Gender and poverty – an analysis of urban poverty in Ethiopia

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This study investigates the relationship between gender and poverty in urban Ethiopia using cross-sectional data of 1999/2000 and 2004/2005 household surveys. It employs consumption expenditure to measure the poverty level. In addition, Foster–Greer–Thorbecke index and regression models such as Ordinary Least Squares, Probit and Quantile models are used to assess the correlates of poverty and determinants of real per capita expenditure of households at mean and different quantiles. The result shows that between 1999/2000 and 2004/2005, the poverty headcount has decreased for both female-headed households (FHHs) and male-headed households (MHHs), where the rate of reduction was higher for the FHHs. Feminization of poverty is thus a weak argument in urban Ethiopia. However, over the two periods the income shortfall below the poverty line and severity of poverty were more common in households headed by females. In the year 1999/2000, FHHs were more poverty stricken compared to MHHs, and the gender headcount difference had fallen to 3% in 2004/2005, but remained at a higher level for both, indicating that poverty is an issue of both MHHs and FHHs.

Keywords: gender; poverty; urban; Foster–Greer–Thorbecke index

Introduction

Empirical literature and statistics show that the distribution of poverty is not specific to a given region or country. The Sub-Saharan African scenario is severe compared to other parts of the world. Ethiopia, as part of Sub-Saharan Africa, is one of the world’s poorest countries by any standard. Poverty remains widespread in Ethiopia. Using a consumption-based measure of poverty suggested by MoFED (2008), 38.7% of Ethiopians were poor in 2004/2005, implying that 27.5 million people were living below the poverty line. Poverty is slightly higher in rural areas (39.3%) than in urban areas (35.1%).

Men and women experience poverty in different ways and use different mechanisms to overcome it. This is mainly because of the different roles they play in their community, which expose them to different constraints, opportunities and needs. Therefore, their priorities regarding poverty measure/response differ. Women are constrained by socio-culturally imposed limitations, which deny them the right to have access and control over productive resources, such as land and other fixed capital. Added to that is unequal access to services that can promote their productive- and income-generating capacities, unequal access to social services, lack of decision-making power and their invisibility which have excluded them from the social, economic and political processes that affect their lives (MoFED 2008).

Gender equity considerations are important for any analysis of urban poverty conditions and trends because of gendered constraints and opportunities in terms of access to income, resources and services (Masika, de Haan, and Baden 1997). Gender considerations in poverty measurement and analysis will have profound consequences for the way in which we characterize gender relations and inequalities (Whitehead and Lockwood 1999). In this regard, the study examines gender issues related to poverty analysis in urban Ethiopia.

Research problem

Reducing extreme poverty is one of the Millennium Development Goals (MDGs) which Ethiopia adopted and its progress towards the target is really commendable. Ethiopia reduced its income poverty rates from 60% to 39%, since the MDGs (Fukuda-Parr, Greenstein, and Stewart 2013). In Ethiopia, the majority of the population live in rural areas, even then, with natural population growth, high rural–urban migration and numerous other reasons, urbanization is taking place at a higher rate than ever before. Urban poverty has, thus, been aggravated by the increase...
in population that is beyond what the urban economy can support. Of the estimated total urban population of about 11 million, nearly 4.1 million live in a state of poverty. In Addis Ababa, the capital city of Ethiopia, the poverty level is estimated at 60%, which implies that 1.7 million out of the 2.8 million people residing in Addis Ababa are categorized as below the poverty line. In recent years, urban poverty in Ethiopia has been growing at a faster rate than rural poverty (Asmamaw 2004).

The different roles, rights and resources that men and women have in society are an important determinant of the nature and scope of poverty. Access to income and assets, housing, transport and basic services is influenced by gender-based constraints and opportunities (Masika, de Haan, and Baden 1997).

In recent years, the relationship between gender and poverty has drawn increasing attention in policy discussions. Since the role men and women can play in economic development and the ways out of poverty may differ, poverty reduction strategies need a good policy formulation that enables the poor to get out of poverty and that results in the required development. The relationship between gender and poverty is complex and controversial and is now being debated more than ever before. Although much policy-making has been informed by the idea of feminization of poverty, the precise nature of the nexus between gender and poverty needs to be better understood and operationalized in policy-making. The difficulty originates from the different shapes and forms that gender inequalities and poverty take depending on different economic, social and ideological contexts. Yet another difficulty involves the scarcity of gender disaggregated data for a number of countries (Cagatay 1998).

