is idiosyncratic if it is reported to have affected only that household and covariate if it affects at least some other households in the locality such as Kebele (Yilma et al, 2014).

Even though recent and holistic evidence is not sufficiently available, Tadesse et al. (2017) found that drought is the most binding risk in the south-central highlands of Ethiopia, followed by crop disease and pests. Dercon et al. (2005) using the Ethiopian rural household survey, a panel data survey covering about 1,450 households across the country, found that in the period spanning from 1999 to 2004, just under about half the households were affected by drought, but a large number of other shocks were also relevant. For example, 43 percent reported to have been affected by a death in the household, and 28 percent were affected by a serious illness in the household. Other shocks reported (by between 10 and 20 percent of households) were output price collapses, increases in input prices, crop pests and crime.

It is essential to have current and detailed evidence on the types, frequency, incidence and distribution of risks among rural households engaged in crop & livestock sub-sectors and residing in different agro-ecologies; Dega (highlands), Woyna Dega (midlands) and Kola (lowlands)-where there is a big research gap in Ethiopia in this area. We believe that assessment of agricultural risks in the context of different sub-sectors and agro-ecologies has merits for policy because the frequency, distribution and incidence of agricultural risks vary across different agro-ecologies, which in turn frames the relevant and feasible risk management option/s in a specific agro-ecology. For example, flood is more likely and common in highlands whereas drought and pests are more pervasive in lowlands.

Farmers do not passively accept the risks they encounter. Rather they apply wide range of traditional and/or modern risk management and shock coping mechanisms (Binswanger-Mkhize, 2012). A review of a large body of literatures by Duong et al. (2019) ascertained that the most frequent and important traditional risk management method is diversification of crops and livestock, followed by pest and disease monitoring and prevention and off-farm work. Moreover, rural farmers may resort to the utilization of savings either in cash or in-kind (Binswanger-Mkhize, 2012; Karlan & Morduch, 2010), cooperation with other farmers, migration (Bardhan & Udury, 1999; Binswanger-Mkhize, 2012), social protection through government handouts (VaRgas & Toremo, 2009), sharecropping (Bardhan & Udury, 1999; Carter et al. 2014), reduction in non-food consumption expenditure, reliance on remittance (Binswanger-Mkhize, 2012). These are some traditional methods on board to manage and cope with agricultural risks and shocks.

In Ethiopia, the use of savings (Tadesse et al. 2016; Yilma et al. 2014), reliance on social networks such as iddir (Tadesse et al. 2016; Dercon et al. 2014), government social safety net programs (Tadesse et al. 2016), and reduction of non-food expenditure (Asfaw & Braun, 2004) are mentioned by farmers either to reduce risk, ex-ante or to cope with shocks, ex-post.

Banerjee (2004) argues that the rural poor may quite well insure through the informal/traditional methods. However, Karlan & Morduch (2009) have reviewed a large body of studies and suggest that the view by Banerjee is too optimistic and that traditional methods are inadequate and the poor households remain substantially exposed to risks, especially for covariant risks. Furthermore, Bardhan & Udry (1999), and Karlan & Morduch (2009) argue that traditional methods are economically inefficient because they dispose of farming efforts (e.g. off farm employment), reduce specialization (e.g. diversification), and provide poor incentive for producing profit maximization level of output (e.g. share cropping). Nonetheless, in a run to develop feasible options of financing, critical assessments of the nature & types of traditional methods applied by farmers have a number of merits. For example, we can use the existing social networks, such as Iddir to sell modern insurance, and integrate the traditional methods with modern agricultural insurance (e.g. R4 in Ethiopia and Senegal). R4 refers to the program's four risk management strategies, partnered by UN World Food Program (WFP) and Oxfam America and implemented in Ethiopia & Senegal (Hill et al., 2013). The first is Risk Reduction: access to improved climate risk management, for example, natural resource rehabilitation or new agricultural extension techniques. This is designed so that a drought year might have less of an impact on farmers. Second, Risk Reserves involve access to individual or group savings so that farmers can build a financial base for investing in their livelihoods. These two categories fall under traditional methods. Index-based (modern method) insurance falls under the third strategy, Risk Transfer, and aims to transfer the component of risk (e.g., a major regional drought) that cannot be reduced in any other way. Finally, Prudent Risk Taking involves access to microcredit. Microfinance Institutions are often reluctant to offer credit to farmers because of the perceived high risk of default in bad seasons. R4 allows farmers to have a stronger asset base and an ability to pay back a loan in a drought year, thus improving access to credit to allow investment in productive assets such as seeds, fertilizers and new technologies.

2.2.4. Agricultural Insurance products

Insurance is a special line of property insurance applied to agricultural firms, and it involves the equitable transfer of a risk of loss from one entity to another in exchange for a premium or a guaranteed and small quantifiable loss to prevent a large and possibly devastating loss (Iturrioz, 2009). Insurance products can broadly be classified into two categories: indemnity-based and index-based insurances.

In case of indemnity-based insurance, payments are made based on assessment of actual losses incurred by the policy holder. More specifically, the insurer assesses losses on yield due to adverse events, and determines indemnity payment for every policy holder at individual level. There are two types of indemnity-based insurance: named peril and multiple peril (yield based) crop insurance. Named peril crop insurance involves payment of indemnity following losses due to adverse events explicitly mentioned in the policy where as in case of multiple perils crop insurance (MPCP) indemnity is paid against all perils that affect production unless specific perils have been explicitly excluded in the insurance contract (Iturrioz, 2009).

Even though indemnity-based insurance has very good precision in the estimation of damages caused by the peril as it requires on-site loss verification by the insurer, its applicability is constrained by high administrative costs and information asymmetry (Karlan & Morduch, 2009; Iturrioz, 2009; Carter et al., 2014; Nshakira-Rukundo et al., 2021). In the case of indemnity-based crop insurance, the insurer should inspect every plot of the insured to estimate damage (thereby increasing administrative costs), and asymmetries of information lead to the possibility of adverse selection and moral hazard. Without adequate technical expertise, underwriters cannot distinguish between high-risk and low-risk producers and, if they set premiums based on averages, they may attract only high-risk applicants. Additionally, this type of insurance may motivate producers to take additional risks such as using less fertilizer, planting out of season or planting in less fertile areas. The livestock variant of this indemnity-based insurance also suffers from the same problems (VaRgas & Toremo, 2009); the insurer should cover vast areas that increase costs to audit lost herds, ex-ante moral hazard (herders failed to protect their livestock), and ex-post moral hazard (herders falsely reported animal deaths).

Index-based agricultural insurance involves writing contracts against specific perils defined and recorded at regional levels (usually at local weather stations). For such schemes, insurance payouts do not depend on the individual losses of policyholders but on the regionally recorded index, which serves as a proxy for the losses in a particular region. It is therefore a contingent claim contract for which an objective index determines payouts, most of the times weather-related parameters (Hochrainer-Stigler et al., 2014). Such parameters need to be highly correlated with farm-level yields. The index can be based on the amount of rainfall (lack of or excess), humidity levels, the arrival of locusts, water levels in a river, occurrence and strength of a hurricane, sea-surface temperature, frost, hailstones, etc. This requires highly capable and independent measurement tools, such as weather stations.

Compared to indemnity-based insurance, IBI has a number of superior qualities and merits, such as it substantially reduces administrative costs because the product pays out in events that are triggered by a publicly observable index, such as rainfall recorded on a local rain gauge, without the need for households to formally file a claim (Hochrainer-Stigler et al., 2014; Carter et al., 2014; Nshakira-Rukundoet al., 2021). The typical advantages of IBIs are that they tend to reduce significantly the problems of adverse selection (that is, since farmers know more about their risks than the insurer, the low-risk farmers may opt out, leaving the insurer with only high-risk customers) and moral hazard (that is, when farmers' behaviors can influence the extent of damage that qualifies for insurance payouts) that often plague insurance markets because payouts are based only on publicly-observed data rather than on private information reported by the person filing claims. Furthermore, IBIs are more efficient than indemnity-based insurance as the former reduces transaction costs significantly since loss assessment isn't made at level of every policy holder (VaRgas & Tomeri, 2009; Karlan & Morduch, 2009; Xavier, 2015; Nshakira-Rukundoet al., 2021).

Through IBI, it is possible to spread risks over large regions, which could decrease premium payments significantly (World Bank, 2007). IBI products can also be combined with other financial services thereby decreasing administrative costs (Nshakira-Rukundoet al., 2021).

Even though IBI has the aforementioned merits, ironically the uptake for this insurance product is low (Ali et al., 2020, 2020; Nshakira-Rukundoet al., 2021), especially in Africa. For example, Hess & Hazzel (2016) have shown that from approximately 51 million small holder farmers in Africa, only 1.3% of them have agricultural insurance. Moreover, Nshakira-Rukundoet al., (2021) documented that uptake of agricultural insurance in Africa is 3.5% but still this figure is by far lower than Asia (46.2%) and Latin America (15.8%).

The facets of low uptake is demonstrated not only by small proportion of farmers buy the insurance offered but also the purchasers usually buy the smallest coverage offered, and the poor farmers who would benefit the most are not usually among the purchasers (Skees, 2010)

In Ethiopia, even though current data is not available about the total number of IBI contract holders, low uptake of thereof is well documented by different authors (Amare et al., 2019; Hill et al., 2013; Tadesse et al., 2016; Ahmed et al., 2020; Bishu et al., 2018).

Several studies aim to resolve the puzzle of low uptake by smallholder farmers in less developing countries. Accordingly, the most important limiting factor is basis risk (Carter et al., 2014; Ali et al., 2020; Nshakira-Rukundoet al., 2021). By ‘basis risk’ we mean the imperfect correlation between computed indexes and the actual losses that can jeopardize actual uptake of IBI (Jensen et al., 2014). According to Nshakira-Rukundoet al. (2021), there are three categories of basis risk. The first is the geographical/spatial basis risk, which measures the distance from a farmer’s plot to the measurement point. The second is design basis risk which emanates from the models and variables used to construct an index. The third is temporal basis risk which is related to the time frame in which the index is measured. Due to the presence of basis risk, significant portion of losses left unpaid. For example, simulation studies in Cameroon and Niger have indicated that basis risk might be as high as 50 percent in most indices (Leblois et al., 2014a, 2014b), implying that there is a 50 percent chance that an insured farmer’s risk might not be covered by their insurance due to such poor correlation. Among the three categories, spatial basis risk is the most pronounced type of basis risk.

In order to reduce basis risk, several strategies have been suggested by experts and these include; i) substantial investment by governments and other stakeholders on whether apparatus to ensure more proximity to farmers (Amare et al., 2019), ii) the insurance product can give more protection through insuring multiple crop and multiple perils rather than single crop and peril (Morsink et al., 2016), iii) insurance product development might consider using multiple sources and types of data to better explain both the production risk and multiple dimensions of possible losses (Wang et al., 2013). However, Nshakira-Rukundo et al. (2021) has underlined that even though these technological improvements are valuable additions, their use should be weighted with their respective costs, time lag in triggering payments etc.

In addition to basis risk, cash-constrained smallholder farmers in developing countries have unveiled low demand for IBI since they don’t have the resource to pay premiums (Cole et al., 2013). As a result, IBI should cost less because premium payments may involve high opportunity costs for the insured, causing other negative consequences such as a decrease in consumption and foregone opportunity to invest more in productive activities (Helgeson et al., 2013).

Furthermore, lack of trust on financial institutions and their products (VaRgas & Torero, 2009; Ali et al., 2020), and limited knowledge & information about index-based insurance (World Bank, 2007; VaRgas & Torero, 2009; Nshakira-Rukundoet al., 2021) are also binding constraints to uptake the insurance product.

Behavioral and cultural aspects of farmers may also limit the uptake of both crop and livestock index-based insurance. Risk and ambiguity aversions are the pool of behavioral factors that affect farmers’ perception of the probability of shock happening, the valuation of losses by shocks, and difficulty to interpret the value of index-based insurances Cultural aspects of smallholder farmers, such as religion and gender are also important areas of considerations in a run to develop appealing and inclusive IBI (Nshakira-Rukundoet al., 2021).

Last but not least, the problem of insurance demand may be further confounded in developing countries because of the availability of self- insurance mechanisms and the presence of many tools that

governments use to smooth farm incomes, such as direct cash or kind safety net programs, quotas & minimum price support systems, input subsidies, and low-interest agricultural loans (Mahul and Stutley, 2010).

With plenty of evidence about low crop and livestock demand in Ethiopia, several studies have been conducted with two main related emphases. Some of the studies have taken for granted the blue print of almost all problems of IBI discussed above as binding constraints in Ethiopia, and conducted various empirical & experimental studies that aim to develop the existing IBI. On the other hand, some of the efforts are spared on investigating the feasibility of existing index-based insurance.

In a recent pilot project, R4 has partnered with the International Food Policy Research Institute (IFPRI) to use smartphone pictures to improve its index insurance contracts for small-scale Teff growing farmers in Ethiopia. With picture-based insurance (PBI) audit, farmers or agents regularly send in geo-referenced smartphone pictures of the insured crops (i.e in this case Teff), from planting to post-damage. Then, loss assessments are based on damages visible from a time series of pictures taken by the farmers regularly using smartphones. In its pilot implementations, the project has increased uptake of index-based insurance by reducing basis risk through engaging farmers to participate directly, with one's own pictures being more tangible than other indices (Porter et al., 2020).

Tadesse et al (2016) use a choice experiment to elicit smallholders' willingness to pay for IBI either in cash or kind (i.e work for insurance program at daily wage rate to overcome cash shortages) in four districts of South-central Ethiopia. They found that farmers opt for premium payments with daily wage rate than cash. In another related study aim at increasing uptake in context of cash constrained smallholder farmers, Ahmed et al. (2017) shows that uptake of commercial rainfall index insurance in drought-plagued farming cooperatives in Amhara region is very low, ranges from 0.5% to 3% across different seasons. However, uptake has increased to 39% when small free insurances are provided.

To address the problems of low trust and knowledge of IBI, Dercon et al (2014) & Belissa et al (2019) test to what extent uptake can be enhanced via informal risk sharing institutions (i.e Iddirs). Both studies ascertained that promoting insurance through 'Iddirs' increases uptake more than standard IBI.

Belissa et al (2020) have provided experimental evidence on impacts of risk and ambiguity aversion behaviors of farmers on the uptake of index-based crop insurance. They found that an increase in risk aversion increases uptake, but an increase in ambiguity aversion lowers uptake.

In the second pool, studies by Clarke (2011), Bishu et al. (2018), and Amare et al. (2019) found that uptake of existing index-based crop insurance depends on basis risk, education level, trust and risk & ambiguity aversions.

One way or another, the above studies provide evidence to improve the existing insurance products and uptake of thereof. However, some of the studies are conducted with a due acceptance of almost all the reasons for low uptake in literatures as binding constraints in Ethiopia too. This approach may fire off efforts aim at increasing demand for IBI. Rather, the run to develop feasible insurance for small holder farmers has to start from the basics of identifying the major agricultural risks among farmers since it frames the relevant feasible options. For example, suppose the numbers of dominant risks faced by smallholder farmers are more than one. In that case, the expert has to assess the feasibility of multi-peril insurance products rather than testing the feasibility of different marketing/promotion channels.

Furthermore, an important aspect that previous studies have overlooked is analysis of agricultural risks and design of distinct feasible insurance mechanisms applicable in different agroecologies. This is worthy of detailed assessment since rural livelihoods and related risks vary across different agroecologies.

2.3. Methodology

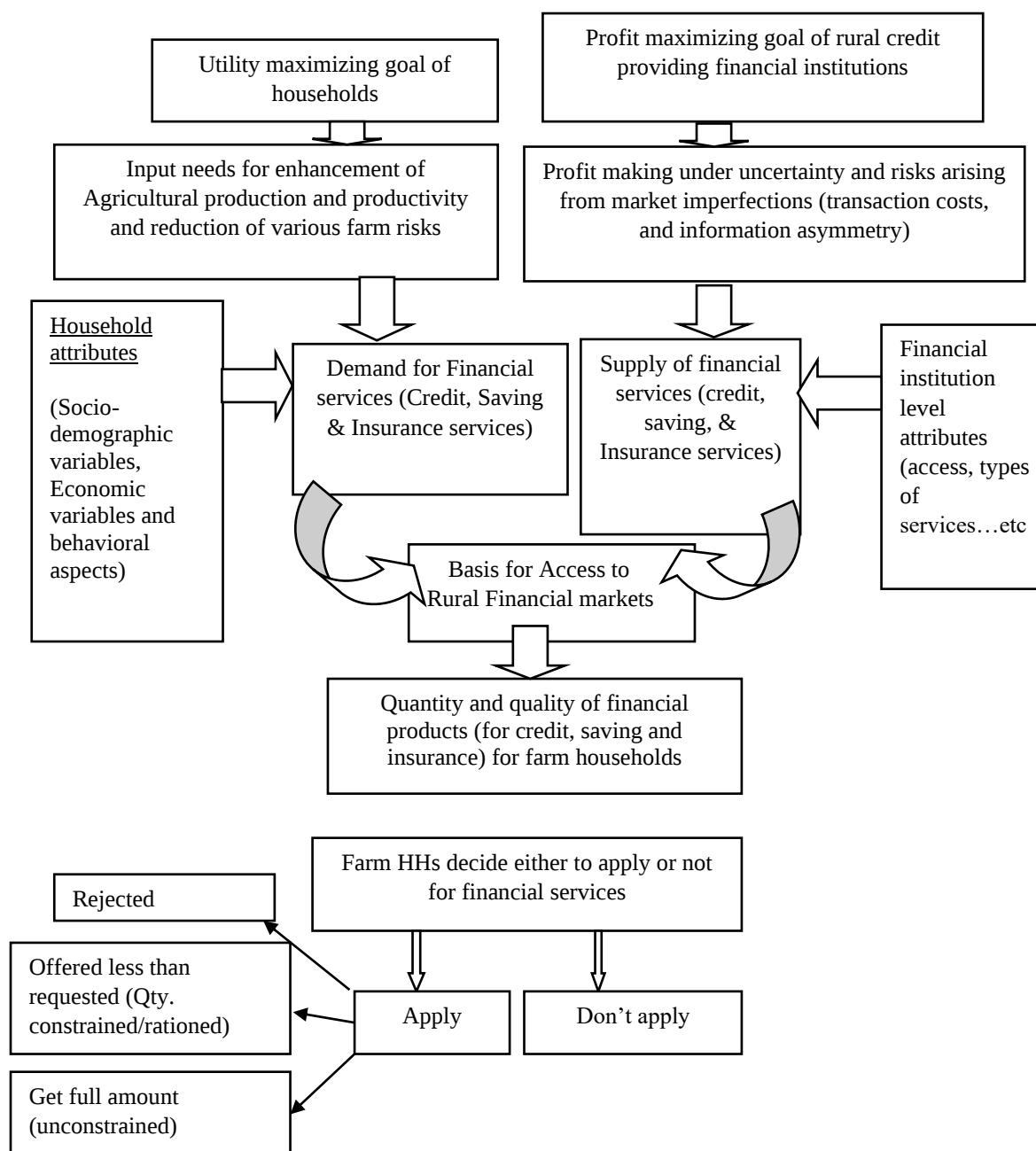
The conceptual framework guides the methodology that the reviewed literature and theories suggest as described below, and the econometric model incorporates variables that arise from the conceptual model and the ensuing mathematical relation derived from utility and profit maximization goals.

2.3.1. Conceptual Framework

Access to rural finance is framed in demand and supply framework of the market where rural households demand for financial services and rural financial institutions supply credit, saving and insurance services. Demand for credit of households emanates from assumed utility maximizing goals and rural supply of credit originates from profit maximization goal of financial institutions. Utility is derived from consumption and other factors and consumption is derived from part of profits made last period less saving. In their quest for increasing output and productivity farm households borrow funds from financial institutions to purchase inputs and technology on the one hand and insurance policies to withstand risks arising from weather and other factors. Insurance appears as a cost of production on the one hand and as enhancer of more use of factors in production, thereby enhancing profit. Thus, the schematic of the conceptual relationship of demand for credit and the supply of credit, saving and insurance services is shown as follows.

Farmers may not apply for financial services for the simple reason that they are not liquidity constrained. Furthermore, some farmers with positive demand may not apply for various reasons such as fear of default, lack of information where to apply, high transaction costs to get credit...etc. Farmers who apply for financial services may either be refused, or offered an amount less than or equal to the amount applied. Those farmers who are refused and offered an amount less than their request are classified as quantity rationed. Farmers' decision to apply for financial services and subsequently rationing by financial intermediaries is assumed to be influenced by institutional attributes such as access, services rendered....etc and characteristics of farmers (Chivakul & Chen, 2008; Awunyo-vitor, 2018).

Figure 2.1: Schematic presentation of the conceptual model



2.3.2. Methodological Framework

Farm households may be assumed to maximize utility derived from the consumption and other factors represented by a vector X . Consumption is realized by the use of part of farm profit and a left over from a little saving at a rate of s , meaning the profit is partly saved and partly consumed.

$U = U(C; X)$ utility is as a function of consumption and a vector of other factors where

$C_t = (1-s)(\Pi_{t-1})$: Consumption today is part of the profit of the previous period less the saving and $(\Pi_{t-1}) = f(K_o, B_c, K_n, L)_{t-1} - (wL + r_o K_o + r_r K_n + r_c B_c)_{t-1} + (P_i)$ where $B_c = (P_i \mu (K_o + K_n))$.

Where K_o is own capital, B_c amount of credit the size of which is based on insurance premium P , risk aversion factor μ and the sum of own physical capital and land, L is own and hired labor, w is wage rate (opportunity cost of own labor), r_o interest rates and r_r is land rental rate.

Under uncertainty, utility (U) becomes expected Utility (EU), hence utility maximization is expressed as:

$$\text{Max } EU = \text{Max } EU \{ (1-s)(f(K_o, B_c, K_n, L)_{t-1} - (wL + r_o K_o + r_r K_n + r_c B_c)_{t-1} + P_t); X \}$$

$$\text{Max } EU = EU((1-s) f(K_o, B_c(P_i \mu (K_o + K_n)), K_n, L)_{t-1} - (wL + r_o K_o + r_r K_n + r_c(P_i \mu (K_o + K_n)))_{t-1} + P_t)X)$$

$$\delta EU / \delta B_c = (1-s)(EUB'(fB_c' * \mu f p \mu^{-1} * (fK_o'c + fK_n') - r_c (fB_c' * \mu f p \mu^{-1} * (fK_o'c + fK_n')) + fB_c'x) = 0$$

Expected marginal utility from borrowing or credit is a function of saving (S), marginal product of capital borrowed, marginal product of insurance, marginal effects of borrowing on marginal product of own capital and land, and interest rate of borrowing plus marginal effects of other factors affecting the marginal product of borrowing ($fB_c'x$).

$$EUB' = F(s, fB_c, \mu f p \mu^{-1}, fBK_o', fBK_n'rc, fB_c'x) \quad (1)$$

On the other hand, the supply side of credit is derived from the assumption that financial institutions maximize profit; where profit $(\Pi) = f(B_f, L) - (wL + r_c B_c + T_t B_c, Y)$ with B_f is being investable fund, B_c credit, T is unit transaction cost, Y any other factors affecting B_c or r_c ,

Again, under uncertainty, Π becomes $E\Pi$, hence profit maximization is expressed as:

$$\text{Max } E\Pi = \text{Max } E\Pi f(B_f, L) - ((wL + r_c B_c + T_t B_c), Y) \text{ and } T_t = \phi v B_c$$

$$\delta E\Pi / \delta B_c = (E\Pi B_c' - r_c - 2B_c \phi v \pm fB_c'Y) = 0$$

Expected marginal profit from lending or providing credit is a function of marginal product of capital lent (interest rate), marginal cost of transaction, plus marginal effects of other factors affecting the lending interest ($fB_c'Y$)

$$E\Pi B_c' = G(r, \phi v, fB_c'Y) \rightarrow B_c = g(r, \phi v, fB_c'Y) \quad (2)$$

The variables in this function interact with the demand side determinants of expected marginal utility of borrowing, including other factors X affecting equilibrium demand for credit of households. Based on marginal utility from borrowing we derive and conclude that the determinants of demand for credit being:

$$B_c = B(s, fB_c, \mu f p \mu^{-1}, fBK_o', fBK_n'rc, fB_c'x, \phi v, fB_c', Y, \phi v) \quad (3)$$

Credit demand (B_c) is expressed as a function of the above variables.

2.4. Data Types, Sources and Sampling

This study mainly relies on three rounds of household panel data to analyze households' demand and supply side aspects of credit access. The first-round survey was conducted in 2012 by the Association of Ethiopian Micro Finance Institutions (AEMFI). In this survey, a total of 1,425 rural households from the entire country were selected and exhaustive information regarding access to credit and saving services of rural households were collected. In the second round, a total of 3,005 rural households were selected of which 1,580 were new households that were not included in the first round. It was conducted in 2018 by the then FDRE policy studies & research center (PSRC) in collaboration with staff from the department of Economics of the Addis Ababa University. The third-round survey was conducted as part of this project and a total of 300² households that were included in the previous rounds were reached out.

Data collected from both crop and livestock producing areas, and for the ease of access to farm households, regions and enumeration areas in central Ethiopia (rural households from Oromia, Amhara, SNNPR and Afar) constitute our sample. The sample size for this study is 300 and it is proportionately distributed to the regions based on sampling weights in 2014³.

Table 2.1: Distribution of sample of rural households across regions

Region	Proportion in 2014	Sample size
Oromia	28.67%	86
Amhara	28.67%	86
SNNPR	28.33%	85
Afar	14.33%	43
Total	100%	300

We also conducted 4 focus group discussions, FGDs (one in each region) with selected community leaders, rural money lenders, and other relevant stakeholders in the rural finance value chain to get additional information about the problems, opportunities and remedies to ensure adequate finance for smallholder farmers.

We also collected secondary data from the National Bank of Ethiopia, Commercial banks and insurances, Micro Finance Institutions, association of Ethiopia Micro Finance Institutions (AEMFI), federal cooperatives agency, World Bank financial index survey etc. to measure the existing supply of major financial products, and assess thereof in terms of crucial indicators such as inclusiveness, access and adequacy.

2.4.1. Method of data analysis

a. Descriptive approach

The measurement of current demand and supply is vital since the difference shows financial gap. Based on this gap, government and other stakeholders can anticipate the work ahead to ensure adequate supply of essential financial products for smallholder farmers in the country.

² The sample size is determined by EEA (as per the ToR) and it may not be a representative sample size for more than 13 million rural households of the Country.

³ It is more or less consistent with sampling weight in ESS which is initially suggested by EEA

The financial market for credit and saving is more familiar to rural farmers than agricultural insurance. As a result, we can estimate the existing demand for these products based on responses by farmers for credit and saving demands within the past 12 months. More specifically, we multiply the average credit demand of sample households by the approximate number of entire rural households to arrive at total agricultural demand for the country. Nonetheless, we may resort to add credit and saving demands weighted by the proportion of regional rural household sizes if we observe significant variations of average demand among regions.

The modern insurance market is so underdeveloped and poorly understood by smallholder rural farmers (WB, 2018) that in turn left significant knowledge gap about the nature and importance of insurance products. Hence, households may face difficulty to explicitly state their demands (eg. lack of prior insurance market information, quality of insurance products...etc). As a result, we use non-market stated preference approach to estimate demand for modern agricultural insurance especially index-based crop and livestock insurances.

Contingent valuation method (CVM) and discrete choice experiment (DCE) are the popular methods to measure stated willingness to pay for a good or service. In contingent valuation methods, a detail description of the product should be given to the respondents and in turn they have to elicit their willingness to pay (WTP) for the product. We can ask information on WTP using one of the following methods; open-ended questions, bidding games, payment cards, or dichotomous or discrete choices. DCE are worthy to measure demand for the various attributes of a product.

On the outset, it seems like that DCEs are better options for this study since at the end we have to provide suggestions to improve the existing IBIs, and meanwhile, we have to optimize in various attributes of IBI (eg. multi crop vs single crop IBI, multiple peril vs single peril, sale of IBI for groups vs individuals, sale of IBI by insurance companies or MFIs...etc). However, this exercise results in large number of scenarios to be considered which in turn pose two types of difficulties. First, setting initial prices increases with the number of products considered, and this is hectic and tedious to pursue. Second, even if researchers overcome the first problem, confusion among farmers grow very much when the number of scenarios is large. Consequently, we use CVM to measure WTP for existing crop and livestock in this study. We allow farmers to elicit their WTP through dichotomous choices (i.e yes or no response about their WTP to purchase insurances at offered prices, and the amount of land or number of livestock the policy should cover at this price). The use of dichotomous choice methods help to reduce strategic biases of CVM. Moreover, this takes it or leave it question mimics the option consumers face in an insurance market (Hill et al., 2013).

The demand for insurance can be estimated by multiplying the average amount of land or number of livestock owned by the number of respondents willing to pay for the product. However, in this study suggestions to develop existing IBI come from critical assessments of the determinants of willingness to pay for IBI where we present an econometrics model in the next section.

As mentioned above, the amount of supply of major financial services can be estimated based on secondary data from various sources such as the National Bank of Ethiopia, Commercial banks and insurances, Micro Finance Institutions, Association of Ethiopian Micro Finance Institutions (AEMFI), federal cooperatives agency and World Bank financial index survey. We assess supply of credit, saving & insurance in terms of crucial indicators such as inclusiveness, access and adequacy.

In this study, various descriptive tools and methods were also used to provide current and detail evidence of the types, frequency, incidence, distribution of risks and coping methods among rural households engaged in crop & livestock sub-sectors and residing in different agro ecologies (Dega (highlands), Woyna Dega (midlands) and Kola (lowlands)). Assessment of agricultural risks and coping

mechanisms in the context of different sub-sectors and agro-ecologies has merits for policy because the frequency, distribution and incidence of agricultural risks vary across different agro-ecologies, which in turn frames the relevant & feasible risk management options in a specific agro-ecology.

Finally, we resort to desk review of various literature and policy documents related to rural finance in Ethiopia, and data from FGDs to identify and address institutional constraints for expanding access to existing financial products and innovative approaches.

b. Econometrics models specification

Farmers as rational agents decide to apply for financial services only if the financial products (credit, saving, and insurance) increase their utilities and they do not go for these products in the opposite case. Let Y_1 & Y_0 be utilities expected by farmers from applying for financial services, and not to apply respectively. If $Y_1 > Y_0$, farmers apply for financial services and do not apply when $Y_1 \leq Y_0$.

However, we cannot directly observe the utilities but their decisions which take a binary value (i.e. 1 if the farmer applies for the services and 0 otherwise).

$$dd = 1 \text{ if } Y_1 > Y_0,$$

This can be further written in terms of probabilities as:

$$P(dd = 1/X) = P(Y_1 > Y_0).$$

In order to identify the major determinants of farmers' decision to apply or not, we estimate Chamberlian probit model from the class of binary models of panel data since it accounts for modeling of unobserved heterogeneity among households (Wooldridge, 2010; Cameron & Trivedi, 2009).

Let us start from the latent variable model which is specified as follows:

$$y_{it}^* = x_{it}\beta + c_i + e_{it} \quad (4)$$

$$y_{it} = 1 \text{ if } y_{it}^* > 0$$

$$y_{it} = 0 \text{ if } y_{it}^* \leq 0$$

The response probability for the above unobserved effects probit model for household i at time t is given by:

$$P(y_{it} = 1 | x_{it}, c_i) = \Phi(x_{it}\beta + c_i) \quad (5)$$

Where x_{it} contains a vector of time variant and invariant variables depicted on the right-hand side of equation 3, c_i is unobserved random variable and e_{it} is the error term. Moreover, for each of the major financial products, the dependent variable is defined as:

For Credit and saving products:

$$Y_{it} = \begin{cases} 1 & \text{if a household decides to apply for credit or decides to save,} \\ 0 & \text{otherwise} \end{cases}$$

For Insurance products:

$$Y_{it} = \begin{cases} 1 & \text{if a household is willing to pay for IBI,} \\ 0 & \text{otherwise} \end{cases}$$

Since c_i is unobserved random variable drawn along with (x_i, y_i) . Chamberlain (1980) allowed for correlation between c_i and x_i by assuming a conditional normal distribution with linear expectation and constant variance. A common restriction is:

$$D(c_i|x_i) = D(c_i|\bar{x}_i);$$

where $\bar{x}_i$ is the time average of continuous variables for every observation. Technically, this implies that there is no partial correlation between c_i and these dummy variables which may not necessarily hold. But, it is a step forward to model c_i using time average of continuous variables compared to other unrealistic distributional assumptions.

Mundlak's (1978) special case of Chamberlain approach can then be written as:

$$c_i = \gamma + \bar{x}_i\delta + \alpha_i \quad (6)$$

$$c_i | x_i \sim \text{Normal}(\gamma + \bar{x}_i\delta, \delta_a^2)$$

Where δ_a^2 is the conditional variance of α_i in the first equation and it is assumed that it doesn't depend on x_i .

Substituting equation 6 into 4, the revised latent variable model becomes:

$$y_{it}^* = x_{it}\beta + \gamma + \bar{x}_i\delta + \alpha_i + e_{it}y_{it} = 1 \text{ if } y_{it}^* > 0 \quad (4)$$

$$\begin{aligned} y_{it} &= 0 \text{ if } y_{it}^* \leq 0 \\ e_{it} | x_i, \alpha_i &\sim \text{Normal}(0,1) \\ \alpha_i | x_i &\sim \text{Normal}(0, \delta_a^2) \end{aligned}$$

Then, the APE of the above model can be estimated using ASF as follow;

$$\begin{aligned} ASF(x_t) &= E_{c_i}[\Phi(x_t\beta + c_i)] = E_{\bar{x}_i}\{E[(\Phi(x_t\beta + c_i)|\bar{x}_i)]\} \\ &= E_{\bar{x}_i}\{E[(\Phi(x_t\beta + \gamma + \bar{x}_i\delta + \alpha_i)|\bar{x}_i)]\} \\ &= E_{\bar{x}_i}\left\{\left[\Phi(x_t\beta + \gamma + \bar{x}_i\delta) / (1 + \delta_a^2)^{\frac{1}{2}}\right]\right\} = E_{\bar{x}_i}[\Phi(x_t\beta_a + \gamma_a + \bar{x}_i\delta_a)] \end{aligned} \quad (5)$$

Where, for example, $\beta_a = \frac{\beta}{(1+\delta_a^2)^{\frac{1}{2}}}$ are scaled coefficients.

However, Barslund & Tarp (2008) argue that when we pool formal and informal demand together as depicted in equation 1 above, we risk blurring the picture of demand for financial services (saving and credit). Consequently, more concrete evidence on rural financial demand can be obtained if we apply a bivariate probit model for demand from formal and informal sources as follows:⁴

$$\begin{aligned} z_{1ti} &= 1 \text{ if } z_{1ti}^* = \beta_1 q_{1ti} + e_{1ti} > 0, \\ &\text{or } 0 \text{ otherwise (demand for services of formal institutions)} \end{aligned} \quad (6)$$

⁴ In case of access from both sources, households are assigned to sources in which they access more.

$$z_{2ti} = 1 \text{ if } z_{2ti}^* = \beta_2 q_{2ti} + e_{2i} > 0, \text{ or } 0 \text{ otherwise (demand for services of informal } \frac{\text{institutions}}{\text{methods}}) \quad (7)$$

Where, q_{jti} is vector of explanatory variables and β_j is vector of coefficients to be estimated, and our main intention is to check whether factors determining credit demand differ between formal and informal sources.

Especially for credit, we should go beyond the horizon of identifying factors that determine thereof to those factors that limit this demand (i.e credit constraints). A household is credit constrained if they have applied for loan and has the application rejected or get smaller loan than applied for. Even though it is possible to get information about households' demand for credit from their responses, it is difficult to know what would have been the lender's decision if the households who demand credit but didn't apply for it had actually applied. To limit our analysis only to those relevant households and subsequently to address the sample selectivity problem, Wooldridge (2010) recommends a bivariate version of Heckman's selection model as specified below:

$$w_{1ti} = 1 \text{ if } w_{1ti}^* = \gamma_1 w_{1ti} + u_{1ti} > 0, \text{ or } 0 \text{ otherwise (constrained)} \quad (8)$$

$$w_{2ti} = 1 \text{ if } w_{2ti}^* = \gamma_2 w_{2ti} + u_{2ti} > 0, \text{ or } 0 \text{ otherwise (applied)} \quad (9)$$

Where, w_{jti} is vector of explanatory variables, γ_j is vector of coefficients to be estimated and equation 9 is the selection equation that explains the households' decision to apply for a loan (i.e $ek_{2ti} = 1$).

2.5. Results and Discussion

2.5.1. Descriptive analysis

i. Rural saving practice

A. Rural savings: The big picture

As depicted in the following table, MFIs' saving has grown on average by 32.53% per annum for a decade (column-7 of Table 2.2). More importantly, the share of voluntary saving has continuously increased to reach 84.71% in 2019 (column-6). The growth in total saving was higher than the growth in the number of active borrowers, which improved saving per borrower significantly. However, this remarkable growth in saving per borrower was far below the growth of loan per borrower. As a result, capacity of MFIs to meet loan demand from savings has reduced through time especially in recent years (column-11). The growth of overall financial gap of MFIs is also evident in the last decade as the difference between total loan (Column D times by column E) and total saving (column E) has been growing continuously except in 2014.

Table 2.2: Ethiopian MFIs Saving Trend, Saving & Loan per Borrower (in Million birr)

Year	Compulsory Saving-in million ETB (A)	Voluntary Saving- million ETB (B)	Total Saving- million ETB (C)	No of Active Borrowers (D)	Voluntary/ Total Saving (%)	Growth of T. Saving (%)	Saving per Borrowers (ETB)- E=C/D	Loan per Borrowers (ETB)-F	Gap per borrower= F-E	growth of gap per cclient
2010	817.13	1,738.60	2,555.73	2.33	68.03	-	1,098.81	2,453.39	1,354.58	-
2011	931.25	2,764.77	3,696.02	2.48	74.80	44.62	1,489.84	2,882.96	1,393.11	2.84
2012	1,407.29	4,067.06	5,474.35	2.64	74.29	48.11	2,075.48	3,635.71	1,560.22	12.00
2013	2,164.47	5,853.83	8,018.31	3.15	73.01	46.47	2,545.70	4,117.37	1,571.67	0.73
2014	2,934.57	8,584.04	11,518.61	3.37	74.52	43.65	3,422.10	4,672.81	1,250.71	(20.42)
2015	3,165.79	11,699.09	14,864.88	3.81	78.70	29.05	3,904.45	5,374.17	1,469.71	17.51
2016	3,384.16	13,600.69	16,984.85	3.86	80.08	14.26	4,397.34	5,867.59	1,470.25	0.04
2017	4,622.97	20,563.27	25,186.25	4.82	81.64	48.29	5,226.97	7,166.67	1,939.70	31.93
2018	5,234.12	23,730.05	28,964.16	5.11	81.93	15.00	5,672.91	8,491.62	2,818.71	45.32
2019	6,014.12	33,330.10	39,344.22	5.00	84.71	35.84	7,869.74	11,001.80	3,132.06	11.12
Average	3,067.59	12,593.15	15,660.74	3.66	77.17	32.53	3,770.33	5,566.41	1,796.07	10.11

Source: AEMFIs and own computation

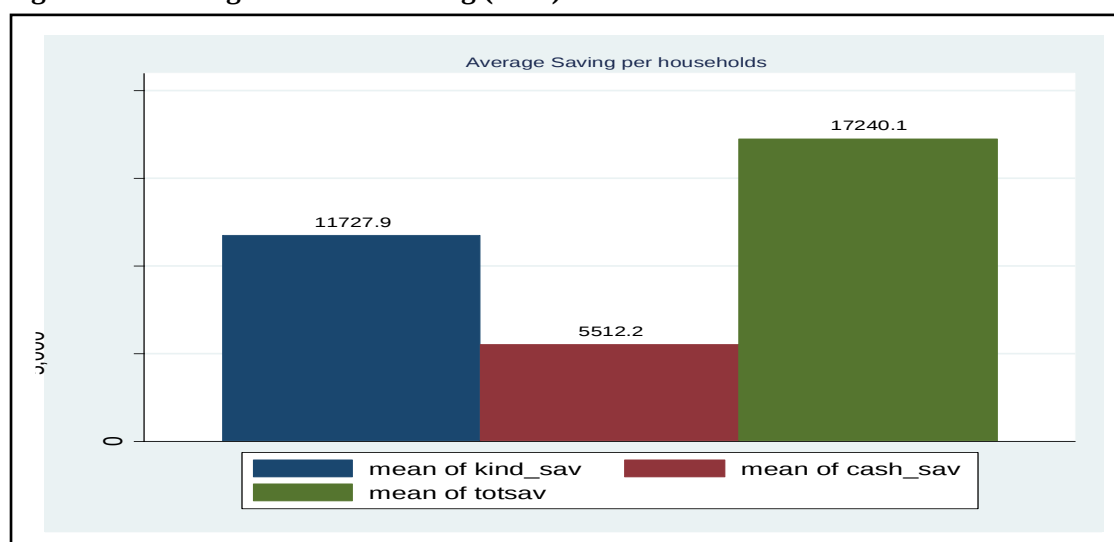
B. Rural savings: in the study area

Majority of the households in the study area (72.6%) save their resources either in kind or in cash. For those who save, the average value of in-kind saving amounted to Birr 11,728 while the cash saving was almost half of that amount (ETB 5,512). The total average saving was, therefore, Birr 17,240 (Figure 2.3).

Table 2.3: Saving status/practice

Saving Status	Freq.	Percent
Practice saving	658	72.63
Don't practice saving	248	27.37
Total	906	100

Figure 2.2: Average amount of saving (ETB)



The nominal value of saving has been increasing over the years. The average saving amounted to Birr 6,725 in 2014; grew to 9,968 in 2018 and to Birr 35,027.5 in 2022 where the average growth rate was about 20.6%. In real terms, assuming a 25% annual inflation, growth of saving was about 11.9%, which was nearly half of the growth in nominal saving. On the other hand, saving in kind was growing faster than saving in cash, reflecting households' response to the country's growing inflation rate over the years. As complement to this, in 2022, 35% of those who practice saving responded that the previous years' inflation have forced them to reduce their saving in cash and resort to in-kind saving where these figures were 21.6% and 16% in 2018 and 2014 respectively.

Table 2.4: Nominal Vs. real saving over the years

Years	Nominal saving value	Ln Nominal saving value	Real saving value	Ln real saving value
2014	6725	8.814	6725	8.814
2018	9967.7	9.207	6645.133	8.802
2022	35027.5	10.464	17513.75	9.771
Growth rate		20.63%		11.96%

Figure 2.3: Nominal Vs. real saving over the years

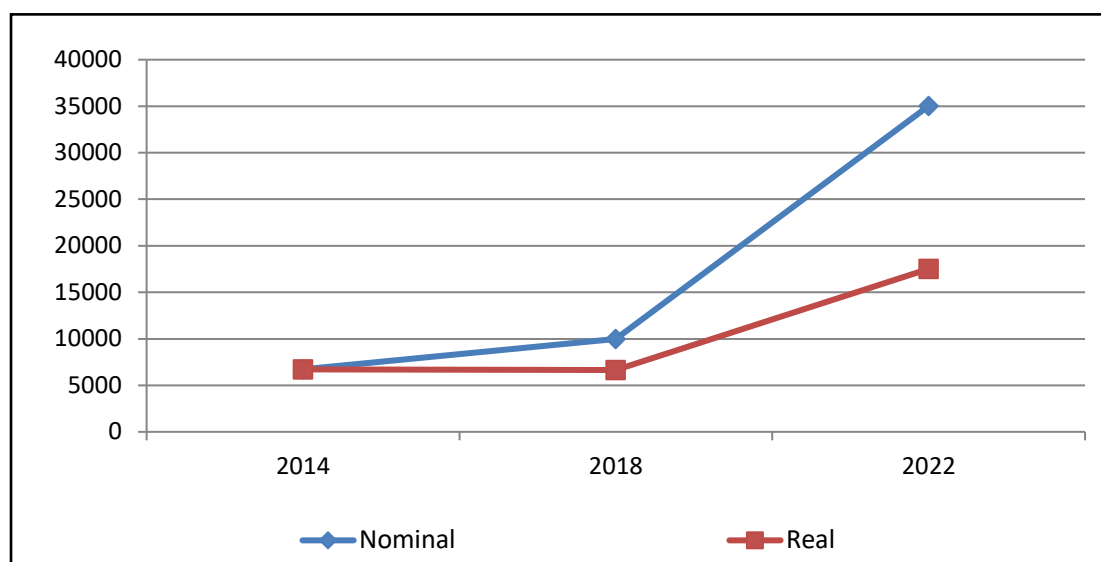
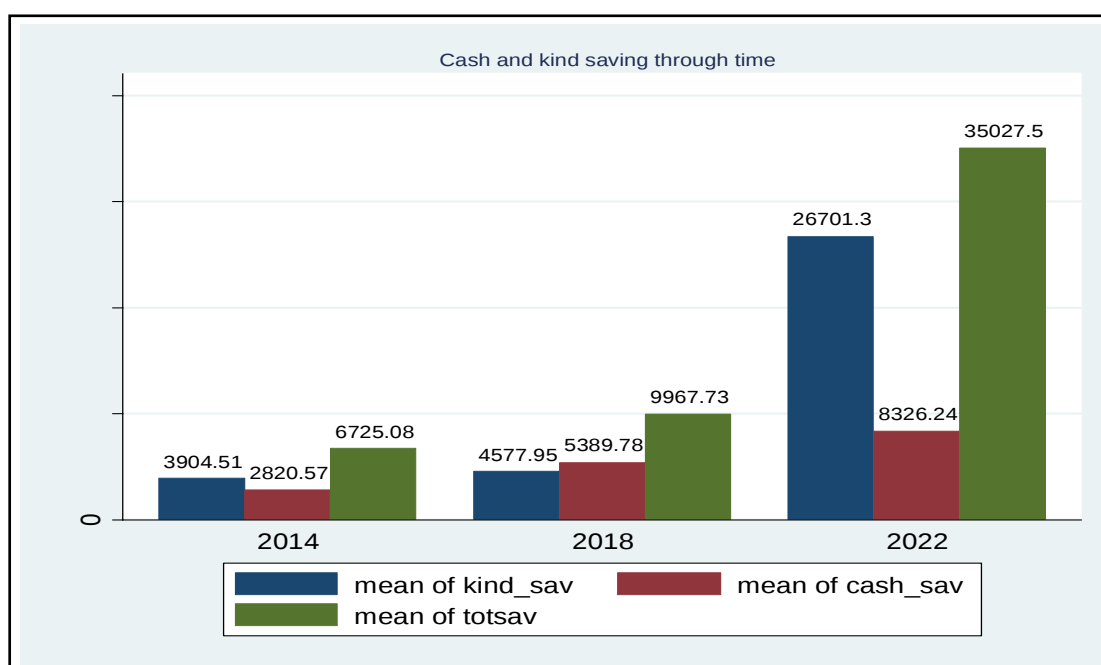


Figure 2.4: Saving in cash and in-kind over time



Those households who saved in-kind mentioned that their main motives to save in this form are the expectation of higher returns (62.5%) and protecting their wealth from inflation (15%) where as cash saving decision by rural households are mainly driven by safety issues (49.5%) and high value for liquidity (47.3%).

The comparison of the mean characteristics of respondents who practiced and did not practice saving indicates that age and income differences between those saving and not saving is significant at 5% while the difference in distance to the nearest formal financial institutions, and the difference in the amount of land holding were significant at 1%. The difference in livestock holding between savers and non-savers was significant at 10% (Table 2.5). The results for mean differences are pretty much consistent with

theory and empirics. More specifically, rural households with higher income, land and livestock holdings, and more proximity to formal financial institutions are more likely to practice savings.

Table 2.5: Comparison of means for those who practice/not practice saving

Variables	Sample Size	Practice saving (1)	Don't practice Saving (0)	Difference (1)-(0)	significance
Age	302	52.85	57.01	-4.16	**
Years of education	302	2.84	2.88	-0.04	-
Family Size	302	8.003	7.68	0.323	-
Distance to the nearest formal FI	302	5.13	6.14	-1.01	*
Amount of landholding	302	1.28	1.05	0.23	*
Amount of livestock	302	19.5	7.79	11.71	***
Total income	302	36,293.36	23,476.26	12,817.1	**
Food consumption expenditure	302	1274.04	1160	114.04	-

***, ** & * show statistical significance at 1%, 5% & 10% respectively

Among 234 households who practiced saving in the year 2022, 53 or 22.6% were using only formal financial institutions, 65 or 27.8%, were using informal institutions and the remaining were using both formal and informal financial institutions. Among those respondents who used to save in informal institutions, 65% and 33.1% of them replied that proximity and easy access respectively are the main drivers to save in informal institutions. Safety (78%), easy access (13.9%) and motive to get other services such as loan (4.3%) are the other factors behind visiting FFIs for deposits.

2.5.1.1. The Supply and Demand for credit

A. Supply of agricultural credit

It is estimated that the supply of credit by formal and semi-formal financial institutions accounts for approximately 80% of the total amount channeled to the sector. In the past decade, the supply of agricultural credit by commercial banks nearly doubled. More specifically, in 2010/11, agricultural credit outstanding was Birr 10.58 billion and this has grown on average by 10% p.a to reach Birr 21.09B in 2019/20. However, in relative terms, the share of agricultural sector was 13.61% in 2010/11, which shrunk to 2% in 2019/20.

Table 2.6: Total credit outstanding of CBs by economic sectors (in billion birr)

Economic sectors	Years					
	2010/11		2014/15		2019/20	
	Amount	% share from total credit outstanding	Amount	% share from total credit outstanding	Amount	% share from total credit outstanding
Agriculture	10.58	13.61	18.58	8.0	21.09	2.0
Non-agriculture	67.12	86.39	213.19	92.0	1,011.12	98.0
Total	77.69	100.0	231.77	100.0	1,032.20	100.0

Source: NBE annual reports of 2010/11, 2014/15 & 2019/20 and own computations

Even though the above illustration gives an overview of the trend and share of agricultural credit in the last decade, it is less relevant to demonstrate credit channeled to smallholder farmers because the banking sub-sector seldom entertains credit requests by smallholder farmers since they fail to meet collateral and other requirements. As a result, we resort to agricultural credit supply by MFIs (i.e provide credit based on group liability) as better indicator¹⁷ since smallholders often visit these institutions to get credit without pledging collateral.

Table 2.7: Total credit outstanding of MFIs by economic sectors (in billion birr)

Economic sectors	Years				Growth (B-A/A)*100
	2014/15		2018/19		
	Amount (A)	% share from total credit outstanding	Amount (B)	% share from total credit outstanding	
Agriculture	10.65	57.9	27.29	49.8	156
Non-agriculture	7.75	42.1	27.56	50.2	256
Total	18.39	100.00	54.86	100.0	198

Source: AEMFI & own computation

Agricultural credit outstanding in 2018/19¹⁸ is 156% higher than the amount in 2014/15 which leaves a tremendous average annual growth rate of above 31.2% p.a for five years. The share of outstanding agricultural credit was 57.9% in 2014/15 and slightly diminished over five years to reach 49.8% in 2018/19.

B. Demand for Agricultural credit

The demand for credit was low as only 24.1% of respondents have visited the doors of both formal/informal lenders to get credit. The average amount of loan requested was ETB 10,084.9 while the approved amount was ETB 9,201.4 with 91% success in securing the loan. The sources of credit were both formal and informal. The major sources of credit were friends and relatives¹⁹ (42.5%) and

¹⁷ It should be noted that though this is a better approach, it may underestimate supply as it doesn't account for supply of thereof by other semi-formal FIs.

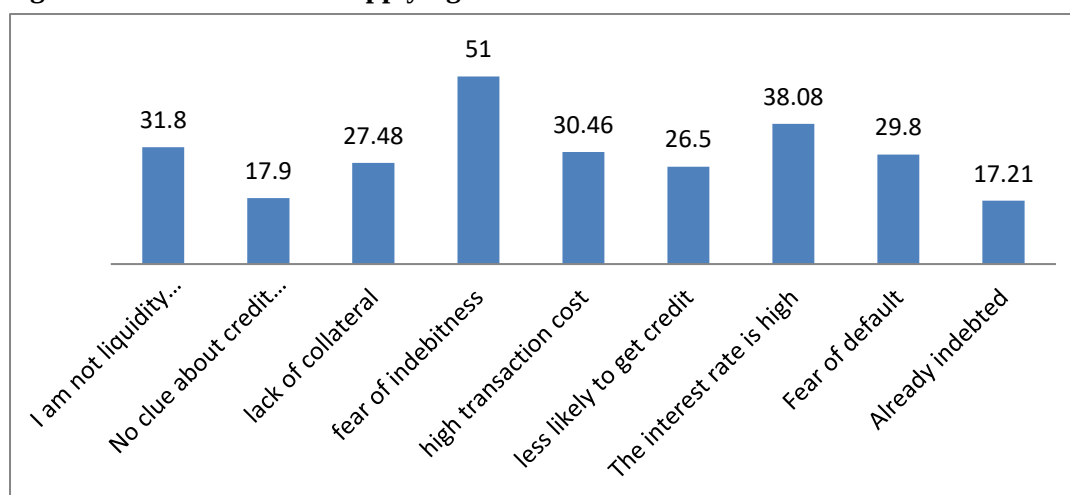
¹⁸ Latest year for which we got data

¹⁹ NB. Informal source

the MFIs²⁰ (30%). Formal FIs rejected only 2% of the applications for loan due to incomplete information and doubts on business feasibility.

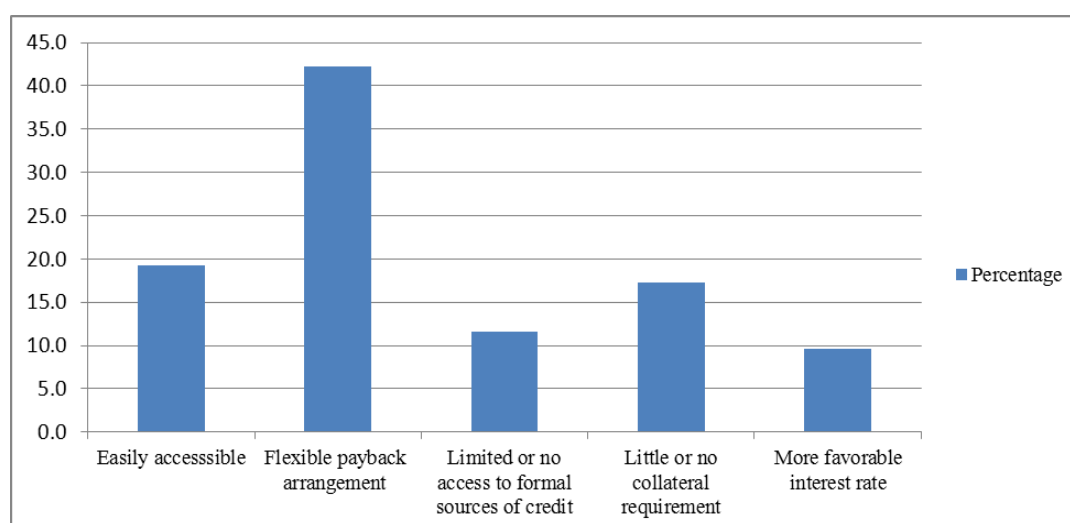
The fact that the success in securing the requested loan is high while the demand for credit is so low is intriguing²¹. The main reasons expressed in a multiple response format as to why they did not apply for loan were that they fear indebtedness (51%), high-interest rate (38%), no liquidity constraint (31.8%), high transaction cost (30.46%), fear of risk of default and its consequences (29.8%), lack of collateral (27.46%), pre-conception that there is less likelihood to get credit (26.5%), no clue about credit sources (17.9%) and already being indebted (17.21%) (Figure 2.4).

Figure 2.5: Reasons for not applying loan



As shown in figure (2.5) below, the major reasons for rural households to visit informal sources are its flexible payback arrangement, ease of access and little or no collateral requirement.

Figure 2.6: Reasons for loan request from informal sources



²⁰ NB. Formal source

²¹ However, the demand for credit will be astonishingly high if any of the relevant constraints to apply for credit are improved (i.e except those who aren't liquidity constrained, the rest can be potential demanders for credit).

2.5.1.2. Remittance

About 9% of the surveyed households received remittance while 85% of the remittance was received in cash and 12% was in kind. The remaining has been received both in cash and in kind. The average amount received was 5,700 ETB and 50% of the money was spent for smoothening consumption. About 54% of the households receive the remittance through formal institutions while the rest receive and informal methods, including individuals.

2.5.1.3. Financial Knowledge

The financial knowledge of respondents about financial products was assessed along with the main sources of information for their knowledge. The financial components were saving account, compulsory and voluntary saving, children saving account, Loan from commercial banks, chequing account, interest on own saving, interest on loan and lease. Of all products, awareness about saving account is better (56.6%) followed by loan from commercial banks (45.4%). The main sources of information are friends, relatives, neighbors, CBs & MFIs (Table 2.8)

Table 2.8: Sources of financial knowledge

Types Of Financial Products	Financial Knowledge			Main Source of Information
	I Knew It Before (%)	I Heard About It (%)	I Don't Know About It (%)	
Saving Account	56.6	25.8	17.5	Friends, Relatives, Neighbors & Cbs, Mfis
Compulsory & Voluntary Saving	29.5	20.9	49.7	Friends, Relatives, Neighbors & Mfis
Children Saving Account	25.5	20.2	54.3	Friends, Relatives, Neighbors & Radio
Loan From Cbs	45.4	21.9	32.8	Friends, Relatives, Neighbors & Cbs
Cheque	15.9	14.9	69.2	Friends, Relatives, Neighbors & Cbs, Mfis
Interest From Saving	38.7	21.5	39.7	Friends, Relatives, Neighbors & Cbs, Mfis
Interest For Loan	36.1	23.5	40.4	Friends, Relatives, Neighbors & Cbs, Mfis
Lease	5.0	17.5	77.5	Friends, Relatives, Neighbors

2.5.1.4. Agricultural Risks and Insurance

Households' risks/shocks mainly arise from adverse market prices (50%), livestock diseases (39%), drought (27.5%), illness of a household member (27%) crop diseases (25.5%), livestock death (25%), Theft (11%), death of a family member (10%), unemployment (9%), unrest (6%) (Fig 2.6). Among the 50% of the households that suffered the risk of adverse market prices 92.7% described the loss in income following this shock was either very high or high. In case of livestock disease, 30.2% of the respondents face either very high/high reduction in income. Moreover, a significant share of those

who experience livestock disease (46.6%) labeled the loss income due to this shock as medium (Table 2.9).

Even though in terms of incidence, drought (27.2%), illness of member of a household head (26.8%) and crop disease (25.5%) and livestock death (24.2%) stood third, fourth, fifth and sixth, compared to livestock disease (i.e. second) a notably higher percentage of respondents reported that the loss in income was either very high or high (Table 2.9) due to these shocks.

Figure 2.7: Incidence of various agricultural shocks

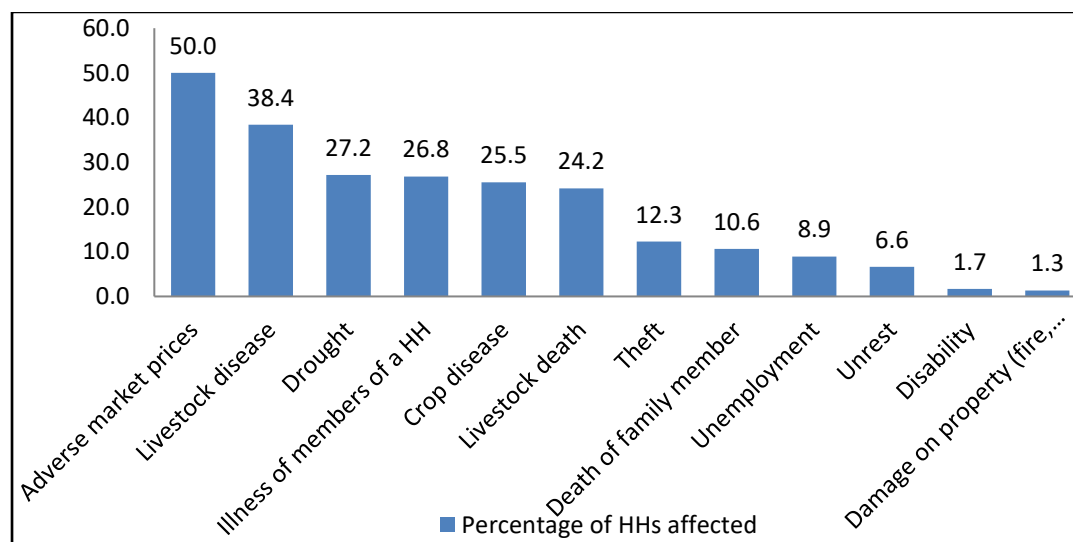


Table 2.9: Risks/shocks and loss in income

Types of risks/shocks	Percentage of HHs affected	Loss in income due to the shock (% calculated based on affected HHs)			Major coping mechanism
		very high & high	Medium	Low & very low	
Adverse market prices	50.0	92.7	6.6	0.7	Reduce consumption
Livestock disease	38.4	30.2	46.6	23.3	Selling prod. Assets
Drought	27.2	39.0	35.4	25.6	Selling prod. Assets
Illness of members of a HH	26.8	39.4	54.9	5.6	Selling prod. Assets
Crop disease	25.5	36.4	35.1	28.6	Selling prod. Assets
Livestock death	24.2	54.8	17.8	27.4	Reduce consumption
Theft	12.3	56.8	40.5	2.7	Use own funds (savings)
Death of family member	10.6	64.5	12.9	22.6	Selling prod. Assets
Unemployment	8.9	70.4	22.2	7.4	Get loan from relatives, friends, etc
Unrest	6.6	20.0	65.0	15.0	Reduce consumption
Disability	1.7	66.7	33.3	0.0	Reduce consumption
Damage on property (fire, flood...etc)	1.3	66.6	33.3	0.0	Reduce consumption

Source: Own computation

The major coping mechanisms for the shocks are largely reduction of consumption, and selling production assets. Few use de-saving and borrowing from relatives, friends as coping mechanisms. Shocks of adverse market prices and death of livestock are mainly addressed by reducing consumption. Shocks of livestock disease, drought, and illness of household member, crop diseases and death of family member are addressed by selling production assets. (Table 2.10). Almost all the shock coping mechanisms practiced by the respondents are traditional and hence inherit the limitations of these pools of options as risk management and shock coping methods which is discussed in section 3.4.

The distribution of the shocks across agro-ecologies indicates that Dega agro-ecological zone has the least percentage of occurrences of shocks. For most of the shocks the percentage of household facing the shocks are largely in desert agro-ecology and roughly equally distributed across Woina dega and Kolla agro ecologies (Table 2.10).

Table 2.10: Major shocks in different agro ecologies

Types of risks	Percentage of HHs affected	Main agroecology			
		Dega	Woina Dega	Kola	Desert
Adverse market prices	50.0	11.9	29.1	24.5	34.4
Livestock disease	38.4	10.3	24.1	24.1	41.4
Drought	27.2	1.2	6.1	39.0	53.7
Illness of members of a HH	26.8	12.3	42.0	29.6	16.0
Crop disease	25.5	6.5	46.8	32.5	14.3
Livestock death	24.2	8.2	19.2	15.1	57.5
Theft	12.3	5.4	59.5	5.4	29.7
Death of family member	10.6	6.3	53.1	28.1	12.5
Unemployment	8.9	11.1	7.4	70.4	11.1
Unrest	6.6	0.0	0.0	5.0	95.0
Disability	1.7	0.0	50.0	50.0	0.0
Damage on property (fire, flood...etc)	1.3	0.0	33.3	0.0	66.7

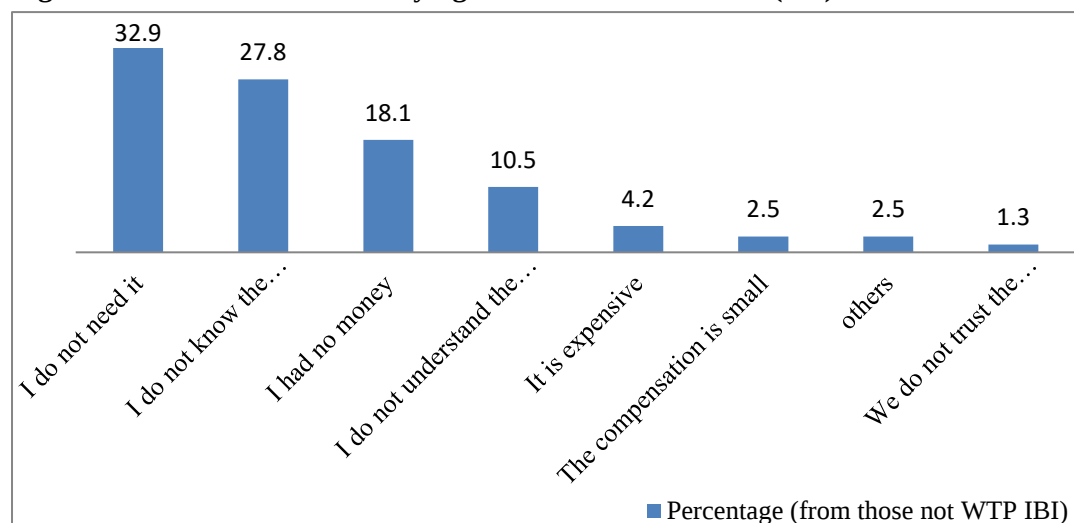
2.5.1.4. Access to crop and Livestock insurance services

The major source of Information about crop insurance for respondents was development agents. Some 15.23% of respondents heard about crop insurance of which more than 90% of them got the information from development agents. Those who purchased crop insurance were 4.3% of the respondents and they purchased it at least once in the last 5 years from an insurance company. The average annual premium payment was 213 ETB per policy. If available, 21.5% of respondents have shown demand for index-based crop insurance.

Only 5% of the respondents heard about Livestock insurance; among those who heard about this insurance, 60% of them got the information from development agents and the remaining from Radio. None of the respondents have purchased livestock insurance so far although 15.56% of the respondents have shown demand for livestock insurance. The main reasons for not buying index-based insurance (IBI) were that they do not need it (33%), or they do not know the institutions selling the

insurance (28%), do not have the money to pay for it (18%), or do not know the benefits of insurance (10%).

Figure 2.8: Main reasons not buying index-based insurances (IBI)



Source: Own computation

2.5.2. Econometric Analysis

2.5.2.1. Determinants of household saving

To understand the determinants of saving behavior of farm households in the study area, initially we run a correlated random effects probit model using surveys of 2014, 2018 & 2022. However, we found that the coefficients of the average values of the continuous variables which are added in the model to control for unobserved heterogeneity are not jointly different from zero. Moreover, we couldn't reject the null hypothesis that $\rho = 0$ and as a result, the panel-level variance component became unimportant, and the panel estimator is not different from the pooled estimator (See appendix A for details). Hence, we run a pooled probit model and estimated the average marginal effects which are presented in Table 2.11 below.

