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**THE IMPACT OF RURAL PRODUCTIVE SAFETY NET PROGRAM ON
HOUSEHOLD RESILIENCE, LIVELIHOOD, AND ITS IMPLICATION TO POLICY
IMPLEMENTATION:**

THE CASE OF WOLITA ZONE, SNNPR, ETHIOPIA

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Declaration

This dissertation is my original work and has not been presented for Doctor of Philosophy in any other university and all the sources and materials used for this dissertation have been properly acknowledged.

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Acronyms

ABA	Asset-based Approach
ATE:	Average Treatment Effect
ATT:	Average effect of Treatment on the Treated
CMC	Coordination and Management Committee
DS	Direct support
EWRD	Early Warning Response Department
EWRD	The Early Warning Response Department
FAO	Food and agricultural organization
FCS:	Food consumption score
FSCD	Food Security Coordination Department
GHI:	Global Hunger Index
HDDS:	Household dietary diversity score
IFPRI:	International food policy research institute
MFIs	Microfinance Institutions
MOA	Ministry of Agriculture
MOARD:	Ministry of agriculture and Rural Development
MOF	Ministry of Finance
MoLSA	Ministry of Labour and Social Affairs
MoWCYA	Ministry of Women, Children, and Youth Affairs
PIM	Program Implementation Manual
PSM:	Propensity Score Matching
PSNP:	Productive safety net programme

PW	Public work
RIMA:	Resilience Index measurement analysis
RJCFSS	Rural Job Creation and Food Security Strategy
SLA	Sustainable Livelihoods Approach
SSNs	Social Safety Nets
UNDP:	United Nations Development Program
UNICEF:	United Nations Children's Fund
WFP:	World Food Program

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Abstract

This comprehensive study investigates the multifaceted impact of the Productive Safety Net Program (PSNP) on household resilience and livelihood in the Wolaita zone of Ethiopia, located in a region vulnerable to climate change and food insecurity. Employing a Resilience Index Measurement and Analysis (RIMA), the First Chapter reveals that non-PSNP households exhibit higher monthly per capita food expenditure, indicating better access to economic resources. Additionally, non-PSNP households score higher in resilience, emphasizing the need for proper targeting to leverage the potential positive spillover effects of such programs on food security and nutrition outcomes through interventions like asset-building, livelihood diversification, or social protection. The Second Chapter delves into the longer-term effects of PSNPs on livelihoods. Employing treatment effects models, the study assesses access to basic services, income, food expenditure, assets, adaptive capacity, and dietary diversity among 300 randomly selected respondents. Results indicate that while the PSNP shows no statistically significant impact on basic services and income, it significantly reduces food expenditure and assets. The mixed findings highlight the intricate nature of designing effective social protection programs to address the multifaceted dimensions of poverty. The Third Chapter explores the influence of institutional arrangements and policy considerations on the PSNP's effectiveness. Employing qualitative methods, including desk reviews and key informant interviews, the study identifies challenges such as a lack of accountability and staff turnover at higher organizational levels. Recommendations include establishing robust accountability mechanisms, implementing regular assessments, and developing guidelines for documenting good practices. The research underscores the importance of structured systems for information dissemination to optimize social protection programs and contribute to more effective poverty reduction and food security outcomes in local communities.

Key words: resilience, productive safety net program, food security, Wolaita, Ethiopia

CHAPTER 1. INTRODUCTION

1.1 Background and Justification

In 2005, the Ethiopian government launched the Productive Safety Net Programme (PSNP) as a comprehensive response to the persistent issue of food insecurity in the country (World Bank, 2017). This initiative was designed with three core components: safety net transfers, livelihood interventions, and institutional support. The primary objectives were to offer timely assistance to vulnerable households, enhance access to services, and strengthen overall systems in rural areas.

The safety net transfers, the first component of the PSNP, aim to provide predictable and timely assistance to food-insecure households in rural areas, both as regular transfers to core clients and in response to unforeseen shocks. The second component focuses on livelihood interventions, seeking to improve access to complementary services for chronically food-insecure households. Lastly, the program provides institutional support, aiming to bolster government institutions, human resources, and the broader system dedicated to the rural productive safety net.

The overarching goal of the PSNP is to function as a safety net for households facing chronic food insecurity and shocks, aligning with the government's broader objectives (MoARD, 2010). However, despite these efforts, the impact of safety nets in low-income countries remains relatively minimal, constituting only 13 percent of the poor's income and consumption. Sub-Saharan African countries allocate an average of US\$16 per citizen annually to safety net programs, significantly lower than the corresponding figure of US\$158 in the Latin America and Caribbean region (World Bank, 2018). Globally, the average spending on safety net programs in developing and transition countries amounts to approximately 1.5 percent of GDP (World Bank, 2019).

Recent literature emphasizes the potential of social protection programs, such as the PSNP, in supporting adaptation to climatic risks by reducing vulnerability to climate-induced shocks and fostering resilience (Linnerooth-Bayer, 2008; Siegel et al., 2011; Davis et al., 2013; Barrientos and Hulme, 2016). Steinbach et al. (2016), in a case study in India, highlighted the benefits of

aligning social protection with climate change interventions, enabling households to manage risks, reduce poverty, and promote climate-resilient livelihoods.

This research aims to investigate the impact of the PSNP on household-level resilience, livelihoods, and its policy implications. By assessing the effectiveness of the program in addressing chronic food insecurity, responding to shocks, and promoting sustainable livelihoods, the study aims to provide valuable insights for policymakers and practitioners involved in social protection and rural development in Ethiopia. The research seeks to contribute to the ongoing discourse on enhancing the effectiveness of safety net programs to improve the well-being of vulnerable populations.

1.2 Statement of the problem

Poverty remains a persistent challenge in the global development agenda, despite notable progress highlighted in the Sustainable Development Goals Report (2019). While extreme poverty decreased from 28% in 2000 to 8.6% in 2018, Sub-Saharan Africa faces a concerning surge, with more than half of the extremely poor residing in the region as of 2015. Disturbingly, projections indicate that by 2030, almost 9 out of 10 individuals in extreme poverty will be concentrated in Sub-Saharan Africa (UN DESA, 2019; World Bank, 2018). The alarming scenario is particularly pronounced in rural areas, where exposure to climate-related shocks and reliance on a diminishing natural resource base compound the issue. Volatile climatic and market conditions further exacerbate the heightened vulnerability experienced by these households, which often lack adequate assets and risk management strategies (Spurce, 2012).

In response to these challenges, Ethiopia initiated efforts to address food insecurity through emergency food aid. However, this approach, while instrumental in saving lives, often fell short in protecting livelihoods (IFPRI, 2015). Recognizing the limitations of this approach, the Ethiopian government introduced the Productive Safety Net Program (PSNP) in 2005 as a transformative strategy. Global initiatives, including social safety net programs, have collectively contributed to a commendable 36% reduction in extreme poverty (World Bank, 2018).

Despite the overall success in poverty reduction, a critical knowledge gap persists regarding the specific impact of the PSNP on household resilience, climate adaptability, and nutrition security. While numerous studies in Ethiopia have concentrated on food security, concrete evidence on the

broader impacts, particularly in terms of resilience, remains lacking. Previous research, exemplified by Gebrehiwot & Castilla (2017), emphasizes the program's positive effect on food security but calls for more comprehensive investigation.

Furthermore, previous studies, including those by Guush et al. (2017) and Woolf et al. (2015), have briefly explored the impact of the PSNP on nutrition and climate resilience. However, these studies lack the depth required to provide a comprehensive understanding of the subject. Additionally, there is a noticeable gap in their examination of specific effects on dietary patterns. The PSNP Project Implementation Manual (PIM) (MOA, 2020) explicitly states that one of the primary goals of the PSNP is to enhance the resilience of households against shocks and threats. Despite this explicit objective, there is a notable dearth of research findings illustrating specific instances showcasing how the program has effectively bolstered household resilience.

This research aims to bridge these gaps by comprehensively examining the multifaceted impacts of the PSNP in Ethiopia. The study will not only delve into its historical success in poverty reduction but will also focus on the nuances of its impact on household resilience, climate adaptability, and nutrition security. By addressing these critical aspects, the research endeavors to provide a robust and nuanced understanding of the PSNP's effectiveness in addressing poverty and related challenges. Such an investigation is vital for shaping informed policy decisions and interventions that can contribute to sustainable development in Sub-Saharan Africa and beyond.

1.3 Research questions

The study has delineated the following inquiries to guide its investigation:

- To what extent does participation in the program enhance a household's ability to adapt their livelihoods to future climate risks?
- What are the primary contributing factors of the program that foster the development of resilient households?
- How well-established, coordinated, and effective are the institutions responsible for implementing the program smoothly?

1.4 Objectives of the Study

The primary objective of this research is to scrutinize the impact of the Rural Productive Safety Net Program on household livelihoods, resilience, and Policy implication. The study is structured around the following specific Objectives.

- 1) Assess the impact of the productive safety net program on enhancing the resilience of households.
- 2) Investigate the effect of the productive safety net program on improving household livelihoods.
- 3) Examine the institutional arrangements and policy implications that shape the implementation of the safety net program.

1.5 Significance of the study

This study aims to assess the effectiveness of the PSNP in addressing chronic food insecurity, responding to shocks, and promoting sustainable livelihoods. Drawing from recent literature emphasizing the potential of social protection programs in climate resilience, the research seeks to contribute nuanced insights into the PSNP's role in Building household resilience. By providing valuable insights for policymakers and practitioners involved in social protection and rural development in Ethiopia, the research aims to contribute to ongoing discussions on enhancing the effectiveness of safety net programs globally. In essence, this study holds significance as it navigates the complexities of social protection impact, offering context-specific findings applicable to similar socio-economic environments and contributing to the broader discourse on effective poverty alleviation strategies in low-income countries.

1.6 Scope of the study

The focus of this research was to evaluate the impact of the Productive Safety Net Program (PSNP) in Ethiopia on improving household resilience, livelihood, and adaptation to climatic variability. This study looked at the following key aspects:

- i) Geographical Focus: The research primarily concentrated on selected areas within Ethiopia, specifically the SNNP Region and Wolayita Zone where the PSNP was actively implemented. This geographic focus allowed for a detailed examination of the program's

effects in specific contexts, taking into account variations in climate, socioeconomic conditions, and agricultural practices.

- ii) Temporal Consideration: The study covered a defined time frame, examining the evolution of the PSNP from its inception in 2005 to the present. This temporal scope enabled an analysis of the program's impacts over time and its response to changing climate conditions.
- iii) Household Level Analysis: The primary unit of analysis was individual households participating in the PSNP. The study assessed the impact on household resilience, considering factors such as asset accumulation, income stability, and coping mechanisms during climate-related shocks.
- iv) Livelihood Improvement: The research investigated how the PSNP contributed to enhancing household livelihoods. This included evaluating changes in income sources, employment opportunities, and overall economic well-being attributable to program participation.
- v) Policy Implications: The research discussed the policy implications of its findings, providing recommendations for potential improvements or adjustments to the PSNP and similar safety net programs in the context of poverty alleviation, climate resilience, and sustainable development.

1.7 Limitation of the study

It is important to note certain limitations in the research. The study primarily focuses on the Wolaita zone in Ethiopia, potentially limiting the generalizability of findings to other regions. Additionally, reliance on available data and the dynamic nature of climate-induced challenges may pose challenges necessitate a recognition that the study's snapshot may not capture ongoing or emerging developments.

1.8 Research Philosophy

This study adopts a pragmatic approach, combining quantitative and qualitative methods, to investigate the impact of the Rural Productive Safety Net Program on household resilience, livelihood, and its implications for policy implementation. The research philosophy is guided by

a social constructivist paradigm, recognizing the subjective nature of reality and emphasizing the importance of individuals' experiences.

Incorporating both positivist and constructivist elements, the study employs a mixed-methods design. Quantitative methods, such as surveys and statistical analyses, provide a broad overview of program impacts, while qualitative methods, including interviews and focus groups, delve into the lived experiences and perceptions of participants.

By explaining fundamental principles and major theoretical tenets of a mixed-methods approach, which involves both quantitative and qualitative data collection in response to research questions, it elucidates several benefits of adopting mixed method research since it integrates post-positivism as well as interpretivism frameworks (Dawadi et al., 2021). This methodological pluralism ensures a comprehensive understanding and enhances the validity and reliability of the findings through triangulation. Mixed methods research will be successful as more investigators study and help advance its concepts and as they regularly practice it (Johnson, & Onwuegbuzie, 2004).

Ethical considerations are paramount, with a commitment to informed consent, confidentiality, and respect for participants' autonomy. The research team aims to contribute positively to the well-being of participants and uphold their rights throughout the study.

1.9 Overall Methodology

The overall methodology of the dissertation involved a comprehensive approach to assess the impact of Productive Safety Net Programs (PSNPs) on household resilience and livelihood. A total of 300 respondents were randomly selected from the study area, comprising both safety net beneficiaries and non-beneficiaries. Among these, 150 respondents formed the treatment group (beneficiaries), while the remaining 150 constituted the control group (non-beneficiaries).

The Resilience Index Model Analysis (RIMA) served as the primary statistical method for evaluating the influence of PSNPs on building household resilience, particularly in terms of income and food security. RIMA II, a latent variable model, conceptualized resilience as an underlying unobserved latent concept. It considered observed variables such as per capita food expenditure and Household Dietary Diversity Score (HDD) as manifestations of this latent

resilience concept. Correlates were acknowledged as variables influencing latent factors reciprocally.

The study's resilience indicators encompassed access to basic services, assets, social safety nets, and adaptive capacity. The estimation of RIMA II involved a two-step process: factor analysis, utilizing indicators for the four RIMA pillars, and the creation of a Resilience Capacity Index through a Multiple Indicators Multiple Causes (MIMIC) model, a type of structural equation model (SEM).

To measure the impact on livelihood, the study employed various statistical techniques, including regression adjustment and inverse probability weighting through propensity score matching. Regression adjustment controlled for confounding factors like household size and location. Propensity score matching aimed to mitigate selection bias by matching beneficiaries and non-beneficiaries based on similar characteristics, constructing a comparison group using observed characteristics.

In addition to quantitative methods, a qualitative study was conducted to assess institutional arrangements and policy implications. Key informant interviews involved stakeholders closely involved in safety net program design, implementation, and evaluation, including government officials, development partners, and community representatives. Purposive sampling ensured diverse perspectives and a comprehensive understanding of the subject matter.

Data collection included a desk review, incorporating information from government and development partner reports, policy documents, and program guidelines. Thematic analysis was employed to identify key themes and patterns in the data obtained from both the desk review and key informant interviews. This process involved organizing and transcribing data, categorizing information, and assigning relevant codes to segments sharing similar characteristics or content. The combined quantitative and qualitative approaches aimed to provide a holistic assessment of the impact and effectiveness of PSNPs on household resilience in Ethiopia.

1.10 Structure of the dissertation.

The research endeavors to bridge the existing gap in knowledge within the second chapter, focusing on an in-depth exploration of the Productive Safety Net Program (PSNP) and its impact on the overall resilience of households. This investigation extends beyond a cursory analysis,

delving into critical dimensions such as asset holding, income diversification, agricultural production, and social capital.

This chapter is to unravel the intricate ways in which the PSNP shapes the resilience of households at a holistic level. By scrutinizing the program's influence on asset holding, the study aims to unearth the extent to which participating households are equipped with tangible resources, examining how these assets contribute to their overall resilience in the face of various challenges. Transitioning to a broader perspective, the third chapter delves into the role of PSNPs in improving the rural livelihood of the household aiming mitigate poverty, food insecurity, and vulnerability. The impact of PSNPs on food security, poverty reduction, and livelihoods is a subject of ongoing debate.

The fourth chapter identifies a critical gap in research regarding the institutional arrangements and policy implementation of PSNPs, particularly in Ethiopia. Effective institutional arrangements and policy implementation are crucial for the success of social protection programs. The challenge lies in understanding how these arrangements and policies can be tailored to local contexts. The research aims to fill this gap by examining the role of institutional arrangements and policy implications in shaping the effectiveness of PSNPs, focusing on the specific context of the Wolaita zone in Ethiopia.

In conclusion, the comprehensive introduction provides an overarching view of Ethiopia's vulnerability to climate change, the role of PSNPs globally and in Ethiopia, and the need for a nuanced understanding of institutional arrangements and policy implementation. The research aims to contribute to effective policy interventions, ultimately leading to more resilient and food-secure communities.

The following details published articles, manuscripts currently under review, and manuscripts prepared for submission. These sources collectively contribute to the compilation and preparation of the dissertation.

1. Mesfin Getaneh Woldemichael, Bamlaku Alamirew & Abenezer Wondwossen (2023). The mediating role of resilience to income and household dietary diversity: Insights from rural Ethiopia, *Cogent Social Sciences*, 9:2, 2270843, DOI: 10.1080/23311886.2023.2270843

2. Mesfin Getaneh Woldemichael and Bamlaku Alamirew. Does productive safety net program enhance livelihoods? insights from vulnerable households in Wolaita zone, Ethiopia (Publication Accepted and in process of production).
3. Mesfin Getaneh Woldemichael and Bamlaku Alamirew. institutional arrangement and policy implications: their role in shaping the effectiveness of the Ethiopia productive safety net program (Under review)

CHAPTER 2: THE MEDIATING ROLE OF RESILIENCE TO INCOME AND HOUSEHOLD DIETARY DIVERSITY: INSIGHTS FROM RURAL ETHIOPIA¹

Abstract

This study examines households' resilience to climate change and food insecurity in Ethiopia. The study was conducted in the Wolaita zone of the Southern Nations, Nationalities and Peoples Region (SNNPR). The article measured the resilience levels of Productive Safety Net Program (PSNP) beneficiary households against non-beneficiaries as a control group using Resilience Index Measurement and Analysis (RIMA). A random sample of 300 respondents were selected from the population of safety net beneficiary and non-beneficiary households in the study area each representing half of the sample. The study found that non-PSNP households have higher monthly per capita food expenditure than PSNP members, with a difference of 30%, indicating that they have better access to economic resources and opportunities. Additionally, non-PSNP households have higher resilience scores than PSNP members, with a difference of almost 0.1 point. The findings suggest that improving resilience through interventions such as asset-building, livelihood diversification, or social protection may have positive spillover effects on household food security and nutrition outcomes if targeted properly. The study also revealed important insights into the characteristics of households in the study area, including the prevalence of poverty and vulnerability, limited opportunities for non-farm employment, and high illiteracy rates, which have implications for policies aimed at reducing poverty and promoting sustainable livelihoods in rural areas of Ethiopia.

Key words: Resilience, RIMA, PSNP, per capital food expenditure, Asset, income

¹ Published in Cogent Social Sciences, 9:2, 2270843, DOI: 10.1080/23311886.2023.2270843

2.1 Introduction

Ethiopia, with a mere 0.5% contribution to global greenhouse gas emissions, is one of the countries at the most extreme risk of climate change, ranked 162 out of 182 countries (UNDP, 2020). The effects of climate change are already visible, with water scarcity, changes in rainfall patterns, frequent floods, landslides, and droughts induced by La Niña causing immense damage to agriculture, livestock, forests, water resources, biodiversity, health, infrastructure, and tourism. These sectors require intensive climate-smart adaptation interventions to mitigate the negative impacts of climate change (FAO, 2014).

Ethiopia is currently facing an escalation in the frequency and severity of droughts, floods, and extreme weather events, which are negatively impacting agricultural productivity, food security, and income. These challenges primarily affect regions already vulnerable to droughts, one of which being the SNNPR. In 2019, the country experienced irregular rainfall, leading to water and pasture shortages and worsening food and nutrition insecurity for pastoral and agro-pastoral communities. Livelihoods in the agriculture and livestock sectors were particularly affected. Additionally, delayed and erratic rainfall in the mid- and highlands disrupted crop production and farmers' incomes. In 2020, Ethiopia endured the worst drought in four decades, mainly affecting the southern and eastern parts of the country. This resulted in a significant increase in the number of people requiring humanitarian assistance, reaching 8.4 million in 2020, 23.5 million in 2021, and further escalating to 29 million in 2022. These challenges have been compounded by multiple shocks, such as desert locust infestations, conflict, disease outbreaks (including the COVID-19 pandemic), and resulted in approximately 5.1 million internally displaced persons (IDPs) in 2021. This crisis demands immediate humanitarian assistance and comprehensive protection for affected populations, including the returnee migrants and returning IDPs (UNDP, 2020; FAO, 2014).

Ethiopia's Crisis Response Plan of 2023 revealed that in 2022, more than 8 million people were acutely food insecure. In the same year, 3.5 million livestock died, and 1.8 million people were displaced from the drought-affected regions (Oromia, Somali and Afar), which make up three-

quarters of the total land area of the country². To address these impacts and promote sustainable livelihoods, it is crucial to enhance households' resilience. Resilience refers to the ability of households to adapt and cope with climate change-induced shocks and stresses while maintaining their livelihoods and well-being (FAO, 2014).

The foregoing paragraphs reveal that Ethiopia's vulnerability to climate change has far-reaching consequences for the country's economy and the well-being of its people. The negative impacts of climate change on agriculture, livestock, forests, water resources, biodiversity, health, infrastructure, and tourism require urgent and intensive climate-smart adaptation interventions. Moreover, enhancing households' resilience is vital to promoting sustainable livelihoods and mitigating the negative impacts of climate change on the most vulnerable communities in the country. In turn, building resilience requires understanding the factors that contribute to households' resilience levels, such as access to resources, social networks, and institutions that support adaptation and coping strategies (Wurzel et al., 2020).

The government of Ethiopia together with donors has been implementing Productive Safety Net Program to build resilience of households. One of the ways in which PSNP (which began in 2005) could enhance resilience of households in Ethiopia is by increasing their purchasing power. The cash transfers provided by the program would enable households to buy more food and other essential items, which in turn helps to improve their overall well-being. The program also provides a safety net for households in times of crisis, such as droughts or floods, which can have a devastating impact on food security in rural areas. Another way in which PSNP could improve resilience is by promoting productive activities. The program provides support for small-scale agriculture, such as the provision of seeds and tools, which enables households to grow their own food and become more self-sufficient. This is particularly important in areas where agriculture is the main source of livelihood, as it helps to build resilience against shocks and improve long-term food security.

² <https://reliefweb.int/report/ethiopia/ethiopia-crisis-response-plan-2023>

Several studies have been conducted on the measurement of resilience and food security globally. For instance, Upton, Cisse and Barrett (2016) proposed an empirical strategy to measure food security using panel data from Kenya and a set of axioms based on the internationally agreed 1996 FAO's definition. However, few studies have measured households' resilience levels in Ethiopia and considered resilience components, limiting the development of effective policy interventions aimed at building resilience and promoting sustainable livelihoods (Wurzel et al., 2020). Ayal et al. (2020) studied the impact of climate change and stated that Ethiopia's agricultural productivity is constrained by climate change impacts, limited access to irrigation, and poor soil quality. According to a study by Adgo et al. (2021), Ethiopia is facing a significant threat to the livelihoods of rural communities due to climate change. Another study in Ethiopia. Cissé and Barrett (2018) introduced an econometric strategy to estimate resilience using panel data. Based on data on self-insurance behavior of pastoralists in Kenya, they proposed a theory-based approach to estimating a decomposable development resilience at the micro-level. They suggested that the method has a potential to help target interventions for resilience-building.

In their study, Knippenberg and Hoddinott (2019) not only focused on the effects of Ethiopia's Productive Safety Net Program (PSNP) on household food security, but also highlighted the program's long-term impact on the consequences of drought. The study revealed that drought shocks significantly reduced the duration of time that households considered themselves food secure. Furthermore, these adverse effects persisted for a considerable period of up to four years even after the drought had ended. However, the researchers provided evidence that the receipt of PSNP payments played a crucial role in mitigating the initial impact of drought shocks.

Delving into the dynamics of resilience, Temesgen Kebede et al. (2016) established asset holding as a cornerstone of smallholder farmers' ability to withstand challenges and maintain their overall wellbeing. Furthermore, Fikru et al. (2023) examined the correlation between external assistance and resilience, revealing a noteworthy positive association. However, there is a gap in the literature regarding the specific contributions of the PSNP program to these resilience-building factors.