To date few studies have been undertaken to clarify the relationship between gender and poverty in Ethiopia and these studies suffer from one or more of the following limitations: they were conducted sometime ago and the nature of the relevant parameters has changed for various reasons, or they were not comprehensive in poverty decomposition among female-headed households (FHHs) and male-headed households (MHHs), or they do not clearly address whether there is feminization of poverty or not, or the analyses used are based on one-period data which may not show the trend of poverty of FHHs and MHHs. So this study increases the understanding of the relationship between gender and poverty with the most recent data by making comparisons between FHHs and MHHs in terms of household characteristics over time and across areas in urban Ethiopia.

Objectives of the study
The main objective of the study is to analyze gender aspects of urban poverty in Ethiopia. More specifically it aims to:

1. Measure the extent of poverty in urban MHHs and FHHs.
2. Look at the trend of poverty for urban FHHs as compared to MHHs over the years 1999/2000 and 2004/2005.
3. Identify the effects of major household characteristics on the probability of being poor.
4. Compare MHHs and FHHs in terms of indicators of poverty and how welfare varies across a number of individual and household characteristics.

Scope of the study
This study constructs poverty profiles for FHHs and MHHs and makes poverty comparisons of household characteristics during the years 1999/2000 and 2004/2005. This is to check whether or not there are poverty differences between FHHs and MHHs in urban Ethiopia and the reasons for the gender poverty differences. In addition, it looks at the welfare distribution of household heads over individual and household characteristics and examines who is mainly affected by poverty.

Materials and methods
Data
In analyzing the gender dimension of urban poverty, the study used secondary data from the 1999/2000 and 2004/2005 Household Income Consumption and Expenditure Survey (HICES) and Welfare Monitoring Survey from the Central Statistical Authority (CSA) of Ethiopia.

The 1999/2000 HICES covered the population in sedentary areas of the nine regional states and two administrative regions on a sample basis excluding the non-sedentary population in Afar and Somali Regional States. Residents of collective quarters, homeless persons and foreigners were not covered by the survey. A total of 542 Enumeration Areas (EAs) in urban areas were covered in each round of the survey in all regions. A total of 8672 sample households were covered in urban areas and a stratified two-stage sample design was used to select the sample. Here, a stratum constitutes all the regional state capitals and the five Major Urban Centers (MUCs) in the country and are grouped as strata in this category. The Primary Sampling Units are the EAs in the regional state capitals and the five MUCs and exclude the special EAs (non-conventional households). Sample EAs from each stratum were selected using systematic sampling probability proportional to size, size being the number of households obtained from the 1994 population and housing census (CSA 2001).

The 2004/2005 HICE Sample Survey covered all rural and urban parts of the country except all zones of the Gambella region, and the non-sedentary population zones of
Afar and six zones of the Somali region. For urban areas, 760 EAs and 12,160 households were covered; 100% of EAs and 99.5% of households were successfully covered by the survey. For the purpose of the survey, urban Ethiopia was divided into two MUCs and other urban centers. In MUCs, all regional capitals (except the Gambella region) and four additional centers having higher population sizes as compared to other urban centers were included. This category has a total of 14 reporting levels. Since there is a high variation in the standards of living of the residents of these urban centers each urban center was further stratified into three sub-strata: High, Medium and Low standards of living. A stratified two-stage cluster sample design was adopted to select samples from this category. Here, a stratified three-stage cluster sample design was also adopted. In this category, 485 EAs and 7760 households were selected. Sample EAs from each reporting level in this category were also selected using probability proportional to size with the systematic sampling method. In other urban centers, seven reporting levels were formed in this category. Here, a stratified three-stage cluster sample design was adopted to select samples from this category. Consequently, 275 EAs and 4400 households were selected in this category. Urban centers from each domain and EAs from each urban center were selected using probability proportional to size with the systematic sampling method (CSA 2007).

Methodology

The Foster, Greer, and Thorbecke (FGT) (1984) poverty indices were used to look at the incidence of poverty of urban poor MHHs and FHHs. The FGT index received wide acceptance because it has most of the desirable properties. The poverty measure, \( P_\alpha \), satisfies the monotonicity axiom for \( \alpha > 0 \), the transfer axiom for \( \alpha > 1 \) and the transfer sensitivity axiom for \( \alpha > 2 \). By using the FGT index, one can estimate three aspects of poverty viz, incidence, depth and severity. In addition, it is additively decomposable, so that we can conveniently get total poverty if we have information on poverty by subgroups, and it is also subgroup consistent, so that overall poverty changes monotonically with changes in poverty among subgroups. Econometric models (Probit Model, Ordinary Least Squares (OLS) and Quantile regressions) were also adopted to analyze the relationship between gender and poverty.