Table 2.11: Average marginal effect after probit regression

dependant var.: Savdum	dy/dx	Delta-method Std. Err.	Z	P>z	[95% Conf. interval]	
family_size	0.010	0.006	1.720	0.086*	-0.001	0.022
Sexdum	0.003	0.041	0.070	0.941	-0.078	0.084
Age	0.000	0.006	0.070	0.943	-0.012	0.013
age_sq	0.000	0.000	-0.510	0.607	0.000	0.000
Offfarmdum	0.019	0.038	0.500	0.618	-0.055	0.093
remit_dum	-0.127	0.045	-2.830	0.005***	-0.215	-0.039
Lny	0.024	0.005	5.230	0.000***	0.015	0.034
knowlefs_dum	0.130	0.032	4.080	0.000***	0.068	0.193
trustfi_dum	0.015	0.031	0.480	0.635	-0.046	0.075
distance_ffl	-0.006	0.002	-2.310	0.021**	-0.011	-0.001
Numlivestock	0.001	0.001	1.090	0.277	-0.001	0.002
Landsize	0.025	0.016	1.560	0.119	-0.006	0.056
localmeb_dum	0.003	0.041	0.070	0.941	-0.076	0.082
ecology_n						
Desert	-0.162	0.059	-2.73	0.006***	-0.279	-0.046
Kola	-0.021	0.052	-0.41	0.684	-0.124	0.081
Woyina dega	-0.009	0.048	-0.19	0.853	-0.102	0.085
Number of obs	906.000					
LR chi2(16)	96.700					
Prob > chi2	0.000					

***, ** & * shows statistical significance at 1%, 5% & 10% respectively

The probit regression result in Table 2.11 above shows that households' income, family size, and knowledge about financial services have significant and positive effect on households' propensity to save while receiving remittance, distance (measured in KM) to formal financial institutions and living in the desert agro-ecological zone to have significant negative effect on the probability of households to save.

A key factor that is found to have a significant effect on household's decision to save is household income. A one percent increase in household's income increases the probability of saving by 2.4% and this result is in line with the findings of Teshome et al (2013), Mirach and Hailu (2014), Fenta et al, (2017), and Temam and Feleke (2018). In relation to households' awareness about financial services, the recent boom in the number of branches of financial institutions across regions in recent years increased access to financial services and played a huge role in increasing awareness of households. Our regression results also show that compared to those households who do not have knowledge about financial services, the probability of saving increases by about 13 percent for those who have better knowledge about financial services. However, as shown in Table 2.7, about 50 percent of farm the households in our study area still have no idea about compulsory and voluntary saving products indicating the need to work more on raising awareness about different saving products.

From the results, the reader can also note that distance matters. As households go far and far away from formal financial institutions, the transaction cost to save also increases and hence more likely to reduce the probability of saving. Moreover, those households whose residence is far away from such institutions are less aware of the services of formal financial institutions (FFIs) and as a result, they have a relatively lower commitment to save. The regression result also shows that the probability to save to decline by 0.6 percent as distance from formal financial institutions increases by one more kilometer and this result is significant at 5%. This result is consistent with previous findings of Teman & Feleke (2018); and Negeri (2018) & Addis et al (2019).

Based on nature, frequency and behavior of the receivers of remittance, receipt of remittance affects probability of saving either positively or negatively. In our case, a receiver of remittance is estimated to reduce the probability of saving by 12.7% compared to those who didn't receive and this result is statistically significant at 1%. This may be due to two reasons. First, the remittances are sent occasionally and mostly for emergency purposes to be spent right away and may not be saved. Second, even though it was sent on constant basis, households may develop a dependency syndrome which reduces the probability to save. The receiver usually becomes more or less certain about the next remittance cycle to smoothen the consumption (see our finding in section 5.1.3). This result is consistent with the finding of Addis et al (2019).

Determinants of saving in cash and kind

According to the 2022 global Findex report saving in formal financial institutions is on the rise, and even though the saving rate in developing counties is lower than the amount in developed countries, a positive progress is being observed (Demirguc-Kunt et al, 2022). The average saving rate in these countries is 42%, and among those who save, 25% of them make their savings in formal financial institutions. Achew et al, (2021) on their report also indicated that 47.4% of sampled households undertake formal saving which is much higher than the 18.1% informal saving. Below, we have present discussions on the results of regression on the determinants of cash (mostly in the formal financial institutions) and savings in kind in the study area.

Table 2.12: Average marginal effect of cash and kind savings after probit regression

	Dependant var.: Cash_dum				Dependant var.: Kind_dum			
	dy/dx	Delta-method Std. Err.	Z	P>z	dy/dx	Delta-method Std. Err.	Z	P>z
family_size	0.007	0.006	1.160	0.245	0.012	0.006	1.910	0.056*
Sexdum	0.046	0.046	1.000	0.316	0.031	0.047	0.660	0.510
Age	0.003	0.007	0.410	0.680	0.000	0.007	0.020	0.986
age_sq	0.000	0.000	-0.970	0.334	0.000	0.000	-0.020	0.981
Offfarmdum	0.077	0.041	1.860	0.063*	-0.084	0.040	-2.110	0.035**
remit_dum	-0.072	0.051	-1.420	0.156	-0.082	0.051	-1.610	0.107
Lny	0.012	0.005	2.190	0.029**	0.034	0.006	6.040	0.000***
knowlefs_dum	0.056	0.036	1.580	0.115	0.212	0.034	6.250	0.000***
trustfi_dum	0.072	0.034	2.130	0.033**	-0.059	0.035	-1.720	0.086*
distance_ffi	-0.004	0.003	-1.500	0.135	-0.007	0.003	-2.610	0.009***
Numlivestock	0.000	0.001	-0.440	0.662	0.002	0.001	2.270	0.023**
Landsize	0.004	0.016	0.240	0.811	0.038	0.016	2.420	0.016**
localmeb_dum	0.011	0.043	0.250	0.801	0.012	0.041	0.300	0.765
ecology_n								
Desert	-0.28	0.065	-4.290	0.00**	-0.21	0.063	-3.260	0.001***
Kola	-.013	0.059	-0.220	0.824	-.102	0.059	-1.720	0.086*
Woyina dega	-.024	0.054	-0.440	0.656	-.194	0.054	-3.600	0.000***
Number of obs			906				906	
LR chi2(16)			100.48				137.68	
Prob > chi2			0.000				0.000	

***, ** & * show statistical significance at 1%, 5% & 10% respectively

As illustrated in the above table, household income, participation in off-farm activities, trust on formal financial institutions and agro-ecology (i.e desert) affect both cash and in-kind savings significantly. In addition to these variables, saving in kind is significantly affected by family size, knowledge about financial services, distance from formal financial institutions, number of livestock and land holding size. The following discussion is based on these findings.

Logarithm of household income measured in ETB

An increase in household income tends to increase the probability of cash and in-kind saving, with a more pronounced impact on the latter. More specifically, a 1% rise in household income results in increment of the probability of cash and in-kind savings by 1.2% and 3.4% respectively. This difference in magnitude can be explained by the vivid shift from cash to in-kind savings following the rising inflations in recent periods. As evidence to this, we have asked the respondents a hypothetical question about the use of additional income if their current income doubled and 57.4% of the respondents replied that they keep it in the form of in-kind savings where as 24.18% prefer to deposit the additional income in MFIs and the remaining eye on boosting their current consumption level.

Participation in off-farm activities

Participation in off-farm activities increases the probability of cash saving by 7.7% whereas the impact of same on the probability of in-kind saving is negative (i.e participation in off farm activities reduces the probability of in-kind saving by 8.7%). A possible reason for this may be that petty trade is the main form of rural households' off-farm participation which forces traders to deposit their income mainly in cash to replenish their stock of goods or services quite often.

Trust on ²²formal financial institutions

We expect higher tendency to save in cash/mainly in formal financial institutions by those households who trust the services of FFIs. In the contrary, low or absence of trust will corner households to in-kind savings. Consistent to this, we found that rural households with medium and high trust on FFIs have 7.2% higher probability of cash saving compared to those households with low and no trust. Furthermore, better trust of FFIs results in reduction of in-kind saving by 5.6%. This result signals that increasing the outreach and financial awareness alone will not result in the intended change on households' decision to save. But more work is required in building trust between small holder farmers and the service providers.

In addition to the above socio-economic factors, in-kind saving is also affected by financial knowledge, distance to FFIs, number of livestock and land holdings.

Size of livestock and land holding

Many households in rural areas are engaged in animal husbandry and farming. Household's income from such activities is determined by the size of livestock and land holding, respectively. These most important determinants of households on farm income can also have a consequence on household's decision to save. Income from such activities is usually collected in-kind, thus if households decide to save, the probability of saving in-kind will be high. Teshome (2013) shows the significant and positive relationship between the size of livestock and household's decision to save and the amount of saving. Our regression results also comply with such findings, and we found that when size of livestock increases by one, the probability of household's decision to save in-kind increases by about 0.2 percent. When land holding of the household increases by one hectare, the probability of household's decision to save in-kind increases by 3.8 percent.

Financial knowledge and distance to save in FFIs

Even though the results of livestock and land holdings are consistent with theory, the impacts of financial knowledge and distance to FFIs on kind savings are at odds with prior expectations. More specifically, knowledge of services of FFIs increases the probability of in-kind savings by 21.2%. This may be due to the fact that stock of financial knowledge help rural households not only to save but also to save in the form of those portfolios with higher return (i.e save in kind).

2.5.2.2. Determinants of household demand for credit

To understand the key determinants of the demand for credit, we run a probit regression and estimated the marginal effects (Table 2.13) and the results are discussed hereunder.

²² It is qualitative measurement (no trust, low, medium and high trust)- we have assigned 0 for those who responded no/low trust and 1 for those who replied medium and high trust on FFIs

Logarithm of household income

The regression result shows that household's income (measured in ETB) has a positive and statistically significant effect on household demand for credit. In fact, when household's income increases by one percent, the probability of applying for credit services increases by 1.6%. Prior studies also show that income level of households is one of the major determinants of the demand for credit (Baba et al, 2015; Balana et al, 2020; Barslund& Tarp, 2008; Gray, 2006 Mamuye, 2021; etc). Using it as an indicator for household's wealth level, wealthier individuals are expected to succeed in securing credit from the formal and the semi-formal financial institutions while the less wealthy individuals obtain credit from informal sources (Mpuga, 2010).

Knowledge about financial services

Following the huge campaign undertaken by formal financial institutions like banks, MFIs and SACCOs to increase their outreach, and the huge awareness creation made by governmental and non-governmental institutions, financial literacy rate in Ethiopia is on the rise. But, according to Faulkner (2022), Ethiopia is still one of the lowest performers in global adult financial literacy rate with only 34%. Financial literacy has been found to be one of the key determinants for demand for credit in developing countries (Barslund and Tarp, 2008 etc). Being significant at 1%, compared to those households who do not have knowledge about financial services, the probability of applying for credit increases by 29 percent for those households with better knowledge about financial services.

Distance in KM from the nearest formal FI

The results of our analysis shows that there is a negative relation between demand for credit and distance to financial institutions as distance from the nearest financial institution increases by 1 km, the probability of households applying for credit falls by about 1 percent.

In Ethiopia, most formal financial institutions are concentrated in urban areas. Achew et al., (2021) on their survey briefing on fourth round of Ethiopia's Socio-Economic Survey (ESS) indicated the existing wide gap between rural and urban areas in access to modern financial institutions. While residents of urban areas are expected to travel on average one kilometer to the nearest modern financial center, those in rural areas are expected to travel up to 15 kms on average, increasing the transaction cost of credit. Other prior studies have also shown the negative effect of this gap on households' demand for credit (example: Barslund& Tarp, 2008; Mamuye, 2021).

Furthermore, there is a difference in distance to formal and informal institutions. But through time, the competence of the informal sector to keep up with the rising demand of the rural households is declining, and this increases the need to improve the accessibility of modern financial institutions even more (Barslund& Tarp, 2008; Bardhan & Udury, 1999; Tang et al, 2010).

Table 2.13: Average marginal effect of demand for credit after probit regression

Dependant Var.: credit_dum	dy/dx	Delta-method Std. Err.	Z	P>z	[95% Conf. Interval]	
family_size	-0.010	0.005	-1.750	0.08*	-0.020	0.001
Age	0.006	0.007	0.950	0.344	-0.007	0.019
age_sq	0.000	0.000	-1.360	0.173	0.000	0.000
Offfarmdum	-0.023	0.036	-0.650	0.517	-0.093	0.047
Sexdum	0.021	0.042	0.510	0.610	-0.061	0.104
remit_dum	0.035	0.044	0.790	0.431	-0.052	0.121
Lny	0.016	0.005	3.030	0.002***	0.006	0.026
access_dum	0.037	0.033	1.140	0.254	-0.027	0.102
knowlefs_dum	0.268	0.029	9.170	0.000***	0.211	0.326
distance_ffi	-0.010	0.003	-3.990	0.000***	-0.015	-0.005
Numlivestock	-0.004	0.001	-3.590	0.000***	-0.007	-0.002
Landsize	0.001	0.014	0.070	0.944	-0.027	0.028
localmeb_dum	-0.073	0.035	-2.090	0.037**	-0.142	-0.004
ecology_n						
Desert	-0.174	0.058	-3.010	0.003***	-0.287	-0.061
Kola	0.107	0.057	1.880	0.06**	-0.005	0.218
Woyina dega	-0.122	0.049	-2.510	0.012**	-0.218	-0.027
Number of obs		906				
LR chi2(16)		204.55				
Prob > chi2		0.000				

***, ** & * shows statistical significance at 1%, 5% & 10% respectively

Membership to local organizations

Most of the rural communities of Ethiopia live in remote areas where modern financial services are not available. As a result, they tend to be members of established local organizations like 'Iqub' and 'Idir' to meet their demand for finance and cope with idiosyncratic risks. Despite the emergence of modern financial service providers in these areas, households might still incline towards local organizations. The findings of our analysis also show the inverse relation between membership to local organizations and demand for credit as the probability of applying for credit falls by 7.3 percent for those households that are members of established local traditional organizations.

Agro ecological zone

After categorizing the -ecological zones of the study area into four, and making living in Dega agro ecological zone a reference category, we tried to investigate how living in the other three agro ecological zones impact household's demand for credit. The result shows that compared to households living in Dega agro ecology, the probability of demand for credit declines by 17.4 percent for those households living in desert areas. Again, compared to households in the Dega agro ecological zone, we found that the probability of demand for credit to decline by about 12 percent for those households living in Woyina dega areas. The driving forces for households' demand for credit include the need for technology adoption and both on- and off-farm livelihood diversification.

2.5.2.3. Determinants of household demand for Insurance Services

In section 5.1.6, we have discussed that the existing coverage of both crop and livestock insurance is highly limited. But, we also found that if available, 21.5% and 15.56% of respondents have shown demand for index based crop and livestock insurance with existing market price. In the following section, we examine the determinants of demand for both crop and livestock insurance based on data collected in 2022 alone since the previous surveys do not have questions related to agricultural insurance.

Determinants of demand for index-based (rainfall) crop insurance (IBCI)

Table (2.14) below, shows that the log of household income, trust on formal financial institutions, size of land holding, membership to local institutions and time preference are positively correlated with the probability of revealing demand for IB crop insurance. On the other hand, demand for crop insurance is negatively correlated with age of the head, number of livestock and being risk averse.

Log of rural household income measured in ETB

Higher household income surely boosts the capacity of rural farmers to pay for insurance premiums, binding constraints to hold the policy by poor rural farmers (Cai, 2016). In support of this, we found that when income of a household increases by 1%, the probability to demand IB crop insurance increases by 3.8%. This result is consistent with Tadesse et al (2017) and Belissa et al. (2019).

Trust on formal financial institutions

When farmers have doubts about either the insurance product design itself or the likelihood of receiving payment when they incur losses, they tend to be hesitant in taking up insurance products (Ali et al., 2020). Similarly, Carter et al (2014) argue that trust in the insurance provider is a major issue in contracting insurance, especially in the developing country context where there is little legal recourse in reclaiming insurance payments.

Our finding is also pretty much consistent with the above arguments. More specifically, the demand for IB crop insurance for rural households with high and medium trust (dummy=1) of FFIs is 12.6% higher than those households who have low/no trust on the FFIs. This result is consistent with the findings of Karlan et al (2014), Linhoff, Mubhoff and Parlasca, (2022), and Belissa et al. (2019) where the latter study used a randomized control trial in Ethiopia and observed that uptake of index-based insurance doubled when leaders of an “Iddir” who have higher trust on the insurance product are engaged in sale of the policy.

Table 2.14: Average marginal effect of crop and livestock insurances after probit regression

Exp. variables	Dependant var.: cropins_dum				Dependant var.: livestockins_dum			
	dy/dx	Delta-method	Z	P>z	dy/dx	Delta-method	Z	P>z
		Std. Err.				Std. Err.		
Sexdum	0.023	0.064	0.350	0.723	-0.043	0.057	-0.750	0.453
Age	-0.003	0.002	-1.870	0.061*	0.000	0.002	-0.170	0.864
offfarm_dum	-0.012	0.056	-0.220	0.829	0.053	0.060	0.880	0.379
Educllevel	0.001	0.006	0.130	0.895	-0.003	0.007	-0.380	0.706
remit_dum	-0.075	0.075	-0.990	0.321	-0.116	0.084	-1.390	0.165
Lny	0.038	0.010	3.940	0.00***	0.013	0.008	1.600	0.1*
trust_dum	0.126	0.039	3.220	0.001***	0.137	0.042	3.220	0.001***
distance_to_ffi	-0.003	0.005	-0.630	0.529	-0.008	0.005	-1.550	0.122
Numlivestock	-0.007	0.003	-2.230	0.026**	0.002	0.001	2.340	0.02**
Landsize	0.048	0.022	2.170	0.03**	0.020	0.024	0.840	0.402
localmem_dum	0.103	0.054	1.930	0.05**	0.093	0.055	1.700	0.089*
Knowinsu	0.065	0.043	1.520	0.129	0.143	0.042	3.370	0.001***
riskav_dum	-0.083	0.046	-1.790	0.073*	0.008	0.051	0.160	0.870
ambig_dum	0.011	0.043	0.250	0.803	0.027	0.042	0.640	0.525
timepref_dum	0.175	0.040	4.310	0.00***	0.021	0.044	0.490	0.623
ecology_n								
Desert	-0.080	0.085	-0.930	0.350	0.024	0.103	0.230	0.819
Kola	0.018	0.083	0.220	0.823	0.028	0.097	0.290	0.774
Woyina dega	0.020	0.070	0.290	0.775	-0.068	0.078	-0.870	0.382
Riskdum	0.127	0.066	1.930	0.054*	-0.008	0.057	-0.150	0.883
Number of obs			302				302	
LR chi2(19)			102.49				42.17	
Prob > chi2			0				0.001	

***, ** & * shows statistical significance at 1%, 5% & 10% respectively

Size of land holding in Ha and number of livestock

The size of land holding is positively correlated with the demand for index-based crop insurance. An increase in land holding by 1 ha raises the demand for index-based crop insurance by about 4.8% and the result is statistically significant at 5%. The amount of land size approximates the level of agricultural yield; hence, it is not surprising if farmers; hence, it is not surprising if farmers mainly rely on crop production demand IBCI. This is also more supported by our finding that the number of livestock owned by the household is negatively correlated with demand for IBCI.

Membership to local traditional institutions

In Ethiopia, households have long tradition of using local organization like 'Idir', 'Iqub' etc. in order to cope with the consequences of risk and uncertainties. Mostly used as an indicator for the social

capital that households possess, membership to local organizations can help internalize economic externalities resulting from climate variability and help to spread awareness about insurance products (Amare and Simane, 2017). Amare et al. (2019) shows how social capital can play a role to increase the uptake of index-based insurance products. Significant at 5%, the regression result indicates that the probability to apply for index-based insurance will increase by 0.103 for members of local traditional institutions. This complies with the works of Abugri, Amikuzuno, and Daadi, (2017), Amare et al., (2019) etc. which show that social capital to have significant and positive impact on households' uptake of index-based insurance.

Time preference of household heads

When households have time preference for the future over the present time (dummy =1 in our case), it is an indicator for households' perception that the future is less uncertain, making them less risk averse (Yesuf & Bluffstone, 2008). But, living under constant threats of climate change, most small holder households' perception about future uncertainties is expected be high and index-based insurance products, which according to Hochrainer-Stigler et al., (2014) are objective indexes, usually are determined by weather related parameters and they will give an opportunity for households to be less risk averse (Russo, Caracciolo & Salvioni, 2022). In our analysis, we have also found time preference of households to be a significant determinant of households' demand for index-based insurance, and the results show that significant at 1%, when a household gives more weight for tomorrow than for today, on average, the probability of the household to apply for index-based insurance increases by about 18 percent.

Risk behavior of households

Basis risk is the most binding constraints for index-based insurances as it creates additional risk for contract holders (Clarke, 2016). As a result, Clarke concluded that the disutility from this additional risk dominates for individuals with higher risk aversion, resulting in risk aversion decreasing the demand for index insurance. However, in a recent study by Hill et al (2019), the demand for index-based insurance by risk-averse individuals initially increases with risk aversion up to a point and starts declining thereafter.

Our finding shows that the demand for IBCI reduces by 8.3% for at-risk rural households compared to non-risk averse rural households. But, this has to be taken cautiously since we must move up to 10% significance level so as to establish the aforementioned relationship.

Prior experience of risks

As expected, priory, those households who experienced crop related risks in the previous one year have higher probability to demand for crop insurance. More specifically, demand for crop insurance increases by 12.7% for those households with risk experience in the past one year compared those without such risks.

Demand for index-based livestock insurance (IBLI)

Household income and trust on FFI's variables correlate with livestock insurance in a similar fashion as they are correlated with crop insurance. A striking difference for IBLI is the correlation between number of livestock and demand for IBCI and IBLI. Consistent with prior expectations, the number of livestock positively correlates with demand for IBLI because the amount of land holding positively correlates with IBCI. Another relevant point here is the role of prior knowledge of insurance

services on the demand for IBLI. Prior knowledge of insurance products increases the demand for IBLI by about 14.3 percent and this variable turned out to be significantly affecting the demand for IBLI at 1% while it is not significant in the case of the demand for IBCI. This has important implication for awareness creation and building trust on insurance services.

Discussion of results from the KIIs and FGDs

We conducted focus group discussions (FGDs) with selected rural households and key informant interviews (KIIs) with managers and senior financial sector experts to assess the existing institutional challenges to expand financial services, mainly credit, saving and insurance for small-holder farmers in Ethiopia. The results are summarized as follows.

2.5.2.4. Institutional challenges to expand credit and mobilize saving

Even though promising results have been achieved, especially through microfinance institutions, to reach bankable smallholder farmers in the last two decades, the road to further heights is limited by several supply and demand side institutional challenges. On the supply side, inadequate all-weather roads and lack of internet services in rural areas hinder MFIs and banks to expand their outreach. Moreover, in some areas, the existing financial products do not fit with the demand by the respective farmers. On the demand side, limited financial knowledge about the services and products of formal financial institutions (FFIs), high cost to reach the nearest FFIs, poor trust on the services and working of FFIs, and availability of local and informal financial service providers such as Iqqub, money-lenders, ‘Tsewa Mahber’...etc. have negatively impacted the opportunity to exploit the services of formal financial institutions.

2.5.2.5. Institutional challenges to provide crop and livestock insurance services

Insurance companies render a number of agricultural insurance products. Index based insurances (IBI), Multi-Peril Crop Insurance (MPCI), Area-based yield insurance and Indemnity-based livestock insurance are the major products of insurance companies to hedge farmers from single or/and multiple sources of agricultural risks. The interviewees pointed out that crop and livestock insurances, especially, the index-based insurance products are more recent phenomenon and the practices compared to credit and saving, and hence the nature and depth of challenges of the former are different from the latter cases.

Policy challenges

Key informant interviewees from various insurance companies expressed that the government's commitment to create fertile grounds for insurance companies to expand crop and livestock insurance products is limited. As evident to this, the government didn't articulate clear and full-fledged agricultural insurance policy and regulatory framework to guide and control the efforts of handful of insurance companies which strive to introduce and improve uptake of agricultural insurance products as potential feasible option to overcome agricultural shocks.

Inadequate infrastructure

Rainfall gauges and satellite information are core for index-based insurance products to function. Lack of these complementary apparatuses in rural Ethiopia are one of the limiting factors to persuade and increase uptake of IBI since farmers lose trust on distantly located gauges. Indemnity and

area yield index insurances which rely on field level data to determine extent of loss by the insurer are found to be costly for insurance companies.

Gaps in Marketing channel

In the case of agricultural insurance, the transaction cost per policy holder is higher since insurance companies are forced to manage a large number of transactions but smaller in size. Middlemen who can work with better proximity and in turn efficiency with farmers are almost scant in rural Ethiopia.

Absence/limited knowledge of crop and livestock insurance products by farmers

Most of the participants of our focus group discussions told us that they do not know about crop and livestock insurance services so far. Furthermore, KIIs pointed that this lack of awareness of insurance products by farmers is a binding constraint to improve uptake of the products.

Poor capacity to pay premiums

In their effort to sell crop and livestock insurance products to small holder farmers, poor capacity of farmers to pay premiums for crop and/or livestock insurances hinders the aspiration of insurance companies to function at larger scale to reduce cost. Here, it is important to note that the responses we got from the FGDs and KIIs agree with the results from the quantitative analysis.

2.6. Conclusion and Recommendations

Sound financial sector with adequate supply of services to the agricultural sector is essential for sustaining the sectoral economic growth and in turn reducing poverty and food insecurity. More specifically, credit facilities in rural areas play a positive role in technology adoption among rural households and in turn promote diversification that generates employment, improvements in income and food security status of households. Cash Savings in formal financial institutions ensures safe and productive storage of money, and in turn, guarantee excess capital channeled to its most productive use. Furthermore, in light of widespread climate and related risks in the context of rain-fed agriculture in Ethiopia, agriculture insurance helps to spread risks of agricultural players efficiently and overcomes limitations inherent to traditional risk management and coping methods. The various demand and supply side factors of the financial services of credit, saving and insurance to farm and pastoral households have been investigated in isolated manner without focus on agro ecologies and livelihoods. Since all these gaps require closer examination, this study tried to identify the major demand and supply side constraints of access to finance by rural households in the study area.

To this end, we reviewed both the theoretical and empirical literature to establish a mathematical relation derived from utility and profit maximization goals and developed a conceptual framework to hypothesize the relation between the demand for and the supply of financial services in the context of rural Ethiopia. Both qualitative and quantitative methods were used to analyze the effect of various socio-economic and policy variables on the demand for financial services and the results are discussed in the previous sections. This section will provide a brief conclusion and tentative recommendations based on the study's key results.

A key factor that is found to have a significant effect on a household's decision to save is household income. A one percent increase in household income increases the probability of saving by 2.4%. However, the effect is not the same for cash and in-kind savings where a 1% rise in household

income results in increment of the probability of cash and in-kind savings by 1.2% and 3.4% respectively. More than half of the households in the study area prefer in-kind savings than cash saving. Such big difference in magnitude can be explained by the vivid shift from cash to in-kind savings due to the rising inflation in recent years. This has a clear message for policy and it calls for an extra effort to control the current inflation using various policy instruments the government has at hand.

The study also showed that trust on FFIs really matters. The probability of cash saving increases by 7.2% for households with medium and high trust on FFIs compared to those households with low and no trust. Furthermore, better trust of FFIs results in reduction of in-kind saving by 5.6%. This result signals that increasing the outreach and financial awareness alone will not result in the intended change on households' decision to save. But, more work is required in building trust between small holder farmers and the financial service providers.

In relation to the demand for credit, the results of this study showed that households with better income succeed in securing credit from the formal and the semi-formal financial institutions while the poor obtain credit from informal sources. This may show a mission drift of the financial institutions (mainly rural financial institutions such as MFIs and SACCOs) which are expected to be pro-poor. This requires policy intervention to allow the poor to have access to credit.

Following the huge awareness campaign undertaken by formal financial institutions like banks, MFIs and SACCOs to increase their outreach, the financial literacy rate in Ethiopia is on the rise. But Ethiopia is still one of the lowest performers in global adult financial literacy rate with only 34% and this implies the need for more effort to increase knowledge about financial services as it has been found to be one of the key determinants for demand for credit in the study area.

The result also showed a difference in demand for credit across agro-ecological zones, implying that a blanket recommendation cannot solve the problem and that policy recommendations should consider variations across agro-ecological and living conditions of farm households.

Household income, trust on formal financial institutions, size of land holding, membership to local institutions and time preference were found to positively affect the probability of revealing demand for index-based crop insurance (IBCI). On the other hand, demand for crop insurance is negatively correlated with age of the head, number of livestock and being risk averse. It is obvious that an increase in household income boosts the capacity of rural farmers to pay for insurance premiums. However, given the high poverty level in rural areas, most farmers cannot pay for crop and livestock insurance. In the context of rural Ethiopia, most pilot insurance products cease due to financial problem, huge loss due to the area-wide climate change impacts and the small pool of households who buy the insurance products. This calls for designing innovative insurance products and government intervention to provide subsidized insurance products (premium subsidies) for poor farmers.

Our key informants noted that lack of technical expertise particularly in loss adjustment is the other major problem and most insurance products are designed by consultants from abroad who have little or no knowledge of the local context. This calls for building local technical skill/knowledge in the area of crop and livestock insurance products.

Household income and trust variables also similarly correlate with livestock insurance as they are correlated with crop insurance. Consistent with our prior expectations, the number of livestock positively correlates with demand for IBLI because the amount of land holding positively correlates with IBCI. Another relevant point here is the role of prior knowledge of insurance services on demand for IBLI. Prior knowledge of insurance increases the demand for IBLI and this has important implication for awareness creation and building trust on insurance services.

Agricultural insurance involves severe losses and reinsurers are unwilling to provide cover for direct insurers. This needs appropriate intervention by relevant stakeholders to make the sector more attractive for re-insurers. For instance, investment on digital technology is crucial to reach out pastoral and agro-pastoral areas to increase the pool, linking credit with saving and insurance can serve as an enabler or loan portfolio protection mechanism for those who apply for credit since it enables them to be creditworthy and at the same time the financier uses it to protect the loan. It can also help to promote small holder farmers practicing both crop production and livestock rearing on sedentary basis in agro-pastoral and highland livelihood systems.

Generally, the government's commitment to creating fertile grounds for insurance companies to expand crop and livestock insurance products is crucial. So far, there is no clear and full-fledged agricultural insurance policy and regulatory framework to guide and control the efforts of handful of insurance companies which strive to introduce and improve uptake of agricultural insurance products as potential feasible option to overcome agricultural shocks. This calls for appropriate action to be taken by the government.

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Appendix A

Random-effects probit regression				Number of obs	=	906
Group variable: unique_id2				Number of groups	=	302
Random effects u_i ~ Gaussian				Obs per group:		
				min	=	3
				avg	=	3.0
				max	=	3
Integration method: mvaghermite				Integration pts.	=	12
Log likelihood = -479.32212				Wald chi2(21)	=	95.38
				Prob > chi2	=	0.0000

savdum	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
family_size	.0161209	.0228289	0.71	0.480	-.028623	.0608648
sexdum	-.0180325	.1396809	-0.13	0.897	-.2918019	.255737
age	-.0032676	.021392	-0.15	0.879	-.0451951	.0386599
age_sq	-.0000595	.0002081	-0.29	0.775	-.0004674	.0003484
offfarmdum	.035066	.1286905	0.27	0.785	-.2171628	.2872948
remit_dum	-.426161	.1518688	-2.81	0.005	-.7238183	-.1285037
lny	.0766857	.0191015	4.01	0.000	.0392475	.1141238
knowlefs_dum	.4922141	.1122404	4.39	0.000	.2722269	.7122013
trustfi_dum	.0645023	.1036098	0.62	0.534	-.1385692	.2675739
distance_fffi	-.0047259	.010596	-0.45	0.656	-.0254936	.0160418
numlivestock	.0031868	.0040675	0.78	0.433	-.0047853	.011159
landsize	.0170612	.0654017	0.26	0.794	-.1111239	.1452462
localmeb_dum	-.0254412	.1385339	-0.18	0.854	-.2969626	.2460802
ecology_n						
Desert	-.4158807	.2117966	-1.96	0.050	-.8309944	-.0007671
Kola	.0710109	.1970819	0.36	0.719	-.3152625	.4572843
Woyina dega	.0336503	.1770325	0.19	0.849	-.3133271	.3806277
avfmsize	.0395143	.043998	0.90	0.369	-.0467202	.1257487
avlny	.0083268	.0388568	0.21	0.830	-.067831	.0844846
avdisffi	-.0377773	.0187699	-2.01	0.044	-.0745656	-.000989
avlivestock	-.0008784	.0050194	-0.18	0.861	-.0107163	.0089594
avland	.183227	.1117907	1.64	0.101	-.0358787	.4023327
_cons	-.2240357	.645821	-0.35	0.729	-1.489822	1.04175
/lnsig2u	-14.10994	30.04023			-72.98771	44.76784
sigma_u	.0008631	.012964			1.42e-16	5.26e+09
rho	7.45e-07	.0000224			2.00e-32	1

LR test of rho=0: chibar2(01) = 0.00Prob >= chibar2 = 1.000

. test avfmsize avlny avdisffi avlivestock avland

(1) [savdum]avfmsize = 0

(2) [savdum]avlny = 0

(3) [savdum]avdisffi = 0

(4) [savdum]avlivestock = 0

(5) [savdum]avland = 0

chi2(5) = 8.03

Prob > chi2 = 0.1545

Moreover, we can't reject the null of $\rho=0$ as a result the panel version the panel-level variance component is unimportant, and the panel estimator is not different from the pooled estimator

Appendix B

Demand for credit by small holder farmers of Ethiopia (an approximation)

Assumptions

Rural population projection for the year 2022	81,287,000 (CSA, 2013)
Average number of members per household	4.6 (DHS, 2016) ²³
Percentage of small holder farmers in Ethiopia	90% (Gebeyanesh et al, 2021; Fantu & Alemayehu, 2022) ²⁴
Percentage of small holder farmers actually requested for loan	24.1% (our finding)
Percentage of small holder farmers with potential demand for loan	76% ²⁵
Average loan size	Br. 10,084.9 (our finding)

Estimation

Actual demand: This approximates the current demand in 2021/22 (i.e demand for credit by smallholder rural households in Ethiopia who apply for loan for a year prior to the date of data collection). This is equal to

$$\begin{aligned} \text{Demanda} &= (1 / 2) * 3 * 4 * 6 \\ &= \text{ETB } 38.65\text{B} \end{aligned}$$

Potential demand: This measure what would have been the demand for credit if all liquidity constrained rural smallholder farmers apply for loan. This is equal to

$$\begin{aligned} \text{Demandp} &= (1 / 2) * 3 * 5 * 6 \\ &= \text{ETB } 121.9\text{B} \end{aligned}$$

²³ We rely on this as it is the most recent figure to date

²⁴ Both mentioned that the proportion of smallholder is more than 90%

²⁵ We have taken rural households except those who are not credit constraints

CHAPTER THREE

Liberalizing Financial Sector in Ethiopia: Constraints, Consequences and Policy Issues

3.1. Introduction

3.1.1. Background and Justifications

It is widely believed that financial liberalization is an essential part of the financial sector's development process, particularly in developing countries. The argument supporting financial liberalization goes back to McKinnon's (1973) and Shaw's (1973) paradigms. They argue that government intervention in the financial sector distorts the financial market, depresses savings, and leads to inefficient investment. The World Bank and IMF have endorsed this paradigm and the reform package prescribed for most developing countries as part of structural adjustment programs.

Since the 1980s, many developing countries have begun to implement financial liberalization schemes. There are many empirical studies in support of this argument. For instance, Demirgüç-Kunt et al. (1998) and Akinsola and Odhiambo (2017) concluded that foreign bank entry accelerated the domestic banking sector's efficiency, thereby contributing to long-run economic growth. Yoshino and Morgan (2016) indicate that opening the financial sector to foreign ownership leads to greater financial inclusion. Románova et al.'s (2018) study also suggests that opening the financial sector promotes competitiveness, innovation, and new product development. Financial liberalization can also be characterized by reducing state ownership in banks, and therefore, the participation of private ownership will increase operational efficiency (Dong et al., 2014). Moreover, the presence of foreign banks improves domestic banks' risk management capabilities (Lensink & Hermes, 2004).

Furthermore, previous researchers investigated whether the extent of financial intermediation development and the level of state ownership of the financial sector influence economic growth. Accordingly, Levine et al. (2000) revealed that greater financial intermediation development positively affected economic growth. Other scholars investigated the ownership structure of banks in 92 countries and found that higher government ownership of banks resulted in lower per capita GDP growth (Porta et al., 2002). They also found that higher government ownership of banks was associated with slower subsequent financial sector development and lower productivity growth.

However, unlike other East African neighbors (e.g., Kenya, Tanzania, and Uganda) and many other developing countries, Ethiopia has not yet opened its financial sector to foreign participation. As a result, the Ethiopian financial sector is characterized by a non-competitive structure and strong capital control. On top of that, the sector has been dominated by state-owned banks. Hence, the closed nature of the Ethiopian financial sector may have constrained the country's financial development (Kiyota, Peitsch, and Stren, 2008). It has been argued that a poorly functioning financial system may negatively influence economic growth. For instance, studies show that financial repression may negatively impact financial sector development (King and Levine, 1993; Rossi, 1999). In addition, previous researchers who examined the liberalization of the Ethiopian financial sector argued that the country's economy would benefit from financial sector liberalization, especially from the entry of foreign banks and associated with the privatization of state-owned banks (Kiyota, Peitsch, and Stren, 2008).

The Ethiopian government is considering liberalizing its financial sector as part of its financial development strategy. Some of the recent reforms that the government has been undertaking include an economic reform to attract foreign direct investments and cluster firms to provide common infrastructure via industrial development parks. As part of this effort, the government is currently launching large national projects and special economic zones, such as Gada special economic zone in between Adama and Mojo town, and a free trade zone in Dire Dawa city, which necessitates the pooling of including foreign currency. Thus, in order to implement and put in place this special economic zone,

there is a need to liberalize the banking sector so as to smoothly finance foreign direct companies. For instance, the government has recently opened the financial sector to Ethiopian-born foreigners, even though it has not announced any schedule or date on which it will allow entry of foreign companies into the Ethiopian financial sector (UN, 2021). We strongly believe that before opening up the financial sector that has remained closed and dominated by state-owned financial institutions for many decades, the government needs to undertake careful planning to minimize possible risks associated with the sector's liberalization. Empirical observation suggests that if handled inappropriately, financial liberalization may trigger destabilization in the financial system and trigger a financial crisis. Financial liberalization, for example, has a strong, negative relationship with financial sector stability, according to scholars such as Stieglitz (2000), Wu et al. (2017), Batuo et al. (2018), and Yin (2019). They indicated that the presence of foreign banks increases the probability of the banking sector crisis and makes the host sector fragile. Moreover, researchers point out that foreign banks' credit is skewed towards large firms (Bruno and Hauswald, 2014; Beck et al., 2018).

In general, studies show that the influence of financial liberalization on financial sector development and economic growth is unclear from both empirical and theoretical perspectives. This indicates that the move by the government of Ethiopia to liberalize its financial sector is a critical policy decision that needs to be supported by empirical pieces of evidence. Studies indicate that, in general, the Ethiopian financial sector has been studied, and hence little has been known as to the possible impacts of opening up the financial sector to allow participation of foreign financial institutions. Therefore, this research aims at providing research evidence to policymakers and scholars by examining constraints, consequences, and policy issues associated with Ethiopia's financial sector liberalization.

3.1.2. Research Questions

The current research intends to address the following basic research questions:

What is the current level of competitiveness of financial institutions in Ethiopia in the context of the domestic market?

- What are the key determinants of financial institutions' performances in Ethiopia?
- How do financial operators perceive the current financial market and policy in Ethiopia?
- What is the relative position of the Ethiopian financial sector in the context of the global financial operations?
- What would be the possible costs and benefits if the Ethiopian financial sector were liberalized (opened up to foreign participation)?
- What is the extent of financial operators' awareness of the consequences of financial market liberalization?
- What are the overriding issues expected to be a bottleneck for financial inclusion in Ethiopia?

3.1.3. General Objective

The overall goal of this study was to examine the constraints, consequences, and policy issues associated with the liberalization of the Ethiopian financial sector.

3.1.4. Specific objectives

In line with the above major objective, the study was aimed to achieve the following specific objectives:

- a. Examine the competitiveness of financial institutions (banks, MFIs, insurance companies) in Ethiopia;
- b. Investigate determinants of financial institutions' performances in Ethiopia;
- c. Elucidate financial operators' perception of the current financial market and policy in Ethiopia;
- d. Determine the relative position of domestic financial institutions to the expected international financial operations;
- e. Examine the costs and benefits associated with the liberalization of the Ethiopian financial sector;
- f. Assess the financial operators' awareness level of the consequences of financial market liberalization;
- g. Identify the overriding issues expected to be a bottleneck for financial inclusion in Ethiopia.

3.1.5. Scope of the Study

This study focuses on the constraints, consequences, and policy issues associated with the liberalization of the Ethiopian financial sector. Issues such as incumbent financial institutions' perception of the existing financial market and policy, domestic financial institutions' competition, and the gains and losses of opening the financial sector to foreign operators were discussed. To address the issues, we have collected primary data from the head offices of financial institutions that started operations before 2018. Thus, we have included 16 commercial banks, 16 insurance companies, and 19 microfinance head offices operating in Addis Ababa. Moreover, based on data availability, the banking, insurance, and microfinance sectors' secondary data were collected for 1994-2020, 1996-2020, and 2010-2020, respectively. The main sources of the data were the National Bank of Ethiopia, the World Bank Database for the Financial Development Indicators and the International Monetary Fund for the financial reform indicators.

3.1.6. Significance

Financial sector liberalization policy is an important agenda item for the Ethiopian government. Since empirical investigations in different parts of the world on financial sector liberalization have witnessed mixed effects on host economies, careful planning and evidence-based policy decisions are paramount. For this reason, this study would provide policy input for the government of Ethiopia concerning the constraints and consequences of financial sector liberalization for the Ethiopian economy. Thus, the study has significance for the government and financial operators in Ethiopia to have strategic readiness and copying mechanisms for the competition they could face if the sector is opened up to the rest of the world.

3.2. Review of Literature

3.2.1. Definitions of key concepts

Throughout the research, terms such as financial liberalization, depth, accessibility, efficiency, inclusion, stability and competition have been used repetitively. Thus, these concepts shall be defined as follows:

Financial liberalization¹: it can be characterized as the process of giving the market the authority to determine who gets and grants service and at what price, allowing entry into the financial-services industry to any company meeting criteria based on prudential considerations (concerning capital, skills, and reputation). It also gives them the autonomy to run their affairs, withdrawing from the ownership of financial institutions, and abandoning control over international capital movements. This characterization suggests six dimensions of financial liberalization: (1) the elimination of credit controls, (2) the deregulation of interest rates, (3) the free entry into the banking sector or, more broadly, the financial- services industry, (4) bank autonomy, (5) private ownership of banks and (6) liberalization of international capital flows. However, in this study, financial liberalization means liberalization of domestic financial sectors to global operators or liberalization of capital flow

Financial sector efficiency: it is the effective utilization of resources and the reduction of costs, which are central to the success of financial intermediaries operating in a competitive environment. While innovations in service delivery through electronic systems and consolidation movements in the financial industry are geared toward improvements in efficiency indicators. In our case, efficiency indicators are measured by net interest margin, return on assets (profitability indicators) and overhead costs to total assets.

Financial stability²: It is about the absence of system-wide episodes in which the financial system fails to function (crises). It is also about the resilience of the financial systems to stress. A stable financial system is capable of efficiently allocating resources, assessing and managing financial risks, maintaining employment levels close to the economy's natural rate, and eliminating relative price movements of real or financial assets that will affect monetary stability or employment levels. In stability, the system will absorb the shocks primarily via self-corrective mechanisms, preventing adverse events from having a disruptive effect on the real economy or on other financial systems. A common measure of stability at the level of individual institutions is the z-score. It explicitly compares buffers (capitalization and returns) with risk (volatility of returns) to measure a bank's solvency risk. The z score is defined as $z \equiv (k + \mu) / \sigma$, where k is equity capital as percent of assets, μ is return as percent of assets, and σ is standard deviation of return on assets as a proxy for return volatility. The popularity of the z-score stems from the fact that it has a clear (negative) relationship to the probability of a financial institution's insolvency, that is, the probability that the value of its assets becomes lower than the value of its debt. A higher z score indicates a lower likelihood of insolvency (Laeven and Levine, 2009; Iñáková and Hesse, 2010).

Financial sector performance: Over the years, financial management theories have provided various indexes for measuring the financial sector's performance, but there is no single universally accepted measuring index (Soylu and Durmaz, 2013). However, many empirical studies (Bagh et al., 2017; Anggono, 2017; Koju, 2018) used Duo Pont model financial ratios for evaluating financial

¹ (Gibson and Tsakalotos, 1994)

² The definition has been taken from world bank homepage (<https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/financial-stability>)

sectors' performance. The maximization of ROA was considered a major corporate performance indicator (Liesz, 2002). The return on assets (ROA) is the average ratio of net profits before tax to total assets. ROA indicates the ability of a bank to generate a profit from its total assets.

Financial access and inclusion³ means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way. Financial inclusion has been identified as an enabler for 7 of the 17 Sustainable Development Goals. Being able to have access to a transaction account is a first step toward broader financial inclusion since a transaction account allows people to store money and send and receive payments.

Financial depth⁴: Financial depth captures the financial sector relative to the economy. It is the size of banks, other financial institutions, and financial markets in a country, taken together and compared to a measure of economic output. A proxy variable that has received much attention in the empirical literature in this regard is private credit relative to gross domestic product (GDP). More specifically, the variable is defined as domestic private credit to the real sector by deposit money banks as a percentage of local currency GDP. Therefore, private credit excludes credit issued to governments, government agencies, and public enterprises. It also excludes credit issued by central banks.

Financial sector competition⁵: Competition in the financial system can be defined as the extent to which financial markets are contestable and the extent to which consumers can choose a wide range of financial services from various providers. Competition is often a desirable feature because it normally leads to increased institutional efficiency, lower costs for clients, and improved quality and range of financial services. Competitiveness is not an end in itself or a target. There are several approaches to measuring bank competition. These include interest spread decomposition; measures of bank concentration based on the “structure-conduct-performance” paradigm; regulatory indicators that measure the banking sector’s contestability; and direct measures of bank pricing behavior or market power based on the “new empirical industrial organization” literature. Instead of using concentration, much of the recent research on the subject has focused on direct measures of bank pricing behavior or market power based on the “new empirical industrial organization” literature and Panzar-Rosse H-statistic is commonly used in much of the literatures. The elasticity of bank interest revenues to input prices is captured by the H-statistic⁶.

Financial institution: A financial institution (FI) is a company engaged in the business of dealing with financial and monetary transactions such as deposits, loans, investments, and currency exchange. Financial institutions encompass a broad range of business operations within the financial services sector, including banks, trust companies, insurance companies, brokerage firms, and investment dealers.

3.2.2. Context of the financial sector in Ethiopia

The history of the modern financial sector in Ethiopia started in 1905 with the establishment of the Abyssinian Bank, based on a 50-year agreement with the Anglo-Egyptian National Bank. Likewise, Ethiopia’s insurance industry’s emergence is traced back to the establishment of the Bank of Abyssinia

³ World bank- <https://www.worldbank.org/en/topic/financialinclusion/overview>

⁴ <https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/financial-depth>

⁵ Competitiveness Advisory Group to the President of the European Commission, June 1995

⁶ <https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/banking-competition>

in 1905. The bank acted as an agent for foreign insurance companies to underwrite fire and marine policies. However, the emergence of microfinance institutions is a recent phenomenon in Ethiopia. The first microfinance service in Ethiopia was introduced as an experiment in 1994 when the Relief Society of Tigray (REST) had attempted to rehabilitate drought and war-affected people through the rural credit scheme.

After the Italian departure, a well-structured financial system started to evolve in the 1940s. A government-owned bank, the State Bank of Ethiopia, was established in 1942. Several foreign bank branches and a private bank were competing with the government-owned commercial bank until they were nationalized and merged into one government-owned mono-bank in 1976. Before liberalization, the command economy, including political instability, had been the stumbling block to the growth of the financial sector in Ethiopia. The command system nipped the competitive banking situation that started to flourish during the 1960s and reigned over the 1974-1991 periods. Following the change of government in 1991 and the subsequent measures taken to liberalize and reorient the economy towards a system of an economy based on commercial considerations, the financial market was deregulated. Proclamation number 84/94 was issued to effect the deregulation and liberalization of the financial sector, and several private banks and insurance companies were established following the proclamation. Following Directives deepened the liberalization, including the gradual liberalization of interest rates, foreign exchange determination, and money market operation. By the end of 2019/2020, Ethiopia's financial sector includes 18 banks (16 private and 2 public), 18 insurance companies (one public and 17 private) and 41 microfinance institutions (11 public, 13 private and 17 NGOs) (NBE, 2019/2020). The number of branches of banks has significantly increased from 970 in 2010/11 to more than 6,511 in 2019/20 (NBE, 2020). As a result, the bank branch-to-population ratio dropped from 1:82,000 during 2010/11 to 1:15,702 in 2019/20 (NBE, 2011; 2020). Similarly, the insurance companies' branch network increased to 605, and the number of microfinance institutions reached 41 by 2019/2020. The World Bank's Findex report (2017) shows that the percentage of adults with an account rose to 35% in 2017 from 22% in 2014. Account usage has improved, with about 26% of adults saving at financial institutions (as compared to 14% in 2014) and 11% borrowing from financial institutions (as compared to 7% in 2014).

Even though Ethiopia has achieved its rapid financial sector growth after the financial sector has been opened to private ownership, Ethiopia's financial sector is still underdeveloped and characterized by low competition, high concentration, and low inclusion (WB, 2019). The performance of Ethiopia's financial sector on many financial metrics, including the number of banking branches, the percent of adults who have an account with formal financial institutions, ATMs per 100,000 adults, depositors and creditors for 1,000 adults, and mobile banking, is substantially behind the average Sub-Saharan African countries and neighboring countries. In 2014, only 34.8% of adults had an account with formal financial institutions, less than the SSA average of 42.6% (Global Findex, 2017). In the same year, 82% of adults have an account in Kenya, while in Rwanda, account ownership stands at 50%. In 2016, mobile banking penetration per 100,000 adults in SSA, Kenya and Rwanda was 24, 57, and 13 percent, respectively, compared to only 1% in Ethiopia (WB, 2017). The insurance and microfinance penetration rate also remains low in Ethiopia, at around 0.4% and 4%, respectively (WB, 2017).

There is also a huge investment-saving gap. According to the National Bank of Ethiopia (2019/2020) report, investment as a percentage of GDP was 30.4% during 2019/2020, while the growth in the domestic saving rate was only 20.9%. Due to this huge investment saving gap, public investment

has been financed by tapping external financing, keeping government consumption low, and deploying heterodox mechanisms such as controlled interest rates and financial repression (World Bank, 2019).

The majority of Ethiopians, mainly the rural community and households with little access to financial services and small savings, rely more on informal institutions for their financial needs. For example, according to Bessir's (2018) study, although 62% of Ethiopians reported saving money, only 26% of them saved formally at financial institutions, while 38% saved with a person outside of their family or at an informal saving club (for example, Iqub). 41% of Ethiopians said they borrowed money during the same period, but only 11% borrowed from financial institutions. The rest was borrowed from family or friends (31%) and a savings club (8%). This indicates a demand for using financial services because most people depend on informal financial institutions because of either a lack of physical access to formal financial institutions or a lack of awareness of using formal financial institutions. The assertion that Ethiopia prefers informal saving clubs to the formal financial sector is justified by its less successful financial inclusion strategy than other East African countries (Lakew et al., 2020).

Even though a series of financial sector reforms have been introduced since 1994, Ethiopia's financial sectors remain closed to foreign ownership and have no capital market. Over the past decades, it has been operating under a financial repression framework used by the government to manage its monetary and foreign exchange policy and finance large infrastructure projects and state-owned enterprises. Although one can observe a strong growth and revival of the private sector since partial liberalization in 1994, the state-owned banks seem to dominate the industry.

The existing empirical shreds of evidence show that the cross-border financial sector benefits the host countries' financial industries by increasing competition, increasing access to higher skills and expertise, better access to capital, and economies of scale. More broadly, they can also positively affect governance structures. For instance, upgrades in the quality of supervision and regulation in host countries are induced by foreign financial institutions and their home supervisors, who often introduce higher standards (e.g., International Financial Reporting Standards accounting). However, potential contagion effects can offset stability benefits as cross-border financial industries can also more easily propagate shocks from their home countries across the host economies. Furthermore, suppose the foreign financial sector focuses on high-end customers only ("cherry picking") or relies too much on formal information, thereby precluding the lower end of the market. This could result in a limited impact on financial inclusion (IMF, 2015).

Thus, positive effects depend on a country's circumstances and existing market structures. For example, in a crowded market, the effects of greater competition might not materialize. In the African context of underdeveloped financial systems, the arrival of more skilled, better managed, and better-funded competitors can have a significant positive impact on host economies (IMF, 2015).

Though the government of Ethiopia has faced different pressures from different international institutions that attempt to liberalize the financial sectors, politicians retain their position not to liberalize the sectors. This might be based on the assumption that the introduction of foreign financial institutions to the financial industry in the country will jeopardize the financial sector in particular and the economy in general. The government's justification and concern are one-sided in that they ignore the possible potential benefits of financial liberalization. The politicians failed to consider the contradictory nature of financial liberalization regarding benefits and costs. Besides, they have not considered successful countries in liberalizing their financial sectors to sketch lessons or experience. Thus, international competition is non-existent and domestic competition is minimal in the Ethiopian financial sector. Therefore, it would appear that the highly closed nature of the Ethiopian financial sector would negate the positive effects of greater financial intermediation.

Currently, the government of Ethiopia, in recognition of the limitations of the previous model for the country's future trajectory, has initiated the implementation of a comprehensive structural reform program. Building on the objectives of the second national Growth Transformation Plan (GTP II), Ethiopian authorities unveiled a Homegrown Reform Agenda in September 2019 that complements the already initiated structural reforms (UN, 202, WB, 2019). This reform aims to ease business constraints and foster private sector development with sectorial and macroeconomic measures, including removing distortions in the financial sector. Recently, in a positive initial step forward, the government of Ethiopia passed a proclamation allowing foreign investors of Ethiopian origin to invest in the financial sector. This demonstrates that the current administration is willing to alleviate poverty by integrating the financial sector into the global financial industry. However, the current legal framework may not support consolidated supervision (WB, 2019); this is particularly important when Ethiopia opens the sector to foreign ownership.

Given the existing context of the Ethiopian financial sector, which is characterized by a noncompetitive nature, a huge investment-saving gap, low inclusion, high concentration, low technology usage, and nonconsolidated supervision, the main question here is what will be the consequences if the government of Ethiopia allows the entry of foreign investors in to the financial sector. This question has to be carefully considered and analyzed with the help of different theoretical and empirical evidence.

3.2.3. Theoretical literature review

The following major theoretical works on financial sector liberalization and economic growth were reviewed.

McKinnon–Shaw hypothesis—As already alluded to, many of the theoretical arguments in favor of financial liberalization originate in the works of McKinnon (1973) and Shaw (1973)⁷. The McKinnon–Shaw model challenges the policy of financial repression, including the ceilings on interest rates, high reserve requirements, administrative credit allocation, and other government-induced distortions that were so prevalent in developing countries during the 1960s and 1970s. In particular, the model puts focus on the negative effects of ceilings on deposit and loan rates. The basic argument is that financial repression in the form of a ceiling on nominal interest rates will stall financial deepening and thereby economic growth. An interest rate ceiling, leading to low or negative real interest rates, essentially has two negative effects. First, it reduces savings, hence the amount of loanable funds intermediated through the formal financial system. Second, low real interest rates influence the marginal productivity of capital. Bankers have no incentive to ration credit according to marginal productivity considerations. Instead, they ration according to their own discretion, which in turn thwarts the efficient allocation of investible funds. High reserve requirements and directed credit programmes further intensify these detrimental effects. In sum, the McKinnon–Shaw Hypothesis model considers financial repression a disequilibrium phenomenon, which prevents markets from clearing and serving their allocative function optimally. The policy implications are straightforward: liberalize the financial system, that is, remove government-induced distortions, and allow the market mechanism to determine the allocation of credit⁸.

⁷ A survey of the early literature is available in Fry (1995).

⁸ Accordingly, policy measures have included the removal or easing of interest rate ceilings and reserve requirements. Similarly, entry barriers have been lowered, and foreign banks allowed in. Government interference

This financial liberalization thesis argues, essentially, that domestic financial sector liberalization will improve resource mobilization by increasing or improving: a) The financialization of savings; b) the rate of savings (both private and public), and by implication, investment; c) the quality of investment; d) the financing of production. As a result, economic growth will be augmented indirectly by increased level and quality of investment and directly by the increased use of improved financial technology. None of the alternative perspectives directly challenged the likelihood of increased financialization of savings from financial liberalization (though, from Stieglitz's perspective, it is not a necessary result and the opposite is possible). However, several of the alternative theoretical models argued that the saving rate would fail to increase, or even fall. The reasons encompass the income distribution effect (Akyuz, 1995), liquidity constraints (Campbell and Mankiw, 1989) and the prevalence of subsistence consumption (Ogaki, Ostry, and Reinhart, 1996). The proposition of improved quality of investment is contested by the neostructuralists, who argue that informal finance dominates formal finance, and to a lesser extent, by Stieglitz's argument that partial repression could dominate full liberalization. The neostructuralists also argue that formal finance is not necessarily more efficient than informal finance.

Keynesian theory of Investment - John Maynard Keynes (1936) propounded the theory. The theory emphasizes the central role of investment in the theory of aggregate output and employment. Keynes focused on investment as the driving force of aggregate demand and short run fluctuations in economic activity. According to the Keynesian school, a low interest rate bolsters investment and income, resulting in higher savings (see Khatkhate, 1988; 1972). Indeed, the main distinction between the Keynesian view and the McKinnon-Shaw hypothesis is the transmission mechanism between interest rates and economic growth. While the Keynesian school believes in a "prior investment" policy, the McKinnon-Shaw school believes in "prior savings." Keynes (1936), for instance, succinctly argued that prior savings have no more tendencies to release funds for investment than does prior spending. Consequently, for the Keynesian school, a high interest rate policy discourages savings through its negative influence on investment and income, while for the McKinnon-Shaw school, high interest rates promote savings, investment, and income. The proponents of this view argue that the financial liberalization model ignores the adverse effects.

Post-Keynesian critique - Just as in the Keynesian school, the post-Keynesians believe that it is investment that determines savings, and not the other way around, and that high interest rates may stifle investment and growth (Warman and Thirlwall, 1994; Gibson and Tsakalotos, 1994). In general, the criticism of post-Keynesian apostles over the role of financial liberalization is based on two premises. Firstly, the Post-Keynesian school argues that the supply of bank credit is not exogenous, as treated by the McKinnon-Shaw school (Davidson, 1986; Asimakopoulos, 1986). Therefore, the post-Keynesians argue that if banks can create credit without increasing their deposits, an increase in financial savings may make no difference to the total credit given to the private sector (Warman and Thirlwall, 1994). Secondly, the post-Keynesians argue that high-interest rates may only result in stagflation, that is, a combination of high inflation and unemployment. According to Dutt (1990), if there is excess capacity in the economy, higher interest rates will only worsen income distribution, increase inflation, and reduce the economic growth rate. However, if the economy is at full employment,

in credit allocation has been scaled down, and banks and insurance companies have been privatised on a grand scale. Sometimes stock markets have been promoted.

higher interest rates may improve income distribution and reduce the rate of inflation, but they will not necessarily increase growth⁹.

Portfolio and inflation tax model: The model was propounded by Tobin in 1965. The model was derived from the assumption of perfect substitutability of money and productive capital in Tobin's monetary growth model. The model shows that the capital-labor ratio and per capita incomes may be raised through financial repression that reduces the attractiveness of holding money vis-à-vis productive capital. This model stipulates that the return on capital rises relative to the return on money. Such circumstances encourage a shift from money to capital in household portfolios, higher capital to labor ratios, and increased productivity. Tobin's approach is expressed in a money and growth model that allocates wealth between money and productive capital for the overall economy (households and the private sector). The opportunity cost of holding money is depicted as the forgone return of productive capital. The dynamics of this model are based on an increased return that reflects higher capital-labor ratios, higher labor productivity, and hence higher per-capital income.

Stiglitz and Weiss critique: Stiglitz (1994), for example, criticizes financial liberalization on the grounds that financial markets are prone to market failures. He suggests that there should be some form of government intervention that will not only make these markets function better but will also improve the performance of the economy. Specifically, Stiglitz advocates government intervention to keep interest rates below their market equilibrium levels. In the same vein, Stiglitz and Weiss (1981) show that the limits to which interest rates can be raised are direct consequences of imperfect information between lenders and borrowers. The basic intuition here is that, while a moderate increase in the lending rate would normally elicit a higher volume of lending, additional increases in rates beyond a certain level would prompt a lower level of lending activity by adversely changing the quality of borrowers in favour of those in the high-risk category.

Mainstream perspectives: Campbell and Mankiw (1990) challenged the idea of McKinnon-Shaw and especially their basic assumptions. Therefore, when the assumption of liquidity constraints is relaxed, "it will lead to a boom in consumption, and hence a fall in savings will follow investment and growth impediments." Given information imperfection, Stiglitz (1994) also argues that financial repression can improve the efficiency with which capital is allocated. First, lowering interest rates improves the average quality of the pool of loan applicants. Second, financial repression increases firm equity because it lowers the cost of capital. Third, financial repression could be used with an alternative allocative mechanism, such as export performance, to accelerate economic growth. Fourth, directed credit programs can encourage lending to sectors with high technological spillovers.

Heterodox perspectives: This is a neo-structuralist critique. The critical difference between the McKinnon-Shaw financial liberalization hypothesis and the neo-structuralist view is the role of the informal financial sector (Odhiambo, 2004). The neo-structuralist school argues that because of the reserve requirements of banks, the diversion of funds from the informal to the formal sector (due to increased interest rates) may lead to a reduction in the total supply of loans to the private sector (see Buffie, 1984; Thirlwall, 2004). However, the validity of this argument depends largely on the relative size of the informal sector in the economy.

In particular, economists working in the neostructuralist tradition argued that, contrary to the presumption of the financial liberalization thesis, the formal financial sector was not necessarily the most efficient means of financial intermediation in developing economies. They suggested, instead, that the informal financial sector (the "curb market") was a more efficient conduit of savings (Taylor, 1983;

⁹ See also Serieux (1997)

Van Wijnbergen, 1983; Buffie, 1984). In their view, while financial liberalization would lead to an increase in the share of savings intermediated through the formal financial sector, if that increase came at the expense of the informal financial sector, the net effect on output and, presumably, investment would be negative. Therefore, the productivity effect suggested by McKinnon (1973) would not be forthcoming, and Shaw's 'intermediation effect' of formal financial sector expansion would be nullified because it represented a shift in emphasis from more efficient to less efficient modes of intermediation rather than an outright expansion.

New Keynesian critique: New Keynesian economists also challenged the presumptions of the financial liberalization thesis (Burkett and Dutt, 1990; Akyuz, 1995). The clearest attempt at a rebuttal of the financial liberalization thesis came from Akyuz's (1995) three-sector model, which differentiated among households, private firms, and the government. According to that model, the high interest rates of liberalized finance would benefit deposit-holding households (renters), who are lower savers than firms are. Moreover, the higher cost of debt would compromise firm profits. The private savings rate would fall because high-saving firms would face lower profits, while low-saving renters would receive a larger proportion of total income. Public savings would also contract as government revenue was compromised by lower taxes on interest income (as part of liberalization measures), while higher interest payments on government debt would increase spending. Thus, while the model accepted the McKinnon-Shaw presumption that an increase in deposit rates (and other liberalization measures) would increase the financialization of savings (financial deepening), such measures were also expected to lower private savings (because of the shift in income from firms to renters) and government savings (because of lower tax revenues and higher interest payments on debt). In effect, financial liberalization would increase financial savings but lower overall savings. The potential productivity effect of financial liberalization was not addressed in this model.

Financial Liberalization Theory: The theory was propounded by McKinnon and Shaw, Fry (1996). They rejected Keynesian monetarism and challenged Tobin's argument. Instead, they introduced a model of an economy with underdeveloped financial markets. McKinnon based his arguments on the fact that developing economies are closed economies with limited access to external finance and self-financing investments. McKinnon claimed that the governments of developing countries intervened in financial markets for specific reasons that revealed investment efficiency; import licensing policy implicitly directs funding to authorized importers. This can create opportunities for corruption and monopoly privileges, cheapening capital goods and indirectly subsidizing investment costs. As such, wealth redistribution can be achieved by participating in the funding of land ownership and creating implicit capital controls over foreign investments. They challenged the case for low controlled interest rates and financial repression, advocating financial liberalization and development as major economic growth-enhancing policies. Moreover, potential investors must first accumulate monetary assets before investing in physical capital.

Generally, from theoretical perspectives, there are costs and benefits of liberalization for the economy. According to Wei (2018), there are three main potential benefits of reducing barriers to cross-border capital flows: (1) lower cost of capital flows, especially for small and medium-sized firms; (2) better ability to handle income risks (with a lower sensitivity of household consumption to fluctuations in output); and (3) more discipline in macroeconomic policies. These potential benefits do not work out strongly in the data, especially in the last two.

There are four broad reasons why a developing country may fail to benefit from reducing barriers to capital flows: (1) distortions in the domestic financial market (resources do not go to the most productive firms), (2) distortions in the international capital market (tendency to overborrow in

the international market, especially in short-term debt, and in debt denominated in a foreign currency), (3) distortions in the domestic labor market (which reduce the returns on capital and raise the probability of capital flight under an open capital account), and (4) weakness in the domestic public governance.

According to Obstfeld [1998] notes that there are costs associated with financial globalization: (a) a loss of fiscal autonomy since financial openness makes it hard to tax internationally footloose capital relative to labor due to the competition for foreign savings through tax incentives; (b) negative income distribution effects through changes in relative factor prices associated with factor movements; and finally (c) the increased susceptibility of participating countries to financial instability, often culminating in severe financial crises. Thus, financial globalization is well recognized to entail genuine costs and risks.

3.2.4. Analytical framework

Financial sector competition

The theory of industrial organization (IO) studies business policy and market performance under specific competitive conditions. The key contribution of IO is the theory of competition (Van Witteloostuijn, 1992). Depending on the level of competition, any industry/market is classified as perfectly competitive, monopolistically competitive, an oligopoly, or a monopoly.

In industrial economics, a financial sector such as a bank, like a firm, is conceptualized as operating under a certain kind of market structure, providing a service to its customers, and incurring costs to produce this service. In the process, it has to compete with other financial institutions in the industry, using price and non-price instruments, and earn a return sufficient to justify its existence.

