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***Gender Finance Gap and Women Economic
Empowerment in Ethiopia***

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Abstract

This study was aimed to estimate the gender finance gap, and the role of financial inclusion on women economic empowerment in Ethiopia. We use two publicly available datasets: The Global Findex and The Ethiopian Living Standards Measurement Surveys (LSMSs) of the World Bank Group. The estimates show that adult Financial Inclusion (FI) has not yet exceeded one third of the adult population in Ethiopia. Estimates of the gender finance gaps are about 12% and 16% in 2017 and 2018, respectively. Education, income, and age are the main factors that could explain the existence of gender finance gap in Ethiopia. The effect of FI on women's labour supply is positive. It increases women's weekly work hours in paid casual, temporary and non-agricultural works by more than four hours per week. Furthermore, the presence of financially included adult women in the household increases households' asset accumulation and total expenditure on nondurable items. The Average Treatment Effects (ATE) of FI on monthly households' expenditures of non-food and non-durable items is about ETB 240 when we compare a household who has at least one financially included woman with a household who has not such inclusion. Therefore, policies that could increase women's ownership of bank account and utilization of financial institutions could increase women empowerment through increasing households' total expenditure on non-food and non-durable items and increase their participation in paid activities that lead to increased household's asset accumulation and welfare in Ethiopia.

Key words: Gender Finance Gap, Women Economic Empowerment, Women's Time Use, Ethiopia.

1. Introduction

1.1 Background

Women economic empowerment and financial inclusion have become a global policy agenda to achieve sustainable development goals. Historically, the notion of women economic empowerment has gotten the greatest attention in the feminism literature since the 1940's. The structural-functionalist approach, which dominates the 1940's and 50's, suggested that the social system segments a particular group in the society can be aligned to a certain act of labour and hence gender inequality exists in a way that create division of labour. Therefore, women would work home, and men provide income for the family. The liberal theory considers women and development as a part of the process of modernization. Women were not considered as a separate group of the society in the process of development. However, the liberal feminism, that criticizes the liberal theory of self, asserts that the existing customary and legal barriers are the causes of female subordination which blocks women's success to the public world ([Sinopoli & Hirschmann, 1991](#)). The role of women as an agent of development process and their role in the national economy has been recognized in the United Nation's Women in Development (WID) framework in the 1970's ([United Nations, 1976](#)). In the 1980's, the Gender and Development (GAD) approach, which was built on socialist feminism, emphasized the productive and reproductive aspect of both women and men in the social, economic and political courses of the society ([Eva M, 1988](#)). In general, the GAD approach was comprehensive that took women as an agent of change inside and outside the household.

Recently, women's Empowerment is defined in broad sense as an expansion of freedom of choice and action in controlling resources and decisions which characterize relations within household and/or between people ([Narayan-Parker, 2002](#)). It constitutes four fundamental elements: access to information, inclusion, accountability of leaders and enhancing the local capacity of disadvantaged groups of the society. Since women are parts of different segments of the society, the classification could create an overlap across the different income groups in which women are involved. In broader sense, Women Economic Empowerment associates with empowering women in decision making, accessing resources and opportunities. Access to resources though control over finance matters improves women's ability to make purchases on behalf of the household or for personal use. It is effective when women enjoy their right to control, benefit

from and make decision about resources, assets, and own time at the household level ([Kidder et al., 2017](#)). As a result, household level analysis of women empowerment is plausible to make policy as well as strategic interventions ([Malhotra & Schuler, 2005](#)).

Most importantly, women and girls comprise half of the total population of the world as well as in Ethiopia. They hold half of the human potential in the country ([UN Women, 2018](#)). However, women in all regions worldwide continue to bear more burden of domestic unpaid works including child and adult care, cooking, and other cleaning duties more than men do. Women spend three times as many hours on domestic unpaid works and spend 38 more minutes per day on total work compared to men ([UN Women, 2022](#)). In developing countries, women are involving not only in domestic production and childcare but also in producing food outside home ([FAO, 2011](#)). Therefore, empowering women would lead to uplifting a considerable number of the world population. Accordingly, the United Nations General Assembly adopted 17 Sustainable Development Goals (SDGs) of which Gender Equality (Goal 5) and Reducing Inequalities (Goal 10) aim to empower women in decision-making, accessing resources and reducing inequality within and among countries by 2030 ([United Nations, 2015](#)). However, women are not yet equal to men in accessing financial services in sub-Saharan Africa (SSA) ([Aterido et al., 2013](#); [Mndolwa & Alhassan, 2020](#)). Gender inequality persists and inhibits economic efficiency and growth in SSA ([Mark et al., 2006](#)).

On the other hand, financial inclusion (FI) has become a policy agenda to achieve SDGs in many countries. It is defined as individuals having a sustainable access, availability and use of the formal financial services such as making payments, saving money, getting credit and insurances irrespective of the level of income and education ([Sarma & Pais, 2011](#); [World Bank, 2022a](#)). Access to financial services generate poverty reduction and empowering effects ([Duvendack & Mader, 2020](#)). Empowering women to access finances contributes a lot in closing the existing gender gap in education, asset ownership and income in SSA. According to Global Partnership for Financial Inclusion([GPFI \(2022\)](#)), 35 percent of adults in Ethiopia have formal bank account and only 29% are female. Twelve percent of adults have made digital transaction in 2017.

Accessing financial services has a welfare improving impact not only for a woman but also families related to her. For instance, when a woman have access to the financial system, she is more likely to invest in education, health and other welfare improving activities than a woman who is financially excluded at household

level ([Dupas & Robinson, 2013](#)). In addition, if women have access to saving and credit, it can assure their economic resilience, strength their control over financial resources and improves their bargaining power within the household ([Ashraf et al., 2010](#); [Hashemi et al., 1996](#)). Therefore, FI empowers women in decision-making, reduce income inequality and poverty, and helps lower income inequality that could guarantee the achievement of sustainable development goals by 2030 ([Beck et al., 2007](#); [Zhang & Posso, 2019](#)). Consequently, FI through creating access to formal bank account, and its usage and utilization of financial products has a positive impact on women economic empowerment, reducing poverty and closing the existing gender gap ([Hulme & Mosley, 1996](#); [Norwood, 2005](#)).

In addition, financial inclusion promoted the standard living of the poor and economic empowerments of women in India ([Swamy, 2019](#)). If a woman has a saving account, her commitment for regular deposit increases; and hence, her household decision making power and spending on household items also improves ([Ashraf et al., 2010](#)). An experimental evidence in India shows that woman who controls earned income, a treatment of direct deposit in her bank account, increases her labour supply and working outside home compared to a woman who only has a bank account ([Field et al., 2021](#)). However, an experimental evidence from Uganda shows that conditional microcredit with training does not have short run effect on female-owned business ([Fiala, 2018](#)). Hence, financial inclusion per se does not improve women's participation in paid labour outside home.