FGT indices

In the literature of poverty measurement, the most popular measures of poverty are the FGT indices. With the FGT formula, it is possible to calculate the following poverty indices:

The headcount index \( (P_0) \) measures the proportion of the population that is poor. But it does not indicate how poor the poor are.

The poverty gap index \( (P_1) \) measures the extent to which individuals fall below the poverty line (the poverty gaps) as a proportion of the poverty line. The sum of these poverty gaps gives the minimum cost of eliminating poverty, if transfers were perfectly targeted. This measure does not reflect changes in inequality among the poor. This measure determines the depth of poverty but ignores its severity.

The squared poverty gap (poverty severity) index \( (P_2) \) averages the squares of the poverty gaps relative to the poverty line. The FGT poverty measures can be written as

\[
P_\alpha = \frac{1}{n} \sum_{i=1}^{N} \left( \frac{G_i}{Z} \right)^\alpha,
\]

where \( N \) is the size of the sample, \( n \) is the number of poor in the sample, \( z \) is the poverty line, \( G_i = z - y_i \) is the poverty gap and \( \alpha \) is a parameter; when \( \alpha = 0 \), \( P_\alpha \) becomes the headcount index \( (P_1) \), when \( \alpha = 1 \), \( P_\alpha \) becomes the poverty gap index \( (P_1) \) and when \( \alpha = 2 \), \( P_\alpha \) becomes the squared poverty gap (poverty severity) index \( (P_2) \).

FGT poverty indices can be used to construct profiles of poverty, evaluate the extent of poverty within each subgroup of the population and compute the poverty difference between subgroups (Bibi and Chatti 2009). If we define each group by the gender of the household head, poverty differences between MHHs and FHHs may be estimated as

\[
\Delta P_\alpha(y^f, z) = P_\alpha(y^f, z) - P_\alpha(y^m, z), \quad (2)
\]

where \( y^f \) is the income distribution of the FHHs and \( y^m \) is the income distribution of the MHHs. Further, applying Equation (2) on two cross-sectional household surveys, one may test whether there is a feminization of the poverty issue:

\[
P_{\alpha,t}(y^f, z) - P_{\alpha,t}(y^m, z) > P_{\alpha,t-1}(y^f, z) - P_{\alpha,t-1}(y^m, z). \quad (3)
\]

In reality, Equations (2) and (3) can lead to a misleading appreciation of the gender poverty issue. An important reason for this is that MHHs and FHHs often differ considerably from each other in many respects, including their endowments and the returns of their assets. For instance, to face a lower return of the labor endowment, FHHs may be forced to increase their labor supply (by reducing child school attendance) to escape poverty. This behavior may yield a lower female poverty as computed by Equation (2) or (3) leading policy-makers...
to believe in the absence of any gender issue (Bibi and Chatti 2009).

Model specification

Probit model

This approach is used to look at the effects of household characteristics on the risk of being poor or not poor. To address the association between gender and poverty, an indicator which can be used as a reasonably close approximation to the individual’s welfare should be chosen. In the context of measuring welfare in developing countries, there are several reasons in favor of using an indicator based on expenditures. The standard argument is that by the permanent income hypothesis, consumption is a better indicator of lifetime welfare than is current income (Bibi and Chatti 2009). Household expenditure levels were used to classify households as poor or not poor, as a proxy for welfare. Households whose real per capita expenditure fell below the poverty line per year are classified as poor and those above this benchmark are classified as not poor.

The dependent variable in this probit model assumes a value of either one or zero depending on whether a household is poor or not. The dependent variable is defined as the binary outcome of an unobserved underlying latent variable, welfare in this case. The probit model expresses the dependent variable as a function of a set of explanatory variables in the following form:

\[ y^g_i = X^g_i \beta^g + e^g_i, \quad h = 1, 2, \ldots, H; \]

\[ g = \text{(gender) female, male}, \tag{4} \]

where \( y^g_h \) is the binary variable indicating whether or not household \( h \) is poor:

\[ y^g_h = \begin{cases} 
1 & \text{if } y^g_h > z, \\
0 & \text{if } y^g_h \leq z = 1, 2, \ldots, H, 
\end{cases} \]

this equation is then estimated across all observations of each group and establishes the concept that the probability of being poor is conditional upon the household’s characteristics. The probability can be linked to the dependent variable as follows:

\[ P(y^g_h = 1) = P(y^g_h < z) = \Phi(X^g_h \beta^g). \tag{5} \]