The theory of industrial organization suggests that financial sector competition can be inferred directly from the markup of prices over marginal costs (Lerner, 1934). However, due to a lack of detailed information on the financial sector's costs and prices, including bank products, this measure is often hard or even impossible to implement (Andrade, 2013).

Financial sector competition can be measured using structural (traditional industrial organization theory, market structure is exogenous) and non-structural (new empirical industrial organization; market structure is endogenous) methods. In the first case, structure-conduct-performance (SCP) and the efficient structure hypothesis (ESH) are the dominant theories in measuring financial sector competition. In the SCP approach, the degree of competition is easily inferred from the level of concentration in the industry, in which competition is minimal in highly concentrated markets and vice versa (Budhathoki et al., 2020). Due to the lack of empirical results that fully support the traditional IO theoretical framework, the New Industrial Organization (NEIO) theory proposes different methods for measuring the level of competition in an industry by making market structure an endogenous variable that a model will determine. In the NEIO theory, the market structure cannot be determined by simply looking at the number of firms or level of concentration in the industry (Gebeyehu, 2018).

The Panzar-Rosse H-statistics (Panzar and Rosse, 1987) and the Bresnahan Index (Bresnahan, 1982) are the two prominent methods used to empirically test financial sector competition based on the NEIO theory. Both methods assume that financial sectors are profit maximizing and that the market structure of an industry is endogenously determined by profit-maximization conditions. The Panzar-Rosse (P-R) method is highly applied for measuring competition in the financial sector, including the banking sector (Bikker et al., 2012). Due to its modest data requirements, single-equation linear estimation, and robustness to market definition, this method has been found with widespread applications in the literature (Shaffer, 2004a).

Determinants of financial sector performance

Financial management theories have, over the years, provided various indexes for measuring the financial sector's performances, but there has been no single universally accepted measuring index (Soylu and Durmaz, 2013). However, many empirical studies (Bagh et al., 2017; Anggono, 2017; Koju, 2018) used DuPont model financial ratios for evaluating financial sectors' performance. The DuPont model is a framework for analyzing the fundamental performance of a firm. Initially, the DuPont model was used to analyze DuPont's fundamental performance. Donaldson Brown, an electrical engineer, first introduced the DuPont model, which was first used in 1912.

The maximization of ROA was considered a major corporate goal, and it was realized that ROA was impacted by profitability and efficiency (Liesz, 2002). In this respect, DuPont analysis was incorporated in many companies as a strong measure of a company's performance until the 1970s. Return on assets (ROA) is the average ratio of net profits before tax to total assets. ROA indicates a bank's ability to generate profit from its total assets. The higher the ROA, the more efficiently the resources are used by the financial sector (Adams and Santos, 2005). The calculation of ROA is as follows: $ROA = \text{net income} / \text{total assets}$.

Since this study aimed to investigate the determinants of both private and public financial institutions, we have employed ROA to measure financial sector performance. Based on other empirical studies (Ongore and Kusa, 2013; Koju, 2018; Gwachha, 2019), determinants of financial institution performance can be classified into financial institution-specific (internal) and macroeconomic (external) factors. Internal factors are financial institution-specific characteristics that affect financial institution's performance. They are influenced by the decisions of the management and the board strategy. Macroeconomic (external) factors are countrywide factors beyond the control of the management that affect banks' profitability.

Consequences of financial liberalization

The neoclassical growth model postulates that economic growth is a function of technical progress in the long- run (Solow, 1956). This model could not give room to other factors that may influence growth, for instance, financial development. However, the endogenous growth literature predicts a positive relationship between financial development, real income, and investment (King and Levine, 1993). Well-developed financial markets promote investment and growth by channeling financial resources to the most productive uses.

$$Y_t = AK_t^\alpha$$

Where Y_t denotes the aggregate output at time t , K_t is the investment at time t , while A denotes total factor productivity growth (TFP). Given that TFP is endogenously determined, the endogenous growth literature argues that financial development and bank competition affect growth through capital accumulation and the TFP channel. This channel suggests that an efficient financial system affects growth by facilitating the adoption of modern technology to boost the development of knowledge- and technology-intensive industries.

3.2.5. Empirical Literature

3.2.5.1 *Liberalization and Financial sector's development*

Liberalization in the financial sector affects the host country's financial sector and economy through different channels. Financial globalization may affect the financial sector and economy as a whole by affecting competition, efficiency, and stability in the financial sector. The effects of financial sector globalization and liberalization on these variables were mixed.

Many studies have been conducted on the consequences of financial sector globalization on competition, and the results have been mixed. Jeon et al. (2011) examine the impact of foreign bank penetration on the competitive structure of host country banking sectors in emerging Asia and Latin America from 1997 to 2008. They found that an increase in foreign bank penetration enhances competition (H statistics)¹⁰ in the banking sector of those countries. With a sample of 50 countries, Claessens and Laeven (2004) find that countries with greater a foreign presence and fewer entry restrictions tend to be more competitive. Bremus's (2015) study on the banking industry in OECD countries from 1995 to 2009 found that cross-border lending and bank foreign direct investment reduce bank concentration and increase the contestability of the host countries.

On the other hand, Mulyaningsih et al. (2015) also observed that foreign banks behave more competitively than local banks in the Indonesian banking market, and their penetration is therefore, important in creating a contestable market. In contrast, Yeyati and Micco (2007) examined the impact of the accelerated of foreign penetration in Latin American countries in the 1990s and found that it decreased competition. Moguillansky et al. (2004) argued that foreign bank entry might not stimulate competition because foreign banks adopted rent-seeking strategies in the Mexican market through mergers and acquisitions. This conflicting evidence warrants another study. Jeon et al. (2011) observed that foreign bank penetration only increases banking competition in the host countries when the foreign banks are more efficient and less risky than domestic banks, but not otherwise. Therefore, whether foreign bank entry increases or decreases, financial sector competition has continued as an empirical question.

A series of cross-country empirical studies show that foreign-owned banks are associated with greater efficiency in a host country's banking sector. For example, Claessens et al. (2000, 2001), Claessens and Lee (2003), and Bayraktar and Wang (2004) show that foreign banks play a statistically and economically significant role in improving the efficiency of domestic banks by reducing costs, profits, and net interest margins. Foreign banks are more cost-efficient than domestic banks (Green et al., 2004, 2003). Foreign banks were more cost and profit-efficient than domestic banks, especially state-owned ones (Bonin et al., 2005). Increasing foreign ownership can help improve overall bank efficiency in developing countries through multiple effects. Ghosh (2016) uses a dataset of 169 nations spanning 1998–2013 and found that a greater share of loans from nonresident banks and a greater share of foreign banks reduce both profits and overhead costs in the banking industry of host nations. In a study of foreign bank ownership and bank efficiency in China, Berger et al. (2009) found that foreign banks are the most efficient. Recent evidence indicates that banks with greater (minority) foreign ownership shares and less state ownership are more cost-efficient than others in China (Berger et al., 2009).

On the other hand, other studies found that banking globalization can lower the efficiency of domestic banks. Pruteanu Podpiera et al. (2008) examined the relationship between bank efficiency and

¹⁰ A measure of the degree of competition in the financial market
(<https://fred.stlouisfed.org/tags/series?t=h-statistics>)

competition in the Czech Republic over the transition period between 1994 and 2005 and found a negative relationship between competition and efficiency in the banking sector. Furthermore, it can take years for the efficiency improvement to be realized, so it is not surprising to see no efficiency gains with foreign bank entry. Yeyati and Micco (2007) examined the impact of foreign penetration in Latin American countries in the 1990s and found that foreign penetration is likely to be associated with lower efficiency in the host country. The conflicting arguments above cannot lead to a clear expectation of the impact of foreign bank presence on host countries' bank efficiency. Therefore, whether foreign bank entry increases or decreases, bank efficiency has continued as an empirical question.

Another strand of studies focuses on the impact of bank globalization on financial stability. Using detailed data on U.S. banks, Cetorelli and Goldberg (2012) found that an active internal capital market in global banks contributes to the international propagation of shocks. Yin (2019), looking at 129 countries from 1995 to 2013, observes increased bank risk in countries that host foreign banks. Chen et al. (2017), studying 32 emerging economies from 2000 to 2013, find that foreign-owned banks take on more risk than their domestic counterparts do. Analyzing bank-level data from 35 emerging countries from 2000 to 2014, Wu et al. (2017) observed that foreign bank presence increases the risk of domestic banks. Findings from recent studies focusing specifically on the recent global financial crisis suggest that global banks were transmitting shocks across borders through their affiliates at the height of the crisis. For example, De Haas and Lelyveld (2014) compared foreign banks with large domestic banks and found that the former group contracted their lending more on average. De Haas et al. (2011) found similar results for a sample of Eastern European countries. Dwumfour (2017) concluded that the presence of foreign banks in the domestic industry reduces stability, which corroborates the fragility view. The presence of foreign banks intensifies the probability of a banking sector crisis and makes the hosting sector fragile (Barth et al., 2004; De Haas and Lelyveld, 2014). However, Zhu and Yang (2016) found that foreign acquisition reduces the risk-taking of state-owned banks in China. Cetorelli and Goldberg (2012) conjecture that global banks can respond to a domestic liquidity shock by activating a cross-border internal capital market between the head office and its foreign offices, thus reallocating funds based on relative needs.

Foreign banks bring higher assets and provide credit to government-owned enterprises, small and medium enterprises, and micro credit. Most developed countries have understood this phenomenon and have achieved significant financial inclusion by liberalizing their banking industries. It is essential to conceptualize and measure the magnitude of factors, determinants, and antecedents for foreign bank entry promoting financial inclusion (Memon et al., 2021). Foreign banks may create opportunities for new entrepreneurs by ending barriers to entry and enhancing market competition (Zingales, 2003). Copalan (2015) examined the relationship between foreign bank entry and financial inclusion for a panel of 57 emerging and developing economies over 2004 to 2009. The empirical findings suggest that foreign banks positively impact financial inclusion, though the relationship turns negative when foreign bank entry is followed by greater banking concentration.

In contrast, few researchers have found a negative correlation between foreign bank participation and banking sector outreach (Detragiache et al., 2008; Bech et al., 2007; Cull & Peria, 2010). Detragiache et al. (2008) found a negative correlation between foreign bank participation and banking sector outreach using cross-sectional data from 2003 to 2008 for 18 countries. They argue that a decline is observed in loans, deposits, and several branches due to the greater presence of foreign banks in a country. Studies by Bruno and Hauswald (2014) and Beck et al. (2018) found that foreign banks' credit is skewed toward large firms, so their entry will harm financial inclusion.

3.2.5.2 Financial sector liberalization and economic growth

The empirical literature on financial liberalization is like a two-sided coin: one side examines the positive relationship between financial liberalization and economic growth (Chang and Mendy, 2012; Özdemir, 2014), while the other side examines whether financial liberalization is responsible for financial fragility (Ahmed, 2013; Philip, 2007) and macroeconomic instability.

Studies in Pakistan showed that the financial liberalization index and economic growth are positively linked in the short run, whereas it is statistically insignificant in the long run (Hye & Wizarat, 2013). In underdeveloped economies like Africa, foreign banks' entry creates financial integration, which increases the finance supply, improves its allocation, and spurs economic growth (Guiso et al. 2004).

Other studies found that the globalization of the financial sector depends on the institution's quality and income level. For example, Akinsola and Odhiambo (2017) found that financial liberalization in sub-Saharan African countries shows a positive and significant effect on economic growth, but its effect varies based on income level. Moreover, Klein (2005), using panel OLS of 71 countries, found that capital account liberalization on economic growth varies with institutional quality.

In contrast, a study conducted by Ahmed (2013) shows that, on average, financial liberalization is negatively associated with income growth in the SSA region. This finding supported the skeptical empirical view of financial liberalization in emerging markets, which shows that liberalization might be associated with lower economic growth through destabilization, stimulating domestic capital flight, and increasing the risk of financial fragility. However, after controlling key macroeconomic factors such as institutional quality, fiscal imbalances, and inflation, the research found that financial liberalization positively influenced financial deepening and resource mobilization in the SSA region. The study reports a stronger reform effect for countries with stronger legal institutions, protection of property rights and higher human capital.

Some of the previous studies in the case of Ethiopia's financial sector liberalization showed the positive effect of liberalization. For instance, Kiyota (2007) suggested that the Ethiopian economy would benefit from financial sector liberalization, especially from the entry of foreign banks and the associated privatization of state-owned banks, if liberalization were put in place. The study by Sime (2014), using data from 1973-2005, revealed that financial liberalization policy has a positive and statistically significant impact on the development of financial sectors in the long run. However, in the short run, it did not impact the development of financial sectors. The policy implication of the study was that the Ethiopian government should have to speeded the full liberalization of financial sectors to maximize the benefit for the country.

Thus, the literature shows that finance is important for stimulating economic growth and development. However, financial liberalization policies should be implemented with caution, taking into account the sequencing and timing of the policies to avoid endangering financial stability. Indeed, there are still issues relating to the financial liberalization–growth nexus that need to be explored based on the country's context.

3.2.5.3. Precondition and sequence of financial liberalization

This international experience over the past 20 years indicates that there are five prerequisites for successful financial liberalization (Fry, 1995): (1) adequate prudential regulation and supervision of commercial banks, implying some minimal level of accounting and legal infrastructure; (2) a reasonable degree of price stability; (3) fiscal discipline taking the form of a sustainable government-borrowing requirement that avoids inflationary expansion of reserve money by the central bank through direct

domestic borrowing either by the government or through the indirect effect of government borrowing that produces surges of capital inflows requiring large purchases of foreign exchange by the central bank to prevent exchange rate appreciation; (4) profit-maximizing, competitive behavior by the commercial banks; and (5) a tax system that does not impose discriminatory explicit or implicit taxes on financial intermediation.

In financial liberalization or integration, countries have chosen alternative paths: some have liberalized their domestic financial markets first, including the banking sector and stock market, or they may have liberalized their capital account first. Related to the order of financial liberalization, each country has its unique experience. Kaminsky and Schmukler (2003) showed that most industrialized countries had liberalized their stock markets first, while most developing countries tended to open their banking sector first.

There is no clear-cut solution to the financial liberalization-sequencing problem in the literature. While some economists claim that the domestic financial sector should be liberalized first, other studies propose that early capital account liberalization can initiate broader economic reforms. The sequence of financial liberalization matters for the performance of the domestic banking sector: After controlling macroeconomic variables and grouping countries by their sequence of liberalization, foreign bank entry has significantly improved domestic bank competitiveness in countries which liberalized their stock market first. In these countries, both profit and cost indicators are negatively related to the share of foreign banks, indicating a more competitive environment. Countries, which liberalized their capital account first, seem to have benefited less from foreign bank entry than the other two sets of countries, as the relationship between the performance indicators and the foreign bank share is the weakest in these countries (Bayraktar and Yan Wang, 2004).

There are many empirical and theoretical studies focusing on the financial liberalization sequence. Kaminsky and Schmukler (2003) established a comprehensive chronology of financial liberalization in 28 developed and emerging economies since 1974. Their study showed that while almost all G-7 countries liberalized their stock markets first, European countries followed a mixed strategy. One-fourth of them deregulated their domestic financial sector first, but most liberalized their stock markets. Another result is that the liberalization of domestic financial markets occurred before opening capital accounts in developed countries. They report that the order of liberalization was different in developing countries. While Latin American countries first liberalized their domestic financial sectors, East Asian countries implemented a mixed strategy. The liberalization processes that started in stock markets were the ones that completed this process the fastest. They indicated that the order of liberalization does not generally matter in terms of vulnerability to the financial crisis. The exception is that crashes are more severe in developing economies if the capital account is liberalized first.

Johnston et al. (1997) point out three different views on the issue of sequencing financial liberalization. One view claims that capital liberalization requires preconditions such as macroeconomic stability and developing domestic financial institutions and markets before liberalizing the capital account. The second view claims that early capital account liberalization can play an important role in broader economic reforms. The last view is between these two views: capital account liberalization should be a part of overall macroeconomic and structural reform. They indicate that the balances of benefits, costs, and risks of one strategy versus another may vary across countries.

Moreover, Johnston (1998) investigated the relationship between financial sector reform and capital account liberalization. He showed that before opening capital accounts, the financial intermediaries needed to be strengthened to guarantee the efficient use of capital inflows. Countries

with weak financial systems may need time to develop financial institutions and markets, especially in the banking sector, before liberalizing their capital account.

According to McKinnon (1991), balancing the central government's finances is the first step that should be taken. The second stage is the opening of the domestic capital market. He argued that the last step should be the liberalization of foreign exchange. After controlling for macroeconomic variables and grouping countries by their sequence of liberalization, foreign bank entry has significantly improved domestic bank competitiveness in countries that liberalized their stock markets first (Bayraktar and Yan Wang, 2004).

Finally, the following issues have been summarized from the empirical evidence literature:

Liberalization in the financial sector affects the host country's financial sector and economy through different channels. Financial globalization may affect the financial sector and economy as a whole by affecting competition, efficiency, and stability in the financial sector. However, the effects of financial sector globalization/liberalization on these variables were mixed.

There is no clear-cut and universal financial liberalization; the sequencing and order of liberalization were different in developing countries depending on their existing macroeconomic situations, but many agreed that macroeconomic stability was a precondition to financial sector liberalization.

In light of the above, this study assesses the constraints, consequences, and policy issues of the liberalization of the Ethiopian financial sector.

3.3. Data and Research Methodology

3.3.1. Research design

Research design shows how all major parts of the research project, samples, sampling techniques, sampling procedures, data collection and analysis tools, and others work together to address the central research questions. Given this, the study adopted a mixed research design to collect quantitative and qualitative data. The qualitative data was used to substantiate the quantitative data. Through a descriptive and inferential research design, variables in the study were described, and their relationships were identified and interpreted.

The objective of this study is to assess the constraints, consequences, and policy issues of the liberalization of the Ethiopian financial sector. To achieve this objective, primary data was collected from the head offices of banks, insurance companies, and microfinance institutions in operation before 2018. Secondary data were collected from the National Bank of Ethiopia, the World Bank, and the International Monetary Fund. Our research analysis approach was predominantly descriptive type and econometric analysis. We attempted to find scientific evidence on the underlying determinants of financial institution performance and the expected costs and benefits of opening the financial sector to foreign operators.

3.3.2. Population of the study

The entire financial institutions of Ethiopia, which were well established and started operations before 2018, are the population of this study. At the end of 2018/2020, there were 18 banks (16 private and 2 public), 18 insurance companies (one public and 17 private), and 41 microfinance institutions registered at the National Bank of Ethiopia (with 11 public, 13 private, and 17 NGOs). But out of the

41 microfinance institutions registered at the NBE, the number of active microfinance institutions during the survey period did not exceed 30. Thus, out of 30, we have considered 19 MFIs (2 public, 1 NGO, and 16 private microfinance institutions) whose head offices are operating in Addis Ababa. Thus, the study population comprised all the above financial institutions operating in Ethiopia and registered by the national bank, including banks, insurance companies, and microfinance institutions, until 2018.

3.3.3. Data collection method

The study used primary data collected from financial institutions and government organizations operating in the financial sector, including commercial banks, insurance companies, microfinance institutions (MFIs), and the National Bank of Ethiopia (NBE). The primary data was collected from the head offices of financial institutions through a structured questionnaire. This structured questionnaire aimed to examine the key informants' (such as managers and policymakers) perceptions about the consequences of financial institution liberalization for the Ethiopian economy. It also helps us analyze the awareness of the consequences of liberalization of the financial institutions and identify financial institution innovations and financial products in Ethiopia's financial sector.

Secondary data were also used to answer some of the research questions and supplement the primary data. It covers from 1994 -2020 for the banking sector, 1996-2020 for the insurance sector, and 2010-2020 for the microfinance sector. The main sources of the data were the National Bank of Ethiopia, the World Bank Database for the Financial development indicators, and the international Monetary Fund for the financial reform indicators. Thus, both micro and macro data were collected and used to achieve the objectives.

3.3.4. Methods of Data Analyses

Two data analysis methods were adopted to enable a more complete and comprehensive analysis. The qualitative analysis helps investigate how incumbent financial institutions perceive the existing financial market and policy, expected competition, gains and losses of opening the financial sector to foreign operators, and the introduction of a secondary financial market. Using qualitative and descriptive analysis, we have explored the relative position of domestic financial institutions and identified financial sector innovations in Ethiopia's financial industry. Moreover, we have applied econometric analysis to investigate Ethiopia's financial sector competitiveness and the underlying factors determining the performance of financial institutions and to measure the expected effect of financial liberalization policy on financial institutions' performance and the economic growth of Ethiopia. Thus, we have addressed the first two and partly the sixth specific objective by employing econometric techniques. The last five objectives are analyzed through qualitative method and supplemented by descriptive techniques.

3.3.4.1. Descriptive and qualitative Method

To elucidate financial operators' perception of the current financial market and policy, assess the relative position of domestic financial institutions to the expected international financial operations; analyze the extent of banking innovations and financial products in Ethiopia's financial sector; and assess the financial operators' awareness level of the consequences of financial market liberalization. Descriptive statistics such as frequency, percentage, the mean, and standard deviation were used.

Qualitative analysis has also been complemented with descriptive analysis to find detailed insights into the issues raised by the research questions.

To address the third objective (investigate the relative position of Ethiopian domestic financial institutions to the expected international financial operations), we have used both qualitative analysis and descriptive statistics, such as the mean and standard deviation of financial institutions' performance indicators, to compare the status of domestic financial institution performance in comparison with other countries that have a better position in financial sector development. For this purpose, we used to access bank service, depth of financial development, financial efficiency, banking competition, bank soundness, return on assets, and equity and innovation indices.

To investigate the financial operators' perception of Ethiopia's current financial policy (fourth objective), we collected primary data from financial institutions (banks, insurance companies and microfinance institutions) by using structured survey questions. To address issues under consideration, we contacted the most relevant persons, such as managers. Then, to analyze the collected data, we used qualitative analysis and descriptive statistics.

Finally, to investigate the financial operators' awareness of the consequence of liberalization (the fifth objective), we collected primary data from financial institutions (banks, insurance companies and microfinance institutions) using structured survey questions. To analyze the collected data pertinent to the fifth objective, we used qualitative analysis and descriptive statistics.

3.3.4.2 Econometrics analysis method

I. Empirical model for financial sector competitiveness

The current study has employed Panzar-Rosse (P-R) model to assess the competitiveness of financial institutions in Ethiopia. To assess the nature of competition in financial institutions, various researchers in different countries have adopted the Panzar-Rosse model (Panzar J and Rosse J., 1987). The H-statistic is derived from financial institutions reduced-form revenue equation. The study estimated P-R reduced revenue from the equation, taking the logarithm of total revenue as the dependent variable, which has evaluated the nature of competition in Ethiopia's financial institutions. The independent variables are factor inputs (labor, capital and fund), and financial specific and macro-economic variables (Ombongiand Long, 2018; Tan, 2020). By assuming x-input and single output production function, the reduced-form equation of the P-R model can be written as

$$\ln TR_{it} = \alpha_0 + \sum_{i=1}^i \alpha_i \ln P_{it} + \sum_{i=1}^i \beta_i \ln Q_{it} + \sum_{i=1}^i \gamma_i \ln R_t + \varepsilon_{it} \quad (1)$$

Where: TR= Total Revenue of each bank, P_{it} are the vectors for factor input prices, Q_{it} are the vectors for financial institutions' specific variables, and R_t are the vector of macro-economic variable(s). Ln is the natural logarithm, ε is the error term. Panzar J. and Rosse J. (1987) H-statistic (H) value is derived from the sum of price elasticities of factor input prices as shown in equation 2 below, which α_i denotes unknown input price elasticities.

$$H = \sum_{i=1}^i \alpha_i \quad (2)$$

Then Panzar and Rosse used the sum of input price elasticities (which is represented by H – statistic) to reflect the competitive structure of the market ($H = \sum \alpha_i$) as a necessary condition.

The estimated value of the H -statistic ranges between $-\infty$ and 1. Rosse and Panzar (1977) show that his negative for a neoclassical monopolist or collusive oligopolistic, between 0 and 1 for a monopolistic competitor, and equal to unity for a competitive price-taking financial sector in long-run competitive equilibrium. Thus, if:

$H \leq 0$, then the market is characterized by Monopoly

$0 < H < 1$, then the market is characterized by Monopolistic Competition

$H = 1$, then the market is characterized by Perfect Competition

Thus, by the same logic we want to test the null hypothesis that $H_0=0$ and $H_0=1$ against the alternative hypothesis that $H_1 \neq 0$ and $H_1 \neq 1$.

Since equations; 1 and 2 presents unknown variables, the study further introduces reduce-form revenue equation with known variables as shown in equation 3.

$$\ln TRTA = \alpha_0 + \alpha_1 \ln EET + \alpha_2 \ln IETD + \alpha_3 \ln OITFA + \beta_1 \ln NPLTL + \beta_2 \ln TA + \gamma_1 \ln GDP + \varepsilon \quad (3)$$

Where:

Log is the natural logarithm; TRTA is the ratio of total revenue to total assets; α_0 is the coefficient constant; EET is the ratio of total employee expense to total assets; IETD is ratio of total interest expense to total deposits; OITFA is the ratio of operating income to total fixed asset (proxy to depreciation to fixed assets); NPLTL is the ratio of total non-performing loans to total loans, TA is the total assets, GDP is the annual Gross Domestic Product (GDP) growth and ε is the random standard error of observation.

EET, IETD, OITFA are vectors for factor input prices for commercial banks in Ethiopia. EET is a measure for the unit price of labour, IETD is a measure for the unit price of funds, and OITFA is a measure for the unit price of capital. NPLTL and TA are the banks' other specific variables that consider the risks encountered and bank size of commercial banks in Ethiopia. GDP is a macroeconomic variable affecting Ethiopia's overall banking sector market. We have estimated the competition model for each financial sector using a similar model with the contextualized variable, as seen in Appendix 1. The variables used for each financial sector, the unit of measurement, the expected sign, and the source of the data are summarized in Appendix 1.

II. Empirical model for determinants of financial sector performance

We have analyzed the determinants of Ethiopian financial sector performance between the years 1994 - 2020 on an annual basis. The study employed three statistical approaches, fixed effects model (FEM), the random effects model (REM), and the generalized method of moments (GMM), which are suitable for panel data. We have applied the Hausman test to determine whether the FEM or REM model is suitable for research. We formed the following panel regression model based on our theoretical discussion and empirical literature, as follows:

$$\pi_{it} = \alpha + \sum \beta_k x_{it}^k + \varepsilon_{it} \quad (4)$$

Where: π_{it} is the performance of financial institution i at time t . α is a constant term; β_k is the coefficient for the respective variables x^n for k explanatory variables and ε_{it} is the disturbance with v_i of the unobserved individual financial institution-specific effect and u_{it} of the idiosyncratic error or varies over time and entities. The explanatory variables x^n were grouped into financial institution-specific and macroeconomic variables.

$$\text{Ln}\pi_{it} = \alpha + \sum_{i=0}^i \alpha_i \text{Ln}FS_{it} + \sum_{i=0}^i \beta_i \text{Ln}IS_{it} + \sum_{i=0}^i \gamma_i \text{Ln}M_t + \varepsilon_{it} \quad (4)$$

Where;

Where: π_{it} refers to dependent variables (Return on Assets to measure a financial institution's performance). FS_{it} are the vectors for financial sector-specific variables, IS_{it} are the vectors for industry (financial industry) specific variables, and M_t are the vector of macroeconomic variable(s). Ln is the natural logarithm, ε is the error term. α represent the coefficient of financial institution-specific variables; β represent the coefficient of industry specific variables and γ represents coefficients of the macroeconomic variable.

Most commonly, the following variables are determinants of financial sectors. These include leverage (capital to asset ratio), asset liquidity, size of the financial firm (total asset), assets quality, management efficiency, interest spread, liquidity (ratio of loan to deposit), financial innovations, inflation rate and domestic product growth and the like.

To make the model more specific, the study introduces a reduced-form ROA equation with known variables as shown in Equation 5.

$$\text{Ln}\pi = \alpha_0 + \alpha_1 \text{Ln}CA + \alpha_2 \text{Ln}AL + \alpha_3 \text{Ln}TA + \alpha_4 \text{Ln}AQ + \alpha_5 \text{Ln}ME + \alpha_6 \text{Ln}IS + \alpha_7 \text{Ln}LD + \beta_1 \text{Ln}FIVATM + \gamma_1 \text{Ln}INF + \gamma_2 \text{Ln}GDP + \varepsilon \quad (5)$$

Using a similar model with the contextualized variable, as seen in Table 3.2, we have estimated the performance model for each financial sector.

Leverage (equity ratio to total assets) has a negative expected sign on financial sector performance. A financial institution's asset quality (ratio of non-performing loans to total loans) helps the management understand the risk concerning the exposure of the financial sector to borrowers. It is expected to harm financial sector performance (Bilal et al., 2013; Kingu et al., 2018). Management efficiency is the ratio of total operating expenses to total operating incomes at a financial institution. The smaller the ratio, the better the bank's performance (Roman and Sargu, 2013; Liu and Pariyaprasert, 2014). Asset liquidity (ratio of total cash and bank equivalent to customer deposits) measures the ability of the financial institution (bank) to quickly meet its financial obligations arising from unforeseen circumstances that can result in an insolvency risk. It is expected to have positive signs (Dang, 2011). The size of the financial institution represents total assets. The bigger the financial institution's size, the higher the profitability because large financial institutions are more likely to benefit from economies of scale (Hasanov et al., 2018). Interest spread is calculated as the difference between a bank's average yields from loans and the average rate it pays on customers' deposits and borrowing. It is expected to increase financial sector performance (Garo, 2013). Financial innovation (number of mobile subscribers or ATMs) is expected to have positive signs (Dongol, 2021) because mobile subscribers can use mobile banking and internet-banking services, which satisfy customers and increase the financial sector's performance. Ownership type, 1 if the private sector owns it, 0 if it is state-owned. State-owned financial

sectors are believed to have the least efficient performance (Robin et al., 2018; Shawtari, 2018). Domestic product growth represents the real GDP growth rate, and when a country experiences a high growth rate, the bank's profits are expected to be higher (Michael, 2014; Pradhan; 2016; Topak and Talu, 2017). The inflation rate is expected to positively affect the financial sector's profitability, given that financial institutions revise their pricing accordingly (Athanasoglou et al., 2006). Financial institution development (total bank credit to the private sector) and this variable are expected to positively affect financial institution performance (Garo, 2013). The variables used for each financial sector, a unit of measurement, expected sign, and data source are summarized in Appendix 2.

III. Empirical model specification for consequences of financial liberalization

The last objective, but not the least, of the current study is to examine the costs and benefits associated with the liberalization of the financial sector in Ethiopia. Based on the empirical specifications in Bayraktar and Wang (2008) and including other more relevant variables for Ethiopia, total factor productivity can be examined with the following variables of interest, resulting in:

$$Y_t = AK_t^\alpha. \quad (6)$$

Where Y_t denotes the aggregate output at time t , K_t is the investment at time t , while A denotes total factor productivity growth (TFP). Given that TFP is endogenously determined, the endogenous growth literature argues that financial development and bank competition affect growth through capital accumulation and the TFP channel. This channel suggests that an efficient financial system affects growth by facilitating the adoption of modern technology to boost the development of knowledge-and-technology-intensive industries

$$A = F(Gcf, HCI, FStab, Fc, FLI, Inf, Ef, FivMob) \quad (7)$$

By substituting equation (7) in to equation (8), we obtain

$$Y_t = Gcf_t^{\alpha_1} HCI_t^{\alpha_2} FStab_t^{\alpha_3} FC_t^{\alpha_4} FLI_t^{\alpha_5} Inf_t^{\alpha_6} Ef_t^{\alpha_7} Fivmob_t^{\alpha_8} \quad (8)$$

By log transformation of equation (9), we obtain:

$$\begin{aligned} \ln Y_t = & \alpha_0 + \alpha_1 \ln Gcf_t + \alpha_2 \ln HCI_t + \alpha_3 \ln FStab_t + \alpha_4 \ln FC_t + \\ & \alpha_5 \ln FLI_t + \alpha_6 \ln Inf_t + \alpha_7 \ln Ef_t + \alpha_8 \ln Fivmob_t + F_{i,t} + T_{i,t} + \varepsilon_t \end{aligned} \quad (9)$$

The coefficients α_1 - α_8 are elasticities of their respective variables, α_0 is the constant component, t denotes time, ε is the error term and $T_{i,t}$ is a time-fixed effect. Where, Y , Gcf , HCI , $FStab$, FC , FLI , Inf , Ef , and $Fivmob$ represent real gross domestic product per capita, a ratio of gross capital formation to GDP, human capital index, financial stability, financial competition, financial liberalization index (proxied by the deposit interest rate), inflation rate, financial efficiency index and financial innovations which mobile subscribers represent. Financial stability ($Z \text{ score} = k + \mu/\sigma$, where k is equity capital and reserve as a percent of total assets, μ is average net income as a percent of total assets, and σ is the standard deviation of return on assets as an indicator of return volatility) respectively. If the

liberalization variable has a positive sign, then benefits should outweigh the costs of financial sector liberalization.

3.4. Discussion and Analysis¹¹

3.4.1. The relative position of Ethiopia's financial institution

This section assessed available financial development indicators in Ethiopia and two other countries from the three southern continents (Africa, Asia, and Latin America). In addition, Ethiopia's position has also been compared with that of SSA countries that opened or did not open their financial sectors to foreign operators. For the SSA case, we considered the economic diversity (low income and high income) and the financial sector's globalization. High-income countries were also considered because potential entrants to the Ethiopian financial sector might come from high-income economies. Indicators of financial sector development, such as access, depth, efficiency, profitability, competition, and stability, were reviewed.

3.4.1.1. Access to financial institutions in Ethiopia

We used different indicators to investigate the relative position of Ethiopia's financial access to other countries. Bank branches and ATMs per 100,000 adults, small firms with a bank loan, credit card ownership (% age 15+), digital payments in the past year (% age 15+), utility bills: using a mobile phone (% age 15+), loans requiring collateral (%) are to mention a few. Except for a few indicators, Ethiopia's access to financial products and services remains below the SSA average. For example, in Ethiopia, from 2005 to 2020, there were 1.46 bank branches per 100,000 adults, whereas, in the same period in SSA, there were 6.41 bank branches per 100,000 adults on average. The result was also very low compared to neighboring countries such as Kenya (4.58 branches per 100,000 adults). The result is disappointing compared to the high-income countries' average (87.41 branches per 100,000 adults) in the same period.

Similarly, only 0.13 ATMs provide banking services for 100,000 adults in Ethiopia, less than the SSA average (10.69) and Kenya's (7.58) ATMs per 100,000 adults. Innovations in the banking sector as a means of financial penetration are less widespread in Ethiopia than in other SSA countries and SSA countries and the SSA average. For instance, electronic payments in Ethiopia are 5.27%, and the SSA's average was 21.55%. Thus, financial access in Ethiopia remains low and lower than the African average.

¹¹A summary of data used for econometric analysis was attached in the appendix section. Thus, the number of observations, mean, standard deviation, minimum and maximum values for variables used for financial sector (bank, insurance and microfinance), determinants of financial sector (bank, insurance and microfinance) performance, and macroeconomic variables were attached in the appendix.

Table 3.1: Financial access (2005-2019)

Country	Bank branches per 100,000 adults	Firms with a bank loan or line of credit (%)	Small firms with a bank loan or line of credit (%)	Saved at a financial institution (% age 15+)	Received wages: into a financial institution	Credit card ownership (% age 15+)	Made digital payments in the past year (% age 15)	Paid utility bills: using a mobile phone (% age 15+)	ATMs per 100,000 adults	Loans requiring collateral (%)
Ethiopia	1.46	24.30	16.75	19.96	2.65	0.33	5.27	0.05	0.17	85.55
Botswana	8.67	38.60	30.80	20.34	17.00	9.28	35.92	6.70	31.07	73.75
Kenya	4.58	31.63	25.10	26.75	14.97	5.46	71.32	27.83	7.58	80.50
Indonesia	12.65	22.80	20.90	21.13	7.73	1.51	21.58	1.83	32.35	82.00
South Korea	17.27	.	.	51.65	43.34	58.70	87.04	7.97	260.64	.
Argentina	13.26	43.70	32.00	5.02	16.58	24.16	31.58	1.59	31.62	57.80
Chile	16.18	74.35	68.55	16.18	30.37	26.93	51.72	5.18	54.59	49.00
SSA- G	6.65	22.26	16.76	12.62	8.54	4.03	26.62	5.10	14.03	83.23
SSA –NG	6.16	16.28	12.81	8.83	4.02	2.25	16.47	4.63	7.34	80.98
SSA	6.41	19.27	14.79	10.73	6.28	3.14	21.55	4.87	10.69	82.11
High Income	33.20	47.30	42.51	42.27	46.17	41.99	79.27	8.24	87.41	70.46
Middle income	14.85	34.68	28.58	13.38	14.63	8.28	28.02	3.05	29.80	78.24
Low Income	2.66	18.73	14.24	7.32	3.52	1.70	15.03	3.06	2.68	85.42

Source: Authors' calculations from World Bank global financial development database, 2022

Note: SSA-G represents bank-globalized Sub-Saharan African countries, and SSA-NG is: Non-bank globalized Sub-Saharan African country.

Based on descriptive empirical evidence, bank globalized SSA countries have better banking service access than non-bank-globalized ones. On average (from 2005-to 2019), 21% of adults have access to bank accounts in countries that open their banking sectors to foreign investors. In contrast, only 12% of adults have access to bank accounts in SSA countries, which blocked foreign investors' entry into the banking sector. Moreover, in non-bank globalized SSA countries, only 7.34 ATMs provide banking services for 100,000 adults. However, in globalized countries, about 14.03 ATMs provide banking services for 100 000 adults. More people made digital payments in bank-globalized SSA countries (26.62%) than in non-bank globalized SSA countries (14.47%).

Overall, Table 3.1 shows that in all indicators of bank access, Ethiopia's performance was not satisfactory, at least at the SSA standard, and globalized SSA countries have better bank access performance than non-globalized SSA countries. Thus, the results of the descriptive statistics confirmed that allowing foreign banks entry into the domestic banking sector might improve the penetration of the banking industry in the country. This might be because foreign banks come with financial innovations such as smartphone technology, which is becoming more readily available, especially for the unbanked, as costs fall.

3.4.1.2. Depth of financial institutions in Ethiopia

The depth of financial development indicates how agents can use financial markets for savings and investment decisions and has strong links with long-term economic growth. It enhances the firm's and businesses' ability to invest in long-term and risky initiatives. A common indicator of financial deepening is domestic credit to the private sector as a percentage of GDP. Higher domestic credit to the private sector indicates the provision of productivity-enhancing financial services and high financial deepening (King and Levine, 1993). Other indicators used to measure the depth of the financial sector in the economy are deposit money banks' assets to GDP (%), nonbank financial institutions' assets to GDP (%), financial system deposits to GDP (%), life insurance premium volume to GDP (%), nonlife insurance premium volume to GDP (%), insurance company assets to GDP (%), stock market capitalization to GDP (%), and stock market total value traded to GDP (%).

Table 3. 2: Financial Depth

Country	Deposit money banks' assets to GDP (%)	Nonbank financial institutions' assets to GDP (%)	Financial system deposits to GDP (%)	Life insurance premium volume to GDP (%)	Nonlife insurance premium volume to GDP (%)	Insurance company assets to GDP (%)	Domestic credit to private sector (% of GDP)	Stock market capitalization to GDP (%)	Stock market total value traded to GDP (%)
Ethiopia	28.42	3.80	31.84	0.03	0.46	0.81	18.89	-	-
Botswana	30.56	4.48	42.00	2.14	0.89	16.71	28.53	-	-
Kenya	42.65		36.25	0.90	1.20	6.63	30.55	33.31	2.15
Indonesia	35.80	4.83	34.68	1.04	0.42	3.74	34.97	41.98	11.89
South Korea	118.41	7.22	91.36	6.51	3.96	51.30	132.76	84.86	128.74
Argentina	22.38	0.45	19.69	0.45	1.78	3.47	13.53	13.11	0.89
Chile	77.06	36.65	49.30	2.46	1.28	19.23	102.23	103.04	16.45
SSAG	32.21	23.37	29.65	0.98	0.76	7.53	24.41	63.99	12.74
SSNG	44.20	1.35	34.33	0.32	0.54	2.81	14.90	-	-
SSA	38.205	12.36	31.99	0.65	0.65	5.17	19.655	63.99	12.74
High Income	33.20	47.30	42.51	42.27	46.17	41.99	79.27	8.24	87.41
Middle income	14.85	34.68	28.58	13.38	14.63	8.28	28.02	3.05	29.80
Low Income	2.66	18.73	14.24	7.32	3.52	1.70	15.03	3.06	2.68

Source: Authors' calculations from World Bank global financial development database, 2022. Note: SSA-G represents bank-globalized Sub-Saharan African countries, and SSA-NG is: Non-bank globalized Sub-Saharan African countries.

Table 3.2 shows, the financial development depth in Ethiopia from 2005-2020 was very poor by any indicator. For instance, on average, from 2005-to 2020, domestic credit to the private sector (percentage of GDP) was about 18.89%, which is less than the SSA's average (21.17%), and it was worse compared to high-income countries (79.27%) and successful countries in financial liberalization such as South Korea (132.76%) and Chile (102.23%) in the same period.

The descriptive evidence for SSA countries shows that countries that open their banking sector to foreign ownership have higher bank service depth than countries that block their banking sector to foreign ownership. In bank-globalized SSA countries, domestic credit to the private sector as a share of GDP was 24.41 percent. On the other hand, in non-bank globalized SSA countries, the share of domestic credit to the private sector in GDP is only 14.90 percent.

3.4.1.3. The efficiency of a financial institution in Ethiopia

Cost controls and effective resource utilization are central to financial intermediary operations in a competitive environment. While innovations in service delivery through electronic system and consolidation movements in the financial industry are geared toward improving efficiency indicators, there is no consensus on what factors drive financial efficiency (Altunbas and Molyneux, 2001). The financial efficiency ratio is a quick and easy measure of a bank's ability to turn resources into revenue. The lower (higher) the ratio, the better, and an increase in the efficiency (inefficiency) ratio indicates either increasing costs or decreasing revenues.

Table 3.3 shows indicators of bank efficiency, such as bank net interest margin (%) and bank overhead costs to total assets (%). These indicators are lower in the Ethiopian banking sector than in SSA countries. The result shows operational efficiency remains relatively satisfactory compared to SSA's average.

Table 3. 3: Efficiency

Country	Bank net interest margin (%)	Bank lending-deposit spread	Bank overhead costs to total assets (%)
Ethiopia	5.08	3.42	3.53
Botswana	5.22	6.29	3.53
Kenya	8.21	7.78	5.64
Indonesia	5.76	5.02	3.27
South Korea	2.07	1.68	1.68
Argentina	6.58	6.76	6.13
Chile	4.06	3.27	2.45
SSA-G	6.35	10.33	5.44
SSA-NG	7.20	11.16	5.75
SSA	6.78	10.75	5.60
High Income	2.43	4.39	1.92
Middle income	5.35	7.79	4.05
Low Income	6.95	14.22	5.83

Source: Authors' calculations from World Bank global financial development database, 2022

Note: SSA-G represents bank-globalized Sub-Saharan African countries, and SSA-NG is: Non-bank globalized Sub-Saharan African countries.

Table 3.3 also shows that all indicators are higher in non-bank globalized SSA countries than in bank-globalized SSA countries from 2005-2020. These results show operational inefficiency to remain relatively higher in non-bank globalized SSA countries than in bank globalized countries.

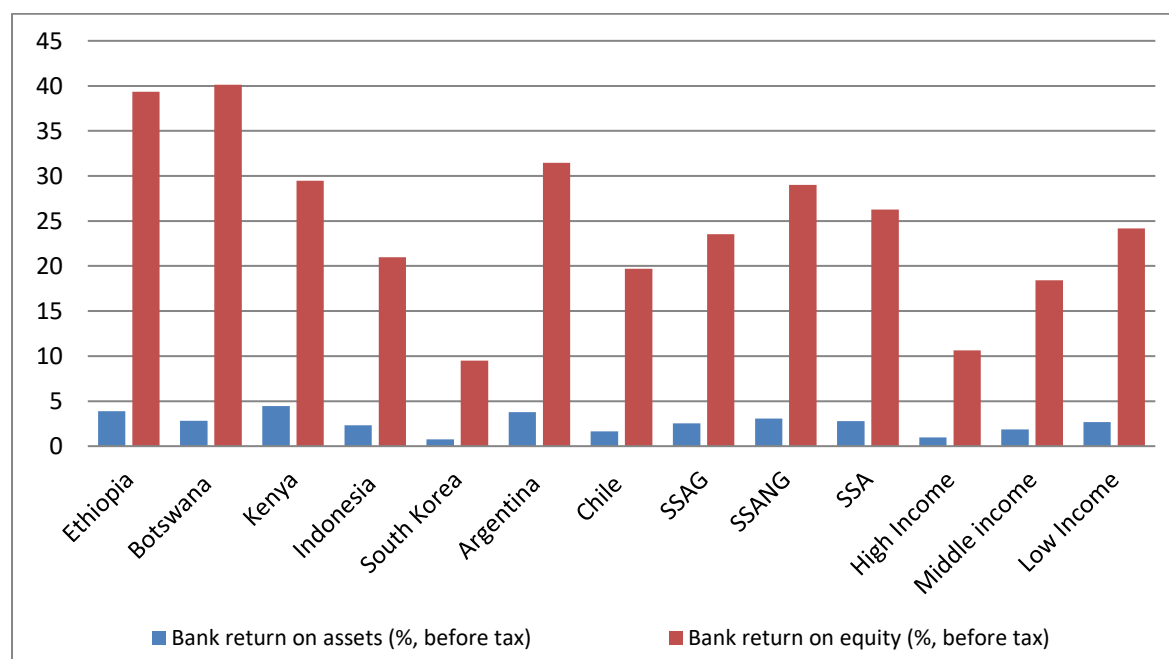
There is also empirical evidence showing a positive effect of foreign bank entry on bank efficiency. To mention a few, Bayraktar and Wang (2004) and Hunegnaw and Adem (2021) indicated that operational efficiency gains from foreign bank entry are higher in the countries that globalized their banking industry than in non-bank globalized countries. However, Hermes and Nhung (2010) revealed that the gains from liberalization were highest for countries that liberalized their stock markets first. The weakest relationship between the performance indicators and the foreign bank share is obtained for the countries which liberalized their capital account first.

3.4.1.4 Profitability of financial institutions

Bank profitability is proxied by return on assets (ROA) and return on equity (ROE). Figure 3.1 shows that the Ethiopian banking sector profitability is higher than the SSA average. This study also shows that non-bank globalized SSA countries' profitability is higher than bank-globalized SSA countries' average profitability.

Figure 3.1 also shows that Ethiopia's rate of return (ROA and ROE) is higher than many higher-income countries' average, which has the potential to come and invest in Ethiopia if our banking system is liberalized. This shows that the opening up of the financial sector will attract many financial institutions to Ethiopia to come and enjoy this higher return.

Figure 3.1: Rate of return



Source: Authors' calculations from World Bank global financial development database, 2022

3.4.1.5. Stability of financial institutions in Ethiopia

Table 3.4 indicates Ethiopia's relative position in financial sector stability compared to the SSA countries and advanced economies. Many financial stability indicators in IMF and World Bank

databases are missing. This creates doubt about the transparency of the banking sector and management in the Ethiopian financial sector. However, the bank Z-score is the basic indicator of stability used by many scholars, and the assets-to-deposits ratio is available. Using these indicators, Ethiopia has better financial soundness than the SSA average. The Z-score measures the probability of bank insolvency. The higher a bank's Z-score, the lower the bank's insolvency.

Table 3. 4: Financial sector stability

	Bank Z-score	Bank nonperforming loans to gross loans	Bank capital to total assets (%)	Bank regulatory capital to risk-weighted assets	Liquid assets to deposits and short-term funding (%)	Provisions to nonperforming loans (%)	Banking crisis dummy (1=banking crisis, 0=none)
Ethiopia	11.98	-	-		38.83	-	0.00
Botswana	6.73	4.23	8.96	19.56	26.13	57.60	0.00
Kenya	20.06	7.45	14.33	19.32	24.05	38.81	0.00
Indonesia	4.09	3.13	12.09	19.83	26.75	54.34	0.00
South Korea	11.26	0.58	7.92	13.95	13.58	70.59	0.00
Argentina	7.35	2.74	12.14	16.16	33.09	130.78	0.00
Chile	8.79	1.81	7.65	13.26	18.22	133.21	0.00
SSAG	14.39	8.43	11.08	18.34	34.64	58.14	0.01
SSNG	14.68	13.02	12.83	20.64	49.45	68.93	0.02
SSA	14.54	10.73	11.96	19.49	42.05	63.54	0.02
High Income	16.51	4.54	8.20	16.26	33.45	58.22	0.08
Middle income	16.97	6.84	11.44	17.77	34.78	78.57	0.01
Low Income	13.02	11.65	12.78	20.83	45.11	64.80	0.01

Source: Authors' calculations from World Bank global financial development database, 2022

Note: SSA-G represents bank-globalized Sub-Saharan African countries, and SSA-NG is: Non-bank globalized Sub-Saharan African countries.

Table 3.4 also indicates that the SSA countries that open their banking sector to foreign investors have better financial soundness than those that do not allow foreign ownership of their banking sector. However, this descriptive result is inconsistent with much empirical evidence on the relationship between foreign bank entry and banking stability. For example, Demirgüç-Kunt and Detragiache (2001) examined the relationship between banking crises and financial liberalization in 53 countries between 1980 and 1995 and found that banking crises were more likely to occur in countries whose financial system was liberalized and the institutional environment was weak. De Haas and Van Lelyveld (2014) and Dwumfour (2017) also argued that the presence of foreign banks intensifies the probability of banking sector crises in host countries.

3.4.1.6. Banking competition

Table 3.5 provides an overview of the competitiveness and ownership structure in the banking industries in Ethiopia relative to the SSA countries and other countries and groups of countries. The 5-bank and 3-bank asset concentration (percentages) capture bank competition. Table 3.5 shows that Ethiopia's banking environment is more competitive than the SSA countries on average. However, Ethiopia's banking environment is less competitive than the globalized banks of the SSA countries. This might be due to its close-door policy to foreign investors and the very late privatization of the banking industry.

Table 3. 5: Bank competition

Country	3-Bank concentration (%)	5-bank assets concentration
Ethiopia	72.28	86.10
Botswana	79.65	96.09
Kenya	50.95	66.96
Indonesia	36.40	48.59
South Korea	67.67	81.99
Argentina	51.04	64.32
Chile	68.92	85.41
SSA	80.44	88.35
SSG	70.96	83.94
SSNG	86.93	92.33
High Income	75.30	84.78
Middle income	67.26	77.64
Low Income	78.05	88.28

Source: Authors' calculations from World Bank global financial development database, 2022

Note: SSA-G represents bank-globalized Sub-Saharan African countries, and SSA-NG is: Non-bank globalized Sub-Saharan African countries.

Banking system in most SSA countries is characterized by high concentration, as measured by the share of banking assets held by the five largest banks. Table 3.5 shows that bank-globalized SSA countries have lower asset concentration among the top 5 banks than the non-globalized SSA countries. On average, the asset concentration among the top 5 banks in the non-globalized SSA countries is 86.93%. From this result, we can conclude that foreign bank presence increases bank competition in the SSA countries' banking sector, but we need to take caution here. Perhaps, other regional differences (for example, general development and regulations) influence the effect of foreign presence and asset concentration on competitiveness and efficiency, as hinted by Claessens and Horen (2014).

Generally, as shown in Table 3.6, the overall performance of Ethiopia's financial sector was not satisfactory during the 2005-2020 periods, at least compared to the African average. The result is worst compared to advanced markets. Moreover, bank-globalized SSA countries' overall financial performance was better than non-bank globalized ones.

Table 3. 6: Overall financial sector development

Country	FD Index	FI Access	FI Depth	FI Efficiency	FI Index	FM Access	FM Depth	FM Efficiency	FM Index
Ethiopia	0.11	0.02	0.05	0.73	0.21	0.00	0.02		0.01
LIC	0.12	0.11	0.07	0.51	0.21	0.01	0.04	0.01	0.02
Adv. Markets	0.59	0.63	0.58	0.63	0.67	0.47	0.49	0.49	0.49
SSAG	0.17	0.12	0.14	0.56	0.26	0.15	0.09	0.14	0.07
SSNG	0.10	0.10	0.06	0.46	0.18	0.00	0.04	.	0.01

Source: Authors' calculations from World Bank global financial development database, 2022

Note: SSA-G represents bank-globalized Sub-Saharan African countries, and SSA-NG is: Non-bank globalized Sub-Saharan African countries.

3.4.2. Ethiopia's financial sector competitiveness

The current study employed the Panzar-Rosse (P-R) model to assess the nature of competition in the financial institutions. The PR model is only valid if the market is in a long-run equilibrium. This long-run equilibrium was tested using a model in which the dependent variable is the total revenue on assets, and the independent variables are factor inputs (labor, capital, and fund), finance-specific and macro-economic variables.

3.4.2.1. Banking sector competition

Various researchers in different countries have adopted the Panzar-Rosse model (Panzar J. and Rosse J., 1987) to assess the nature of competition in banking institutions. This study also employed this model with the dependent variable as the total revenue on assets, and the independent variables are factor inputs (labor, capital, and fund), financial specific and macro-economic variables.

The Hausman test was conducted to estimate H-statistic, fixed, and random effect econometric estimations. The fixed-effects model was rejected in favor of the random-effects model. Thus, we applied the random effect to analyze bank competition in the Ethiopia's banking industry using the P-R model. To control the endogeneity, omitted variable bias, measurement error, and potential unobserved heterogeneity (Bond et al., 2001), a system of GMM estimators was employed. A System GMM estimator is a dynamic one which estimates the model in first differences and uses lagged values of the variables as instruments. We considered the results the most appropriate and valid in our empirical work. The static models estimated in the analysis utilized data for the whole sample period 1990-2020. However, the dynamic models have been estimated for 2010-2020. The reason for doing so is the problem of too many instruments, as large collections of instruments can overfit endogenous variables (Roodman 2009). The panels in all models were unbalanced due to a lack of data for some years.

The estimates for the coefficient of parameters (input prices) are all statistically significant, and the estimated H-statistic (income price elasticity) is 0.591 and 0.678 using the Random effects model and GMM approaches. GMM results are higher than random effect results; this might be due to improved competition in the Ethiopia's banking industry in later years. The results were consistent with the findings of Eshete et al. (2013), which was 0.629 from 2000-2007. The estimated H-statistic (0.591) also has no significant difference with African level H-statistics (0.54), as estimated by Bikker and Spierdijk (2009).

This study also found that all the three input prices were positive and statistically significant. The dependent variable, the total revenue divided by the total assets is positively related to the price of

funds (interest expense), the price of capital (proxied by overhead and operating expenses), and the price of labor (employee salary and other benefits expenses). All factor prices have positive signs, which implies that increased factor prices lead to a higher revenue-to-asset ratio and a higher H-statistic.

Table 3. 7: Banking competition in Ethiopia

TRTA	Random			Fixed			GMM (2010-2020)		
	Coef.	Std. E	P>t	Coef.	Std. E	P>t	Coef.	Std. E,	P>t
EET	0.240	0.030	0.000	0.211	0.039	0.000	0.229	0.113	0.042
IETD	0.257	0.027	0.000	0.246	0.030	0.000	0.360	0.139	0.010
OITFA	0.094	0.008	0.000	0.094	0.009	0.000	0.089	0.017	0.000
NPLTL	-0.027	0.013	0.031	-0.034	0.014	0.014	-0.084	0.072	0.248
GDP	0.031	0.021	0.149	0.023	0.022	0.297	-0.053	0.063	0.399
TA	-0.020	0.007	0.008	-0.010	0.010	0.313	-0.190	0.121	0.116
CONS	-5.042	0.200	0.000	-5.300	0.259	0.000	6.786	7.819	0.385
$H=\alpha_1+\alpha_2+\alpha_3$		0.591			0.551			0.678	
R square within			0.665			0.677			
R square between			0.812			0.775			
R square overall			0.742			0.724			
Wald chi2(6) (p-value)			456.86(0.00)						
Wald chi2(9) (P-value)							200.85(0.00)		
Prob> Chi2 (P-value)			65.78(0.00)						
Haus. Test -Chi(Prob)			7.08(0.333)						
Sargan Test -Chp(Prob)							4.40(3.55)		
AR(1)-Z(P-value)							-1.198(0.231)		
AR(2) Chi2(Prob)							-0.441(0.659)		
			0.3546(0.00)						
Number of Groups			216			216			90
Number of observations			16			16			15
$H=\alpha_1+\alpha_2+\alpha_3=0$		chi2(1) = 254.82			F(1, 197) = 132.17		chi2(1) = 36.61		
		Prob = 0.0000			Prob = 0.0000		Prob = 0.0000		
$H=\alpha_1+\alpha_2+\alpha_3=1$		chi2(1) = 121.78			F(1, 197) = 87.63		chi2(1) = 8.32		
		Prob = 0.0000			Prob= 0.0000		Prob = 0.0039		

Source: authors' calculation based on National Bank of Ethiopia's data, 2022

Where variables such as, EET, IETD, OITFA, NPLTL, GDP, and TA represent employee salary benefits expenses ratio to total assets, interest expense ratio to total deposit, operating income total fixed asset (proxy to depreciation to fixed assets), non-performing loans ratio to total loans, real gross domestic product and total asset respectively. Note: Because of the absence of data for non-performing loans, less provision for doubtful debts was considered as a proxy to this variable. All variables were transformed into natural logarithms before the estimation.

The first regressor, employee salary and other benefits expenses on total assets (EET) revealed that a high labor cost paid by banks to their employees increases the bank's revenue-generating capacity. This result is consistent with the prior empirical findings of Barros and Mendes (2016), Tan (2016), Tihir et al. (2016), and Rakshit and Bardhan (2020). This empirical evidence elucidated that a higher

financial benefit increases employees' morale, dedication, and loyalty to the organization and increases overall efficiency and productivity. This also increases the bank's income. The second regressor interest expense on assets (IETD) showed that the higher funding cost increased the bank's income. This result agrees with the former empirical findings of Neupane (2016), Barros and Mendes (2016); Tan (2016); Tihir et al. (2016); and Rakshit and Bardhan (2020). However, this result conflicts with the past study by Hall and Simper (2013). The third regressor, the ratio of non-interest expenses¹² to total assets as a proxy for the price of physical capital (NETA), has a positive effect on total revenue from assets and is statistically significant.

Control variables such as the ratio of non-performing loans to total loans and total assets negatively explained the total revenue to total assets, which is statistically significant. The result for asset size is consistent with a study by Hamza (2011) and Owusu-Antwi and Antwi (2013), who found a negative relationship between bank assets and revenue generation. Similarly, the sign of a nonperforming loan is consistent with a study by Simpasa (2013) in Zambia, which found a negative and significant relationship. On the other hand, GDP growth is positively related to the H-statistic but not statistically significant. The insignificant positive relationship between GDP and total revenue may imply that it does not matter whether the economy is growing or not. The test for the long-run equilibrium was undertaken using the Wald coefficient restriction test. The null hypotheses on the long-run equilibrium in the Ethiopia's banking sector ($\alpha_1 + \alpha_2 + \alpha_3 = 0$) and $\alpha_1 + \alpha_2 + \alpha_3 = 1$ were tested at the significance level of 5% using the Wald test, and the null hypothesis $H = 0$ had to be rejected ($\chi^2(1) = 254.82$ and Prob = 0.000) as well as the hypothesis $H = 1$ with ($\chi^2(1) = 121.78$ and Prob = 0.000) using the Wald test. This shows that the banking sector in Ethiopia is neither a monopoly nor perfectly competitive. The Ethiopia's banking sector can; therefore, be described as a monopolistic competition. This study supports Bikker and Haaf (2002), who argued that monopolistic competition is ideal because the sector is prone to product differentiation.

The result has an implication for financial sector liberalization policy, for which the Ethiopian government needs to know about the possible consequences of liberalization. For instance, the result shows that all factor prices have positive signs, which indicates that increased factor prices lead to a higher revenue-to-asset ratio and higher H-statistic. The higher the H-statistics, the more competitive the industry is. Thus, the presumption of the banking industry market after liberalization will be fierce competition. Because of this, the current finding indicates that the banking industry needs to spend on the labor with different incentives since higher financial benefit increases employees' morale, dedication, and loyalty to the organization, and increases banks' overall efficiency and productivity. By the same logic, the higher the funding cost and the price of physical capital, the higher the bank's revenue and income. Therefore, this finding is both useful evidence for the current banking industry in Ethiopia to experiment in advance and a foresight signal for the banking industry after liberalization to cope with the fierce competition with the potential entrants.

3.4.2.2. Insurance sector competition

As we stated earlier, the PR model is only valid if the market is in a long-run equilibrium. This long-run equilibrium was tested by a model in which the dependent variable is the total revenue on assets, and the independent variables are factor inputs (labor, capital and fund), financial specific and macroeconomic variables. The test for the long-run equilibrium was undertaken using the Wald

¹² Sanderson and Roux (2016) used non-interest expenses such as operating and general expenses to total asset ratio as proxy to capital expenses.

coefficient restriction test. The null hypotheses on the long-run equilibrium in the Ethiopia's insurance sector ($\alpha_1 + \alpha_2 + \alpha_3 = 0$) and ($\alpha_1 + \alpha_2 + \alpha_3 = 1$) were tested at the significance level of 5% using the Wald test, and the null hypotheses were rejected.

Table 3. 8: Insurance competition in Ethiopia

TRTA	Random			Fixed			GMM (2010-2020)		
	Coef.	Std. E	P>t	Coef.	Std. E	P>t	Coef.	Std. E,	P>t
EET	0.191	0.042	0.000	0.185	0.049	0.000	0.110	0.197	0.576
DTFA	0.097	0.024	0.000	0.105	0.025	0.000	0.004	0.082	0.959
GAETA	0.051	0.022	0.019	0.044	0.026	0.093	0.359	0.200	0.073
EC	0.303	0.079	0.000	0.258	0.096	0.009	0.158	0.220	0.474
PE	0.411	0.026	0.000	0.402	0.031	0.000	0.314	0.069	0.000
TA	-0.035	0.022	0.119	-0.026	0.075	0.727	-0.288	0.218	0.187
GDPG	-0.005	0.067	0.935	-0.029	0.024	0.243	0.208	0.119	0.081
OCPC	-0.020	0.034	0.557	-0.020	0.035	0.579	0.041	0.050	0.405
CONS	0.977	0.488	0.045	0.758	0.547	0.171	-3.986	2.812	0.156
$H = \alpha_1 + \alpha_2 + \alpha_3$	0.339			0.334			0.474		
R square within		0.826			0.827				
R square between		0.923			0.913				
R square overall		0.865			0.858				
Wald chi2(6) (p-value)		Wald chi2(6) = 404.66 with P = 0.000		F(8,61) with P=0.000			Wald chi2(9) = 36.54 with P=0.000)		
Haus. Test -Chi(Prob)							2.55((0.959)		
Sargan Test -Ch(Prob)							Chi2(11) = 14.72888		
							Prob> = 0.1952		
Walid Test							Wald chi2(9) = 176.18		
							Prob> = 0.0000		
Number of Groups							8		
Number of observations							43		
$H = \alpha_1 + \alpha_2 + \alpha_3 = 0$		chi2(1) = 54.45 Prob> chi2 = 0.000		F(1, 61) = 41.67 Prob> F = 0.0000			chi2(1) = 33.79 Prob> chi2 = 0.000		
$H = \alpha_1 + \alpha_2 + \alpha_3 = 1$		hi2(1) = 205.98 Prob> chi2 = 0.0000		F(1, 61) = 166.04 Prob> F = 0.0000			chi2(1) = 34.43 Prob> chi2 = 0.000		

Source: author's calculation based on National Bank of Ethiopia's Data, 2022

Where variables TRTA, EET, DTFA, GAETA, EC, PE, TA, GDPG and OCPC represent total income to total assets, employee salary and benefits expenses, depreciation expenses to total fixed assets, and general and administrative expenses to total assets as a proxy for interest expenses, Paid-up capital to total asset, net profit after tax to total paid-up capital, total assets, GDP growth and OCPC=Outstanding claim to total paid-up capital respectively. All variables were transformed into natural logarithms before the estimation.

Our regression model, Panzar-Rosse's H-statistic, is given by $H = \alpha_1 + \alpha_2 + \alpha_3$. These coefficients are estimated using a fixed-effect panel procedure. This approach was preferred based on the Hausman test result. Additionally, a system GMM model was applied to assess the robustness of

the results. However, the results of GMM were not good due to small observations. Panzar-Rosse's E-statistic estimation for the Ethiopian insurance industry was based on annual balance sheet data from the insurance companies. The data covers the period 1996-2020 and includes 17 insurance companies in the general insurance sector. However, our system's GMM panel includes only eight companies due to missing or nonmeaningful values for some variables. The panel is unbalanced due to a lack of data for some years.

The estimates for the coefficients of parameters are all statistically significant, and the estimated H-statistic (income price elasticities) is 0.334 and 0.474 using the fixed effects and system GMM approaches, respectively. The outcomes of the reduced-form revenue model showed that the input prices were positively and significantly associated with the total revenue on assets. In each model, we performed Wald tests to check whether the estimated H-statistic is different from zero and unity. In all the three models, the H-value differs significantly from zero and unity (at the 1% level). These results suggest that the insurance market structure differed from a perfect competition and a monopoly during the period under consideration. The firm-specific control variable, total asset-firm size (TA) has a negative sign but is not statistically significant. The macro-economic variable, real GDP growth, was negative but not statistically significant in the fixed effect model, but the result was positive and statistically significant in the GMM result.

The result of the insurance industry reveals similar characteristics with the banking industry and has similar implications for the financial sector's liberalization policy. The result shows that the insurance industry's market is a monopolistic competitive (H-statistics 0.334), and the input prices have a positive and significant influence on the insurance industry's total revenue to assets ratio. Therefore, this finding is useful evidence for the current insurance industry in Ethiopia to exercise competition in advance, prepare, and know what to do during financial sector liberalization to cope with the fierce competition with the potential entrants.

3.4.2.3. Microfinance sector Competition

This study also investigated the extent of the competition in the microfinance sector as part of a financial institution applying the Panzar-Rosse (P-R) model. The data covers the period 2010-2020 and includes 38 MFIs. Many empirical studies (for instance, Shaffer, 1982) and Kar and Swain (2018), used return on assets as a dependent variable instead of total revenue.

Our regression model of long run equilibrium is given by $E = \alpha_1 + \alpha_2 + \alpha_3$. These coefficients are estimated using a random-effects panel procedure. This approach was preferred based on the Hausman test result. Additionally, the system GMM Model was applied to assess the robustness of the results.