Moreover, access and use of financial services enhance women's control over resources ([Gammage et al., 2017](#)). Control over properties (agency) and ownership of assets improve women's bargaining power within the household ([Panda, 2003](#)). Women's bargaining power in financial matters, which is a key components of WEE, increases household's' consumption expenditure ([Ashraf, 2009](#); [Duflo, 2012](#)), human capital investments ([Duflo, 2003](#); [Thomas, 1990](#)) and investment in child education, and nutrition ([Duflo, 2003](#)). For example, when poor women are provided with livestock assets and skillsets, it raises their earnings and aggregate labour supply which ultimately lead them to asset accumulation and poverty reduction that sustained after seven years in Bangladesh ([Bandiera et al., 2017](#)). Similarly, an increase in the proportion of income of wives increases expenditures on food items in Côte d'Ivoire ([Hoddinott & Haddad, 1995](#)). However, the timing of flow of income received by a woman has a paramount importance in influencing food expenditure in Niger ([Hopkins et al., 1994](#)).

Furthermore, the recognition of asset ownership is a critical means to women bargaining power in household and their community ([Grown, 2010](#)). Assets play a significant role in reducing poverty. It strengthens the ability of households and individuals to respond to aggregate shocks or idiosyncratic shocks, and reduces distress ([Carter & Barrett, 2006](#); [Kamal, 2014](#)). Therefore, possession of assets help households and individuals cope with vulnerability and avoid impoverishment ([Hulme & McKay, 2005](#)).

However, the utilization of financial services does not reach to the level required to achieve the SDGs. In developing countries, a slightly more than 70% of adults have bank account in formal banking and related financial institutions. The gender financial gap in SSA countries is two times larger than the developing economies averages ([Demirgüç-Kunt et al., 2022](#)). The gender finance gap in account ownership in developing economies has reduced to 3% from 9% in 2017, only 40% of adults in the lower income group and less educated entitled to account ownership. The Global Findex database also further revealed that only 42% of adults in developing economies have made savings in 2021.

Women in Ethiopia are among the most vulnerable groups in the society in terms of educational attainment, financial inclusion, and asset ownership. For instance, about 60% of women are illiterate, twice as large as men illiteracy rate in both the lower and higher 20% of the income distribution from 2005-2016 ([UN Women, 2018](#)). Women literacy rate in Ethiopia was 44.4% in 2017. Adult literacy rate gap between men and women is about 14.8% which was larger than the adult literacy rate, 13.11%, in SSA ([World Bank, 2022b](#)). Although they constitute 60% of the total population, forty three percent of them do not have access to cell phone in 2021 ([ESS, 2021](#)). Financial exclusion of women is pervasive in areas where large educational attainment gap between women and men exists ([Morsy, 2020](#)). For instance, women with lower level of education and overdependence on men contributes for gender financial disparities in Tanzania ([Mndolwa & Alhassan, 2020](#)). Spending on women economic empowerment through increasing access to education, finance and technology leads to inclusive growth and poverty reduction in SSA. Therefore, economic empowerment of women through financial inclusion requires enabling environments such as education, access to financial institution and legal environment.

The Ethiopian government devised the first national women's policy in 1993 to establish an appropriate structure within the government institutions to setup gender-sensitive, equitable and assuring its commitment to empower women

in social, economic, and political arena. It further reiterated in the ratification of the FDRE constitution that women are equal to men in acquiring, administering, controlling, using, and transferring of property. The National Action Plan for Gender Equality (NAP-GE) (2006-2010) also aimed to achieve equality of men and women in social, economic, and political development. The Government of Ethiopia has indicated a priority strategy in the women's development and change strategy that identifies elimination of violence against women and ensuring the incorporation of protection of women from violence in other national plans. Furthermore, the recent 10-year development plan (2020-2030) has emphasised on market-based economics system, stable macro economy, structural economic transformation, improving social development services, building strong institutions, and maintaining peace, security, and justice. Its future enshrines the natural, human, and democratic rights of women, children, and youth. It reiterates the participation of women in all stages of economic, social, and political fields ([MoPDC, 2020](#)).

Previous literatures on financial inclusion conducted in Ethiopia mainly focused on investigating socioeconomic barriers and derivors of financial inclusion using cross-sectional surveys ([Desalegn & Yemataw, 2017](#); [Mossie, 2022](#)). They use three FI indicators (such as having a bank account, saving and credits), which may not be independent to one another to estimate determinants of FI. They agree that voluntary and involuntary barriers determine financial inclusion in Ethiopia. However, the factors that explain the gender gap in financial inclusion are not clearly pointed out in the literatures. The dynamics of financial inclusion and its relation to WEE were not shown in these literatures. Although the impact of financial inclusion on women empowerment is positive, it depends on the financial service program features, geography and cultural context ([Duvendack & Mader, 2020](#)). In general, previous literatures on the effects of FI on women empowerment have shown mixed results depending on geography, income distribution, and cultural context. Although many of them support the evidence that FI empowers women economically, it also increases women's workload and responsibilities in activities beyond domestic production. Moreover, the country's economic policy and strategies try to show the importance of women's development though they do not show up the specific role of women's financial inclusion on economic empowerment.

Therefore, this study tries to show how does women's financial inclusion affect their economic empowerment in Ethiopian context using time spent in paid labour and household's asset ownership. Consequently, this paper fills the gap in

the previous studies by examining the effects of financial inclusion gap on women economic empowerment at household level. It further deals with underlying factors that explain the existing gender finance gap in Ethiopia. So, the hypothesis “woman’s financial inclusion leads to woman’s greater economic empowerment” is tested using asset ownership and time use. It explores the role of financial inclusion in assuring women economic participation and asset ownership and its implication on their overall welfare. Subsequently, it provides a policy recommendation to close the existing gender finance gap and the importance of women’s financial inclusion by indicating the close relationship between women’s FI and their economic empowerment. Therefore, the study tries to answer the following research questions: (a) Are women and men different in their access to finance services in Ethiopia? (b) How large is the gender finance gap in Ethiopia? (c) Why women and men are different in their access to the available financial services? and (d) Does financial inclusion affect WEE?