Following Cissé and Barrett (2018), Abay et al., (2022), studied the impact of productive safety net program in Ethiopia on resilience level of households employing a probabilistic moment-based approach on a panel data of five rounds. They concluded that the productive safety net program is associated with high level of resilience. However, they were not certain whether safety nets with small transfers over a short time horizon offer significant contribution to resilience building suggesting a room for further studies suggesting that a comprehensive analysis of the PSNP's influence on overall household-level resilience remains limited. This proposed research, therefore, seeks to address this gap by investigating the extent to which the PSNP program contributes to the enhancement of household-level resilience among smallholder farmers in Ethiopia. By examining the impact of PSNP interventions on various dimensions of resilience, including asset holding, income diversification, agricultural production, and social capital, this study aims to provide evidence-based insights into the effectiveness of the program in bolstering the resilience of vulnerable households. Against this backdrop, the objectives of this article are twofold: first, to measure the resilience levels of households, and second, to investigate the mediating role of resilience in consumption expenditure and household dietary diversity.

2.2 Description of the Study Area, Data and Methods

2.2.1 Background of study area

Wolaita Zone is a zone located in the southern part of Ethiopia, within the Southern Nations, Nationalities, and Peoples' Region (SNNPR). The zone covers an area of approximately 4,500 square kilometers. Based on the 2021 population projection conducted by the Central Statistical Agency of Ethiopia (CSA), the zone has a total population of 6,142,063 (in an area of 4,208.64 square kilometres (1,624.96 sq mi)). Out of the total population of the zone, females make up 3,115,050, where as males count 3,027,013. The zone is bordered by the Oromia Region to the north, the Sidama Zone to the east, the Gamo Gofa Zone to the south, and the Hadiya Zone to the west. The main town and administrative center of the zone is Sodo, which is also the capital of the SNNPR. The economy of Wolaita Zone is primarily based on agriculture, with coffee, maize, teff, and beans being the main crops grown in the area. Livestock rearing is also an important

source of income for many households. The zone is rich in natural resources, including gold, which is mined in the area.

Wolaita Zone has been affected by drought and food insecurity in recent years, leading to the implementation of safety net programs to support vulnerable households. The Productive Safety Net Program (PSNP) is one such program that has been implemented in the area. The PSNP is a social protection program that provides cash or food transfers to households in exchange for participation in public works projects or community service activities. The program aims to improve food security, reduce poverty, and build resilience to shocks such as drought.

In the Wolaita Zone, the PSNP has been implemented since 2005 and has supported thousands of households in the area. As per the new PSNP5 design document, The program has been successful in reducing food insecurity and poverty among participating households, and has also contributed to the development of infrastructure such as roads, water supply systems, and schools (MOA, 2020). Despite the success of the PSNP, Wolaita Zone still faces challenges related to drought and climate change. The area is prone to droughts, which can have devastating effects on the local economy and food security. In recent years, the government and development partners have worked to improve drought resilience in the area through measures such as promoting climate-smart agriculture, improving water management, and investing in early warning systems for droughts. In addition to the PSNP, other programs and initiatives have been implemented in the area to support vulnerable households during times of drought and food insecurity. For example, the World Food Programme has implemented a food assistance program in the Wolaita Zone to support households affected by drought and other shocks.

2.2.2. Data and Methods

Following Conroy (2018) and Yamane (1968) using 5% level of precision, 300 respondents were randomly selected from the population of safety net and non-beneficiaries in the study area. Out of the 300 respondents, 150 were selected as the treatment group, who were beneficiaries of the safety net program. The remaining 150 respondents were selected as the control group, who were not beneficiaries of the program. The list of beneficiaries and those in the waiting list obtained

from the PSNP coordinators served as a sampling frame. A random sampling procedure was followed to reach out to each respondent with the help of local coordinators. The methodology used to analyze this data has been involved several steps. Firstly, the data was reviewed and assessed to ensure that it is consistent and of good quality. This was involved examining the variables and indicators used in the data collection process, as well as assessing the methods used to collect and analyze the data.

The Resilience Index Model Analysis (RIMA) was used to assess the impact of Productive Safety Net Programs (PSNPs) on building household resilience through further impacting income and food security. RIMA is a statistical analysis method used to evaluate the ability of households to cope with and recover from shocks and stresses.

The concept of resilience is indeed better understood in a dynamic scenario where changes and progress of households can be observed over time. However, it is also possible to conduct a non-dynamic analysis of resilience when the objective is prediction and a snapshot of resilience at a particular point in time. Cross-sectional data can be used for predictive purposes, such as in the case of studies that have used machine learning techniques to predict household resilience, as demonstrated by Garbero (2022).

While cross-sectional resilience analysis may not provide a trajectory of the studied variables, it can still be useful for predictive purposes. For example, the RIMA II methodology has been used to predict the Resilience Capacity Index (RCI) of households based on cross-sectional data, as seen in studies by Sibrian (2021) and FAO (2016, 2021). The RCI is used to rank households from most to least resilient for targeting purposes, and the RIMA II methodology is an ex-ante indicator of households' intrinsic ability to recover from future shocks (FAO, 2020). Therefore, cross-sectional data can be employed to measure resilience capacity for predictive purposes, which can be used for future analysis of shock resistance. While a dynamic analysis may provide a more comprehensive understanding of resilience, cross-sectional analysis can still provide valuable insights for predictive purposes.

RIMA II, or the Resilience Index Measurement and Analysis II, is a latent variable model that aims to measure and analyze resilience in households. It assumes that the observed variables,

such as per capita food expenditure and Household Dietary Diversity Score (HDD), are manifestations of an underlying unobserved latent concept, which is resilience. Additionally, RIMA II considers that other variables, known as correlates, construct and influence the latent factors, creating a reciprocal effect (FAO 2016).

The most commonly used format for estimating RIMA II involves a two-step procedure. First, a factor analysis is performed using indicators for the four RIMA pillars. These observable indicators are assigned to each of the RIMA pillars in the factor analysis. The goal of the factor analysis is to explain at least 96 percent of the sample covariance, which helps identify the underlying latent factors related to resilience. In the second step, a Resilience Capacity Index is created using the output of the factor analysis. This is done through a Multiple Indicators Multiple Causes (MIMIC) model, which is a type of structural equation model (SEM). The MIMIC model consists of two components: the SEM and the measurement model. In the SEM component, the observed variables (such as per capita food expenditure and HDD) are considered causes of resilience as a latent variable. This means that these variables are believed to influence the level of resilience in households. The measurement model component treats the observed variables as indicators of resilience. In this case, a reference unit is required, which is a variable assumed to be affected by a household's resilience. This reference unit is commonly associated with well-being-related metrics. By combining the SEM and measurement model, the MIMIC model allows for the creation of a single unit of resilience for a household along a scale of 0 (lowest resilience) to 1 (highest resilience). This is achieved using a min-max normalization procedure, which standardizes the values of the indicators to fit within the desired range. The equation for the structural model is given by (FAO, 2016):

$$RCI = ABS \times \beta_{abs} + AST \times \beta_{ast} + SSN \times \beta_{ssn} + AC \times \beta_{ac} + \varepsilon_{RCI} \quad (1)$$

Causal coefficients β_{abs} , β_{ast} , β_{ssn} , and β_{ac} are four critical determinants for resilience to food and nutrition insecurity, and disturbance of RCI is ε_{RCI} .

While the two food security indicators are modelled in the measurement part of the SEM as follows:

$$\text{Food Expenditure (FE)} = \text{RCI} \times \alpha_{\text{FE}} + \varepsilon_{\text{FE}} \quad (2)$$

$$\text{HDDS} = \text{RCI} \times \alpha_{\text{HDDS}} + \varepsilon_{\text{HDDS}} \quad (3)$$

The α_{FE} coefficient is scaled by setting it to 1 so that one standard deviation increase in RCI implies an increase of one standard deviation in Food expenditure. The unit of measure of coefficients for other indicators (coefficient α_{HDDS} and variance) is determined by the scaling and is zero for var (FE) and var (HDDS). Measurement errors of FE and HDDS are ε_{FE} and $\varepsilon_{\text{HDDS}}$, respectively.

Overall, RIMA II provides a framework for measuring and analyzing resilience in households by considering the underlying latent factors and their influences. By using a combination of factor analysis and a MIMIC model, it allows for the creation of a Resilience Capacity Index that can help assess and compare the resilience levels of different households.

The RIMA model involves the use of a set of resilience indicators that measure the economic, social, and environmental factors that affect household resilience. These indicators include income, employment, access to education and healthcare, and exposure to natural disasters. The conceptual framework involving these variables under RIMA-II is schematically depicted in Figure 1.

As depicted in Figure 1, the resilience of households is determined by various critical factors, including access to basic services, assets, social safety nets, and adaptive capacity (FAO, 2018). These elements are essential in helping households withstand and recover from shocks, such as economic downturns, natural disasters, or pandemics. When households face such shocks, interventions become necessary to help them become more resilient. These interventions must be based on the principles of strengthening diversity, rebuilding local institutions and traditional support systems, reinforcing local knowledge, and building on household ability to adapt and reorganize (Pingali et al., 2005).

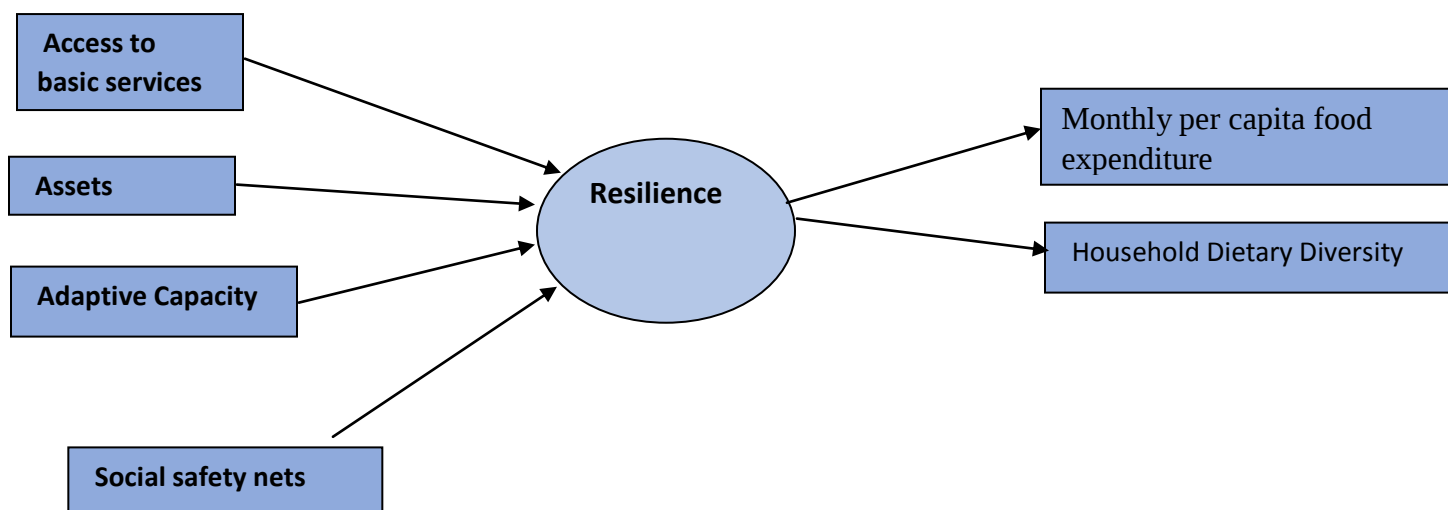


Figure 1: Resilience conceptual framework (based on FAO, 2016)

To enhance the resilience of households, it is crucial to ensure they have access to basic services such as healthcare, education, and clean water. Access to these services can improve the health and well-being of households, reduce their vulnerability to shocks, and help them cope better during difficult times (World BankWorld Bank, 2019).

Furthermore, assets such as land, livestock, and financial resources are critical in enhancing the resilience of households. These assets can help households generate income, build financial reserves, and cope with economic shocks (Carter & Barrett, 2006). Social safety nets such as cash transfers, food subsidies, and social insurance programs can also help households overcome the adverse effects of shocks (UNDP, 2014).

Adaptive capacity is another essential factor that determines the resilience of households. Adaptive capacity refers to the ability of households to adjust their behaviors and strategies to cope with changing circumstances. This includes the ability to adopt new technologies, diversify income sources, and build social networks that can provide support during difficult times (Adger et al., 2005). In sum, enhancing the resilience of households is critical in promoting their well-being and reducing their vulnerability to shocks. By strengthening access to basic services,

assets, social safety nets, and adaptive capacity, households can better cope with unexpected shocks and recover more quickly from difficult situations.

The resilience index (RCI) constructed using the two-step procedure indicated above is the outcome variable with fractional values between zero and one. Several analysis methods are used to model such data. The most popular model, linear regression, assumes that errors have a normal distribution and have an equal variance. However, our outcome variable (resilience index) contains fractional values that do not meet the normality assumption. The validity of employing linear regression to model such data would be questioned in the absence of normal distribution of residuals (Schmid et al., 2013) and complex to interpret the result (Fang et al., 2019). Further, in such a case, the linear regression model does not account for the bounded nature of the outcome variable (Kieschnick and McCullough, 2003).

Therefore, looking for another approach that is suitable for fractional data is critical to fix the estimation bias related to linear regression. As proposed by Papke and Wooldridge (1996), fractional regression is used to analyze dependent variables described in a unit interval [0 1]. While beta regression deals with outcome variables in the range of zero and one (0 1) (Ferrari and Cribari-Neto, 2004; Smithson and Verkuilen, 2006).

Our response variable resilience (RCI) is measured continuously and restricted to unit interval (0,1), the response of $RCI \in (0,1)$, and follows beta density. Based on Ferrari and Cribari-Neto (2004), we specified beta density of RCI as follows:

$$f(RCI; \theta, \alpha) = \frac{\gamma(\alpha)}{\gamma(\theta\alpha)\gamma((1-\alpha)\theta)} RCI^{\theta\alpha-1} e(1 - RCI)^{(1-\theta)\alpha-1},$$

$$0 < RCI < 1 \dots \dots \dots (4)$$

Where, $\theta \in (0,1)$ is the mean of RCI, $\alpha > 0$ is a precision parameter and $\gamma(\cdot)$ is a gamma function. The variance of RCI is given by $\text{var}(RCI) = (\theta(1-\theta))/((1+\alpha))$. RCI is a dependent variable where each $[RCI]_i, i=1, \dots, n$. Beta density accommodates several shapes depending on the parameters (Ferrari and Cribari-Neto, 2004; Cribari-Neto and Zeileis, 2010). Following the beta

density described in equation (4) with mean θ_i and unknown precision α , the beta regression model for resilience capacity looks like:

$$g(\theta_i) \sum_{j=1}^n x_{ij} \beta_j \dots \dots \dots (5)$$

Where, $g(\theta_i)$ is strictly monotonic and twice differentiable link function that maps (0,1) β is the coefficient of the j^{th} covariate and x_{ij} is the explanatory variables of household i , which are assumed fixed and known. Hence, beta distribution provides a very adaptable approach for modelling fractional data bounded in zero and one. Therefore, our outcome variable Resilience Capacity Index (RCI) is defined by fractions greater than zero and less than one, beta regression best suits to model our data.

The description of the variables that constitute household resilience is provided in Table 1, which includes access to basic services, assets, social safety nets, and adaptive capacity. FAO (2018) defines Access to Basic Services as the ability of a household to fulfill its fundamental needs by accessing and effectively utilizing basic services such as schools, healthcare facilities, infrastructure, and markets. Adaptive Capacity, on the other hand, refers to a household's ability to adapt to new circumstances and develop alternative livelihood strategies. The Social Safety Nets pillar assesses a household's capacity to obtain support from various sources, including relatives, friends, government, and timely assistance from international agencies, charities, and NGOs. Assets comprise both productive and non-productive assets. Productive assets are crucial for households to generate consumable or tradable goods, and examples of such assets include land, livestock, and durable goods. Context-specific sets of productive assets are evaluated based on their ability to generate household income. Tangible non-productive assets, such as housing, vehicles, and household amenities, reflect a household's standard of living and wealth.

Table 1: Indicators of resilience

Resilience Pillars	Components
	Monthly per capita food expenditure (log)
	Household Dietary Diversity score (HDD)
Access to Basic services (ABS)	Inverse distance to veterinary services (in km)
	Inverse distance to primary schools (in km)
	Inverse distance to healthcare center (in km)
	Inverse distance to main market (in km)
	Inverse distance to safe drinking water (in km)
	Inverse distance to Farmer Training center (FTC) (in km)
Asset (ASST)	Agricultural asset index (measured using factor analysis)
	Tropical Livestock Units (TLU) per capita
Social Safety Nets (SSN)	Membership in productive safety net program (1=yes 0=No)
Adaptive Capacity	Household head average years of education (in years)
	Dependency ratio (inverse)
	Non-farm activities =1 if household member is engaged in non-farm wage work or casual/irregular wage

Source: Variables were selected based on review of FAO (2018)

2.3 Results and Discussion

2.3.1 Descriptive Statistics

Table 2 illustrates that a mere 20.3% of households are involved in non-farm employment, indicating a dearth of viable livelihood alternatives beyond agriculture. This trend aligns with prior studies emphasizing agriculture's dominance in rural Ethiopia (Alemu and Adugna, 2017; Negash, 2019). The scarcity of non-farm opportunities can intensify poverty and augment households' susceptibility to shocks like droughts and disease outbreaks (Barrett et al., 2001). Furthermore, household heads in the study area possess an average of 3.9 years of schooling,

with a standard deviation of 4.452, underscoring a prevalent illiteracy that curtails their ability to access information, make informed choices, and engage in basic non-agricultural activities (Gebreegziabher and Mekonnen, 2016),

Table 2:RIMA domain indicators included in the study

Domain	FAO suggested indicators	N ^o obs.	Mean	Std. dev	Min	Max
Outcome indicators	Monthly per capita food expenditure (log)	300	5.61	0.88	2.93	8.11
	Household Dietary Diversity score (HDD)	300	3.51	1.85	0.00	8
Access to Basic services (ABS)	Inverse distance to veterinary services	288	0.12	0.14	0.00	1
	Inverse distance to primary schools		0.10	0.08	0.00	0.5
	Inverse distance to healthcare center		0.14	0.13	0.00	1
	Inverse distance to main market		0.05	0.13	0.00	1
	Inverse distance to safe drinking water		0.10	0.14	0.00	1
	Inverse distance to Farmer Training center (FTC)		0.12	0.13	0.00	1
Asset (ASST)	Agricultural asset index	300	0.50	0.21	0.00	1
	Tropical Livestock Unit (TLU) per capita		0.56	0.48	0.00	4.51
Social Safety Nets (SSN)	Membership in PSNP (1=yes)	300	0.50	0.50	0.00	1
Adaptive Capacity	HH head average years of education (years of schooling)	279	3.91	4.45	0.00	18
	Dependency ratio (inverse)		1.48	1.34	0.17	7
	Non-farm activity=1 if household member is engaged in non-farm wage work or casual/irregular wage		0.20	0.40	0.00	1

Chi-square test shows that resilience level of households was divided into two with a cut-off value of 0.5 whereby households with a score above the cut-off are designated to be resilient. Accordingly, a comparison was made between PSNP members and non-members. The result in Table 3 shows that the later are better-off compared to their counterparts. While 51.3% of the PSNP non-members are resilient, only 34% of the members are resilient. This association between level of resilience and PSNP membership is significant at 1% level (Pearson Chi2(1) = 9.2115 and Pr= 0.002).

In addition to chi-square test, independent samples ttest was done to examine the mean difference between PSNP members and non-members against outcome variables of interest.

Table 3 highlights a notable difference in monthly per capita food expenditure between households who are members of the Productive Safety Net Program (PSNP) and those who are not. The data reveals that non-PSNP households have a higher monthly per capita food expenditure than PSNP members, with a difference of 30%. This finding suggests that non-PSNP households have better access to economic resources and opportunities, which enable them to purchase more food and improve their food security status.

The difference in food expenditure between PSNP members and non-members may be attributed to the transfer value of the PSNP. The transfer value of the PSNP is relatively small and may not be enough to cover all the food needs of households (Alderman and Yemtsov, 2014). Additionally, the transfer value is subject to delays and interruptions, which may affect the ability of households to purchase food consistently (Devereux and Sabates-Wheeler, 2004).

Table 3:. Mean difference between PSNP members and non-members

S. No	Variable	Group	N ^a Obs	Mean	Std. dev	Diff	T	Sig.
1	Resilience Index	PSNP Non-member	150	0.52	0.01	0.09	4.55	.00
		PSNP member	150	0.43	0.01			
		PSNP-member with non-farm activity	29	0.51	0.04	0.11	2.98	0.0
		PSNP-member without non-farm activity	121	0.40	0.01			
2	Monthly per capita food expenditure (log value)	PSNP Non-member	150	5.76	0.82	0.30	3.05	0.0
		PSNP member	150	5.45	0.07			

Source: Own analysis from the survey data

Conversely, non-PSNP households may have better access to income-generating activities, such as off-farm work or remittances, which increase their income and purchasing power (Alemu and Adugna, 2017). This finding highlights the need for promoting livelihood diversification and income-generating activities as a means of improving food security in rural areas of Ethiopia. Moreover, the data shows that non-PSNP households have higher resilience scores than PSNP members, with a difference of almost 0.1 point. This finding suggests that non-PSNP households are better equipped to withstand shocks and stresses, such as droughts, floods, or other economic hardships, than PSNP members. This could be due to their higher level of assets, livestock ownership, or access to other income-generating activities (Desta et al., 2017).

These findings have significant implications for the design and implementation of safety net programs, such as PSNP, in Wolaita Zone, Southern Nations, Nationalities and Peoples Region (SNNPR), Ethiopia. It may indicate the need for PSNP to be re-evaluated and adjusted to ensure that it is reaching the most vulnerable households and providing adequate support to improve their food security and resilience.

Overall, Table 3 provides compelling evidence of a significant difference in monthly per capita food expenditure between PSNP members and non-members, with non-PSNP households spending more on food. Policymakers should consider these findings when designing interventions aimed at reducing food insecurity in rural areas of Ethiopia.

Figure 2 displays a positive relationship between household resilience levels and monthly per capita food expenditure in Wolaita Zone, SNNPR, Ethiopia. This finding suggests that as household resilience levels increase, so does their ability to purchase more food and improve their food security. This relationship between resilience and food expenditure has also been observed in other studies, which goes in tandem with the findings in our study. For instance, a study by Yimer and colleagues (2020) in Ethiopia found that households with higher resilience levels were more likely to have higher food expenditure and better dietary diversity. Another study by Sibhatu and Qaim (2018) found a positive association between household resilience and food security outcomes in Ethiopia, as well as in other African countries.

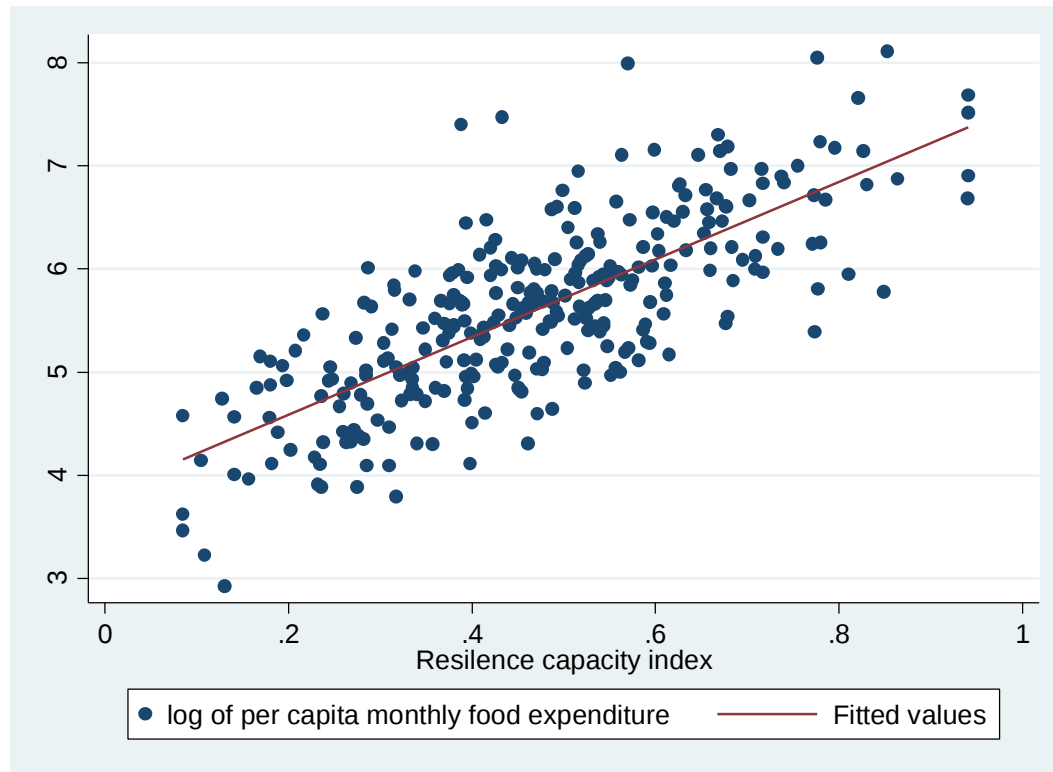


Figure 2: Scatter diagram showing the relationship between resilience and monthly per capita food expenditure

Source: Own analysis from the survey data

According to the results of the structural equation modelling presented in Table 4, the path coefficient from assets to resilience is positive and statistically significant at a level of significance of 1%. Similarly, the coefficients for access to basic services, social safety nets, assets, and adaptive capacity are positive and significant at a 5% level. These findings suggest that households with higher levels of access to basic services, social safety nets, assets, and adaptive capacity are more likely to be resilient to food insecurity in the study area. This is consistent with previous research on household resilience to food insecurity, as noted by Bezabih and Bezabih (2021) and Fanzo et al. (2018).