Where, P_l is the price of labour, and its proxy is the ratio of personnel expenses to total assets, the price of funds, P_f , is measured as the ratio of interest expenses to total deposits, and price of physical capital, P_k , is defined as the ratio of depreciation and administrative expenses to the total assets. Ca represents capitalization MFIs; its proxy is capital-assets-ratio; and La represents the outstanding loan to total assets ratio. The loans-to-assets ratio is used as a control variable for their business and portfolio mix. To control for the potential effects of an MFI's size, we include $Size_{it}$, the total assets and GDP to control macroeconomic effects.

Thus, both static and dynamic revenue tests consistently confirmed the validity of the methodology we applied and acted as an additional tool for robustness checks. This shows that the microfinance sector in Ethiopia is neither a monopoly nor perfectly competitive. Thus, the Ethiopian microfinance sector can also be described as monopolistic competition since the H-statistic is between

0 and 1. However, there is scope to make these markets more competitive by creating a more conducive atmosphere for the participation of other MFIs and reducing unnecessary restrictions on their activities. Caution must be maintained, as promoting competition may not improve the incumbent socially motivated MFI's financial sustainability and outreach performance and may result in mission drift concerns. The competitive microfinance industry may not guarantee the better performance of an MFI, whereas the monopoly of an altruistic MFI can be good for its clients. Owing to competitive pressures, MFIs cannot always pass an increase in input prices on to their clients. Achieving financial sustainability and balancing it with higher outreach are ongoing challenges for MFIs, and they must improve their efficiency by reducing costs.

Where Pl is the price of Labour, and its proxy is the ratio of personnel expenses to total assets; the price of funds, Pf , is measured as the ratio of interest expenses to total deposits; and the price of physical capital, Pk , is defined as the ratio of depreciation and administrative expenses to total assets. Ca represents capitalization MFIs; its proxy is capital-assets-ratio; and La represents the outstanding loan to total assets ratio. The loans-to-assets ratio is used as a control variable for their business and portfolio mix. To control for the potential effects of an MFI's size, we include $Size_{it}$, the total assets and GDP to control macroeconomic effects.

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Table 3. 9: Microfinance competition in Ethiopia

ROA	Random			Fixed			GMM (2010-2020)		
	Coef.	Std. E	P>t	Coef.	Std. E	P>t	Coef.	Std. E	P>t
Pf	-0.054	0.038	0.161	-0.121	0.046	0.010	-0.052	0.083	0.529
Pl	-0.174	0.050	0.000	-0.236	0.056	0.000	-0.162	0.046	0.000
Pk	-0.016	0.018	0.384	-0.023	0.018	0.216	0.003	0.014	0.846
Ca	0.182	0.065	0.005	0.257	0.072	0.001	-0.080	0.090	0.375
L	0.251	0.072	0.001	0.165	0.079	0.040	0.207	0.113	0.067
Size	0.047	0.021	0.022	0.089	0.032	0.006	-0.008	0.029	0.773
GDP	0.115	0.101	0.256	0.086	0.113	0.446	-0.019	0.071	0.794
Con	-0.499	0.161	0.002	-0.845	0.253	0.001	-0.229	0.199	0.250
$E=\alpha_1+\alpha_2+\alpha_3$	-0.244			-0.38			-0.211		
R square within	0.321			0.3578					
R square between	0.282			0.1544					
R square overall	0.138			0.0677					
	Wald chi2(7) = 62.35			F(7,114) 9.07			Wald chi2(9) = 926.15		
	Prob> chi2 = 0.000			Pob = 0.000			Prob> chi2 = 0.000		
Haus. Test -Chi(Prob)	chi2(7) = 11.18								
	Prob>chi2 = 0.131								
Sargan Test -Chp(Prob)							chi2(6) = 6.918382		
							Prob> chi2 = 0.3285		
AR(1)-Z-(P-value)							-1.9421	0.0521	
AR(2)							-.82702	0.4082	
Chi2(Prob) =									
Number of Groups	32			32			23		
Number of observations	153			153			86		
	chi2(1) = 17.38			F(1, 114) = 33.20					
$H=\alpha_1+\alpha_2+\alpha_3=0$	Prob> chi2 = 0.000			Prob> F = 0.000			chi2(1) = 5.33		
							Prob> chi2 = 0.021		
$H=\alpha_1+\alpha_2+\alpha_3=1$	chi2(1) = 453.21			F(1, 114) = 437.31			chi2(1) = 174.96		
	Prob> chi2 = 0.000			Prob> F = 0.000			Prob> chi2 = 0.000		

Source: authors' calculation based on National Bank of Ethiopia's Data, 2022

Where Pl is the Price of Labour, and its proxy is the ratio of personnel expenses to total assets; price of funds, Pf, is measured as the ratio of interest expenses to total deposits; and price of physical capital, Pk, is defined as the ratio of depreciation and administrative expenses to total assets. Ca represents the capitalization of MFIs, its proxy is capital-assets-ratio, and L- represents the outstanding loan-to-total assets ratio (a proxy for Loans-to-assets ratio) and is used as a control variable for their business and portfolio mix. To control for potential effects of MFI's size, we include $Size_{it}$, that is, the total assets and GDP to control macroeconomic effect. All variables were transformed into natural logarithms before the estimation.

Table 3.9 shows that the coefficients on the proxies for the input prices are negative and statistically significant for the MFI in Ethiopia. The result is consistent with a study by Kar and Swain (2018) for Indonesia and Peru. Negative and significant coefficients indicate the presence of excess capacity in Ethiopia's microfinance industries. As Bikker, Shaffer, and Spierdijk (2009) explained, a negative H-statistic may also arise under long-run competition with a constant average cost and short-

run competition. The negative coefficients of the input prices increased factor costs, leading to lower returns on assets. This could also indicate cost-cutting efforts by MFIs.

Table 3.9 also shows the coefficients of the control variables. The effects of the loan-to-assets ratio and total assets on the return on assets were positive. These results confirmed the positive effects of MFI size (economies of scale) on the return on assets and the positive effect of the capitalization (capital to total assets ratio) variable (though statistically insignificant) for the MFIs in Ethiopia. The results indicate that improved capitalization and asset size may raise the return on assets.

The null hypotheses on the long-run equilibrium in the Ethiopian MFI sector ($\alpha_1 + \alpha_2 + \alpha_3 = 0$) and $\alpha_1 + \alpha_2 + \alpha_3 = 1$) were tested and rejected using the Wald test and significant at the significance level of 5 %. Instead, $\alpha_1 + \alpha_2 + \alpha_3 = -0.244$ for random effect and -0.22 at GMM model estimation. The null hypothesis $H = 0$ had to be rejected ($\chi^2(1) = 17.38$ and $\text{Prob} = 0.000$) as well as the hypothesis $H = 1$ with ($\chi^2(1) = 453.21$ and $\text{Prob} = 0.000$) using the Wald test.

The Ethiopian microfinance sector can also be described as having monopolistic competition since the H-statistic is between 0 and 1. The coefficients on the proxies for the input prices are negative and statistically significant for the MFI in Ethiopia, showing the presence of excess capacity in Ethiopia's microfinance industries. Thus, there is scope to make these markets more competitive by creating a more conducive atmosphere for the participation of other MFIs and reducing unnecessary restrictions on their activities. Since microfinance has dual objectives and promoting competition may not improve the incumbent socially motivated MFI's financial sustainability and outreach performance, there shall be a cautionary effort that could work for both purposes. Thus, the result implies that the existing microfinance institutions must improve their efficiency by reducing costs and getting prepared for the possible fierce competition after liberalization.

3.4.3. Determinants of Ethiopia's financial sector performance

This section analyzes the determinants of the financial sector, including financial sector competition (an indirect proxy for financial liberalization).

3.4.3.1. Determinants of banking sector performance

According to Chris Brooks (2008), if the p-value for the Hausman test is less than 1%, the random-effects model is inappropriate, and the fixed-effects specification is preferred. Based on this fact, the p-value for the Hausman test was 0.000, i.e., less than 1%, so a running fixed effect model is appropriate. The fixed-effect model suggested that bank-specific variables such as asset liquidity (AL), asset quality (AQ), and loan-to-deposit ratio (LD) are found to be positive and statistically significant, while leverage ratio (Leb) and management efficiency have a negative sign and are statistically significant.

Table 3. 10: Determinants of banking sector performance

ROA	Random			Fixed			GMM (2010-2020)		
	Coef.	Std. E	P>t	Coef.	Std. E	P>t	Coef.	Std. E	P>t
CA	0.018	0.158	0.910	-0.471	0.176	0.008	-1.857	1.740	0.286
AL	0.228	0.156	0.145	0.353	0.153	0.023	0.330	0.428	0.441
TA	-0.030	0.067	0.652	-0.009	0.101	0.927	-0.104	0.226	0.646
AQ	0.035	0.066	0.601	0.008	0.081	0.920	0.397	0.203	0.050
ME	-0.345	0.126	0.006	-0.332	0.137	0.017	-0.008	0.252	0.973
IS	-0.043	0.064	0.499	0.132	0.086	0.126	0.139	0.283	0.623
LD	0.617	0.255	0.016	0.694	0.297	0.021	0.717	1.161	0.537
Fivatm	0.265	0.059	0.000	0.258	0.088	0.004	0.357	0.225	0.113
Inf	0.060	0.053	0.251	0.090	0.050	0.075	0.056	0.045	0.213
GdpG	0.523	0.270	0.052	0.776	0.298	0.010	0.512	0.267	0.055
Cons	-1.087	1.452	0.454	-5.719	1.994	0.005	-12.242	10.361	0.237
R square within	0.133			0.202					
R square between	0.108			0.366					
R square overall	0.141			0.030					
	Wald chi2(10) =27.68			F(10,161) = 4.07			Wald chi2(12) = 55.07		
	Prob = 0.002			Prob = 0.000			Prob = 0.0000		
Haus. Test -Chi(Prob)	50.11 (0.000)								
Sargan Test -Chp(Prob)							1.212(1.000)		
Number of Groups	15			15			27		
Number of observations	186			186			156		

Source: authors' calculation based on National Bank of Ethiopia's Data, 2022

Where variables CA, AL, TA, AQ, ME, IS, LD, Fivatm, Inf, GDPg represent leverage (equity to total asset), asset liquidity (liquid asset to totals asset), management efficiency (ratio of general expenses to total assets), interest spread, loan to total deposit ratio, mobile subscribers per 100,000 adults, inflation and real GDP growth respectively. All variables were transformed into natural logarithms before the estimation.

Table 3.10 shows that the leverage ratio (equity to total assets) has a negative effect on the bank's rate of return. It is one of the bank-specific factors that influences bank profitability. As revealed in an interview with NBE management members, Ethiopia has been working to introduce Basel III before globalizing the banking sector. Basel III established a 3% minimum requirement for the leverage ratio while opening the possibility of systematically increasing that threshold for important financial institutions. This shows that the introduction of Basel III may reduce the bank's return through the leverage threshold effect.

The bank's management or operational efficiency, measured by the general expense ratio to net income, has a negative effect on ROA and is statistically significant. The negative sign of the ME variable shows the negative relationship between operational inefficiency (cost-income ratio) and the performance of Ethiopian commercial banks. The result of the study implies that more operationally efficient commercial banks reported higher profits than those commercial banks that had poor expense management over the study period. Therefore, one factor that negatively affects the banks' profitability is the failure of management to control costs. The result of the study is consistent with Pasiouras and Kosmidou (2007) and Kosmidou (2008), among others. This management efficiency implies

liberalization; hence, international banks will come with high management efficiency, and domestic banks shall improve their management efficiency to overcome stiff competition from international banks.

Table 3.10 also shows that the loan-to-deposit ratio positively affects the profitability of banking firms in Ethiopia. Loans are the most important indicators of the bank's performance in its financial statements because they reflect its primary activity. Assuming, other variables are constant; the higher the rate of transforming deposits into loans, the higher the profitability. A positive relationship between the loan deposit ratio and the bank's profitability is expected. The bank with the higher loan-to-deposit ratio (which indicates lower liquidity) may have a higher performance. This finding differs from previous studies, which found a negative correlation between liquidity and bank performance (Elyor, 2009; Jha and Hui, 2012; Liu and Pariyaprasert, 2014). The interest spread used as a proxy for banking liberalization positively affects banking sector performance but is not statistically significant. It is known that when the banking sector is globalized, interest rate spreads will decrease, so it may have a negative effect on the banking sector's performance in Ethiopia, but it is difficult to conclude because it was found to be statistically insignificant.

Similarly, GDP growth, ATMs per 100,000 adults (five ATMs) and inflation have positive and statistically significant effects on the ROA of a bank. GDP growth varies over time but not among the banks. GDP growth is expected to positively impact bank profitability (Bikker, and Bos, 2006; Athanasoglou et al., 2006) because bank profitability increases when GDP rises as the demand for lending increases. Additionally, a growing economy enables businesses to operate more efficiently. GDP, in particular, has a significant positive effect on banks' performance (Emase, 2017; Matar et al., 2018; Tahsin & Gülşah, 2018). Inflation is also a macroeconomic variable that positively affects a bank's performance. This conclusion is consistent with many empirical studies (Miguel et al., 2018; Gilbert and Jaya, 2019; and Almansour et al., 2021).

This result has an important implication for financial sector liberalization policy, for which the Ethiopian government needs to know the possible consequences of liberalization. The empirical results showed that firm characteristics, industry-specific variables, and macroeconomic variables were determinants of financial performance. In contrast, leverage (Leb), asset liquidity (AL), management efficiency (ME), loan-to-asset ratio, ATM per 100 000 adults, inflation, and GDP growth were found to be the main determinants of the banking sector in Ethiopia, while total asset (TA), asset quality (AQ), and interest rate spread were factors that did not affect the sector's performance. For instance, operational efficiency leads to an increase in profit in the banking industry; a higher loan-to-deposit ratio positively affects the profitability of banking firms; and financial innovation improves banking performance. In addition, the interest spread used as a proxy for banking liberalization positively affects banking sector performance. Thus, by paying more attention to firm-specific variables and macroeconomic dynamics, the banking industry can outperform and resist potential entrants due to liberalization policy.

3.4.3.2. Determinants of insurance sector performance

In this study, we used a model that studied the effect of specific variables of a firm (age, size, leverage, liquidity, tangibility, managerial efficiency, investment to asset ratio, growth of firm) and the macroeconomic variable real GDP on the performance of the Ethiopian insurance sector. This study focused on seventeen insurance companies for a period (from 1996-2020). The study used ROA ratio (return on assets) as a measure of performance that will be regressed in terms of the explanatory variables. This model was adopted by Derbali (2014). Fixed effects and random effects econometric

models for panel data were applied to examine the impact of the independent variable on the dependent variable. To identify the appropriate model for study, we have conducted a Hausman test against the hypotheses: H0: A random-effect model is appropriate and H1: A fixed-effect model is appropriate.

Table 3. 11: Determinants of insurance sector performance (ROA)

ROA	Random			Fixed			GMM (2010-2020)		
	Coef.	Std. E	P>t	Coef.	Std. E	P>t	Coef.	Std. E	P>t
LnAge	-0.409	0.108	0.000	-0.310	0.205	0.134	-0.715	0.974	0.463
LnSize	0.336	0.084	0.000	0.248	0.124	0.050	0.398	0.312	0.203
LnLeverage	-1.724	0.424	0.000	-1.694	0.491	0.001	-1.435	0.902	0.112
Lnliquidity	0.991	0.295	0.001	0.917	0.314	0.005	0.746	0.596	0.211
TA	-0.279	0.088	0.002	-0.217	0.103	0.039	-0.358	0.265	0.177
ME	-0.116	0.052	0.025	-0.128	0.066	0.058	-0.883	0.189	0.000
LnIV	-0.169	0.046	0.000	-0.173	0.057	0.003	-0.051	0.062	0.411
LnGF	0.005	0.056	0.930	0.066	0.061	0.285	-0.048	0.058	0.407
LnGDP	0.016	0.213	0.939	0.067	0.222	0.763	0.177	0.209	0.395
Cons	-9.857	1.599	0.000	-8.215	2.086	0.000	-12.732	4.110	0.002
R square within	0.378			0.390					
R square between	0.625			0.461					
R square overall	0.332			0.265					
	Wald chi2(9) = 56.32			F(9,77) = 5.47			Wald chi2(11) = 67.97		
	Prob= 0.0000			Prob = 0.0000			Prob = 0.0000		
Haus. Test -Chi(Prob)	chi2(9) = 8.80								
	Prob = 0.456								
Sargan Test -Chp(Prob)							chi2(12) = 15.14788		
							Prob = 0.2334		
Number of Groups	17			32			7		
Number of observations	196			153			42		

Source: authors' calculation based on National Bank of Ethiopia's Data, 2022

Where leverage, liquidity, TA-tangibility, ME-management efficiency, IV-investment to assets ratio, GF-growth of the insurance firm, GDP-Gross domestic product. Ratios can be calculated as ROA=Net profit before tax/Total Asset, ME= administrative and general expense/total income; leverage = total debt/total asset; liquidity=current asset/current liability; tangibility= total fixed asset/total asset; size=total asset. All variables were transformed into natural logarithms before the estimation.

As shown in Table 3.11, the Hausman specification test for this study has a p-value of 0.456 for the regression models. This indicates that the p-value is not significant, and then the null hypothesis is not rejected, justifying a random effect model as appropriate for the given data set in this study. Table 3.11 shows the results of the independent variables from the random effect regression model, and the overall model is significant (P-value = 0.000) with an adjusted R² of about 37.8%. This indicates that the explanatory variables explain about 37.8 percent of the insurance sector's financial performance variation.

Random results show that about seven of the independent variables, like the firm's age, leverage of the firm, liquidity of the firm, tangibility, management efficiency, and investment-to-assets ratio, have a significant effect on the performance of an insurance company. Furthermore, the study's main

findings regarding the factors that affect the financial performance of insurance companies are discussed below.

As the above result shows, the coefficient of the leverage ratio is negative (-1.724) and statistically significant. Leverage is measured by the debt-to-equity ratio and considers the firm's capital structure and the evaluation of the relative risk and return associated with long-term debt and equity. The result shows a significant and negative association between leverage and ROA. This implies that, holding all other factors constant, a 1% increase in the leverage of insurance firms in Ethiopia led to, on average, a 1.724% fall in their financial performance. The result is consistent with prior studies such as Suheyli (2015), Meaza (2014), Mirie M. and Jane W (2015), Andres and Stephen (2013), and Nikhel B. et al. (2015).

Table 3.11 also depicts that the coefficient of liquidities measured by current assets to current liability is 0.991, and the p-value is significant. There is a significant positive relationship between Ethiopian insurance companies' liquidity and return on assets (ROA). The result is consistent with previous studies: Hadush (2015), Hana (2012), Mirie and Jane (2015), Behaylu (2017), and Suheyli (2015), which the liquidity ratio has a positive relationship with the financial performance and profitability of firms. When the firm's liquidity improves, its financial performance will also improve.

The coefficient of real GDP of 0.016 was positive, but it was not statistically significant, with a p-value of 0.939. As far as economic growth is concerned, several studies have tried to measure its influence on insurance companies' profitability; for instance, Meaza (2014), Hana (2015), Mister (2015), and Teklit and Jasmindeep (2016), which showed that GDP has a positive but insignificant relationship with ROA, which is a proxy for profitability.

The regression coefficient of management efficiency (administrative and general expenses/total income) was 0.116 with a p-value of 0.025. The result suggested a negative and significant relationship between ROA and management efficiency. This means managerial efficiency greatly improves the financial performance of insurance companies in Ethiopia. The result suggested that insurance companies should focus on the competency of the management team. When the capabilities of the management team increase, it leads to the company's performance increasing. This may be due to professional help from the insurance company in managing risks, finding and creating investment options, efficient use of resources, and working capital management. The result is similar to Almajali's (2012) and Wangugu's (2012) findings, indicating that management competency strongly influences profitability.

The coefficient of growth of the firm was positive 0.005 and statistically insignificant, with a p-value of 0.930, which is above 5%. The coefficient of investment ratio is -0.169 and statistically significant at a 5% significance level with a p-value of 0.025, lower than 0.05. The results show that the coefficient on size (scale) is positive (0.336). Company size is computed as the natural logarithm of the insurance company's total assets. The regression result of the study revealed that there are significant and positive relationships. Thus, large insurance companies in Ethiopia are more efficient than smaller ones. The result was consistent with other prior studies such as Suheyli (2015), Bahailu (2016), and Burca and Batrinca (2014). In contrast, the coefficient on age is negative (-0.409). Thus, younger insurance companies in Ethiopia are more efficient than those of older ages.

With regard to the insurance industry, the finding has some implications for financial sector liberalization policy. For instance, the results show that managerial efficiency greatly improves the financial performance of insurance companies in Ethiopia. Thus, with the presumption that the insurance industry will face tough competition when the sector is opened up to the rest of the world, in

order to cope with the shock, the domestic insurance industry needs to work on operational efficiency in advance. When the capabilities of the management team increase, it leads to the company's performance increasing. Regarding leverage, the insurance industry needs to properly handle the debt-to-equity ratio, consider the firm's capital structure, and evaluate the relative risk and return associated with long-term debt and equity. So, the insurance industry can perform better in the liberalized financial sector.

3.4.3.3. Determinants of MFIs' performance

This study sought to establish the determinants of the financial performance of microfinance institutions in Ethiopia. Therefore, the study employed the Ngumo et al. (2020) equation to examine the determinants of the financial performance of MFIs in Ethiopia. The study used the ROA (return on asset) as a measure of performance that will be regressed in terms of the explanatory variables. Independent variables include capital adequacy (CA), equity to total assets (ETA), asset quality (AQ), liquidity ratio to total assets (LTA), total asset (TA), management efficiency (ME), interest spread (IS), gross domestic product growth (GDPg), ownership (Owner), and inflation (Inf) in the GDP deflator (annual %).

Fixed-effect and random-effect econometric models for panel data were applied to examine the impact of an independent variable on the dependent variable. To identify the appropriate model for study, we have conducted a Hausman test against the hypotheses: H0: A random-effect model is appropriate, and H1: A fixed-effect model is appropriate.

As shown in Table 3.12, the Hausman specification test for this study has a p-value of 0.000 for the regression models. This indicates that the p-value is significant, and then the null hypothesis is rejected, as a fixed effect model is appropriate for the given data set in this study. The results in Table 3.12 indicate that the R-square value is 0.875 for our appropriate model, which indicates that the independent variables (capital adequacy, equity to total assets, asset quality, liquidity ratio, total assets, management efficiency, interest spread, GDP, ownership, inflation) explain 87.5% of the variation in the dependent variable (financial performance) of MFI. Additionally, the results indicate that the F statistic value is 15.58 with a p-value of 0.000, which is less than the significance value of 0.05 ($0.000 < 0.05$) hence, an indication that the regression model is significant and a good predictor of the relationship between the independent variables and the dependent variable. The results also indicate a statistically positive and significant relationship between inflation, ownership, interest spread, management efficiency, liquidity ratio, asset quality, capital an operational efficiency, and financial performance of microfinance institutions in Ethiopia. The findings are similar to those of Yenesew (2014), who found that operational or management efficiency and size of MFIs significantly affect MFIs' financial performance. Sudharika and Madurapperuma (2016) also found that operational efficiency and capital adequacy ratios significantly affect MFIs' financial performance. On the other hand, total assets (size of firm), GDP, and equity to total assets negatively affect the financial performance of MFI.

Table 3. 12: Microfinance Performance (ROA)

ROA	Random			Fixed			GMM (2010-2020)		
	Coef.	Std. E	P>t	Coef.	Std. E	P>t	Coef.	Std. E	P>t
CA	2.917	1.408	0.038	1.575	2.190	0.158	0.564	2.020	0.780
ETA	-1.407	0.431	0.001	-2.415	0.330	0.000	0.257	0.754	0.733
AQ	0.322	0.123	0.009	0.084	0.141	0.558	0.007	0.145	0.963
LTA	1.016	0.335	0.002	0.241	0.313	0.450	-0.359	0.410	0.381
TA	-0.902	0.559	0.107	-0.428	0.449	0.351	-0.152	0.865	0.861
ME	-1.831	1.055	0.083	-2.798	1.066	0.016	-1.312	0.956	0.170
IS	0.986	0.627	0.116	0.135	0.491	0.786	0.481	0.773	0.534
GDP	0.383	0.321	0.232	-0.130	0.226	0.572	-0.419	0.226	0.064
Owner	1.702	0.425	0.000						
Inf	0.197	0.142	0.167	0.066	0.097	0.506	0.118	0.094	0.209
Constant	0.486	1.794	0.787	-1.279	3.582	0.725	-9.668	5.167	0.061
R square within	0.625			0.875					
R square between	0.912			0.081					
R square overall	0.776			0.231					
	Wald chi2(10) = 93.32			F(9,20) = 15.58			Wald chi2(10) = 27.55		
	Prob = 0.0000			Prob = 0.0000			Prob = 0.0021		
Haus. Test -Chi(Prob)	chi2(9) = 89.04								
	Prob = 0.0000								
Sargan Test -Chp(Prob)							chi2(13) = 24.03594		
							Prob = 0.0308		
Number of Groups	9			9			8		
Number of observation	38			32			22		

Source: authors' calculation based on National Bank of Ethiopia's Data, 2022

Ratios are calculated as ROA=Net income/Total asset; capital adequacy=total capital to total asset; asset quality=nonperforming /total loans; management efficiency= total expenses/total income

The effect of interest spread used as a proxy for microfinance liberalization positively affects MFI sector performance but is not statistically significant. It is known that when the financial sector is globalized, the interest rate spread will fall, which may negatively affect the MFI sector's performance in Ethiopia.

With regard to the microfinance industry, the finding has an important implication for financial sector liberalization policy. For instance, the result shows that managerial efficiency greatly contributes to improving the financial performance of microfinance institutions, and liquidity ratio, asset quality, and capital adequacy have positive impacts on those institutions' performance. In addition, the effect of interest spread, used as a proxy for microfinance liberalization, positively affects MFI sector performance. Thus, with the presumption that the microfinance industry will face tough competition when the sector is opened up to the rest of the world, to cope with the shock, the domestic microfinance industry needs to work on operational efficiency in advance. When the capabilities of the management team increase, it leads to the company's performance increasing. Regarding leverage, the microfinance industry needs to properly handle the debt-to-equity ratio, consider the firm's capital structure, and

evaluate the relative risk and return associated with long-term debt and equity for the microfinance sector. By so doing, the microfinance industry can perform better in the liberalized financial sector.

3.4.4. Consequences of financial sector liberalization in Ethiopia

Our main objective in this section is to estimate the effect of liberalization of the financial sector on global operators. Hence, Ethiopia does not open the financial sector to foreign operators; we can use proxies such as interest rate liberalization, efficiency, stability, and competitiveness. We used interest liberalization as a direct proxy for liberalization and other variables, such as efficiency and stability, as an indirect proxy for financial liberation. Thus, with other banking and macro-control variables, these variables were estimated in the study. To control for the macroeconomic variables, the GDP per capita, gross capital formation, human capital index, and inflation rate were used as control variables. These variables are taken from the world development indicators of the World Bank. The estimation was made for the short-run and long-run effects of financial liberalization. Before estimating the long-run effect, the long-run relationship among variables was checked using the ARDL bound procedure. Table 3.13 shows the computed F-statistics and critical values at 5 percent. If the statistic lies between the bounds, the test is inconclusive. The null hypothesis of no level effect is rejected if it is above the upper bound. If it is below the lower bound, the null hypothesis of no level effect cannot be rejected. In this estimation, F statistics fall above the upper bounds of critical values at the 5% significance level. This result indicates the existence of cointegration among variables.

i. Long-run effect

Table 3.13 shows that financial liberalization (deposit interest rate) positively affects gross domestic product per capita in the long run. A 1 percent increase in the financial liberation rate (deposit interest rate) increases GDP per capita growth by 0.048 percent, but the effect is not statistically significant. The positive sign of liberalization is consistent with the basic idea of McKinnon (1973) and Shaw (1973), who state that lifting restrictions on interest rates leads to a boost in saving, which subsequently increases capital accumulation and growth rates via a proper rate of return.

Moreover, the indirect proxy of financial liberalization-specifically, opening the financial sector to global investors on gross domestic product per capita was estimated. Table 3.14 shows the effects of inefficiency and stability. For example, the effect of inefficiency was negative and significant. Table 3.13 shows that the inefficiency variable (EFR) is negatively related to gross domestic product per capita (GDPPC), indicating that when the inefficiency of the banking sector increases by 1 percent, the gross domestic product reduces by 0.044 percent, and the result is statistically significant. Many empirical studies, to mention a few, such as those by Claessens et al. (2001), Bayraktar and Wang (2005), and Hunegnaw and Adem (2021), showed that an increase in foreign bank share reduces domestic banking inefficiency by reducing costs and net interest margins. This result shows that opening the banking sector to the global market may improve economic growth indirectly by reducing banking sector inefficiency.

Another variable of interest, the Z-score as a stability indicator, positively affects the GDP per capita growth. This positive result suggests that Ethiopia's bank stability is essential to enhancing GDP per capita growth. Table 3.13 shows that as banking stability (the Bank-Z score) increases by 1 percent, the gross domestic product increases by 0.117 percent in the long run, which is statistically significant. However, many theoretical and empirical studies agree that when foreign banks' asset share increases

in the banking sector, insolvency risks escalate, the sector's instability. When faced with capital or funding shocks at home, foreign banks might withdraw from cross-border banking activities to redirect lending at home (Peek and Rosengren, 1997 and 2000). Competition frugality: empirical studies suggested a negative effect of competition on banks' stability (Kasman and Kasman, 2015; Mulyaningsih et al., 2015). The result about foreign banks and stability is consistent with other empirical strands of evidence. Demirgüç-Kunt and Detragiache (2001) examined the relationship between banking crises and financial liberalization in 53 countries between 1980 and 1995. They found that banking crises were more likely to occur in countries with liberalized systems. This is especially true in developing countries where the institutional environment is weak. De Haas and Van Lelyveld (2014; 2017; and Dwumfour (2017) also argued that the presence of foreign banks might reduce banking stability. The result may imply that when the banking sector is opened to global operators, banking stability may increase and gross domestic product per capita will be harmed. Thus, opening the banking sector to foreign owners will indirectly reduce stability and GDP growth through this channel.

Table 3. 13 Estimated long run coefficients using the ARDL Approach

ARDL(1,0,1,0,0,1,0,0,1) selected based on Schwarz Bayesian Criterion				
Dependent variable is GDPPC				
29 observations were used for estimation from 1991 to 2019				
Regressors	Coefficient	Standard Error	Prob	
GCFGDP	.219	.057	.001	
STAB	.117	.042	.013	
HC	.507	.099	.000	
FC	-.610	.098	.000	
INF	-.037	.009	.001	
FLI	.048	.039	.241	
EFR	-.044	.012	.002	
FIVMOB	.046	.011	.001	
INPT	8.991	.568	.000	
Testing for the existence of a level relationship among the variables in the ARDL model				
F-statistic	95%	Lower Bound	95% Upper Bound	90% Lower Bound 90% Upper Bound
5.9249		2.8474	4.4581	2.3323 3.7400

Source: authors' calculation based on World Bank development indicators and financial development indicators and IMF Data, 2022

Where GDDPC is gross domestic product per capita (constant 2015 US\$); GCFGDP is the share of gross capital formation (% of GDP); STAB is the Bank Z-score proxy for bank stability, HC is the human capital index; Fc represents bank deposits to GDP ratio as a proxy to competition, INF represent inflation rate; FLI represents deposit interest rate; EFR represents efficiency ratio, FIVMOB represents Mobile subscriber per 100 adults.

In the long run, coefficients of control variables such as mobile bank subscription (FIVMOB), inflation rate (INF), human capital (HC), and gross capital formation to GDP ratio (GCFGDP) were found to be statistically significant. As expected, the gross capital formation to GDP ratio (GCFGDP) coefficient is positive and statistically significant. It implies that a higher growth rate of capital accumulation is associated with a higher rate of economic growth, which is consistent with the main

propositions of the Solow growth model and endogenous growth theory (Romer, 1986; Lucas et al., 1994; and Benhabib and Spiegel, 2000). From the results, the coefficient of gross capital formation ratio to GDP indicated that a 1-percentage point increase in gross capital formation ratio to GDP might increase GDP per capita by approximately 0.219 percent. Similarly, the human capital index (HC) has an expected positive sign, indicating that a 1 percent increase in the human capital index in Ethiopia increases GDP per capita by 0.507 percent. The indicator of financial innovation (mobile phone subscribers) also has an expected positive sign, indicating a positive effect of innovation on GDPPC.

On the other hand, high inflation rates as signals of macroeconomic instability have an expected negative impact on Ethiopia's gross domestic product per capita (GDPPC). This is because high inflation can destabilize the economy; consequently, the relationship between inflation and growth is expected to be negative. If inflation goes up by one percent, the GDPPC of Ethiopia falls by 0.037.

Generally, the empirical results in this research support the issue that opening the financial sector to the global market may have both costs and benefits for the Ethiopian economy in the long run. Foreign operators' entry into the financial sector may improve economic growth directly and indirectly by improving efficiency. However, the entry will reduce economic growth indirectly via increasing bank fragility.

ii. Short-run effect

Table 3.14 shows the short-run coefficient and coefficient on ECT. Our error correction system is well-behaved and has a robust long-term relationship. The sign of the coefficient on ECT is negative, which is statistically significant. The negative coefficient ensures that the series is non-explosive to ensure that long-run equilibrium can be attained. The size of the coefficient on ECT determines the one-period response of the dependent variable to its deviation from equilibrium.

The ECT coefficient is -0.520 . The value shows a deviation of GDP per capita from long-run equilibrium because the shock from last year is corrected by approximately 52% in the current year. The finding indicates a relatively slow pace of adjustment or convergence to equilibrium.

Table 3. 14: Error correction representation for the selected ARDL Model

ARDL(1,0,1,0,0,1,0,0,1) selected based on Schwarz Bayesian Criterion			
The dependent variable is Dgdppc			
29 observations used for estimation from 1991 to 2019			
Regressor	Coefficient	Standard Error	Prob
dGCFGDP	.114	.031	.001
dSTAB	.007	.016	.654
dHC	.264	.061	.000
dFC	-.317	.061	.000
dINF	-.010	.004	.010
dFLI	.025	.019	.206
dEFR	-.023	.008	.007
dFIVMOB	.014	.008	.081
ecm(-1)	-.520	.058	.000

Source: authors' calculation based on World Bank development indicators and financial development indicators and IMF Data, 2022

The short-run elasticities of efficiency and the indirect proxies of financial liberalization to GDPPC, were statistically significant, but the direct proxy for financial liberalization (deposit interest) is not statistically significant. Thus, financial liberalization may improve GDPPC through increased efficiency in the short run. It may reduce GDPPC by reducing financial stability, such as banking fragility, but it is not statistically significant. All macro-control variables (gross capital formation to GDP ratio, GCFGDP, human capital (HC), and mobile subscriber (FTVMOB)) have a positive effect on GDPPC and are statistically significant except for inflation.

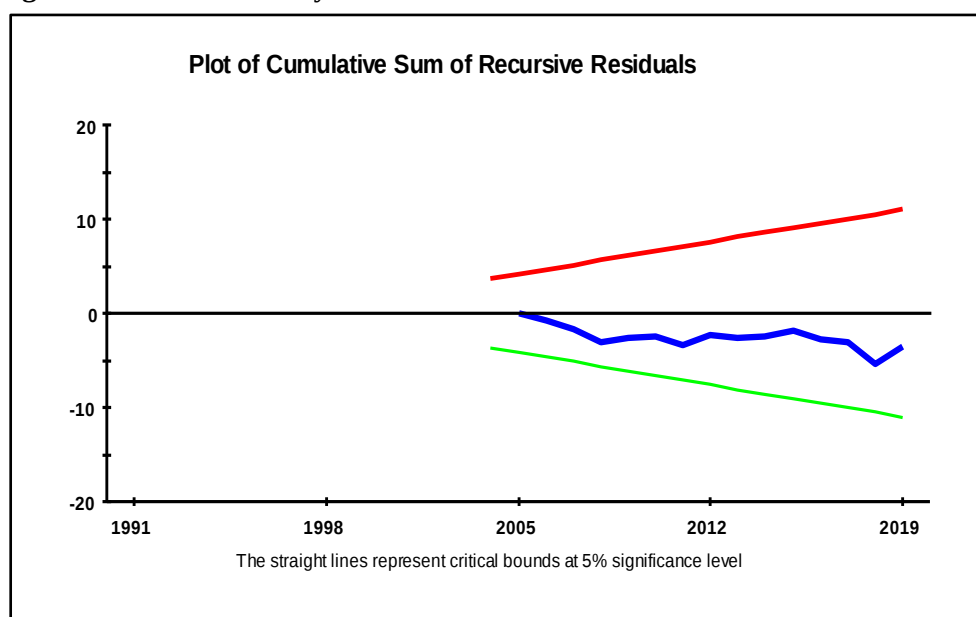
The R^2 and R^2 are goodness of fit measures, which reasonably suggest a good fit for every country's data set. Variables jointly affect GDPPC. Table 3.14 shows diagnostic test results. To test for heteroscedasticity, we applied the Breusch-Pagan test. The test result shows that we cannot reject the null hypothesis: "the nonexistence of heteroscedasticity and Breusch-Godfrey serial correlation LM(X2H) test results show the absence of serial correlation problem at a 5% significance level".

Table 3. 15: Diagnostic Tests

Test Statistics	LM Version	F Version
A: Serial Correlation	CHSQ(1)=5.8440[.016]	F(1,15)=3.7856[.071]
B: Functional Form	CHSQ(1)=1.0541[.305]	F(1,15)=.56577[.464]
C: Normality	CHSQ (2)=1.9086[.385]	Not applicable
D: Heteroskadasticity	CHSQ(1)=2.0296[.154]	F(1,27)=2.0318[.165]

Source: authors' calculation based on World Bank development indicators and financial development indicators and IMF Data, 2022

Figure 3.2: Model stability Test



The model also passed the normality Jarque Bera test at 5% significance. To examine the stability of long-run coefficients with short-run dynamics, we applied CUSUM Test. Figure 3.3 shows the straight lines representing critical bonds at a 5% significance level. The CUSUM plot does not cross the critical bounds.

3.4.5. Operators' perceptions on Ethiopia's financial sector and policy

3.4.5.1. The Background of Financial Institutions

We surveyed 51 firms in the financial industry in Ethiopia, of which 16 were banks, 16 were insurance companies, and 19 were microfinance institutions. 45 (90%) of these firms are privately owned, while the remaining belong to the public (6%), NGO (2%), and public-private partnership (2%) ownership. The average age of financial institutions is 20 years.¹

Table 3. 16: Background of financial institutions

Backgrounds		N	%
Type of Financial Sector	Bank	16	31.4
	Insurance	16	31.4
	Micro Finance	19	37.3
	Total	51	100.0
Ownership type	Public	3	6.0
	Private	45	90.0
	NGO	1	2.0
	Public-Private Partnership	1	2.0
	Total	50	100.0
Average Year of Establishment		20	

Source authors' calculation based on primary data survey, 2022

3.4.5.2. Financial operators' Perceptions on performance

To examine financial operators' perceptions of the current Ethiopian financial market and policy, we used a self-administered questionnaire, in which banks, insurance companies, and microfinance institutions took part. Accordingly, we asked the participants to rate their perception of the status of the Ethiopian financial sector using several indicators, such as efficiency, competition, stability, innovation, diversification, inclusiveness, and capability, as shown in Table 3.17 below. As can be seen in Table 3.17 below, the status of the Ethiopian financial sector is poor in terms of all dimensions. That is, the rating is below average for all of the dimensions. This implies that the financial operators generally perceive the current status of the Ethiopian financial sector as inefficient, less competitive, unstable, less innovative, undiversified, not inclusive, and poorly capable.

Scholars believe that the efficient, competitive, stable, innovative, diversified, inclusive and capable financial sector is better positioned to withstand the adverse effects of liberalizing the sector and exploit opportunities related to liberalization. If the financial sector performs poorly in terms of efficiency, competitiveness, stability, innovation, diversification, inclusiveness, and capability, the cost of liberalization would be higher than its benefits for domestic firms. In other words, this result implies that the firms in the financial sector are not yet ready to welcome the liberalization policy, at least soon. This suggests that the liberalization process should consider the current status of the financial sector, which is poor in terms of all dimensions, to be effectively implemented.

¹ With regard to individual respondents representing financial institutions, 98% of the individual respondents have attained a bachelor's degree or above education level. The average age of the individual respondents was 42 years. In addition, the individual respondents have been working in the financial industry for 14 years on average and in the current company for 8 years on average

Table 3. 17: Operators’ perceptions of Ethiopia’s financial sector and policy

	Mean	St. Deviation	N	Maximum	Minimum
Efficiency	2.55	.76	51	4.75	1.00
Competition	2.65	.58	51	4.00	1.00
Stability	2.65	.77	51	5.00	1.50
Innovation and Diversification	3.07	.73	51	4.50	1.00
Inclusiveness	2.36	1.06	51	5.00	1.00
Capability	2.79	.87	51	5.00	1.00

Source authors’ calculation based on primary data survey, 2022

3.4.5.3. Financial sector operators’ perception on policy

In addition, we assessed financial operators’ perceptions of the current policy guiding Ethiopia’s financial sector. We asked banks, insurance companies, and microfinance institutions to rate how they perceived the current policy guiding Ethiopia’s financial sector using a scale of 1-5 (where 1 is ‘strongly disagree’ and 5 is “strongly agree”). Our question items included whether or not the National Bank of Ethiopia has the required capability to supervise the financial sector, whether or not the current financial system regulations should be revised, the extent of the National Bank of Ethiopia’s involvement in formulating and implementing policies; whether or not the share of the private sector should be increased; and the extent of foreign owners’ participation in the financial sector.

As can be seen from Table 3.18, about 39% of respondents disagreed that the National Bank of Ethiopia has the capability required to supervise the financial system, while about 37% of them agreed, and about 24% of them were indifferent. This implies that many respondents perceive that NBE Ethiopia lacks the supervision capability that the financial system demands.

In addition, we asked respondents if they perceived that the Ethiopian financial system’s regulation should be relaxed, and the majority (about 61%) agreed or strongly agreed. Similarly, a significant number (50%) of the respondents perceived that NBE’s operations are not free from political interventions, while only 20 % perceived the opposite. It is believed that the autonomy of the regulatory body is vital for efficient and effective financial system management.

Table 3. 18: Operators' Perceptions of Ethiopia's financial sector policy

No		Scale	N	Percent
1	Currently, National bank of Ethiopia has a required capability to supervise the Ethiopian Financial system	Strongly Disagree	5	9.8
		Disagree	15	29.4
		Neutral	12	23.5
		Agree	18	35.3
		Strongly Agree	1	2.0
		Total	51	100.0
2	Ethiopian Financial system regulation should be relaxed	Strongly Disagree	2	3.9
		Disagree	9	17.6
		Neutral	9	17.6
		Agree	23	45.1
		Strongly Agree	8	15.7
		Total	51	100.0
3	The national bank of Ethiopia operates free from political interventions	Strongly Disagree	8	16.0
		Disagree	17	34.0
		Neutral	13	26.0
		Agree	7	14.0
		Strongly Agree	5	10.0
		Total	50	100.0
4	Share of Private ownership should be increased in Ethiopia's financial sector	Strongly Disagree	0	0.0
		Disagree	2	3.9
		Neutral	10	19.6
		Agree	22	43.1
		Strongly Agree	17	33.3
		Total	51	100.0

No		Scale	N	Percent
5	It is better if foreign owners participate in the Ethiopian financial sector with limited share	Strongly Disagree	2	3.9
		Disagree	3	5.9
		Neutral	4	7.8
		Agree	29	56.9
		Strongly Agree	13	25.5
		Total	51	100.0
6	It is better if foreign owners participate in the Ethiopian financial sector without any limitation	Strongly Disagree	16	31.4
		Disagree	22	43.1
		Neutral	3	5.9
		Agree	6	11.8
		Strongly Agree	4	7.8
		Total	51	100.0

Source authors' calculation based on primary data survey, 2022

Furthermore, 76% of respondents believed that the share of private firms in Ethiopia's current financial sector should be increased. Similarly, the majority of respondents (about 82%) perceived that the share of foreign banks in the current financial sector, if ever allowed, should be limited. Finally, about 75% of our research participants perceived that foreign participation in Ethiopia's financial sector should not be without restrictions. The findings suggest that the current policy guiding the financial sector needs to be revised; the National Bank of Ethiopia lacks political independence in supervising and guiding the sector, the share of private ownership in the Ethiopian financial sector should be increased; the share of foreign ownership in the financial sector should be to a limited extent, and there should be some restrictions in allowing foreigners to operate in the country's financial systems. The current policy guiding the financial sector should be given due attention if the sector must be liberalized.

We asked our respondents to rate their perception of the importance of strict supervision and regulation for developing the current financial system. 74% of the respondents agreed that strict supervision and regulation are essential for the current financial system. More specifically, 75%, 50%, and 94% of the respondents from the bank, insurance, and MFI sectors agreed that strict supervision and regulation are important for Ethiopia's current financial sector. From the survey, banks and microfinance institutions seem to prefer more strictly supervised and regulated financial institutions than the insurance sector.

Table 3. 19: Regulation and supervision of the financial sector

			N	Percent
Sector	Bank	No	4	25.0
		Yes	12	75.0
	Insurance	No	8	50.0
		Yes	8	50.0
	Micro Finance	No	1	5.6
		Yes	17	94.4
	Total	No	13	26.0
		Yes	37	74.0

Source authors' calculation based on primary data survey, 2022

Following the above questions, we asked the operators about the specific areas of regulation or supervision they need to improve or be given more attention. Accordingly, the following areas were identified to be given more attention from the supervisory and regulatory bodies. The regulatory and supervisory organs of the financial system need:

- To supervise and support the technology adoption and human resource development in the country's financial sector;
- To ensure impartial application of its laws and regulations to private and public institutions;
- To properly design and implement risk monitoring regulations;
- To design, formulate, and implement consumer protection policy;
- To avail a regulation that limits the maximum interest rate on loans;
- To strengthen regulations related to credit and foreign currency allocation'
- To provide strict supervision and ensure effective implementation of the existing directives;
- To ensure strict control and manage illegal money movement in the country;

- To revise directives continually to adapt to the changing situations;
- To closely supervise and support the process of providing loans and financial services to the rural farmers at an affordable rate;
- To regulate the financial markets and promote fair competition among firms in the financial industry;
- To revise regulations and directives on non-performing loans, reserve review, and capital adequacy;
- To provide close supervision and support to ensure cyber security in the financial sector;
- To revise its regulations related to reserve ratio and interest rate;

Our respondents also identified issues that they think the financial system in Ethiopia is facing due process of regulation and supervision. The major issues raised by respondents include the following:

- The regulatory body has limited capability to closely supervise and regulate the financial system;
- The government tends to monopolize the financial sector in the country; this hampers fair competition in the industry;
- Increase incidence of corrupt and unethical behaviors in the financial sector;
- Financial institutions have no or little participation when designing policies, regulations, and directives that govern the financial sector;
- Poor implementation of existing directives and regulations;
- Seldom use of appropriate technology in the process of supervision and regulation;
- Politically motivated and frequent changes in directives of the NBE, which make the regulatory environment unpredictable;
- Regulations and directives are not consistently implemented across the board;
- Directives and regulations are not up to the global standard, and neither are supervisions’
- Lack of pragmatic and proactive regulation and supervision policies;
- Supervisory efforts focus on operational issues instead of focusing on strategic issues;
- Many directives are more prohibitive than enabling business activities in the sector.

We further asked our respondents (operators) to suggest solutions to the challenges they faced in the financial sector during the supervision and regulation processes. Accordingly, they proposed the following approaches that may help the National Bank of Ethiopia improve the supervision and regulations of the financial sector in the country.

- The NBE needs to have a clear roadmap that enables it to effectively regulate and supervise the financial sector in the country;
- NBE needs to ensure the participation of stakeholders in the formulation of policies and directives;
- NBE may revise directives related to foreign currency surrender so that private; commercial banks shall fully utilize foreign currency coming from their own operations;
- NBE may ensure the merit-based appointment of higher officials instead of political affiliations alone;

- The insurance industry should be separated from NBE and supervised by an independent institution with the knowledge and skills that the insurance sector demands;
- The financial sector liberalization process needs to be supported by the right roadmap and effectively planned;
- NBE needs to capacitate itself technologically and intellectually to be able to effectively manage during and post-liberalization;
- The liberalization process needs to be implemented on gradually and progressively;
- The regulatory framework should be continuously revised to respond to the dynamic and changing environment effectively;

3.4.5.4. Inclusiveness of the Ethiopian financial sector

Financial inclusion refers to efforts to make financial products and services accessible and affordable to all individuals and businesses, regardless of their net worth or company size. Financial inclusion aims to bring in digital financial solutions for the economically underprivileged people of the nation. It also intends to bring in mobile banking or financial services to reach the poorest people living in extremely remote areas of the country. We asked our respondents to rate the inclusiveness of Ethiopia's financial sector. Overall, about 68% of the respondents rated the inclusiveness of Ethiopia's financial sector as low or very low. More specifically, of those who reported low or very low, about 21% were banks, about 21% were insurance companies, and 26% were from microfinance institutions. Microfinance institutions are more likely to report low-level inclusiveness of the financial sector than banks and insurance companies.

Table 3. 20: Inclusiveness of Ethiopian financial Sector

How do you rate the inclusiveness of Ethiopian Financial Sector?										
	Very-Low		Low		Medium		High		Very-High	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
Bank	3	6.4	7	14.9	5	10.6	1	2.1	0	0.0
Insurance	6	12.8	4	8.5	3	6.4	1	2.1	0	0.0
Micro Finance	5	10.6	7	14.9	5	10.6	0	0.0	0	0.0
Total	14	29.8	18	38.3	13	27.7	2	4.3	0	0.0

Source authors calculation based on primary data survey, 2022

Moreover, we asked respondents the reason for the low level of inclusiveness in the financial sector. The following major reasons were identified:

- The financial system is inaccessible, and the cost of credit is high;
- Society lacks awareness of financial services, and saving interest rate is unattractive;
- Limited use of financial technologies;
- Financial products are limited in diversity;
- Poor infrastructures such as internet, energy, and roads and high cost of expansion as a result;
- Lack of skilled manpower and unpredictable directives from the supervision body;
- Absence of competition to motivate banks to serve the unbanked population;
- Low of trust in the financial system of the country;

- The rural population lives highly scattered;
- Low-income level of the society;
- Poor security in remote areas of the country;
- The limited capacity of the financial institutions;
- High level of inflation;
- Lack of clear regulatory framework that facilitates financial inclusion;
- Illiquidity of financial institutions;
- Collateral-based credit provision;
- Lack of adequate and inclusive product development.

3.4.5.5. Ethiopian financial sector financial innovations and products

The provision of customer-based and diversified financial products is crucial to competing in the post-liberalization era, which is expected to be much more competitive. Hence, it is vital to identify the financial products being provided by the local financial institutions to be able to know the extent to which these products are diversified customer-focused, and meet global standards. To this end, we asked banks insurance companies, and microfinance institutions to list the financial products they currently provide with their respective customers.

The result shows that the most common financial products banks provide in Ethiopia include checking accounts, savings accounts, certificates of deposit, mortgages, home equity loans, auto loans, personal loans, debit cards, traveler's checks, and currency exchange. Products such as money market accounts, credit cards, and safe deposit boxes are common financial products elsewhere but not yet provided by Ethiopian banks. Hence, the majority of the banks' financial products are currently limited to basic financial products. In addition to providing diversified and up-to-date financial products, banks need to adopt recent innovations to remain competitive in the post-liberalization era. Hence, we asked our bank respondents to indicate their recently adopted innovations. Accordingly, most banks have adopted several innovations, such as ATMs, mobile banking, internet banking, electronic payment, electronic transfer, remittance technology, and agency banking. However, these financial institutions have not yet adopted innovations such as e-commerce¹.

In the case of the insurance industry, the most common financial products provided by insurance companies in Ethiopia include life, motor, health, travel, property, and motor insurance. Products such as microinsurance and mobile insurance are less common in the insurance sector in Ethiopia. In addition, we investigated the extent to which these companies adopt innovative technologies to become competitive in the industry. Accordingly, claim automation and network system automation are the most commonly adopted innovations by insurance companies. However, insurance companies in Ethiopia seldom adopt insurance-related innovations such as online insurance, mobile insurance applications, e-marketing, biometrics, and remote data processing².

¹ Innovations recently introduced in the banking industry include: Biometric identification of customers using fingerprint scanning for those individuals without ID cards, Remittance Tech, Dashen America Express international debit card, Amole mobile (internet banking), online(internet Banking), mobile banking, goal-oriented saving (new) products, Mobile money (CBE birr), ATM deployment (Bank to bank), agent banking, A platform that has mobile, internet merchant banking services), Automatic clearing house, Real-time gross settlement

² Innovations recently introduced in the insurance industry were; Automation, reinsurance, Insurance software upgrading, integrated insurance information system for continual improvement, Mobile insurance, Special Assistant, Medical Evaluation, Premium financing, Takaful insurance, Education insurance, New insurance,

Like banks and insurance companies, microfinance institutions (MFI) provide financial services to their customers. The most common MFI financial products include; agricultural loans, mid-term loans, emergency loans, individual loans, saving accounts, energy loans, and business start-up loans. To understand the innovation propensity of microfinance institutions, we asked them to identify recent innovations that their respective companies have adopted. According to their responses, network system automation is the most commonly adopted innovation. On the other hand, MFI-related innovations such as ATMs, mobile banking, remote data processing, and biometric identifications are rarely adopted by MFIs in Ethiopia³.

Finally, understanding the major challenges hindering the innovation practices of financial institutions in Ethiopia is essential to improving future innovations. For this purpose, we investigated the challenges that financial institutions (banks, insurance companies, and MFIs) have faced in their innovation endeavors and identified the following major issues. The following are major challenges for innovation and product diversification in the Ethiopian financial sector. These are poor infrastructure (weak internet connectivity, power shortage in the rural area), knowledge gap, lack of awareness and resistance to innovation and financial products, limited knowledge and skilled manpower- technical challenges (post-implementation) to run the technology, limited capacity in conducting grand research (R&D), introduction of innovations is highly expensive, poor strategic leadership, and restrictive regulations of the government (National Bank of Ethiopia).

3.4.5.6. Sequences of the liberalization process

It has been argued that opening up the financial sector to foreign operators should be done bit by bit. In order to know in what order activities should be done to effectively liberalize the financial sector, we identified five major activities related to the liberalization process and asked our respondents to rank the order of these activities. Then, after we calculated the weighted mean for each activity, as indicated in Table 3.21, the activity with the largest number implies that it needs to be done before any other activities. Accordingly, opening up the secondary financial market was ranked first, followed by the liberalization of capital accounts (offshore borrowing and multiple exchange rate markets), the liberalization of regulations on reserve ratio and interest rate, the liberalization of the domestic financial sector to foreign investors, and the privatization of existing public financial institutions (see Table 3.21 for the details). This finding is in line with the government's steps toward the liberalization of the financial sector. The government plans to open the stock market in the near future before liberalizing the financial sector to foreign operators.

products like school fees for children ,Professional liability for doctors' and medical practitioners' insurance, With the connection to COVID-19, developed an online policy renewal system.

³ Innovation recently introduced in the microfinance institution include; application of core banking, M-birr services, mobile money, electronic payment, network system automation, PAY GO, Youth Saving Product

Table 3. 21: Sequences of the liberalization process

No	Activities	1st	2nd	3rd	4th	5th	mean	Rank
		N	N	N	N	N		
1	Privatization of existing public financial institution	9	6	5	8	16	2.6	5 th
2	Liberalization of regulations on reserve ratio and interest rate	5	8	13	11	7	2.8	3 rd
3	Liberalization of domestic financial sector to foreign investors	5	7	11	11	10	2.7	4 th
4	Liberalization of capital account (offshore borrowing and multiple exchange rate market)	5	14	10	8	7	3.0	2 nd
5	Opening of capital market	23	8	5	5	3	4.0	1 st

Source authors' calculation based on primary data survey, 2022

Note: (weight: first=5; second=4; third =3; fourth=2; fifth=1)

In addition to the sequence of liberalization, there can also be different modes of entry for foreign banks into host countries. A given economy may allow entry of a foreign bank either in the form of a subsidiary, branch, joint venture, or representative office, depending on the expected benefit earned by host economies. In fact, these modalities of entry may vary in terms of legal aspects, functionality, and flexibility. For instance, a branch is an extension of the parent company operating under the laws of another jurisdiction, so it is not a separate legal entity. A subsidiary (most typically a limited company) is a separate legal entity with separate legal liability, albeit typically owned and run by the parent company. Whereas a joint venture is created by two or more businesses pooling their resources and expertise to achieve a particular goal. The risks and rewards of the enterprise are also shared. Therefore, we believe that the mode of entry is mostly decided by the entrant company. But host economies could also sometimes set modalities of entry to be allowed for the sake of foreign financial sector experimentation before fully opening up. However, due to limited data on these issues, we are afraid to strongly suggest to the policymakers whether to allow or not specific types of entry modes for foreign entrant companies in the Ethiopian context.

3.4.5.7. Financial sector readiness

The level of readiness of the financial sector to compete with foreign financial operators is very essential to minimize post-liberalization costs. In order to overcome the stiff competition expected from foreign operators, the local financial operators need to enhance their competitiveness levels ahead of time. To do so, our respondents suggest the following:

- The government needs to allow stock market in the country;
- Financial institutions, particularly banks, should take advantage of the digital economy by actively involved in digital finance and multi-channel banking systems using state of the art technology and capitalizing on the technological advancements;
- Financial institutions need to build up global capabilities in technologies, knowledge and skills;
- Financial institutions need to enhance their efficiencies (that is, operation efficiency); hold adequate capital (capital development); increase their foreign currency access and reserve;

- Financial institutions need to increase their research and development budget, focus on continuous improvement and develop their learning capability;
- They need to facilitate offshore borrowing for financial institutions;
- Financial institutions need to be innovative and customer focus;
- Financial institutions may adopt merger and acquisition strategies to build up their competitiveness;
- Financial institutions need to enhance their cyber security systems.

3.4.5.8 The consequence of financial sector liberalization

Suppose opening up the financial sector to foreign operators (liberalization) is necessary. In that case, both the government and the domestic financial firms need to understand the possible consequences of liberalizing the financial sector, which is the first of its kind in the history of the Ethiopian financial sector. To identify the potential costs of the liberalization policy, we surveyed banks, insurance companies, and MFIs operating in Ethiopia. Accordingly, 98% of the respondents agreed that liberalization of the Ethiopian financial sector would benefit by bringing new skills, technology, innovations, and systems; 64% of the respondents agreed that liberalization of the financial sector would benefit from improved financial regulation and supervision; 76% of the participants agreed that financial liberalization would lead to the development of the financial markets; 93% of the respondents agreed that financial liberalization may benefit from improving the financial system's infrastructure; 49% agreed that the overall stability of the financial system would be enhanced if the sector is liberalized; 90% of the respondents agreed that liberalization makes the financial sector more competitive; 94% of the respondents agreed that financial liberalization improves the sector's service quality; about 71% of the respondents agreed that credit supply would improve if the Ethiopian financial sector is liberalized; and 74% of them agreed that financial liberalization would benefit by facilitating the transfer of good financial institution practices.

Table 3. 22: Potential benefits of financial sector liberalization in Ethiopia

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
Bring new skills, technology, innovations and system	0	0.0	0	0.0	1	2.0	17	34.0	32	64.0
Improve financial supervision and regulation	3	6.0	6	12.0	9	18.0	23	46.0	9	18.0
Development of financial markets	1	2.0	2	4.0	9	18.0	20	40.0	18	36.0
Improvement of the financial system's infrastructure	0	0.0	1	2.0	3	6.1	26	53.1	19	38.8
Enhance the overall stability	1	2.0	3	6.1	21	42.9	17	34.7	7	14.3
Competition will be enhanced	0	0.0	2	4.1	3	6.1	23	46.9	21	42.9
Improve quality service	0	0.0	0	0.0	3	6.0	23	46	24	48.0%
More credit supply can be offered	0	0.0	3	6.1	11	22.4	20	40.8	15	30.6
Transfer of good institutions practice	0	0.0	1	2.0	12	24.0	24	48.0	13	26.0
Introduce new product and service	0	0.0	1	2.0	5	10.0	21	42.0	23	46.0

Source authors calculation based on primary data survey, 2022

This indicates that liberalizing the financial sector of Ethiopia may lead to increased skills, knowledge, and technology transfers; an improvement of the financial supervision and regulation system; the development of secondary financial markets; improved infrastructure; the overall stability of the sector; enhanced competitiveness of local firms; improved quality services; increased credit supply; and the introduction of new financial goods and services.

Liberalization of the financial system also has costs. As can be seen from the table below, we asked respondents to indicate their agreement on costs related to liberalizing Ethiopia. Accordingly, 68% agreed that financial liberalization would weaken the local financial institutions; 46% agreed that financial liberalization would lead to increased operating costs; about 58% agreed that financial liberalization would cause sudden capital outflow (capital flight); 57% agreed that biased credit provision to big firms could cost financial liberalization in Ethiopia; 80% agreed that financial liberalization would lead to a fall in the market share of the domestic financial sector; about 41% agreed that foreign financial firms would promote home country exports instead of domestic exports if the financial system was opened up; 30% agreed that financial sector liberalization would trigger instability; and 42% agreed that financial sector liberalization would trigger supervisory difficulty.

In summary, opening up the Ethiopian financial sector to foreign operators may weaken the domestic financial firms, increase operating costs, lead to a foreign currency shortage (sudden capital outflow), caused domestic misallocation of capital flows, cause biased credit provision to big firms, decrease the market share of domestic firms, create a situation where the foreign financial firm will promote home country export instead of domestic export, lead to financial sector instability if not properly managed, and trigger supervision and regulation difficulties.

Table 3. 23: Potential costs of financial liberalization in Ethiopia

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
Weakening of domestic financial sector (infant industry argument)	1	2.0	5	10.0	11	22.0	22	44.0	11	22.0
Foreign financial firm entry may increase operating costs	4	8.0	8	16.0	15	30.0	18	36.0	5	10.0
Sudden capital outflow (foreign shortage)	1	2.1	6	12.5	13	27.1	21	43.8	7	14.6
Domestic misallocation of capital flows	1	2.1	4	8.5	19	40.4	19	40.4	4	8.5
Biased credit provision to big firms	3	6.1	8	16.3	10	20.4	22	44.9	6	12.2
Fall of market share of domestic financial sector	1	2.0	4	8.0	5	10.0	27	54.0	13	26.0
Foreign financial firm will promote home country export instead of domestic export	2	4.1	6	12.2	20	40.8	15	30.6	6	12.2
Financial sector liberalization trigger instability	3	6.0	10	20.0	22	44.0	12	24.0	3	6.0
Trigger supervisory difficulty	4	8.0	6	12.0	19	38.0	14	28.0	7	14.0

Source authors calculation based on primary data survey, 2022

3.4.5.9. Macro-economic effect of financial market liberalization

It is believed that financial sector liberalization policy has both macro and microeconomic impacts. We investigated the potential macroeconomic benefits of liberalizing Ethiopia's financial sector using a Likert scale of 5 rates, where 1 stands for strongly disagree, and 5 stands for strongly agree. We calculated the percentage of respondents who rated 1, 2, 3, 4, or 5. Accordingly, 82% of the respondents agreed that financial liberalization would speed up foreign direct investment; 55% of them agreed that financial liberalization would reduce the population to financial sector ratio; 63% of the respondents agreed that lending interest would be lower if the financial sector is liberalized; 67% of the respondents agreed that financial liberalization would reduce the cost of financial service; 73% agreed that financial liberalization would make economies of scale and scope possible; 83% of respondents agreed that if the financial sector is liberalized, consumer and mortgage credit will improve; 43% of them believed that there would be better economic stability if the financial sector is liberalized; 77% of them believed that if the financial sector is liberalized, employment and wage rate will improve; and 65% of them responded that financial liberalization would ensure a more stable source of credit.

Hence, if the financial sector of Ethiopia is liberalized, the potential benefits will be increase FDI, a reduced population to financial sector ratio, lowered lending interest rates, reduced cost of financial service, improved economies of scale and scope, improved consumer and mortgage credit, better economic stability, increased employment and wage rate, and a stable source of credit (see the below Table 3.24 for the details).

In addition to its macroeconomic benefits, financial sector liberalization will also have macroeconomic costs. In the same fashion, we asked respondents' level of agreement on costs related to liberalizing Ethiopia's financial sector. The result shows that about 26% (where 51% remained neutral) of the respondents agreed that financial liberalization would cause a loss of macroeconomic stability; about 45% (where about 28% of them remained neutral) of them believed that small firms will suffer from credit shortage if the financial sector is liberalized; about 35% (where about 37% remained neutral) of them agreed that if the financial sector is liberalized, foreign financial institutions may lack the interest to mobilize domestic capital; and about 65% of them agreed that financial liberalization would cause volatility of capital flows.

Table 3. 24: Potential macroeconomics benefits of financial market liberalization

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
Speed up FDI	2	4.1	0	0.0	7	14.3	26	53.1	14	28.6
Reduce the population to financial sector ratio	3	6.1	6	12.2	13	26.5	22	44.9	5	10.2
Lower lending interest rate	1	2.0	5	10.2	12	24.5	21	42.9	10	20.4
Reduce cost of financial service	1	2.0	6	12.2	9	18.4	23	46.9	10	20.4
Possible economies of scale and scope	1	2.0	1	2.0	11	22.4	29	59.2	7	14.3
Improve in consumer and mortgage credit	2	4.2	0	0.0	6	12.5	31	64.6	9	18.8
Bring about better economic stability	1	2.0	7	14.3%	20	40.8	17	34.7	4	8.2
Increase in employment and wage rate	3	6.1	3	6.1	5	10.2	27	55.1	11	22.4
Provide a more stable source of credit	1	2.0	4	8.2	12	24.5	23	46.9	9	18.4

Source authors calculation based on primary data survey, 2022

The above discussion implies that the macroeconomic costs related to liberalizing Ethiopia's financial sector include loss of macroeconomic stability, financial exclusion because small firms will be denied credit services, limited interest by a foreign financial institution to mobilize domestic capital, and volatility of capital flows (see Table 3.25 below for the details).