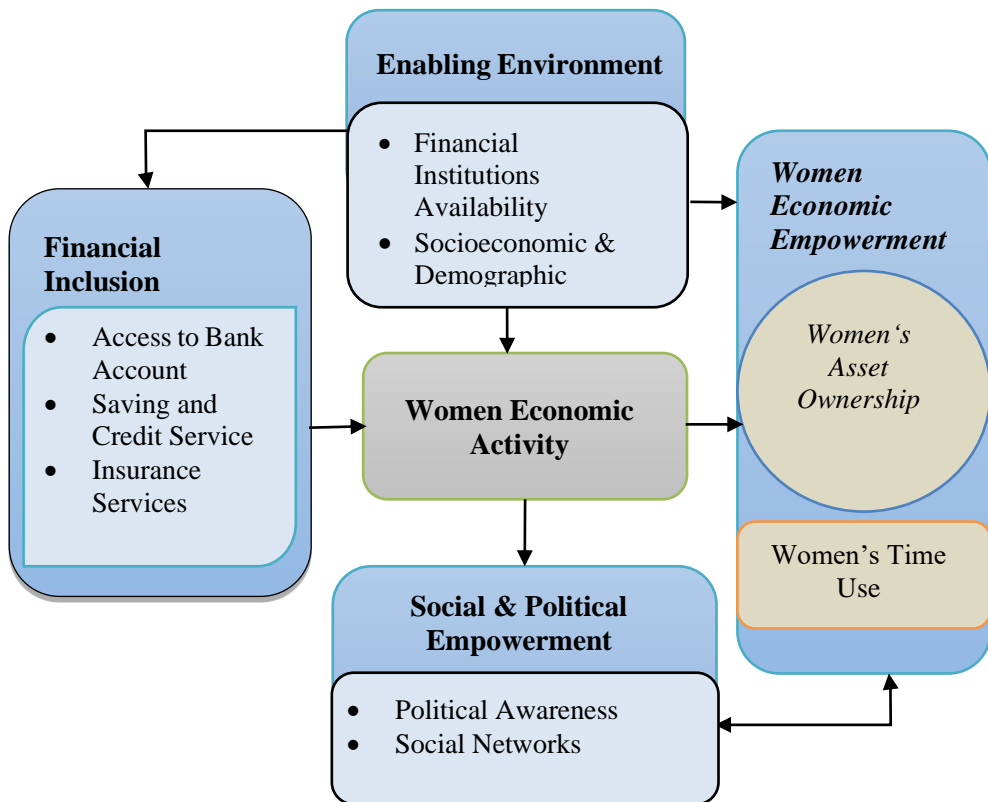
The scope of the study is limited to individuals sampled in the Global Financial Index conducted in 2014 and 2017. These rounds of the global financial index sampled one thousand individuals in each round that are independent of each other. This study further uses the latest LSMS dataset conducted in 2018/19 to estimate the effects of financial inclusion gap on women economic empowerment.

1.2 Conceptual Framework

The concept of empowerment has been described as a process of augmenting individual’s ability, who have been denied the ability of choice, to make choice and self-determination ([Kabeer, 1999](#); [Sen, 1990](#)). Thus, empowerment entails the process of change which may constitute interrelated dimension of access to resources, social networks, ability to define goals and the right to achievement of choice. The study adopts the conceptual framework of [Mayoux and Hartl \(2009\)](#) with due consideration of relevant literatures of financial inclusion discussed above. Financial Inclusion is one of the instruments that contribute to various dimensions of WEE. Although there is no universally accepted definition of WEE, it has been commonly aligned with the concept of women’s acquiring skills, resource and ability for decision-making ([Laszlo & Grantham, 2017](#)). WEE has both subjective and objective dimensions. Oxfam’s women economic empowerment conceptual framework states that “effective economic empowerment for women occurs when women enjoy their rights to

control and benefit from resources, assets, income and their own time, and when they have the ability to manage risks and improve their economic status and wellbeing”(Kidder et al., 2017). Therefore, WEE constitutes input to production decision, access and ownership of resources, income, leadership, and time use.

Figure 1: Conceptual Framework for Financial Inclusion and Women Economic Empowerment



2. Data and Methods

2.1 Type and Sources of Data

To estimate the gender finance gap and to identify its underlying determinants, the study uses the World Bank’s Global Findex Database collected in 2014 and 2017. It was collected from a randomly selected sample of 1000

individuals in Ethiopia. Therefore, it gives insights to estimate the gender finance gap and the determinants of financial inclusion in each wave. These datasets are independent of each other aimed to collect a financial inclusion of people related to financial account ownership, utilization of financial institution for saving and credit, and having insurance in the last 12 months. Furthermore, the study uses a nationally representative latest Ethiopian LSMS dataset conducted in 2018/19. Beyond being the recent LSMS dataset, the survey instrument incorporates the financial inclusion module that helps to uncover the role of women’s financial inclusion and associated factors on women economic empowerment in Ethiopia. It is particularly an important dataset that integrates the financial inclusion module, household’s asset ownership, and women’s time spent in paid labour.

2.2 Method of Data Analysis

Following [Zhang and Posso \(2019\)](#), the FI multidimension inclusion index is constructed using three dimensions of financial inclusion indicators (Table 1). These three dimensions are equally weighted to calculate the composite indicator of financial inclusion score. It includes ownership of bank account, access to saving and credit, and access to insurance services.

Table 1: Dimension of Financial Inclusion Indicators

Dimensions (D_i)	Weight		Financially included
Bank account	1/3		If an adult woman in the household has an account or has registered book at the financial institution.
Saving and credit/loan	1/3	1/6	If an adult woman has saved any amount in the last 12-months in the financial institution.
		1/6	If an adult woman has access to loan/credit from bank, microfinance institution or other formal institutions.
Insurance	1/3		If an adult woman belonging to a household make payment to insurance through microfinance, banks, or other financial institution.