Resilience, as a latent variable, has been extensively studied in the literature. It is widely acknowledged that it is a complex construct that includes multiple factors that contribute to a household's ability to withstand and recover from shocks and stresses (Bezabih & Bezabih,

2021; Fanzo et al., 2018). The findings of this study indicate that adaptive capacity, social safety nets, access to basic services, and assets are all significant predictors of resilience. Specifically, assets are found to have a strong positive impact on resilience, and this effect was statistically significant at the 1% level, while the other factors were significant at the 5% level.

Adaptive capacity refers to a household's ability to adapt to changing circumstances and is influenced by factors such as education, skills, and knowledge (Bezabih & Bezabih, 2021). Social safety nets, which are programs or mechanisms that provide assistance to vulnerable households during crises, such as cash transfers, food aid, or public works programs, play an essential role in enhancing households' resilience (Fanzo et al., 2018). Moreover, access to basic services, such as health care, education, and clean water, is a vital predictor of resilience as it enables households to meet their basic needs and better cope with shocks (Bezabih & Bezabih, 2021).

Lastly, assets, including land, livestock, and savings, are crucial predictors of resilience as they provide households with a buffer against shocks and can be used to generate income or as a means of exchange (Fanzo et al., 2018). Furthermore, the possession of assets provides households with greater flexibility and freedom to make decisions, thereby reducing their vulnerability to shocks.

In addition to the aforementioned results, the study (Table 4) also found that resilience acts as a mediator variable that significantly affects both monthly per capita consumption and household dietary diversity in the study area. This implies that households with higher levels of resilience are more likely to have better food consumption patterns and dietary diversity. These findings are consistent with previous research on the relationship between resilience and food security (Dillon et al., 2015; Tesfaye et al., 2016), which has shown that resilient households are better able to cope with food insecurity and maintain adequate food consumption.

The concept of resilience has been linked to food security in various ways, and it is generally agreed that resilience is a critical factor in achieving food security (Dillon et al., 2015; Tesfaye et al., 2016). Resilient households are better equipped to cope with shocks and stresses, including

those related to food insecurity, and they are more likely to maintain their food consumption patterns and dietary diversity. This is because households with higher levels of resilience have better access to resources, including social safety nets, assets, and adaptive capacity, which enable them to mitigate the impacts of shocks and stresses (Dillon et al., 2015; Tesfaye et al., 2016).

Table 4: RIMA II MIMIC determinants and indicators

Variables	Coefficients
Structural model	
Access to Basic services (ABS)	0.99** (0.45)
Asset (ASST)	1.86*** (0.33)
Social safety Nets (SSN)	0.80** (0.40)
Adaptive Capacity (AC)	0.44** (0.20)
Measurement Model	
Per capita monthly food expenditure	1.00
Household dietary diversity (HDDS)	2.02*** (0.40)
Statistics	
Observations	268
Chi2	5.20
Prob > Chi2	0.000
RMSEA	0.05
Probability RMSEA<0.05	0.01
CFI	0.97
TLI	0.92

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Source: Own analysis from the survey data

The structural model on the top panel of Table 4 shows the correlates of resilience. All coefficients are found to be statistically highly significant and have the expected sign. Better access to basic services, greater access to assets, better access to household transfer payment and higher degree of adaptive capacity influences the resilience capacity of households positively. The central panel on the other hand shows the link between the latent variable (RCI) and its indicators. The coefficient of per capita food expenditure is standardized to one to make the coefficient of household dietary diversity score interpretable. We find that a unit increase in the

RCI results in a 2.02 (0.41) increase in the standard deviation of HDDs. The lower panel in Table 4 summarizes the adequacy of the model and indicates that the chi-square value is significant at the 1 percent level, and the root mean square estimate (RMSEA) is 0.05 (with a p-value of 0.000). The comparative fit index (CFI) and The Tucker-Lewis index (TLI) are quite high which is an indication of a good model fit.

As evident in Table 5, we control for certain explanatory variables to understand their relationship to resilience indicators following a beta regression analysis. Table 5 highlights the significant influence of household characteristics on resilience capacity. The findings paint an interesting picture revealing the fact that female-headed households show a lower correlation of 16.3% with improved resilience capacity than male-headed households. Household size reduces resilience capacity by 0.08. This could be because of low support ratio at household level owing to high unemployment in Ethiopia. On the other hand, as Table 5 shows, education of the household head (Literate) boasts a coefficient of 0.31, implying a significant positive relationship with a higher resilience index. Engagement in non-farm income activities has a positive and significant coefficient of 0.19, indicating higher involvement in non-farm activities leads to a heightened resilience index.

Table 5 further indicates that engagement in off-farm activities significantly reduces resilience capacity by 0.35. This could be because off-farm activities in the Ethiopian context are exploitative of the environment leading to degradation of the resource base. Conversely, participation in productive safety net program corresponds to a positive and significant coefficient of 0.18, suggesting a meaningful connection to an increased resilience index. In the same line, households with a higher asset index and access to credit have a positive and significant coefficient of 2.16 and 2.33e-05, respectively signifying enhanced resilience. Finally, crop failure and farming as an occupation correspond with reduced resilience levels of 0.14 and 0.16, respectively.

Table 5: Results of the Beta regression Model

VARIABLES	Resilience Capacity Index
Age of the household head (in years)	0.00 (0.00)
Sex of the household head (1=female)	-0.16** (0.08)
Household size (in number)	-0.08*** (0.02)
Education of the household head (in years)	0.31*** (0.07)
Marital status of the household head (1= single)	-0.02 (0.09)
Engagement in non_farm activities	0.19** (0.08)
Engagement in off_farm activities	-0.35** (0.16)
PSNP participation (1=Yes)	0.18*** (0.07)
Asset index	2.16*** (0.17)
Total credit amount	2.33e-05*** (8.93e-06)
Crop failure (1=yes)	-0.14* (0.07)
Farming as occupation (1= Yes)	-0.16* (0.09)
Constant	-0.51** (0.21)
Scale	2.62*** (0.08)
Statistics	
Observations	284
Log likelihood	190.37
LR Chi2(10)	207.34
Prob>chi2	0.000
Link Function=g(u) l.log(u/ (1.-u)){logit}	

Source: Own analysis from the survey data

The overall model results (Table 5) showing log likelihood of 190.37, a likelihood ratio Chi-squared statistic (LR Chi2) of 207.34 and a corresponding p-value of 0.000, underscore the model's overall significance in explaining resilience index variability.

2.4 Conclusions and Implications for Policy

The study was aimed to examine households' resilience to climate change and food insecurity in Ethiopia. Using cross-sectional data and utilizing both Structural Equation (SEM) and Beta regression models, this study delves into the intricate factors that influence household resilience to food insecurity within a specific region.

The findings underscore the substantial contribution of various factors to household resilience. Notably, access to basic services, social safety nets, assets, and adaptive capacity exhibit statistically significant and positive correlations with resilience, corroborating prior research and emphasizing their pivotal role in enabling households to navigate and recover from challenges. Of particular significance is the robust influence of assets on resilience, demonstrating a notably strong positive impact. Equally vital, adaptive capacity—nurtured through education and skill acquisition—emerges as a cornerstone. The tangible role of social safety nets, encompassing cash transfers and food aid, in enhancing households' crisis-coping capabilities is evident. Additionally, access to fundamental services like healthcare and clean water emerges as indispensable for meeting basic needs and bolstering shock resilience.

Crucially, resilience is unveiled as a mediator, fostering favorable outcomes in monthly per capita consumption and household dietary diversity. This underscores the tangible, real-world implications of resilience, solidifying its importance beyond theoretical constructs and emphasizing its role in food security.

The implications derived from this analysis pave a clear path for actionable policy strategies on the role of productive safety net programs. Customized interventions aimed at vulnerable groups, enhanced education, fortification of social safety nets, asset fostering initiatives, diversified income streams, and agrarian advancement present concrete avenues to fortify household resilience. These measures encapsulate the multi-dimensional nature of resilience and advocate for comprehensive strategies that address the interwoven factors influencing household well-being. More importantly, the study's broader significance lies in its potential to guide policy formulation, program design, and resource allocation, extending beyond the immediate study

area. By discerning the intricate relationships between adaptive capacity, basic service accessibility, social safety nets, assets, and resilience, policymakers can lay the groundwork for fostering resilient households. This study stands as a pivotal cornerstone for evidence-driven decision-making, contributing to the collective mission of bolstering food security, diminishing vulnerability, and enhancing the quality of life for households across diverse contexts.

Based on the results of this study, policymakers and practitioners can consider the following policy implications:

1. **Improve access to basic services:** Access to basic services, such as clean water, health care, and education, was found to be a significant predictor of household resilience to food insecurity. Therefore, policymakers should prioritize efforts to improve access to basic services, particularly in rural areas, where access is often limited.
2. **Strengthen social safety nets:** Social safety nets, such as cash transfers and food assistance programs, were also found to be important predictors of household resilience. Policymakers should strengthen and expand social safety nets to provide a safety net for vulnerable households, particularly during times of shocks and stresses.
3. **Increase access to assets:** The study found that households with greater assets were more resilient to food insecurity. Therefore, policymakers should focus on increasing access to assets, such as land, livestock, and savings, particularly for vulnerable households.
4. **Build adaptive capacity:** Adaptive capacity, or the ability to adapt to changing circumstances, was also found to be a significant predictor of household resilience. Policymakers should focus on building the adaptive capacity of vulnerable households, particularly through education and training programs that build skills and knowledge.
5. **Promote resilience-building programs:** The study found that resilience is a critical factor in achieving food security. Therefore, policymakers and practitioners should focus on promoting resilience-building programs, particularly in vulnerable communities. Such programs can

include training on sustainable agriculture practices, disaster risk reduction, and climate change adaptation.

Overall, the findings of this study highlight the importance of building resilience in efforts to improve food security in Wolaita zone, Ethiopia. Policymakers and practitioners should consider these policy implications in designing and implementing policies and programs aimed at improving food security and reducing vulnerability to shocks and stresses.

CHAPTER 3: DOES PRODUCTIVE SAFETY NET PROGRAM ENHANCE LIVELIHOODS? INSIGHTS FROM VULNERABLE HOUSEHOLDS IN WOLAITA ZONE, ETHIOPIA³

Abstract

The impact of Productive Safety Net Programs (PSNPs) on food security, poverty, and livelihoods has been examined in several studies. While some studies found positive impacts on food security and agricultural productivity, there are still gaps in understanding the long-term effects of these programs on poverty reduction and food security. This study aims to investigate the impact of PSNP on the livelihood of beneficiaries based on indicators including access to basic services, income, expenditure on food, adaptive capacity, and dietary diversity. This article used quasi-experimental design and treatment effects model taking into account access to basic services, income, food expenditure, assets, adaptive capacity, and household dietary diversity as outcome variables of interest. 300 respondents were randomly selected from the population of safety net beneficiaries and non-beneficiaries in the study area. Out of the 300 respondents, 150 were selected as the treatment group, who were beneficiaries of the safety net program. The algorithms used in analysis include regression adjustment, inverse probability weighing and propensity score matching. The study's results reveal that the PSNP has no statistically significant impact on access to basic services and income based on all three algorithms, yet it does show a significant and negative effect on food expenditure and assets. The coefficients across all three models consistently demonstrate this negative impact, underscoring its statistical significance at the conventional significance level ($p = 0.05$). This suggests that the PSNP leads to a reduction in food expenditure. Furthermore, the analysis highlights substantial differences between PSNP members and non-members across all three variables, with non-members having higher mean values for assets. This difference is statistically significant at the 1% level, suggesting that membership in the PSNP has a tangible impact on asset ownership. The study's mixed findings emphasize the complexities of designing effective social protection programs that can adequately address the multifaceted nature of poverty.

Key words: Livelihood, treatment effects model, productive safety net program, dietary diversity, **income**, food expenditure, Ethiopia.

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3.1 Background of the Study

Productive Safety Net Programs (PSNPs) have emerged as crucial social protection measures in numerous low-income countries, with Ethiopia being a prominent example. These initiatives are designed to mitigate poverty, food insecurity, and vulnerability by offering a combination of cash and food transfers, alongside public works opportunities, to households in dire need. While PSNPs are recognized for their vital support to vulnerable households, their impact on food security, poverty reduction, and livelihoods remains a subject of ongoing debate. To comprehend the potential impact of PSNPs on livelihoods, scholars have employed theoretical frameworks such as the sustainable livelihoods approach (SLA) and the asset-based approach (ABA). The SLA underscores the importance of building resilient livelihood systems capable of withstanding shocks and offering diverse income opportunities (Ellis, 2000; Devereux, 2006). Similarly, ABA emphasizes asset accumulation as a means to reduce poverty and enhance food security (Barrett & Carter, 2013; Devereux & Sabates-Wheeler, 2004). Furthermore, PSNPs are viewed as a form of social protection, aimed at reducing poverty and vulnerability by providing basic social security (World BankWorld Bank, 2012). Nonetheless, the role of social protection in promoting economic development and poverty reduction remains a topic of contention, with concerns about dependency and work disincentives (Mkandawire, 2005; Standing, 2011).

It is impressive how extensively Productive Safety Net Programs (PSNPs) have been studied, revealing a spectrum of impacts on food security, poverty, and livelihoods across different contexts (Alderman & Yemtsov, 2014; Belete & Bayu, 2023). The research findings, while diverse, create a nuanced understanding of the complexities involved in these social protection initiatives (Devereux, 2016).

Various studies underscore the positive outcomes of PSNPs, especially in bolstering food security and agricultural productivity (Alem & Söderbom, 2012). Ethiopia has been a focal point for these analyses, with studies demonstrating the program's positive effects on female-headed farm households' food security and broader poverty reduction (Abay et al., 2021). Moreover, within the sub-Saharan African context, PSNPs have consistently shown effectiveness in enhancing food security and reducing poverty among participating households (Sibhatu et al., 2015).

However, when it comes to livelihood impacts, the picture becomes more intricate (Hirvonen et al., 2017). Some studies indicate positive effects, such as reduced poverty and improved food security, while others highlight the need for more transformative measures to stimulate long-term economic growth and social change (World Bank, 2012). Additionally, there are concerns about the sustainability of PSNPs in certain regions and potential unintended consequences, like decreased labor market participation or limited impacts on income and asset accumulation among the poorest households (Berhane et al., 2014; Odusola, 2017).

This wide range of findings underscores the need for further investigation into the multifaceted effects of PSNPs, considering various dimensions like assets, income, adaptive capacity, and food security (Devereux & Sabates-Wheeler, 2004). It is also crucial to focus on specific contexts, especially rural areas in Ethiopia, where poverty and food insecurity are most acute (World Bank, 2012). This kind of targeted research can offer valuable insights to refine the design and implementation of effective social protection programs.

This study aims to delve deeper into this area by examining the PSNP's impact on beneficiaries' livelihoods (Krishnan et al., 2021). It considers indicators such as access to basic services, income, food expenditure, adaptive capacity, and dietary diversity (Mkandawire, 2005). This research could contribute significantly to filling existing gaps and informing the refinement and optimization of social protection programs like PSNPs.

3.2 Methodology

3.2.1 Research Design, Sampling and Data

This study sought to evaluate the effectiveness of the Productive Safety Net Program (PSNP) in enhancing the livelihoods of beneficiaries in Ethiopia by examining several indicators. Following Conroy (2018) and Yamane (1968) and using 5% level of precision, 300 respondents were randomly selected from the population of safety net beneficiaries and non-beneficiaries in the study area. Out of the 300 respondents, 150 were selected as the treatment group, who were beneficiaries of the safety net program. The remaining 150 respondents were selected as the control group, who were not beneficiaries of the program. The list of beneficiaries and those in

the waiting list obtained from the PSNP coordinators served as a sampling frame. A random sampling procedure was followed to reach out to each respondent with the help of local coordinators. The data was collected from March to April 2023 from Wolaita zone, Ethiopia. To assess the impact of the PSNP on access to basic services, income, food expenditure, assets, adaptive capacity, and household dietary diversity, the study employed a household survey methodology. This involved collecting data on the various indicators through structured questionnaires administered to households selected through a random sampling technique.

Access to basic services is crucial for improving livelihoods as it provides households with necessary resources such as healthcare, education, and water supply. The study examines the extent to which the PSNP has contributed to enhancing beneficiaries' access to these basic services. Income is also a crucial indicator of livelihoods. The PSNP provides regular cash or food transfers to its beneficiaries, which can help increase their income and enable them to invest in income-generating activities. The study assesses the impact of the PSNP on the beneficiaries' income.

Food expenditure is another essential factor in improving nutrition, and the study investigates the impact of the PSNP on the beneficiaries' food expenditure. The PSNP may enable households to purchase more diverse and nutritious food items, which can help improve their overall health and wellbeing. Asset accumulation is also important for improving livelihoods, and the study investigates the impact of the PSNP on the beneficiaries' asset ownership. The program may enable beneficiaries to acquire assets such as livestock, which can provide a reliable source of income and contribute to long-term financial stability.

Adaptive capacity refers to a household's ability to cope with shocks and stresses such as drought or disease outbreaks. The study examines the extent to which the PSNP has contributed to enhancing the beneficiaries' adaptive capacity. The program may provide households with the resources needed to cope with emergencies, such as savings or emergency food supplies.

Finally, household dietary diversity is another crucial factor in improving nutrition, and the study investigates the impact of the PSNP on the beneficiaries' dietary diversity. The program may

enable households to purchase a more diverse range of food items, which can help improve their overall health and wellbeing.

To ensure the accuracy of the study’s findings, the study employed different statistical techniques such as regression adjustment, inverse probability weighting and propensity score matching. Regression adjustment was used to control for confounding factors that may have influenced the study’s results. For example, variables such as household size and location could have influenced the study’s results, and regression adjustment helped to control for these factors. Propensity score matching was used to reduce selection bias by matching beneficiaries and non-beneficiaries with similar characteristics. This helped to ensure that the study’s findings were not biased by factors such as differences in the characteristics of beneficiaries and non-beneficiaries. This statistical method constructs a comparison group based on a model of the probability of participating in the program using observed characteristics. Participants and non-participants are then matched based on their propensity scores (Shahidur et al., 2010). A linear model showing the impact of the “Treatment” is shown in equation 1.

$$Y = \beta_0 + \beta_1 * \text{Treatment} + \beta_2 * X_2 + \beta_3 * X_3 + \dots + \varepsilon \dots\dots\dots 7$$

Y: The outcome variable we want to predict or explain (e.g., health improvement, income change, academic achievement).

Treatment: A binary variable (1 or 0) indicating whether an individual received the treatment (1) or not (0).

X₂, X₃, ...: Covariates or control variables that may influence both the treatment assignment and the outcome.

β₀: The intercept, representing the expected value of Y when all predictors (Treatment and X variables) are zero.

β₁: The coefficient associated with the Treatment variable, representing the estimated treatment effect.

β₂, β₃, ...: Coefficients associated with the covariates, indicating how they influence the outcome.

ε: The error term, representing the unexplained variation in Y not accounted for by the model.

The coefficient β₁ is of particular interest in a treatment effects model, as it quantifies the causal impact of the treatment on the outcome while holding other variables constant.

For a household benefiting from PSNP, $T=1$ (treatment), whereas for a non-participant household, $T=0$ (control).

Because of selection bias, Equation (1) cannot give robust estimates. Therefore, the impact of PSNP is obtained by:

$$E(Y^1/T = 1) - E(Y^0/T = 0) \dots\dots\dots 8$$

Where $T=1$ stands for participation in PSNP and “0” otherwise.

In order to net out the true effect of the program on livelihood outcome, the model is re-specified as follows by subtracting and adding the counterfactual for the treated group:

$$E(Y^1/T = 1) - E(Y^0/T = 1) + E(Y^0/T = 1) - E(Y^0/T = 0) \dots\dots\dots 9$$

Collecting like terms, equation (3) becomes:

$$E(Y^1 - Y^0/T = 1) + E(Y^0/T = 1) - E(Y^0/T = 0) \dots\dots\dots 10$$

The first part before the plus sign refers to the Average Treatment Effect on the Treated (ATET)

$E(Y^1 - Y^0/T = 1)$, whereas the second part is the selection bias $(E(Y^0/T = 1) - E(Y^0/T = 0))$. Using these procedures, treatment effects models reduce selection bias.

In this study, the application of treatment effects models was a carefully considered choice, primarily due to the unique characteristics of our data (since households were not selected randomly when they joined the program, inducing selection bias and research design (quasi-experimental). Unlike randomized controlled trials, the program did not use randomization, which would have simplistically allowed for causal inference. Additionally, finding a suitable instrument for instrumental variables (IV) analysis proved to be challenging, as instruments are often necessary when addressing endogeneity issues. Furthermore, the absence of a clear cut-off

or threshold made it difficult to employ regression discontinuity analysis effectively. As our dataset was cross-sectional, the classic difference-in-difference model, which typically relies on pre- and post-treatment observations, was not applicable. Given these constraints, treatment effects models emerged as the most appropriate approach to estimate and understand the causal relationships in our study, allowing us to control for covariates and account for potential biases while assessing the impact of the treatment or intervention, i.e, productive safety net program.

3.2.2 Variable Description

The variables used in this study include demographic, socio-economic and institutional factors. Table 6 describes these variables and how they are measured.

Table 6: Results of the Beta regression Model

Variables	Description	Measurement
Household size	Number of people living in a family	Number
Age of the household head	Age of the head of the household	Years
Gender of the household head	Whether the head of the household is male or female	Dummy variable (1=female and 0= male)
Education level of the household head	The level of schooling the household head attended	Years
Engagement in off-farm activities	Whether the household gets involved in off-farm income-generating activities	A dummy variable (1= Yes and 0= No)
Engagement in non_farm activities	Whether the household gets involved in off-farm income-generating activities	A dummy variable (1= Yes and 0= No)
Household Dietary Diversity	Different food groups are considered	Number
Livestock ownership (TLU)	Number of livestock a household owns	In Tropical Livestock Units using standard conversion factors
Access to credit	Whether the household has got access to credit or not	A dummy variable (1= Yes and 0= No)

3.2.3 Characteristics of Respondents

Table 7 provides descriptive statistics for several variables related to households. These variables include household size, age of the household head, gender of the household head, education level of the household head, engagement in off-farm activities, engagement in non-farm activities, household dietary diversity, livestock ownership (measured in TLU or Tropical Livestock Units), and access to credit. For household size, the average household in this dataset consists of approximately six people (with a standard deviation of 1.96.), with most households having between four and eight members. The minimum household size recorded is two, while the maximum is ten. The result also shows that the average household head is in their mid-forties (with a standard deviation of 13.61), but there is a significant amount of variation in age across the dataset. The minimum age recorded is 14, while the maximum is 90.