Table 3. 25: Potential Macro-economic costs of financial market liberalization in Ethiopia

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
Leads to loss of macroeconomic stability	3	6.1	9	18.4	25	51.0	11	22.4	1	2.0
Small firms will be suffered because of credit shortage	5	10.2	8	16.3	14	28.6	19	38.8	3	6.1
Lack of interest by foreign financial institution to mobilize domestic capital	4	8.2	10	20.4	18	36.7	15	30.6	2	4.1
Volatility of Capital Flows	2	4.1	1	2.0	14	28.6	29	59.2	3	6.1

Source authors calculation based on primary data survey, 2022

The primary reason behind investigating the possible benefits and costs of liberalization is to propose mechanisms that will help both the government and domestic financial operators capitalize on the potential benefits and minimize the costs. We asked our respondents to propose interventions that would minimize the costs of liberalization. The following solutions were proposed:

- a clear policy should be designed so that the local banks will not be affected and they can meet up to the level which is expected in the process of liberalization;
- avoid total liberalization; articulate prudent but less bureaucratic policies;
- compulsory insurance policy;
- interest /credit intervention is needed, including of poor society to be granted;
- create enabling business environment for all banks;
- develop capability and gradually liberalize;
- facilitate early merger and acquisition of domestic financial firms;
- government should negotiate on the amount of dividend that should be paid and reinvested to manage capital outflow;
- introduction of foreign financial institutions on acquiring less than 50% of shares each existing private financial sector;
- NBE should put a policy in place that makes the local institutions take advantage of the liberalization;
- Policy on capital outflow (flight), pricing policy, areas of investment and financing for banks, paid-up capital in terms of amount and currency etc;
- policy support, such as providing tax-free schemes to domestic firms in acquiring technology and other resources, relaxing some strange policies, loans and foreign exchange for domestic firms;
- promoting a digital-oriented banking system;
- strengthen the central bank's supervisory capacity; reorient leadership in the sector so that factors should be where it needs to be in bank management and digitization;
- strong preparation in regulation and supervision of foreign financial companies efficiently;
- strong regulatory and supervisory framework; allow foreign banks to participate in the domestic market with a minor share.

3.4.5.10. Financial operators' awareness level on the consequences of financial institution liberalizations

Being aware of the consequences of the planned financial sector liberalization is essential to withstand its negative consequences. To know the extent to which domestic financial operators are aware of the consequences of liberalization, we asked banks, insurance companies, and MFIs to evaluate their level of awareness of financial sector liberalization. In general, about 21% of the respondents rated the level of their awareness of the consequences of financial liberalization as low or very high, whereas about 50% reported it as medium. Of those who reported low or very low income, banks account for about 6%, insurance companies for about 4%, and MFIs for about 11%. MFIs have the lowest level of awareness, followed by banks and insurance companies. The awareness level of the operators in the financial sector seems modest; however, more awareness-creation activities might be needed to make the liberalization process more effective; see Table 3.26 below for the details.

Table 3. 26: Financial operators' awareness level of the consequence of financial liberalization

	How do you evaluate your awareness level of the consequence of financial liberalization?									
	Very-Low		Low		Medium		High		Very-High	
	N	%	N	%	N	%	N	%t	N	%t
Bank	1	2.1	2	4.3	6	12.8	4	8.5	1	2.1
Insurance	1	2.1	1	2.1	9	19.1	4	8.5	1	2.1
MFI	0	0.0	5	10.6	8	17.0	4	8.5	0	0.0
Total	2	4.3	8	17.0	23	48.9	12	25.5	2	4.3

Source authors calculation based on primary data survey, 2022

3.4.6. Insights from NBE management members

3.4.6.1. Current policy guiding the financial sector

Based on our discussion with the vice presidents of NBE, we have summarized the following points: The guiding principles of the financial sector are inclusiveness, efficiency, competitiveness, and modernization. To enhance the above principles, the NBE has been working to liberalize the financial sector, including opening it up to foreign investors. Currently, the financial sector has already been opened to diaspora investors. Another top priority is the digital financing policy, which works to improve digital financing. The government has given priority to financial institutions that import financial technology. Management members mentioned the following reasons to prohibit foreign financial operators from entering the Ethiopian financial sector.

i. Stability issue

The major concern of foreign bank entry, as mentioned by the NBE management, is a stability issue. Their concerns have been raised and they believe that foreign banks can be a source of contagion. When faced with capital or funding shocks at home, foreign banks might withdraw from cross-border banking activities to redirect lending at home. This can be translated into a reduction in the capital that parents lend to their foreign affiliates, can negatively impact the supply of credit by these affiliates in the Ethiopian market. Empirical evidence such as Schnabel (2012) also shows that the negative liquidity shock resulting from the Russian default led international banks to reduce lending domestic and foreign-owned Peruvian banks, reduced lending Peruvian firms. Other studies (De Haas and Lelyveld, 2013; Popov and Udell, 2012) focusing specifically on the recent global financial crisis suggest that global banks were transmitting shocks across borders through their affiliates at the height of the crisis. This transmission of bank distress of firm access to credit also occurred when shocks occurred to the parents' balance sheets of the foreign-owned subsidiaries. Another concern is that the domestic authorities will lose control over the banking system if foreign banks have a strong presence. International banks can engage in complex cross-border financial transactions, sometimes difficult to be monitored by either the host or the home country supervisors (Roldos, 2001).

Moreover, the home country's regulatory institutions may negatively affect foreign banks' decisions to lend, merge or acquire the host environment (Peek and Rosengren, 2000). A related issue is the inability of domestic banks to compete with high-performing international banks. Foreign bank

entry may lead to lowered the interest margins, further weakening of domestic players, and bankruptcies (Peek and Rosengren, 2000).

ii. Low supervision capacity

Another justification they indicated is that the existing supervisory body cannot regulate the financial sector in the current situation if foreign banks are allowed to operate. It is true, and as the presence of foreign-owned banks grows, it increases the complexity of supervisory authorities' tasks. However, these challenges can be resolved through enhanced cooperation between home and host-country supervisory authorities and the development of additional international best practices. Mishkin (2005) argues that financial globalization should be taken as an important supporting force behind institutional reform.

iii. Fear of foreign control.

Foreign control over credit allocation implies substantial economic power in any economy. Officials from the NBE explained that foreign banks might serve as drains for the inward and outward capital flows. This may cause foreign exchange and liquidity shortages, adversely affecting the country's capital account. The concern becomes more pronounced given the limited regulatory capacity of the National Bank.

iv. To protect public banks

As we know, one of the government's major revenue-generating enterprises is public banks. As we know, the state-owned CBE is the dominant commercial bank and accounts for 70% of banks' total assets (as of May 2013, IMF 2013). If foreign investors enter the market, there is a possibility that these banks will incur huge losses because foreign banks will use large-scale and innovative technology. However, the authors argue that if foreign banks allowed the income generated from them to be taxed would exceed the revenue generated from CBE.

3.4.6.2. A future perspective on opening the financial sector to global operators

During a discussion with two vice presidents of the NBE, they said that the government is committed and ready to open the financial sector to foreign investors. As they stated, one step of commitment was easing the financial sector to Ethiopian-born foreign citizens, which happened for the first time since the free economy was endorsed in the early 1990s. However, they stated that the openness had been delayed due to the current political and global pandemic shock, and it was initially planned to open the financial sector within three years as of 2018. They stated that the financial sector would be open within a short period of time.

i. Competency requirements

The vice presidents suggested the following requirements for domestic financial institutions to compete with international bank operators:

- Technology - They should invest in technology to survive foreign banks' strife competition;
- The area of investment should follow project appraisal;
- Professionalism;
- The skill of workers shall be developed;

- Banks associations need to strong to reduce traditional competition instead of fair and healthy competition;
- Merging;

ii. Potential benefits from current protection

The following are key benefits obtained from current protection.

- Existing protection reduced competition so that citizens are participating in shareholding and making a profit
- Governments also get benefit from mobilizing capital for different projects
- Expected costs from opening up the financial sector to foreign participation
- Capital flight in the form of dividends will harm foreign currency reserves
- Sudden capital flight because of some shocks
- Stability issue

iii. Potential benefits of opening up the financial sector to foreign participation

The following are key potential benefits that can be obtained from opening of financial sector to foreigners

- The public benefit from the financial sector will be increased; currently, banks and insurance companies are surviving and enjoy stable profits at the expense of the public
- They bring technology and knowledge
- Competition and so that efficiency

iv. Readiness of NBE to open up the financial sector to foreign participation

- The following are key potential costs that can be obtained from opening of financial sector to foreigners Indirectly, the NBE is helping banks to be protected from new entries by forcing them to have 5 billion paid-up capital
- Banks are allowed to borrow from foreign institutions
- The Forex reserve or surrender requirement has declined except remittances and exports requiring 70% surrender.
- Some institutions are designed to provide training and consultancy to them
- Priority is given to importing technology
- The progress and readiness to open the banking sector are good except for current political and global pandemic shocks.
- Introduction of Basel III

v. Autonomy of NBE in formulating and implementing policies

National bank has taken the following key measures to make financial sector ready to open up the sector to foreigners.

- No problem with autonomy concerning finance
- Policy instrument: monetary and fiscal institution, there is currently freedom.
- Interest rate is open up
- KYC, which is an important step to opening up, is being implemented in every bank.

Know Your Customer (KYC) is verifying a customer's identity. The objective of KYC guidelines is to prevent banks from being used by criminal elements for money laundering activities. Generally, from our discussion, we learned that there is a commitment by the current government to open the financial sector to foreign operators very shortly. Officials from the NBE believe that foreign banks would provide many benefits given the maturation of our banking system. The following benefits were mentioned during our discussion: The foreign banks will improve domestic bank efficiency by introducing new products, enhancing the competitive environment, and transferring knowledge and good banking practices, transfer of knowledge. They expected that if foreign banks were allowed to operate, the spillover effect would develop human resources capacity. This effect is more important to a developing country like Ethiopia, with low technological development and management skills. Thus, the spillover initially causes rising costs since domestic banks have to invest in such techniques and practices to implement them.

Moreover, the presence of foreign banks forced them to improve the quality of their services to retain their market share. In particular, foreign banks' presence may put old-style banking practices under pressure. Besides, increased competition may lower interest rate margins and profits. Finally, foreign banks with better technology and expertise assess the quality of feasible business, and the technology provides a better service in assessing risk business. Therefore, if they do not copy this practice, the domestic banks will be left with riskier business. In order to avoid the risks, the domestic financial sectors use better disclosure.

When we summarized their thoughts, the competition, transfer of knowledge, good banking practices and copying better disclosure from foreign banks will stimulate domestic banks to reduce costs, increase the efficiency and increase the diversity of financial service.

3.4.7. Lessons for Ethiopia from financial sector liberalized economies

South Korea

South Korea's economy was the fastest growing economy in the world until it faced a crisis in 1997. Starting from the early 1960s, its growth had been called a miracle. Korea's economic growth was based on strong government intervention in allocating resources (Cho and Kim 1995; Park 1993, 2001; Woo, 1991). The key instrument in this growth strategy was the government's control over the financial sector. We need to understand the dynamics of financial repression, liberalization, crisis, and the transition from a heavily state-controlled financial system to a market-oriented system. The role played by the government can be summarized as:

- First, the government selected priority sectors and supported investment into these sectors through interventions in credit allocation;
- Second, the government encouraged the mobilization of financial savings by implicitly guaranteeing financial institutions and creating incentives for them to maximize deposits and assets rather than profits; and
- Third, the government became an active risk partner in the corporate sector by controlling the financial sector and encouraging adventurous, aggressive investment expansion and capital accumulation. At times, the government also helped build markets and institutions.

Based on the study of Cho, Yoon Je (2002), the following lessons have been drawn from South Korean financial sector liberalization and financial sector development.

First, the perception that poorly managed banks need to be corrected via incentive structure to change the banking culture, including management priorities, risk management, and lending behaviors.

Second, once the perception is corrected, the preference of the household savers is also realigned.

Third, strengthening the regulatory norms also contributed to improved capital adequacy ratios, assets quality, transparency of management decisions and portfolio structures.

Fourth, the improvement of the governance structure, with outside directors taking the majority on board, has created great pressure for change in the banking culture.

Fifth, the capital market opening, which eliminated the limit on the share of foreign investors in the bank's capital, resulted in a situation where foreign institutional investors own the majority share of the most commercial banks (except nationalized banks).

The Korean financial sector did not liberalize all at once. Rather, it has been indirectly controlling the credit and interest rates.

Indonesia

Indonesia's phased and gradual approach to reforms appeared to mitigate some of the major risks of financial sector reforms. The first phase of the financial reforms in Indonesia involved the removal of direct credit and interest rate controls and shifted toward a more market-oriented credit allocation and monetary control system. Generally, Indonesian experience shows that:

- Liberalization was gradual;
- The first removal of direct credit and interest rate control;
- A shift toward a more market-oriented system of credit allocation and monetary control;
- The second phase of deregulation altered the financial system structure, with a substantial reduction in directed credit and a major increase in the number of financial institutions;
- Later on, the volatility of capital flows was managed by indirect monetary controls that varied interest rate;
- The increase in real interest rates following the reforms also appeared to be an important factor that contributed to an increase in deposit mobilization and helped to mitigate the rapid growth of bank credit;

Argentina

The financial reforms in Argentina from 1977-1980 illustrate the risks of financial sector liberalization when other structural and macroeconomic policies are inadequate to support the liberalization. Unfortunately, the reforms did not sufficiently promote competition within the financial system, resulting in reshuffling of the existing institutions and ownership rather than undergoing through a fundamental reorganization. New instruments and markets in securities were not part of the reform. Consequently, the financial system remained uncompetitive and underdeveloped, and borrowers continued to rely mainly on bank's borrowing rather than on equity financing. Also, prudential controls were not developed, while at the same time, deposits were guaranteed by the state. As a result, there were moral hazard problems, and credit allocation was ineffective, resulting in an increasingly poor quality of loan portfolios among banks. The macroeconomic policy also contributed to the failure of liberalization, where relaxed direct credit controls and initially low real interest rates allowed for a rapid expansion of bank credit. Concurrently, the government deficit increased, and gross domestic savings declined as a percent of GDP. In addition, the overvaluation of the exchange rate

aggravated the external position and weakened the financial position of business enterprises. When the monetary policy was eventually tightened in 1981 due to the loss of confidence in the exchange rate, it precipitated a financial crisis because of the weak positions of banks and business enterprises. Generally, the following lessons could be learned from Argentina's failure cases:

- Financial sector liberalization was made before strengthening the inadequate structural and macroeconomic policies to support the liberalization;
- The reforms did not sufficiently promote competition within the financial system and largely resulted in a reshuffling of existing institutions and ownerships;
- Borrowers continued to rely mainly on bank borrowing rather than equity financing and the state-guaranteed deposits;
- As a result, there were moral hazard problems, and credit allocation was ineffective, resulting in an increasingly poor quality of loan portfolios among banks;
- The macroeconomic policy also contributed to the failure of liberalization, where relaxed direct credit controls and initially low real interest rates allowed for a rapid expansion of bank credit. Concurrently the government deficit was increasing, and gross domestic savings declined as a percent of GDP.

Chile

The financial liberalization in Chile illustrates the risks of financial reform, even with fiscal adjustments and a restrictive monetary policy. Despite the highly positive real interest rates after the reforms, private credit growth was very rapid-more so than the growth of private sector deposits. This partly reflected the weak prudential regulations that permitted a rapid credit expansion to nonviable projects and subsequent distress borrowing because of the persistence of high real interest rates. In the meantime, the reduction in the fiscal deficit minimized the impact of the faster growth of credit than deposits on the investment-savings balance. However, the rapid credit growth associated with a high concentration of bank ownership, loans to interrelated entities, and inadequate supervision resulted in a weak allocation of private credit and a serious banking crisis. Although the authorities in Chile revised the prudential regulations at the beginning of their reforms, the controls were poorly designed and inadequately implemented, particularly concerning the concentration of ownership, restrictions on bank loans to interrelated entities, and loan classification and provisioning requirements. There was also little market discipline at the banks because of implicit deposit guarantees. The weak prudential controls and rapid credit growth allowed banks and borrowers to become overexposed. A financial crisis resulted when financial conditions tightened in 1981 because of pressure on the overvalued exchange rate. In conclusion, the following lessons can be taken from the failure cases of Chile:

- High positive real interest rates after the reforms were in place led to a rapid private credit expansion to nonviable projects that resulted in distress on borrowing; and
- The rapid credit growth associated with a high concentration of bank ownership, loans to interrelated entities, and inadequate supervision resulted in a weak allocation of private credit and a serious banking crisis.

Botswana

Most southern African development community countries introduced financial reforms in the late 1980s and 1990s (Mowatt, 2001). Prior to the reforms, the financial systems of most of these countries were largely controlled by the respective governments, real interest rates were negative, and

there was a lack of competition, especially in the banking sector. Financial reforms positively turned real interest rates from negative to positive territory, despite the obstacles of high inflation and increasing savings and investments in several countries. To a large extent, financial reforms were successful in Botswana and Mauritius. Due to a market-oriented economy, savings and investments have been high in Botswana. This has positively increased the economic growth and propelled the country into middle-income territory with a high standard of living.

Botswana has embarked on several reform measures to facilitate the development of the financial sector over the past two decades. Major reforms that were implemented to encourage financial deepening and competition include the deregulation of interest rates, lessening commercial bank licensing requirements, and removing foreign exchange controls. Other important reform measures in the financial sector were establishing the Botswana stock exchange in 1989 and introducing government bonds to support the development of the domestic capital market. The following lessons that can be considered from successful cases in Botswana:

- Prior to the reforms, the financial systems were largely controlled by the government, real interest rates were negative and there was a lack of competition, especially in the banking sector;
- After the financial reform, real interest rates changed from negative to positive territory, despite the obstacles of high inflation and increasing savings and investments in several countries;
- Due to a market-oriented economy, savings and investments have been high in Botswana that was resulting in a positive effect on increasing economic growth;
- Major reforms that were implemented to encourage financial reform in Botswana were;
 - * In 1986 Removal of control on interest rates;
 - * In 1989 Establishment of the Botswana stock exchange;
 - * In 1990 Liberalization of commercial bank licensing requirements;
 - * In 1991 Introduction of Bank of Botswana Certificates;
 - * In 1995/96, Modernization of legislation (revised Bank of Botswana Act; Bank Act);
 - * In 1999 Removal of foreign exchange controls;
 - * In 2000 Launching of International Financial Service Center (IFSC) operations; and
 - * In 2003 the introduction of 2-, 5-, and 12- year government bonds were introduced.

Kenya

Kenya has made remarkable progress over the last decade in expanding financial access. Three quarters of adult Kenyans are now with a formal account through which they can save and transact. The country has reached a level of financial access which is seen in more developed economies. The Brookings Institute's 2015 financial and digital inclusion report ranked Kenya as the first out of 24 emerging economies that are increasing access to affordable financial services. This progress is due, in large part, to the collective efforts of various players in the Kenyan financial system. Regulators opened the way for innovators to deliver groundbreaking solutions through digital technology; banks developed basic accounts delivered through branches and agents close to where people live and work; and government social transfer programs are using the financial system to reach remote corners of the country (Heyer and King, 2015). The success of Kenya's financial digitalization is attributed to regulators' commitment and financial liberalization.

3.4.8. Lesson on the sequence of liberalization

An ordered process of financial liberalization is often emphasized to minimize the adverse impact of possible disturbances from the deregulation process on economic and financial stability. It is often suggested that domestic financial deregulation should ideally be implemented before opening the financial sector to competition from foreign financial institutions and the relaxation of foreign exchange controls. Similarly, it is suggested that trade deregulation should precede to the liberalization of external financial transactions and that current account deregulation should be implemented prior to the deregulation of capital flows (Shih, 1996).

In practice, however, the sequence may be distorted due to political considerations or pressure from both domestic and foreign interested groups. An example in Taiwan is that the correct sequence of deregulating the banking system would be to streamline the banking supervisory system, privatize government-owned banks, and finally allow the entry of new private commercial banks. However, protests from different interest groups and the lengthy administrative and legislative process have seriously delayed the privatization and upsetted the planned sequence. In any event, the entry of new private banks has been allowed. First, the bank supervision system has not yet been fully streamlined, and government-owned banks are not yet privatized. Nevertheless, the Taiwan government eventually managed the financial sector liberalization process and was able to benefit from it.

The overall takeaway from the successful economies is that maintaining macroeconomic stability, strengthening financial institutions' capability to monitor and supervise, and following an appropriate sequence of the financial sector, liberalization¹ is among the pathways for successful financial sector liberalizations. Based on successful economic experiences concerning the sequence of liberalization, there is no uniformity across the board; rather, depending on the context. However, according to Patabendige & Senarath (2014) and Mohammed (2017), the optimal sequence of financial sector liberalization would follow the following order.

¹Instruments used to liberalize financial sectors are credit controls, interest rate, entry barriers, gov't Regulation of operation, privatization, international capital flows

Table 3. 27: Optimal sequence of liberalization

	Sequence 01 	Sequence 02 	Sequence 03
Order of sequence	Liberalizing of the real sector	Liberalization of the domestic financial sector	Liberalization of the external financial sector
Instruments	Fiscal discipline(stability) Elimination of implicit and explicit taxes and subsidy Privatization	Restricting /privatization of the domestic financial system Creation/reactivation of the money market	Liberalization of the current transaction (capital account) Creation of foreign currency exchange market and currency convertibility Control elimination on capital movement

In addition to the sequence of liberalization, there can also be different modes of entry of foreign banks to host countries. A given economy may allow entry of foreign banks either in the form of subsidiary, branch, joint venture, or representative office depending on the expected benefit earned by the host economies. In fact, these modalities of entry may vary in terms of legal aspects, functionality, and flexibility. For instance, a branch is an extension of the parent company operating under the laws of another jurisdiction so that it is not a separate legal entity. A subsidiary (most typically a limited company) is a separate legal entity with separate legal liability albeit typically owned and run by the parent company. Whereas, a joint venture is created by two or more businesses pooling their resources and expertise to achieve a particular goal. The risks and rewards of the enterprise are also shared. Therefore, we believe that the mode of entry is mostly decided by the entrant company. But host economies could also sometimes set modalities of entry to be allowed for foreign financial sector's experimentation before fully opened up. However, due to limited data on these issues, we are afraid to strongly suggest the policymakers to whether allow or not to allow specific types of entry modes for foreign entrant companies in the context of Ethiopia.

3.5. Conclusion and Policy Implications

3.5.1. Conclusion

We conducted an in-depth analysis of the Ethiopia's financial sector in view of the government's plan to open up the domestic financial sector to foreign operators, a sector that has been strongly protected for years. More specifically, we examined, among others, the competitiveness of the domestic financial institutions (for example, banks, insurance, Micro finance institutions), determinants of their financial performances, potential benefits and costs of opening up the financial sector to foreign operators, innovativeness of the domestic financial institutions, government's regulatory capacity, and inclusiveness of the current financial system in the country. Hence, the following conclusion can be drawn from our findings.

- In terms of efficiency and profitability, Ethiopia's financial institutions perform poorly compared to financial institutions in sub-Saharan African countries.

- The current financial sector in Ethiopia can be characterized by monopolistic competition, indicating that the sector is not yet competitive enough given the government's protectionist policy and the presence of strong state-owned institutions in the sector.
- Both micro- (firm-specific) and macro-level variables were found to influence the operation of the financial institutions in Ethiopia. However, the nature of the influences of those variables depends on whether a firm is in the banking, insurance, or microfinance sectors. Firm-specific factors that influence the performance of the banks include asset liquidity, asset quality, loan to deposit ratio, and management efficiency. Liquidity, management efficiency, and company size play vital roles in the performance of insurance companies. Similarly, the performance of microfinance institutions is largely influenced by firm-specific variables such as ownership type, interest spread, management efficiency, liquidity ratio, asset quality, and capital adequacy.
- In both the long and short run, financial liberalization has both costs and benefits for the Ethiopian economy. Foreign operators' entry into the financial sector may improve economic growth directly and indirectly by improving efficiency. However, the entry will reduce economic growth indirectly by increasing bank fragility.
- The potential benefits of liberalizing the Ethiopian financial sector include, among other things, an increase in skills, knowledge, and technology transfers; an improvement in the financial supervision and regulation capacity; development of secondary financial markets; improved infrastructure; enhanced competitiveness of local firms, improved quality services; increased credit supply; and the introduction of new financial goods and services.
- The potential costs of opening the domestic financial institutions to foreign operators include an increase in operating costs, a sudden capital outflow (capital flight), biased credit provision to big firms, a fall in the market share of the domestic financial sector, the promotion of home country exports instead of domestic exports, increased instability, and supervisory difficulties.
- From a microeconomic perspective, liberalizing the financial sector may have both positive and negative consequences. The positive consequences include FDI promotion, a reduced population-to-financial sector ratio, lowered lending interest rates, reduced cost of financial service, improved economies of scale and scope, improved consumer and mortgage credit, increased employment and wage rates, and a stable source of credit. Its potential negative consequences can be the loss of macroeconomic stability, the suffering of small firms from credit shortage, the lack of interest by foreign financial institutions in mobilizing domestic capital, and the volatility of capital flows.
- It has been widely believed that an inclusive financial system is vital for economic growth and development. However, our study results showed that the rural population, smallholder farmers, SMEs, and women have been largely excluded from the modern financial system in Ethiopia. This can be attributed to, according to our findings, weak competition in the sector to motivate banks to serve the unbanked population, poor infrastructure (internet, energy, and roads), poor security in remote areas of the country, limited use of financial technologies available in the market, collateral-based credit provision, a cost of credit that is high but a saving interest rate that is unattractive in society, and unpredictable directives from the supervision body.

- The findings suggest that the current policy guiding the financial sector needs to be revised; the National Bank of Ethiopia lacks political independence in supervising and guiding the sector; the share of private ownership in Ethiopia's financial sector should be increased; the share of foreign ownership in the financial sector should be limited; and there should be some restrictions in allowing foreigners to operate in the country's financial systems. The current policy guiding the financial sector should be given due attention if the sector needs to be liberalized.
- The majority of the financial sector's financial products and innovations are currently limited to basic financial products and do not adopt innovations (e-commerce, e-marketing, biometric identifications, and remote data processing). The major obstacles are identified as follows: poor infrastructure (weak internet connectivity, power shortage in the rural area), knowledge gap, lack of awareness, and resistance to innovation and financial products, Limited knowledge and skilled manpower: technical challenges (post-implementation) to run the technology; limited capacity in conducting grand research (R&D); introduction of innovations is highly expensive; poor strategic leadership; restrictive regulations of the government (National Bank of Ethiopia).
- Our survey results and literature review show that the financial sector liberalization sequence may be distorted because of political considerations or pressure from domestic and foreign interest groups. However, assuming normal conditions, the optimal sequence of financial sector liberalization would be an opening of the secondary financial market, liberalization of capital accounts (offshore borrowing and multiple exchange rates), relaxation of regulations on reserves and interest rates and opening up of the domestic financial sector to global operators, and privatization of existing public financial institutions. Prerequisites or lessons taken from other countries for the globalization of the domestic financial sector, especially banks as global operators, include:
- In view of international experiences, Ethiopia may benefit from the liberalization process by ensuring adequate prudential regulation and supervision of commercial banks, implying minimal accounting and legal infrastructure levels; a reasonable degree of price stability; Profit-maximizing, competitive behavior by the commercial banks; fiscal discipline takes the form of a sustainable government-borrowing requirement that avoids inflationary expansion of reserve money by the central bank through direct domestic borrowing either by the government or through the indirect effect of government borrowing that produces surges of capital inflows requiring large purchases of foreign exchange by the central bank to prevent exchange rate appreciation; and a tax system that does not impose discriminatory explicit or implicit taxes on financial intermediation.
- The Main lesson that Ethiopia can learn from African and Latin American countries' failure and Asian successful financial liberalization before the financial crisis: A stable macroeconomic is an important variable in the success of financial liberalization.
- The findings from the literature show that financial liberalization policies should be implemented with caution, taking into account the context and timing of the policies to avoid endangering financial stability;
- The lesson from successful countries shows that financial sector liberalization should follow a gradual approach. First, a strong and stable economy needs strong financial sector

institutions. Then, following a gradual approach, financial sector reforms could be put in place with strong indirect control based on the situation; and

- The lesson from failed countries shows that it is a crisis to liberalize the financial sector before strengthening the structural and macroeconomic policies that are inadequate to support the liberalization.

3.5.2. Policy implications

Our findings have several implications to the financial sector operators and policymakers to effectively manage a vital structural transformation process which demands a strong commitment and a concerted effort of several stakeholders. In general, it is believed that liberalization of the financial sector has both micro and macro benefits; however, these benefits can be materialized if the liberalization process is well managed and properly implemented. We have developed policy implications based on our findings and suggestions are given by financial institution operators and key informants from the NBE, and from empirical literature review. Policy suggestions can pre-liberalization and post liberalization but they are not exclusive.

3.5.2.1. Pre-liberalization stage

For the existing financial institutions and policymakers, this is a stage that involves proper management of activities and ready to compete in the expected new market environment and take opportunities and reduce threats of transformation of the financial sector.

Financial institutions

- Given the current technological, human, financial and organizational structure capabilities, the costs of liberalizing the financial sector may outweigh its benefits. Hence, our financial institutions need to work hard to bring themselves to the required level of readiness.
- Capacity building up (in organizational structure, technology, knowledge and skills, and financial resources). Therefore, financial institutions shall revise organizational design and strategic plans considering opportunities and threats that may arise due to the FS liberalization; increase investment on their R&D, and on technology; adopt merger and acquisition strategies to build competitiveness and allow offshore borrowing.
- Financial institutions need to enhance their cyber security systems
- Financial institutions shall actively involve in digital finance
- Investment shall follow strict project appraisal
- Professionalism and healthy competition and bank associations need to be too strong to reduce traditional competition.

Government

Government is primarily responsible for creating an enabling business environment; hence, before liberalization of the financial sector, government (NBE) shall:

- ensure stable macro economy; shall not consider it as a solution to macroeconomic instability.
- have clear policy on capital flight and negotiate on reinvestment to manage capital out flow (stability issues)

- introduce foreign financial institutions on acquiring less than 50% of shares from the existing private financial sector.
- ensure required level of capacity and capability in its supervision, leadership and digitalization (human capital, technology and organization structure) to properly manage liberalization. Therefore, NBE/government shall revise working policies, organizational structure, strategic plan, directives, and regulations; establish separate supervisory institution for insurance industry with the knowledge and skills that sector demands; investment on Rand D, training and technology closely supervise and work in supporting FIs to build up their human, technology, and financial capabilities ahead of FS liberalization identifying financial institutions' constraining (directives, regulations and replacing them); facilitate early merger and acquisition of domestic financial institution; tax-free schemes to domestic firms in acquiring technology and other resources; create enabling business environment for all banks(private and public)
- avoid total liberalization; articulate prudent but less bureaucratic policies
- introduce of compulsory insurance policy
- encourage greenfield foreign bank investment
- regulate and promote fair competition among firms in the financial industry
- ensure the participation of stakeholders in the formulation of policies and directives
- revise directives related to foreign currency surrender so that private commercial banks shall fully utilize foreign currency coming from their own operations.
- ensure the merit-based appointment of higher officials instead of political affiliations.
- Implement the liberalization process gradually and progressively.

3.4.2. Post liberalization stage

This involves the implementation of the regulations and directives related to liberalizations of the financial sector and monitoring of the implementation process.

Financial institutions

- May need to have qualified leaders who can manage the transformation process.
- Implement of reward mechanisms that attract, motivate and retain skilled employees
- Establish strong monitoring evaluation systems and take corrective measures when and where necessary.
- Pursue product diversification strategies.
- Continue investment on innovations
- Provide differentiated and customized financial products to excluded population
- Continue improving management efficiency and quality of their service.

Government

- monitoring the implementation of the liberalization policy and taking corrective measures
- when and where necessary to minimize potential risks (instability) associated with liberalization
- Decide the sequences of activities and gradual –liberalization than radical liberalization.

- Shall ensure implementation of liberalization in the right sequence.
- work with financial institutions to ensure financial inclusiveness (rural pop and small firms)
- supporting financial institutions to use technologies to address the needs of the disadvantaged groups
- Work with Financial institutions to design a solution to easy credit requirements to disadvantaged groups so that they can access credit with little constraint or without/little collateral requirements.
- May minimize potential risk of instability associated with liberalization
- Intervene with appropriate policy tools to avoid the unnecessary outflow of capital.
- ensure impartial applications laws and regulations to private and public institutions.
- Properly design and implement risk monitoring regulations
- Limit the maximum interest rate on loans
- provide strict supervision to ensure effective implementation of directives
- ensure strict control to manage illegal money movement in the country
- revise directives and regulations especially on nonperforming loans, reserve ratio, interest rate, capital adequacy

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CHAPTER FOUR

Agriculture-Industry Linkages for Employment and Economic Transformation in Ethiopia

4.1 Introduction

4.1.1. Background

There has been strong consensus among scholars of development economics that the industrial sector, particularly manufacturing, possesses relatively a much bigger potential than other sectors in terms of sustainably absorbing large amounts of labor force and achieving successful economic structural transformation. This mainly emanates from the sector's benefit from technological improvements, its high capacity to exhibit prolonged periods of increasing returns to scale, and its high potential for inducing the development of other sectors through its strong backward and forward linkages (Newman et al., 2016). As a result, manufacturing has historically received a disproportionately favorable policy and financial support in many countries in different epochs.

It is evident that structural transformation cannot be achieved without strong linkages between agriculture and manufacturing particularly at the early stages of the development process. Cognizant to this, economic development theories have given considerable attention to sectoral linkages since the 1950s. For instance, Lewis (1954) considered agriculture as less productive compared to manufacturing. He then suggested that the agricultural labor should be reallocated to the most productive manufacturing sector. According to Lewis, the role of agriculture was mainly to supply labor to manufacturing sector, which expands continually through adopting productivity enhancing technologies. In a definitive form, the essence of sectoral linkage was introduced by proponents of unbalanced growth model, which believed that manufacturing sector with higher forward and backward linkages should be promoted to induce growth and development (Hirschman, 1958)¹.

The development process of many countries clearly shows that at the earlier phase, countries tend to produce commodities which intensively use agricultural outputs as intermediate input and also heavily rely on labour-intensive techniques. For instance, from recent experiences in South-East Asian (SEA), South Korea gave prime focus on the development of agro-processing industries such as textile and garment, food, and beverage at the early stages of industrialization in the 1970s (UNIDO, 2017). This development pathway helped South Korea and other SEA countries to achieve sustainable growth, and structural transformation. For instance, from 1950 to 1990, industrial employment soared from 7 percent to 26.9 percent in South Korea, from 12 percent to 32 percent in Taiwan and from 19 percent to 29.5 percent in Singapore (UNCTAD, 1996). This entails that, effective sectoral linkages could serve as a steppingstone for achieving successful structural transformation in Ethiopia wherein agriculture still contributes 32.5 percent of the Gross Domestic Product (GDP) while manufacturing contributes only 6.8 percent of the total GDP (PDC, 2021). Thus, strengthening linkages between manufacturing and other sectors particularly agriculture as well as linkages within manufacturing are the key focuses in designing development plans, policies, and strategies aimed at sustainably improving employment creation and economic structural transformation.

4.1.2. Statement of the problem

Ethiopia has introduced a series of economic development policies and strategies since the formulation of its First Five-Year development plan (1957-63) to transform the economy and improve

¹ This theory explicitly recognizes the linkage between agriculture and the manufacturing as a source of sustainable economic development.

the lives and livelihoods of its citizens (Welteji, 2018). These development policies and strategies have promoted some selected sectors in their respective implementation periods. For instance, in the mid-1960s, the imperial government anchored its economic development strategy on the development of sectors such as agro-processing, mining, and power generation with the ultimate objective of propping up the domestic manufacturing capacity. This enabled the manufacturing sector to grow at an annual average rate of 16 percent, and thus the sector's share in the total GDP reached 13 percent in 1967 from 9 percent in 1963 (UNDP, 2017). By contrast, agricultural sector development did not get enough emphasis by then. Agriculture was mainly meant to supply raw materials for the industrial sector besides the usual role of supplying the food required for household consumption.

The economic development pathway of Ethiopia was adhering to the 'industry first' approach in the 1950s and 1960s. Unfortunately, the industrial growth could not be sustained with the same pace after Ethiopia joined the socialist block in 1974. The shift in the political ideology has been accompanied by reforms that encouraged public ownership of private enterprises and thus the booming private sector left way for communal ownership. This adversely affected the status of the overall economy while industry sector growth drastically decelerated with negative growth rate averaging -1.4 percent per annum over the seventeen-years (1973/74 to 1990/91) of the Dergue period.

Ethiopia reverted to the market led economic system after the downfall of the socialist Dergue regime in 1991. Consequently, various reforms² have been initiated to speed up the transition into a market based economic system partly supported by the structural adjustment program spearheaded by the World Bank (WB) and the International Monetary Fund (IMF). Ethiopia also introduced the Sustainable Development and Poverty Reduction Program (SDPRP) and the Plan for Accelerated and Sustained Development to End Poverty (PASDEP), which were used as guiding strategic frameworks during 2002/03-2004/05 and 2005/06-2009/10, respectively. The country has also introduced Agricultural Development Led Industrialization (ADLI) strategy in 1993, and this has continued to be the overarching strategy on Ethiopia's development efforts complementing the initiatives under the SDPRP and PASDEP until the first Growth and Transformation Plan (GTP) was put in place in 2010. The main aim of the ADLI strategy was to achieve initial industrialization through robust agricultural growth and creating strong linkages between agriculture and industry.

In general, Ethiopia's development orientation in recent decades has been to bring about structural transformation primarily through industrialization. During ADLI, the attempt was to transform the economy by first developing agriculture, as it was considered as the best engine for propelling the socio-economic development due to its purported potential for creating the basis for industrialization and generating the necessary surplus for the expansion of other sectors. By prioritizing agriculture and creating initial stimulus for the sustainable growth of the industry the economic policy has been aimed to raise productivity in both agriculture and industry through appropriate linkages between sectors and other interventions. The key focuses to close the input-output linkages and enhance productivity in the overall economy were through commercialization and market-oriented production in agriculture and through export orientation and labor intensiveness in industry.

Following long years of implementing SDPRP, PASDEP, and ADLI and recognizing their failures to deliver the intended goals in sustainably developing agriculture, let alone transforming the general economic structure, Ethiopia designed and implemented two successive growth and transformation plans (GTP I and GTP II) to induce a comprehensive economic structural change. Again, the GTP I (2010/11-2014/15) and GTP II (2015/16-2019/20) also gave peculiar attention to

² Such as devaluation, liberalization, and privatization.

industrialization. Priority industries, namely textile and apparel, leather and leather products, sugar, metal and engineering, chemical products, paper products, pharmaceutical products, and agro-processing industries have been prioritized (MoFED, 2010). The argument was that industries can help diversify exports, increase foreign exchange earnings, promote linkage with the agricultural sector, create employment for the abundant labor force, and ensure rapid technology transfer.

Although Ethiopia has shown progress in selected indicators of economic development, the process of transition from agriculture to sectors with better productivity and increasing returns to scale has been sluggish. The manufacturing subsector which is conventionally known for its higher productivity and increasing returns to scale has not been performing well in Ethiopia. For instance, the share of the manufacturing subsector in GDP has remained low at less than 6.8 percent, and its share in merchandise export earning stood at less than 13 percent by the end of 2019/20 (PDC, 2021). This signifies that the manufacturing subsector is extremely feeble, and the desired change has been far from being achieved. In addition to this, the Ethiopian manufacturing subsector is characterized by less degree of sophistication and integration both within itself and with other sectors. As a result, the subsector is dominated by light industries and showed a tardy transformation over several decades. Besides, the average capacity utilization remained persistently low partly due to high reliance on imported inputs, weak forward and backward linkages, frequent energy outage, and inadequate supply of skilled labor (PDC, 2021).

The low intersectoral linkages within the domestic economy and the lack of substantial improvement in both agriculture and industry over the past decades can also be looked at from the extent the country substituted imports of agro-processed products. Much of agro processed products in big supermarkets in Ethiopia have been imported (GAIN, 2016) signifying mainly very low level of import substitution and sluggish structural transformation despite the implementation of various industrial development plans and strategies including the growth and transformation plan.

It is evident that sound policy making often requires detailed assessment using micro and macro frameworks to closely examine the degree of sectoral linkages to reap larger economic benefits in the long-term. Among these, the link between agriculture and industry dominates the debates very often; and Ethiopia's urge for economic structural transformation revolved around this very fact for the past several decades. The issue of economic structural transformation has also been considered by the former Planning and Development Commission as one of the ten strategic pillars in the ten-years development plan (PDC, 2021).

Although empirical studies on Ethiopia highlighted that the linkage between the agriculture and the manufacturing sectors and the market has not been strong, evidence have shown that strong sectoral linkage is one of the most salient sources of economic development (Berliant, 2007). This is because the expansion of key sectors will have a significant impact on competitiveness, increasing output, income, or employment domestically. Particularly, in the initial phase of development when the agriculture sector is the main driving sector of the development of the economy, it plays a crucial role in establishing the framework for industrialization (Fei and Ranis 1961, Kuznets 1965). Agriculture supplies raw materials and key inputs including labor to industry while it in turn uses important industrial outputs as productivity enhancing farm implements and machineries. These forward and backward interlinkages between the sectors are important elements of the development process. Thus, the assessment of sectoral linkages lays the foundation to ensure sustainable economic development. Therefore, a proper understanding of sectoral linkages between agriculture and industry is necessary for designing appropriate long-term policies and strategies to achieve a sustainable development by addressing the following research questions.

- To what extent do the priority industries (agro-processing) have backward and forward linkages? To what extent are manufacturing sectors linked to the agricultural sectors?
- How do manufacturing link to existing and emerging formal market outlets in Ethiopia?
- What are the hindering factors for sectors to have high sectoral linkages within the economy?

There is a wide range of empirical studies on the topic of sectoral linkages in Ethiopia. However, these studies heavily focused on examining the impact of external shocks (Tadele and Philip, 2005; Fekadu, 2007; Solomon, 2015). Critical examination of the policy context of Ethiopia from a sectoral linkages perspective using a mix of both qualitative and quantitative methods of analysis is lacking. Thus, this study aims at filling the research gaps using a Social Accounting Matrix (SAM) multiplier analysis and an additional qualitative assessment that has augmented the results of the SAM multiplier analysis by providing the necessary contextual dimensions and insights.

This study assesses and generates evidence on the opportunities and constraints that Ethiopia faced in creating decent employment opportunities in industries over the past decades. Furthermore, the study examines factors behind the weak structural transformation that has been observed in Ethiopia's economy (mainly from agriculture dominated economy to industry dominated in terms of value added, exports, and job creation) over the past decades and propose policy recommendations that help overcome this in the subsequent years of development endeavors.

4.1.3. Objectives

The general objective of the study is to assess the nature of the agriculture-industry linkages and the role of the linkages in employment creation and structural transformation of the Ethiopian economy. This general objective has been explored through the following specific objectives:

- to identify factors behind weak structural transformation observed in the Ethiopian economy despite the double-digit growth registered during the last decades;
- to assess the contribution of agriculture and industry sectors in general, and manufacturing in particular to employment creation and overall economy of the country;
- to assess the extent of the agriculture-industry linkages in the Ethiopian economy and its role in fostering economic structural transformation;
- to review experiences and lessons of other countries which remarkably transformed their economies from a predominantly agrarian economy into industrialized economy; and
- to review the existing agriculture-industry linkage policy and strategy documents, examine the documents and identify their shortcomings, if any, and propose policy reforms that are necessary for ensuring strong and effective agriculture-industry linkages that will bring the needed structural transformation of the country's economy.

4.2. Review of the Literature

4.2.1 Market and sectoral linkages theories

Efficient resource allocation is one of the central issues in economic development. This is because scarce resources ought to go into key sectors which could induce sustainable development, promote sectoral linkages, ensure broader spillover effects, and create greater employment

opportunities. Because of this, the issue of sectoral linkages has remained as an anchor subject matter in the realm of economic development since long time. Particularly, in the 1950s when “industry first” was a prominent approach in economic policy, there was huge debate about the best ways of ensuring intersectoral linkages. Some argued that economies should invest in all sectors while others suggested few, but the most important sectors should be given prime attention. Theories including ‘big push’ (Rosenstein-Rodan, 1943), ‘balanced growth’ (Nurkse, 1953), and ‘take-off into sustained growth’ (Rostow, 1956) have proposed the promotion of all sectors equally. The fundamental argument of all theorists was anchored on the fact that the industrial sector could spur economic growth and development by creating linkages in the economy.

In his study, Rosenstein-Rodan (1943) superbly argued that at an early stage of development, the investments of industrializing firms in one sector may raise the profitability of other sectors in the entire economy. Industrialization of many sectors at the same time could be beneficiary for all of them, but no sector would be benefiting industrializing alone.

Lewis (1954) also introduced growth model of development based on the historical experience of the now western industrialized countries. Lewis’ theory basically assumed that there are two sectors in a traditional economy notably traditional agricultural sector with surplus labor and a modern industrial sector with high labor productivity. Economic growth in such an economy can be achieved by rapid capital reinvestment in the non-agricultural (e.g., industrial and service) sector, aided by drawing surplus labor from the agricultural sector. In the Lewis theory, an economy gradually transits from the first, ‘labor-surplus stage’ to the second, ‘labor-scarce stage’ of development. The linkage between the agricultural and industrial sectors is through labor migration. Fie and Ranis (1961) extended the Lewis growth model, yet they considered agriculture as equally important as manufacturing in the development process. The theory averred that development can happen if there is a shift from the agricultural sector to the industrial sector of the economy, which happens by the transmission of labor from the agricultural sector to the industrial one. At the same time, growth in the agricultural sector must not be neglected and its output should be sufficient to support the whole economy with food and raw materials. This shows that Fie and Ranis (1961) recognized the importance of the agricultural sector for its contribution to supply labor and raw materials to the industrial sector through its forward linkages.

The issue of sectoral linkages was vividly discussed in the 1960s when the ‘balanced’ versus ‘unbalanced’ growth models were much debated. Both approaches emphasized the role of intersectoral linkages in the development process. The difference was basically resided on the way of ensuring effective sectoral linkages. In this regard, Nurkse’s balanced growth model claims that all sectors in the economy are important to induce economic development. Accordingly, investment should be made in all sectors in such a way the supply and demand bottlenecks could be squashed simultaneously through effective sectoral linkages. This signifies that Nurkse recognized the expansion and intersectoral balance between agriculture and manufacturing as a necessary condition to bring effective sectoral linkages in the economy. However, unbalanced growth models such as the one provided by Lewis (1954) claims that investments in selected sector would create a spill-over effect on other sectors and ultimately lead to overall economic transformation.

Though the Nurkse ‘balanced growth model’ is important to do away with sectoral linkages in a coordinated way, its applicability in developing economies remains doubtful since developing economies have deficiencies of resources, enterprises, and entrepreneurship. Because of this, Hirschman’s (1958) unbalanced growth model have gotten wider acceptance in the developing world.

The theory claims that economic growth and development could begin from promoting some prominent sectors which have strong backward and forward linkages. Hirschman pointed out that underdeveloped countries cannot develop all the sectors simultaneously rather one or two strategic sectors or industries should be given priority. The criteria of selecting priority sectors depend on the capacity of the sectors to bring backward and forward linkages in the economy.

The issue of sectoral linkages has long been one of the areas of focus in the theories of growth and development. For instance, O-ring model of economic development posits coordination failure as one of the salient reasons for underdevelopment in developing economies (Kremer, 1993). The proponents of the theory claim that effective coordination along the chain of production and distribution is quite important. This again signifies the importance of forward and backward linkages across different economic agents in the production and distribution processes to induce structural transformation and sustainable economic development. The theory also pointed out that complementarities between several conditions are necessary for successful economic development.

4.2.2. Theories on structural transformation

Most economists in the classical tradition, from Adam Smith up to the early 20th century, supposed that laissez-faire economics could achieve sustained economic growth and structural transformation due to the belief that the market system ensures efficient allocation of resources. The role of structural transformation for economic development has been glorified by Kutznets (1979) who argues that the ultimate sources of higher rate of economic growth of per capital income is achieved if there is successful structural transformation. The concern of how to achieve structural transformation paved the way for the emergence of various theories on structural transformation. For instance, Prebisch (1950) indicated that by specializing in commodities and resource intensive outputs where many of them have a comparative advantage, developing countries could miss their chances of industrializing. He suggests that this direction of structural transformation tend to make their terms of trade decline thereby exacerbating the balance-of-payments constraint on economic growth. However, empirical research vindicated that, since the mid-1970s, there has been a downward trend in the terms of trade of manufactures produced by developing countries compared to those produced by developed economies (Sarkar and Singer, 1991). In other words, developing economies that specialized in low-tech, low-skill-intensive manufactures couldn't escape the problem of declining terms of trade, while those that managed to upgrade their exports into high-tech, high-skill-intensive manufactures could improve their terms of trade. This implies that an export-oriented diversification strategy towards manufacturing does not necessarily solve the terms-of-trade issue noted by Prebisch, which in turn emphasizes the key role of upgrading and technological change.

The interest in structural transformation has been declined in the 1980s and 1990s, mainly due to the prevalence of Washington Consensus. However new strand of economic theories notably the new structural economics literature, the new Latin American structuralism, Schumpeterian, or evolutionary, economics, the global value chain literature and resource-based industrialization have been emerged since 2005. For instance, according to the new structural economics literature approach, firms would move up the industrial ladder and become progressively more competitive in more capital- and skill-intensive products. This in turn would lead to an upgrade of the overall economy's factor endowment and industrial structure (Ju et al., 2009). The evolutionary approach to structural change relies on the idea that the scope for technological change varies substantially across industries, and that the speed of

technological progress thus crucially depends on the dynamics of structural transformation in an economy (Dosi et al., 1990). The value-chain literature argues that structural transformation has also been revived by the observation that production today is globally fragmented, giving rise to global value chains. The new Latin American structuralism shows how productive heterogeneity and the direction of structural transformation that prevailed in recent decades hampered technological change and development. Latin American economies are characterized by strong heterogeneity such that resource-based industries are highly productive and technologically advanced, whereas manufacturing industries are less productive and advanced. Structural transformation favoring resource-based industries at the expense of manufacturing industries ceased industrialization and slowed technological change, learning, and accumulation of capabilities (Cimoli, 2005)

4.2.3. Empirical literature review

There are empirical evidence that deals with the contribution and influence of sectoral linkages on economic development and employment creation in different countries. Some studies applied time series econometrics while others deployed SAM multiplier analysis. In addition, some of the studies are country specific while some others have multi-country dimension. Tiffin and Irz (2006), using a co-integration framework and Granger-causality tests on 85 countries data, study found that agricultural value added is the causal variable to bring economic growth in developing countries. A study by De Souza (2015) estimates the relationship between the growth rate of agricultural productivity and the manufacturing sector for 62 developing countries. The study shows that a one percentage increase in agricultural output raises manufacturing output growth between 0.47 percent and 0.56 percent in the general model and between 0.28 percent and 0.47 percent for the parsimonious model.

The importance of agriculture for growth in the context of the ADLI strategy has been demonstrated by Vogel (1994), who estimated the forward and backward SAM multipliers for agriculture and non-agriculture for a variety of developing and developed countries and found out that the backward multipliers of agriculture are much larger than the forward multipliers at all development levels. The finding entails that the agriculture sector contributes considerably to industrial sector growth and overall economic growth in different countries.

Yao (2000) also demonstrated how agriculture has contributed to China's economic development using a co-integration analysis. Although agriculture's share in GDP declined sharply over time, it remained an important force for the growth of other sectors notably the industrial sector. Subramaniam and Michael (2009) estimated the linkages among agriculture, manufacturing, service and trade for Poland and Romania using an econometric model. The long run relationship shows that the industrial sector in Poland has positive contribution to the agricultural sector and in Romania the industrial sector is detrimental to the growth of the agricultural sector. Fiess and Verner (2001) signified agricultural sector as a major driving force in sectoral growth in Ecuador.

On the other hand, Kanwar (2000) found out that effective linkages among agriculture, infrastructure, and service sectors significantly affect the process of income generation in the manufacturing and constructions sectors in India. Saikia (2011) found that India's 'agriculture-industry' linkage has undergone directional changes as both the production and demand linkages, which were primarily from industry to agriculture in the pre-reform period and transformed to agriculture to industry in the post-reform period. It has been shown that improved agriculture performance will provide the necessary raw material for industries to thrive in Africa (Diao et al., 2018). Blunch and Verner (2006)

found empirical evidence to support a large degree of interdependence in long-run sectoral growth in Cote d'Ivoire, Ghana, and Zimbabwe, and concluded that the sectors grow together since there are externalities or spillovers.

Hoai et al. (2016) using a SAM multiplier and decomposition analysis has shown that for several important manufacturing subsectors, inter-industry interaction has contributed positively to the change in gross output between 2000 and 2012 in Vietnam, confirming the existence of higher backward linkage multipliers for these activities. Chitonge and Kabinga (2019), using SAM multiplier analysis, have shown that the agriculture and manufacturing sectors have strong backward linkages in the Zambian economy while the services sector revealed weak backward and forward linkages to the rest of the economy between 1994 and 2010. This suggests that manufacturing, particularly agro-processing relies on the agricultural sector for input supplies. Indeed, the subsector still relies on imports of non-agricultural intermediate goods. They further claimed that the local market for agro-processing products has been limited and inhibits growth in the agro-processing sector. Apart from this, they pinpointed that the subsector is hampered by policy inconsistencies and logistical constraints, which not only reduce the competitiveness of local producers but also act as a barrier to the subsector from realizing its full potential.

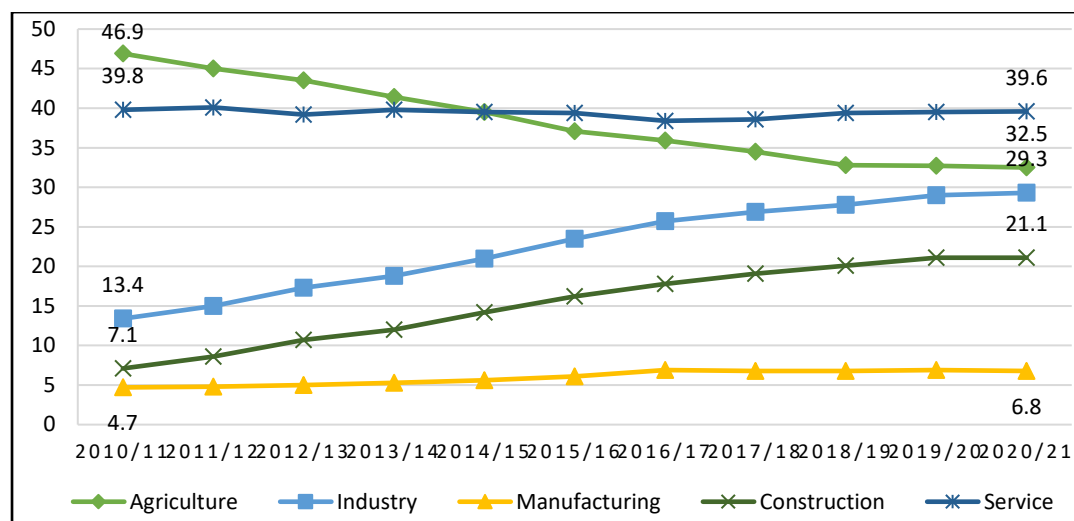
4.2.4 Overview of the Ethiopian economy

4.2.4.1 General structure of the Ethiopian economy

Ethiopia is one of the poorest countries in the world. The country's per capita income reached US\$ 1,092 in 2020/21 (PDC, 2021) which is substantially lower than the SSA regional average of US\$ 1,645. In Ethiopia the average economic growth rate of 10.5 percent from 2004-2018 over the last decade was far beyond the average 5.2 percent economic growth rate recorded in Sub-Saharan Africa (SSA) countries, (PDC, 2021). As a result, the level of poverty in Ethiopia has declined from 45.5 percent in 1995 to 29.6 percent, in 2011 (MoFED, 2012) and is estimated to reach as low as 19 percent in 2020 (PDC, 2021).

Nevertheless, such remarkable growth has not been accompanied by adequate structural transformation of the economy which should be reflected by a sustainable shift from low productivity and labor-intensive activities such as agriculture to high productivity and skills-intensive activities both within and between sectors and subsectors. Although the share of agriculture in GDP had been steadily shrinking from about 47 percent of GDP in 2010/11 to 32.5 percent in 2020/21 (Figure 4.1), the share of the manufacturing sub-sector in GDP increased from 4.7 percent in 2010/11 to 6.8 percent by 2020/21. An apparently interesting development is that the country's high growth rate has been driven primarily by growth in the service and industrial sectors (which was driven by the boom in the construction sector) which, respectively, accounted for 39 percent and 29 percent of GDP in 2020/21.

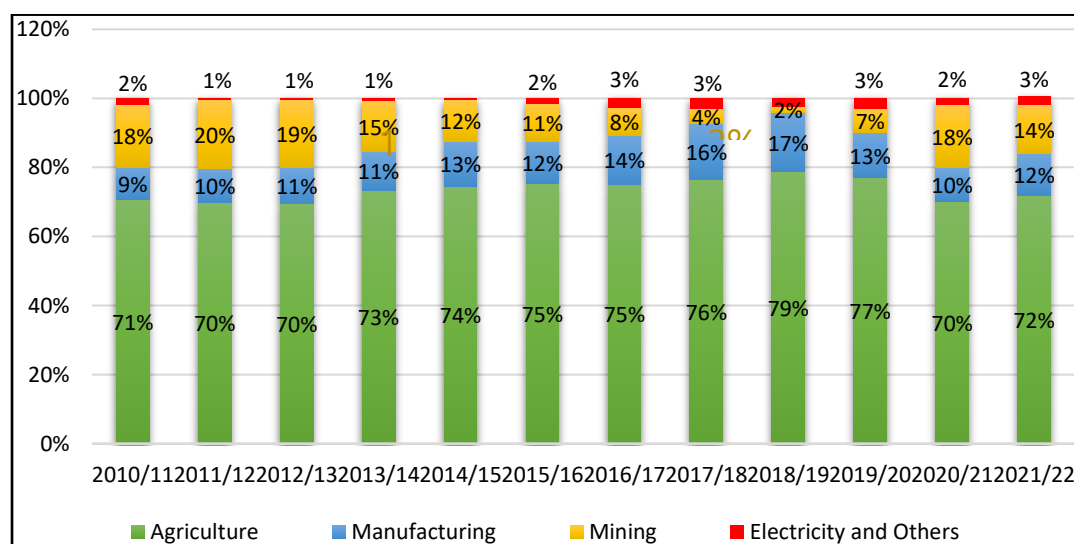
Figure 4.1: Share of major economic sectors in total GDP (percent)



Source: Ministry of Planning and Development (2021)

On the other hand, there has been encouraging results in the total value of merchandise exports in recent years. However, diversifying exports remained arduous and the main export commodities continue to be dominated by agricultural products, especially coffee, sesame, cut flowers, khat, as well as gold. One of the indicators of economic structural change is the change in the composition of merchandise exports, particularly a rise in the share of manufacturing goods in total merchandise export. In this regard, the share of manufacturing goods in total merchandise export increased from 9 percent in 2010/11 to 17 percent by 2018/19, while the share of agriculture in merchandise export increased from 71 percent to 79 percent during the same period (Figure 4.2). However, the share of manufacturing fell back to 10 percent in 2020/21 before slightly reviving to 12 percent a year later. Thus, there has not been a shift both in terms of the diversity of the products and the sectoral composition in exports – implying weak structural change in the economy. Besides, the weak performance in exports coupled with high import demands led to huge trade deficits.

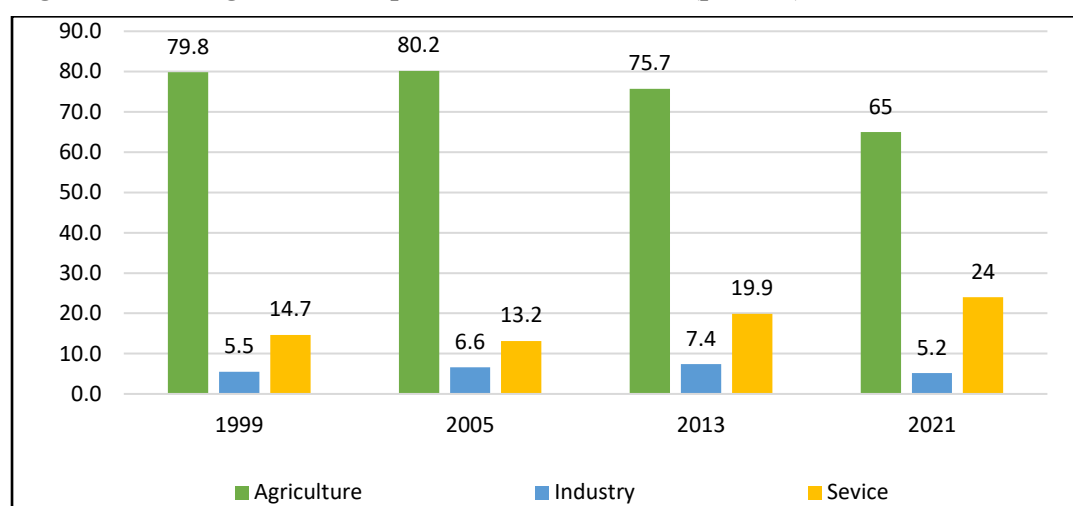
Figure 4.2: Trends in sectoral share in merchandise export (percent)



Source: Compiled Based on data from National Bank of Ethiopia

Besides changes in the sectoral compositions of GDP and export, structural change can also be mirrored through shifts in the composition of labour force participation in the economy. The economy has been highly dependent on agriculture and primary activities in terms of labour force participation. At the national level, 65 percent of the labour force are engaged in agricultural activities in 2021, which declined from 80 percent in 1999 and 72.7 percent in 2012/13 (CSA, 1999 and 2013; ESS, 2021). The data also indicates that the share of labour force participation in industry sector which includes manufacturing, mining, quarrying and construction activities together employ only 5.2 percent of the labour force in 2020/21. This is a significant decline from 7.4 percent in 2013 (Figure 4.3). While the labour force participation in agriculture noticeably declined over the past two decades, this was compensated by rise in share of services and informal sector since the industry sector's share has been falling during the same period, testifying challenges for economic structural change.

Figure 4.3: Change in the composition of labour force (percent)



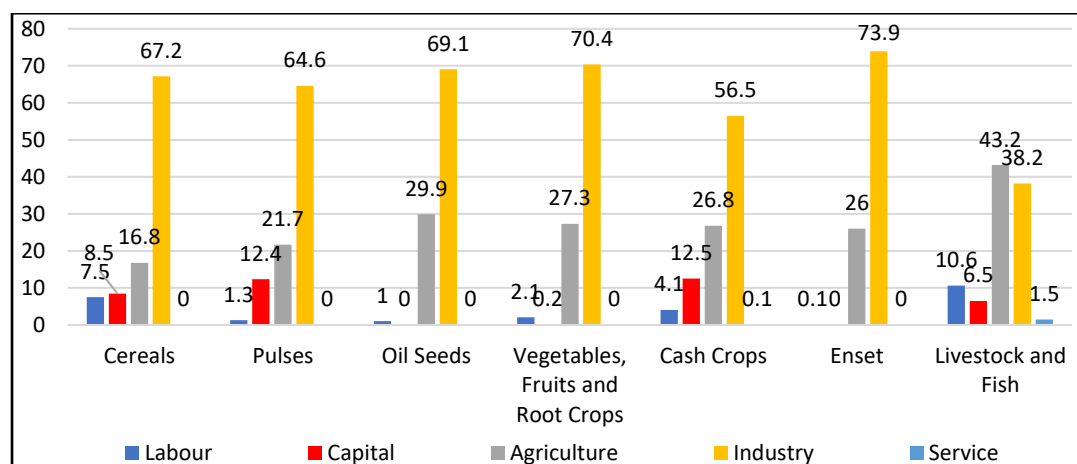
Source: Based on data from CSA (1999, 2005, 2013) and ESS (2021)

4.2.4.2 The SAM description of the structure of the economy

The production system of agricultural and industrial activities determines the level of sectoral linkages in the economy. In this regard, SAM (2015/16) based characterization has been made on the input consumption pattern of manufacturing and agricultural activities. The results have shown that agricultural activities relatively use more of labor and capital³ than intermediate inputs. For instance, the share of labor out of the total value added of cereals is 67.2 percent and the figures go as high as 70.4 percent and 73.9 percent for vegetables/fruits/root crops and Enset, respectively (Figure 4.4). On the other hand, the share of intermediate inputs from the industry sector by cereals is only 7.5% and it is as low as 1.1% for oil seeds. The results further revealed that the agricultural activities mainly use intermediate inputs from the agricultural sector itself. This is evidenced by the fact that the share of intermediate inputs from the agricultural sectors by cereals and pulse out of the value of the total output are 8.5 percent and 12.4 percent, respectively. The figure goes as high as 12.5 percent by cash crops. This entails that the linkage of the agricultural sector with the industrial sector is relatively weak.

³ Land is included in capital for simplicity.

Figure 4.4: Share of production factors and intermediate inputs from total value of agricultural outputs (percent)

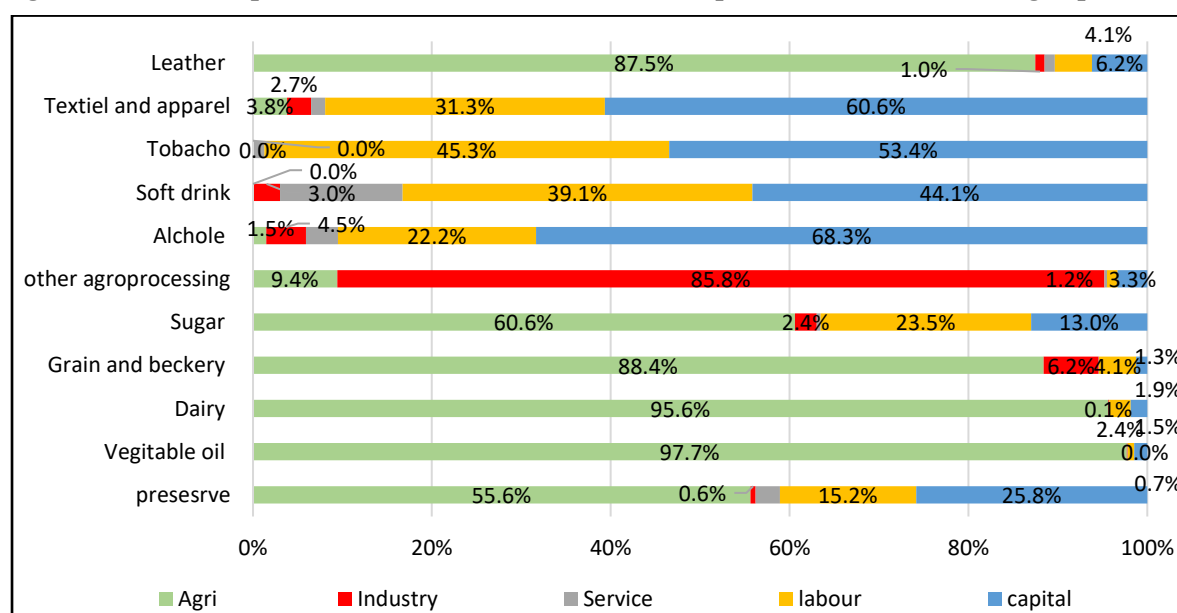


Source: Authors' computation based on SAM (2015/16)

Since the agricultural activities are mostly rainfed and do not use that much agro-chemicals and fertilizer, the share of agro-chemicals and fertilizers from the total value of the agricultural outputs is low.