The financial inclusion (FI) score is calculated as follows:

$$FI = \sum_i^3 \frac{1}{3} D_i \quad (1)$$

Where D_i is the financial inclusion dimensions that includes a dummy variable for opening a bank account, and utilization of the financial institutions in the last 12 months including a women use of financial institution for the purpose of saving and credit, and payment for insurance services. We assume that access and utilization of financial institutions are crucial elements of FI although access is determined exogenously by the availability of financial institutions in the nearby locations. Therefore, access to finance can be defined through the availability of financial institution in which an adult has opened bank account in the survey year. In addition, utilization of financial services refers to the use of financial institution of a person who has a bank account for transaction purposes (either received or paid cash) in the form of services related to cash saving, deposit, credit, wage payment, or remittances in the survey year. Insurance services are not prevalent at the household level and in this dataset. Hence, it is redefined the financial inclusion index in equation 1 by reducing the insurance variable and introducing detail variables of financial institution utilization in equation 2. The utilization of financial institution is defined using the combination of saving and credit sections in equation 2 below.

$$FI = \sum \frac{1}{3} (Fi1) + \frac{1}{3} (Fi2) + \frac{1}{3} (Fi3) \quad (2)$$

Where $Fi1$ is a binary indicator of whether a woman has opened a formal bank account or not in either commercial banks or microfinance institutions in the last 12 months. $Fi1 = 1$ if a woman has a formal bank or microfinance accounts, other wise zero.

$$Fi2 = \sum \frac{1}{3} (s1) + \frac{1}{3} (s2) + \frac{1}{3} (s3) \quad (3)$$

$$Fi3 = \sum \frac{1}{3} (c1) + \frac{1}{3} (c2) + \frac{1}{3} (c3) \quad (4)$$

Where $Fi2$ includes a financial activity of a woman that has made an inflow of money to the bank or microfinance institution in the last 12 months. It is considered as the saving group variable that leads to a cash inflow to the bank through savings (s1), deposit(s2) or sending remittances(s3) through the financial institution.

s1, s2 and s3 are binary indicators that indicate whether a woman has made savings, deposit and sending remittance using the financial institutions in the last 12 months, respectively. Similarly, **Fi3** is an activity that refer to the withdrawal money from financial institutions. It is considered as a credit group variable that initiates the outflow of cash from the bank by the respondent as borrowing (c1), wage received(c2), and collects remittance (c3) from the financial institution in the past survey year. **c1, c2 and c3** are binary indicators that indicate whether a woman has gotten credits, received wage payments, and collected remittances using the financial institutions in the last 12 months, respectively. Finally, **FI** score is determined by the cut-off point ‘**0.5**’. A woman is financial included if **FI** score is greater than the cut-off point. In other words, a financially included woman has not only opening bank account but also deposits money, making payments or transferring money using the financial institutions.

2.2.1 Estimating Gender Finance Gap

Following [Fairlie \(2005\)](#)'s nonlinear decomposition method, which is an extension of the [Oaxaca \(1973\)](#) linear method, has been used to estimate the contribution of both explained and unexplained factors that determine the gender finance gap in Ethiopia. The nonlinear equation of FI is represented by the cumulative distribution function in Equation (5) below. It estimates the determinants of financial inclusion by estimating the logistic cumulative distribution function. Then, it decomposes the total variation into observed and unobserved endowments in Equation (6) below. Therefore, this method of non-linear decomposition approach has a two-fold advantages over the linear approaches. It provides the estimates for the determinants of financial inclusion in the first stage for both and each groups separately. Then, it computes the decomposition of gender finance gap in the second stage. This approach considers the differences in the effects of the covariates on the outcome variable between the two groups (male vs female) being compared.

$$FI = F(X\hat{\beta}) \quad (5)$$

The non-linear decomposition can be written as

$$\overline{FI}^m - \overline{FI}^f = \left[\sum_{i=1}^{N^m} \frac{F(X_i^m \hat{\beta}^m)}{N^m} - \sum_{i=1}^{N^f} \frac{F(X_i^f \hat{\beta}^m)}{N^f} \right] + \left[\sum_{i=1}^{N^f} \frac{F(X_i^f \hat{\beta}^m)}{N^f} - \sum_{i=1}^{N^f} \frac{F(X_i^f \hat{\beta}^f)}{N^f} \right] \quad (6)$$

Where \overline{FI}^m and \overline{FI}^f are the average probability of the binary outcome of financial inclusion for female and male computed using (5). $F(X\hat{\beta})$ is the cumulative distribution function from the logistic cumulative distribution. N^m and N^f are sample size for adult male and female participated in the financial inclusion survey, respectively. X_i^g are row vector of characteristics for individual i of gender g (male or female). Coefficients $\hat{\beta}^m$ and $\hat{\beta}^f$ show that an estimated slope for male and female groups.

The first part of the right-hand side in the above equation (6), $\left[\sum_{i=1}^{N^m} \frac{F(X_i^m \hat{\beta}^m)}{N^m} - \sum_{i=1}^{N^f} \frac{F(X_i^f \hat{\beta}^m)}{N^f} \right]$ represents part of gender finance gap due to group differences in distributions of observed characteristics X_i . Whereas, the second term $\left[\sum_{i=1}^{N^f} \frac{F(X_i^f \hat{\beta}^m)}{N^f} - \sum_{i=1}^{N^f} \frac{F(X_i^f \hat{\beta}^f)}{N^f} \right]$ represents differences in the group processes determining levels of Financial Inclusion (FI) among men and women. The second part of the decomposition also captures the portion of the gender finance gap due to group differences in unmeasurable or unobserved endowments. To estimate the gender finance gap using the above nonlinear decomposition method, the Global Financial Inclusion (Findex) database collected in Ethiopia in 2014 and 2017 has been used.

2.2.2 Effect of Financial Inclusion on WEE

In this section, the study estimates the effect of financial inclusion on Women Economic Empowerment (WEE) using an indicator variable of their involvement in paid labour and the time spent in it. WEE is defined based on the Oxfam's conceptual definition which is called an objective approach of measuring WEE. It encompasses women's time use on paid work and her household's asset ownership. The dependent variable is woman labour supply in paid work. It is observed when she decided to participate in paid activities. Following [Heckman \(1976\)](#); [Lewis \(1974\)](#), the Heckman selection model was adopted to estimate the effects of financial inclusion on women's time spent on paid labour (WEE_i) assumes the underlining relationship of the following regression (7).

$$WEE_i = FI_i\beta + X_i\gamma + \varepsilon_{1i} \quad (7)$$

Where FI_i is a financial inclusion score calculated in equation (2) above, X_i s are covariates including individual and household characteristics, and ε_{1i} is the error term. Therefore, the dependent variable is observed if the selection equation in equation (8) below is satisfied.

$$y_i = \mathbf{1}(Z_i\varphi + \varepsilon_{2i}) \quad (8)$$

If $y_i = 1$ then it is observed that WEE_i and 0 otherwise, Z_i are the covariates modelling selections (including education, distance to the market and marital status). ε_{2i} is the observation-level selection error. These two error terms ε_{1i} and ε_{2i} follow a normal distribution with zero mean, and equal variance and unit variance, respectively with a correlation coefficient $\text{corr}(\varepsilon_1, \varepsilon_2) = \rho$.