Table 7: Descriptive statistics

Variables	N ^a obs	mean	Std. dev	Min	Max
Household size	300	5.89	1.96	2	10
Age of the household head	284	44.41	13.61	5	90
Gender of the household head	284	0.71	0.45	0	1
Education level of the household head	283	3.91	4.45	0	18
Engagement in off_farm activities	300	0.04	0.20	0	1
Engagement in non_farm activities	300	0.20	0.40	0	1
Household Dietary Diversity	300	3.51	1.85	0	8
Livestock ownership (TLU)	300	2.99	2.16	0	11.84
Access to credit	300	0.32	0.47	0	1

Source: Own analysis from the survey data

The mean of the gender variable is 0.71, suggesting that the majority of household heads in this dataset are female. The education level of the household head is measured on a scale of 0-18, with higher scores indicating greater levels of education. The mean education level is 3.91, with a standard deviation of 4.45. This suggests that, on average, household heads in this dataset have

completed some primary education, but there is a significant amount of variation in education levels.

Table 7 also includes information on whether households engage in off-farm and non-farm activities, with means of 0.04 and 0.20, respectively. Household dietary diversity is another variable listed, with a mean of 3.51 and a standard deviation of 1.85. The livestock ownership variable is measured in TLU (tropical livestock units) and has a mean of 2.99 and a standard deviation of 2.16. Finally, the table includes information on access to credit, with a mean of 0.32, indicating that about a third of households in the sample have access to credit.

3.2 Results and Discussion

3.3.1 Results of Inferential Statistics

Table 8 displays the results of an independent samples t-test comparing the means of members and non-members of the Productive Safety Net Program (PSNP) for three variables: Assets, Resilience, and Log of Income. For each variable, the table presents the mean and standard deviation for both members and non-members of the PSNP, as well as the difference between the means, the t-value, and the p-value. Overall, the results suggest that members of the PSNP have lower levels of assets and resilience, and significantly lower levels of income compared to non-members.

Table 8: Results of the independent samples ttest

<i>Variables</i>	<i>Membership in PSNP</i>	<i>Mean</i>	<i>Std. dev</i>	<i>Difference</i>	<i>t</i>	<i>p</i>
Assets	Non_members	0.297	0.130	0.068	4.5316	0.0000
	Members	0.228	0.132			
Resilience	Non_members	0.516	0.157	0.090	4.5501	0.0000
	Members	0.426	0.183			
Log of income	Non_members	5.757	0.067	0.304	3.0479	0.0025
	Members	5.453	0.074			

Source: Own analysis from the survey data

The results indicate that for all three variables, there is a significant difference between the means of members and non-members of the PSNP. For Assets, the mean for non-members is 0.297, with a standard deviation of 0.130, while the mean for members is 0.228, with a standard deviation of 0.132. The difference between the means is 0.068. The t-value is 4.5316, and the p-value is 0.0000, indicating that the difference is statistically significant at 1% level.

Similarly, for Resilience, the mean for non-members is 0.516, with a standard deviation of 0.157, while the mean for members is 0.426, with a standard deviation of 0.183. The difference between the means is 0.090. The t-value is 4.5501, and the p-value is 0.0000. For Income, the mean values are presented in logarithmic form. Accordingly, the mean for non-members is 5.757, with a standard deviation of 0.067, while the mean for members is 5.453, with a standard deviation of 0.074. The difference between the means is 0.304 or 30.4%. The t-value is 3.0479, with the p-value of 0.0025 showing significance at 1% level.

3.3.2 Results of the Treatment Effects Models

The analysis of the Productive Safety Net Program (PSNP) in Ethiopia, utilizing various algorithms such as regression adjustment, inverse probability weighting, and propensity score matching, indicates no statistically significant impact on access to basic services (Table 9). Although all three algorithms show negative coefficients, suggesting a potential decrease in access to basic services, none of these coefficients demonstrate statistical significance at conventional levels ($p > 0.05$). These findings align with similar studies, like Davis et al. (2017), Davis and Handa (2018) emphasizing the PSNP's had no significant impact on food security or health outcomes and access to education or health services in Ethiopia, respectively. However, it is crucial to note that the absence of a significant impact on access to basic services does not necessarily imply the program's ineffectiveness. The PSNP might still have other vital impacts, such as poverty reduction or agricultural productivity enhancement, despite these findings.

Regarding its impact on income, the PSNP shows no significant effect across the applied algorithms, consistent with prior research indicating inconsistent or null effects on income in

Ethiopia and other global contexts (Dammert, 2008; de Brauw, Mueller, and Woldehanna, 2013; Hassen Habib, Mohamed Abdirizak, and Abdukerim Ahmed, 2023). Despite observed improvements in food security and poverty reduction, studies highlight limited impacts on income or consumption among program participants. For example, a study by Dammert (2008) found that the government's Productive Safety Net Program in Ethiopia had a positive impact on food security and asset accumulation, but no significant impact on income. Another study by de Brauw, Mueller, and Woldehanna (2013) found that PSNP participants had lower levels of income and assets, but higher levels of food security and social capital compared to non-participants. A more recent study by Hassen Habib, Mohamed Abdirizak, and Abdukerim Ahmed (2023) also found that the program had no significant impact on income or consumption but did improve food security and reduce the risk of being in poverty. Similarly, a study by Feyisa (2021) on the same program found that it reduced poverty and increased food security but had no significant impact on household income.

These inconsistent findings are not unique to Ethiopia. In sub-Saharan Africa, a study by Coady, Grosh, and Hoddinott (2004) on social safety nets found that while cash transfer programs had positive effects on consumption and food security, they did not have a significant impact on income. Similarly, a study by Prifti, Daidone, and Davis (2019) on the social cash transfer program in Zambia found that while the program improved the welfare of its beneficiaries, it had no significant impact on household income. A study by Devereux (2016) on the effects of social protection programs in Africa also found that while these programs had positive impacts on health and education outcomes, they did not significantly increase income

Table 9: Impact of PSNP on livelihood outcomes

Algorithm	Access to Basic services	Income	Food Expenditure	Asset Ownership	Adaptive Capacity	Dietary Diversity
Regression Adjustment	-0.0005 (0.0107)	0.3929 (0.5969)	-0.2964*** (0.1016)	-0.0626*** (0.0156)	-0.0065 (0.0225)	0.0224 (0.2233)
Inverse Probability	-0.0008	0.4011	-0.2976***	-0.0624***	-0.0071	0.0234

Weighting	(0.0108)	(0.5987)	(0.1014)	(0.0157)	(0.0226)	(0.2240)
Propensity score Matching	-0.0066 (0.0118)	0.2540 (0.7022)	-0.3183*** (0.1164)	-0.0609*** (0.0175)	0.0006 (0.0247)	-0.1165 (0.2440)

n=284

Source: Own analysis from the survey data

Globally, a study by Devereux (2016) on social protection programs found that while cash transfers had positive effects on poverty reduction and human development outcomes, the evidence on their impact on income was inconclusive. Similarly, a study by Prifti et al. (2019) on the impact of social protection programs on income in low- and middle-income countries found that while these programs had positive impacts on poverty reduction and well-being, they did not necessarily increase income. A study by Hidrobo, Hoddinott, Kumar, and Olivier (2018) on the impact of cash transfer programs in Asia and the Pacific found that while these programs reduced poverty and improved food security, they did not significantly increase income.

Examining food expenditure, all three models in Table 4 present negative and statistically significant coefficients ($p < 0.05$), suggesting that PSNP participation is linked to decreased food expenditure. These findings are consistent with previous studies that have also found a negative or null impact of social protection programs on food expenditure in Ethiopia, Africa, and globally. For example, a study by Feyisa (2021) found that the PSNP had no significant impact on food expenditure in Ethiopia, but did improve food security and reduce the risk of being in poverty. Another study by Prifti et al. (2019) found that the PSNP had no significant impact on food security or health outcomes in Ethiopia.

In sub-Saharan Africa, a study by Devereux (2023) on social protection programs found that while cash transfer programs had positive effects on food consumption, they did not have a significant impact on food expenditure. Similarly, a study by Bastagli et al. (2018) on social protection programs globally found that while cash transfers had positive effects on poverty reduction and human development outcomes, the evidence on their impact on food expenditure was inconclusive. The negative impact of the PSNP on food expenditure may reflect the

challenges of designing effective social protection programs that address the multidimensional nature of poverty, particularly in contexts of high food insecurity and limited access to basic services. It is possible that the PSNP is not providing sufficient support to its beneficiaries to maintain or increase their food expenditure, or that the program's implementation and targeting mechanisms are not reaching those who need it the most.

As depicted in Table 9, the negative and significant coefficients obtained from all the three treatment effect models suggest that the Productive Safety Net Program has a detrimental impact on asset ownership among member households. This means that the program leads to a reduction in assets owned by households that participate in the program. These results are consistent with findings from other studies on safety net programs in Ethiopia and Africa. For instance, a study by Zeng et al. (2018) found that Ethiopia's Productive Safety Net Program had a negative impact on asset accumulation, particularly for households that had been participating in the program for several years. Another study by de Brauw et al. (2013) found that the program had a negative impact on asset accumulation and household welfare in Ethiopia's Tigray region. Another study by Tassew et al. (2018) found that PSNP participation was associated with lower levels of household assets compared to non-participants. These findings are also consistent with similar studies conducted globally. A review by Hidrobo et al. (2018) found that safety net programs in Africa, Asia, and Latin America often had negative effects on asset ownership and other dimensions of household welfare. There could be several reasons why safety net programs have a negative impact on asset ownership. For example, programs that provide cash transfers or food aid may discourage households from investing in income-generating activities or other long-term assets. Additionally, households that receive transfers may become dependent on the program, leading to a decline in their willingness to invest in productive assets.

In terms of adaptive capacity, the analysis in Table 9 indicates no significant effect of the PSNP across households. These findings are consistent with previous studies on the PSNP's impact on adaptive capacity. For example, a study by Baynachew, Thaddeus, Emmanuel, and Ngozi (2019) found that the PSNP in Ethiopia had a limited impact on enhancing adaptive capacity, particularly in terms of diversifying livelihoods and increasing access to education and health services. Another study by Beyene, Senapathy, Bojago, and Tadiwos (2023) found that the PSNP

had little impact on the adaptive capacity of rural households in Ethiopia, particularly in terms of reducing their vulnerability to shocks and stresses.

Similarly, a study by Andersson et al. (2011) found that PSNP participation was associated with lower levels of resilience in Ethiopia. These results are also consistent with similar studies on the impact of safety net programs on adaptive capacity in other regions of Africa and globally. For instance, a study by Galing and Chase (2017) found that a cash transfer program in Tanzania had limited impact on the adaptive capacity of households, particularly in terms of improving their access to education and health services. Another study by Hidrobo et al. (2018) similarly found that the Productive Inclusion Program (PIP) in Honduras had little impact on improving the adaptive capacity of poor households, particularly in terms of diversifying their income sources and reducing their exposure to shocks. This finding is also consistent with other studies that have found limited impact of safety net programs on adaptive capacity. For instance, a study by Béné, Headey, Haddad, and von Grebmer (2015) found that social protection programs in Ethiopia and other African countries have had limited impact on the resilience of vulnerable households to climate change.

Regarding household dietary diversity, the study reveals no significant effect of the PSNP on dietary diversity in the study area. This finding is consistent with other studies on the PSNP's impact on household dietary diversity in Ethiopia. For example, a study by Sibhatu et al. (2015) found that the PSNP had no significant effect on the dietary diversity of rural households in northern Ethiopia. Similarly, a study by Gazeaud and Stéphane (2020) found that the PSNP did not significantly improve the dietary diversity of rural households in southern Ethiopia. These results suggest that the PSNP may not be effectively addressing the underlying causes of food insecurity and malnutrition in the study area, such as poverty and limited access to diverse food sources.

Similar studies on the impact of safety net programs on dietary diversity in other regions of Africa and globally have also found mixed results. For example, a study by Hirvonen et al. (2017) found that cash transfers in Kenya led to significant improvements in dietary diversity among recipient households. However, a study by Kilburn et al. (2018) found that a cash transfer

program in Zambia had no significant impact on dietary diversity. These differences may be due to variations in the design and implementation of the programs, as well as differences in the socio-economic and cultural contexts in which they are implemented.

In a nutshell, while the PSNP demonstrates impacts in certain areas like food security and poverty reduction, the findings underscore challenges in achieving significant positive impacts across various dimensions of livelihoods. They emphasize the necessity for refined program designs and implementations to effectively address the multifaceted nature of poverty among vulnerable populations in Ethiopia.

3.3 Conclusions and Policy Implications

3.4.1 Conclusions

The article discusses the results of a study on the impact of the Productive Safety Net Program (PSNP) in Ethiopia on access to basic services, income, food expenditure, dietary diversity and adaptive capacity. The study used three different algorithms to analyze the data: regression adjustment, inverse probability weighting, and propensity score matching. The results indicate that there is no statistically significant impact of the PSNP on access to basic services based on all three algorithms. The results also indicate that there is no significant impact of the PSNP on the income, dietary diversity and adaptive capacity of its members based on all three algorithms.

The results further indicate that there is a statistically significant negative impact of the PSNP on food expenditure and asset ownership based on all three algorithms. This suggests that the PSNP is associated with a decrease in food expenditure and assets suggesting that intermittent cash hand-outs are not adequate to cover expenses for food leading to asset rundowns, which is against the very objective PSNPs are designed. It is important to note that the null or mixed findings in this study may reflect the challenges of designing effective social protection programs that address the complex and multidimensional nature of poverty. The PSNP aims to provide both immediate relief and long-term investments in human capital and productive assets, which may require a longer timeframe and more nuanced measures of impact to assess fully. Additionally, the findings may be context-specific and may not generalize to other settings or

programs. Further research is needed to identify effective approaches to social protection that can improve the income and well-being of vulnerable populations.

3.4.2 Policy Implications

Based on the findings, we suggest that policy makers consider the following interventions:

1. Given the lack of significant impact on access to basic services and income, it may be necessary to reassess the design and implementation of the productive safety net program in Ethiopia to ensure that it effectively addresses the complex and multidimensional nature of poverty.
2. Consider the context-specific factors that may affect the impact of the program on the income and well-being of beneficiaries, including the socio-economic and political conditions of the beneficiaries and the implementation of the program.
3. To address the negative impact of the productive safety net program on food expenditure, policy-makers should consider complementary programs that focus on improving food security, such as agricultural extension services, seed and fertilizer subsidies, and other nutrition interventions.
4. It may also be necessary to identify effective approaches to social protection that can improve the income and well-being of vulnerable populations, both in Ethiopia and globally, through further research and evaluation of existing programs.
5. Future studies may use more nuanced measures of impact and a longer timeframe to fully assess the effectiveness of the productive safety net program in Ethiopia.

CHAPTER 4: INSTITUTIONAL ARRANGEMENT AND POLICY IMPLICATIONS: THEIR ROLE IN SHAPING THE EFFECTIVENESS OF THE ETHIOPIA PRODUCTIVE SAFETY NET PROGRAM

Abstract

The objective of this research is to investigate the influence of institutional arrangements and policy considerations on the effectiveness of the Productive Safety Net Program in Ethiopia's Wolaita zone. By examining the role of local institutions and community-level organizations in the delivery of PSNP benefits and emphasizing transparency and accountability, this research seeks to contribute to a deeper understanding of how social protection programs can be optimized to meet the unique needs and challenges of local communities, ultimately leading to more effective poverty reduction and food security outcomes. A qualitative research design was employed, using desk reviews and key informant interviews as primary data collection methods. The desk review involved a comprehensive analysis of policy documents, program guidelines, and reports associated with the conception, execution, and assessment of safety net programs in Ethiopia. The findings underscore two significant challenges: i) the lack of accountability was identified as a significant obstacle to the implementation of social welfare policies..; ii) staff turnover, particularly at higher organizational levels, also emerged as a substantial concern that undermines institutional memory and program continuity. The findings of the study suggest that to enhance the effectiveness of social welfare policies, there is a need to establish robust mechanisms for accountability, outlining roles and responsibilities for all relevant entities and institutions. Additionally, the study suggests the implementation of regular assessments and oversight of accountability through well-defined indicators and frameworks. Furthermore, guidelines should be developed to systematically document and report good practices and lessons learned, facilitating knowledge-sharing platforms enabling the replication of successful strategies. Lastly, the research underscores the importance of implementing a structured system for capturing and disseminating valuable information.

Key words: Productive safety net program, institutional arrangements, qualitative analysis, Wolaita, Ethiopia

4.1 Introduction

The Government of Ethiopia has shown a strong commitment to implementing social protection programs to curb poverty and food security challenges as well as a multitude of shocks they face. Nevertheless, the country still faces challenges in addressing poverty and food insecurity (World BankWorld Bank, 2021). One of the main social protection programs implemented in Ethiopia is the Productive Safety Net Program (PSNP), which aims to provide income support and asset-building opportunities to poor and food-insecure households in rural areas (FDRE, 2019).

While some studies have assessed the PSNP in Ethiopia, there still remains a critical gap in empirical research regarding the program's institutional arrangements and policy implementation. For instance, Bethelhem (2024) studied the contribution of a productive safety net program on livestock accumulation and children's education in Ethiopia. Woldehanna et al (2014) examined the direct effect of PSNP on reducing poverty using fiscal incidence analysis. They indicated that the program payments reduce poverty by about 6 percent owing to the fact that the program was well-targeted. In fact, Berhane et al (2027) contend that the amount of payment relative to work requirements matter in determining the impact of PSNP on livelihood outcomes (such as child labor and educational attainments), indicating that lower payments relative to work requirements resulted in lower academic performance of girls and boys and increased labor child labor in family farms. The opposite holds true for a higher payment relative to PSNP work requirements.

Despite the fact that effective policy implementation ensures that the program is implemented as intended and achieves its objectives (Assefa & Lavers, 2015), there is limited understanding about the nuances of how the program works in terms of its institutional arrangements and its policy implications. More importantly, the challenge lies in understanding how the specific institutional arrangements and policy implications of the PSNP can be tailored to local contexts, like the Wolaita zone, where the program has been implemented since its inception (FDRE, 2019). It is essential to investigate how these arrangements and policies are designed, implemented, and adapted to local conditions and how they influence the program's outcomes and impact on addressing poverty and food insecurity in Ethiopia. This research, therefore, adds

value to the existing literature by bridging this critical gap through examining the role of institutional arrangements and policy implications in shaping the effectiveness of the Ethiopian Productive Safety Net Program, focusing on the specific context of the Wolaita zone.

4.2 Review of Related Literature

4.2.1 Institutional Arrangements and Coordination Mechanisms

The effectiveness of the Productive Safety Net Program (PSNP) in Ethiopia is intrinsically tied to the strength of its institutional arrangements and the coordination among various stakeholders. A study by REACH project stated that the program was scaled up quickly so coordination was necessary from the level of government and international donors who provided extensive funding (cash and in-kind) and technical expertise (on operating procedures, design, and resources of a rural safety net) for government administrators and policy-makers all the way to the community level where regional and local administrators selected beneficiaries, administered food and/or cash transfers, conducted the public works programs and fostered linkages for beneficiaries to other social programs run by NGO (REACH, 2019).

These institutional structures are the cornerstone upon which the program's success is built. Effective coordination mechanisms among government ministries, non-governmental organizations (NGOs), and local communities are pivotal. The Ministry of Agriculture and Ministry of Finance, along with regional and local administrations, play significant roles in program design and execution. Ensuring seamless collaboration among these entities is essential to facilitate the smooth implementation of PSNP (Thomas et.al., 2020). A tripartite MOU has been developed and signed by the three ministries involved in coordinating and delivering this Output, namely MoA, MoLSA and MoH (MOA, 2020). The MOU documented and described the roles and responsibilities and institutional arrangements for all actors at various levels of government. MoA-FSCD as the program coordinator will facilitate the process of jointly developing and signing of the MoU (MOA, 2020).

The PSNP platforms, such as the kebele and woreda level Food Security Taskforce, serve as a means to connect people to social services, address issues through sharing relevant information and monitor and improve the efficiency of the referral mechanism. To achieve this, the ToRs of

the PSNP coordination mechanisms need to be revised in order to clearly define the roles and responsibilities of each institution represented, as well as those involved in the referral mechanism (MOA, 2020).

Research has shown that strong institutional arrangements can enhance the responsiveness and adaptability of the program. These structures help in the allocation of resources, the establishment of clear responsibilities, and the establishment of reporting mechanisms, enabling efficient use of resources (UNDP, 2017). Furthermore, they facilitate the dissemination of relevant information, which is critical for the successful implementation of the program. However, challenges can arise in maintaining these institutional arrangements, as changes in leadership or a lack of adequate funding may disrupt the coordination among stakeholders (Clinger, 2016). Therefore, sustaining institutional arrangements over time and across different regions is an ongoing challenge.

4.2.2 Policy Implementations and Challenges

The success of Ethiopia's Productive Safety Net Program (PSNP) depends not only on sound policy design but also on effective implementation. In order to design programs that improve the livelihoods of its target clients, it is crucial to involve the community for at least three reasons. Firstly, this approach helps programs to look beyond their life cycle and facilitate sustainable livelihoods for clients. Secondly, it enables a sense of ownership among the community, paving the way for better program implementation. Thirdly, individuals have the right to participate in programs implemented in their communities (Lema and Cochrane, 2020). They suggested that involving the community in the design and implementation of programs is essential for their success.

Administrative bottlenecks, bureaucratic procedures, or logistical issues often cause these delays. Timely distribution of resources to beneficiaries is fundamental for reducing their vulnerability, and research shows that it is crucial for the program's success. The Ethiopia social protection policy clearly defines the importance of focusing inclusive and protective based social safety net approach. The policy further stated that the establishment of a scalable SafetyNet that can

expand in coverage, including to urban areas, and value of transfer, is a measure to protect vulnerable people from the negative effects of shocks (MoLSA, 2012). This instrument prevents poor and vulnerable households from further sliding into poverty and is thus a key element of a more comprehensive social protection policy (MoLSA, 2012).

Moreover, transparency in resource allocation and distribution plays a significant role in building trust among beneficiaries and stakeholders. It is important to ensure that resources reach the intended recipients to avoid any perception of unfairness or corruption, which can erode public trust. Consultations held during the (2014) PSNP 4 ESAC revealed the potential for targeting errors that, as with anywhere where there are unequal socio-economic dynamics, could result from favoritism or corruption (i.e. kebele leadership or other economically influential community members could misuse resources to their benefit) (MOARD, 2017). Other study conducted by the World Bank (2010) revealed that While the Roving Appeal Audit found that the KAC is widely accepted, a household survey in 2008 found that among households that described the targeting process as unfair, roughly 23% lodged a formal complaint.

4.2.3 Local Context and Community Involvement

The local context in Ethiopia is far from homogeneous, and understanding the unique socio-economic and environmental conditions of each region is imperative for the success of the Productive Safety Net Program (PSNP). Research has repeatedly underlined that program effectiveness relies on policies tailored to the specific needs and conditions of local areas (Muktar, 2012). The PSNP's approach to community involvement recognizes the importance of local communities in decision-making processes and program implementation. The involvement of beneficiaries, community leaders, and local institutions has been found to enhance the program's effectiveness. Their knowledge of local dynamics, needs, and cultural nuances is invaluable. One of the key activities of PSNP is regional, woreda, and kebele management on their program responsibilities, accountability arrangements designed to ensure effective performance, and leadership and management skills (MOA, 2020).

Local context and community involvement intersect significantly. Tailoring policies to the local context can only occur through the active engagement of local communities (Lea den Broeder et al., 2017). The study further explains that community participation is considered as a good method to gather specific information about local circumstances, adding up to expert knowledge. This participatory approach can also foster a sense of ownership among beneficiaries, strengthening their commitment to the program.

4.2.4: Monitoring and Evaluation

Effective monitoring and evaluation mechanisms are essential for the success of the Productive Safety Net Program (PSNP) in Ethiopia. Ensuring the quality implementation of such a large and complex program has been, and remains, a significant challenge for the PSNP (World Bank/UNDP, 2010). It has required a continuous and iterative process of strengthening the monitoring, evaluation, and quality assurance systems and mechanisms used by the Government of Ethiopia (GoE) which means Over the longer term, this work should contribute to lasting improvements in government capacity (World Bank WORLD BANKWORLD BANK, 2010).

The effectiveness of monitoring and evaluation also depends on the quality and availability of data. Monitoring and evaluation (M&E) are essential strategic components of safety net program management. Information produced by M&E is vital in providing feedback to enhance program effectiveness, making projects accountable to the public, and helping the government better allocate budget resources (World Bank, 2012). Ensuring that data is accurate and up-to-date is a challenge in many contexts. Additionally, capacity building is often necessary to enhance the skills of those responsible for conducting evaluations. the perceived and actual lack of commitment between various stakeholders to formalize and maintain the sharing of information and knowledge at all phases of the response undermined trust, long-term relationships, and system-wide knowledge management which could have increased efficiency and effectiveness in service delivery (the ‘Alliance’, 2019).