The industrial sector relatively uses more of intermediate inputs compared to the agricultural sector. The input consumption pattern of manufactured activities varies across activities. Some use more of intermediate inputs while others use production factors intensively. For instance, 87.5 percent of the total value of the leather sector goes to the agricultural intermediate inputs. The figures go as high as 97.7 percent, 95.6 percent, and 88.4 percent for vegetable oil and dairy processing industries, and millers/bakeries respectively. Some of the industries notably textile and apparel, tobacco, beverage and alcohol use labor and capital intensively (Figure 4.5). For example, from the total value of textile 60.6 percent goes to capital and 31.3 percent of it goes to labor. This entails that these industries have the potential to create more employment opportunities.

Figure 4.5: Share of production factors and intermediate inputs from total values of agro-processing



Source: Authors' computation based on SAM (2015/16)

Sectoral linkages also depend on the consumption pattern of households and other economic agents. For instance, if households, firms and the government consume more of domestically produced goods that heavily use domestically produced raw materials and intermediate inputs, then they will induce more linkages and spillover effects in the economy. In this regard, agro-processing firms which use domestically produced agricultural outputs as intermediate inputs can boost demand for domestically produced agricultural goods through its backward linkage. Cognizant to this, assessment has been made on the sources of demand for goods and services. Results have revealed that from the total production of cereals, 85 percent is consumed as intermediate input by agro-processing enterprises, mainly grain mills and bakeries/grain mills. The rest 8 percent and 7 percent are consumed by households for final consumption and as intermediate input by the agriculture sector itself (e.g., seed usage), respectively. Similar demand pattern holds true for pulses and oil seeds (Table 4.1). But the lion shares of the demand of vegetables, Enset, cash crops, and livestock are consumed directly by households. This reality signals that many of the agro-processing enterprises are engaging in very few sectors notably grain mill, bakery, and vegetable oil production while agro-processing related to fruit and vegetables and livestock are not well developed.

Table 4.1: Demand structure for agricultural commodities (percent)

Type of Commodity	Intermediate input for agricultural sector	Intermediate input for industrial sector	Consumption by households	Investment	Export
Cereals	7	85	8	0	0
Pulses	11	57	13	0	19
Oilseeds	0	60	23	0	17
Vegetables and fruits	0	34	64	0	1
Cash crop	10	12	34	0	43
Enset	0	0	100	0	0
Livestock and fish	6	27	63	2	2

Source: Authors' computation based on SAM (2015/16)

It is evident that the lion's share of the manufacturing sector in Ethiopia are comprised of agro-processing and simple labor-intensive industries. Examining the sources of demand for these products helps to scrutinize the level of linkages they tend to create with the rest of the activities in the economy. For instance, the lion's share of the demand for the agro-processed products come from households. This signifies that these products are not heavily used as intermediate inputs. It is mainly the textile and the leather industries which export their outputs to the rest of the world.

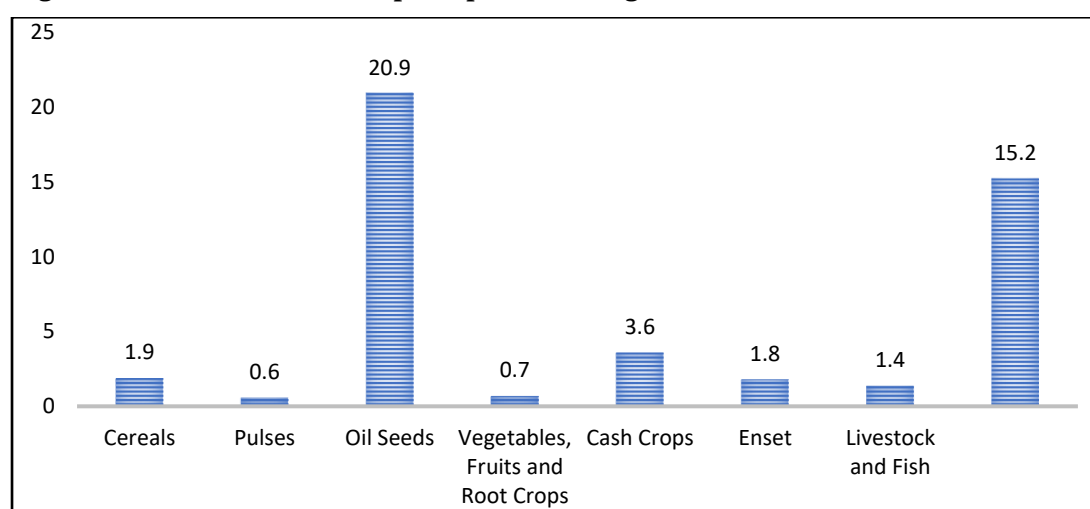
Table 4.2: Demand structure for agro-processed commodities

Type of Agro-processed commodities	Intermediate input for agricultural sector	Intermediate input for industrial sector	Consumption by households	Export
Preserve	0	36	52	12
Vegetable oil	24	18	58	0
Dairy	0	8	92	0
Bakery and grain mills	0	28	71	1
Sugar	0	20	80	0
Other agro-processing	23	2	75	0
Alcohol	0	3	97	0
Beverage	0	52	48	1
Tobacco	0	47	53	0
Textile/apparel	0	9	85	6
Leather	0	2	90	9

Source: Authors' computation based on SAM (2015/16)

An assessment has been made on the consumption pattern of different households in Ethiopia based on the 2015/16 SAM. Households nearly spend 55 percent of their income on food which are heavily coming from domestic sources. Bakery/grain mills constitutes the highest share of expenditure of the households followed by livestock and fish.

Figure 4.6: Household consumption patterns of agricultural commodities

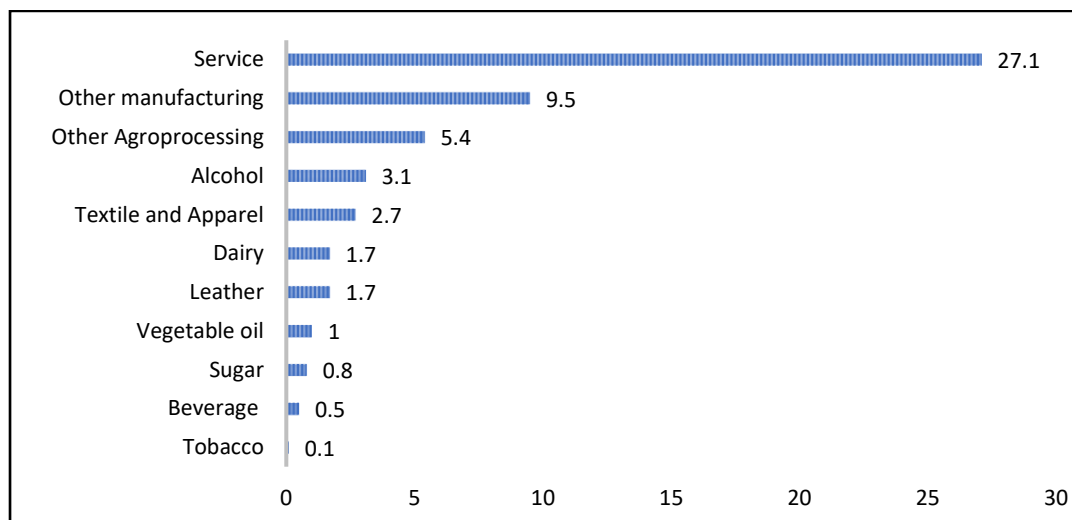


Source: Authors' computation based on SAM (2015/16)

Households spend nearly 27 percent of their expenditure on services. Textile and apparel and leather together accounts 5 percent of the total expenditure of households. “Other agro-processing”, alcohol and dairy are the other important commodities where households spend their income. Besides, the share of imports in total supply of basic cereals is less than 0.5 percent which is extremely small. However, the corresponding import shares of textile (38 percent), paper (37 percent), sugar (11 percent),

and leather (6 percent) are relatively higher. It is only the leather industry which exports more than it imports.

Figure 4.7: Share of expenditures of households on non-agricultural commodities

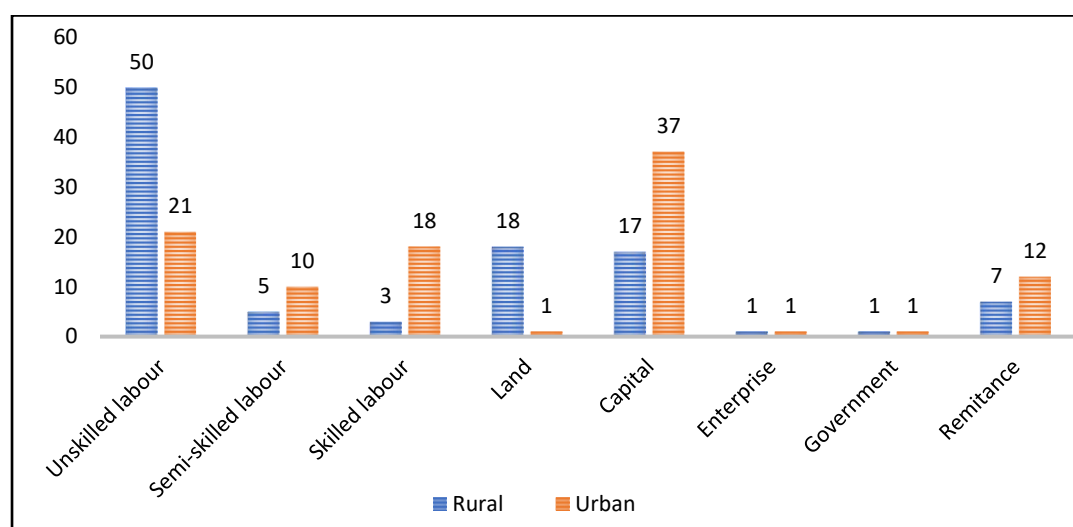


Source: Authors' computation based on SAM (2015/16)

Households get income mainly from labor (64.7 percent), capital (33.6 percent), land (1.14 percent), and remittance (0.3 percent). These are agricultural labour, non-agricultural labour, capital and land. These factors contribute more than 90 percent of the income of poor rural households. This figure is more than 83 percent for non-poor rural households. Indeed, the pattern is different between poor and non-poor households. The non-poor households earn their income from agricultural labor and non-agricultural capital. But the poor households earn their income mainly from agricultural labor. This is because non-poor households have non-agricultural assets using which they fetch additional incomes. On the other hand, urban households earn much of their income from skilled, unskilled, and professional labors. For instance, all urban households earn more than 60 percent of income from skilled labor. Small urban non-poor households obtain 20 percent of their income share from unskilled labor (Figure 4.8).

Thorough analysis has been made on the sources of income of households. The result shows that rural households earn nearly 50 percent of the total income from unskilled labor while the share is as low as 21 percent for urban household which earn 37 percent and 18 percent of its income from capital and skilled labor, respectively. Apart from this, both rural and urban households get income from the government in the form of transfers. The contribution of the government to both rural and urban households is extremely infinitesimal. In this regard, government transfers a higher income share to the urban households compared to the rural households. The other source of income of households is remittance from the rest of the world. This is evidenced by the fact that nearly 12 percent of the income of the urban households and 7 percent of the rural households come from remittances sent from the rest of the world.

Figure 4.8: Sources of income of households (percent)



Source: Authors' computation based on SAM (2015/16)

4.3. Methodology

4.3.1. Data

Both primary and secondary data were collected using appropriate data collection tools. Secondary data were collected from various sources including national and sectoral plans, policies, strategies, reports, national accounts statistics, and other relevant documents. Macroeconomic and sectoral data were collected mainly on agriculture and manufacturing especially from Ethiopian Statistics Service, Ministry of Planning and Development, Ministry of Industry, Ministry of Agriculture, Ministry of Trade and Regional Integration, Ethiopian Investment Commission, Ministry of Finance, and the National Bank of Ethiopia. In addition to the secondary data, primary data was collected from industries and agri-businesses in Addis Ababa city administration and Hawassa town using Key Informant Interviews (KII) and Focus Group Discussions (FGD). The FGD were held with representatives from selected enterprises, government policy makers, and sectoral associations to get comprehensive insights on the agriculture-industry linkages and possible policy options.

4.3.2. Ethiopia's Social Accounting Matrix (SAM)

The most recent SAM of Ethiopia that was constructed in 2015/16. The 2005/6 and 2015/16 SAMs have been used to carry out the analysis. The 2015/16 SAM contains 81 activities and 83 commodities. The factor accounts include agricultural labor, non-irrigated land, irrigated land, skilled labor, semi-skilled labor, other agricultural capital, and capital. The SAM also has four household accounts: urban poor, urban non-poor, rural poor, and rural non-poor. Similarly, the tax account contains direct tax, sales tax, value Added tax, excise tax, and import duty. For this analysis, the SAM has been re-adjusted in such a way that it fits to the purpose of our analysis.

The 2015/16 SAM for Ethiopia used multiple surveys covering different dimensions of economic activities. We have also used the GDP and the 2020/21 Supply and Use Table (SUT)⁴ generated by the Ministry of Planning and Development (MoPD) of Ethiopia, to fill the data gap in the service activities as well as to align the preliminary SAM estimates with national account statistics. Likewise, the SAM used certain coefficients of the service sector built from the most recent Tanzanian SAM (Randriamamonjy and Thurlow, 2015) to fill the data gap considering the similarity in economic structure and the level of economic development between Ethiopia and Tanzania as per international practices and the recommendations of the system of national accounts⁵.

Table 4.3 lists the main data sources used for the 2015/2016 SAM's construction. Most of the input data are originated from the Central Statistics Agency (CSA). The SAM exhaustively utilized “Meher” Season Post Harvest Survey data to estimate agricultural components of the activity account. Multiple surveys covering various aspects of economic activity were used to construct Ethiopia's SAM. We also used the National Account Statistics (NAS) data for subjects not adequately covered by surveys.

Table 4.3: Data sources for the construction of the 2015/16 SAM for Ethiopia

Source of Data	Title of the Survey	Abbreviation
CSA	The 2015/16 Agricultural Sample Survey	AgSS
CSA	The 2015/16 Ethiopian Socioeconomic Survey	ESS
CSA	The 2015/16 Large and Medium Scale Manufacturing and Electricity Industries Survey	LMMIS
CSA	The 2015/16 Small Scale Manufacturing Industries Survey	SMS
CSA	The 2015/16 Ethiopian Household Consumption – Expenditure Survey	HCES
CSA	Retail and Producer Price Survey Data for the Year 2015/16	RPPSD
PDC	2015/16 Supply and Use Table	SUT
PDC	2015/16 Annual GDP estimate	XX
Randriamamonjy and Thurlow	2015 Social Accounting Matrix for Tanzania	XX

Source: Authors' compilation and elaboration

The two SAMs have been modified into a form that is suitable to compare results and to conduct the SAM decomposition analysis. Toward this end, the agricultural activities have been aggregated into cereals, pulses, oil seeds, fruits, vegetable and root crops, enset, cash crops and livestock and fish. The industrial sectors have been aggregated into agro-processed and non-agro-processed activities. Since

⁴ The SAM greatly benefited from the Ethiopia's first-ever supply use table constructed in 2020/21 covering economic features for the year 2015/16.

⁵ When data for specific economic activities are inadequate, alternative constructs might be used, according to the most recent System of National Accounts (SNA) (2008).

the main aim of the study is to look at the linkage between agriculture and manufacturing sectors, the agro-processed activities have been disaggregated into preserve, vegetable oils, dairy, bakery and grain, sugar, other agro-processed, alcohol, beverage and soft drinks, tobacco, textile and apparel and leather. The activity and the commodity account have been merged so that the SAM decomposition analysis can be carried out.

Document reviews: Secondary data sources were garnered from various national and international industry documents as well as other sector level sources. This include documents regarding the Agricultural Development Led Industrialization Strategy (ADLI-1994), the National Industrial Development Strategy (NIDS-2002/03), Sustainable Development and Poverty Reduction Program (SDPRP-2002/03-2004/05), Plan for Accelerated and Sustained Development to End Poverty (PASDEP-2005/06-2009/10); GTP I, GTP II, the homegrown economic reform agenda (2019/20-2022/23), and the Ten-Year Development Plan (202021-2029/30). Additional secondary data were also obtained from international organizations such as the World Bank, United Nations Conference on Trade and Development (UNCTAD), the IMF, United Nations Industrial Development Organization (UNIDO), and others.

Focus Group Discussions (FGD): This was used to get more information about the industry agriculture linkage through a participatory discussion. Two FGDs in Hawassa and Addis Ababa were conducted. In the FGD eight participants were included from relevant governmental and non-governmental agencies, enterprises, supermarkets as well as other relevant actors in Addis Ababa and 10 participants from different manufacturing sectors notably from garment, leather, textile, flour took part in the discussion in Hawassa.

Key Informant Interview (KII): This method is used to explore more firsthand data about the nature and level of Agriculture-Industry Linkages and their contribution to employment and economic Transformation in Ethiopia. The initial guiding questions were prepared and followed up by posing more probing questions based on the responses during the discussions as a way of validating some of the explanations. The key informants were selected from Ethiopian government agencies notably Ministry of Industry, Ministry of Planning and Development, Ethiopian Chamber of Commerce, sectoral associations, and producers' associations.

4.3.3. Methods of analysis

A qualitative-quantitative mixed approach was used in this study. The task started with establishing the basis for understanding of policy making processes and policy priorities in Ethiopia through a systematic review of Ethiopia's past development plans, policies and implementation strategies starting with the ADLI strategy and all the way until the Ten-Year Development Plan). The implementation, shortcomings, and the content of the recent development plans, policies and strategies in terms of planning and strategic development for inclusive and sustainable structural transformation were reviewed. To determine the extent of the linkage among agricultural and industrial sectors, a SAM multiplier analysis using the 2005/6 and 2015/16 SAMs has been used. This enabled to sort out subsectors with strong forward and backward linkages during the two periods and make comparisons. This enabled to sort out subsectors with strong forward and backward linkages in these two periods. In addition, SAM decomposition and structural change analysis have been conducted using the same data sets. The details of the approach are featured below.

4.3.3.1. SAM multiplier analysis

The input-output analysis and the subsequent measurement of linkage coefficients including SAM multiplier analysis has been used excessively for the identification of key economic sectors. Since the pioneering work of Rasmussen (1958), Chenery and Watanabe (1958) and Hirschman (1958), numerous studies applying input-output techniques have relied on linkage analysis to describe the linkage between economic sectors and to assist in the formulation of economic development policies and strategies.

In order to examine forward and backward linkages of agricultural and industrial sectors, the study employed a SAM-multiplier analysis. To use this technique, endogenous and exogenous accounts have been specified in order to capture the magnitude of influence caused by one sector over the other sector. The accounts of production activities, factors of production and domestic or institutions (such as households) were considered as endogenous, and those of government, combined capital and the rest of the world accounts were considered as exogenous.

The product of an economic activity is consumed by the sector (activity) itself, used as intermediate input by other activities (by endogenous accounts in other words) or consumed by households and institutions as final goods. This could be presented using the following matrix representation:

$$Y = (I - A)^{-1} X = MX \quad (1)$$

where Y represents the column vector of outputs or products in the left-hand side, X represents the column vector of the final consumptions, A represents the coefficients, and I is the nxn identity matrix.

The matrix $M = (I - A)^{-1}$ is known as the accounting multiplier matrix. Each cell M_{ij} of M quantifies the change in total income of account i as a result of a unitary increase in the exogenous component of account j. The forward linkage (in percentage terms) of sector j quantifies the change in income in sector r relative to the average change in the economy, caused by a unitary injection in the final demand of all sectors. If the forward linkage for sector j is greater than 100 percent, the change in sector j's income is higher than the average income changes in the economy after a unitary injection in all sectors. On the other hand, the backward linkage of sector j quantifies the change in economy wide income relative to the average change in the economy, caused by a unitary injection in the final demand of sector j. A key sector is usually defined as one with both backward and forward linkages greater than 1. If a sector has a backward linkage greater than 1, and forward linkage less than 1, is called backward oriented. On the other hand, if it has a forward linkage greater than 1, and backward linkage less than 1, it is called forward oriented. If none of the linkages is greater than 1, the sector is said to have weak linkages with other sectors (Parra and Wodon, 2009).

Let V denote the sum of all cells of the inverse matrix: $V = \sum_i \sum_j M_{ij}$. Let $M_{i\bullet}$ and $M_{\bullet j}$ denote the sum of the ith row and the jth column of the inverse matrix, respectively. $M_{i\bullet} = \sum_k M_{ik}$, and $M_{\bullet j} = \sum_k M_{jk}$. Then the Hirschman-Rasmussen backward linkage index of sector i is given by $BL = \frac{nM_{i\bullet}}{V}$ (2), and the forward linkage index is given by $FL = \frac{nM_{\bullet j}}{V}$. (3)

The Hirschman-Rasmussen indices do not consider the relative importance of each sector in terms of GDP, final demand, or total production. Thus, adjustment has been made to capture the importance of the sector in the economy using weighed average. In this regard, a total production share of activities has been computed so that a weighted linkages index can be formulated as follows. Let α_i be sector i's total production share; the weighted sums of the ith row and column of the inverse matrix are given by $WM_{i\bullet} = \sum_i \alpha_i M_{ik}$ and $WM_{\bullet j} = \sum_j \alpha_k M_{jk}$ respectively. The weighted backward and forward linkage indices can be written as $WBL_i = \frac{nWM_{i\bullet}}{WBV}$ and $WFL_i = \frac{nWM_{\bullet i}}{WBV}$ respectively, where $WVB = \sum_i \sum_j \alpha_i M_{ij}$

and $WVF = \sum_i \sum_j \alpha_j M_{ij}$. A unitary injection in sector k will cause a change in income across other sectors in the amounts indicated by the kth row of the inverse matrix. These changes can be separated into self-induced component and non-self-induced component, together adding up to one. On the output

side, the self-induced effects for sector k (in percentage) can be computed as $\frac{M_{kk}}{M_{k\bullet}}$. On the input side, these effects can be computed as $\frac{M_{kk}}{M_{\bullet k}}$, also in percentage.

The description assumes prices as fixed, technology as given, supply as flexible, and the existence of unitary expenditure elasticities. The assumption of unitary expenditure elasticities also holds true in Ethiopia (Nigussie, 2012). As prices and technologies are not responsive in the short run, assuming a given technology and fixed prices seems plausible.

4.3.3.2. SAM decomposition

The above multiplier matrix can be decomposed into three economically meaningful components or sub-matrices following Stone (1981), Pyatt and Round (1979), and Round (1985) decomposition techniques (see the detailed specification in the Appendix 2). This enables to identify which of these linkages induce higher multiplier in the economy. The multiplicative form is depicted below.

$$\bar{Y}_n = M_{a3} M_{a2} M_{a1} F \quad (4)$$

The above specification could be converted into an additive form in the following way.

$$\bar{Y}_n = (I + (M_{a1} - I) + (M_{a2} - I) * M_{a1} + (M_{a3} - I) * M_{a2} * M_{a1}) * F \quad (5)$$

$$d\bar{Y}_n = d(I + (M_{a1} - I) + (M_{a2} - I) * M_{a1} + (M_{a3} - I) * M_{a2} * M_{a1}) \quad (6)$$

Since the above equation is in additive form, the total change on y could be written as

$$d\bar{Y}_n = (I + (M_{a1} - I)) * dF + (M_{a2} - I) * M_{a1} * dF + d(M_{a3} - I) * M_{a2} * M_{a1} * dF. \quad (7)$$

Since the multiplier component is constant in each sub matrix in the above expression, the change in total output is the result of the multiplication of the change in total demand and the multiplier component.

The first of these matrix ($M1 = M_{a1} - I$) shows both the direct effects on the endogenous accounts of one-unit exogenous shocks (appearing as unit increases in the diagonal) and subsequent interaction effects among accounts within the same institutional group. The direct effect captures the multiplier effects resulting from direct transfers within institutions, households and the interindustry transfers. This component of the SAM multiplier depicts the part of the multiplier that mainly comes from the forward and backward linkages among activities in Ethiopia where intra-household transfer is limited. The first part of the M1 which is $(I - A_{11})^{-1} - I$ is the only active matrix in Ethiopia and it shows the typical input-output multiplier in the economy.

$$M_1 = \begin{bmatrix} (I - A_{11})^{-1} - I & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & (I - A_{33})^{-1} - I \end{bmatrix} \quad (8)$$

The second component, the open-loop matrix, captures cross-effects between different institutional groups. These effects are transmitted from one category of endogenous institutions to other endogenous categories, and in turn, set in motion multiplier processes of within-category interaction effects, which amplify the initial stimulus. The open-loop effects capture the interactions among and between the three endogenous accounts notably activities, production factors, and households. The diagonal elements are zero and this component of the multiplier captures the off-diagonal elements which are typically cross account effects.

$$OL = \begin{bmatrix} 0 & A_{13}^* A_{32}^* & A_{13}^* (I - A_{33})^{-1} \\ A_{21}^* (I - A_{11})^{-1} & 0 & A_{21}^* A_{13}^* (I - A_{33})^{-1} \\ A_{32}^* A_{21}^* (I - A_{11})^{-1} & A_{32}^* & 0 \end{bmatrix} \quad (9)$$

The third component, closed-loop matrix details the multiplier effects of an exogenous change on one institutional group, after it has travelled through the rest of endogenous accounts and returned to the original recipient. Thus, the closed-loop matrix captures the full circular multiplier effects net of own and open loop effects; i.e., from production activities to factors to institutions and then back to activities in the form of consumption demand. This component is basically linked to the consumption effect of an external shock that comes from institution to the activity account.

$$CL = \begin{bmatrix} C_{132} (I - A_{11})^{-1} & C_{132} A_{13}^* A_{32}^* & C_{132} A_{13}^* (I - A_{33})^{-1} \\ C_{213} A_{21}^* (I - A_{11})^{-1} & C_{213} & C_{213} A_{21}^* A_{13}^* (I - A_{33})^{-1} \\ C_{321} A_{32}^* A_{21}^* (I - A_{11})^{-1} & C_{321} A_{32}^* & C_{321} (I - A_{33})^{-1} \end{bmatrix}$$

$$C_{132} = (I - A_{13}^* A_{32}^* A_{21}^*)^{-1} - I, C_{213} = (I - A_{21}^* A_{13}^* A_{32}^*)^{-1} - I, C_{321} = (I - A_{32}^* A_{21}^* A_{13}^*)^{-1} - I \quad (10)$$

Thus, decomposing the general multiplier analysis into the above three components could clearly sort out which of these linkages are strong in the Ethiopian agricultural and manufacturing sectors.

4.3.3.3. Structural transformation

The speed of technological progress in different sectors crucially depends on the dynamics of structural transformation in an economy (Dosi et al., 1990). Therefore, the speed of technical changes in different sectors could be a good proxy to examine the rate of structural transformation in Ethiopia. It is evident that the changes in a sector's level of output could emanate from two sources, namely changes in technology and changes in final demand. Here, positive contributions in change to output due to changes in technology should be interpreted as the degree to which interactions amongst activities have increased and leakages out of the domestic economy have declined. We follow the approach and notation of Millar and Blair (2009) and Hoai et al. (2016). Gross output in year 2005 and year 2015 can be written as:

$$\Delta Y = (I - M)_{2015}^{-1} F_{d2015} - (I - M)_{2005}^{-1} F_{d2005} \quad (11)$$

We have two components on the right-hand side, notably $(I - M)_{2005}^{-1}$ and F_d . The $(I - M)_{2015}^{-1}$ shows the multiplier part while F indicated the final demand of commodities. Thus, it is possible to decompose the change in output, ΔY , as the change in these two components. Changes in $(I - M)^{-1}$ and F can be weighted in terms of the year 2005 or the year 2015's final demands and technologies respectively or a combination thereof. We take an unweighted average and derive the decomposition in the following way:

$$\begin{aligned} \Delta Y = & \left(\frac{1}{2}\right) \left((I - M)_{2015}^{-1} - (I - M)_{2005}^{-1} \right) (F_{d2015} + F_{d2005}) + \left(\frac{1}{2}\right) \left((I - M)_{2005}^{-1} + \right. \\ & \left. (I - M)_{2015}^{-1} \right) (F_{d2015} - F_{d2005}) \quad \dots \end{aligned} \quad (12)$$

In this way, the component that is attributed to changes in technology is weighted by the unweighted average of the final demands of the initial and final year while the change in the final demand component is weighted by the average of the initial and final technologies.

4.3.3.4. Qualitative method of analysis

It is obvious that effective linkage between the agriculture, manufacturing and markets is ensured if effective policies are carefully formulated and properly implemented to promote strong linkages among agriculture and industry sectors. To modernize the sectors and also bring about structural transformation, both inter-sectoral and intra-sectoral linkages are important. Apart from this, the existence of monitoring framework and institutional capacities are extremely important to have effective implementation of plans. Cognizant of this, the study used sequential approaches. First, Ethiopian development and sectoral policies were extensively examined from the perspectives of inter-sectoral and intra-sectoral linkages using the SAM multiplier analysis. A desk review of policy, strategy and plan documents and detail qualitative assessment were then carried out at industry and sub-industry levels to explore the most binding factors that cause poor linkages among agriculture, manufacturing, and the market systems in the economy.

The qualitative analysis was specifically conducted to attempt to answer the why question by seeking answers to why some of the linkages have been weak after the levels of the strengths of the linkages have been identified by the SAM multiplier. The critical review and synthesis of existing national planning, policy, and strategy documents particularly helped to identify the key gaps in national

development programmes regarding intersectoral linkages. The major national documents reviewed include the National Industrial Development Strategy, ADLI, the SDPRP, PASDEP, GTP I, GTP II, the Homegrown Economic Reform Agenda, and the Ten-Year Development Plan. Thus, besides analyzing why the linkages have been weak using primary data, the study also conducted a gap analysis by examining how the issue of sectoral linkages between agriculture and industry have been depicted in the national development plans, policies, and strategies during different periods.

4.4. Results and Discussion

4.4.1. Forward and backward linkages

In Ethiopia, agro-industries and food and beverages contribute about 50 percent to the manufacturing sector output in the country. However, the sector's exports constituted only 1.3 percent in 2013 and import dependency remained strong (UNCTAD, 2021). This signifies that the sector has weak linkage with the rest of the economy. The degree of economic linkage is expressed by the level of backward and forward linkages of activities in a given economic system. Backward linkages show the extent of dependence of an activity on inputs produced from other activities in the domestic economy while forward linkages capture the economic sector's role in supplying inputs to other sectors. These two linkages are very decisive to identify key and weakly linked sectors of an economy and to design effective intervention plans and strategies.

The multiplier analysis has shown that the main agricultural commodities, except cereals and livestock, have weak forward linkages. Yet, almost all agricultural commodities have relatively strong backward linkages. Specifically, cereals, livestock, and bakery/grain are the key leading sectors with strong forward and backward linkages in the economy. Of all agricultural activities, livestock has the highest forward and backward linkages followed by cereals. The major agricultural products including cereals, oilseeds, cash crops, and fruits and vegetables have high backward linkages. This signifies that any demand change in the outputs of these commodities can create significant spillover effects in the economy through backward linkages.

Table 4.4: Forward and backward linkages of key agricultural outputs/activities

Type of Commodity	2015/16		2005/06	
	Backward Linkage	Forward Linkage	Backward Linkage	Forward Linkage
Cereals	1.042	1.428	1.090	1.32
Pulses	1.188	0.352	1.242	0.34
Oilseeds	1.141	0.372	1.193	0.32
Vegetables, fruits, & root crops	1.142	0.378	1.194	0.52
Cash crops	1.160	0.329	1.213	0.44
Enset	1.184	0.199	1.238	0.21
Livestock and Fish	1.199	1.412	1.255	1.35

Source: Authors' computation based on SAM (2005/06, 2015/16)

The analysis has shown that the status of the backward and forward linkages of activities did not significantly change in the decade preceding 2016. This could be partly because the production

pattern of activities did not technically alter between 2005 and 2016. For instance, when we compare the technical coefficients of 2005/06 and 2015/16 SAM of Ethiopia, there is no as such huge difference on the share of factors of production and input intensity of activities. This shows that there has not been any significant change in the mode of production and the level of integration among activities in the Ethiopian economy during the decade under consideration

Since Ethiopia has one of the least developed manufacturing sectors in the world, the majority of the main agro-processing industries have fallen under weakly linked sectors with weak forward and backward linkages. This signifies that any increases in the final demand for the agro-processing activities will have limited impact on the overall economy and agricultural sectors. Particularly, except the bakery and grain mill, all agro-processing activities have weak forward linkages. This is partly because the biggest demand of these goods come from households. Some agro processing activities notably bakery/grain, vegetable oil, dairy and alcohol have higher backward linkages while the rest of agro processing sectors have weak forward and backward linkages. This is mainly because many of the agro-processing sectors rely on imported intermediate inputs so that their impact on domestic production via backward linkages is weak.

Table 4.5: Forward and backward linkages of agro-processing outputs/activities

Type of Commodity	2015/16		2005/06	
	Backward Linkage	Forward Linkage	Backward Linkage	Forward Linkage
Preserve	0.817	0.139	0.857	0.15
Vegetable oils	1.269	0.211	1.387	0.14
Dairy	1.322	0.214	0.140	0.37
Bakery and grain mills	1.188	1.631	1.247	0.91
Sugar	0.888	0.175	0.931	0.2
Other agro-processing	1.308	0.491	1.374	0.27
Alcohol	1.072	0.284	1.116	0.13
Beverage and soft drink	0.947	0.165	0.989	0.33
Tobacco	0.643	0.138	0.674	0.17
Textile and apparel	0.584	0.264	0.613	0.4
Leather	0.816	0.214	0.857	0.17

Source: Authors' computation based on SAM (2005/06, 2015/16)

Detailed analysis has also been made to examine the impact of a unit increase in the production of agro-processing activities on the demand for key agricultural activities. The results show that bakery/grain, other agro-processing, vegetable oils, and dairy activities create relatively more demand for the key agricultural products. When we look at the level of linkages of each agricultural items with the agro-processing manufacturing activities, oilseeds, and livestock will have relatively higher demand if the production of the key agro-processing activities increase. For instance, if the demand for agro-processed products increases by one unit, the demand for cereals, livestock, and oilseed tend to increase by 0.97, 0.42, and 0.04, respectively. In the same way, if there is an expansion of vegetable oil by one unit, the demand for oilseed increases by 1.01 which shows that the sector tend to create a strong backward linkage with the agricultural activity (Table 4.6).

Table 4.6: Inter-sectoral multipliers between agricultural and agro-processing outputs/activities

	Preserve	Vegetable oils	Dairy	Bakery & grain mill	Sugar	Agro-processing	Alcohol	Beverage	Tobacco	Textile & apparel	Leather	Wood	Total
Cereals	0.25	0.38	0.43	1.09	0.26	0.97	0.36	0.30	0.19	0.17	0.25	0.30	4.95
Pulse	0.04	0.06	0.07	0.16	0.04	0.15	0.06	0.05	0.03	0.03	0.04	0.05	0.78
Oilseeds	0.03	1.01	0.06	0.03	0.03	0.04	0.04	0.03	0.02	0.02	0.03	0.03	1.37
Vegetable & fruits	0.05	0.09	0.09	0.08	0.06	0.08	0.08	0.07	0.04	0.04	0.05	0.06	0.79
Cash crops	0.03	0.04	0.04	0.04	0.46	0.04	0.04	0.04	0.02	0.03	0.03	0.03	0.84
Enset	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.2
Livestock	0.51	0.35	1.38	0.32	0.24	0.42	0.33	0.28	0.18	0.16	0.75	0.26	5.18
Total	0.92	1.95	2.09	1.74	1.11	1.72	0.93	0.79	0.49	0.46	1.16	0.75	

Source: Authors' Computation

4.4.2. SAM decomposition analysis and sectoral linkages

The previous results of the SAM multipliers do not allow tracking the relative contribution of direct and indirect effects to sectoral linkages. The SAM multiplier decomposition enables to scrutinize which linkage induces more spillover effect in the economy. In a nutshell, there are three distinct effects in the SAM multiplier analysis. These are the own or the within effect, the open-loop effect, and the closed-loop effect. Since institutional/household transfer is limited in Ethiopia, the within effect captures the part of the multiplier occurring within activities through forward and backward linkages.

The magnitude of the within effect basically depends on the strength of forward and backward linkages among sectors in the economy. The open-loop or spill-over effect captures the part of the spillover effect that flows from activities to households via factor payments. The closed-loop or feedback effect shows the increase in the production of activities that emanates from household consumption after activities pay to factors and factors pay to households.

Results of the within effect have also revealed that an increase in the demand of cereals by one unit induces demand for agriculture, other industries, and services by 0.09, 0.07, and 0.19, respectively. Since cereals sector do not normally use any input from the agro-processing sector, its within effect multiplier on agro-processing can safely be set to zero.

When we look at the strength of the consumption effect which comes from the consumption of goods and services by households through the closed-loop effects, they are quite stronger than the within effect. For instance, the total within effect of an increase in production of cereals by one unit goes as low as 0.35 while the closed-loop effect goes as high as 2.35. In the same way, an increase in demand for livestock by one unit increases the within production effect among activities by 0.51 while the closed-loop effect goes as high as 2.69. When we split the effect across sectors, the highest within effect is created by the agro-processing (0.16) while the closed-loop effect for the agro-processing for the same demand change goes as high as 0.81 (Table 4.7).

Table 4.7 clearly shows that the closed-loop effects of cereals and other agricultural crops creates more spillover effects and linkages with the agro-processing manufacturing activities. The change in demand of cereals or any of the agricultural activities by households or any agent induces

more production. Feedback effect that goes from industries' factor payments to households' income will stimulate production activities through demand effects. Because of this, the change in the final demand is the salient driver of the change in economy-wide gross output in Ethiopia. This is because much of the commodities produced by various activities are consumed as final demands by households and government than used as intermediate inputs by activities. This limits the spillover effect created in the economy through forward and backward linkages.

The same as agricultural goods, the lion's share of outputs from the manufacturing activities are consumed by households. In addition, some agro-processing activities are labor intensive while some other activities intensively use more of agricultural intermediate inputs. Because of this, the linkage and spillover effect of agro-processing activities coming from the within and closed-loop effects differ. For instance, the increase in demand for vegetable oil, bakery, and dairy by one unit will induce additional demand for agricultural commodities through its within effect by 1.26, 1.47, and 1.38, respectively.

Table 4.7: Within and closed loop multipliers induced by agricultural activities on agro-processed outputs/activities

		Cereals	Pulses	Oilseeds	Fruit & Vegetable	Cash crops	Enset	Livestock
Within effects	Agriculture	0.09	0.14	0.02	0.02	0.14	0.03	0.16
	Agro-processing	0.00	0.00	0.00	0.01	0.01	0.01	0.16
	Other industries	0.07	0.02	0.02	0.03	0.05	0.01	0.02
	Service	0.19	0.17	0.24	0.30	0.29	0.36	0.19
	Total	0.35	0.33	0.28	0.36	0.49	0.41	0.53
Closed-loop effects	Agriculture	0.55	0.64	0.62	0.61	0.61	0.64	0.63
	Agro-processing	0.71	0.83	0.79	0.79	0.79	0.82	0.81
	Other industries	0.23	0.27	0.26	0.25	0.25	0.26	0.26
	Service	0.86	1.01	0.97	0.96	0.96	0.99	0.99
	Total	2.35	2.75	2.64	2.61	2.61	2.71	2.69

Source: Authors' computation based on SAM (2016)

Other key sectors such as beverage, textile, and leather sectors don't generate strong within spillover effects. For instance, a unit increase in demand of the textile and the leather sectors only induces 0.02 and 0.58 demand for output of the agricultural sector activities. This is because these commodities do not intensively use domestically produced agricultural goods as intermediate inputs. In the same way, when there is a unit increase in demand of vegetable oil, it generates 0.62 demand for agricultural outputs via closed-loop effect but the value goes as low as 0.28 and 0.37 for textile and leather, respectively.

The other channel of the multiplier effect is through consumption. The increase in household income increases the production of agricultural activities through consumption effect. Agro-processing activities tend to have higher closed-loop effects since they are heavily consumed by household. For instance, dairy and vegetable oils have the highest closed-loop effect. Since households relatively spend

the lion's share of their income on food, agriculture, and agro-processing activities entertain more demand from household when income of household increases. The result in general entails that the consumption effect creates the highest spillover effect and sectoral linkages. This is because the consumption of goods and services by households are greater than the amount used as intermediate inputs by activities. In relative terms, activities such as dairy and bakery/grain mills and other agro-processing create more demand and linkage with the agricultural sector through direct and closed-loop effects compared to other agro-processing activities. This is because they intensively use domestically produced agricultural goods and are heavily consumed by households.

Table 4.8: Within and closed loop inter-sectoral multipliers induced by agro-processing activities on agricultural activities

		Preserve	Vegetable oil	Dairy	Bakery & grain mill	Sugar	Agro-processing	Alcohol	Beverage	Tobacco	Textile apparel	Leather	Other manufacturing
Within effect	Agriculture	0.33	0.99	1.10	0.88	0.45	0.83	0.03	0.03	0.00	0.02	0.58	0.05
	Agro-processing	0.05	0.01	0.16	0.06	0.01	0.89	0.03	0.02	0.00	0.01	0.08	0.03
	Other industries	0.01	0.02	0.02	0.06	0.04	0.05	0.02	0.02	0.00	0.01	0.02	0.45
	Service	0.25	0.24	0.19	0.38	0.18	0.40	0.24	0.26	0.06	0.08	0.12	0.08
	Total	0.64	1.26	1.47	1.38	0.68	2.17	0.32	0.33	0.06	0.12	0.8	0.61
Closed-Loop effect	Agriculture	0.38	0.62	0.63	0.56	0.42	0.57	0.57	0.49	0.32	0.28	0.37	0.94
	Agro-processing	0.49	0.79	0.81	0.72	0.55	0.73	0.73	0.63	0.41	0.36	0.47	1.21
	Other industries	0.16	0.26	0.26	0.23	0.18	0.24	0.24	0.20	0.13	0.12	0.15	0.39
	Service	0.60	0.97	0.99	0.87	0.66	0.89	0.89	0.77	0.50	0.43	0.58	1.47
	Total	1.63	2.64	2.69	2.38	1.81	2.43	2.43	2.09	1.36	1.19	1.57	4.01

Source: Authors' computation based on SAM (2016)

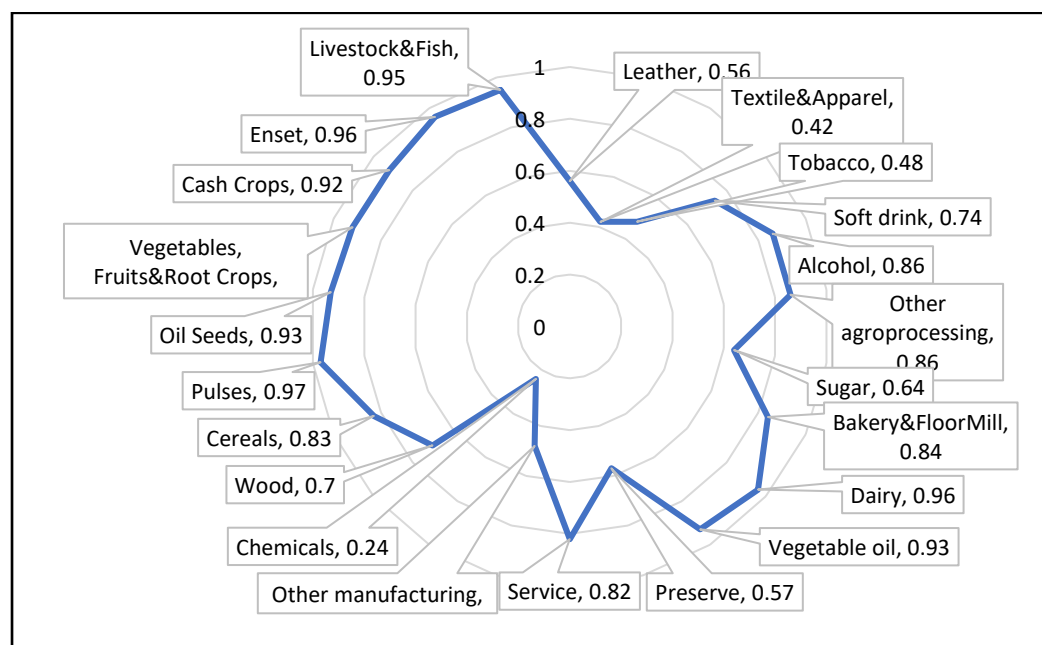
4.4.3. Welfare and employment effects of sectoral linkages

The impact of an expansion of agro-processing and agricultural activities on the welfare of households partly depends on its effect on income. The effect of an increase in the production activities on income of households partly depends on the share of labor and capital in the values of goods and services. The results revealed that all agricultural activities; namely pulses, oilseeds, fruits and vegetables, cash crops, Enset, and livestock induce higher impact on household's income compared to manufacturing activities. However, from the agro-processing activities, edible oils, dairy, bakery and grain mill, sugar, and alcohol ensure higher income gain compared to other manufacturing activities.

The results show that an increase in the demand of pulse, oil seeds, and livestock by one unit increase the income of households by 0.97, 0.93, and 0.95, respectively. The figures for textile, tobacco and leather go as low as 0.42, 0.48, and 0.56 in the order they are mentioned. This entails that those agro-processing activities that intensively use domestically produced agricultural goods as intermediate inputs, and which are labor intensive, induce higher impact on the income of households.

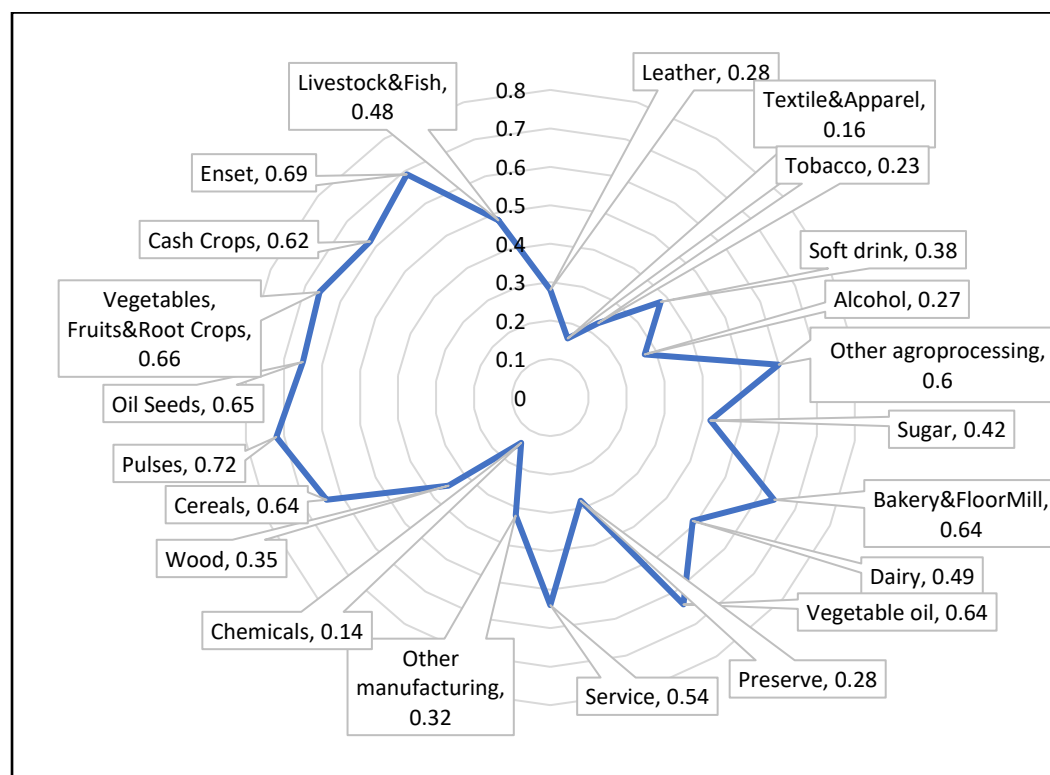
Unemployment has remained one of the chronic problems of many developing countries including Ethiopia. Thus, the decision to prioritize or expand the production of commodities from some of the key sectors partly depend on sector's capacity to create sustainable and decent employment opportunities. Particularly in a situation where there is massive unemployment, an increase in income of labor from a certain shock would entail that more employment would be created. In general, the impact of the expansion of activities on creating employment opportunity apparently depends on the effect of the expansion of activities on labor.

Figure 4.9: Spillover effects from activities on household income



Source: Authors' computation based on SAM (2016)

The results of the analysis have shown that the agricultural activities induce more demand for labor than the industrial sector. From all activities of the agro-processing, bakery and grain, dairy, and vegetable oil and other agro-processing activities induce more demand for labor than other sectors. The result has revealed that other agro-processing activities do not create more employment opportunities. This is because they either intensively use intermediate inputs or capital in their production systems. For instance, a one unit increase in the demand for cereals and oil seeds each, their effect on income of labor would be 0.64 and 0.75, respectively. If the same shock happens on textile, leather, and sugar, their impact on labor income would be 0.16, 0.28, and 0.48 in the order mentioned.

Figure 4.10: Spillover effects from activities on labor employment

Source: Authors' computation based on SAM (2016)

4.4.4. Decomposition and technical change

It has been observed that there is a change in the production of goods and services in Ethiopia in recent decades. There are two sources for this change of production patterns. One of it is the change in technical capabilities emanating from strong backward and forward linkages among sectors; and the other is the change in the final demand by economic agents. When the income of households increases, it again increases the demand for goods and services that eventually increases the demand for goods and services. This may not be accompanied by increased domestic production or strong technical change. The closed loop shows the effect of consumption effects on the production of goods and services. The result of this study clearly shows that the change in the production of goods and services in the economy occurred because of a boom in consumption. The results have shown that there is no significant change in the nature of the production function on sectoral linkages.

Decomposition of change in gross value of production between 2005/6 and 2015/16 shows contributions by changes in technology and changes in final demand. The results for this decomposition of change in gross output are presented in Table 4.9. The results show that the change in economy-wide gross output is predominantly due to the change in the final demand, with changes in technology only contributing a very infinitesimal amount. Although, final demand is the main driver of change in economy-wide gross output over the period under study, results vary across activities. Several activities rely solely on final demand effects while their technology effects associated with backward linkages to the other activities have become less intense. Pulses, oilseed, livestock, vegetable oil, grain and bakery, and agro-processing exhibit positive technology effects, although for all these activities final demand remains the main source. The limited role of technical change indicates that there was no significant structural transformation in the economy over the ten years between 2005/6 and 2015/16.

Table 4.9: Decomposition of technical and demand changes of activities

Activities	Technical change	Change in Demand	Total Change
Cereals	(15.37)	303.10	287.72
Pulses	17.78	44.33	62.10
Oil seeds	1.48	35.45	36.93
Fruits and vegetables	(2.22)	68.56	66.34
Cash crops	(3.16)	74.03	70.87
Enset	(0.76)	18.86	18.10
Livestock and fish	14.34	277.41	291.74
Preserve	0.06	3.49	3.55
Vegetable oil	3.73	17.28	21.02
Dairy	(3.08)	29.20	26.12
Grain and bakery	44.18	311.15	355.33
Sugar	(3.56)	16.32	12.76
Agro-processing	4.52	81.55	86.07
Alcohol	0.42	36.09	36.51
Soft drink	(6.80)	20.42	13.62
Tobacco	0.32	2.19	2.51
Textile and Apparel	(2.86)	44.31	41.45
Leather	(0.08)	23.68	23.60

Source: Authors' computation based on SAM (2006 and 2016)

4.4.5. Ethiopia's national planning experience and sectoral linkages

Ethiopia has gone through various ideologically distinct regimes which implemented different economic development policies since 1950s. The country formulated its first national development plan in 1957. There were three consecutives between 1957 and 1973 all under the Imperial era. These are the first five-year plan (1957-1962), the second five-year plan (1963-1967), and the third five-year plan (1968-1973).

The first-five-year plan emphasized the improved production and productivity of mainly commercial crops as a starting point to develop the economy (Welteji, 2018). The second five-year plan was, on the other hand, emphasized on industrial development through the promotion of large-scale agricultural production such as cotton and sugar for the promotion of the required input for the industrial sector (Alemu et al., 2002). The third five-year development again re-emphasized the development of the agricultural sector as a response to the rising challenges to ensure food security in the country (Alemu et al., 2002).

It is evident that while the Imperial government managed to design national development plans its missions have been shifting from agriculture sector focus under the first five-year plan period to industry sector focus during the second five-year plan period and then back to agriculture sector focus during the third five-year plan period. The priorities were shifting based on partly by the aspirations to transform the economy, and partly by the need to respond to the overriding challenges facing the country such as food security issues which was the key factor behind reverting back to focusing on agriculture

sector under the third five-year plan while the non-agricultural sector was acknowledged to be the key driver of development.

To achieve its goals during the three plans, the country engaged in an export promotion strategy with generous incentive packages given to attract foreign direct investment. These incentive packages and measures included generous tax incentives and high levels of tariff protection for selected industries and easy access to domestic credit for production of manufactured goods (Bigsten et al., 2009). In addition to this, every development effort, including provision of infrastructure, was tied to the expansion of primary exports such as coffee, hides and skins. Some achievements related to raising the linkages between agriculture and industry have been registered. For instance, between 1962 and 1969, following the expansion of the textile industry, cotton's share in employment and output reached 40 percent and 33 percent, respectively, with numbers of people employed doubling from 10,100 to 21,610. Though textile production stimulated backward linkages to cotton production, its effects on forward linkages (such as stimulating the apparel industry) were weak. In the textile sector, import substitution strategy (ISS) brought benefits in employment creation and foreign exchange savings. However, the policy was not as such designed to promote systemic and sustainable linkage between the agricultural and the manufacturing sectors through the promotion of the agribusiness industry in other sectors.

After 1974, the country was led by a socialist political economic ideology with initial focus on industry led development strategy. The regime undertook very bold actions including nationalization of both medium and large-scale industries in 1975 to centrally command the economy. In addition, the government used relatively high import tariff rates and other non-tariff trade barriers to promote domestic industries. During this period, sectors such as food and beverages, textiles, leather, cement, and the chemical industry continued to be considered as priorities. The food and textile sectors showed some degree of competitiveness. Other sectors couldn't be competitive. Rather, they had been struggling to exist. This was because the nationalization of industries curtailed the expansion of the private sector investment, which resulted in the decline of the contribution of privately owned manufacturing industries to employment and production. For example, the contribution of the private sector to employment and production was only 4 percent and 8 percent, respectively, in 1988/89 (CSA, 1990).

After 1991, the country has taken various radical policy initiations including privatization, liberalization, and trade reforms. The government endorsed ADLI strategy in 1994 as an umbrella strategy to bring about rapid agricultural transformation which should subsequently lead to industrialization. Subsequently, Industrial Development Strategy (IDS) was introduced in 2003. The strategy focused mainly on industries that are labor intensive, have broad linkages with the rest of the economy, use agricultural products as inputs, are export oriented and import substituting, and contribute to rapid technological transfer. The policy was more concretized into action by various sub-sector strategies. The focus has been on sectors such as leather and leather products, apparel and textiles, meat processing, food processing and beverages, cement and steel, and horticulture (IDS, 2002). These priority industries were dominated by agro-processing and other sectors which had strong linkage to the agricultural sector. This entails that the strategy intuitively recognized the importance of intersectoral linkages to achieve successful industrialization in Ethiopia. For instance, the IDS priorities indicated that developing a leather shoes export industry fosters the promotion of other leather and leather products industries which in turn paves the way for the expansion of livestock resources, and the establishment of qualitative and standardized modern abattoirs.

Once ADLI was crafted as a guiding framework for national development, the government came up with the Sustainable Development and Poverty Reduction Program (SDPRP) which as the

same implies, affirmed the need to focus on agricultural development to reduce poverty (MoFED, 2002). Although it recognized the need for a multi-sectoral development approach, the SDPRP did not put forward any clear mechanism for strengthening intersectoral linkages.

It was the Plan of Action for Sustainable Development to End Poverty (PASDEP) which laid the foundation for a more comprehensive view to national development by widening the focus to urban area development although agricultural development remained a national priority during 2004/5-2009/10. As such, it has been the first clear attempt of the government to leverage the linkages between agriculture and the non-agricultural or urban based sectors.

The country embarked on the first Growth and Transformation Plan (GTP I) in 2010/11 to build on the experiences from PASDEP and widen the national development agenda towards industrialization and ultimately achieve economic structural transformation. While recognizing the importance of developing agriculture, the plan focuses on developing labor-intensive small-scale manufacturing as a way of creating linkages between other sectors. The second Growth and Transformation Plan (GTP II) was designed in 2015/16 to build on the experiences of the GTP I and continue the industrialization drive in the country by reemphasizing the potentials of development urban areas and the manufacturing sector. The country aimed to become the hub for light manufacturing in Africa under GTP II.

The GTP I and GTP II have clearly sorted out specific sectors that have been promoted by medium and large industries. These include textile and garment industry, leather and leather products industry, sugar and sugar related industries, cement industry, metal and engineering industry, chemical industry, pharmaceutical industry, and the agro-processing industry. During this plan period, several tangible institutional changes have been introduced including the establishment of new (or strengthening of existing) specialized capacity building and technology institutes for sub-sectors (such as leather and leather products, textile and apparel, sugar, metal, dairy and meat, and horticulture), and the elaboration of a detailed sector strategies for the leather industry (Zerihun, 2008).

Ambitious reforms have been initiated to supply skilled manpower via the development of extensive Technical Vocational Education and Training (TVET) system. The plans yielded some successful achievements though they failed to meet the expectations and planned targets. For instance, the export earnings from the textile and garment industry sub-sector stood at USD 98.1 million which shows significant improvement though it was far below the USD 1 billion target set for the end of the plan period.

In addition, the total export revenue of the leather and leather products industry over the GTP I period totaled USD 596.2 million. In 2014/15 alone, the export revenue from this subsector stood at USD 131.6 million, which was more than double the value for the base year (base year value of USD 56.4 million). During GTP I period, the agro processing industry subsector registered USD 196 million export earnings while creating job opportunities for 52,000 citizens. On the other hand, during the plan period, USD 416.56 million was generated from the export of meat, milk, and honey. The pharmaceuticals industry has also registered USD 20.92 million in export earnings during the plan period (NPC, 2015).

The KII with selected participants from the policy circles participated in the preparations of the two GTPs revealed that sectoral linkages were not set as anchor element during the preparation of both GTPs and other prior plans in the country. Every sector and line ministries set their goals and targets without adequate consideration for intersectional issues and complementarities in their setting of targets as well as choice of priorities and strategies. For instance, the priority activities indicated in the industrial strategy, which were dominated by agro-processing, were not supported by equivalent attention and emphasis by the agricultural sector to feed agro-processing activities with quality

agricultural inputs. Because of this, the agro-processing industries have remained to be heavily relying on imported intermediate inputs.

In addition, the country continued to import massive agro-processed commodities from the rest of the world to meet the ever-rising demand for such commodities among the urban population whose consumption pattern has been changing. Apart from this, the agricultural and agro-processing sectors were not monitoring common outcomes to achieve a common national goal (well developed and synchronized agro-processing sector) together as one entity. This made the country squander the benefits that would have been accrued if the sectors were linked with each other through the right and parallel development of priority activities which would feed each other along the value chains. The discussants revealed that still, the combination of rapid urbanization and population growth induces more demand for processed foods, which brings about an opportunity for expanding agro-processing industries to meet the local demand with locally produced inputs.

The key informants have shown that the planning process of the Ten-Year Development Plan has attempted to fix the problems by promoting joint planning across sectors which have been thought to have strong linkages so that the linkage between industries and agriculture will be fostered to achieve a common goal. These joint planning will squash input shortages of agro-processing which remains as one of the priority activities in the ten-year plan implementation period ending in 2029/30. Apart from this, the plan envisioned the establishment of growth corridors in different areas based on consideration for potentials so that the linkage between agriculture and agro-processing can be strengthened.

The country has also embarked on a three years (2019-2022) homegrown economic reform agenda towards the end of the GTP II because of protest induced changes in the country's political leadership and subsequent changes of the economic directions towards more opening up. Under the homegrown economic reform agenda, the government identified key challenges facing the economy and designed interventions to redress macroeconomic imbalances, solve structural bottlenecks, and enhance productivity and efficiency in selected sectors. While there has not been much in terms of linking them, agriculture and manufacturing were among five key sectors selected for interventions aimed at improving capacity utilization, productivity, and efficiency. The following schemata summarizes the planning experience of Ethiopia since 1950s.

Table 4.10: Schematic summary of Ethiopian development plans and sectoral linkages

Epochs	Focus of attention	Global initiations	Detail plan components
Imperial regime	✓ Industrialization	“Industry first argument “was prevalent throughout the world	Incentivizing big industries Import substitution as a policy tool Big farming expanded to provide input to industries Intersectoral linkage was envisioned, and some achievements have been registered
Dergue regime	✓ Socialism	Socialism has been promoted in many developing countries	Public ownership of industries Cooperatives and villagization to promote agricultural productivity Poor sectoral linkages Only few agro-processing sectors namely textile and leather withstood the competition
EPRDG regime Pre-GTP I (Sustainable Development Poverty Reduction Programme) IDS (industrial development strategy	Agricultural led industrialization	Structural Adjustment Program	Structural adjustment policies Privatization Agricultural transformation by increasing productivity of smallholders Increased agricultural production, but poor linkage with agro-processing Surge in import of agro-processing following rising demand for goods and services “One leg on the ground” to promote agricultural transformation
Growth and Transformation Plan I	Industrialization by promoting selected industrialization	Structural Adjustment Programs and Millennium Development Goals	Incentives (Credit rationing) was introduced to promote selected industries

Epochs	Focus of attention	Global initiations	Detail plan components
	Climate resilient Green Economy (CRGE) introduced		
Growth and Transformation Plan II	Industrialization by promoting selected industrialization Commercialization CRGE mainstreamed	Structural Adjustment Programs Sustainable Development Goals	Incentives (Credit rationing) was introduced to promote selected industries Commercial farming promoted
Current Regime	Agriculture Manufacturing	G-20 Common Framework Resolutions for debt restructuring	Capacity utilization Import substitution
Homegrown Economic Reform	Tourism Mining ICT		Export promotion Productivity and efficiency Competitiveness
Ten-Year Development Plan	Multi-sectoral sources of growth and job opportunities Sustainable and inclusive development financing Demographic dividend Quality and efficiency of infrastructure projects Urban development and sustainable urbanization Peace, Justice, and inclusive institutions	SDG (Agenda 2030) AU Agenda 2063 AfCFTA WTO	Integration across sectors promoted Climate resilient green economy Promoting competitiveness through improved competitiveness Private sector led economic development Modernizing the agricultural sector

Source: Authors' compilation based on desk review

4.4.6. Key insights from focus group discussions and key informant interviews

The SAM multiplier analysis and results have shown that the agriculture and the agro-processing sectors are weakly linked with each other. Recognizing this evidence, more analysis has been conducted using a qualitative analysis to explore the possible reasons. FGD and KKI were undertaken with carefully selected participants from diverse group of actors engaged in production and policy making circles. The FGDs were conducted in Addis Ababa and Hawassa by two senior and well-experienced investigators. The selection of participants were undertaken at sector level since every sector has its own unique and distinct features that require a deep understanding and separate analysis as the saying goes “the same size doesn’t fit all”.

The FGD participants have explained that Ethiopia has massive potentials for agro-processing if effective linkage between agriculture, the agro-processing and the market linkage is aided by sound policies and effective incentives that promote the right investment decisions along the value chains of each agro-processing sectors. However, participants generally indicated that there are a lot of hurdles that hinder and disrupt the agriculture and the industrial linkages. Even though the reasons varies across sectors, the main challenges that have been commonly indicated by the participants include poor quality of raw materials domestically along the value chains, policy and institutional problems which don’t give much attentions to sectoral linkages and investment alignments, incidences of high prevalence of illegal trade particularly in the livestock sector, challenges to access financial services to operate at optimal scale, inadequate provisions of strategic raw materials, lack of access to reliable markets, and poor logistic services. The following subsection provides insights from the FGD at the sub-sectoral level.

Textile and garment

The participants have explained that illegal trade and contraband (synthetic of equal quality with leather) hampers the sector not to grow to the required level. But, the most salient problem explained by the participants is related to the lack of domestically produced thread and fabric to feed the ever-rising garment industries. The fabric and other auxiliary sectors within the industry could not be developed to a state that enables to feed the garment sector in adequately sustainable and reliable manner. This is partly because the agricultural sector could not supply the require raw materials to the sectors. Because of this, the garment sector heavily relies on imported raw materials that deter the competitiveness of the sector.

Another very concerning issue raised by the FGD participants is that high price has been an additional challenge limiting the use of domestic raw materials. Despite being inferior quality wise, the domestic raw materials are often more expensive than the imported ones. This has made the challenge even worse for those would want to use domestically available raw materials to produce garment and textiles and derivative products. Ideas raised in this regard have been consistent between the discussants who took part in the FGD in the two locations, indicating that much of these problems might not be location specific and hence require greater attention.

Meat and livestock

The participants in both locations share the long-held claim that Ethiopia is endowed with large numbers of livestock and presents significant potential for development if the right policies and strategies are in place. The meat sector is particularly one of the most promising sectors in the economy.

However, the meat processing sector is more of traditional, and households usually slaughter animals to meet their meat demand often during cultural festivities and other irregular events. The culture to buy a certain portion of meat from proper markets such as supermarkets or slaughterhouses for household consumption are rare, if not uncommon.

The participants claimed that the commercial livestock sector is very backward even by African standards. Apart from this, households don't buy cattle from the ranches; rather they rely on the local markets which do not follow proper regulatory framework related to quality assurance including certifying for sanitary and Phyto-sanitary issues. This deters the sector not to strive to produce quality livestock that would have also been beneficial from the consumers' point of view. In addition, rural households usually supply older animals to the market often after using them for plowing for several years, and hence the supply of lean meat of calf younger than 3 years is difficult to meet the demand of the local and the export markets.

Illegal trade is also the key problem that challenges the sector according to the explanations of the FGD participants. According to the participants the sector has problems related to provision of adequate land, access to financial services, and technological supports to achieve high performance. The participants suggest the country to establish an independent institution that deal with livestock, hides and skins and meat. There have been several cases raised by the participants as to how illegal livestock trade across the borders and also in the country have been affecting their businesses. More effort is required to integrate the meat processing sector with a formal and modern livestock sector by also better protecting cross-border trade and smuggling of livestock.

Sweeteners

The discussants have shown that due to its small size and less emphases given by the government, to the sub-sector, the Ethiopian sweets and sugar producers are not developed and cannot compete with imported items which are often better packaged and marketed than the domestic ones regardless of quality and prices. The ideas that came out during the discussions revealed that the current government policy towards sugars and sweets is discouraging for their businesses. The participants have indicated that the current tax policy towards glucose encourages illegal trade. Apart from this, the necessary intermediate inputs are not domestically produced, and the participants pleaded that the government better understand the sector and fixes problems along the value chains for domestic companies to play their role in production and job creation.

Leather

The participants have shown that the country is endowed with abundant livestock resources with potentially high-quality natural skins although that will not always be the case due to lack of proper care. Since the subsector is one of the areas that has been given prime attention during recent decades, it has been growing faster. However, there has been serious issues linked to the quality and quantity supply of raw hides and skins to the extent that the leather companies were sometimes compelled to dump the skins and hides they collected due to serious deficiencies to meet the quality threshold for processing. The participants explained that in recent days, the prices of skins and hides have drastically decreased, so has been the quality.