$$\varepsilon_1 \sim N(0, \sigma)$$

$$\varepsilon_2 \sim N(0, 1)$$

To estimate the effects of financial inclusion on women's asset ownership, we use the quasi-experimental design called matching method. We assume that women economic empowerment, asset ownership and expenditure on nondurable assets (HA), conditional on observed characteristics (X') is independent of the treatment assignment of financial inclusion indicator (FI). Previous literatures shed light on the impact of microfinance program on poverty reduction, gender, small business, capital return, women empowerment, household expenditure and welfare ([de Mel et al., 2008, 2009](#); [Ganle et al., 2015](#); [Ghosh, 2022](#)). For instance, [Banerjee et al. \(2015\)](#); [de Mel et al. \(2008, 2009\)](#) conducted a randomized control trial (RCT) to evaluate group lending microcredit programs. They have used an OLS method to estimate the effect of microcredit treatment on consumption, women empowerment, and labour supply outcomes ([Banerjee et al., 2015](#)). [Swamy \(2014\)](#) also employed the quasi-experimental method, difference-in-difference estimator using panel least square and GMM, to estimate the impact of microfinance on household income growth in India. [Rahman et al. \(2009\)](#) and [M. M. Pitt et al. \(2003\)](#) also used a control group experiment to estimate the impact of microcredit program in Bangladesh. Although most studies on FI and WEE employed quantitative

method of analysis, a research conducted in Ghana was designed through a longitudinal qualitative approach to estimate the association of credit and women empowerment ([Ganle et al., 2015](#)). Therefore, we assume the conditional expectation $E(HA|X, FI)$ is linear in the outcome equation (9) shown as follows.

$$HA = X'\beta + \gamma FI + \varepsilon \quad (9)$$

Where, FI is an exogenous financial inclusion binary treatment indicator variable. HA is a measure of WEE proxied by household's asset ownership estimated by the first principal components, X_i is other socioeconomic covariates that are time invariant, and ε_i is a random error term. A binary treatment indicator $FI = 1$ if a household has at least one financially included woman, and zero otherwise. Following ([Rosenbaum & Rubin, 1983](#)), assume that $E(\varepsilon|FI) = E(HA - X'\beta + \gamma FI|FI) = 0$, the Average Treatment Effects (ATE) of financial inclusion on asset ownership and expenditure on nondurable assets (HA) are estimated using alternative matching techniques called nearest neighbourhood matching, and the propensity score matching methods. It compares HA between households who has at least one financially included women with a comparison household who don't have one financially included adult woman in equation 10.

$$ATE = E(HA^1|x, FI = 1) - E(HA^0|x, FI = 0) \quad (10)$$

Where HA^1 is household's asset index or expenditure for a household who has at least one financially included women and HA^0 is household's asset index or expenditure for a non-financially included women. The outcome variable is measured at the household level using asset-based index, and household expenditure on non-durable products. Households' Asset Ownership / Asset based index is constructed using a Principal Component Analysis (PCA) of household ownership of different assets in the survey year. By predicting the first component of the PCA as an index helps us to measure the total asset score for a household.

3. Findings

3.1 Gender Finance Gap

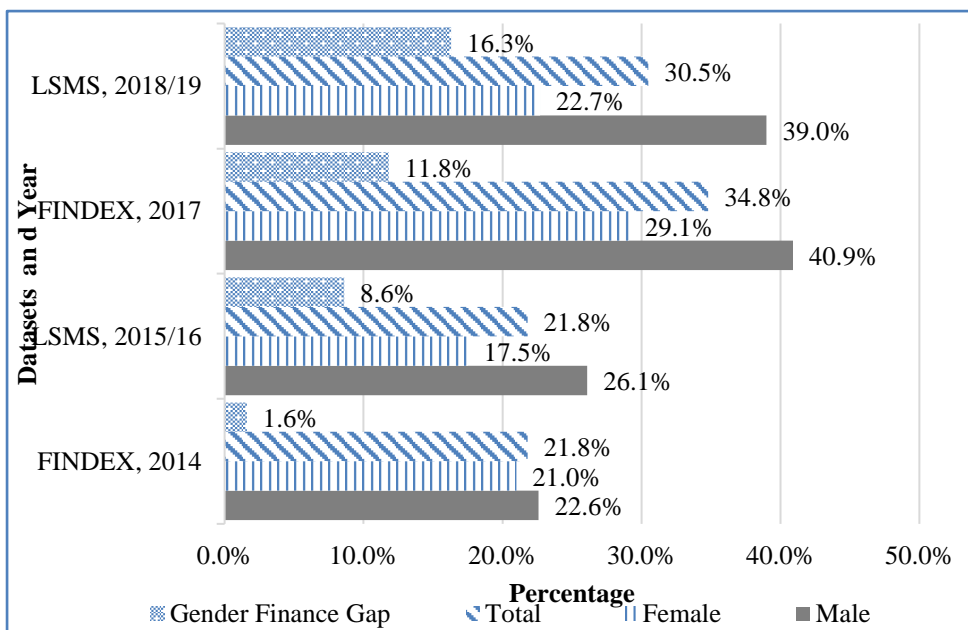
As shown Table 2 below, the proportion of adults (15+) who have bank account turns out to be 21.79% in 2014. About 78% of adults in Ethiopia did not have a formal bank account in 2014. Although there is an improvement in accessing financial institutions for both sexes which reaches to 35%, about 70% of Ethiopian female adults did not have a formal bank account in 2017. The recent LSMS dataset has also shown that about 30.5% of adults had a bank account. However, adult female is far behind compared to the male counterparts. It clearly shows that there is a gender finance gap in account ownership as well as access to financial institutions.

Table 2: Gender Finance Gap Based on Account Ownership in The Financial Institutions in Ethiopia

Datasets	Year	Male (%)	Female (%)	Total (%)	Gender Finance Gap (%)
FINDEX	2014	22.6	21.0	21.8	1.6
	2017	40.9	29.1	34.8	11.8
LSMS	2015/16	26.1	17.5	21.8	8.6
	2018/19	39.0	22.7	30.5	16.3

The Gender finance gap in account ownership is increasing despite the rise in the proportion of women financial inclusion. Despite the rise in the accessibility of financial institutions, women are still behind the bar when compared to men in different surveys. It is evident that LSMS surveys support the existence of gender finance gap in Ethiopia. Although the proportion of men who have bank account increases from 2015 to 2018 LSMS waves, the gender finance gap widens from 8.6 % in 2015 to 16.3% in 2018 (Figure 2 below). The gender finance gap in LSMS surveys is bigger than the FINDEX surveys. It could be associates with the nature of LSMS sampling frame that incorporated a rural sample enumeration area in which financial institutions are not prevalent.