4.2.5 Gender and Social Inclusion

The impact of the Productive Safety Net Program (PSNP) in Ethiopia is not the same for all demographic groups. Research and policy efforts have focused on recognizing these disparities and integrating strategies for gender equity and social inclusion (MoLSA, 2012). Gender disparities have been a major concern. Studies show that the program can have different effects on men and women. Attanasio and Lechêne (2002) found that an increase of one percentage point in the wife's share of income led to an increase of about 7 percentage points for the food budget, 1.2 percentage points for girl's clothing, and 0.7 percentage points for boy's clothing. It also led to a decrease in alcohol and tobacco consumption. It is crucial to understand and address these differences. Gender-sensitive policies aim to reduce inequalities and empower women with more opportunities and resources especially there are policies to promote Child nutrition and education.

In addition, social inclusion cannot be ignored. The PSNP has a role in supporting marginalized populations, including indigenous groups, people with disabilities, and other vulnerable communities. It is essential to ensure that policies do not worsen existing inequalities. Socially inclusive policies aim to reduce discrimination and provide equal opportunities for all. However, challenges remain, especially in ensuring effective implementation and enforcement of gender-sensitive and socially inclusive policies. For instance, the differences between men and women in accessing important information on the eligibility criteria have a determinant effect on equity and equal participation in the program (Endris et al. 2020). Therefore, ensuring that participation is inclusive and representative of all beneficiary groups, including women and marginalized populations, is a priority. Beneficiary selection, access to resources, and participation in decision-making processes are areas where disparities can persist.

4.2.6 Capacity Building

Developing the capabilities of local institutions and stakeholders is a crucial element of successful program implementation. Studies have shown that providing training and resources to

enhance the skills and knowledge of those responsible for program implementation can lead to better results (Smith et al., 2019).

Capacity building encompasses a range of activities. It includes training government personnel, local community leaders, and NGO representatives involved in program administration. Additionally, it involves strengthening technical skills such as project management, data analysis, and financial planning, which are necessary for effective implementation. Capacity building can take different forms, such as workshops, seminars, and on-the-job training. It is a long-term investment that yields benefits in terms of more efficient program implementation, better problem-solving, and the ability to adapt to changing circumstances (Jones & Brown, 2018).

Resource constraints and the need for sustainable training programs are common challenges in capacity building. It is important to ensure that the knowledge and skills acquired are retained and transferred within organizations (Garcia et al., 2020).

4.3 Data source and method of analysis

In this study, a qualitative research design was utilized, involving desk review and key informant interviews as the primary data collection methods. The desk review involved a comprehensive analysis of policy documents, program guidelines, and reports related to the design, implementation, and evaluation of safety net programs in Ethiopia. This provided a comprehensive understanding of the existing frameworks and strategies in place.

To gain further insights, key informant interviews were conducted with stakeholders closely involved in the design, implementation, and evaluation of safety net programs. This included government officials, development partners, and community representatives. Purposive sampling was used to select informants with knowledge and experience related to safety net programs. The selection of informants included government officials from relevant ministries and agencies, development partners involved in funding or supporting safety net programs, and community

representatives with direct experience in these programs. By including a range of perspectives, a more comprehensive understanding of the subject matter was achieved.

Data collection through the desk review involved gathering information from various sources, such as government and development partner reports, policy documents, and program guidelines. Key informant interviews were conducted using a semi-structured interview guide, which covered topics related to program design, implementation, and evaluation. Specific areas of focus included targeting mechanisms, beneficiary selection criteria, coordination among stakeholders, monitoring and evaluation systems, and program outcomes.

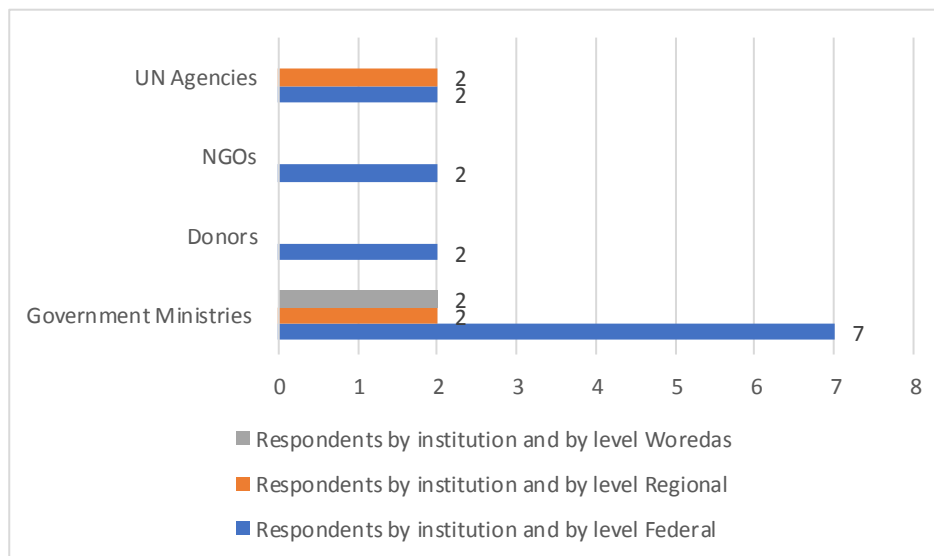


Figure 4: Key informant respondents by institution and level

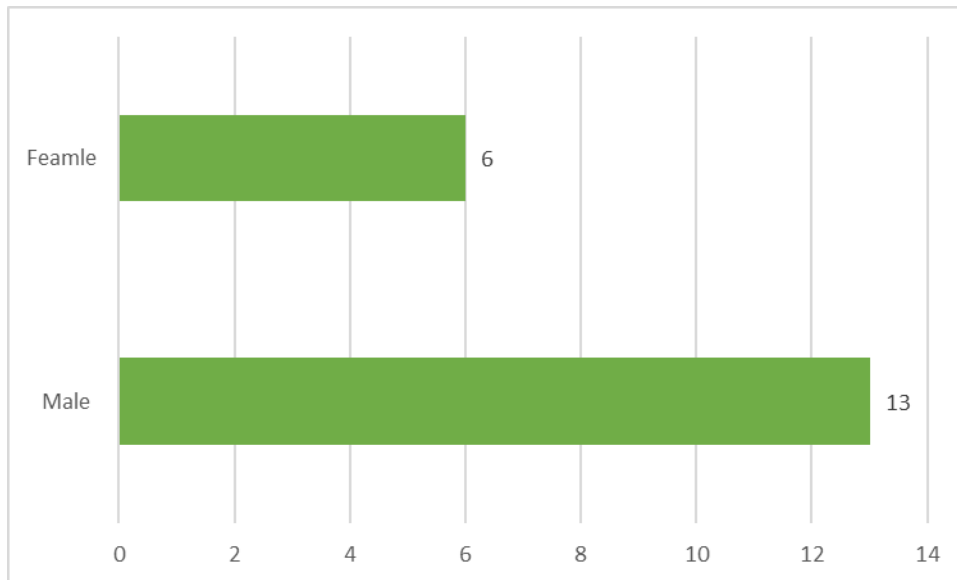


Figure 5:Key informant respondents by Gender

Data analysis employed a thematic analysis approach, focusing on identifying key themes and patterns within the data gathered from both the desk review and key informant interviews. The first step involved organizing and transcribing the data obtained from the interviews to ensure accuracy and completeness. Additionally, data from the desk review, including policy documents, program guidelines, and reports, were carefully categorized and organized. Once the data was properly organized, the thematic analysis commenced. This involved reading through the data, identifying recurring themes and patterns, and assigning relevant codes to segments that shared similar characteristics or content. These coded segments were then grouped under broader categories, allowing for a deeper exploration of the data and identification of overarching themes. Throughout the analysis process, any contradictory or divergent findings or perspectives were duly documented to ensure a comprehensive understanding of the data and avoid bias.

Finally, the researchers interpreted the findings and drew conclusions based on the emergent themes. They searched for patterns, connections, and gaps within the data, facilitating a more thorough understanding of the institutional arrangements that underpinned the implementation and effectiveness of safety net programs in Ethiopia. Any areas requiring further exploration or investigation were also identified and noted

4.4 Results and Discussion

4.4. 1. Policy Design and Implementation

4.4.1.1 Analysis of the policy design and implementation process

Document reviews (MoLSA, 2012) and key informant interviews indicate that Ethiopia has made significant strides in the development and implementation of a range of social welfare policies, among which the social protection policy stands out as a key initiative. The purpose of the PSNP program is to ensure that vulnerable communities have access to essential services. This program supports the Social Protection Policy by reducing the fragmentation of institutional budgets for services that support the same clients, such as safety nets, livelihood support, and health and nutrition services. The PSNP program also aims to promote harmonization between these services and serve as a platform to facilitate easy access to social services for the clients. Such programs have proven essential in addressing various social policy concerns, improving the economic situation of vulnerable communities, and providing the much-needed support through social safety net programs.

The Productive Safety Net Program (PSNP) holds a crucial role within Ethiopia's Disaster Risk Management Policy, as revealed by key informants and documented in a comprehensive study by the Food and Agriculture Organization (FAO, 2022). The policy, designed to integrate disaster risk management seamlessly with sustainable development, aims to transition from a reactive and recovery-based approach to a proactive and multi-sectoral strategy that prioritizes disaster prevention, mitigation, and readiness.

According to key informants, the PSNP5 program, now in its fifth iteration, significantly contributes to shaping the national risk management landscape. The premise that financial transfers can assist impoverished households in navigating climate change-induced shocks is underscored by insights gained through interviews and consultations. The program's Public Works (PWs) component, aimed at addressing root causes, is based on recommendations from these key informants.

“The public work program has had a significant impact on improving the environmental conditions of the areas. For instance, soil and water conservation works are crucial in protecting farmlands from erosion, as well as restoring and maintaining the ecosystem in the area. The program is beneficial not only to the PSNP beneficiaries but also to those who are not part of the program as their lands are protected from degradation and flooding”.

One of the key informants from MOA

Document reviews and insights from key informant interviews underscore the dual objectives of PSNP5: firstly, to mitigate the likelihood of weather-induced shocks causing production setbacks, and secondly, to minimize the impact in the event of such shocks. Emphasizing the aim to enhance the resilience of households and communities, PSNP5 seeks to enable them to better withstand the impacts of disasters.

As part of its strategic adjustment, PSNP5, informed by document reviews and key informant input, aims to strengthen its response tools. This involves augmenting the contingency budget, improving disaster risk financing mechanisms, and mobilizing humanitarian resources. These measures, according to key informants, establish an efficient delivery system that ensures timely and appropriate responses, facilitating communities in preparing for and responding to disasters by transitioning from reactive to proactive disaster management strategies. Document reviews highlight the significance of the PSNP’s cash transfer program, aligned with the National Nutrition Policy (MoLSA, 2012), which empowers households by providing the means to purchase essential food items, particularly during tough times.

At the forefront of Ethiopia’s pursuit of a Climate Resilient Green Economy (CRGE), PSNP plays a pivotal role, as indicated by key informants and documented evidence. Launched in 2011, the CRGE initiative aims to elevate Ethiopia to middle-income status by 2025, fortifying the nation against climate change impacts and minimizing greenhouse gas emissions. Information from key informants underscores the commendable outcomes resulting from the PSNP’s involvement in this overarching objective.

“The Protection of forests and reforestation are important pillars of the CRGE, and the Prime Minister's office has been actively involved in promoting them. The PSNP program has given great emphasis to this initiative, with major activities focused on tree planting and protecting forests”

A key informant from Woreda Bureau of Agriculture

The impact of PSNP’s contributions, according to key informants, is most noticeable in the context of the Ethiopian government’s CRGE initiative. The achievements, as documented and highlighted by key informants, result from a comprehensive approach encompassing soil and water conservation, infrastructure development, and large-scale reforestation projects. Together, these initiatives have, according to key informants and document reviews, significantly improved food security and proactively mitigated environmental and climate-related consequences.

4.4.1.2 Factors that hinder policy implementation

Ethiopia has implemented various social welfare policies, notably the Productive Safety Net Program (PSNP), but encounters challenges that impede the successful execution of these policies. Despite their well-defined goals, the PSNP and other programs confront obstacles that affect their efficacy. One pivotal factor hindering policy implementation is the manipulation of the beneficiary selection process. Individuals with greater influence within the community sometimes exploit their position to serve personal interests, diverting resources from the intended communities. This compromises the program’s ability to effectively address the needs of vulnerable populations, potentially undermining the integration of social protection policy objectives.

Insightful key informant interviews underscore the program’s emphasis on the meticulous targeting and selection of beneficiaries. This approach aims to include the most marginalized communities, specifically those classified as the "poorest of the poor." However, challenges arise in the beneficiary selection process. Instances reveal individuals with significant community influence manipulating and diverting the selection process for personal gain, highlighting the complexity of balancing community dynamics and policy implementation.

Similar challenges are evident in other countries where social safety nets are implemented in rural settings. A recent study suggests improving the targeting of Social Safety Nets (SSNs) to protect those in need while minimizing leakages. Integrated information systems and robust administrative capacity are recommended for enhanced targeting efficiency (Gigineishvili et al., 2023).

“One of the main issues with the program is the selection process. There are instances where high-ranking officials at lower levels abuse their power and favor their own groups during the selection process. This is evident when some deserving individuals who meet the livelihood criteria are excluded from the beneficiary list, while some non-deserving individuals are included”. A key informant from the NGO

External factors such as recurring droughts, the unforeseen impact of the COVID-19 pandemic, and disruptive conflicts pose significant challenges to the implementation of social welfare policies. Another study indicates that the COVID-19 shock led to a significant output contraction and increased poverty and inequality (Gigineishvili et al., 2023). These adversities hinder the PSNP’s livelihood and asset provision programs, impeding their alignment with broader disaster risk management policies. Such external factors can disrupt program trajectories and impede desired outcomes.

Moreover, challenges related to delays in disbursing cash transfers, the impact of inflation, and selective timing of transfers compound implementation difficulties. Key informant interviews reveal that the misuse of cash by beneficiaries exacerbates the situation for vulnerable households, hindering their ability to address food needs promptly. Another study emphasizes the need for systematic follow-up and monitoring measures to mitigate risks associated with cash transfer programs (Idris, 2017). Inflation may erode the purchasing power of transferred funds, rendering them insufficient for basic dietary requirements. Additionally, selective timing of transfers may not align with seasonal fluctuations in food availability and prices, leading to imbalanced access to food resources for households.

Information obtained from key informants indicates that addressing these factors necessitates astute management and adaptive strategies. Refining the implementation process, incorporating safeguards, and considering the financial and temporal dimensions of cash transfer programs are crucial for meeting the needs of vulnerable households and achieving the intended outcomes of social welfare policies. Based on document reviews, it is evident that continuous efforts are required to enhance the effectiveness and resilience of these programs in the face of evolving challenges.

4.4.2 Institutional Coordination

4.4.2.1 Overview of actors involved in safety net program implementation

At the federal level, the Ministry of Agriculture and Natural Resources (MOANR) collaborates closely with the Ministry of Labor and Social Affairs (MOLSA) to oversee the implementation of the safety net program, guided by the overarching Rural Job Creation and Food Security Strategy (RJCFSS). According to key informants, the coordination efforts are led by the Food Security Coordination Department (FSCD), which has recently welcomed technical specialists such as a Program Management Advisor and a Food Management Specialist. This department is responsible for orchestrating all aspects of the program, including the designation of focal points for critical areas such as Systems Development, Livelihoods, Public Works, Financial Management, and Food Management.

To enhance communication and collaboration, the FSCD holds monthly managerial gatherings with essential implementing partners as highlighted in key informant interviews. These meetings pave the way for subsequent Joint Coordination and Management Committee (CMC) sessions held monthly. Financial governance and reporting, according to document reviews, fall under the purview of the Ministry of Finance (MOF) responsible for financial management, resource allocation to regions, and overall fund channeling. Simultaneously, key informants note that the FSCD ensures the timely distribution of resources to beneficiaries aligning with approved annual plans and budgets.

The Early Warning Response Department (EWRD) manages the early warning system, activating a response mechanism that guides the utilization of contingency budgets. Key informants point out that the Food Management Unit within EWRD oversees the intricate processes of storing, handling, dispatching, delivering, and monitoring in-kind resources. This ensures a streamlined flow of information and resources within the FSCD's operations.

The Natural Resource Management Department (NRMD) plays a crucial role in supporting implementation through its Public Works Coordination Unit, offering technical coordination and oversight for PSNP public works initiatives. According to key informants, within the FSCD, a dedicated Public Works Focal Point leads coordination efforts. The Livelihoods Implementation and Coordination Unit, also within the FSCD, plays a vital role in orchestrating and supervising livelihood interventions, based on key informant interviews and document reviews. They collaborate with diverse stakeholders through the Livelihoods Implementation Unit and the Livelihoods Focal Point.

"The arrangement within the Food Security Coordination department is highly coordinated, with clear roles and responsibilities assigned to each team member for overseeing the implementation process. Additionally, the Livelihood team has its own set of responsibilities and a separate team to carry out these tasks" A key informant from MOA.

Integral partners in service delivery, according to key informants include the Agricultural Extension Directorate, Livestock Resource Development Sector, FEMSEDA/Urban Job Creation and Food Security Agency, TVETs, FCA, Ministry of Women, Children, and Youth Affairs (MoWCYA), MOLSA, and Microfinance Institutions (MFIs). These partners, as per document reviews, appoint PSNP Focal Points to ensure a structured and coordinated approach. According to key informants, notably, FCA oversees capacity enhancement within Rural Savings and Credit Cooperatives (RUSACCOs) and the establishment and fortification of agricultural cooperatives, fostering comprehensive support for the program.

At all levels, a steering committee oversees the program's overall work at the federal level, comprising directors at ministerial levels and development partners. According to key informants, their primary purpose is to support and ensure donor harmonization in line with the implementation of the PSNP. Similar structures exist at the regional, woreda, and kebele levels under the Ministry of Agriculture, Ministry of Health, and the Ministry of Social Affairs, respectively. Each structure has specific responsibilities in different intervention areas, according to document reviews, with the Ministry of Agriculture taking leadership roles at lower levels. Task forces and councils at the kebele level have direct responsibilities for overseeing implementing activities, functioning appeal systems, and implementing and monitoring the beneficiary selection process, as per information obtained from both document reviews and key informant interviews.

4.4.2.2 Analysis of coordination mechanisms and their effectiveness

While each pillar is led by a government ministry, several institutions play a vital role in providing technical support through the coordination platform. Key informants indicate that monthly meetings are held, allowing representatives from each pillar and their respective institutions to gather, share information, discuss challenges, and collectively devise solutions. Emphasizing the benefits, key informants further noted that this collaborative approach brings together experts with diverse backgrounds and mandates, fostering a more comprehensive and integrated approach to the safety net program.

However, several challenges hinder the effective functioning of the coordination mechanism. The PSNP aimed to tackle the complex drivers of poverty. Accordingly, in order to achieve its ambitious goals of addressing the multifaceted determinants of poverty in Ethiopia and the large scale of the intervention necessary to achieve it, the program required a substantial increase in coordination to accurately identify beneficiaries at every level of implementation compared to similar other food aid programs being implemented in the country (REACH project, 2019). Discussion with key informants reveal that a major obstacle is the lack of accountability, where roles and responsibilities are not fully fulfilled as expected. To address this, it is crucial to establish mechanisms to regulate and measure accountability, ensuring each institution meets its

expectations and obligations. Clear indicators and frameworks for accountability need to be identified and implemented. According to an expert observation, issues related to the PSNP were not given enough priority by other implementing organizations.

Although the implementers acknowledged the importance of assigning specific responsibilities to organs with relevant expertise, they also complained about the lack of a strong coordination mechanism that could effectively integrate the services provided by multiple organs into a coordinated and unified set of services for clients. (MOARD, 2017). Another challenge is staff turnover, particularly at higher levels, which undermines institutional memory and program continuity. Strategies should be developed to retain experienced staff and facilitate knowledge transfer, ensuring the smooth operation and effectiveness of the coordination mechanism.

Besides, an uneven distribution of funds to institutions poses yet another challenge. This prevents institutions from fully utilizing their capacity to support program implementation. Establishing an agreed earmarked budget for each institution will enable equitable resource distribution, ensuring that all have the necessary means to contribute effectively to program objectives. The lack of documentation of good practices also hinders the coordination platform. Without a well-organized system for capturing and reporting lessons learned, valuable information remains untapped. Developing guidelines for documentation and reporting will facilitate knowledge sharing, enabling institutions to replicate successful strategies and improve overall program effectiveness.

During key informant interviews, it was emphasized that inadequate representation at the lower levels of some institutions, such as the Ministry of Social Affairs, hampers their full engagement in the coordination platform. Increasing the presence of resource persons at these levels will ensure proper representation and participation, enhancing the inclusiveness and efficiency of the coordination mechanism.

4.4.2.3 Institutional Roles on Targeting and Beneficial Selection

One glaring issue unveiled through key informant interviews pertains to the inefficient administrative processes within the PSNP. The interviews underscored bureaucratic hurdles and notable delays in program implementation. These challenges go beyond mere procedural inefficiencies; they hinder the timely distribution of benefits to vulnerable populations. The current administrative bottlenecks pose a significant problem, impeding the program's effectiveness and potentially causing dissatisfaction among beneficiaries who experience delays in receiving crucial support.

To overcome these challenges, efficient administrative processes should be established, and local communities and beneficiaries should be involved in monitoring and oversight. Encouraging beneficiary participation in decision-making processes can help improve the transparency and accountability of the program. Besides, to mitigate the identified problems within the Productive Safety Net Program (PSNP) in Ethiopia, the establishment and reinforcement of institutional roles on targeting and beneficial selection emerge as a crucial solution. The key informant interviews have highlighted issues such as inefficient administrative processes, insufficient community involvement, and inadequate monitoring and oversight mechanisms. 'Exploring institutional roles, an excerpt from a key informant shows the following:

"One of the challenges in targeting and beneficiary selection is ensuring adequate representation of all stakeholders in the selection committee. However, some institutions lack a vertical structure at all levels, which hinders their direct involvement in all programs." A key informant interview from MoLSA

4.4.3 Streamlining Administrative Processes:

Incorporating institutional roles dedicated to the improvement of administrative processes is essential. By assigning specific responsibilities to designated entities within the program, such as task forces or specialized units, the PSNP can systematically address bureaucratic inefficiencies. This involves not only identifying bottlenecks but also implementing measures to streamline

workflows, optimize resource allocation, and introduce technological solutions for efficient data management. Clear institutional roles ensure accountability in addressing administrative challenges and contribute to a more responsive and agile program structure.

4.4.3 Enhancing Community and Beneficiary Involvement:

Institutional roles can play a pivotal role in ensuring the active participation of local communities and beneficiaries. By assigning specific responsibilities to engage communities in decision-making processes, such as community liaison officers or local committees, the PSNP can bridge the current gap in community involvement. These institutional roles should facilitate regular consultations, feedback mechanisms, and culturally sensitive approaches to ensure that the program aligns with the unique needs of different communities. This strategy not only enhances the program's cultural appropriateness but also fosters a sense of ownership among beneficiaries.

4.4 Monitoring and Evaluation for Institutional Accountability

Effective monitoring and evaluation mechanisms are essential for tracking progress and ensuring optimal resource utilization, particularly in programs like the Productive Safety Net Program in Ethiopia. The evaluation process involves two key components. Firstly, process evaluations critically assess the program's performance, with a focus on elements such as the precision of beneficiary selection, promptness of fund disbursement, and adherence to program guidelines. These evaluations play a pivotal role in pinpointing bottlenecks and identifying areas requiring improvement in program administration. Secondly, impact evaluations delve into the broader outcomes of the program. They scrutinize its efficacy in alleviating poverty and enhancing food security among the targeted populations. The findings from impact evaluations are instrumental in determining whether the program is successfully achieving its intended goals. Establishing and maintaining a robust monitoring and evaluation system is imperative for making well-informed, data-driven decisions within the context of programs like the Productive Safety Net Program in Ethiopia.

Based on document reviews (REACH project, 2019) and key informant interviews, it is evident that the PSNP has faced various challenges in terms of monitoring and evaluation. In fact, in order to address this issue, the Program Implementation Manual (PIM) has outlined a monitoring and evaluation system, which incorporates progress monitoring, periodic assessments of key program components, household surveys, and impact assessments. However, one recurring issue is the lack of accuracy, timeliness, and comprehensiveness in many PSNP impact evaluations.