Though price reduction seems that it helps the leather subsector, since the lion share of skins come from households, the low price of skins has further reduced the quality as well as the supply of the skin as less attention is given to the quality of leather and skin during slaughtering. During slaughtering, some households were said to have thrown away the skins due to extremely low value that

it brings compared to the transaction cost of selling it in the markets. Apart from this, higher order industries which could absorb finished leather are less in number. In addition, the participants have also explained that almost all chemical and intermediate inputs other than the skin are imported.

Agro-processing

There are currently no formal forward and backward linkages in the supply chains particularly in the fruits and vegetables. In Ethiopia, fruits and vegetables are mainly produced by smallholders, with only a few dedicated commercial farms in the upper and lower Awash, Koka, Meki, Batu, and a few other areas. Supermarket owners have shown that import of fruits have increased in Ethiopia notably oranges, mandarins, apples and grapes. Post-harvest loss is the significant problems that affect the supply of fruits and vegetables. Participants claimed that fruit and vegetable growers in Ethiopia are not well organized to negotiate contracts with major buyers. As a result, information and knowledge about quality standards in fruits and vegetables is only limitedly available within the supply chain. The role of middlemen has also been raised as one of the major obstacles in the market for fruits and vegetables. The supermarkets source produce from distributors or their own agents in the production areas.

The participants have indicated the following corrective actions to be considered:

- For the government to conduct a comprehensive and detailed diagnostic assessment along the value chain and carefully look at the potentials of each subsector as well as complementarities that could serve as a basis for developing strong and sustainable intersectoral linkages;
- For all actors along the value chain to effectively contribute their shares to ensure improved competitiveness of the subsectors;
- For policies and strategies be designed to give special privileges and incentives to local manufacturers at least for a defined short period of time to protect them against unfair competition from foreign firms;
- For the government to work decisively to solve administrative and bureaucratic bottlenecks that hinders investments and development;
- For the government to revise the existing investment policy and incentive structures to support the development of the subsectors and to possibly enhance the use of domestic inputs and encourage intersectoral linkages

4.5. Conclusion and Policy Implications

The analysis has generated various results both through the quantitative and the qualitative analyses. The results have shown that there is weak linkage between the agricultural and agro-processing sectors in Ethiopia. Particularly, agro-processing sectors have weak linkages with agricultural activities. The linkage has been found to be very weak especially in the fruits and vegetables subsector although several other subsector activities have also exhibited weak intersectoral linkages with other sectors. On the contrary, cereals have strong forward linkage showing that the agro-processing is concentrating on flour production and bread production or bakery business which is fundamental for household consumption and catering businesses.

In the quantitative analysis using SAM, decomposition has been applied to the effects of an injection of income to the account of activities on household's income and then of an injection to

different kinds of factors to household's income. The SAM decomposition analysis has shown that the closed loop effect is the strongest form which shows that it is the consumption effect which is stronger than the within effect which is linked to the forward and backward linkages of activities. The structural analysis has also shown that the change in production of activities has been caused by the change in consumption than technical changes.

On the other hand, the qualitative analysis in general depicted that there are no concrete steps and efforts in policy design for promoting systemic and sustainable linkages between the agricultural and manufacturing activities. The focus group discussions as well as the key informant interviews also revealed that there is input shortage both in terms of quality and quantity entailing the fact that the agricultural and the industrial sectors were not well linked to each other to induce economic structural transformation. Apart from this, the previous development plans, policies, and strategies were not designed in a way that can sustainably and effectively promote the linkages between the agricultural and industrial sectors although there were intentions to do so as indicated by some policy and strategy documents.

In general, this study made it clear that the intersectoral linkages between agriculture and industry sectors in Ethiopia are weak. This implies that there is a long way to inducing effective structural transformation and creating jobs in the country if we continue to do things the same way. The major problem regarding weak linkages is more resulting from the structure of the economy and weak implementation of the plans, policies and strategies rather than the existence of such documents. It will remain an uphill to achieve sustainable development without building high quality value chains and linkages within and between agriculture and industry sectors, fostering economic structural transformation, and ensuring a vibrant business environment for the private sector to flourish. The study recommends that the policy making should focus on improving implementation capacity to promote systemic linkages between the agricultural and the industrial sectors. Particular attention should be given to the fruits and vegetable sectors where the forward linkages of vegetable and fruits are extremely weaker.

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Appendices

Appendix 1: Forward linkages

Forward linkages	Within effects				Closed-loop effects			
	Agriculture	Agro-processing	Other industries	Service	Agriculture	Agro processing	Other industries	Service
Cereals	0.15	1.49	0.02	0.03	2.60	3.15	-	0.33
Pulse	0.14	0.22	0.00	0.00	0.42	0.51	0.57	0.05
Oilseeds	0.02	1.01	0.00	0.00	0.26	0.31	0.09	0.03
Fruits and Vegetables	0.04	0.05	0.00	0.03	0.56	0.68	0.06	0.07
Cash crops	0.12	0.46	0.00	0.00	0.30	0.36	0.12	0.04
Enset	-	-	-	-	0.17	0.20	0.06	0.02
Livestock and fish	0.12	2.02	0.02	0.04	2.41	2.92	0.04	0.30
Preserve	-	-	0.00	0.00	0.02	0.02	0.53	0.00
Vegetable Oil	0.02	0.04	0.00	0.00	0.17	0.21	0.00	0.02
Dairy	-	0.01	0.00	-	0.20	0.24	0.04	0.02
Bakery and grain	0.08	1.06	0.01	0.01	3.26	3.95	0.04	0.41
Sugar	-	0.02	0.00	0.00	0.10	0.12	0.71	0.01
Agro-processing	0.08	0.15	0.00	0.00	0.80	0.97	0.02	0.10
Alcohol	-	.02	-	-	0.36	0.44	0.17	0.05
Beverage	0.01	0.01	0.00	0.00	0.08	0.09	0.08	0.01
Tobacco	-	-	-	0.00	0.02	0.02	0.02	0.00
Textile and apparel	-	0.00	0.00	0.00	0.32	0.39	0.00	0.04
Leather	-	0.00	-	-	0.20	0.24	0.07	0.03

Appendix 2: SAM decomposition

We recall that

$$Y_n = A_n \bar{Y}_n + X$$

Where Y_n the total of each endogenous account. A_n is define as the matrix of average expenditure propensities. X_n represents the exogenous accounts. From the multiplier analysis,

$$\bar{Y}_n = (I - A_n)^{-1} X \quad \text{we can denote the multiplier matrix as } M_a = (I - A_n)^{-1}$$

$$\bar{Y}_n = M_a X$$

This matrix could be decomposed following Pyatt and Round (1978) into three economically meaningful components. These are a transfer, an open-loop matrix, and a closed-loop matrix.

Recall

$$Y_n = A_n \bar{Y}_n + X$$

Let us add and subtracted the same expression

$$\bar{A}_n \bar{Y}_n$$

$$Y_n = A_n \bar{Y}_n - \bar{A}_n \bar{Y}_n + \bar{A}_n \bar{Y}_n + X ; (I - \bar{A}_n) \bar{Y}_n = (A_n - \bar{A}_n) \bar{Y}_n + X ; Y_n - \bar{A}_n \bar{Y}_n = (A_n - \bar{A}_n) \bar{Y}_n + X$$

$$\bar{Y}_n = (I - \bar{A}_n)^{-1} (A_n - \bar{A}_n) \bar{Y}_n + (I - \bar{A}_n)^{-1} X$$

$$\text{Let } A^* = (I - \bar{A}_n)^{-1} (A_n - \bar{A}_n)$$

$$\bar{Y}_n = A^* \bar{Y}_n + (I - \bar{A}_n)^{-1} X$$

$$Y_n - (I - \bar{A}_n)^{-1} X = A^* \bar{Y}_n$$

$$\text{Multiply } \bar{Y}_n = A^* \bar{Y}_n + (I - \bar{A}_n)^{-1} X \quad \text{by } A^*$$

$$A^* \bar{Y}_n = A^{*2} \bar{Y}_n + A^* (I - \bar{A}_n)^{-1} X \quad \text{but } Y_n - (I - \bar{A}_n)^{-1} X = A^* \bar{Y}_n$$

$$Y_n - (I - \bar{A}_n)^{-1} X = A^{*2} \bar{Y}_n + A^* (I - \bar{A}_n)^{-1} X$$

$$Y_n - (I - \bar{A}_n)^{-1} X = A^{*2} \bar{Y}_n + A^* (I - \bar{A}_n)^{-1} X$$

$$\bar{Y}_n = A^{*2} \bar{Y}_n + A^* (I - \bar{A}_n)^{-1} X + (I - \bar{A}_n)^{-1} X$$

$$\bar{Y}_n = A^{*2} \bar{Y}_n + (A^* (I - \bar{A}_n)^{-1} + (I - \bar{A}_n)^{-1}) X$$

$$\bar{Y}_n - (A^* (I - \bar{A}_n)^{-1} + (I - \bar{A}_n)^{-1}) X = A^{*2} \bar{Y}_n$$

$$\text{Multiply } \bar{Y}_n = A^* \bar{Y}_n + (I - \bar{A}_n)^{-1} X \quad \text{by } A^{*2}$$

$$A^{*2} \bar{Y}_n = A^{*3} \bar{Y}_n + A^{*2} (I - \bar{A}_n)^{-1} X$$

$$\text{replace } A^{*2} \bar{Y}_n$$

$$\bar{Y}_n - (A^*(I - \bar{A}_n)^{-1} + (I - \bar{A}_n)^{-1})X = A^{*3}\bar{Y}_n + A^{*2}(I - \bar{A}_n)^{-1}X$$

$$\bar{Y}_n = A^{*3}\bar{Y}_n + A^{*2}(I - \bar{A}_n)^{-1}X + (A^*(I - \bar{A}_n)^{-1} + (I - \bar{A}_n)^{-1})X$$

$$\bar{Y}_n - A^{*3}\bar{Y}_n = (A^{*2} + A^{*-1} + I)(I - \bar{A}_n)^{-1}X$$

$$(I - A^{*3})\bar{Y}_n = (A^{*2} + A^{*-1} + I)(I - \bar{A}_n)^{-1}X$$

$$\bar{Y}_n = (I - A^{*3})^{-1}(A^{*2} + A^{*-1} + I)(I - \bar{A}_n)^{-1}X$$

$$\text{Let } Ma_1 = (I - \bar{A}_n)^{-1} \quad Ma_2 = (A^{*2} + A^{*-1} + I) \quad Ma_3 = (I - A^{*3})^{-1}$$

So,

$$\bar{Y}_n = M_{a3}M_{a2}M_{a1}X$$

We can convert the afore mentioned expression into additive form

$$\bar{Y}_n = I + (M_{a1} - I) + (M_{a2} - I) * M_{a1} + (M_{a3} - I) * M_{a2} * M_{a1}$$

I = the initial unitary injection

$(M_{a1} - I)$ = captures the net effect of a group of accounts on itself through direct transfers

$(M_{a2} - I) * M_{a1}$ = net contribution of open loop or cross multiplier effects

$(M_{a3} - I) * M_{a2} * M_{a1}$ = net contribution of circular or closed loop multiplier effect.

The nxn matrix A (a partition of A) was chosen as follows, considering that the first row (and column) corresponds to the block of activities/commodities, the second to the block of production factors, and the third to the block of enterprises/households:

$$\bar{A} = \begin{bmatrix} A_{11} & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & A_{33} \end{bmatrix}$$

Given a matrix

$$A = \begin{bmatrix} A_{11} & 0 & A_{13} \\ A_{21} & 0 & 0 \\ 0 & A_{32} & A_{33} \end{bmatrix} \text{ such that } A - \bar{A} \text{ is } A = \begin{bmatrix} A_{11} & 0 & A_{13} \\ A_{21} & 0 & 0 \\ 0 & A_{32} & A_{33} \end{bmatrix}$$

$$A^* = (I - \bar{A})^{-1}(A - \bar{A})$$

$$= \begin{bmatrix} (I - A_{11})^{-1} & 0 & 0 \\ 0 & I & 0 \\ 0 & 0 & (I - A_{33})^{-1} \end{bmatrix} \begin{bmatrix} 0 & 0 & A_{13} \\ A_{21} & 0 & 0 \\ 0 & A_{32} & 0 \end{bmatrix}$$

$$= \begin{bmatrix} 0 & 0 & A_{13}^* \\ A_{21}^* & 0 & 0 \\ 0 & A_{32}^* & 0 \end{bmatrix} \text{ where } A_{13}^* = (I - A_{11})^{-1} * A_{13}, A_{21}^* = A_{21}, A_{32}^* = (I - A_{33})^{-1} * A_{32}$$

$$M_1 = \begin{bmatrix} (I - A_{11})^{-1} & 0 & 0 \\ 0 & I & 0 \\ 0 & 0 & (I - A_{33})^{-1} \end{bmatrix}$$

$$A^{*2} = A^* * A^* = \begin{bmatrix} 0 & 0 & A_{13}^* \\ A_{21}^* & 0 & 0 \\ 0 & A_{32}^* & 0 \end{bmatrix} * \begin{bmatrix} 0 & 0 & A_{13}^* \\ A_{21}^* & 0 & 0 \\ 0 & A_{32}^* & 0 \end{bmatrix} = \begin{bmatrix} 0 & A_{13}^* A_{32}^* & 0 \\ 0 & 0 & A_{21}^* A_{13}^* \\ A_{32}^* A_{21}^* & 0 & 0 \end{bmatrix}$$

$$M_2 = I + A^* + A^{*2} = \begin{bmatrix} I & 0 & 0 \\ 0 & I & 0 \\ 0 & 0 & I \end{bmatrix} + \begin{bmatrix} 0 & 0 & A_{13}^* \\ A_{21}^* & 0 & 0 \\ 0 & A_{32}^* & 0 \end{bmatrix} + \begin{bmatrix} 0 & A_{13}^* A_{32}^* & 0 \\ 0 & 0 & A_{21}^* A_{13}^* \\ A_{32}^* A_{21}^* & 0 & 0 \end{bmatrix}$$

$$= \begin{bmatrix} I & A_{13}^* A_{32}^* & A_{13}^* \\ A_{21}^* & I & A_{21}^* A_{13}^* \\ A_{32}^* A_{21}^* & A_{32}^* & I \end{bmatrix}$$

$$A^{*3} = A^{*2} * A^* = \begin{bmatrix} 0 & A_{13}^* A_{32}^* & 0 \\ 0 & 0 & A_{21}^* A_{13}^* \\ A_{32}^* A_{21}^* & 0 & 0 \end{bmatrix} * \begin{bmatrix} 0 & 0 & A_{13}^* \\ A_{21}^* & 0 & 0 \\ 0 & A_{32}^* & 0 \end{bmatrix}$$

$$= \begin{bmatrix} A_{13}^* A_{32}^* A_{21}^* & 0 & 0 \\ 0 & A_{21}^* A_{13}^* A_{32}^* & 0 \\ 0 & 0 & A_{32}^* A_{21}^* A_{13}^* \end{bmatrix}$$

$$Ma_3 = (I - A^{*3})^{-1} = \begin{bmatrix} (I - A_{13}^* A_{32}^* A_{21}^*)^{-1} & 0 & 0 \\ 0 & (I - A_{21}^* A_{13}^* A_{32}^*)^{-1} & 0 \\ 0 & 0 & (I - A_{32}^* A_{21}^* A_{13}^*)^{-1} \end{bmatrix}$$

$$M_1 = \begin{bmatrix} (I - A_{11})^{-1} - I & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & (I - A_{33})^{-1} - I \end{bmatrix}$$

$$OL = \begin{bmatrix} 0 & A_{13}^* A_{32}^* & A_{13}^* (I - A_{33})^{-1} \\ A_{21}^* (I - A_{11})^{-1} & 0 & A_{21}^* A_{13}^* (I - A_{33})^{-1} \\ A_{32}^* A_{21}^* (I - A_{11})^{-1} & A_{32}^* & 0 \end{bmatrix}$$

$$CL = \begin{bmatrix} C_{132} (I - A_{11})^{-1} & C_{132} A_{13}^* A_{32}^* & C_{132} A_{13}^* (I - A_{33})^{-1} \\ C_{213} A_{21}^* (I - A_{11})^{-1} & C_{213} & C_{213} A_{21}^* A_{13}^* (I - A_{33})^{-1} \\ C_{321} A_{32}^* A_{21}^* (I - A_{11})^{-1} & C_{321} A_{32}^* & C_{321} (I - A_{33})^{-1} \end{bmatrix}$$

$$C_{132} = (I - A_{13}^* A_{32}^* A_{21}^*)^{-1} - I, C_{213} = (I - A_{21}^* A_{13}^* A_{32}^*)^{-1} - I, C_{321} = (I - A_{32}^* A_{21}^* A_{13}^*)^{-1} - I$$

CHAPTER FIVE

Gender Balance and Women Economic Empowerment for Gender-transformative Policy in Ethiopia

5.1. Introduction

5.1.1. Background and Rationale of the Study

Women account about half of the human capital in countries across the world with equal productive capacity and potential to contribute for economic development as men. Greater participation of women in economic activities often measured by Female Labor Force Participation (FLFP) can promote inclusive socioeconomic growth and development. Gender balance in economic activity is key for growth by directly increasing labor supply and productivity, and indirectly boosting domestic demand and standard of living (Cuberes & Teignier, 2011; Fabrizio et al., 2020; Fatima & Sultana, 2009). Increased FLFP can also enhance equity and efficiency by improving the utilization of productive human endowment and bringing greater diversity in the labor market that can nurture new perspectives and skills for production and management (Fatima & Sultana, 2009; Loko & Diouf, 2009; Ostry et al., 2018; Psacharopoulos & Tzannatos, 1989). Moreover, higher FLFP is crucial in reducing income inequality and poverty through its impact on household income and welfare (Fabrizio et al., 2020; Fatima & Sultana, 2009; Hosney, 2015). In general, better integration of women in economic activity has a significant potential to lift economic welfare and should be a central goal of any country.

In Ethiopia, women constitute close to 50 percent of the total population and an estimated 46.6 percent of the labor force (WDI, 2019). However, their involvement in measured economic activity is way below its potential. According to Central Statistical Agency (CSA, 2020), among economically inactive urban population, women make up 62.4 percent which is much higher than 37.6 percent of men. The employment to population ratio in urban areas shows notable gender gap in economic activity standing at 39.9 percent for women and 60.6 percent for men. Also, 26.1 percent women in urban areas are found to be unemployed which is more than double compared to unemployed men of 12.7 percent. In addition, relatively larger percentage of young women in urban areas are unemployed where the female and male youth unemployment rates were estimated to be 31.7 percent and 18.8 percent, respectively (CSA, 2020). The same tendencies of gender disparities in economic activity are also observed at regional and national level (see CSA, 2006, 2014).

Women in Ethiopia work less hour than men with reported average working hour of 27 hours per week compared to 37 hours per week worked by their men counterparts (CSA, 2014). Gender disparities are also observed in type of occupation and sectors where women often concentrate in informal, low-skilled, and low-paid or unpaid jobs. Indeed, women account only 32.6 percent of skilled workers and 26.5 percent of managers and senior officials (CSA, 2014; World Economic Forum (WEF), 2019). Women on the other hand dominate clerical support (64.8 percent), service and sales (65.2 percent), personal care (70 percent) and elementary jobs like cleaning and helping (79.4 percent). Compared to men (14.7 percent), relatively higher percentage of women (23.1 percent) also work in informal sector of the economy (CSA, 2014). Though there are encouraging changes in the country, such gender disparities are observed to persist based on the recent urban employment-unemployment survey (CSA, 2020). Working in informal sectors with little regulation as well as in elementary jobs which require less skill entails women having low payment, job insecurity and limited access to social protection coverage like health and safety insurance, pensions and maternity leaves (International Development Research Center (IDRC), 2020). Gender gaps in key economic outcomes are also significant where 51 percent and 42 percent of the wage and income gender gaps respectively are still remain unclosed (WEF, 2019).

Though women possess promising potential to be entrepreneurs thereby contributing to job creation and economic growth, there is substantial gender gap regarding their participation and the performance of enterprises owned by them. The 2015 World Bank Enterprise Survey of Ethiopia show that women participated as owners and top managers only in 36.2 percent and 4.5 percent of the surveyed enterprises respectively (World Bank, 2014). Significant gender gap is also observed in the growth (Amha, 2015; Gebreeyesus, 2007) and survival (Woldehanna et al., 2018) of business where women owned firms show relatively low growth and survival rate compared to their men counterparts. Women entrepreneurs face various impediments including lack of access to finance; business training, information and networks; managerial and technical skill; previous business experience; access to raw materials; and limited time due to high burden of household and family responsibilities (Abagissa, 2013; Alene, 2020; Assefa & Cheru, 2018; Eshetu & Zeleke, 2008; Gebremariam, 2017; Solomon, 2010; ILO, 2003).

Such gender gaps in economic activities and outcomes are rooted in cultures, social norms and structural conditions which shape the roles, responsibilities and positions of women in the society. Women in Ethiopia often bear the high burden of household chores with no monetary return and face labor market segregation as they largely participate in informal sectors which are not officially counted as an economic activity. They also have low level of education as well as limited ownership of, and access to, productive resources and services, such as land, finance, training and time curtailing their ability and potential to partake in economic activities (IDRC, 2020; MOWCY, UNICEF Ethiopia, & SPRI, 2019).¹ Bringing gender parity in socio-economic systems thus requires measures ranging from changing cultural and social norms to devising and implementing transformational gender policies. Change in social norms which redefines the role and position of women in a household and the society are needed to safeguard the betterment of women in education, employment, and overall economic activity. Gender transformative policy which treats gender issues as a special focus area instead of following a simple holistic approach which integrate them within already existing development policy models' is also very essential to meet targets which leads to gender balance in various spheres (Bekana, 2020).

Understanding factors which influence the labor force participation of women either in wage employment or self-employment in Ethiopia can offer important policy insights for raising economic growth and wellbeing. Examining women's decision to work, how much to work, and in which sectors to work as well as the factors that influence her decision to participate in the labor market are essential to design policies which can address obstacles that discourage women from working or devise new ways that encourage women's participation in the labor market.

5.1.2. Objective of the Study

The general objective of this study is to assess the key gendered barriers that hinder women's participation in the labor force (wage employment and entrepreneurship) in Ethiopia. The specific objectives are;

¹ The 2020 World Economic Forum's Gender Gap Index indicated that even if Ethiopia achieved a remarkable improvement by closing 70.5 percent of its gender gap (largely accounted by increase in women's presence in political institutions), the country is still far from ensuring gender parity in education and economic opportunities.

- To review the current situation of gender gap in main economic outcomes and policy frameworks aimed at reducing gender inequality in Ethiopia;
- Identify gendered factors that determine individual's decision to participate in wage employment and entrepreneurship;
- Estimate and decompose gender gaps in economic outcomes of wage employment and self-employment; and
- Identify outcomes where the gender gap is high and examine factors which explain the observed gaps.

5.1.3. Research Questions

To attain the above objectives, the study attempts to address the following research questions:

- What factors do explain the gender gap in economic activities?
- What is/are known about the impact and effects of the practices and policies aimed at reducing gender gap in economic activities?
- Does gender matter in individual's decision to work, how much to work, and in which sector to work?
- In which outcome variable is the gender gap high and what are the underlying factors for this?

5.2. Theoretical and Empirical Framework

5.2.1. Theoretical Framework

The neoclassical model of labor-leisure choice or the income-leisure model is typically used by economists as a theoretical framework to analyze labor supply behavior. The model is applied to investigate factors that determine individual's decision to work (participate in the labor force) and how many hours to work. According to the neoclassical school of labor supply, individuals or household members decision to enter the labor market is induced by their need for more income, and they work as far as they expect that the benefits from work is greater than those from household activities (Gary S Becker, 1965; Blundell & MaCurdy, 1999; Gronau, 1977; Mincer, 1962; Psacharopoulos & Tzannatos, 1989). The conventional labor-leisure choice model starts from a basic consumer theory where the objective of an individual is to maximize utility which is composed of within-period consumption of commodities C_t and leisure L_t at time t (Blundell & MaCurdy, 1999);

$$U(C_t, L_t)$$

The utility function (U) is assumed to be well behaved and will be maximized subject to the budget constraint which given as follows;

$$C_t + W_t L_t = Y_t + W_t T$$

Where W is the hourly wage rate, Y_t is non-labor income and T is the total time available. The left-hand side of the equation 2.2 shows pattern of expenditure while the right-hand side indicates source of income. The income that an individual has in his/her disposal comprises of unearned income (Y_t) and

earned income ($W_t T$) if the individual devotes it full-time endowment at work. The unearned (Y_t) income includes all sources of income obtained from non-market work such as property/asset, inheritance and chance winning. The sum of income from the two sources is often defined as "full income" from which the consumer purchases consumption goods and leisure. This income concept can be denoted as M , so that

$$M_t = Y_t + W_t T$$

First-order conditions take the familiar form and are expressed as follows;

$$U_C(C_t, L_t) = \lambda_t$$

$$U_L(C_t, L_t) \geq \lambda_t W_t$$

Where U_C and U_L are the partial derivatives of the utility function with consumption goods and leisure respectively, and λ_t is the marginal utility of income.² Solving the first-order conditions and using $H_t = T - L_t$ (where H_t is hours devoted to work at time t) as well as the definition of M_t in terms of Y_t , the hours of work rule is given as,

$$H_t = H(W_t, Y_t)$$

The income-leisure model mainly examines labor supply in relation to wages and incomes with given work-leisure preferences. Wage rate change makes work more attractive having two effects on labor supply; the substitution effect and the income effect. The substitution effect of change in wage rate is positive on labor supply or hours of work. The higher the wage rate means increased opportunity cost of leisure making work more attractive than leisure for those who are already actively participating in the labor force. Higher wage rate also induces new labor supply in the market by attracting those who are not working. However, the income effect of change in wage rate reduces hours of work by making additional work less desirable, since the same level of income can be achieved with less work. Assuming leisure as a normal good, as income increases due to higher wage, more leisure will be demanded resulting less hours of work. Thus, the effect of higher wages on decision to work or how much to work is vague and it depends on the individual's work-leisure preference (that is, the value placed on more work relative to higher earnings). Yet, the effect of increase in non-labor (unearned) income on labor supply is always negative (Psacharopoulos & Tzannatos, 1989).

Generally, in the basic neoclassical labor supply model, the decision to work and, if so, for how many hours to work is contingent on the wage rate, non-labor income and preferences. The model ignores the explicit treatment of non-economic factors that can affect labor supply which are subsumed in analysis as "preferences" and are assumed to be determined exogenously (Psacharopoulos and Tzannatos, 1989). However, individual and/or household attributes as well as social factors are key in determining labor supply decisions. The basic income-leisure equation of hours of work rule thus can be augmented with individual, demographic and social factors that can affect labor supply, and it is given as follows;

² If the inequality in 2.4 holds strictly then the individual is not working and $L_t = T$. The wage, W_R , such that $U_L(C_t, L_t) = \lambda_t W_R$ is the reservation wage below which the individual will not work.

$$H_t = H(W_t, Y_t, X_t)$$

Where X_t includes all observed and unobserved individual and social attributes which can influence labor supply (Blundell & MaCurdy, 1999).

When it comes to women labor supply, similar factors also apply in affecting their decision to participate in the labor market (Mincer, 1962). However, the labor force participation of women appears to depend much more on social aspects than men which often shades the observed relationship of women's participation in the labor market with economic variables of wages and incomes (Psacharopoulos & Tzannatos, 1989). The Becker's time allocation model (Becker, 1965) which based on the neoclassical labor supply theory can be used to explain women's decision to participate or not to participate in the labor market. According to the model, women decide to participate or opt out of the labor force by comparing the values of her time in the labor market with the values of her time spend on domestic activities or home production.

The relative paybacks from time spent on market work and domestic activities depends on the prevailing market wage rate, individual attributes (such as age, education, and number of children) and policies (such as paid maternity leave or childcare provision) which in turn affect women's labor supply (Christiansen et al., 2016; Güven-Lisaniler & Bhatti, 2005). In addition to the typical economic variables of wages and incomes, empirical studies have indicated that many social and demographic variables influence female labor supply functions. Level of economic development, public policies, education, age, marital status, fertility, head of household's status, ownership and control of assets, area of residence, urbanization and employment structure are few to mention. Key factors which influence women's participation in the labor force (either as wage employment or self-employment) are discussed in the next section with the support of empirical evidence.

5.2.2. Empirical Framework

The vast body of literature on women's involvement in the labor market identified a number of variables which affect women's labor market participation rate and can be broadly classified as micro and macro level factors. The macro literature focuses on the role of economic development and various policies on women's aggregate labor supply (Christiansen et al., 2016; Gaddis & Klasen, 2014; Klasen, 2019; Altarawneh, 2020). Such studies often use time-series data and analyze cross country differences in FLFP. One area of study which captures researchers attention is the U-shaped (feminization U) hypothesis which dates back to Sinha (1967). The hypothesis suggested that the relationship between FLFP and economic development follows a U-shape. In particular, the hypothesis states that FLFP first declines at early stages of industrialization and starts to rise again at later stages of economic development. The reason behind such relationship is that at early stages of economic development, agriculture is the main economic activity and women participation is high because most women work in family farms. Working in family farms enables women to combine economic activity with other household chores such as taking care of children.

As the economy transits from agriculture dominated to industrial lead, FLFP decreases due to the dwindled role of the agricultural sector as the main employer of women and shift in the structure of the economy towards a more formal sector. The rationales for such trend of FLFP includes low education attainment, socio-cultural restraints and high manual labor requirement of industrial jobs all of which limiting women (especially married women with children) from working outside home and

exploit emerging employment opportunities in the industrial and other formal sectors (Boserup, 1970; Goldin, 1995). Also, industrialization and the thriving of the formal sectors boosts overall productivity and household earnings mainly by male household heads having a negative income effect on female labor supply (Klasen, 2019). With continued structural change inducing expansion of the service sector, education opportunities, and family planning and childcare services, FLFP starts to increase again. At later stages of economic development, women will have a higher chance of participation in the labor market given their improved education, declining fertility rate and increased availability of service sector and part-time jobs. The U-shaped hypothesis of FLFP was tested by several empirical studies and proved to hold in most cases (Clark et al., 2003; Fatima & Sultana, 2009; Gaddis & Klasen, 2014; Goldin, 1995; Luci, 2009; Mammen & Paxson, 2000; Psacharopoulos & Tzannatos, 1989; Tam, 2011).

Another stand of literature from the macro perspective analyzes the effect of gender-sensitive public policies on FLFP. Gender-sensitive public policies can take various forms including investing in women education and basic infrastructures (such as water, electricity, road); providing adequate and affordable child care services; allowing paid parental leave and avoiding discriminatory tax provisions (Christiansen et al., 2016; Fabrizio et al., 2020). Lack of knowledge and skill are main constraint for women to participate in labor force. Hence, policies which support women education and provide them with greater educational opportunities are shown to increase FLFP particularly in developing countries (Heath & Jayachandran, 2017; Sackey, 2005). Women in developing countries, especially those in rural areas, are mainly responsible for fetching water and collecting firewood. Policies which are designed to improve access to these basic services has significant positive effect on women's participation in the labor market by reducing the burden of unpaid work and freeing up her time to participate in income-generating activities (Dinkelman, 2011; Koolwal & van de Walle, 2013). Also, better road access and improved transportation service is indicated to increase FLFP more so than men (Lei et al., 2019). Moreover, policies which enable women to undertake household responsibilities in parallel with market work such as paid parental leave and subsidized child care services can lift women's participation in the labor market (see e.g., Andersen & Havnes, 2019; Blau & Kahn, 2013; Kalb, 2018). Such policies are important for women to maintain the work-life balance. In advanced nations, empirical evidence show that income taxation also has a significant influence on FLFP (Christiansen et al., 2016; Fabrizio et al., 2020).³

At micro level, various empirical studies have tried to explain FLFP by differences in personal, demographic, household, social and labor market characteristics. Education is the most important factor in affecting FLFP where women with more education are likelier to participate in the labor force than those with less or no education (Ackah et al., 2009; Khanie, 2019; Sackey, 2005; Yakubu, 2010). Education enhances women's incentive to participate in the labor market as it raises the chance of getting better jobs with high earnings compared to household work (Becker, 1975; Eckstein & Lifshitz, 2011; Schultz, 1961). The higher earning potential which comes with education increases the opportunity cost of not working inducing more labor supply by women. Also, education is investment in human capital and an educated women has to work to compensate for the cost of the investment (Khanie, 2019; Psacharopoulos & Tzannatos, 1989). Studies conducted across Europe revealed that countries with higher women educational attainment exhibit a smaller gender gap in employment (Pissarides et al., 2005). Empirical studies also show that women's investment in education can give

³ In countries with joint taxation system, the income of married women is taxed highly because taxes are calculated by combining husband's and wife's income resulting an adverse effect on women's labor supply decisions (Bick & Fuchs-Schündeln, 2017).

more return than men (Psacharopoulos & Tzannatos, 1989). The positive effect of education on women's labor supply also comes through reduced fertility rate. Particularly, studies show that women with more education tends to have less children which increases their chance of participating in the labor market (Lam & Duryea, 1999; Mujahid, 2014; Sackey, 2005).

The women's age, marital status and fertility rate are additional factors which shape the participation of women in the labor market. Age is an important factors in determining FLFP where women who are within the age of child bearing and rearing often have a lower participation rate than those outside such age (Eckstein & Lifshitz, 2011; Heckman & MaCurdy, 1980; Uwakwe, 2004). Married women with children (with large families) have lower participation rate because family responsibilities and taking care of children increases the value of time spent on domestic activities. The more time a women spent on home production, the less time she has to spent for market work (Bloom et al., 2009). Especially, the presence of young children (aged 5 or below) in the household adversely affects the labor force participation of women. Some empirical studies, however, show that having more children can increase women's participation in the labor force due to increased income need to cover the expense of large family size. Household assets, husband's income and participation in economic activities, and place of residence (urban vs. rural) are also additional factors which affect women's participation in the labor market (Hosney, 2015).

Social norms, attitudes and religion can also affect women's participation in the labor market. Social norms and attitudes towards women's role in in society can adversely affect women's employment. In developing countries, women (especially married women) are considered as homemakers primarily responsible for household activities of taking care of husband and children, cleaning and cooking (Fernández, 2013; Khadim & Akram, 2013; Psacharopoulos & Tzannatos, 1989). Such patriarchal systems constraints women from participating in paid economic activities (Güven-Lisaniler & Bhatti, 2005; Mukherjee, 2015). Stereotypes about gender roles not only affects women's participation rate but also her sector of participation where women are often perceived to be unfit for higher managerial positions and occupations requiring technical skills. Religion could also affect FLFP where empirical evidence show that countries with strong religious views about the role of women in the society exhibit lower women participation rate in the labor market (Psacharopoulos & Tzannatos, 1989).

5.3. Methodology and Data

The discussion in the previous sections indicated that FLFP is determined by several factors ranging from micro level individual and household characteristics to macro level variables of economic development and government policies. The main focus of this study is to analyze factors affecting individual women's labor supply decision (either in wage or self-employment) in Ethiopia. The study will also review the current situation of gender gap in main economic outcomes and policy frameworks aimed at reducing gender inequality in Ethiopia. Moreover, the study will estimate and decompose gender gaps in economic outcomes of wage employment and self-employment. Furthermore, the study will also identify outcomes where the gender gap is high and examine factors which explain the observed gaps. The proposed analytical approaches, models, estimation methods and data for analysis are described in the following subsections.

5.3.1. Labor Force Participation, Hour of Work and Earning

In order to investigate factors which influence women's labor force participation, her intensity of participation (hour of work) and earning, this study applied the Heckman sample selection model. The Heckman procedure (also called Heckit model) is a method used to estimate regression models which suffers from sample selection bias due to incidental truncation where the dependent variable is only observable for a certain outcomes of another variable (Wooldridge, 2013). Classically, the model is applied to estimate female labor supply models where women's wage or hour of work is only observed if she decides to participate in the labor market

The Heckman model includes two separate equations, the sample selection equation and the outcome equation. Given a latent variable y_1^* and the outcome latent variable y_2^* where for this study, y_1^* denotes the unobserved propensity to work and y_2^* denotes the supply of working hours or wage, the selection equation can be expressed as:

$$y_1 = \begin{cases} 1 & \text{if } y_1^* > 0 \\ 0 & \text{if } y_1^* \leq 0 \end{cases}$$

And the outcome equation is given as follows:

$$y_2 = \begin{cases} y_2^* & \text{if } y_1^* > 0 \\ . & \text{if } y_1^* \leq 0 \end{cases}$$

What follows from the two equations system is that whenever y_1^* is positive then y_2 will be known, whereas for non-positive y_1^* , y_2 is non-observable.

Considering a linear wage equation;

$$w_i^* = x_{1i}'\beta_1 + \varepsilon_{1i}$$

Where x_{1i} denotes a vector of exogenous characteristics and w_i^* denotes women i's wage. The wage w_i^* is not observed for women who are not working. The selection equation which describes whether a woman is working or not is specified as standard probit model.

$$h_i^* = x_{2i}'\beta_2 + \varepsilon_{2i}$$

With the following observation rule;

$$w_i = w_i^*, h_i = 1 \quad \text{if } h_i^* > 0$$

$$w_i \text{ not observed, } h_i = 1 \quad \text{if } h_i^* \leq 0$$

Where w_i is the women's actual wage and the binary variable is h_i , simply indicates working or not working. The model is completed by distributional assumption on unobserved errors ($\varepsilon_{1i}, \varepsilon_{2i}$), usually a bivariate normal distribution with expectations zero, variances σ_1^2, σ_2^2 , respectively and covariance σ_{12} . The variables in x_1 and x_2 can be the same or different depending on model specification (Verbeek, 2004).⁴

⁴ If the variables are the same, i.e., the restriction that $x_{1i}'\beta_1 = x_{2i}'\beta_2$ and $\varepsilon_{1i} = \varepsilon_{2i}$ is imposed the model will be a standard Tobit model (Tobit I).

The conditional expectation of the outcome variable, given that women i is working, given by;

$$\begin{aligned} E\{w_i|h_i = 1\} &= x'_{1i}\beta_1 + E\{\varepsilon_{1i}|h_i = 1\} \\ &= x'_{1i}\beta_1 + E\{\varepsilon_{1i}|\varepsilon_{2i} > -x'_{2i}\beta_2\} \\ &= x'_{1i}\beta_1 + \frac{\sigma_{12}}{\sigma_2^2} E\{\varepsilon_{2i}|\varepsilon_{2i} > -x'_{2i}\beta_2\} \\ &= x'_{1i}\beta_1 + \sigma_{12} \frac{\phi(x'_{2i}\beta_2)}{\Phi(x'_{2i}\beta_2)} \end{aligned}$$

The conditional expectation of the outcome variable (wage in the above case) equals $x'_{1i}\beta_1$ only if $\sigma_{12} = \rho_{12}$ where ρ_{12} is the correlation coefficient between the two errors. If the error terms from the two equations are uncorrelated, the outcome equation can be consistently estimated by ordinary least squares (OLS). A sample selection bias in the OLS estimator arises if $\sigma_{12} \neq 0$. The term $\phi(x'_{2i}\beta_2)/\Phi(x'_{2i}\beta_2)$ is called the inverse Mill's ratio as well as Heckman's lambda as it denotes $\lambda(x'_{2i}\beta_2)$.

The Heckman sample selection model is often estimated in two steps which is based on the following regression;

$$y_i = x'_{1i}\beta_1 + \sigma_{12}\lambda_i + \eta_i,$$

Where

$$\lambda_i = \frac{\phi(x'_{2i}\beta_2)}{\Phi(x'_{2i}\beta_2)}$$

The error term in the above model equals $\eta_i = E\{\varepsilon_{1i}|x_i, h_i = 1\}$. Given the assumption that the distribution of ε_{1i} is independent of x_i (but not of h_i), η_i is uncorrelated with x_i and λ_i by construction. This means β_1 and σ_{12} will be estimated by running a least squares regression of y_i up on the original explanatory variables x_{1i} and the additional variable λ_i . The unknown element in λ_i which is β_2 will be estimated consistently by probit maximum likelihood applied to the selection model (Verbeek, 2004).

5.3.2. Specification of the Heckman model

The participation model (selection equation)

Given the cross-sectional structure of dataset that will be used for this study, the determinants women's participation in the labor force is specified as follows;

$$FLFP_i^* = \alpha_i + \beta X_i + v_i$$

Where $FLFP_i^*$ is a dummy variable which takes 1 if the women participate in the labor market and 0 if she does not. The participation equation, $FLFP_i^*$ is positive only if the dummy variable equals one. β is a vector of unknown parameters and v_i is the error term. The decision to participate depends on a vector of explanatory variables X_i . Based on the theoretical and empirical framework in the previous section, women's labor force participation is hypothesized to depend on the following factors;

$$FLFP_i = f\{\text{personal and demographic factors; household factors; geographic location factors; others}\}$$

Where;

- Personal and demographic factors include education, age, marital status, number of children, head of household's status, ownership and control of assets, religion
- Household factors include household's labor and non-labor income, household's asset, number of dependents, husband's education and income (for married women),
- Geographic location factors include area of residence (urban and rural)

The labor force participation status of the woman at time t ($FLFP_i$) takes the value 1 if the i -th woman is in the labor force and zero otherwise. Participation is defined to include a woman declaring a job, paid or unpaid, which captures those women participating either in paid work or unpaid domestic work (family farm or business). The selection equation is estimated using a standard probit model.

The wage equation (the outcome equation)

The wage equation is specified by including the estimated inverse Mill's ratio ($\hat{\lambda}_{it}$) from the probit model for each period.

$$w_i = Z_i\beta + \hat{\lambda}_i + e_i$$

Where, w_i is wage earned by individual i , Z_{it} is vectors of individuals specific factors which explain earning and e_i is error term. w_i is not observed unless the individual is not participating in wage employment.

5.3.3. Decomposition of gender gaps in key economic outcomes

To decompose gender gaps in economic outcomes, this study applied the Blinder-Oaxaca (1973) decomposition technique based on Jann (2008). The Blinder-Oaxaca technique was originally used in labor economics to decompose earning gaps and to estimate the level of discrimination. The method can be used to study labor-market outcomes by groups decomposing mean differences in the outcome variable based on linear regression models in a counterfactual manner. It divides the difference in outcome variable between two groups into a part that is “explained” by group differences in observed predictors (characteristics) and a residual (unexplained) part that cannot be accounted for by observed predictors. This “unexplained” part is often used as a measure for discrimination, but it also incorporates the effects of group differences in unobserved predictors (Jann, 2008).

Given there are two groups, A and B (women and men in the current study); an outcome variable, Y ; and a set of predictors. The main question is how much of the mean outcome or the expected value of the outcome variable, i.e., $E(Y)$, is accounted for by group differences in the predictors.

$$R = E(Y_A) - E(Y_B)$$

Based on a linear model

$$y_g = x_g'\beta_g + \epsilon_g, \quad E(\epsilon_g) = 0 \quad g \in (A, B)$$

where X is a vector containing the predictors and a constant, β contains the slope parameters and the intercept, and ϵ is the error, the mean outcome difference can be expressed as the difference in the linear prediction at the group-specific means of the explanatory variables. That is,

$$R = E(Y_A) - E(Y_B) = E(X_A)' \beta_A - E(X_B)' \beta_B$$

Where $E(\beta_g) = \beta_g$ and $E(\epsilon_g) = 0$ by assumption.

To identify the contribution of group differences in predictors to the overall outcome difference, the equation can be rearranged and written as;

$$R = \{E(X_A) - E(X_B)\}' \beta_B + E(X_B)' (\beta_A - \beta_B) + \{E(X_A) - E(X_B)\}' (\beta_A - \beta_B)$$

Where;

$E = \{E(X_A) - E(X_B)\}' \beta_B$ is amounts to the part of the differential that is “explained” by differences in the predictors (also called the “endowments effect”).

$C = E(X_B)' (\beta_A - \beta_B)$ is the portion of differential attributable to differing coefficients and;

$U = \{E(X_A) - E(X_B)\}' (\beta_A - \beta_B)$ is the unexplained portion of the differential.

The sum of C and U measures differential attributed to discrimination.

The estimation of these components is given as;

$$\hat{R} = \bar{Y}_A - \bar{Y}_B = (\bar{X}_A - \bar{X}_B)' \hat{\beta}_B + \bar{X}_B' (\hat{\beta}_A - \hat{\beta}_B) + (\bar{X}_A - \bar{X}_B)' (\hat{\beta}_A - \hat{\beta}_B)$$

Where $\hat{\beta}_A$ and $\hat{\beta}_B$ are the least-squares estimates for β_A and β_B , obtained separately from the two group-specific samples, and the group means $\bar{X}_A$ and $\bar{X}_B$ are estimates for $E(X_A)$ and $E(X_B)$.

5.3.4. Explaining observed gender gaps in key economic outcomes

In order to explain the observed gender gaps in outcome variable of interest, detailed decomposition that can subdivide components into the respective contributions of each covariate will be conducted. Such analysis is useful to investigate the detailed contributions of the single predictors or sets of predictors to observed group-wise differences in outcome variables.

Identifying the contributions of the individual predictors to the explained part of the differential is not complicated because the total component is a simple sum over the individual contributions. Individual predictor's contribution to the explained part is given as;

$$\hat{E} = (\bar{X}_A - \bar{X}_B)' \hat{\beta}_B = (\bar{X}_{1A} - \bar{X}_{1B})' \hat{\beta}_{1B} + (\bar{X}_{2A} - \bar{X}_{2B})' \hat{\beta}_{2B} + \dots$$

Where $\bar{X}_1, \bar{X}_2 \dots$ are the means of the single predictor, and $\hat{\beta}_1, \hat{\beta}_2, \dots$ are the associated coefficients. The first summand reflects the contribution of the group differences in $\bar{X}_1$; the second, of differences in $\bar{X}_2$; and so on. The individual predictor's contribution to the unexplained part can also be decomposed in a similar manner (Jann, 2008).

5.3.5. Data

This study used the Ethiopian Socioeconomic Survey (ESS) which is collected by the Central Statistics Agency of Ethiopia (CSA) in collaboration with the World Bank Living Standards Measurement Study-Integrated Surveys on Agriculture (LSMS-ISA) team. The ESS is conducted in four waves so far; ESS1 (2011/12), ESS2 (2013/14), ESS3 (2015/16) and ESS4 (2018/19). The first wave of ESS began as Ethiopia Rural Socioeconomic Survey (ERSS) in 2011/12 and it covered only rural and small-town areas while the subsequent waves were expanded to include all urban areas. The 2018/19 ESS (ESS4) is a new panel which is not a follow-up of the previous ESS waves. This study primarily uses the recent ESS (2018/19) dataset. The 2015-16 data is also utilized for comparison purpose in the descriptive analysis section.

The ESS survey provides a representative dataset on both urban and rural households covering all nine regional states and two administrative cities (Addis Ababa and Dire Dawa) of Ethiopia. The dataset has information on individual and household demographic characteristic (such as education, age, marital status, health); labor and time use; financial inclusion; assets ownership and user right; food and non-food expenditure; household nonfarm activities and entrepreneurship; food security and shocks; safety nets; housing conditions; physical and financial assets; credit; tax and transfer; and other sources of household income. The survey also contains information on community level information regarding access to basic services; economic activities, infrastructure; community organizations; resource management; changes in the community; key events; community needs, actions and achievements; and local retail prices. In addition, for agricultural households, information on post-harvest, post-planting and livestock ownership and production is available in the dataset. The labor and time use, and the non-farm enterprise modules are the primary data sources for this study.

5.4. Legal and Policy Framework

This section presents reviews of legal and policy frameworks adopted by Ethiopia which are aimed at reducing gender inequality and fostering women economic empowerment. In recognition of the pivotal role that gender equality and women empowerment plays in achieving inclusive and sustainable economic growth, the Ethiopian government has been taking various legal and policy reforms. Since the adoption of the new Constitution in 1994, the issue of gender parity has been conveyed in various policies, legal frameworks, rules, and regulations of the country. Ethiopia is also a signatory of several international and regional gender parity agreements. The issue of gender equality has been expressed in the constitution itself, the family laws, penal code, gender policies, national development plans and the ratified international and regional treaties on gender equality (Beyene, 2015; Drucza & Rodriguez, 2018).

The 1994 Constitution of Ethiopia was a key step forward in advocating the protection of fundamental rights of women and gender equality in the legal, economic, social, and political spheres (Beyene, 2015). The constitution grants women equal citizenship rights to men (Article 7) and ruled out gender-based discriminations (Article 25). Under Article 89(7), the state is deemed to be responsible in ensuring equal participation of women in all economic and social activities. In particular, women are entitled to equal rights in employment, marriage, access to and control over resources and political participation. The employment rights of women are stated under Article 42 and Article 35 which gives women equal right to work or employ, and get equal work-related benefits including wage, promotion,

and pension. The constitution also entitled working women with fully paid maternity leave. The marriage rights are addressed under Article 34 which allows men and women to have equal rights during marriage and in divorce. Regarding property and land rights, the constitution states that women have full right in acquiring, administering, controlling, using, and transferring property including land. In the political realm, women are granted equal right to participate in political activities including voting (Article 38) and in designing development policy. By taking the historical legacy of inequality and discrimination suffered by women in Ethiopia into consideration, the constitution under Article 35(3) also entitled women with corrective and affirmative action. The aim of such measures is to enable women to compete and participate on the basis of equality with men in political, economic and social life as well as in public and private institutions. The state is also obliged to protect women from traditional and harmful customs and practices which adversely affect their bodily and mental status (Beyene, 2015; Ogato, 2013; Drucza & Rodriguez, 2018).

Ethiopia also passed various proclamations and made a revision on civic, penal, and labor laws in order to address the issue of gender equality. The revised Family Law (2000) gives women equal right in marriage making notable reforms over the Civil Code of 1960. The revised law rose the minimum age of marriage for women from 15 to 18 years and puts mutual consent of the spouses as one of the requirements for marriage (Article 6). The law also entitled women with equal property right (Article 102) and joint management of family assets (Article 50). Women who lived with her partner for three or more years are granted a right to share any property owned by the household. The 2005 Penal Code of the country criminalizes various forms of violence against girls and women including harassment, sexual abuse, female genital mutilation, early marriage, abduction and physical violence in any form of union (Drucza & Rodriguez, 2018). Regarding labor rights of women, the Labor Proclamation No. 377 of 2003 forbids gender-based discrimination in employment and compensation. The proclamation also grants women with paid maternity leave. Any forms of discrimination in employment are also outlawed by the Federal Civil Servants Proclamation No. 515 of 2007. The pension rights of women are protected by the Public Servant Proclamation No. 714 of 2011 and the Private Organization Employees Proclamation No. 715 of 2012 in public and private sectors respectively (Beyene, 2015; UN Women, 2014).

In the policy sphere, Ethiopia announced the first National Policy on Women in 1993 which establishes the base and overall direction for the recognition and realization of gender equality. The principal objective of the Women's Policy of 1993 was to institutionalize the rights of women in various domains. It aimed at introducing gender sensitive public policies and interventions by establishing suitable platforms and arrangements in government offices and institutions (Ogato, 2013). Accordingly, the Women's Affairs Office and other subsidiary structures: the Women's Affairs Sector in all the regional administrative offices, and the Women's Affairs Departments in all ministries and government organizations were established (Drucza & Rodriguez, 2018).

The National Action Plan for Gender Equality (NAP-GE) was developed by the Ministry of Women's Affairs (MoWA) in 2006 which was implemented during the period 2006-2010. The policy mainly aimed at ensuring gender equality in social (such education and health related rights of women), economic (poverty reduction and economic empowerment of women) and political aspects of life. The policy also focused on women's empowerment in decision-making and creating institutional mechanisms to ensure the right of women. In addition, NAP-GE emphasized the need for sex-disaggregated data to develop gender sensitive indicators. Moreover, the policy made the first attempt to frame and integrate gender issues in national development plans mainly the Sustainable Development and Poverty Reduction Program (SDPRP). The NAP-GE also proposes areas in which the policy can

be linked with Plan for Accelerated and Sustained Development to End Poverty (PASDEP) (MoWA, 2006).

Ethiopia also reflected the issue of gender equality in its National Development Plans. In line with the constitution and the NAP-GE, in 2006, the MoWA adopted the first Ethiopian Women Development Package followed by the second package in 2017. The issue of gender equality and mainstreaming is included in PASDEP which was the main poverty reduction strategy of the government for the period 2005/06-2009/10 (Ministry of Finance and Economic Development (MoFED), 2005). The NAP-GE is incorporated as integral part of the PASDEP forming the core of its gender strategy. The PASDEP recognizes the essential role of women participation in economic development and gender equality is perceived as way to eliminate poverty. The plan intended to achieve gender equality by giving women (especially rural women) equal access to productive resources and services, assisting poor women with safety net programs, providing women and girls with equal chance of education, promoting gender mainstreaming in government institutions and increasing the involvement of women in managerial government positions (MoFED, 2005).

The consecutive Growth and Transformation Plans, GTP I (2010/11-2014/15) and GTP II (2015/16-2019/20) considered women's empowerment as key step towards achieving the development goals of the country. In GTP I, the issue of women, children and youth is treated as interlinked. The plan focused on promoting girls' education and increasing the number of female teachers in schools. In addition, it aims at increasing the economic participation of women in rural areas by providing them with extension services and productive resources. In addition to agriculture, women's and youth's participation in non-farm activities is also encouraged in GTP I. The plan also intends to assist women microenterprise owners to transform their businesses to small and medium scale enterprises (MoFED, 2010). Building on GTP I, the second growth and transformation plan (GTP II, 2015/16-2019/20) also emphasized the issue of women and youth by recognizing various challenges faced by such vulnerable groups. GTP II puts strengthening women and youth organizations and ensuring the active participation of such organizations in the development and governance programs of the country as a strategic plan. The plan also designed to ensure equal participation and benefits for women and youth in political, economic and social domains. The challenges faced by rural women in accessing extension services, agricultural technologies and various productive resources and services are continued to receive recognition in GTP II (National Planning Commission (NPC), 2016).

Apart from domestically issued laws and policies, Ethiopia signed and adopted a number of international and regional agreements on gender equality. These include the Convention on the Political Rights of Women, Convention on the Elimination of All Forms of Discrimination against Women, the 1995 Beijing Platform for Action, the Declaration on the Elimination of Violence against Women and the International Conference on Population and Development. Ethiopia is also a signatory of international labor conventions that protect the right of women employees: C100 Equal Remuneration, which guarantees equal remuneration and calls for ending workplace discrimination; C111 Discrimination (Employment and Occupation), which promotes the rights of working women; and C156 Workers with Family Responsibilities, which promotes equal opportunities and equal treatment for men and women workers. Ethiopia endorsed the MDGs of 2000 which includes women's socioeconomic issue as part the goals (such as providing equal access to education and reducing maternal mortality) and made considerable effort to achieve the targets (Beyene, 2015; UN Women, 2014; Drucza & Rodriguez, 2018). Similarly, Ethiopia is striving to attain the Sustainable Development Goals (SDGs) which replaced the MDGs in 2015 where gender equality is stated under goal five of the SDGs.

5.5. Situational Analysis

5.5.1 Status of labor force participation

This section presents an assessment of the current status of gender gap in economic activities by conducting situational analysis based on the Ethiopia Socioeconomic Survey (ESS) dataset. For this study, working age population is defined as individuals aged 15 years and older. For the descriptive analysis, participation in economic activities are defined based on two approaches; current and usual activity status (see CSA, 2006, 2014). In the current activity status approach, the economic activity status of an individual is determined based on a short reference period of seven days before the date of interview. Based on this approach, individuals who spent one hour or more during the reference week in productive activities (including agricultural activities; non-agricultural business activities; casual, part-time, or temporary labor; or any other paid work) are considered as active participants in the labor force. The usual activity status bases longer reference period (twelve months prior to the date of interview) to determine the economic activity status of an individual. Based on the usual activity approach, individuals who reported to engage in productive activities (including paid, unpaid, PSNP or casual, part-time, or temporary labor work) during the last twelve months from the date of interview are considered as active participants in the labor force.

Table 5.1: Working age individuals and activity status

Activity status	2015-16			2018-19		
	Total N	%Men	%Women	Total N	%Men	%Women
Working age individuals	13,503	47.86	52.14	16,962	47.01	52.99
Active individuals (Current)	7178	56.0	44.0	8547.0	58.4	41.6
Active individuals (Usual)	4,792	62.5	37.5	5248.0	59.4	40.6
%Active (Current)	53.2			50.4		
%Active (Usual)	35.5			30.9		

Source: Based on ESS (2015/16; 2018/19)

In 2018-19, the total numbers of working age individuals are 16,962 out of which 47% are men while 53% are women. About 50% of the working age individuals are found to be currently active while 31% are usually active. Among currently active individuals, 58% are men while 42% are women. Similarly, women account 41% of usually active individuals while the rest are men. In both 2015-16 and 2018-19, women participation in the labor force is significantly lower than men and it is not showing notable change over time.

Table 5.2: Characteristics of labor force participant (2018-19)

Characteristics	Current Activity			Usual Activity		
	Men	Women	Total	Men	Women	Total
Age	35	33	34	35	32	34
Household head	66.7	27.4	50.3	72.1	32.7	56.1
Family size	5.2	5.0	5.2	4.8	4.6	4.7
Religion						
Christian	62.9	66.5	64.4	66.5	72.9	69.1
Muslim	36.3	32.6	34.8	32.7	26.5	30.1
Others	0.8	0.8	0.8	0.8	0.6	0.7
Marital status						
Single	31.9	23.1	28.3	28.1	26.3	27.4
Married	65.2	58.0	62.2	68.6	52.6	62.1
Divorced, Separated, Widowed	2.9	18.9	9.6	3.3	21.1	10.6
Education						
Not Educated	32.2	49.1	39.2	26.4	38.2	31.2
Informal education	0.9	0.5	0.7	0.8	0.4	0.7
Primary Education	36.9	27.7	33.1	32.9	29.2	31.4
Secondary Education	15.3	11.0	13.5	17.5	13.4	15.8
Tertiary (Certificate)	1.7	1.3	1.5	2.4	2.0	2.3
Tertiary (Not complete)	0.9	1.4	1.1	1.4	2.0	1.6
Tertiary (Diploma)	4.2	4.5	4.3	6.1	7.0	6.5
Tertiary (First degree)	6.3	4.0	5.3	9.9	6.6	8.5
Tertiary (Graduate degree)	1.6	0.7	1.2	2.6	1.2	2.0

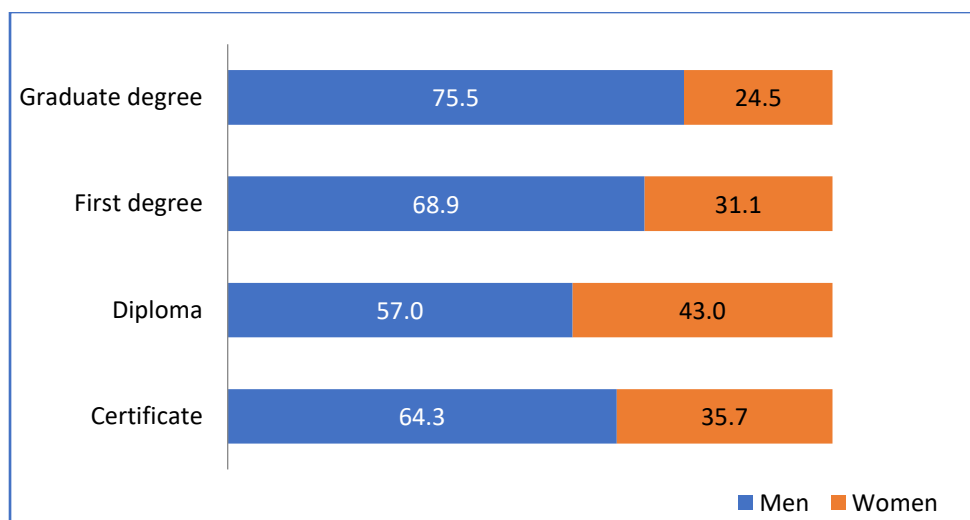
Source: Based on ESS (2015/16; 2018/19)

The average age of participants in current and usual activity is 34 years where women participants are by one or two year/s younger than their men counterparts. Only 27% of currently active women are household heads compared to 67% of men. Similarly, the share of usually active men household heads is 72% which is significantly higher than 33% of women participants. Majority of the participants are married (62%) where the percentage of married men is relatively higher than women. Compared to men, higher percentage of women are divorced, separated, or widowed. Looking into the education profile, majority of the labor force participants have no education where the share of uneducated women is higher than men both in the case of current and usually active participants. Among those with some level of education, labor force participants with primary education as their highest level of education attainment dominate the sample. The share of individuals with tertiary education is below 15% and 25% for those currently active and usually active respectively.

As it is shown in Figure 5.1, the percentage of currently active women having tertiary education of certificate, diploma, first degree and graduate degree is significantly lower than men. For example, among currently active participants with graduate degree, only a quarter are women. Virtually the same

gender disparities are observed in attainment of tertiary education for usually active participants and hence results are not reported.

Figure 5.1: Tertiary Education by Gender, 2018-19 (currently active)



Source: Based on ESS (2018/19)

5.5.2. Status of Labor force participation by types of activity and gender

Results from previous sections show that women in Ethiopia generally have less participation in the labor force especially in measured economic activities compared to men. Table 5.3 show the current activity status of men and women by types of economic activities (including agricultural, non-agricultural, temporary and wage). The percentage of women who participate in domestic activities (fetching water and collecting firewood) is significantly higher than men both in 2015-16 and 2018-19 indicating that the gender role of women in the society is not showing notable change over time. When it comes to agricultural activity, women participation is significantly lower than that of men. Women on the other hand have almost an equal participation with men in non-agricultural activities which are mainly household business. Participation in wage activity is generally low in the sample but women participation is even lower than men.

Table 5.3: Current Activity Status (Last seven days)

Activity	2015-2016			2018-2019		
	% Men	% Women	Diff. Sig.	% Men	% Women	Diff. Sig.
Domestic	17.78	53.61	0.0000	20.75	48.98	0.0000
Agricultural	44.09	30.34	0.0000	39.14	22.80	0.0000
Non-Agricultural	10.58	10.71	0.8159	9.68	9.55	0.7632
Casual, part-time or temporary	5.82	2.95	0.0000	3.30	1.30	0.0000
Wage	9.44	5.41	0.0000	15.46	8.33	0.0000
Any activity*	62.16	44.89	0.0000	62.56	39.59	0.0000

Source: ESS (2015-16; 2018-19)

Note: For domestic activity, respondents were asked if they spent time in collecting water and firewood yesterday

*Excluding domestic activity

Similar gender disparities in labor force participation are also observed when considering the usual activity status of men and women. Table 5.4 shows the percentage of women who reported to participate in paid job is less than by half compared to men both in the 2015-16 and 2018-19. The percentage of men participating in unpaid work which include free or exchange labor to assist other households is also higher than women. Even if Productive Safety Net Programs (PSNP) are often targeted to benefit women with low economic status, the percentage of women participating in such programs is found to be lower than men. In general, the overall economic participation of women measured by usual activity status is significantly lower than that of men.

Table 5.4: Usual Activity Status (Last twelve months)

Activity	2015-2016			2018-2019		
	% Men	% Women	Diff. Sig.	% Men	% Women	Diff. Sig.
Wage	13.54	7.33	0.0000	19.92	10.51	0.0000
Unpaid	27.36	14.36	0.0000	15.24	9.98	0.0000
PSNP	4.44	2.52	0.0000	5.17	3.70	0.0000
Casual, part-time or temporary	10.34	4.38	0.0000	5.13	2.11	0.0000
Any activity*	44.34	23.73	0.0000	35.85	20.99	0.0000

Source: Based on ESS (2015-16; 2018-19)

*Excluding PSNP job

5.5.3. Status of Labor force participation by types of activity and residence

As it is known, rural labor force participation in Ethiopia is dominated by agricultural activity. This is shown by Table 5.5 where 52.3% and 56.8% of the rural observations participate in agricultural activity compared to only 6% and 7.4% of individuals residing in urban areas in 2015-16 and 2018-19 respectively. On the other hand, relative to rural occupants, larger percentage of individuals in urban area participate in non-agricultural and wage activity. Considering current activity status, overall labor force participation (any activity) is higher in rural areas than in urban areas in both rounds of the survey. However, when usual activity status is considered, labor force participation is higher in urban areas than rural areas.

Table 5.5: Labor force participation by residence (current and usual activity)

Activity	2015-16		2018-19	
	% Urban	% Rural	% Urban	% Rural
Current Activity (Last seven days)				
Agricultural	5.97	52.27	7.40	56.82
Non-Agricultural	18.57	6.72	13.6	5.06
Casual, part-time or temporary	4.42	4.28	3.21	1.14
Wage	17.76	2.17	19.73	2.51
Any activity	42.63	58.38	40.99	61.11
Usual Activity (Last twelve months)				
Wage	23.92	3.56	24.47	4.05
Unpaid	10.87	25.43	6.35	19.41
PSNP	0.63	4.83	1.88	7.26
Casual, part-time or temporary	6.58	7.56	3.81	3.22
Any activity*	36.06	32.37	31.24	24.25

*Excluding PSNP job

Source: Based on ESS (2015-16; 2018-19)

Looking into labor force participation of men and women in urban areas, women in general have lower participation rate compared to men both in the case of current and usual activity status. Gender gaps are not however observed in non-agricultural, unpaid and PSNP activities where the participation rate of urban women in such activities is virtually the same as men.

Table 5.6: Labor force participation in urban areas by gender (current and usual activity)

Activity	2015-16			2018-19		
	% Men	% Women	Diff. Sig.	% Men	% Women	Diff. Sig.
Current Activity (Last seven days)						
Agricultural	7.14	5.01	0.0000	9.64	5.54	0.0000
Non-Agricultural	19.88	17.5	0.0419	14.18	13.11	0.1362
Casual, part-time or temporary	5.84	3.27	0.0000	4.74	1.93	0.0000
Wage	23.58	13.06	0.0000	26.2	14.32	0.0000
Any activity	51.05	35.81	0.0000	50.66	32.93	0.0000
Usual Activity (Last twelve months)						
Wage	31.97	17.39	0.0000	32.63	17.67	0.0000
Unpaid	10.82	10.91	0.9186	6.35	6.35	0.9997
PSNP	0.5	0.73	0.335	1.24	2.41	0.0000
Casual, part-time or temporary	9.77	3.99	0.0000	5.47	2.41	0.0000
Any activity	45.3	28.58	0.0000	39.71	24.18	0.0000

Source: Based on ESS (2015-16; 2018-19)

Similar to urban areas, rural women's labor force participation rate is significantly lower than men except in the case of non-agricultural activities. In 2018-19, rural women's participation rate in agriculture is 26.8 percentage point lower than men. This is expected because 73.6% of households in

rural areas are male headed and main agricultural resources like land are often owned by men. In rural areas, generally there is little participation in paid activity and compared to men; women's participation is significantly lower.