Figure 2: Gender Finance Gap Across Different Surveys in Ethiopia



The relationship between age and account ownership is non-linear. The turning point is around age 48. Therefore, as age rises by one year the probability of having bank account increases by 2.3 percentage point until age 48 then declines. Similarly, the financial inclusion index that account for access and utilization of financial institution is nonlinear with the turning point is at 46 years old. Adult males are more likely to have a bank account or financially included than female adults. It shows that the presence of gender gap in finance in 2017. In other words, adult male is 7 to 8 percentage point more likely to be financial included than female adults in column 1 and 2, respectively. The coefficients for the income distribution from the third through fifth income quintiles are positive and statistically significant. Comparing with the base category of being in the lower 20% of the income distribution, being in the third, fourth and fifth-income quintile increases the probability of opening bank account by 9, 15 and 28.6 percentage points, respectively.

Table 3: Average Marginal Effects of Logit Regression Output for the Determinants of Financial Inclusion and Gender Finance Gap in Ethiopia in 2017

Variables	Account Ownership	FI index
Female	-0.072* (-2.34)	-0.076** (-2.79)
Age	0.025*** (3.82)	0.023** (3.12)
Age square	-0.001** (-3.19)	-0.001** (-2.64)
Employment status	0.051 (1.41)	0.056 (1.79)
Income (Second 20%)	0.03 (0.60)	0.069 (1.61)
Income (Middle 20%)	0.097 (1.92)	0.12** (2.79)
Income (Fourth 20%)	0.15** (2.94)	0.17*** (3.87)
Income (Richest 20%)	0.29*** (5.33)	0.26*** (5.58)
Secondary Education	0.29*** (6.74)	0.24*** (6.07)
Saving for farm/business purposes	0.19*** (5.64)	0.21*** (7.51)
Saving for old age	0.11 (1.85)	0.089 (1.74)
saving informal savings club	0.054 (1.61)	0.046 (1.51)
Observations	1000	1000

It is evident that being older makes a person responsible for not only his own finances but also his family related expenditures. Therefore, as age increases by one year the probability of having a bank account or financial inclusion increases. Like previous studies and the presence of traditional division of labour in developing countries adult male are more likely to control financial matters of the household than adult female in developing countries. Hence, males are four percentage point more likely to have a bank account and five percent more likely to be financially included than female adult in Ethiopia. Finally, income has a positive significant effect on the probability of being financial included. Being in the higher 20% of the income distribution is more likely to financially included than an adult in the lower 20% of the income distribution. In general, being male, having a higher

income and having a secondary education positively contributes for an adult to be financially included. Despite the expected results, it is discussed so far that, the probability of having bank account and saving behaviour could be correlated with employment, earnings, and wage income. On the other hand, education attainment is endogenous and could be highly correlated with inherent ability and decision making. Unfortunately, it is not possible to control for such specification issues with the data available at hand. Therefore, the estimates could have a limited use for inference purposes, but it could show us how the gender finance gap is partly explained by education, income, and age of the respondents.

3.2 Decomposition of Gender Finance Gap

The decomposition of gender finance gap in Ethiopia is reported in Table 4 below. The total explained variation in both financial inclusion indicators ranges from 39% to 40%. The difference between female and male in account ownership and FI index are 0.047 and 0.048, respectively. Therefore, the total unexplained factors for the gender finance gap remains at 61%. As expected, the top factors explaining gender disparity in account ownership are education, income, and purpose of savings. Purpose of saving contributes the largest (45%) for the gender finance gap followed by education (39%). Saving for business purpose and for old age explain 45% and 13.5% of the gender finance gap, respectively. However, income has unexpected but significant negative effect explaining 15 % of the gender finance gap. It turns out that although the gap exists in account ownership, more females are represented in the income distribution. In other words, income quintile is negative and statistically significant indicating that the contribution of income is in favour of female in which the proportion of female in the higher quintile is higher than the male counterparts, which is expected to reduce the gender finance gap.

Table 4: Decomposition of Gender Finance Gap in Ethiopia in 2017

	Financial Inclusion indicator	
	Account Ownership	FI index
Observations (male)	398	398
Observations (female)	602	602
Probability male	0.41	0.32
Probability female	0.29	0.2
Difference (Total gap)	0.118	0.123
Total explained gap	0.047 (39.8%)	0.048 (39%)
Total unexplained gap	61.2%	61%

Furthermore, the gender finance gap has been decomposed using the financial inclusion index (FI index) (Table 5). It is estimated at about 0.123. The total explained gap is about 39%. The disparity in gender finance gap is explained by age, employment status, income and saving purpose. When age is introduced as a non-linear part in the decomposition, the gender finance gap reduces in early stage of an adult life and then contributes to widen the gap. It shows that as age increases, the probability of women access to financial system is lower than the male counterparts. Saving for business purpose contributes to 69% of the explained gap followed by education and employment status. Like the decomposition using account ownership, income contributes 25.6% but has a reducing effect on the gap. Employment status contributes about 25.8% of the explained gender finance gap. Participation of women in the labour market explains 26% of the gender finance gap, in which about 30% of female samples are out of the work force.

Table 5: Contribution of Covariates to the Gender Finance Gap

	Account Ownership	Percentage contribution to Ex. Gap	FI index	Percentage contribution to Ex. Gap
Age	0.008 (0.012)		-0.035** (0.016)	74%
Age square	-0.011 (0.009)		0.026** (0.012)	54.6%
Employment status	0.011 (0.008)		0.012* (0.007)	25.8%
Income	-0.007* (0.004)	15%	-0.012*** (0.004)	25.6%
Education	0.019*** (0.003)	39.3%	0.02*** (0.003)	36.2%
Saving for business purpose	0.021*** (0.004)	45%	0.03*** (0.005)	68.7%
Saving for old-age purpose	0.007* (0.003)	13.8%	0.007* (0.004)	14%
Saving in the informal institution	0.000377 (0.001)		0.0007 (0.001)	
Total Gender Finance Gap (TGFG)	0.118		0.123	
Explained Gap (Ex. Gap)	0.047	39.8%	.048	39%
Observations	1,000		1,000	

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

Both decompositions discussed above show that the total explained variation of observable factors to the gender finance gap is around 39%. More than 60% of the gender finance gap has been left unexplained by observable factors. It turns out that the difference between female and male in account ownership remains lower for both sexes in Ethiopia. When the financial inclusion index is introduced that considers utilization of financial institution beyond access to financial institution, account ownership could be better explained by the observable factors.

3.3 The Role of Financial Inclusion on WEE

In this section, we use the latest LSMS 2018/2019 to estimate the effects of FI on women economic empowerment. The results of the regression analysis using the Heckman sample selection model specified in equation 7 above. In the first stage, this specification corrects for the sample selection biases associated with the decision to work in paid labour. In the second stage, the impact of FI on women's labour supply is presented in the following Table 6 below.