‘The most crucial element to ensure effectiveness and efficiency is accountability. However, the program suffers from a weak monitoring and evaluation system, which leads to a lack of reliable data and evidence. Documentation of good practices and lessons learned are not properly captured.’ A key informant interview from Donor groups.

These evaluations often rely on outdated data, hindering their effectiveness in providing meaningful insights. Moreover, the absence of clear, community-based indicators makes it difficult to measure the program’s overall success. For instance, previously, one of the primary indicators used to measure the success of the PSNP was graduation. However, the graduation process itself faces several irregularities including a lack of adherence to graduation criteria, problematic appeals processes, institutional power dynamics, and a high tendency of graduates to relapse into food insecurity after a few seasons.

4.5 Conclusions

In conclusion, strengthening the coordination of safety net programs in Ethiopia requires addressing the challenges of accountability, staff turnover, resource allocation, documentation, and representation. By implementing the proposed recommendations, the coordination platform can significantly contribute to poverty reduction and sustainable development in the country.

- Effective policy implementation requires astute management, adaptive strategies, and the incorporation of safeguards to fulfill the intended outcomes of social welfare policies. Regular meetings facilitate collaborative coordination among different institutions, fostering a comprehensive and integrated approach to the safety net program in Ethiopia.

- Lack of accountability is a major obstacle, necessitating the establishment of mechanisms to regulate and measure accountability and define clear indicators and frameworks for accountability. Issues related to the Productive Safety Net Program (PSNP) not being prioritized by other implementing organizations need to be addressed through a stronger coordination mechanism to integrate services effectively.
- Despite implementing meticulous beneficiary selection procedures, challenges persist in the administration of social welfare policies in Ethiopia. Powerful community figures manipulate the process to their advantage, highlighting the need for robust administrative capacity and integrated information systems to enhance targeting efficiency and timely benefit delivery.
- External factors like recurring droughts, the COVID-19 pandemic, and conflicts disrupt policy implementation and hinder integration with disaster risk management efforts. Misuse of cash by beneficiaries exacerbates household vulnerability, hindering their ability to address food needs. To mitigate risks in cash transfer programs, proper follow-up and monitoring are essential.
- Delays in disbursing cash transfers, inflation, and selective timing of transfers compound implementation challenges, eroding the purchasing power of transferred funds and impacting their effectiveness in meeting basic dietary requirements. To ensure equitable access to food resources, timely cash transfers should align with seasonal fluctuations in food availability and prices.
- Staff turnover, particularly at higher levels, undermines institutional memory and program continuity, highlighting the need for strategies to retain experienced staff and facilitate knowledge transfer. Uneven distribution of funds to institutions hampers their capacity to support program implementation, emphasizing the importance of establishing an agreed-earmarked budget for each institution.

- The lack of documentation of good practices inhibits knowledge sharing and replication of successful strategies, necessitating the development of guidelines for documentation and reporting. Inadequate representation at lower levels of some institutions hampers their full engagement in the coordination platform, highlighting the importance of increasing resource persons at these levels for enhanced inclusiveness and efficiency.

4.6 Recommendations

- The government should establish clear mechanisms for accountability by assigning well-defined roles and responsibilities to each institution involved in the safety net program. Regular assessments and reviews should be conducted to ensure accountability is maintained throughout the program's implementation.
- To strengthen coordination, a more effective mechanism that integrates the services provided by different organizations should be developed. Encourage assigning specific responsibilities to organizations with relevant expertise.
- To ensure program continuity, strategies should be developed to retain experienced staff, especially at higher levels. Knowledge transfer programs should be implemented to facilitate the smooth operation of the coordination mechanism.
- An agreed earmarked budget should be established for each institution to enable an even distribution of funds and ensure that all institutions can utilize their capacity fully and contribute effectively to program objectives.
- Guidelines should be developed for the documentation and reporting of good practices and lessons learned. A well-organized system should also be implemented for capturing and sharing valuable information, allowing institutions to replicate successful strategies and improve program effectiveness.
- To enhance inclusiveness and efficiency within the coordination mechanism, resource persons should be increased at lower levels of institutions that are currently underrepresented in the coordination platform.
- Robust mechanisms for accountability should be established, clearly defining roles and responsibilities for all involved parties and institutions. Regular assessments and regulation of accountability through well-defined indicators and frameworks should also be conducted.

Follow-up and monitoring measures should be implemented to ensure proper handling of cash transfers and mitigate risks.

- To improve the targeting of social safety nets, information systems that consolidate and exchange household data should be integrated to enhance efficiency. Guidelines should also be developed for documenting good practices and lessons learned to facilitate knowledge sharing and replication of successful strategies.

CHAPTER 5: SYNTHESIS AND POLICY IMPLICATIONS

5.1 Overall summary of the study

The study's intricate examination of household resilience in rural Ethiopia provides a nuanced understanding of the dynamics at play, particularly in relation to the Productive Safety Net Program (PSNP). The Chi-square test, employed to categorize households into distinct resilience levels, yielded a significant disparity between PSNP members and non-members. Non-members emerged as notably more resilient (51.3%) compared to their PSNP-affiliated counterparts (34%), shedding light on the nuanced impact of PSNP membership on household resilience.

Delving deeper into the economic dimensions, an independent samples t-test scrutinized monthly per capita food expenditure. The discernible pattern revealed that non-PSNP households exhibited a substantial 30% higher monthly per capita food expenditure, indicative of their more access to economic resources and enhanced food security status. This discrepancy prompted a closer examination of potential contributors, with the transfer value of the PSNP emerging as a plausible factor influencing lower food expenditure among PSNP households. Concurrently, non-PSNP households appeared to leverage increased access to diverse income-generating activities, thereby bolstering their income and subsequently enabling greater spending on food. Importantly, not only did non-PSNP households exhibit higher food expenditure, but they also demonstrated more resilience, emphasizing a capacity to withstand an array of shocks and stresses.

The graphical representation in Figure 2 solidified these findings, showcasing a positive correlation between household resilience levels and monthly per capita food expenditure in Wolaita Zone, SNNPR, Ethiopia. This visual insight reinforced the narrative that higher household resilience correlates with an increased ability to purchase more food, ultimately contributing to improved overall food security—a finding consistent with broader literature.

Structural equation modeling brought an additional layer of depth to the analysis. The study's results underscored the critical role of assets, access to basic services, social safety nets, and adaptive capacity in shaping household resilience. Assets, including land and livestock, emerged

as pivotal predictors, not only providing a buffer against shocks but also affording households greater flexibility in decision-making.

Expanding the exploration to explanatory variables, the study scrutinized factors influencing resilience capacity. The intricate interplay revealed that household head literacy, engagement in non-farm income activities, participation in the productive safety net program, a higher asset index, and access to credit were all associated with heightened resilience. Conversely, female-headed households, larger household size, and engagement in off-farm activities were linked to lower resilience. This multifaceted analysis underscores the intricate web of factors shaping household resilience, emphasizing the need for comprehensive and context-specific strategies.

The comprehensive analysis of the Productive Safety Net Program (PSNP) in Ethiopia, employing advanced statistical techniques such as regression adjustment, inverse probability weighting, and propensity score matching, unveils nuanced insights into the program's impacts across multiple dimensions. The study focuses on access to basic services, income, food expenditure, asset ownership, adaptive capacity, and household dietary diversity.

Firstly, concerning access to basic services, the study finds no statistically significant impact of the PSNP across three different algorithms. While negative coefficients suggest a potential decrease in access, the lack of statistical significance does not necessarily undermine the program's overall effectiveness. It echoes findings from similar studies emphasizing that the absence of significant impacts on access to basic services doesn't diminish the potential positive effects the PSNP might have on poverty reduction or agricultural productivity.

In terms of income, the study consistently reveals no significant effect of the PSNP across various algorithms. This aligns with previous research indicating inconsistent or null effects on income, even though improvements in food security and poverty reduction have been observed among program participants. The study underscores that while the PSNP's impact on income remains inconclusive, its positive effects on food security and poverty reduction are noteworthy.

Examining food expenditure, all three models consistently show a negative and statistically significant relationship between PSNP participation and decreased food expenditure. These findings align with similar studies suggesting that social protection programs, including the PSNP, may face challenges in effectively addressing the multidimensional nature of poverty,

especially in contexts of high food insecurity and limited access to basic services. The study further reveals a detrimental impact on asset ownership among PSNP member households. All three models consistently show negative and significant coefficients, indicating a reduction in assets owned by participating households. These results echo findings from other studies on safety net programs in Ethiopia and Africa, suggesting that programs providing cash transfers or food aid may discourage households from investing in income-generating activities or other long-term assets.

In terms of adaptive capacity, the analysis indicates no significant effect of the PSNP across households. This aligns with previous studies highlighting limited impacts on enhancing adaptive capacity, particularly in terms of diversifying livelihoods and increasing access to education and health services.

The study finds no significant effect of the PSNP on household dietary diversity in the study area, consistent with other studies on the program's impact on dietary diversity in Ethiopia. These results suggest that the PSNP may not effectively address the underlying causes of food insecurity and malnutrition, such as poverty and limited access to diverse food sources.

The analysis of Ethiopia's social welfare policies, particularly the Productive Safety Net Program (PSNP), reveals multifaceted impacts and challenges. The PSNP aligns with the Social Protection Policy, aiming to provide vulnerable communities with access to essential services while reducing institutional budget fragmentation. It plays a crucial role in Ethiopia's Disaster Risk Management Policy, contributing to a proactive, multi-sectoral approach that integrates disaster prevention, mitigation, and readiness. PSNP5, in its fifth iteration, contributes significantly to shaping national risk management. It addresses weather-induced shocks, seeks to enhance household resilience, and adjusts its strategies to strengthen response tools, including increasing the contingency budget and improving disaster risk financing mechanisms. The program also aligns with the National Nutrition Policy, utilizing cash transfers to empower households during challenging times.

In the pursuit of a Climate Resilient Green Economy (CRGE), the PSNP plays a vital role, contributing to environmental sustainability and improved food security. The program's involvement in soil and water conservation, infrastructure development, and reforestation projects positively impacts Ethiopia's CRGE objectives. However, challenges hinder policy

implementation. Manipulation of beneficiary selection processes, external factors like recurring droughts and the COVID-19 pandemic, and administrative issues pose obstacles. The targeting of beneficiaries faces challenges, with influential individuals manipulating the selection process. External factors disrupt program trajectories, and administrative inefficiencies, delays in cash transfers, inflation impacts, and selective timing of transfers compound implementation difficulties.

Institutional coordination involves collaboration between ministries, departments, and partners. While coordination mechanisms exist, challenges such as a lack of accountability, staff turnover, uneven fund distribution, and insufficient documentation of good practices hinder effectiveness. Strategies to regulate accountability, address staff turnover, allocate funds equitably, and document lessons learned are crucial for improvement.

In terms of institutional roles, streamlining administrative processes is vital. Assigning specific responsibilities to address bureaucratic inefficiencies, enhance community involvement, and establish monitoring and evaluation mechanisms ensures accountability, transparency, and program effectiveness. Challenges in monitoring and evaluation, including outdated data and unclear indicators, require attention for meaningful insights and decision-making.

To address these challenges, establishing efficient administrative processes, enhancing community involvement, and strengthening monitoring and evaluation mechanisms are essential. Clear institutional roles, accountability measures, and documentation of lessons learned will contribute to the overall effectiveness and resilience of the PSNP in Ethiopia.

5.2 Overall Conclusion of the study

The study's nuanced analysis not only provides critical insights into the variations in food expenditure and resilience among households but also lays the foundation for targeted policy interventions. Policymakers are urged to consider the multifaceted nature of household resilience, incorporating livelihood diversification strategies and income-generating activities to address food insecurity in rural Ethiopia effectively. The findings underscore the importance of holistic approaches that recognize and leverage the diversity of factors influencing household resilience.

While the PSNP demonstrates positive impacts on food security and poverty reduction, the study highlights challenges in achieving significant positive effects across various dimensions of livelihoods. It emphasizes the need for refined program designs and implementations to effectively address the multifaceted nature of poverty among vulnerable populations in Ethiopia. The inconclusive impact on income, challenges in maintaining access to basic services, and the negative impact on asset ownership underscore the complexity of implementing effective social protection programs.

Finally, enhancing the coordination of safety net programs in Ethiopia requires addressing several key challenges. Accountability, staff turnover, resource allocation, documentation, and representation are identified as crucial areas for improvement. By implementing recommended measures, the coordination platform can play a significant role in reducing poverty and promoting sustainable development in the country. Effective policy implementation necessitates astute management, adaptive strategies, and safeguards to fulfill the intended outcomes of social welfare policies. Lack of accountability poses a major obstacle, emphasizing the need for mechanisms to regulate and measure accountability with clear indicators and frameworks. Challenges persist in beneficiary selection procedures, requiring robust administrative capacity and integrated information systems. External factors like droughts and the COVID-19 pandemic disrupt policy implementation, while issues with cash transfer programs, including delays, inflation, and misuse, need careful monitoring. Staff turnover and uneven fund distribution underscore the importance of retaining experienced staff, establishing earmarked budgets, documenting good practices, and ensuring adequate representation at all levels for an effective coordination platform.

5.3 Recommendations

5.3.1 Accountability Mechanisms

Establishing robust accountability mechanisms is imperative to ensure that all institutions involved in safety net program implementation fulfill their roles effectively. This involves defining clear indicators and frameworks for accountability, enabling transparent monitoring of program activities. Regular audits and evaluations can be conducted to assess the performance of institutions, and corrective actions should be taken promptly if any discrepancies are identified.

Additionally, creating channels for feedback from beneficiaries and local communities can contribute to increased accountability.

5.3.2 Strengthening Administrative Capacity

To address challenges in beneficiary selection procedures, there is a need to strengthen administrative capacity in the study area. This involves streamlining administrative processes to minimize bureaucratic hurdles and delays. Specific units or task forces should be designated to identify bottlenecks, streamline workflows, and incorporate technological solutions for efficient data management. Ensuring community involvement in decision-making processes can also enhance transparency and reduce manipulation by powerful figures, fostering a more inclusive and responsive safety net program. This further helps enhance empowerment of communities in the study area.

5.4.3 Resource Allocation

Ensuring an equitable distribution of funds to institutions is crucial for optimal resource utilization. Establishing an agreed-upon, earmarked budget for each institution involved in safety net programs will help prevent an uneven distribution that hampers capacity. This approach allows each institution to contribute effectively to program objectives. Periodic reviews of resource allocation can be conducted to address any disparities and ensure that financial resources are aligned with the evolving needs of program implementation.

5.3.4. Documentation and Knowledge Sharing

Developing guidelines for documentation and reporting is essential to capture and disseminate good practices not just for the study area but to other areas in the country with similar situations and contexts. This involves creating a systematic approach to record lessons learned, successful strategies, and challenges faced during program implementation. Institutions should be encouraged to share their experiences, and a centralized repository for best practices can be established. This facilitates knowledge sharing among implementing organizations, contributing to a collective learning process.

5.3.5. Strategies for Staff Retention

To address staff turnover challenges in the study area, strategies should be developed to retain experienced personnel, particularly at higher levels. Implementing mentorship programs, providing professional development opportunities, and offering competitive remuneration packages can contribute to retaining skilled staff. Institutional knowledge transfer programs can be established to ensure continuity in program implementation despite changes in personnel.

In summary, the successful implementation of safety net programs in Ethiopia requires a comprehensive approach that addresses challenges in various aspects of coordination. By adopting these recommendations, Ethiopia can strengthen the coordination platform, fostering collaboration among different institutions and contributing to positive outcomes in poverty reduction and sustainable development.

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Annexes

Annex I Household survey questionnaire (HSQ)

Introduction and consent

The purpose of this HSQ is to explore households' vulnerability situations to the changing climate and investigate resilience capacities from adaptive, absorptive and transformative capacities perspectives in Wolaita *Zone*, Southern Ethiopia. This is therefore to collect detailed information on households' vulnerability situations and explore the existing resilience capacities in the face of the changing climate. You are selected randomly for this survey and your participation is based on your willingness to take part. Therefore, your kind cooperation with honest responses to the HSQ will be vital for the overall success of the study. It is purely for academic purpose; results and any other details will not be used for un-intended purpose. To this end, anonymity and confidentiality of our respondents are highly guaranteed unless and otherwise under mutual agreement between the concerned parties.

General instruction for the interviewer/enumerator

- ⇒ Please put the code chosen by the respondent in the space provided for some of the close-ended questions and encircle the chosen responses for those which do not have space to put the codes;
- ⇒ The respondent can choose more than one response for some questions (multiple response items);
- ⇒ Skip the code to which it does not require the response;
- ⇒ Write down the response for open-ended questions whenever the respondent provides and necessary;
- ⇒ Respondent agrees to be interviewed Respondent does not agree to be interviewed

.....**1**

.....**2 → END**

..... **2 → END**

↓

MODULE 1: HOUSEHOLD IDENTIFICATION

N	Date of the enumeration:	Time: Start:	Finish: _
1.1	HH identification number:		
1.2	<i>Wereda:</i> 1=Damote Gale; 2=Sodo Zuria 3=Duguna Fango		
1.3	<i>Kebele:</i> 1=Aro Wegera; 2=Konassa Bullasa; 3=Wondra Bolosso; 4=Humbo Larena; 5=Zalla Shasha; 6=Wereza Lasho; 7=Haba Gerera; 8=Kokate Maria Chare; 9=Dendo Werkicho; 10=Arso Woyde; 12=Duguna Damote Shinka		
1.4	Village/Gotte_____		
1.5	Agro-ecology type:	1=Highland	2= Midland 3=Lowland
Enumerator name: _____		Signature: _____	

MODULE 2: BASIC DEMOGRAPHIC INFORMATION

2.1 Relation to the head [code 1]	2.2 Age in years (write years)	2.3 Sex [code 2]	2.4 Marital status (if age above 18) [code 3]	2.5 Religious affiliation [code 4]	2.6 Occupation [See code 5]		2.7 Highest level of education (completed) [for education level different from 1- 12 [code 6]	2.8 Length of years in the current residence [write years]	2.9 Responsibility in the community [code 7]
					Main	Secondary			

Codes for 1: 1= Head 2= Wife/Husband/Partner 3= Son/daughter 4= Grandchild 5= Father/Mother 6= Sister/Brother 7= Niece/nephew 8= Uncle/Aunt 9= Son/Daughter-in-law 10= Father/Mother-in-law 11= Brother/Sister-in-law 12= Grandparent 13= Other relative of head or of his/her spouses 14= Servant (farm worker, herder, maid) 15= other (specify) _____

Codes for 2: 1= Male 2= Female

Codes for 3: 1= Married, single spouse; 2= Married with more than one spouse/ polygamous; 3= Single; 4= Divorced; 5= Widowed; 6= Separated

Codes for 4: 1= Orthodox; 2= Muslim; 3= Catholic; 4= Protestant, 5= Indigenous religions; 6= other (specify) _____

Codes for 5: 1= None, 2= Farmer; 3= Farm assistant, 4= Salaried work; 5= Student; 6= Farming/crop production and sales; 7= Livestock production and sales; 8= Non-farm product trader; 9= Beverage (tella, tej, areke, etc), 10= Wage labor (local); 11= Pensioner; 12= Handicraft, 13= Mining, 14= Carpentry, 15= House help, 16= Sale of wild/bush products (including charcoal); 17= blacksmith 18= looking for work 19= other (specify) _____

Codes for 6: 0= Cannot read and write; 13= 10+1; 14= 10+2; 15= 10+3; 16= Certificate; 17= Diploma; 18= Degree; 19= Masters and above; 20= Informal education (can read and write); 21= KG (Completed)

Codes for 7: 1= None; 2= Religious leader; 3= Coordinator of community development work; 4= Kebele Administrator; 5= other (specify) _____

2.10 Is this your village of origin? 1= Yes 2= No

2.11 If your place of birth is different from the current place, what is the reason for coming here?
(Multiple response is possible)

1=Marriage; 2=Join relative; 3=Displacement by drought; 4=Displacement by flooding; 5=Divorce
6=Search for agricultural land; 7=War/conflict; 8=others specify_____

2.12 Ethnicity of the household head: 1=Wolaita; 2 Gamo; 3=Dawro; 4=Sidama; 5=Amhara
6=Oromo 7=Tigray; 8=other (specify) _____

2.13 Number of permanent household members: Male_____female_____

2.14 Capable to work 1=Yes; 2=No

2.15 Reasons for not working or being incapable: 1=Disability; 2=Old age/aged; 3=Other health
problem; 4=Others specify_____

2.16 If agriculture is your major livelihood activity, for how long did you work on agriculture?
(write in years) _____

2.17 Which farming system are you following currently? 1=Only crop production; 2= Livestock
raring; 3=Mixed farming (Crop production and livestock raring)

2.18 Have you changed your farming system in the past 5-10 years? 1=Yes 2=No

2.19 If yes for QN # 2.18, why did you change the farming system you were following? (Multiple
response is possible)

1=Decrease in rainfall amount; 2= Drought; 3=Decrease in productivity of livestock; 4=Decrease in
productivity of land; 5=Decrease in grazing land; 6=increase in pest and disease; 7=Others
specify_____

MODULE 3: HOUSEHOLD SOURCES OF INCOME (ON-FARM, OFF-FARM AND NON-FARM ACTIVITIES).

3.1 What are the sources of livelihoods and estimated earnings for all members in the household?
(Answer all that apply)?

Farming activities	Codes (1=Yes;2=No)	Number of months participated	Estimated yearly income from each
Crop production			
Livestock rearing			
Fruit production (Apple, mango, Banana)			
Bee keeping			
Off-farm activities			
Non-farm activities			
Other (specify)			

3.2 Do any of your household members work in activities apart from crop production? 1=Yes; 2=No

3.3 If yes for QN #3.2, what are the types of **off-farm** livelihood activities that you are engaged in
the last 12 months?

No.	Type of off-farm activities	Participation code (1=Yes;2=No)	Number of months engaged in off-farm activities	Estimated annual income earned in Birr

1.	Sale of agricultural labor			
2.	Sharecropping (cash or food)			
3.	Livestock herding			
4.	Sale of fire wood or charcoal			
5.	Sale of grass or fodder			
6.	Sale of wood			
7.	Petty trading (salt, soap, sugar, etc.)			
8.	Migratory labor (for a week or more)			
9.	Remittances			
10.	Gifts/inheritance			

3.4 If yes for QN #3.2, in which of the **non-farm** activities that you are engaged in the last 12 months?

No.	Type of non-farm activities	QN# 3.4.1 Participation code (1=Yes;2=No)	QN# 3.4.1.1 Number of months engaged in non- farm activities	QN# 3.4.2 Estimated annual income earned in <i>Birr</i>
1.	Trading grains and pulses			
2.	Trading livestock			
3.	Drinks production and sales			
4.	Weaving /spinning			
5.	Carpentry			
6.	Pottery			
7.	Blacksmithing or metal work			
8.	Traditional healers			
9.	Renting out pack animals			
10.	Others (specify)			

3.5 For what purpose, did you use the income obtained from non-farm/off-farm activities? (Multiple response is possible) 1=Buy food; 2=Saving; 3=Buy clothes; 4=Pay taxes; 5=Pay loan; 6=Buy agricultural inputs; 7=others specify_____

3.6 If you think that there is a challenge to engage in non-farm activities, what do you think are the possible reasons? (Multiple response is possible) [**use tick✓ mark in front of the selection**]

1. Lack of spare time from agriculture		2. No employment opportunities	
3. Lack of awareness about its use		4. Jobs are too far away	
5. Lack of work skills		6. Poverty/lack of funds	
7. Unable to work due to old age		8. Income is intermittent	
9. Health problem		10. Others specify	

3.7 Is anyone from the family member work outside the community? 1= Yes; 2=No

3.8 If yes for QN # 3.7, how many in number? Males_____ Females_____

MODULE 4: HOUSEHOLD EXPENDITURE AND CONSUMPTION INDICATORS

5.1 We would like to ask you about all the food that was bought for consumption or was consumed from your own (beteseb's) stock, IN THE LAST WEEK.