Table 5.7: Labor force participation in rural areas by gender (current and usual activity)

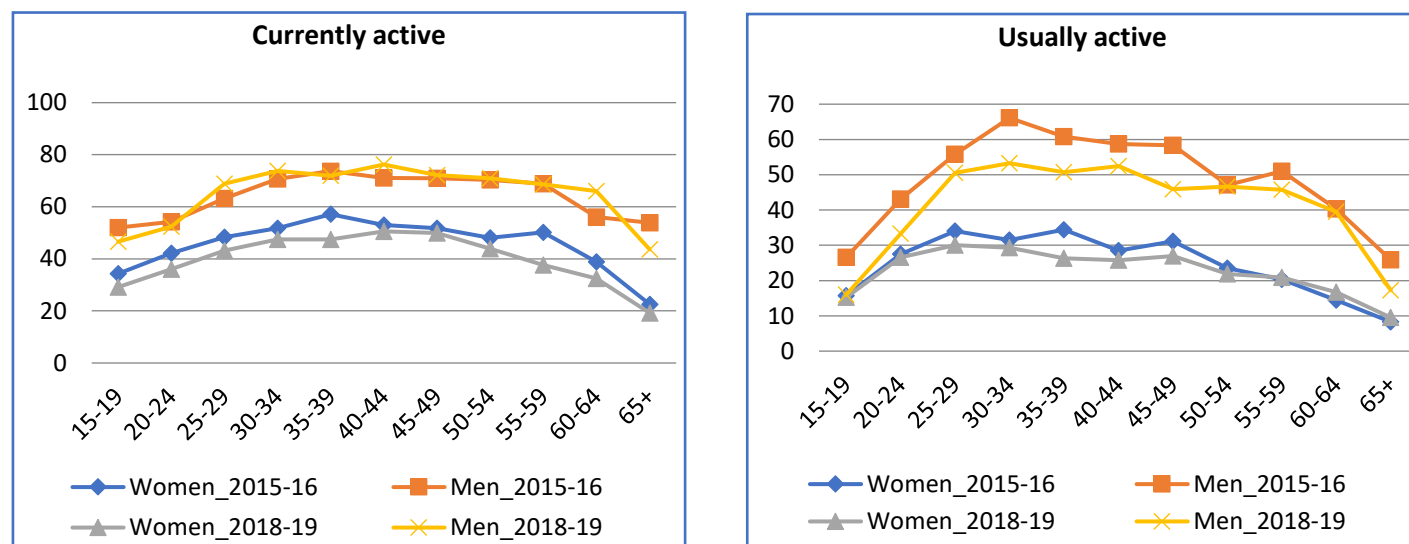
Activity	2015-16			2018-19		
	% Men	% Women	Diff. Sig.	% Men	% Women	Diff. Sig.
Current Activity (Last seven days)						
Agricultural	60.67	44.06	0.0000	70.54	43.75	0.0000
Non-Agricultural	6.41	7.03	0.2426	4.89	5.22	0.5026
Casual, part-time or temporary	5.81	2.78	0.0000	1.76	0.54	0.0000
Wage	3.09	1.27	0.0000	4.04	1.06	0.0000
Any activity	67.15	49.81	0.0000	75.23	47.68	0.0000
Usual Activity (Last twelve months)						
Wage	5.27	1.88	0.0000	6.39	1.82	0.0000
Unpaid	34.82	16.24	0.0000	24.7	14.39	0.0000
PSNP	6.21	3.48	0.0000	9.35	5.27	0.0000
Casual, part-time or temporary	10.59	4.59	0.0000	4.76	1.75	0.0000
Any activity	43.9	21.11	0.0000	31.74	17.12	0.0000

Source: Based on ESS (2015-16; 2018-19)

The age-participation profile of men and women for current and usual activity status is presented in Figure 5.2. In the case of currently active, for both women and men, participation is already high at young ages (15-19), increases marginally at prime working age⁵ years (25-54) and declines in later years of age. The age-participation profile of men and women in the case of usual activity status follows the same trend but participation is relatively lower at young ages (15-19). The inclusion of agricultural activity as part of current activity explains the high participation of young age group, 15-19 years. In rural areas, children and youngsters are active participants in household agricultural activities.

⁵ The prime working age population include adults between the ages of 25 and 54

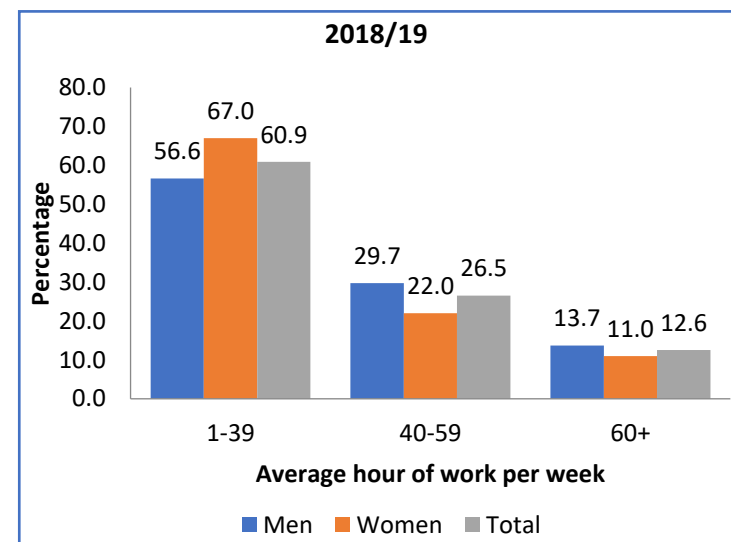
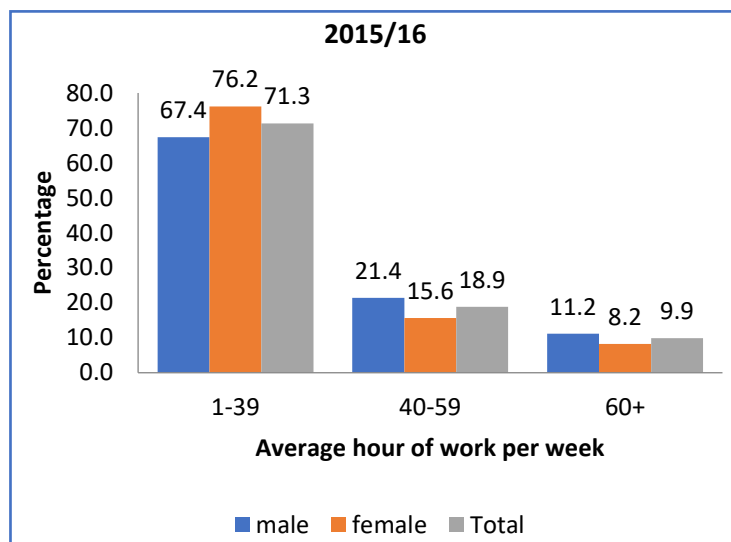
Figure 5.2: The age-participation profile of men and women



Source: Based on ESS (2015-16; 2018-19)

Figure 5.3 shows the distribution of currently active individuals by hours of work per week. Majority 71% and 61% of the individuals in the sample work less 40 hour per week in the 2015-15 and 2018-19 survey period. Full-time employment is not very prevalent in the sample where only 33% of active women and 43% men work 40 or more hours per week in 2018-19. Compared to 2015/16, the percentage of individuals working 40 and more hours per week show increment in 2018/19.

Figure 5.3: Hour work per week, 2018-19 (current activity)



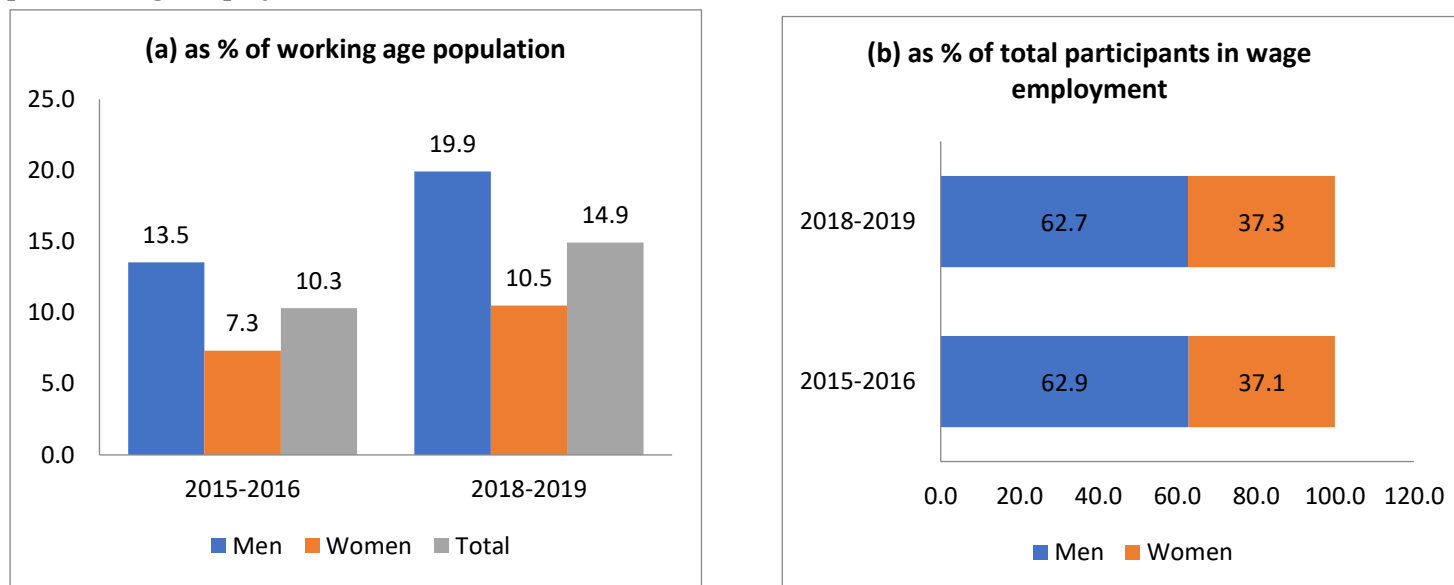
Source: Based on ESS (2015-16; 2018-19)

5.5.4. Participation in wage and self-employment

5.5.4.1 Participation in Wage Employment

Due to the continued dominance of agriculture as the main livelihood for majority of the population, in Ethiopia, the rate of wage employment is limited. Among working age individuals in the sample, only 15% (2533 individuals) participated in wage employment in 2018-19 showing slight increment from 10% in 2016. The percentage of women participated in wage employment is almost less than by half compared to men in both rounds of the survey. Among those who participated in wage employment, women account only 37%.

Figure 5.4: Participants in wage employment



Source: Based on ESS (2015-16; 2018-19)

The average age of participants in wage employment is 33 years and women participants are on average four years younger than their men counterparts. Majority (73%) of the male wage employees are household heads which is much higher than that of 35% of women. The percentage of married women participants is 42% which is lower than married men participants. The percentage of women participants in wage employment who are single, divorced, separated or widowed is higher than men participants. Close to 50% of wage employees have either primary or secondary education only. Compared to men, larger percentage of women have diploma as their highest degree while for first and graduate degree, the percentage of men is higher. Such gender disparity in education achievement often hinders women from securing top position jobs that also offer better pays.

Table 5.8: Characteristics of participants in wage employment (2018-19)

Characteristics	Wage Employment		
	Men	Women	Total
Age (Mean)	35	31	33
Household head (%)	72.80	34.92	58.67
Family size (Mean)	4.2	4.0	4.1
Religion (%)			
Christian	73.61	80.21	76.08
Muslim	25.82	19.26	23.37
Others	0.57	0.53	0.55
Marital status (%)			
Single	29.66	36.61	32.25
Married	66.81	42.01	57.56
Divorced, Separated, Widowed	3.53	21.38	10.19
Education (%)			
Not Educated	10.83	16.93	13.11
Informal education	0.38	0.21	0.32
Primary Education	24.81	26.03	25.27
Secondary Education	23.8	19.26	22.11
Tertiary (Certificate)	3.97	3.39	3.75
Tertiary (Not completed)	2.27	3.28	2.65
Tertiary (Diploma)	11.08	14.18	12.24
Tertiary (First degree)	18.2	14.18	16.7
Tertiary (Graduate degree)	4.66	2.54	3.87

Source: Based on ESS (2015-16)

About 61% of wage employees have below tertiary education which is an indication that elementary and non-professional occupations comprises significant share (67%) of the wage employment in the sample. The percentage of legislators, senior government officials and managers in the sample is generally low in which women engaged in such type of occupation is 50% less than men whereas women involvement in elementary occupations is 15 percentage point higher than men. Hence, women have less overall participation in wage employment and those who participate tend to concentrate in elementary and service-related jobs. Higher representation of women in elementary and service-related jobs indicates that wage employment is not necessary empowering for women. Women who are engaged in elementary and low paying service jobs often work out of distress to support

themselves and families than by choice. Regarding this, Klasen et al., (2019) indicated that in most poor and developing countries where economic growth is in short of creating adequate decent jobs, women usually participate in the labor force out of distress. Their study also found that in such economies, women often leave the labor market as soon as it is affordable to do so.

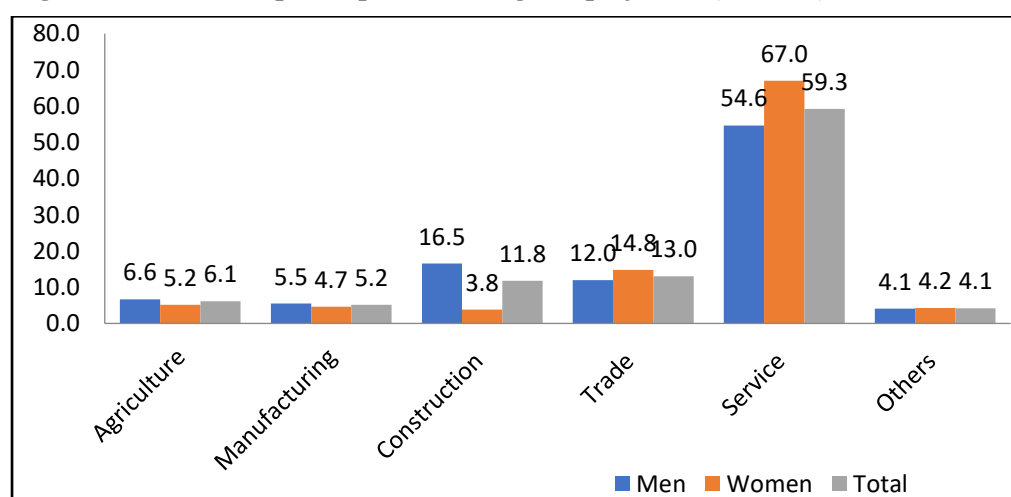
Table 5.9: Types of occupations (2018-19)

Types Occupations	Men (%)	Women (%)	Total (%)
Legislators, senior government officials and managers	3.91	1.8	3.12
Professionals/Science professional	27.73	25.19	26.78
Technicians and associate profession	3.59	2.65	3.24
Clerks, office clerks	1.76	7.94	4.07
Service workers, and shop and market	17.52	18.94	18.05
Skilled agricultural and fishery workers	4.79	3.81	4.42
Craft and related trades workers	17.39	4.13	12.44
Plant and machine operators and assemblers	0.95	0.32	0.71
Elementary occupations, sales, and service	19.47	33.86	24.84
Army/ member of the armed forces	2.71	1.16	2.13

Source: Based on ESS (2018-19)

The service sector dominates participation in wage employment where 59% of participants work in the sector. Women comprises relatively higher share of participants in the service and the trade sector while men dominate the construction sector compared to women. Existing social norms, unsuitable working environment at construction sites and lack of adequate knowledge about the sector are usually the main reasons for lower participation of women in the construction sector compared to men. Gender-based discrimination in pay is also noticed in the sector where women daily laborers are often paid less compared to men. Such discrimination together with work place harassments are discouraging for women to actively participate in the construction sector.

Figure 5.5: Sector of participation in wage employment (2018-19)



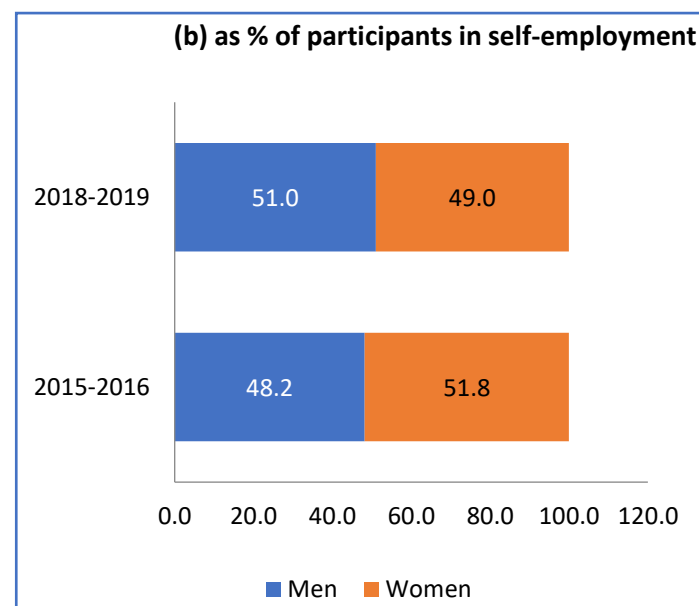
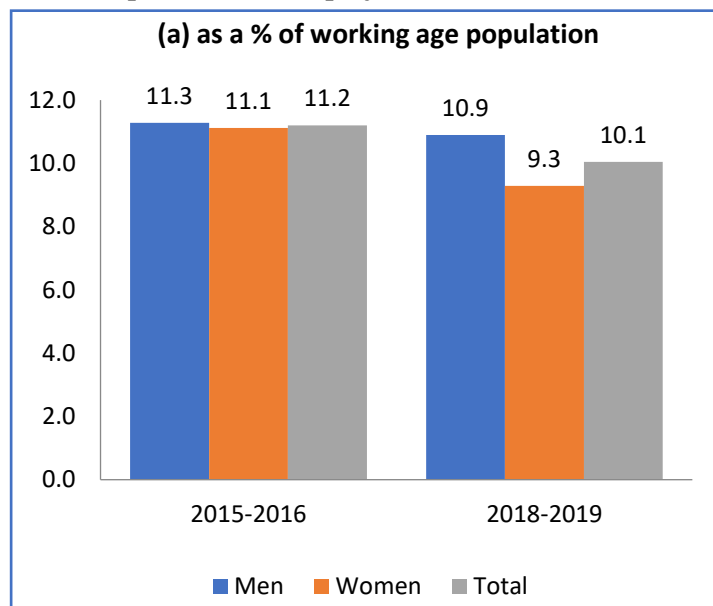
Source: Based on ESS (2018-19)

Note: The service sector includes hotels and restaurants, transport, financial intermediation, public administration, education, health and social services, and other services

5.5.4.2. Participation in self-employment

Similar to wage employment, the percentage of individuals engaged in self-employment which are mainly non-agricultural household business activities are also limited. In 2018-19, only 10% of working age individuals own non-farm enterprises which is almost the same with the percentage in 2015-16. There is no significant gender disparity in ownership of non-farm enterprises.

Figure 5.6: Participants in self-employment



Source: Based on ESS (2015-16; 2018-19)

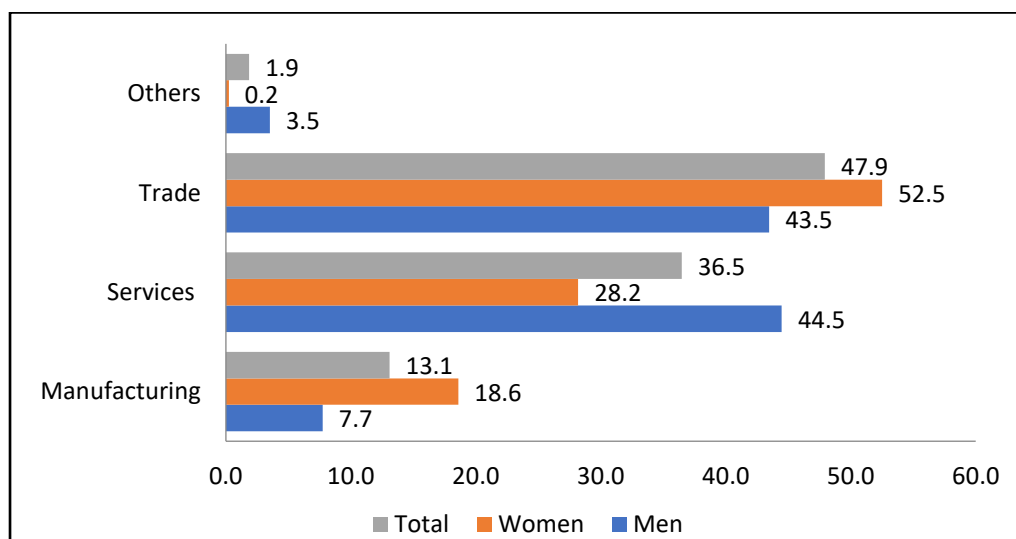
The average age of self-employed individuals is 36 where women non-farm enterprise owners are on average one year younger than their men counterparts. 87% and 51% of men and women non-farm enterprise owners are household heads respectively. The average family size of non-farm enterprise owners is 4 where the majorities (67%) of them are married. The education status of non-farm enterprise owners is low where 30% of them are illiterate while 36% of them have only primary education. Significantly higher percentage of self-employed women has no education compared to men. The percentage of non-farm enterprise owners with tertiary education is 11%. The percentage of men entrepreneurs with tertiary education stand at 15% which is significantly higher than women (9%).

The larger 48% of non-farm enterprise owners' work in trade sectors followed by service (37%) and manufacturing sector (13%). The share of women entrepreneurs working in trade, service and manufacturing sector are 53%, 28% and 19% respectively while men non-farm enterprise owners working in the respective sectors are 44%, 45% and 8%. Close to half of the non-farm enterprise owners work in the retail trade, women accounting 55% and men the remaining 45%.

Table 5.10: Characteristics of participants in self-employment (2018-19)

Characteristics	Self-employment		
	Men	Women	Total
Age (Mean)	37	36	36
Household head (%)	87.46	51.02	69.60
Family Size (Mean)	4.6	4.3	4.4
Religion (%)			
Christian	67.43	70.9	69.13
Muslim	32.22	28.62	30.46
Others	0.35	0.48	0.41
Marital status (%)			
Single	16.8	11.14	14.03
Married	79.06	54.73	67.14
Divorced, Separated, Widowed	4.14	34.13	18.84
Education (%)			
Not Educated	19.91	42.28	30.87
Informal education	1.15	1.32	1.23
Primary Education	39.93	32.69	36.38
Secondary Education	24.17	15.21	19.78
Tertiary (Certificate	2.19	1.68	1.94
Tertiary (Not complete)	1.04	0.96	1
Tertiary (Diploma)	4.6	3.95	4.28
Tertiary (First degree)	5.41	1.44	3.46
Tertiary (Graduate degree)	1.61	0.48	1.06

Source: Based on ESS (2018-19)

Figure 5.7: Non-farm enterprises by sector (2018-19)

Source: Based on ESS (2018-19)

About 40% of men owned enterprises have business license while the percentage of licensed business owned by women are only 20%. This shows that women tend to engage more in informal businesses. Women owned entrepreneurs on average hired three workers less than their men counterparts. This may indicate that women owned enterprises are smaller in size, create fewer jobs and possess less growth potential. The average monthly sale of women non-farm enterprise owners is also only 31% of that of men. The average total operating cost of women owned enterprises is also by far low (61% less) compared to men entrepreneurs which might be an indication that women own smaller enterprises relative to men. In general, even there is no significant gender disparity in ownership of non-farm enterprises; women owned enterprises seem to perform less in terms of business legalization, sales, number of hired workers and firm size.

Table 5.11: Characteristics of Men's and Women's Enterprises (2018-19)

Attributes	Men	Women	Total
% of licensed enterprises	40	20	30
Number of Hired workers	4	1	2
Average monthly sales (in Birr)*	15,075.3	4,719.0	99,71.8
Average monthly operating cost (total in Birr)*	21,295.3	8,302.5	14,892.5

Source: Based on ESS (2018-19)

* The self-reported average monthly operating cost is greater than the average monthly sales. The actual figures thus should be taken with caution and may not necessarily imply loss. The numbers are only considered to show the sales and operating cost gap between in men and women enterprise owners.

5.6. Factors associated with labor force participation

The analysis in this section is based on the fourth round of ESS data (2018-19). The description of explanatory variables (individual, household, geographical, job and enterprise related factor) included in various model specifications is given in Table 5.12 below.

Table 5.12: Definitions of Variables included in the Estimation Models

Variables	Description
Individual level factors	
Female	Dummy=1 if female
Age	Age in years
Age square	Square of age
Education	Dummy=1 if individual have certificate and above level of education
Religion (base category = Christian)	1 = Muslim, 2 = Others (traditional and pagan)
Marital status	Dummy =1 if individual is a married, 0 otherwise
Household head status	Dummy =1 if individual is a household head, 0 otherwise
Illness/Injury	Dummy =1 if individual faced health problem (illness or injury) within a month time
Household level factors	
Family size	Number of household members
Children under 5 years	Dummy=1 if there are children aged 5 years and below in the household
Dependency ratio	Household dependency ratio
Wealth index	Household wealth constructed based asset of the household members
Non-labor income	Household total income from various non-labor sources
Formal loan	Dummy=1 if the household received formal loan
Job related factors	
Types of occupation (base category = Legislators, senior government officials and managers)	1. Legislators, senior government officials and managers 2. Professionals/Science professional 3. Technicians and associate profession 4. Clerks, office clerks 5. Service workers and shop and market 6. Skilled agricultural and fishery workers 7. Craft and related trades workers 8. Plant and machine operators and assemblers 9. Elementary occupations, sales and service 10. Member of the armed forces
Geographical factors	
Residence	Dummy =1 if an individual lives in rural area and 0 otherwise
Enterprise related factors	
Licensed enterprise	Dummy=1 if the non-farm enterprise has business license
Hired workers	Number of workers hired by the non-farm enterprise
Total cost	Total operating cost of the non-farm enterprise
Seasonal activity	Dummy=1 if the enterprise's activity is seasonal

5.6.1. Participation in the labor force and hour of work

In this section factors which associate with men's and women's decision to work and how much to work are investigated. Participation in the labor market is defined based on current activity status. Table 5.13 presents estimation results from the pooled sample which includes both men and women observations and gender dummy is included as explanatory variable to see the gender gap in decision to work and how much to work. The results show that women have 17% less participation in the labor force and work 8 hour less compared to men controlling for individual and household characteristics. This result is similar with previous study which found that women in Ethiopia generally show less participation in the labor market and those who participate work less hour compared to men (World Bank, 2019). Age, education, religion, marital status, and household headship are also factors which significantly associate with individual's decisions to work and how much to work. In particular, individuals with certificate and above education level have 9% more chance of participation in the labor market and work 4 hours more compared to those with education below certificate. The effect of education on decision to work and how much to work is more pronounced among women sample as women with certificate and above education level are more likely to participate and work additional hours than their male counter parts.

Married individuals have higher participation in the labor market (3%) and work 2 hours more. However, being a married woman is associated with less chance of participation in the labor market and less working hours. Marriage often brings additional household responsibilities for women which curtail her time that can be allocated to income generating economic activities outside of home. Household heads are 13% more likely to participate in the labor market and work 11 hours more compared to other members of the household. Having more family size and children aged below five are associated with less and more working hours respectively. Individuals in wealthier households also show more participation in the labor market and work more hours whereas individuals in households with more non-labor income show less participation in the labor market and work fewer hours.

Table 5.13: Participation and hour of work in current activity (pooled sample – Men and Women)

Variables	Probit		Tobit		Probit with interaction	Tobit with interaction
	(1) Participation (Coeff.)	(2) Participation (Margins)	(4) Hour of work (Coeff.)	(5) Hour of work (Margins)	(6) Participation (Coeff.)	(7) Hour of work (Coeff.)
Female	-0.500*** (0.0228)	-0.171*** (0.00747)	-16.32*** (0.718)	-8.300*** (0.364)	-0.741*** (0.139)	-23.95*** (4.367)
Age	0.0582*** (0.00379)	0.0200*** (0.00127)	1.901*** (0.121)	0.967*** (0.0616)	0.0532*** (0.00564)	1.796*** (0.171)
Female and age					0.0229*** (0.00812)	0.761*** (0.257)
Age square	-0.000757*** (4.34e-05)	-0.000259*** (1.45e-05)	-0.0245*** (0.00139)	-0.0125*** (0.000707)	-0.000693*** (6.04e-05)	-0.0225*** (0.00185)
Female and age square					-0.000298*** (9.39e-05)	-0.0111*** (0.00301)
Above Certificate	0.268*** (0.0357)	0.0920*** (0.0122)	8.135*** (1.088)	4.138*** (0.553)	0.166*** (0.0477)	4.848*** (1.406)
Female and above certificate					0.264*** (0.0713)	9.237*** (2.198)
Religion (Base = Christian)						
Muslim	-0.211*** (0.0284)	-0.0726*** (0.00972)	-5.462*** (0.882)	-2.744*** (0.437)	-0.212*** (0.0285)	-5.431*** (0.879)
Others	-0.215* (0.115)	-0.0738* (0.0394)	-3.314 (3.565)	-1.700 (1.773)	-0.222* (0.116)	-3.394 (3.554)
Married	0.104*** (0.0259)	0.0357*** (0.00886)	2.202*** (0.814)	1.120*** (0.414)	0.283*** (0.0513)	7.197*** (1.521)
Female and married					-0.327*** (0.0631)	-10.44*** (1.933)
Household head	0.386***	0.132***	11.65***	5.926***	0.298***	8.093***

Variables	Probit		Tobit		Probit with interaction	Tobit with interaction
	(1) Participation (Coeff.)	(2) Participation (Margins)	(4) Hour of work (Coeff.)	(5) Hour of work (Margins)	(6) Participation (Coeff.)	(7) Hour of work (Coeff.)
	(0.0281)	(0.00947)	(0.876)	(0.444)	(0.0509)	(1.538)
Female household head					-0.0298 (0.0662)	-0.154 (2.060)
Family size	0.00198 (0.00522)	0.000678 (0.00179)	-0.325** (0.163)	-0.165** (0.0830)	0.00115 (0.00777)	-0.515** (0.229)
Female and family size					-0.00949 (0.0104)	-0.0536 (0.322)
Children under 5 years	0.0323 (0.0261)	0.0111 (0.00895)	1.901** (0.809)	0.967** (0.412)	0.0658* (0.0400)	2.407** (1.151)
Female and children aged less than 5					-0.0633 (0.0527)	-0.970 (1.608)
Dependency ratio	0.00538 (0.0169)	0.00184 (0.00578)	-0.130 (0.522)	-0.0661 (0.265)	0.00930 (0.0278)	0.180 (0.792)
Female and dependency Ratio					0.00627 (0.0349)	-0.248 (1.045)
Wealth index	0.000370 (0.00236)	0.000127 (0.000809)	0.329*** (0.0744)	0.167*** (0.0379)	-0.00971*** (0.00299)	0.148 (0.0916)
Female and wealth index					0.0158*** (0.00336)	0.246** (0.105)
Non-labor income	-0.00364 (0.00263)	-0.00125 (0.000902)	-0.343*** (0.0819)	-0.174*** (0.0417)	-0.00325 (0.00395)	-0.421*** (0.116)
Female and non-labor Income					-0.000208 (0.00529)	0.169 (0.163)
Formal loan	0.155 (0.0953)	0.0533 (0.0327)	2.421 (2.752)	1.232 (1.400)	0.309** (0.148)	4.058 (3.722)

Variables	Probit		Tobit		Probit with interaction	Tobit with interaction
	(1) Participation (Coeff.)	(2) Participation (Margins)	(4) Hour of work (Coeff.)	(5) Hour of work (Margins)	(6) Participation (Coeff.)	(7) Hour of work (Coeff.)
Female and formal loan					-0.275 (0.194)	-3.380 (5.462)
Illness/Injury	0.0410 (0.0568)	0.0141 (0.0195)	0.689 (1.731)	0.350 (0.881)	-0.00745 (0.0920)	-0.896 (2.561)
Female and Illness/Injury					0.0881 (0.117)	3.153 (3.461)
Rural	0.614*** (0.0269)	0.210*** (0.00882)	11.51*** (0.847)	5.857*** (0.429)	0.613*** (0.0271)	11.34*** (0.845)
Regional Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-1.306*** (0.0760)		-33.51*** (2.432)		-1.235*** (0.106)	-31.68*** (3.216)
Observations	16,799	16,799	16,799	16,799	16,799	16,799

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5.14 presents estimation results from the women only sample. Women's age, education and household headship show significant positive association with both participation in the labor market and hour of work. Women with certificate and above education level are 15% more likely to participate in the labor market and work 5 hour more than women with no such education. Previous studies show that the positive effect of education on women employment comes through increased chance of getting a better and well-paying job, higher opportunity cost of not working (Khanie, 2019; Psacharopoulos & Tzannatos, 1989), and reduced fertility rate (Lam & Duryea, 1999; Mujahid, 2014; Sackey, 2005; Bbaale, 2014). Women household heads are also 8% more likely to participate in the labor market and work 3 hour more. Having more family size and being a married woman are associated with less hour of work while women from relatively wealthier household work more hours. Marriage is often followed by childbearing and increased household chores and responsibilities for woman which reduces her time for economic activities outside of home lending to her to decide not to work or dropout from the labor market if she is already a working woman. Similarly, women with large family size might be face with huge burden of domestic activities (i.e. taking caring of family members especially children and the elderly).

Table 5.14: Participation and hour of work in current activity (women only sample)

VARIABLES	Probit		Tobit	
	(1) Participation (Coeff.)	(2) Participation (margins)	(3) Hour of work (Coeff.)	(4) Hour of work (Margins)
Age	0.0764*** (0.00585)	0.0272*** (0.00203)	2.736*** (0.213)	1.087*** (0.0848)
Age squared	-0.000985*** (7.19e-05)	-0.000351*** (2.49e-05)	-0.0359*** (0.00263)	-0.0143*** (0.00105)
Certificate and above	0.423*** (0.0533)	0.151*** (0.0188)	14.83*** (1.871)	5.895*** (0.743)
Religion (Base = Christian)				
Muslim	-0.217*** (0.0387)	-0.0773*** (0.0136)	-6.684*** (1.393)	-2.603*** (0.531)
others	-0.0955 (0.163)	-0.0345 (0.0581)	-2.263 (5.795)	-0.927 (2.315)
Married	-0.0504 (0.0369)	-0.0180 (0.0132)	-3.573*** (1.322)	-1.420*** (0.526)
Household head	0.245*** (0.0425)	0.0875*** (0.0151)	8.282*** (1.513)	3.291*** (0.601)
Family size	-0.00730 (0.00715)	-0.00260 (0.00255)	-0.606** (0.258)	-0.241** (0.103)
Children aged less than 5	0.00761 (0.0347)	0.00271 (0.0124)	1.597 (1.248)	0.634 (0.496)
Dependency ratio	0.0169 (0.0215)	0.00604 (0.00767)	-0.0605 (0.763)	-0.0241 (0.303)
Wealth index	0.00119 (0.00322)	0.000426 (0.00115)	0.372*** (0.116)	0.148*** (0.0460)
Non-labor income	-0.00286 (0.00354)	-0.00102 (0.00126)	-0.247* (0.127)	-0.0981* (0.0503)
Formal loan	0.0820 (0.127)	0.0293 (0.0453)	1.964 (4.442)	0.781 (1.765)
Illness/Injury	0.0929 (0.0723)	0.0331 (0.0258)	2.506 (2.562)	0.996 (1.018)
Rural	0.505*** (0.0369)	0.180*** (0.0128)	12.64*** (1.343)	5.021*** (0.532)
Regional dummy	Yes	Yes	Yes	Yes
Constant	-1.944*** (0.109)		-63.61*** (4.028)	
Observations	8,874	8,874	8,874	8,874

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.6.2. Participation in wage employment

This section analyzes factors which affect men and women's participation in wage employment. Table 5.15 reports results from Heckman selection model. Column 1, 2 and 3 illustrates estimated coefficients from the outcome (wage) equation, coefficients of the selection equation and average marginal effects from the selection equation respectively for model with no female interaction terms.

Column 4-5 show the same results for model with female interaction terms.⁵³ Results from the pooled sample show that there is a sample selection problem in estimating the wage equation given that the coefficient on Hackman lambda is significant. Similar to overall participation in the labor market, women have significantly less participation in wage employment compared to men controlling for education and, other individual and household characteristics. In particular, the participation of women in wage employment is 12% lower than men. Women also receive 43% less wage than men while controlling for age (proxy for experience), education and type of occupation. Additional factors which significantly associate with both women's and men's participation in wage employment include age, education, religion, marital status, household head status, family size, having children aged less than five years in the household, wealth, non-labor income and residence.

The age of an individual is positively associated with participation in wage employment up to the age of 38 years. Every additional one year of age is associated with 2.5% higher chance of participation in the wage employment in primary working age years. Education is also positively associated with participation in wage employment where individuals with certificate and above level of education are 23.8% more likely to participate in the wage employment and earn 25 percent more wage than individuals with no tertiary education. Household heads, individuals from wealthier households and with children under five years also more likely to participate in wage employment. Being married, Muslim, living in rural areas, and having large family size and non-labor income are associated with lower probability of participation in paid employment. Compared to their male counterparts, married women show less participation while women from wealthier households are more likely to participate in wage employment. The negative impact of marriage on wage employment of women than men is associated with the social norms and traditional role of women in Ethiopia where while married men is expected to be breadwinner and hence have to work outside home while women is seen as homemaker responsible for running the household and caring for children and others household members (Tumsarp & Pholphirul, 2020). Results from the wage equation show that in addition to education, age which is included as a proxy for experience is also significantly associated with wage controlling for types of occupations. Every additional year of age (experience) is associated with 4.8% increase in wage until the age of 45 years.

⁵³ Only coefficients of significant interaction terms are reported in the table

Table 5.15: Participation in wage employment (Heckman Selection Model, pooled sample)

Variables	With no interaction			With interaction		
	(1) Logarithm of Hourly Wage	(2) Participation (coefficients)	(3) Participation (margins)	(4) Logarithm of Hourly Wage	(5) Participation (coefficients)	(6) Participation (margins)
Female	-0.430*** (0.0419)	-0.411*** (0.0308)	-0.126*** (0.00933)	-0.544 (0.342)	-0.112 (0.231)	-0.0348 (0.0714)
Age	0.0480*** (0.00950)	0.0831*** (0.00636)	0.0254*** (0.00194)	0.0508*** (0.0117)	0.0963*** (0.00859)	0.0298*** (0.00266)
Age square	-0.000526*** (0.000120)	-0.00108*** (7.78e-05)	-0.000330*** (2.38e-05)	-0.000544*** (0.000142)	-0.00117*** (0.000100)	-0.000362*** (3.11e-05)
Certificate and Above Religion (Base=Christian)	0.258*** (0.0608)	0.777*** (0.0367)	0.238*** (0.0104)	0.161** (0.0654)	0.742*** (0.0481)	0.230*** (0.0141)
Muslim		-0.259*** (0.0384)	-0.0781*** (0.0114)		-0.258*** (0.0386)	-0.0789*** (0.0116)
Others		-0.180 (0.198)	-0.0550 (0.0588)		-0.151 (0.197)	-0.0471 (0.0600)
Married		-0.137*** (0.0347)	-0.0421*** (0.0106)		0.0307 (0.0595)	0.00952 (0.0184)
Household head		0.315*** (0.0371)	0.0964*** (0.0113)		0.152** (0.0597)	0.0471** (0.0185)
Family size		-0.0693*** (0.00796)	-0.0212*** (0.00242)		-0.0840*** (0.0106)	-0.0260*** (0.00328)
Children under 5 Years		0.127*** (0.0361)	0.0390*** (0.0111)		0.151*** (0.0498)	0.0468*** (0.0154)
Dependency ratio		-0.0239 (0.0267)	-0.00731 (0.00816)		-0.0290 (0.0384)	-0.00899 (0.0119)
Wealth index		0.0118*** (0.00277)	0.00362*** (0.000848)		0.00451 (0.00344)	0.00140 (0.00106)
Non-labor income		-0.0118*** (0.00353)	-0.00362*** (0.00108)		-0.0108** (0.00485)	-0.00335** (0.00150)
Formal credit		-0.0780 (0.132)	-0.0239 (0.0405)		-0.137 (0.173)	-0.0424 (0.0537)
Health problem		-0.0543 (0.0868)	-0.0166 (0.0265)		-0.270** (0.126)	-0.0835** (0.0392)
Rural		-0.686*** (0.0394)	-0.210*** (0.0123)		-0.702*** (0.0402)	-0.218*** (0.0127)
Occupation3(a)	0.288** (0.127)			0.288** (0.126)		
Occupation8	0.354*** (0.131)			0.344*** (0.130)		
Occupation10	-0.321** (0.127)			-0.301** (0.126)		
Lambda		-0.175*** (0.0550)			-0.156*** (0.0543)	
Female and,				0.337***	0.102	0.0315

Variables	With no interaction			With interaction		
	(1) Logarithm of Hourly Wage	(2) Participation (coefficients)	(3) Participation (margins)	(4) Logarithm of Hourly Wage	(5) Participation (coefficients)	(6) Participation (margins)
certificate and above				(0.0813)	(0.0740)	(0.0230)
Female and Married					-0.394*** (0.0796)	-0.122*** (0.0247)
Female and Wealth Index					0.0119*** (0.00420)	0.00369*** (0.00130)
Female and, Illness/Injury					0.425** (0.174)	0.132** (0.0540)
Regional dummy		Yes	Yes		Yes	Yes
Constant	2.210*** (0.248)	-2.078*** (0.122)		2.150*** (0.292)	-2.292*** (0.159)	
Observations	16,773	16,773	2,506	16,773	16,773	2,506

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: (a) only occupations which significantly affect wage are reported in the table

Looking into the women only sample, women's participation and wage is significantly associated with age, education, religion, marital status, household headship, family size, the existence of children under five years in the household, wealth, non-labor income and residence.⁵⁴ Women's additional years of age is associated with 2.6% higher chance of participation in wage employment and 6% higher wage in primary working years of age respectively. Women having certificate and above education also have 24.4% higher chance of participation and earn 51% higher wage than women with no such education. To further assess the relevance of education for women's participation in wage employment, a separate analysis using categorical education variable is conducted and the results are presented in the Appendix, Table A. The results show that compared to women with primary education, having tertiary education specifically diploma, first degree and graduate degree matters more for women to participate in wage employment and earn higher wage. The importance of having tertiary education for women participation in wage employment is also established by previous studies (see Cameron et al., 2001; Ince, 2010; Khanie, 2019; Wainerman, 1980). Though education in general is important in enhancing women participation in labor force, it should go beyond primary and secondary education if women are to access paid jobs. However, given the current status of women education in Ethiopia is low; a short-term policy action should focus on creating job opportunities that takes it to account the current education level of women in the country.

⁵⁴ The estimation on the women's only sample show no evidence of a sample selection problem in estimating the wage equation given that the coefficient on the Hackman lambda is insignificant.

Table 5.16: Participation in wage employment (Heckman Selection Model, Women only sample)

Variables	(1) Logarithm of hourly wage	(2) Participation (coeff.)	(3) Participation (margins)
Age	0.0593*** (0.0143)	0.0904*** (0.0107)	0.0262*** (0.00310)
Age squared	-0.000732*** (0.000195)	-0.00126*** (0.000140)	-0.000365*** (4.08e-05)
Certificate and above	0.510*** (0.0895)	0.842*** (0.0569)	0.244*** (0.0157)
Religion (Base=Christian)			
Muslim		-0.200*** (0.0587)	-0.0564*** (0.0161)
Others		-0.255 (0.340)	-0.0708 (0.0882)
Married		-0.361*** (0.0533)	-0.104*** (0.0155)
Household head		0.217*** (0.0612)	0.0627*** (0.0177)
Family size		-0.0746*** (0.0125)	-0.0216*** (0.00364)
Children under 5 years		0.0902* (0.0539)	0.0261* (0.0156)
Dependency ratio		-0.00784 (0.0384)	-0.00227 (0.0111)
Wealth index		0.0159*** (0.00409)	0.00462*** (0.00118)
Non-labor income		-0.0122** (0.00523)	-0.00353** (0.00151)
Formal loan		0.0320 (0.203)	0.00925 (0.0589)
Illness/Injury		0.149 (0.120)	0.0432 (0.0348)
Rural		-0.671*** (0.0676)	-0.194*** (0.0201)
Occupation10(a)	-0.373* (0.218)		
Regional dummy		Yes	Yes
lambda		0.00791 (0.0714)	
Constant	1.316*** (0.356)	-2.531*** (0.193)	
Observations	8,859	8,859	930

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: (a) only occupations which significantly affect wage are reported in the table

Marital status, residence, family size and non-labor income are factors which associate with less participation of women in wage employment. Previous studies found that marriage (especially early marriage) reduces educational attainment and literacy of women leading to less chance of securing wage employment (Field et al., 2018; Mariara et al., 2018). Women living in rural areas also show less participation. In rural areas of most developing countries, agriculture is the dominant economic activity and wage employment is scarce. The situation is not different in Ethiopia where women in rural areas of the country face both demand and supply side labor market constrain to participate in wage employment. Rural women have less education attainment and access to wage employment than those living in urban areas. Large family size is often associated with increased burden of household works and responsibilities for women which leads to less chance of participation in paid work outside of home. Having more non-labor household income reduces the pressure to work as long as the family income need is satisfied with non-labor income sources (see (Psacharopoulos & Tzannatos, 1989)). Household headship and wealth are factors which positively associate with women's participation in wage employment.

5.6.3. Participation in self-employment

This section assesses gender gap in self-employment and factors which associate with men's and women's decision of owning non-farm enterprises. The section will also identify existing gender gap in business sales and factors which explain such gaps. Table 5.17 presents estimation results on factors affecting participation in self-employment and sales of non-farm enterprises. When it comes to self-employment (ownership of non-farm business), women have 2.2% higher chance participation than men controlling for various individual and household characteristics. Women entrepreneurs however make 54.4% less average monthly sale than their men counterparts. This could be due to the small size of women enterprises compared to their men counterparts as indicated by the significantly lower operating cost (see Table 5.11). Previous studies in Ethiopia also show that women entrepreneurs face various impediments in expanding business sales where most women sell their products and services in local markets having less access to wider and more profitable markets (Alene, 2020; Assefa & Cheru, 2018; Gebremariam, 2017; Abagissa, 2013; Solomon, 2010; Eshetu & Zeleke, 2008). In the current data, about 75% of women non-farm enterprise owners sell their products to local customer. This indicates that women entrepreneurs face limited market and business linkages where most of them transact directly with customers without much use of intermediaries limiting their prospects of networking and growth.

In the pooled sample; age, education, marital status, household headship, family size, wealth and residence are significant factors which associate with participation in self-employment. Individual's age, marital status and household wealth have significant positive association with participation in self-employment while education, family size and living in rural areas have significant negative association. In particular, individuals having certificate and above show 6% less chance of participation in self-employment. In the data, most owner of non-farm business has level education below tertiary where 30% are not educated and 57% have only primary or secondary education. A similar result is found in the women only sample where women with tertiary education are 5% less likely to participate in self-employment. Only 9.6% of women non-farm business owners have tertiary education. This shows that women with tertiary education are more likely to engage in wage employment than self-employment. The dominance of retail trade in the sample of self-employed also explains the low education profile of women entrepreneurs.

Education however is positively associated with sales of an enterprise where owners having certificate and above make 36.5% higher sales. A business sale in wealthier households is also 4% higher. Enterprises having business license make 21% higher sale than with no license. Number of hired workers and total production cost also positively associate with sales. Sale is negatively associated with the regularity of activity where enterprises with seasonal business activity show 16.2% less sales. In the women only sample, religion, household head status, family size and residence also significantly determine participation in self-employment. Muslim women and those having large family size and living in rural area have less participation while women household heads have higher participation in self-employment.

Table 5.17: Participation in self-employment and sales of non-farm enterprises

Variables	Pooled (Men and Women)			Women only		
	(1) Participation (Coeff.)	(2) Participation n (margins)	(3) Logarithm of Sales	(4) Participation (Coeff.)	(5) Participation (margins)	(6) Logarithm of Sales
Female	0.142*** (0.0332)	0.0221*** (0.00515)	-0.544*** (0.0876)			
Age	0.0796*** (0.00650)	0.0123*** (0.00101)	0.00602 (0.0180)	0.122*** (0.00995)	0.0179*** (0.00146)	0.00730 (0.0249)
Age square	-0.0010*** (7.79e-05)	-0.00016*** (1.21e-05)	-0.00026 (0.000217)	-0.00153*** (0.000126)	-0.00022*** (1.85e-05)	-0.00028 (0.000314)
Certificate and above	-0.432*** (0.0480)	-0.0670*** (0.00745)	0.365*** (0.130)	-0.353*** (0.0763)	-0.0515*** (0.0112)	0.272 (0.205)
Religion (Base=Christian)						
Muslim	-0.00387 (0.0383)	-0.000601 (0.00594)	0.330*** (0.0939)	-0.118** (0.0556)	-0.0169** (0.00782)	0.514*** (0.131)
Others	-0.252 (0.203)	-0.0340 (0.0236)	-0.533 (0.586)	-0.363 (0.294)	-0.0451 (0.0288)	-0.955 (0.682)
Married	0.0989*** (0.0356)	0.0153*** (0.00552)	0.119 (0.0909)	0.0681 (0.0511)	0.00995 (0.00746)	0.170 (0.126)
Household head	0.690*** (0.0387)	0.107*** (0.00599)	0.122 (0.0988)	0.679*** (0.0549)	0.0992*** (0.00799)	0.0754 (0.132)
Family size	-0.0293*** (0.00790)	-0.00454*** (0.00123)	0.0237 (0.0204)	-0.0312*** (0.0111)	-0.00456*** (0.00163)	0.0309 (0.0276)
Children under 5 years	0.0191 (0.0366)	0.00297 (0.00568)	-0.0659 (0.0932)	0.0271 (0.0507)	0.00395 (0.00742)	-0.188 (0.121)
Dependency ratio	0.0165 (0.0236)	0.00256 (0.00367)	-0.0262 (0.0583)	-8.97e-05 (0.0304)	-1.31e-05 (0.00445)	-0.0460 (0.0726)
Wealth index	0.0172*** (0.00300)	0.00267*** (0.000466)	0.0420*** (0.00790)	0.00555 (0.00423)	0.000811 (0.000619)	0.0385*** (0.0104)
Non-labor income	-0.00279 (0.00366)	-0.000433 (0.000567)	0.0149 (0.00931)	-0.00265 (0.00506)	-0.000388 (0.000739)	0.00249 (0.0121)
Formal loan	0.178 (0.117)	0.0276 (0.0182)	0.146 (0.266)	0.206 (0.168)	0.0301 (0.0245)	0.169 (0.368)
Illness/Injury	0.0710 (0.0771)	0.0110 (0.0120)	-0.225 (0.188)	0.0193 (0.104)	0.00282 (0.0152)	-0.0755 (0.240)
Licensed enterprise			0.215** (0.0972)			0.0995 (0.142)

Variables	Pooled (Men and Women)			Women only		
	(1) Participation (Coeff.)	(2) Participatio n (margins)	(3) Logarithm of Sales	(4) Participation (Coeff.)	(5) Participation (margins)	(6) Logarithm of Sales
Seasonal activity			-0.162** (0.0807)			-0.363*** (0.109)
Hired workers			0.00277** * (0.000713)			0.00290 (0.0148)
Log total cost			0.179*** (0.0126)			0.218*** (0.0184)
Rural	-0.467*** (0.0374)	-0.0724*** (0.00580)	-0.546*** (0.0960)	-0.375*** (0.0521)	-0.0548*** (0.00763)	-0.560*** (0.122)
Regional dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.710*** (0.124)		6.315*** (0.354)	-3.264*** (0.181)		5.521*** (0.498)
Observation s	16,822	16,822	1,601	8,889	8,889	807
R-squared			0.403			0.421

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.6.4. Decomposing and explaining the wage and sales gap

Results from the Blinder-Oaxaca decomposition analysis are presented in Tables 5.18 and 5.19. The unconditional wage gap between men and women is estimated to be 62.7%. The Blinder-Oaxaca decomposition analysis indicated that 26.2% of the gender wage gap is explained by the variables included in the model where the largest share of 73.8% remained unexplained. The decomposition model divides group differences in outcome variable into a part that is explained by differences in observed characteristics between genders (i.e., different levels of endowments) and a residual part that cannot be accounted for by observed predictors. The group differences attributable to different means of observed characteristics between groups are generally called the part of the wage gap that is “explained,” while the residual difference is referred as the part that is “unexplained.” Assuming there are no unobserved predictors in the model, the “unexplained” part is often used as a measure for discrimination.

Table 5.18: Wage gap decomposition

Variables	(1) Differential	(2) Decomposition
Mean log wage (Men)	3.180*** (0.0261)	
Mean log wage (Women)	2.553*** (0.0302)	
Difference	0.627*** (0.0399)	
Explained		0.164*** (0.0299)
Unexplained		0.463*** (0.0441)
Observations	2,506	2,506

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In order to evaluate how much of the explained and unexplained gender pay gap is attributed to which explanatory variable, a detailed decomposition analysis is conducted, and results are reported in Table 5.19. Only coefficients of variables which significantly account for the explained and unexplained wage gap are reported. The explained part of the wage differential is accounted by differences in age (23.2%), education (6.7%), religion (7.8%), marital status (14%), household headship (25.6%) and wealth (32.3%). Together, the two occupation categories (8 – plant and machine operators and assemblers and 10 – army members) account 56% of the explained wage gap. Factors which significantly contribute to the unexplained gender pay gap are education, marital status and family size.

Table 5.19: Factors explaining the wage gap

Variables	(1) Explained	(2) Unexplained
Age	0.209*** (0.0434)	
Age square	-0.171*** (0.0372)	
Certificate and above	0.0110* (0.00657)	-0.0694** (0.0328)
Religion (1=Muslim)	0.0128*** (0.00459)	
Married	0.0231** (0.0116)	-0.101* (0.0526)
Household head	0.0420** (0.0184)	
Family size		-0.233*** (0.0792)
Wealth index	-0.0530*** (0.00976)	
Occupation8	0.0556*** (0.0157)	
Occupation10	0.0364** (0.0147)	
Total	0.164*** (0.0299)	0.463*** (0.0441)
Observations	2,506	2,506

Tables 5.20 and 5.21 present results of the Blinder-Oaxaca decomposition analysis for sales gap. Similar to wage gap analysis, only coefficients of variables which significantly account for the explained and unexplained sales gap are reported in Table 5.20. Based on the decomposition model, the unconditional sales gap between men and women non-farm enterprises owners is estimated to be 80.6% where 36% of it explained by predictors included in the model.

Table 5.20: Sales gap decomposition

Variables	(1) Differential	(2) Decomposition
Mean log sales (Men)	8.009*** (0.0649)	
Mean log sales (Women)	7.203*** (0.0602)	
Difference	0.806*** (0.0885)	
Explained		0.290*** (0.0748)
Unexplained		0.516*** (0.0926)
Observations	1,601	1,601

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The explained part of the gender sales gap is accounted by difference in education (9%), religion (5.9%), wealth (17%), business license (14.5%), operating cost (27%) and residence (8.2%). Factors which significantly contribute for the unexplained portion of gender sales gap are religion, marital status, wealth, seasonality of business activity and operating cost.

Table 5.21: Factors explaining the sales gap

Variables	(1) Explained	(2) Unexplained
Above certificate	0.0261*** (0.0100)	
Religion (1=Muslim)	0.0172* (0.0102)	-0.106** (0.0478)
Married		-0.311** (0.146)
Wealth Index	0.0494*** (0.0190)	0.190** (0.0787)
Licensed enterprise	0.0423** (0.0209)	
Seasonal activity		0.125** (0.0541)
Log total cost	0.0785** (0.0305)	-0.469** (0.199)
Rural	0.0253* (0.0140)	
Total	0.290*** (0.0748)	0.516*** (0.0926)
Observations	1,601	1,601

5.7. Conclusion and Policy Implications

5.7.1. Conclusion

The participation of women in the labor market shows great disparity across various regions of the world. Such differences are attributed to a range of factors including the level of economic development, education attainment, social norms, fertility rate, national policies and access to support systems such as child care. Ethiopia is showing notable improvement in addressing gender gap in various social and political domains. However, gender gap in economic participation is still significant and extra effort is required to increase women's participation in the labor force. In sight of this, the study analyzes the status of gender gap in labor force participation and, factors which influence men's and women's decision to work and how much to work in wage and self-employment. The study mainly utilizes the recent round (2018/19) Ethiopia Socioeconomic Survey (ESS) to meet its objectives. The 2015/16 round of the same survey was also used for comparison purpose in the descriptive analysis section.

The situation analysis indicated that women participation in the labor force is significantly lower than men and it is not showing notable change over time both in rural and urban areas. Lower participation of women is observed in all economic activities considered in the study except ownership of non-farm enterprises which are mainly household business. The education level of women is generally found to be lower compared to men. Among active participants in the labor market, the share of uneducated women is considerably higher than men while women having tertiary education of certificate, diploma, first degree and graduate degree are significantly lower than men.

Participation in wage activity is generally low in the sample but women participation is even lower than men. Women wage employees are less by half compared to men participants and they account only about one-third of the wage workers in the sample. Though the education profile of wage employees is generally low in the sample (61% have below tertiary education), compared to women, higher percentage of men possess first and graduate degree. Elementary and non-professional occupations account significant share of wage employment whereas the percentage of legislators, senior government officials and managers is very low. Women show less representation in top positions (legislators, senior government officials and managers) while they dominate elementary occupations relative to men. Having a paid job thus might not be necessarily empowering for women if they continue to dominate elementary jobs which are often low quality, low paying and underpin traditional gender roles. Gender disparity in sector selection is also observed among wage workers where the service and trade sectors are largely comprised by women while the construction sector is dominated by men.

Regarding ownership of non-farm enterprises, significant gender disparity is not observed. Majority of the non-farm enterprise owners possess below tertiary education. Retail trade is the main economic activity among the self-employed and women account relatively higher percentage than men. Even if there are no significant gender disparities in ownership of non-farm enterprises, women owned enterprises show less performance when various indicators are considered. Women owned enterprises make significantly less sales than their men counterparts. They also tend to participate more in the informal sector given that the percentage of women owned enterprises with business license are significantly lower. The number of workers and the firm size women owned enterprises are also by far lower than men which might be an indication of their limited growth potential.

The econometric analysis results also support findings in the situational analysis where women's participation and hour of work (work intensity) are found to be less compared to men

controlling for various individual and household characteristics. Age, education, religion, marital status, household headship, family size, wealth, non-farm income and residence are the main factors which explain such disparities in decision to work and how much to work. Education stands out as the main factor which positively affects women's overall participation in labor market. Also, women having tertiary education have a higher participate in the labor market and work more hours compared to women with no such education. However, compared to married men, married woman show less participation in the labor market and work fewer hours. Women's age and household headship also show significant positive association with both participation in the labor market and hour of work while the effect of family size on hour of work is negative.

Women also have significantly lower participation in wage employment and earn lower wage than men controlling for individual and household characteristics. Age, education, household headship and wealth are factors which significantly associate with women's participation in wage employment. In particular, though women education in general is crucial in boosting their participation in wage employment, tertiary education is found to be more relevant than primary and secondary education. Married women show less participation in wage employment compared to their male counterparts. Similarly, residence in rural areas, having large family size and non-labor income are factors which associate with less participation of women in wage employment. Women household heads and those from wealthier households are more likely to participate in wage employment.

Women have relatively higher chance of participation in ownership of non-farm household business compared to men while controlling for various individual and household characteristics. However, the sales of women owned enterprises are significantly lower than their men counterparts. Education negatively associates with women's participation in self-employment where women having tertiary education are less likely to own non-farm enterprises. Education however is associated with higher business sales. Additional factors which positively associate with business sales include business license, number of hired workers and operating cost. Moreover, women with large family size and those living in rural areas show less participation in self-employment.

The Blinder-Oaxaca decomposition analysis indicated that the unconditional wage gap between men and women is 62.7% where 26.2% of the gender wage gap is explained and the remaining 73.8% is unexplained. Age, education, religion, marital status, household headship, wealth and occupation are factors which account the explained part of the wage gap. For non-farm enterprises owners, the unconditional sales gap between men and women is estimated at 80.6% where 36% of it explained by variables included in the model. The explained part of the gender gap in sales is accounted by difference in education, religion, wealth, business license, operating cost and residence.

5.7.2. Policy Implications

Education is found to be very important for women's participation in the labor force. The findings from this study show that having tertiary education matters more for participation in wage employment. The participation of women in wage employment is found to be lower compared to men and those who participate tend to concentrate in elementary and service-related jobs. Therefore, if women are to work in better paid jobs their education attainment should expand beyond primary education. Higher education attainment will result in better earning, increased opportunity cost of not working and a higher chance of getting decent jobs. All of these will serve as pull factor helping women to overcome socio-economic constraints limiting them to work in income generating activities outside

of home. Better education for women is also important in narrowing observed wage and sales gap between men and women. However, given that the current education level of women in Ethiopia is limited, short term actions should focus on creating job opportunities that fit the existing education profile of women in the country. In addition, it should be noted that jobs that require higher level of education are limited in nature and hence simply expanding the education attainment of women will not guarantee them being employed in better jobs. The labor market should be diversified to accommodate women with different level of education and types of skills.

Similarly, though women have higher participation in ownership of non-farm employment, large majority of self-employed women work in retail trade. Increasing the active participation of women in the labor market is crucial but ensuring whether the participation is empowering or not should also be given due attention. This is important because in many developing countries women join the labor force due to distress often as a surviving strategy in response to economic hardships and shocks faced by their household. Such economic activities are often disempowering and reinforce the traditional gender role of women. The quality of work that women are able to access and engage in is thus equally important as the rate of participation. Unless interventions aimed at increasing the economic participation women go beyond numbers and take the quality of work in to consideration, the sustainability of achievements will be in question. Women who participate in the labor market as coping mechanism to economic shocks often leave the labor market as soon as it is affordable to do so.

Among social factors, marital status is found to be a key factor in influencing women's decision to work and how much to work. In particular, married women show less overall participation in the labor market and particularly in wage employment. Married women also work less hour. Marriage reduces women's participation in the labor market through various channels. First, marriage especially early marriage reduces the education attainment for women decreasing the chance of getting paid job. Second, after marriage, the household responsibility of women increases tremendously with child bearing. If marriage is accompanied by higher fertility, the chance of a woman to participate in economic activities will become even lesser because the opportunity cost of participating in the labor market will upsurge. Third, social and cultural norms also restrict the labor force participation of married women with children. In Ethiopia, especially in rural areas, the role of married women is often restricted to taking care of families and children. The attitude and education level of the married woman's husband and other family members also shapes her participation in the labor force. Increasing the economic participation of married women thus requires interventions ranging from gradually changing traditional social norms to establishing support systems that assist them to take part in productive economic activities. Gender sensitive labor policies which include paid maternity leave and adequate and affordable child care services are important to enhance the labor force participation of a married woman. Such interventions are also vital in reducing the double burden faced by working married women.

Women non-farm enterprise owners seem to perform less in terms of sales, business legalization, and firm size. Government support programs thus should give special emphasis to women entrepreneurs. Such programs should encourage women non-farm enterprise owners to legalize their business. Having a business license will assist them to go out of informal sector, expand their production/services, have better access to finance and other government support services (such as working premises). An intermediary that facilitate and finance the transition of women owned enterprises from informal to formal, and from micro to small and medium-scale enterprises should be included as part of government support programs. Most women sell their products to immediate local customers. Limited market access means fewer customers, tight competition with local sellers, lower prices, lesser return and reduced potential to grow. Women entrepreneurs thus need support to access

broader and more rewarding markets. Government and NGO supported programs can assist women by giving trainings that enhance women's knowledge and skill on how to build business networks, exploit wider markets and advertise their products/services. Providing the required resource for market expansion, skill trainings and exhibitions are some of the actions that can be taken by government and NGOs to expand the market access and sales of women entrepreneurs.

There are additional constraints than hinder effective operation and growth of non-farm enterprises which are common to both women and men owners. These includes lack of access to production and marketing place, lack of government support, lack of access to finance, lack of raw materials, excessive bureaucracy, stiff competition, corruption and high interest rate. Government related obstacles of inadequate business premises and poor infrastructure supply (water and electricity) are also hindrances to business growth and expansion. Though these challenges are common to both men and women entrepreneurs, especial emphasis should be given to women non-farm business owners facing such problems given that they already hold vulnerable position and show weak performance.

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Appendix

Table A1: Participation in wage employment (Heckman Selection Model, Women only sample with categorical education variable)

Variables	(1) Logarithm of Hourly Wage	(2) Participation (coeff.)	(3) Participation (margins)
Age	0.0578*** (0.0140)	0.0905*** (0.0107)	0.0260*** (0.00311)
Age Squared	-0.000696*** (0.000190)	-0.00124*** (0.000140)	-0.000357*** (4.07e-05)
Education (Base=Primary Education)			
Not Educated	-0.0870 (0.0827)	-0.130** (0.0644)	-0.0375** (0.0185)
Secondary Education	0.0720 (0.0773)	-0.0185 (0.0613)	-0.00533 (0.0176)
Tertiary (Certificate)	0.148 (0.154)	0.282** (0.129)	0.0811** (0.0372)
Tertiary (Not completed)	0.289* (0.153)	0.182 (0.128)	0.0523 (0.0368)
Tertiary (Diploma)	0.430*** (0.112)	0.884*** (0.0852)	0.254*** (0.0240)
Tertiary (First degree)	0.876*** (0.119)	0.954*** (0.0923)	0.274*** (0.0255)
Tertiary (Graduate degree)	1.070*** (0.186)	1.257*** (0.222)	0.361*** (0.0625)
Religion (Base=Christian)			
Muslim		-0.190*** (0.0593)	-0.0536*** (0.0163)
Others		-0.190 (0.333)	-0.0536 (0.0893)
Married		-0.363*** (0.0538)	-0.104*** (0.0155)
Household head		0.214*** (0.0619)	0.0616*** (0.0178)
Family size		-0.0749*** (0.0126)	-0.0215*** (0.00363)
Children under 5 years		0.0918* (0.0541)	0.0264* (0.0156)
Dependency ratio		0.000897 (0.0386)	0.000258 (0.0111)
Wealth Index		0.0124*** (0.00425)	0.00358*** (0.00122)
Non-labor income		-0.0136*** (0.00525)	-0.00390*** (0.00151)
Formal loan		0.0323 (0.205)	0.00930 (0.0590)
Illness/injury		0.137 (0.121)	0.0394 (0.0349)
Rural		-0.659*** (0.0688)	-0.190*** (0.0203)
Constant	1.214*** (0.348)	-2.501*** (0.195)	
Regional Dummy		Yes	Yes
Observations	8,859	8,859	930