As shown in Table 6, the effects of financial inclusion on women's labour supply in the last seven days in causal, non-agricultural, part time jobs is estimated about 4.4 hours per week. It turns out that on average being financially included increase women's labour supply by 4.4 hrs of work in paid works. Being in urban area could increase participation in paid labour due to the availability of part time jobs. Being in urban areas increase women's time spent in paid labour by 14 hrs. In other words, a woman in urban areas is likely to work about two more working days (8hrs work) than a woman in rural areas in these types of jobs. A education of a woman, certificate and above education qualification, in the selection equation affects the participation decision to work. It relates to the fact that an educated woman, who is empowered and has a qualification to involve in causal paid labour. Therefore, having a qualification certificate increase her participation in paid labour compared to a woman who has not educated. Therefore, having certificate degree and above, and being a separated woman increases her decision to participate in these job categories. However, compared to the base category single, marries and separated/divorced/separated women may reduce their labour supply in such kind of jobs due to their family support and child caring activities. It may be associated with the fact that workload in the agricultural and domestic works may not give them a chance to participate in such streams of income generating activities. Similar previous studies such as [Banerjee et al. \(2015\)](#) find out, a randomized control trial evaluation on microfinance in India, no significant impact on women's empowerment. However, it increases household head and spouse overall labour supply. [de Mel et al. \(2008, 2009\)](#) emphasised that a randomized cash grant does not have a significant impact on

women owned business unlike male’s enterprises. Being head of the household increases the participation as well as spending more labour compared with a son/daughter. In other words, if a woman is the head of the household are more likely to work in paid labour than being daughter, spouses, and other members. It is intuitively true that a woman is more responsible to the family if she is the head of the households. However, compared to a single woman, a woman who is married or was married before is working less hours.

Table 6: Heckman Selection Regression Model Results

Variables	Outcome Equation		Selection Equation	
	Coefficient	Std. errors	Coefficient	Std. errors
Age	0.04	0.05		
Financial Inclusion Index	4.42 **	1.75		
Household size	-0.84 *	0.5		
Education (Base: no / informal education)				
Primary	2.9	6.41	0.05	0.22
Secondary	2.53	5.32	0.19	0.24
certificate, diploma and above	-2.04	6.06	0.72 ***	0.21
Relationship to the household (Base: Head)				
Spouse	2.25	2.47	-0.13	0.11
Son/Daughter	-1.13	1.61	-0.51 ***	0.12
Another member in the household	9.96 ***	2.58	-0.2 **	0.08
Marital Status (Base: single)				
Married	-5.73 **	2.31	-0.15	0.13
divorced/separated/widowed	-9.28 ***	1.5	0.29 ***	0.08
Religion (Base: Orthodox)				
Protestant	-4.08 **	2.06		
Muslim	3.94	3.12		
catholic, traditional or others	9.69	8.44		
Rural/Urban				
Urban	13.86 ***	2.01		
Distance to the Market (Base <5km)				
between 5 km to 10 km			-0.08	0.07
greater than 10 km			-0.25 ***	0.06
Constant	36.87 ***	5.35	-0.47 *	0.25
Athrho	-0.32 ***			
Lnsigma	3.19 ***			

Contrary to the above findings, loan given to women is more likely to divert into consumption and productive assets in their household, lack of asset ownership in the family deters her to repayment of loan from loan-sponsored activities ([Garikipati, 2008](#)). Despite having the positive association of microcredit programs on women’s ability to influence on family issues and decision making, it also increases women’s workload burden beyond their traditional role at household level ([Malik & Luqman, 2005](#)). A qualitative research conducted in Ghana shows some women are worse off due to their inability to pay loan on time([Ganle et al., 2015](#)).

3.4 Impact of Women’s Financial Inclusion on Asset Ownership

The average treatment effect of women financial inclusion on household’s asset ownership and expenditure on non-durable is estimated using a quasi-experimental design called propensity score matching. The FI index is a one-third weighted composition of whether she has a bank account, uses for saving, gets credit from financial institution and has insurance coverage in the formal insurance institutions (Table 7). Based on this data and the FI inclusion index constructed, about 27.45% of adults; 21.62% of female and 34.07% of male adults are financially included in 2018. It turns out that the gender finance gap is about 12.45%.

The Average Treatment Effect (ATE) of financial inclusion on asset score is positive and statistically significant. It ranges from 1.4, 1.6 and 1.3 for a one nearest neighbourhood matching, three nearest neighbourhoods and a Propensity Score Match (PS-match), respectively. It indicates that a household with at least one financially included woman has on average 1.3 score better in (PCA score of assets) than a household with no financially included women. In other words, if at least one woman gets an access to financial institutions, it increases household ownerships of assets. The average treatment effect of FI on women asset-based index is reported in the following Table 7 below

Table 7: Average Treatment Effects of Women Financial Inclusion on Household’s Asset Ownership

Average Treatment-Effects (ATE) of FI estimation (at least one FI Woman)			
Asset Score	Coefficient	Std. Error	Matching Method
ATE	1.405***	0.111	One Nearest Neighbourhood
ATE	1.606***	0.11	Three Neighbourhoods
ATE	1.312***	0.114	Propensity Score

Note: *** denotes 1% significance level.

The Average Treatment Effects of women financial inclusion on household's asset ownership (asset score) using the one neighbourhood matching algorithm is 1.41. It turns out that having at least one financially included woman in the household impacts asset accumulation at the household level. The Average Treatment Effects of women's financial inclusion on asset score using three nearest neighbourhood match is 1.61. In this case, there is a match of a treatment group with the three closer comparison groups in the control group. In the above table it has been shown the comparison of treatment and comparison groups based on the propensity score values of the comparison groups. It indicates the Average Treatment Effects of women financial inclusion on asset ownership is about 1.3. In general, the impact of women's FI on asset accumulation is positive.