In last week, did your household consume any of the following? (FOOD-ITEM EXPENDITURE)

Food type	1. How much was purchased? How much was spent?			2. Did you consume this food from your own harvest or your own stock? How much?		3. Did you receive this food as a GIFT, a LOAN, as WAGE IN KIND or as BARTER? How much? Who gave you this food? GIVE AMOUNT CONSUMED IN THE LAST WEEK		
	Response 1=Yes 2=No	Amount (code 1)	Total expendit ure	Response 1=Yes 2=No	Amount (code 1)	Response 1=Yes 2=No	Amount (code1)	Source (code 2)
Teff								
Barley (Gebis)								
Wheat(Sinde)								
Maize (Bekolo)								
Sorghum (Mashila)								
Lentils (Misir)								
Horse Beans (Bakela)								
Cow Peas (Ater)								
Chick Peas(Shimbira)								
Milk/yoghourt (ergo)								
Mutton (yebeg)/goat meat (yefiyel siga)								
Chicken								
Eggs								
Butter/cheese								
Tella/Tej								
Birra (Bottled)								
Araqi/Kathikala								
Potatoes								
Sweet Potatoes								

Green leaf vegetables								
Enset								
Others (code 3)								

Codes for 1: 1=Kilograms; 2=Quintal; 3=Chinet; 4=Dawula; 5=Kuna; 6=Silicha; 7=Esir; 8=9=Litter; 10=Kil; 11= Gan;13=Ensira;14=Tassa; 15=Big Madaberia; 16=Small Madaberia; 17=Shekim 18=Others specify_____

Codes for 2: 1=Family, local; 2=Family, non-local; 3=Neighbour/village member; 4= Individual from outside village; 5= Gift from government; 6= Gift from aid agency, NGO; 7= Food-for-work (PSNP); 8=Wages in kind; 9=Barter; 10=Loan; 11=Other specify _____

Codes for 3: 1=Salt; 2 =sugar=cooking oil, 3= Spices/Karia/Berbere, 4= Bread (Dabo), 5= Macaroni/Spaghetti, 6= Honey 7= coffee 8=soft drinks and others specify_____

5.2 Has the household purchased any prepared foods, or paid to eat food outside the household in the last week? (1 =Yes 2=No (If no, skip to QN#4.4.)

5.3 What was the total expenditure on prepared foods and food eaten outside the household in the last week? _____(Birr)

NON-FOOD ITEM EXPENDITURE AND HOUSEHOLD CONSUMABLES: PART I

5.4 Did the household purchase any of the following for its own consumption during the last MONTH? If so, where did you purchase these?

Commodity	Total expenditure (Birr)	The place purchased (code)
Matches/Batteries		
Candles (tua'af), incense		
Laundry soap/OMO/endod/besana leaves, Hand soap		
Other personal care goods (incl. sendel, matent,)		
Charcoal/ Firewood		

Codes for 1: 1=This village, 2=Another village, 3=Local market town/Sodo, 4=Regional center/Hawassa, 5=Addis Ababa 6=Other (Specify)

NON-FOOD ITEM EXPENDITURE: PART II

5.5 IN THE LAST FOUR MONTHS, has the household purchased any of the following non-food items?

Commodity	Total expenditure in the last four	Where purchased? (code 1)
Clothes/shoes/fabric for men, women, goys, and girls		
Kitchen equipment (cooking pots, etc.)		
Linens (sheets, towels, blankets)		
Furniture		
Building materials		

Transport		
Ceremonial expenses (weeding, holyday)		
Contributions to <i>Iddir</i>		
Donations to the church		
Compensation and penalty		
Voluntary contributions		
Involuntary contribution (forced)		
Other goods purchased (code 2)		

Codes for 1: 1=This village; 2=Another village; 3=Local market town/Sodo; 4=Regional center/Hawassa; 5=Addis Ababa; 6=Other (Specify)_____

Codes for 2: 1= Savings and credit scheme; 2= Repair and maintenance; 3=Cosmetics (Hair oil, butter, perfume); 4= Bicycle or motor bicycle; 5=Bio-Gas tube (Oxygen gas); 6= Labor cost/salary; 7=Jeba, Gembo, Mitad, Broom and other such items; 8=Payment to broker

NON-FOOD ITEM EXPENDITURE: PART III

5.6 IN THE LAST FOUR MONTHS, has the household purchased any of the following non-food items?

Commodity	Total expenditure in the last four	Where purchased? (code 1)
Modern medical treatment and medicines		
Traditional medicine and healers		
School fees		
Other educational expenses (exercise books, pens, pencils, uniforms, maintenance, club fees)		
Cigarettes, tobacco, suret, gaya		
Alcoholic beverages		
Others specify		

Code 1: 1=This village, 2=Another village, 3=Local market town/Sodo, 4=Regional center/Hawassa, 5=Addis Ababa 6=Other (Specify)

MODULE 5: FOOD SECURITY INDICATORS

5.1 Indicate the months of not enough food, enough food and surplus food you have experienced during the last 12 months?

0=Not enough food/food insecure 1= Just enough food/food sufficient 2= Plenty of food/surplus or food secure											
2008/2016											
Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Total # of food needs met (all months with the score of 1 or 2)											
Total # of food gaps (all months with the score of 0)											

5.2 Does the income you earn from non-farm or off-farm activities enable you to buy food for bridging the deficiency? 1=Yes 2=No

5.3 Did you or your household members face any food shortage in the last 12 months? 1= Yes; 2=No

5.4 If your household has faced food shortage over the last 12 months, what is the possible cause for this? (multiple response is possible)

1=Heavy rains/hailstorm; 2=Drought; 3=Diseases and pests; 4=Depleted soil nutrients; 5=Small land holdings; 6=Lack of enough money; 7=Traditional farming tools/system; 8=Big family size; 9=Other (Specify) _____

5.7 How did your household cope up during food shortage months?

1=Purchase of grain from market; 2=Food aid; 3=Food/Cash from work; 4=Support from friends; 5=Credit cash; 6=income from off-farm; 7=Income from non-farm; 8 =Sale animals and animal products; 9=Others (specify) _____

5.8 How much quintal is the actual annual grain requirement of your household? (Estimate) _____ Quintals

Food Access: Household dietary diversity score (HDDS) (Applicable to all households)

No.	HDDS QUESTIONS	Response codes	If yesterday was special or unusual day, skip this table
	Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night. This does not include food that you ate at a restaurant or outside of the home. Read the list of foods. Choose “yes” if anyone in the household ate the food in question. Choose “no” if no one in the household ate the food. THE FOODS LISTED SHOULD BE THOSE PREPARED IN THE HOUSEHOLD AND EATEN IN THE HOUSEHOLD OR TAKEN ELSEWHERE TO EAT. DO NOT INCLUDE FOODS CONSUMED OUTSIDE THE HOME THAT WERE PREPARED ELSEWHERE.		
1.	Any enjera, bread, rice, biscuits, or other foods made from teff, millet, sorghum, maize, rice, pasta, macaroni, wheat or barley or other cereal.	1 = Yes, 2 = No	
2.	Any potatoes, yams, cassava, or any other foods made from roots or tubers?	1 = Yes, 2 = No	
3.	Any vegetables?	1 = Yes, 2 = No	
4.	Any fruits?	1 = Yes, 2 = No	
5.	Any meet, beef, lamb, goat, wild game, chicken, liver, kidney, heart, or other organ meats?	1 = Yes, 2 = No	
6.	Any eggs?	1 = Yes, 2 = No	
7.	Any fresh or dried fish?	1 = Yes, 2 = No	
8.	Any foods made from beans, peas, lentils, haricot beans, or nuts?	1 = Yes, 2 = No	
9.	Any cheese, yogurt, milk, or other milk products?	1 = Yes, 2 = No	
10.	Any foods made with oil, fat, or butter?	1 = Yes, 2 = No	

Sum of categories above (a scale of 0-10)			
11.	Any sugar or honey?	1 = Yes, 2 = No	
12.	Any other foods, such as condiments, coffee or tea?	1= Yes, 2 = No	

5.9 Did you participate in safety net programs in the past? 1= Yes; 2=No

5.10 Currently, are you a member of productive safety net programs? 1= Yes; 2=No

MODULE 6: LIVELIHOOD VULNERABILITY AND RESILIENCE CAPACITY INDICATORS

1) Natural capital [Land, irrigated area and access to publicly owned resources]

6.1 Do you have access to land for agricultural use? 1=Yes; 2= No

6.2 If yes for QN #6.1, how did you get it?

1=Through land redistribution 2=Shared with the family/relatives 3=Inherited from parents 4=Share cropped- in 5=Rented from relatives 6=Purchased 7=Other (specify) _____

6.3 Do you have land use right/ownership certificate? 1= Yes 2=No

6.4 What are the total sizes of the following land types that you use?

Land type	Unit in local measure (kada or timad)	In hectare
Cultivated land		
Fallow land		
Grass and woodland		
Forest land/wood lot		
Homestead/backyard		
Irrigated land		
Total land holding in hectare		

6.5 What type of soil is your cultivated land? 1=Black 2=Brown 3=Red; 4= Other (specify) _____

6.6 How did you plough your land? 1=Using pair of oxen/horses; 2=Using hand hoe; 3=Using machine or tractor; 4=Others specify_____

6.7 List the total area of land operated in 2008/2009 EC production season?

Land type	Area in hectare (ha)	Fertility of soil [see code 1]	Status of farming land [see code 2]	Slope of the land [see code 3]
Own land				
Rented in land				
Rented out land				
Share crop in				
Share crop out				
Fallow land				

Codes for 1: 1=Not fertile; 2= Somewhat fertile 3=Fertile; 4=Highly fertile

Codes for 2: 1=Increased; 2=remain the same/no change; 3=decreased; 4=Do not know

Codes for 3: 1=Flat; 2=Somewhat hilly;3=Highly steep;4=Mountainous;5=Other specify_____

6.8 Have you sharecropped out your plot to other farmers on equal basis? 1=Yes 2=No

6.9 If yes for QN # 6.8, why did you sharecrop out? (Multiple response is possible):

1=Lack of draft power; 2=Lack of seed; 3=Unable to purchase technological inputs; 4=Elderly and unable to operate it; 5=Illness; 6=Having extra land; 7=Others, specify _____

6.10 Indicate your access to other publicly owned land resources

Indicator questions	Code definition	Response
1. Do you have access to open or publicly owned grazing land?	1=Yes 2= No	
2. Do you have access to open or publicly owned water source for livestock?	1=Yes 2= No	
3. Do you have access to get firewood from open or publicly owned forested land?	1=Yes 2= No	

6.11 What benefit do you get from the open or publicly owned land?

1=Grazing livestock; 2=Collecting fire wood; 3= Fire wood for selling; 4=Source of construction materials; 5=Other (specify) _____

6.12 What are the main constraints to your farmlands?

1= Erosion; 2= Waterlogging; 3= Poor soil fertility; 4=Susceptibility to frost; 5= High concentration of stones on the topsoil; 6= High concentration of stones on the topsoil; 7= Salinity; 8= Highly sandy; 9=Water scarcity-inaccessibility to water or drought; 10=Other (specify) _____

6.13 Did farm land related challenges force you to enhance the use of soil and water conservation management techniques (terracing, agroforestry, etc.)? 1=Yes 2=No

6.14 If yes for QN # 6.13, what is the size of your land area covered with improved soil and water conservation practices in hectare? _____

6.15 Which measure(s) do you practice to minimize soil erosion on your own farm, and in your community at large? (Multiple response is possible)

1= Terracing; 2= Crop rotation; 3= Using composite; 4= Tree planting; 5= Soil or stone bunds; 6=Contour ploughing; 7=Furrowing; 8= Strip cultivation; 9= Other (specify) _____

6.16 Which of the following land management practice do you carry out in order to maintain and replenish the soil fertility of your farmlands? (Multiple response is possible)

1= Fallowing (field rotation); 2= Crop rotation; 3= Manuring; 4= Use of fertilizers (e.g., Dap, Urea, and blended fertilizer); 5= Inter-cropping; 6= Other (specify) _____

6.17 How do you see the status of your land size over the last 5-10 years?

1= Highly increased; 2= Increased; 3= No change; 4= Decreased; 5= Highly decreased

6.18 If your answer is decreasing for QN # 6.17, what is the possible reason for the decrease for farm land size? (Multiple response is possible)

1=increased demand for agricultural land; 2=land degradation; 3=land fragmentation; 4=conversion of farm land to non-farm activities; 5=limited carrying capacity or population pressure; 6=others specify_____

2) Crop Production

6.19 Would please indicate the type of crops/vegetables you have produced/, land area covered by crops, amount sold, and income earned from sales of crops during the year 2008/2009 E.C

Crop types	Have you produced [...]? 1=Yes; 2=No	Area covered (Timad) (Kada)	Production (qt) (quintal/hectare)	Amount sold (quintals)	Income from sales (Birr)
Maize					
Teff					
Wheat					
Barley					
Haricot bean					
Sorghum					
Lentil					
Coffee					
Tomato					
Potato					
Cassava					
Taro					
Onion					
Enset					
Carrot					
Beet root					
Other specify					

6.20 What are criteria used to select crops for production? (Multiple response is possible)

1=Drought tolerance; 2=Pest and disease tolerance; 3=The time it takes to mature; 4= High market value; 5=High yield crop/productivity; 6=others, specify _____

6.21 Would you list the type of agricultural inputs you used in the 2008/2009 cropping year?

Type of agricultural inputs		Responses 1=Yes 2=No	Total amount used in Kg.	Total amount of costs incurred	Total area covered using inputs (in
Chemical fertilizers	DAP				
	Urea				
	Blended fertilizer				
Pesticides/herbicides					
Improved seeds					
Others specify					

6.22 If there are constraints in the use of agricultural inputs, what are the problems? (Multiple response is possible) 1=Drought/erratic rainfall; 2=High price of inputs; 3=Lack of cash; 4=Indebtedness; 5 =Farm land is inappropriate to use of fertilizers; 6=Crop disease; Excessive rain/flooding; 8=Unavailability of improved seed; 9=Untimely input distribution; 10= Other, please specify_____

6.23 In general, what is the trend of your crop production for the following crop types over the last 5-10 years?

Crops produced	Trends in crop production				
	Highly decreased (1)	Decreased (2)	No change (3)	Increased (4)	Highly increased (5)
1. Maize					
2. Wheat					
3. Barely					
4. Teff					
5. Sorghum/					
6. Peanuts					
7. Chickpea (shinbira)					
8. Bean (baqella)					
9. Pea (atar)					

6.24 What are the possible reasons for any increase in your cultivated land productivity? (Multiple response is possible)

1=Increased soil fertility; 2= Improved seed supply; 3= Improved agrochemical use; 4= Improved use of organic fertilizer; 5=Suitable weather conditions/good rainfall; 6=Soil and water conservation practices; 7= Other, please specify_____

6.25 What are the possible reasons for any decrease of your cultivated land productivity? (Multiple response is possible)

1=Land degradation; 2=Lack of timely input supply; 3= Lack of oxen; 4=Erratic rainfall /variability;5=Drought; 6= Land scarcity; 7= Non-use of fertilizer; 8=Pests and crop diseases; 9= Other, please specify_____

3) Livestock Ownership/Production

6.26 Please indicate the number of livestock owned by the household and the estimated current value per each

Type	Number of livestock ownership status		Equivalence in cash currently (in <i>birr</i>)
	Last year	This year	
1. Cows			
2. Oxen			
3. Bulls			
4. Heifers			
5. Calves			
6. Sheep			
7. Goats			
8. Mules			
9. Horses			
10. Donkeys			
11. Chicken			
12. Bee colony			

6.27 How do you perceive the current livestock production compared to 5-10 years ago?
1= Highly increased; 2= Increased; 3= No change; 4= Decreased; 5= Highly decreased

6.28 If decreased for QN #6.27, what would be the cause? (Multiple response is possible)

1=Livestock disease prevalence; 2=Shortage of grazing land; 3=Natural disaster (e.g. drought); 4=Scarcity of fodder; 5=Shortage of hybrid; 6= Lack of sufficient veterinary services; 7= Shortage of water; 8= others (specify) _____

4) Household Assets Ownership

6.29 Could you please tell us the number of productive assets you own currently, number of each asset and the cash equivalence of each asset in Birr?

Type of assets	Response 1=Yes; 2=No	If yes for each, number of asset owned	Cash equivalence of the asset
1. Axe (Metarabia)			
2. Machete			
3. Sickle (machid)			

4. Spade (Akafa)			
5. Hoe(doma)			
6. Bucket			
7. Grain mill(weficho)			
8. Plough(maresha)			
9. Plow/Yoke/ Kenber			
10. Plow/ Beam/			
11. Plow/Share			
12. Horse/Mule/Ox Cart			
13. Modern bee hive			
14. Traditional bee hive			
15. Weaving equipment			
16. Gotera or Dibignit			Not applicable
17. Hammer (fas or martelo)			
18. Saw(megaz)			

6.30 Could you please tell us the number of household assets you own currently, number of each asset and the cash equivalence of each asset in Birr?

Type of assets	Response 1=Yes 2=No	If yes, number of assets owned	Cash equivalence in Birr
1. Blankets/gabis			
2. Bed (alga)			
3. Chairs			
4. Tables			
5. Cupboard (Sanduk/Kumsatin)			
6. Leather Mat (Kurbet, Agoza, Debdab)			
7. Flashlight (torch)			
8. Watch/clocks			
9. Kerosene stove			
10. Radio/cassette player			
11. DVD player			
12. Television			
13. Mobile phone			
14. Bicycle			
15. Motor bicycle			
16. Iron (Kawuya)			
17. Leather Pouch (Silicha)			
18. Mehegia (Leather Sofa)			
19. Jewelry/Gold/Maria Theresa Coin, Ring			
20. Guns(Tebmenja)			
21. Spear/Sword (Gorade)			
22. Shield (Gasha)			

6.31 Has any household member lost any of the above mentioned productive assets due to the last year (2007/2008) drought? 1= Yes 2= No

6.32 If yes for QN # 6.31, what are the major impacts of the drought on your productivity that your household has experienced during the last 12 months? (Multiple response is possible)

1= Loss of productive assets; 2= Loss of household income; 3=Reduction in household consumption; 4= Asset and income loss; 5= Asset loss and reduced consumption; 6= Income loss and reduced consumption; 7= Other specify____

5) Access to Financial Capital

6.33 Did you have access to any cash credit service from any source during the last 12 months? 1= Yes 2= No

6.34 If yes for QN# 6.33, please indicate your access to credit services, amount and purposes of loan?

No.	Source of credit	Amount of credit received in Birr	For what purpose, did you receive the money? (use code 1)
1.	Marketing cooperative		
2.	Local money lender		
3.	Friends/relatives		
4.	NGOs		
5.	Omo MFIs		
6.	Banks		
7.	Vision fund		
8.	Religious institutions		
9.	Saving group		
10.	Women group		
11.	Iddir		
12.	Equib		
13.	Others, specify		

Codes for 1: 1= Petty trade; 2 = Food grain purchase; 3 = Input purchase for crop production; 4 = Animal purchase; 5 = Other income generating activities; 6 = Repay debt; 7= others, specify

6.35 If no for QN # 6.36, what was the problem?

1= Did not want to take loan; 2=couldn't find a loan that met my needs; 3=Afraid I couldn't pay back; 4= No loan providers in the locality; 5= others, specify _____

6.36 Do any of the household members have cash saving? 1=Yes 2=No

6.37 If yes for QN # 6.36, where is the saving held?

1= Credit or micro-finance group; 2=Banks; 3=Religious institutions; 4=Saving group; 5=Vision fund; 6=Women's group; 7=Others specify_____

6.38 What is the total amount of saving in Birr? _____

6.39 What is the primary purpose of saving?

1=To use in time of emergencies; 2=To buy livestock; 3=To buy agricultural inputs; 4=To pay debates; 5=Others specify_____

6.40 Do any of the household members have existing debt from any one? 1=Yes 2=No

6.41 If yes for QN # 6.40, what is the total amount of credit to be paid? _____

6) Network/Relationship (Social Capital)

No.	Indicator questions	Response code
1.	In the past months in a year, did relatives or friends help you and your family (e.g., to get medical care or medicines, sell animal products or other goods produced by the household, take care of children, worked in field?	1=Yes 2= No
2.	In the past months in a year, did you and your family help relatives or friends?	1=Yes 2= No
3.	Has anyone from your family participate in informal association (<i>Iddir, equib, mahaber etc</i>)	1=Yes 2= No
4.	If yes for QN # 3, are there bylaws to govern the groups?	1=Yes 2= No
5.	Has anyone from your family participate in informal association (<i>debo</i> or working groups)?	1=Yes 2= No
6.	If yes for QN # 4, what is the number of non-working days/month in the debo? _____ days	
7.	How do you rate the culture of working together in your community? 1=Very weak, 2=Weak, 3=Fair, 4=Good, 5=Very Good	
8.	Has anyone of your family member or involve in formal association? (local leadership, one-five organization, & others?	1=Yes 2= No
9.	Has anyone of your family member or involve in cooperative promotion?	1=Yes 2= No
10.	Has anyone of your family member or involve in household asset building program/HABP?	1=Yes 2= No
11.	Has anyone of your family member or involve in disaster reduction and early warning/DRR-EW committee?	1=Yes 2= No
12.	Has anyone of your family member or involve in hazard insurance schemes?	1=Yes 2= No
13.	Has anyone of your family member or involve in shock preparedness and mitigation program or schemes?	1=Yes 2= No
14.	Has anyone of your family member or involve in vision fund (VF)?	1=Yes 2= No
15.	Has anyone of your family member or involve in women group?	1=Yes 2= No
16.	Has anyone of your family member or involve in religious group?	1=Yes 2= No
17.	Has anyone of your family member or involve in charitable group?	1=Yes 2= No

7) Health, Trainings /Skills

No.	Indicator questions	Response code
1.	Is anybody in your family chronically ill?	1=Yes 2= No
2.	Has anyone in your family been so sick in the past 1 month that they had to miss work or school?	1=Yes 2= No
3.	Has anyone in your family been suffered by TB, Malaria, Cholera or other	1=Yes 2= No

	communicable diseases in the past six months?	
4.	Has anyone in your household has died due to illness or natural disasters (drought, floods, landslides, malnutrition) in the past 5-10years?	1=Yes 2= No
5.	Has anyone in your household has been injured due to the climate related disasters (drought, flood, epidemics etc...) in the past 5-10years?	1=Yes 2= No
6.	Do you have access to health extension services in your locality?	1=Yes 2= No
7.	If yes for QN # 6, 1=Daily 2=Weekly 3=Fortnightly 3=Monthly 4=biannually 5=Annually	
8.	Do you send your children to school?	1=Yes 2= No
9.	Have you received any training over the last 12 months?	1=Yes 2= No
10.	If your answer is yes for QN # 9, could you state the number of trainings you have attended over the last 12 _____months?	
11.	Type of trainings attended (multiple response is possible) 1= Crop Management/Production; 2= Livestock Production (animal health/fattening); 3= Financial Literacy; 4= Health/Family Planning; 5= Climate change adaptation/conservation; 6= Business skills (income generating activities); 7= Value Addition (Marketing); 8= Nutrition (dietary diversity); 9= Poultry Production; 10= Early warning and disaster risk management; 11=Others specify_____	
12.	Do you have additional skills?	1=Yes 2= No
13.	If yes for QN # 11, what are these skills?	
14.	1_____2_____3_____	

MODULE 7: ADDITIONAL RESILIENCE CAPACITY INDICATORS

1) Physical capital

No.	Indicator questions	Response code
1.	Do you or your family own a house?	1=Yes 2= No
2.	What is the construction materials used for outside walls and roof of your house? 1= Mud/dung (chika/ebet); 2=Wood; 3=Galvanised iron (korkoro); 4= Stone/Brick/Concrete/Cement; 5= Thatch (sar) 6=Bamboo 7=others specify	
3.	Do you have access to clean and safe [drinking] water supply?	1=Yes 2= No
4.	What is the main drinking water for your household? 1=Piped in 2=Tube well/borehole with pump 3=Protected dug well 4=Open/unprotected well 5=Protected spring 6=River/stream	
5.	Who normally collect water for the household? 1=Men 2=Women 3=Both	
6.	Do you use a toilet [does not include outdoors defecation]?	1=Yes 2= No
7.	What is the main source of lighting for the house? 1=Bottle lamp 2=Kerosene 3=Candle 4=Wood fire 5=Other (specify)	
8.	What is the main source of cooking fuel for the household? 1=Wood 2=Charcoal 3=Gas 4=Kerosene 5=Dung 6=Crop residue 7=Other (specify)	

9.	If you collect wood for QN #8, how long does it takes to go there and comeback? _____ min/hours
10.	Who normally collect firewood for the family? 1=Men 2=Women 3=Both

2) Access to Infrastructure

No.	Indicator questions	Walking distance in KM	Walking distance in minutes
1.	How far is your home from all weather-roads?		
2.	How far is your home from healthcare center?		
3.	How far is your home from the savings and credit institutions?		
4.	How far is your home from the village market/within the <i>Kebele</i> ?		
5.	How far is your home from the main market (central for <i>Wereda</i>)		
6.	How far is your home from the primary school?		
7.	How far is your home from the secondary school?		
8.	How far is your home from the farmers training center?		
9.	How far is your home from the veterinary services?		
10.	How far is your house from the save drinking water?		

3) Access to Information and Services

No.	Indicator questions	Response code
1.	Do you have access to climate related information?	1=Yes 2= No
2.		
3.	Do you have access to early warning information system?	1=Yes 2= No
4.	If yes for QN # 2, what type of early warning information providing structure are put in place?	1=Formal/government; 2=Informal/traditional
5.	If yes for QN # 2, how often have you been informed about the potential risk of natural disasters (erratic rain fall, flooding, land slid, outbreak of crop pests and diseases)	1=Frequently; 2=Occasionally/seasonally; 3=Rarely
6.	Who provides the information on early warning?	1=Government; 2=NGOs; 3=CBOs; 4=All of them
7.	How do you rate the contribution of the early warning system for you to withstand from the shocks?	3=High; 2=Medium; 1=Low; 0=None
8.	Do you have access to agricultural extension services?	1= Yes 2= No
9.	Does the presence of extension services help you to improve productivity and production?	1= Yes 2= No
10.	How often do you meet and get advice from the extension agent? 1=Daily; 2=Weekly; 3=Once in two weeks;4=Monthly; 5=Once in three months 6=None/not at all	
11.	Do you get important information related to agriculture and market from this information?	1= Yes 2= No

	center/source?	
12.	Do you have access to irrigation sources (pond, diversion canal, etc.)	1= Yes 2= No
13.	Do you have access to security services that can reach the community within 1 hour?	1= Yes 2= No
14.	Do you have access to micro-insurance scheme or program in your locality?	1= Yes 2= No
15.	If yes for QN # 13, what type of micro-insurance program are you involved in?	1=Crop 2=Livestock 3=Both 4=Others specify_____

7.1 Who provides the services in your locality? 1=Government; 2=NGOs; 3=CBOs; 4=Private business; 5=All of them

7.2 How do you rate the effectiveness of service delivery? 5= Most effective; 4= Effective; 3= Moderate; 2= Less effective; 1= Ineffective

7.3 What are your main early warning information needs? (multiple response is possible)

1=Information on rainfall; 2=Market information; 3=Updates on harvesting time; 4=Updates on growing time; 5=About impending possible hazard 6=Others (specify)_____

7.4 Which mechanisms are being used to disseminate EW information? (multiple response is possible)

1= Radio and TV; 2= Printing media (newspaper, magazine, etc); 3= Community meetings; 4=One to one communication; 5=Through Kebele EW committees; 6=Through local Command post; 7=Agriculture Extension Officers; 8=NGOs; 9= Others (specify)_____

7.5 How do you rate the effectiveness of information dissemination mechanisms? 5= Most effective; 4= Effective; 3= Moderate; 2= Less effective; 1= Ineffective

7.6 If it is ineffective for QN # 7.5, why?

1= Not timely disseminated information; 2=Less relevant information; 3=lack of services to act timely; 4=awareness raising and mobilization was not enough; 5=lack of support provided for timely action; 6=Others (specify)_____

4) Availability of Formal and Informal Support Mechanisms

No.	Indicator questions	Response code
1.	Is there any institution in your locality where people can receive food assistance in time of shock or emergencies?	1= Yes 2= No
2.	Is there any institution in your locality where people can receive non-food assistance in time of shock or emergencies?	1= Yes 2= No
3.	Is there any institution in your locality where people can receive assistance due to losses of livestock?	1= Yes 2= No

4.	Is there any institution working on disaster response program from government or NGOs?	1= Yes 2= No
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MODULE 8: FARMERS' PERCEPTION TO CLIMATE VARIABILITY OR CHANGE

8.1 To what extent would you agree or disagree that the options indicated in the table below apply as possible reasons to responses by your household to the climate trend (Changes of temperature and precipitation)

No.	Perception indicators	Level of agreement or disagreement (five-point scale)				
Change in temperature		Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
1	Increased temperature					
2	No change temperature					
3	Decreased temperature					
4	Rainy season temperature decreased					
5	Dry season temperature increased					
6	Increase number of hot days					
7	Number of cold days increased in years					
Change in Amount rainfall						
1	Increased precipitation					
2	No change in precipitation					
3	Decreased precipitation					
4	Late start of precipitation					
5	Early cessation of precipitation					
6	Belg rain decrease					
7	Main rain season rain decrease					

MODULE 9: CLIMATE INDUCED SHOCKS INDICATORS

9.1 Have you ever faced crop failure during the last five to ten years?

1=Yes 2=No

9.2 If yes for QN# 9.1, what are the main reason for the crop failure? [Multiple response is possible]

1=Erratic rainfall; 2=Improved seed security and high price; 3=Unaffordable price of fertilizers; 4=Low level of soil fertility; 5=Pest and disease; 6=Shortage of farm oxen; 7=Other (specify)_____

9.3 Have you ever experienced flooding due to erratic rainfall over the last 10-20 years?

1=Yes 2=No

9.4 If yes for QN# 9.3, how do you rate the frequency of drought in your locality over the last 10-20 years?

5= Highly increased; 4= Increased; 3= No change; 2= Decreased; 1= Highly decreased

9.5 Have you ever experienced drought due to climate variability/change over the last 10-20 years?

1=Yes 2=No

9.6 If yes for QN # 9.5, how do you rate the frequency of flooding in your locality over the last 10-20 years?

5= Highly increased; 4= Increased; 3= No change; 2= Decreased; 1= Highly decreased

9.7 Have you ever experienced disease (crop, livestock and human) disease outbreak due to climate variability/change over the last 10-20 years?

1=Yes 2=No

9.8 If yes for QN# 9.7, how do you rate the frequency of disease outbreak in your locality over the last 10-20 years?

5= Highly increased; 4= Increased; 3= No change; 2= Decreased; 1= Highly decreased

1) Self-Reported Climate Related Shock Indicators

9.9 Please indicate your experiences with climate induced shocks, frequency of occurrences over the last 10-10 years and estimated costs of the damage due to the shocks

Experience of the following shocks	Frequency of shocks over the last (10-20 years)	Severity 1=High, 2=Medium, 3=low	Estimated costs of the damage on property/livelihood/health in Birr
1. Flooding			
2. Drought			
3. Crop failure			
4. Crop pests and diseases			
5. Livestock disease			
6. Infectious human disease/human health problem			

9.10 Who has been affected most by the above-mentioned shocks?

1=Men; 2=Women; 3=Children; 4=Elders; 5=All segment of the society

2) Subjective Resilience Indicators

9.11 We would like to ask you about your level of agreement or disagreement if climate resulted shocks [INSERT THE SHOCK TYPE] were occurred/will be occurred, and your household would be/will be able to successfully deal with the threats posed in the past/to be posed in the future?

Type of shock anticipated [occurred in the past five years/last year]	Level of agreement on households' capacity to withstand from shock [NAME THE SHOCK] in the past and level of agreement for each shock [PAST CAPACITY] (code 1)	Level of agreement for the likely occurrence of shocks [NAME THE SHOCK] in the future (next year/five years) and household capacity to withstand from each shock [FUTURE CAPACITY] (code 1)
Flooding		
Drought		
Crop failure		
Crop pests and diseases		
Livestock disease		
Infectious human disease		

Codes for 1: 2= Strongly disagree, 2= Disagree 3= Neutral, 4= Agree, 5= Strongly agree

9.12 Which of the following statements best describes the extent to which you and your household have been able to recover from the last drought (2015/6/2007/8 E.C)?

1=Did not recover; 2=Recovered some, but worse off than before drought; 3=Recovered to same level as before drought; 4=Recovered and better off; 5=Not affected by drought

9.13 Which of the following statements best describes your household's ability to cope with and manage with future droughts or future periods of shocks or stress?

1=Unable to cope; 2=Able to cope, with changes income and food sources; 3=Able to cope without difficulty; 4=Others specify_____

MODULE 10: PERCEIVED CLIMATE IMPACTS OF CLIMATE CHANGE AND VARIABILITY

10.1 Would you please indicate the type of impacts that climate change has brought to you or your household?

No.	Indicators questions	Dummy	Response
1.	Crop productivity decline	1= Yes 2= No	
2.	Shortage of water for irrigation	1= Yes 2= No	
3.	Shortage of water for home/animal consumption	1= Yes 2= No	

4.	Emergence/resurgence of new pests (weeds and	1= Yes 2= No	
5.	Increased level of temperature	1= Yes 2= No	
6.	Increased frequency of drought	1= Yes 2= No	
7.	Increased frequency of flooding	1= Yes 2= No	
8.	Geographic isolation/inaccessibility	1= Yes 2= No	
9.	Livestock disease	1= Yes 2= No	
10.	Crop pests and diseases	1= Yes 2= No	
11.	Local conflict over diminishing resources	1= Yes 2= No	
12.	Food price inflation	1= Yes 2= No	

MODULE 11: COPING OR ADAPTION STRATEGIES EMPLOYED

11.1 Are there any adaptation strategies you have made for the change in climate (precipitation and temperature)? 1=Yes 2=No

11.2 If yes for QN #11.1, what adaptation strategies have you so far employed in response to long term change in precipitation and temperature over the last 5-10years?

No.	Key indicators or questions	Dummy	Response
1.	Planting different crops	1= Yes 2= No	
2.	Shift to drought resistant crop varieties	1= Yes 2= No	
3.	Practicing crop diversification	1= Yes 2= No	
4.	Different/new planting dates	1= Yes 2= No	
5.	Shortening length of growing period	1= Yes 2= No	
6.	Move to different site	1= Yes 2= No	
7.	Changes from crops to livestock	1= Yes 2= No	
8.	Changes from livestock to crops	1= Yes 2= No	
9.	Increasing water conservation on farms	1= Yes 2= No	
10.	Use of irrigation (home gardens)	1= Yes 2= No	
11.	Use of chemicals, fertilizers, manure and pesticides	1= Yes 2= No	
12.	Shading and sheltering young plants	1= Yes 2= No	
13.	Mixing crops and livestock (diversification)	1= Yes 2= No	
14.	Adjusting livestock management practices	1= Yes 2= No	
15.	Use of micro-insurance schemes	1= Yes 2= No	
16.	Use of prayer and socio-cultural adaption schemes	1= Yes 2= No	

Thank you for your cooperation!!

Annex II : Key informant interview questions

1. Can you provide an overview of the current institutional arrangements for safety net programs in your organization/department?
2. How would you describe the current institutional arrangements of safety net programs in terms of policy implementation and program outcome?
3. Are there any specific policies or guidelines in place that govern the implementation of safety net programs? How are these policies developed and updated?
4. How is the coordination and collaboration between different departments or agencies involved in safety net programs managed? Are there any challenges or opportunities for improvement in this regard?
5. What mechanisms are in place to monitor and evaluate the outcomes and impact of safety net programs? How are the findings from these evaluations utilized to inform policy and programmatic decisions?
6. Can you provide examples of successful policy implementations in safety net programs that have resulted in positive program outcomes? What factors contributed to their success?
7. Have there been any instances where policy implementation challenges have hindered the desired outcomes of safety net programs? If so, what were the main factors contributing to these challenges?
8. How is the effectiveness of the institutional arrangements for safety net programs assessed? Are there any specific indicators or metrics used to measure their efficiency and effectiveness?
9. Are there any ongoing efforts or initiatives to improve the institutional arrangements of safety net programs? If so, what are these initiatives and what are their expected outcomes?
10. What role does stakeholder engagement play in shaping the institutional arrangements of safety net programs? How are the voices and perspectives of beneficiaries and other relevant stakeholders taken into account?
11. How do the institutional arrangements of safety net programs align with broader social policy goals or objectives? Are there any areas where further alignment is needed to ensure program effectiveness and efficiency?

Annex III Key Informant respondents list

SN	Interview code	Profile of key informant
1	KII 01	KII 01 has served as Senior Expert of PSNP 1- 4. Currently, The informant has extensive experience and is familiar with the food security related issues and challenges in Ethiopia.
2	KII 02	KII 02 has served as Senior Expert of PSNP 1- 4. Currently, The informant has extensive experience and is familiar with the food security related issues and challenges in Ethiopia.
3	KII 03	KII 03 is a senior expert in World Bank Ethiopia Office, and he has been member of the PSNP technical working groups. He has been working very closely with Government and donor counter parts on the design and implementation of PSNP
4	KII 04	KII 04 worked in the government, NGOs. He has extensive experience and exposure for the PSNP implementation.
5	KII 05	KII 05 worked in the government, NGOs. He has extensive experience and exposure for the PSNP implementation.
6	KII 06	KII 06 is an Senior expert in MOLSA office. He as extensive and considerable experience working with PSNP partners at different level
7	KII 07	KII 07 is a Senior expert in UN agency and closely working on PSNP projects with provide technical support to the government for effective implementation
8	KII 08	KII 08 is a Senior expert in UN agency and closely working on PSNP projects with provide technical support to the government for effective implementation
9	KII 09	KII 09 is a team leader in one of food security department at Zonal level. He has rich experience on the implementation of PSNP and its coordination structure.
10	KII 10	KII 10 is an expert at MOF who closely working with PSNP implementation and has a responsibility of oversee financial regulation.
11	KII 11	KII 11 is Senior expert in the bureau of agriculture at woreda level. He has extensive engagement in PSNP implementation
12	KII 12	KII 12 is Senior expert in the bureau of agriculture at woreda level. He has extensive engagement in PSNP implementation

Annex IV list of Result figures

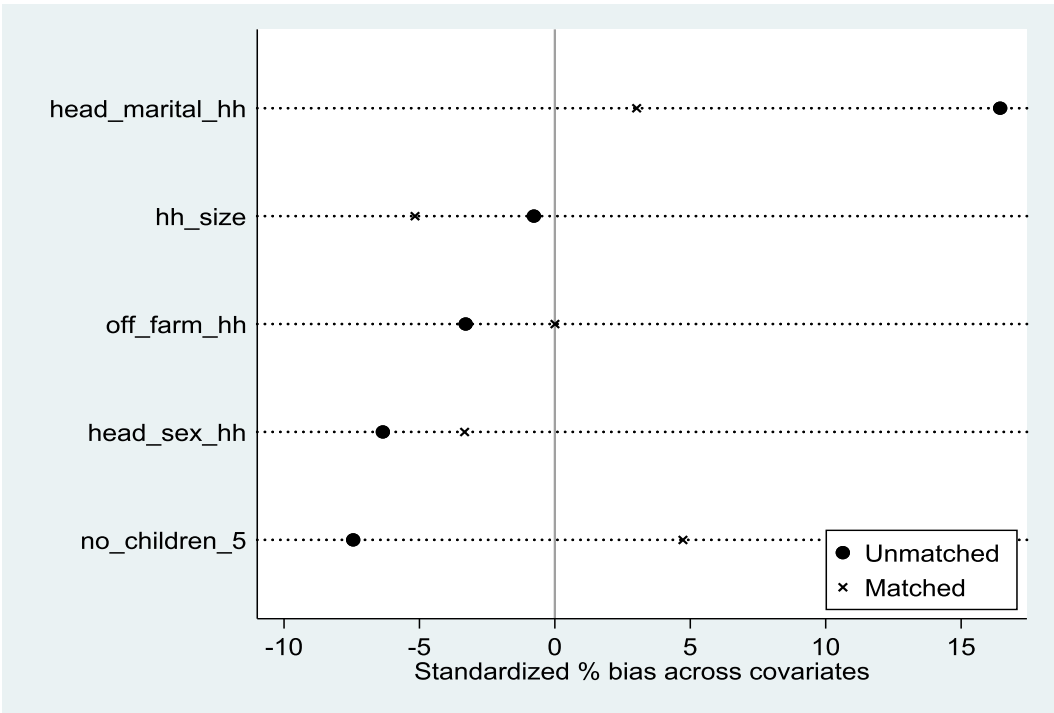


Figure. Balancing Property for the propensity score matching model

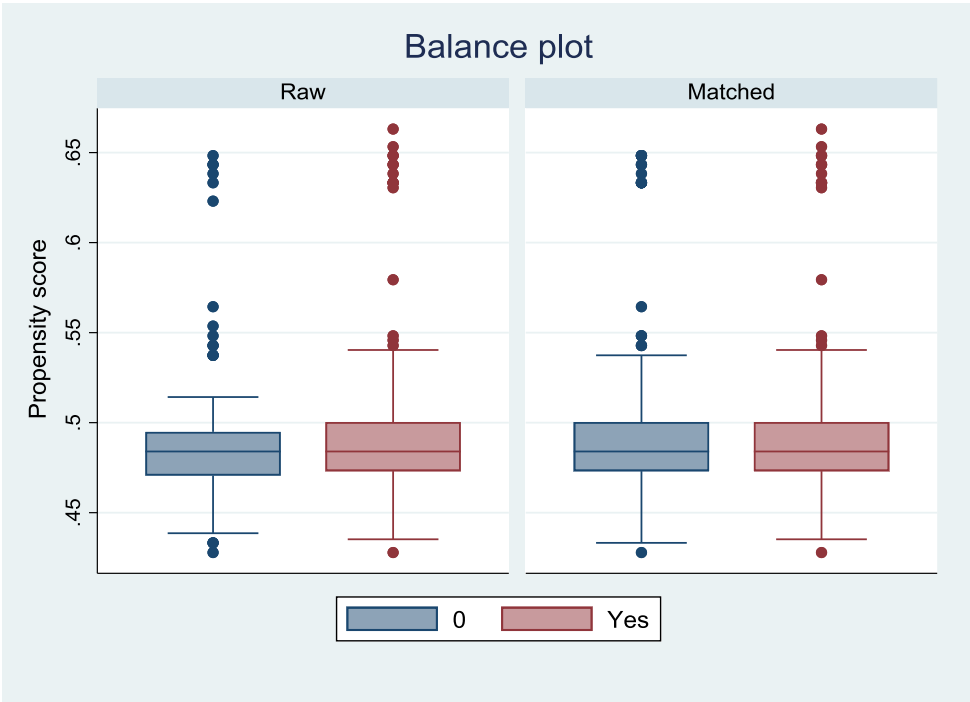


Figure. Balancing Plot

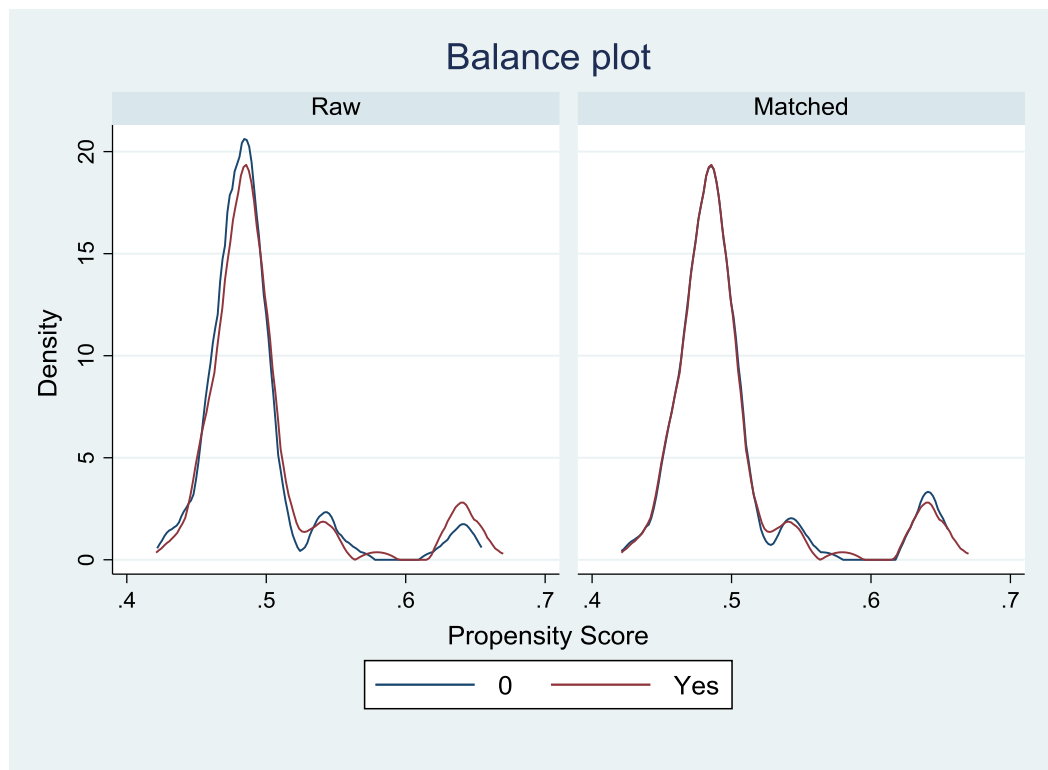


Figure. Kernel density plot after teffcts model estimation

Annex V. Factor Analysis

```
. factor transfer D5_10 tot_credit, pcf
(obs=300)
```

```
Factor analysis/correlation      Number of obs   =      300
Method: principal-component factors Retained factors =      1
Rotation: (unrotated)           Number of params =      3
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.11989	0.14775	0.3733	0.3733
Factor2	0.97215	0.06419	0.3240	0.6973
Factor3	0.90796	.	0.3027	1.0000

```
LR test: independent vs. saturated:  chi2(3)  =    3.45 Prob>chi2 = 0.3273
```

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
transfer	0.5716	0.6732
D5_10	-0.5539	0.6932
tot_credit	0.6973	0.5137

```
. factor tlu_pcata asset_index , pcf
(obs=300)
```

```
Factor analysis/correlation      Number of obs   =      300
Method: principal-component factors Retained factors =      1
Rotation: (unrotated)           Number of params =      1
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.32321	0.64641	0.6616	0.6616
Factor2	0.67679	.	0.3384	1.0000

```
LR test: independent vs. saturated:  chi2(1)  =   32.93 Prob>chi2 = 0.0000
```

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
tlu_pcata	0.8134	0.3384
asset_index	0.8134	0.3384

```
. factor      drink_wat_dist electricity safe_water pri_sch_dist_inv ftc_dist  ///
> drink_wat_dist_inv ftc_dist_inv , pcf
(obs=288)
```

```
Factor analysis/correlation                                Number of obs   =      288
Method: principal-component factors                        Retained factors =       3
Rotation: (unrotated)                                     Number of params =     18
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	2.25623	1.06527	0.3223	0.3223
Factor2	1.19096	0.07236	0.1701	0.4925
Factor3	1.11860	0.14732	0.1598	0.6523
Factor4	0.97128	0.29398	0.1388	0.7910
Factor5	0.67730	0.04500	0.0968	0.8878
Factor6	0.63230	0.47897	0.0903	0.9781
Factor7	0.15333	.	0.0219	1.0000

LR test: independent vs. saturated: $\chi^2(21) = 470.49$ Prob> $\chi^2 = 0.0000$

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
drink_wat_~t	-0.8220	0.2880	0.2878	0.1585
electricity	0.0483	0.4822	0.2748	0.6896
safe_water	0.2957	-0.5384	0.6185	0.2401
pri_sch_di~v	0.4465	0.6579	0.0333	0.3668
ftc_dist	-0.8175	0.1315	0.4655	0.0977
drink_wat_~v	0.5503	-0.0377	0.5798	0.3595
ftc_dist_inv	0.5660	0.3661	0.1538	0.5220

```
. factor head_edu_hh dep_ratio non_farm_hh , pcf
(obs=279)
```

```
Factor analysis/correlation                                Number of obs   =      279
Method: principal-component factors                        Retained factors =       1
Rotation: (unrotated)                                     Number of params =       3
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.17677	0.25121	0.3923	0.3923
Factor2	0.92556	0.02790	0.3085	0.7008
Factor3	0.89766	.	0.2992	1.0000

LR test: independent vs. saturated: $\chi^2(3) = 6.25$ Prob> $\chi^2 = 0.1002$

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
head_edu_hh	0.6370	0.5942
dep_ratio	0.5917	0.6499
non_farm_hh	0.6488	0.5791