Figure 3: Graphical Representation of ATE using different Matching Method

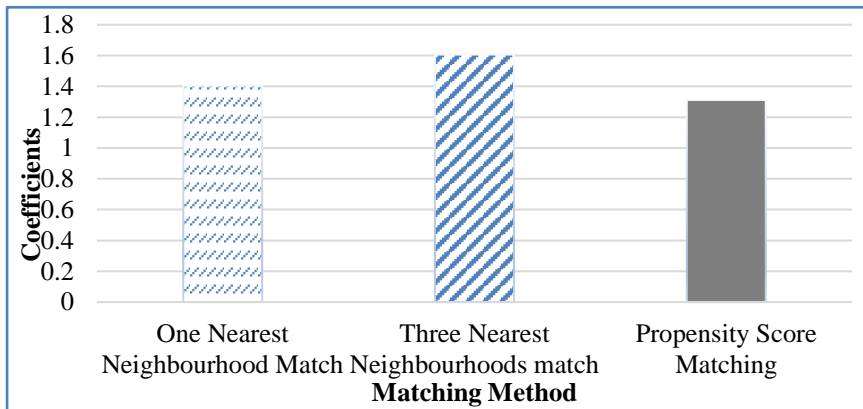
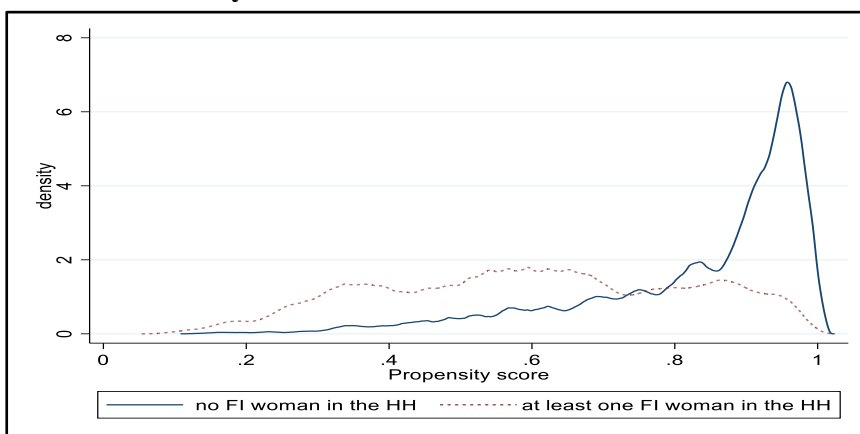


Figure 4: Estimated predicted probability of financial included women vs non-financially included women.



In the Figure 4, the predicted probabilities of a household with financially included women vs women who are not financially included. Neither plot indicates high probabilities densities at 0 nor 1 and the two estimated densities have most of their respective masses in the overlapping region. In the Table 8 below, the Average Treatment Effects (ATE) of Financial Inclusion on household expenditure on non-durable assets is 240 ETB per month and 3640.5 ETB per year. In other words, a household who has at least one financial included woman has a 240 ETB monthly and 3640.5 yearly higher total non-durable items expenditure than the household who does not have a financial included woman. Therefore, this is in line with other empirical evidences of conditional cash grant increases women expenditure on nutrition, asset, child health and food consumption in developing countries ([Ashraf et al., 2010](#); [Duflo, 2003, 2012](#); [Dupas & Robinson, 2013](#); [Norwood, 2005](#)). The role of financial inclusion and access to financial system on empowering women has been discussed in various literatures. ([Mark M. Pitt et al., 2006](#)) found that women’s participation in microcredit program help for their economic empowerment. Similarly, comparing villages with and without microcredit program in Bangladesh shows that being membership in Grameen Bank and BRAC have a positive impact on women empowerment at village level ([Hashemi et al., 1996](#)). In addition, Access to microcredit finances leads to greater women economic empowerments in India ([Swain & Wallentin, 2009](#)). [Al-shami et al. \(2018\)](#) found out that microcredit program improves women in household’s decision making such as expenditure on children’s school and health. Financial inclusion could benefit individuals to use financial services to search new sources of income, to save money and invest in asset ([Chliova et al., 2015](#); [Duvendack & Mader, 2020](#); [Duvendack et al., 2011](#); [Steinert et al., 2018](#)). Hence, It has a positive impact on asset endowment and income in Bangladesh ([Mazumder & Wencong, 2013](#)). As a result, financial inclusion policy enhances household expenditure on nondurable items that improves welfare at the household level.

Table 8: The Average Treatment Effects (ATE) of Monthly and Yearly Expenditures on Non-durable items.

Expenditure on nondurable items (Birr)	Coefficient	Std. errors
ATE of Monthly expenditure in Birr	239.822***	66.797
ATE on Yearly Expenditure in Birr	3640.495***	968.404

Note: *** denotes 1% significance level

4. Conclusion and Recommendation

The above result and discussion have revealed that the existence of gender finance gap in Ethiopia. It is estimated about 16% in the recent LSMS conducted across Ethiopia. The impact of financial inclusion on women economic empowerment is positive. As shown in the result discussion section, the impact of financial inclusion increases women's labour supply by 4.4 hours per week. It also increases household expenditure on non-food items as expected and like many other literatures related to the impact of microcredit programs on welfare, empowerment, and expenditure although it also increases women workload beyond domestic jobs. Increasing women inclusion into the financial system increases not only their income but also household welfare. However, it increases women's workload outside the home production, it assures her that controlling resources at household level, and increases her bargaining power and improves over all welfare. Unfortunately, adult financial inclusion is not yet surpassing es one third of the total adult population in Ethiopia. To make matters worse, that financial inclusion without considering gender would deteriorate the existing gender finance gap that has a counterproductive effect on household welfare. Therefore, it is recommended that it increases adult financial inclusions is not a question of policy but considering women to be included will have a more impact in reducing the gender finance gap but also has a welfare enhancing effect at household level. Consequently, the following policy recommendations are proposed as follows.

Financial inclusion policies that could give a special window of opportunity for women to access financial services (i.e., access to credit services, good interest rate to encourage savings) would increase women's participation in paid labour, it further improves savings for investment and household welfare improving impacts through expenditures on nondurable items in Ethiopia. Government's financial inclusion policy and strategies should be designed in a way that stretch consideration of women in rural areas in the agricultural sector. However, there should also be in line with other complementary inputs that reduce women workload in the agricultural works.

There is still access to finance coverage and gap issues in many parts of the country. It only reaches not more than one third of the adult population. Hence, the national bank should have a clear legislation and access polices on the finance institution to reach out to people in the remote areas either through subsidy program or corporate social responsibility arrangements or both. It also with due emphasis with enhancing financial as well as digital financial platforms.

Emphasising financial inclusion in gender policy as a pillar for women's equal opportunity and participation in economic activities. However, the national gender policy and the ten-year economic development plan have not given a due attention to these issues. Thus, revising current policies and strategies to reflect the existing reality of lower access to financial services and gender finance gap. Therefore, increasing access and utilization of adult financial inclusion through digital and innovative solutions with due emphasis on the gender gap

Education is a key determinant of gender finance gap and hence, improving adult education may reduce the gap in financial inclusion. But it is till one third of adults are only have a bank account. Therefore, creating access to finance and education are key elements of the process of reducing gender finance gap in Ethiopia.

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