Bibi and Chatti (2009) decompose the difference in the predicted poverty rates between FHHs and MHHs into differences in the conditional poverty function that is the return of characteristics and differences in the distribution of characteristics:

\[
P(y^\text{female}_i < z) - P(y^\text{male}_i < z) = \Phi(X^\text{female}_i \beta^\text{female}) - \Phi(X^\text{male}_i \beta^\text{male})
\]

\[
= (\Phi(X^\text{female}_i \beta^\text{female}) - \Phi(X^\text{male}_i \beta^\text{male}))
\]

\[
+ (\Phi(X^\text{female}_i \beta^\text{female}) - \Phi(X^\text{male}_i \beta^\text{male}))
\]

\[
= (\Phi(X^\text{male}_i \beta^\text{female}) - \Phi(X^\text{male}_i \beta^\text{male}))
\]

\[
+ (\Phi(X^\text{female}_i \beta^\text{female}) - \Phi(X^\text{male}_i \beta^\text{female}))
\]

\[
= \Phi(X^\text{male}_i \beta^\text{female}) - \Phi(X^\text{male}_i \beta^\text{male})
\]

\[
+ (\Phi(X^\text{female}_i \beta^\text{female}) - \Phi(X^\text{male}_i \beta^\text{female}))
\]

\[
= 1/2(D_1(z) + D_2(z)) + 1/2(E_1(z) + E_2(z))
\]

Pure discrimination effect

Endowment effect

\[
= D(z) + E(z). \tag{6} \]

Whenever the discrimination effect is positive and statistically significant, more effort should be made to promote gender equality even if FHHs are not poorer than MHHs.

The other probit model is the one that includes the gender of the household head as an independent variable to identify the effects of household head characteristics on the probability of the poor:

\[ y^*_i = \alpha + x_i \beta + u_i w, \tag{7} \]

where \( y^*_i \) refers to the underlying latent variable and is assumed to be unobserved; \( y_i \) is defined as the binary observed realization of the underlying latent variable \( y^*_i \), expressing the poverty outcome of a household, \( 0 = \text{not poor and } 1 = \text{poor}; i = 1, \ldots, n; x_i \) is a column vector of realizations on \( k \) explanatory variables for the \( i \)th household; \( \beta_i \) is a corresponding column vector of \( k \) unknown parameters for the \( i \)th household; \( u_i \) is an error term for the \( i \)th household, and \( w_i \sim N(0, \sigma^2) \), \( \alpha \) is an intercept term. The probit model can be stated as follows:

\[ P(y^*_i > 0] = P[y_i = 1] = \Phi(xi' \beta), \tag{8} \]

where \( y_i \) is the binary realization of the latent dependent variable and \( \Phi(\cdot) \) denotes the cumulative distribution function for the standard normal.
OLS regression model

Poverty functions, such as the probit analysis, are useful when the underlying dependent variable of interest is unobservable, but are often criticized for introducing measurement errors by using arbitrarily defined poverty lines. In fact, an arbitrary choice of the poverty line will be handled by applying stochastic dominance tests to the poverty line. Reducing a continuous variable, such as expenditure, to a qualitative variable, such as a poor or not poor binary variable, may discard information (Deaton 1997). The household expenditure per capita adult equivalent was used as a continuous proxy for welfare. The following model is estimated by using OLS:

\[
\ln(\text{rpce})_i = \alpha + x_i \beta_i + u_i,
\]

where \(\ln(\text{rpce})_i\) is the natural log of per capita expenditure for the \(i\)th household; \(\alpha\) is an intercept term; \(x_i\) and \(\beta_i\) are defined as in expression (7); \(u_i\) is an error term for the \(i\)th household; and \(u_i \sim N(0, \sigma^2)\).

The OLS estimates for \(\beta_i\) provide the ceteris paribus effects of the respective characteristics on the log of annual household per capita expenditure, \(\ln(\text{rpce})\).

Quantile regressions

The quantile regressions use the procedure of minimizing the absolute sum of errors rather than, as in OLS, minimizing the sum of the squared residuals. The estimator is also known as the Least Absolute Deviations estimator. The median regression coefficients can be estimated by minimizing \(\Phi\):

\[
\Phi = \sum_{i=1}^{n} |(y_i - x_i' \beta)| = \sum_{i=1}^{n} (y_i - x_i' \beta) \text{sgn}(a), \quad (10)
\]

where \(\alpha = y_i - x_i' \beta\), \(y_i\) in this application is the natural logarithm of real per capita equivalent adult expenditure of the \(i\)th household; \(\text{sgn}(a)\) is the sign of \(a\), 1 if \(a\) is positive, and \(-1\) if \(a\) is negative or zero, where \(a\) is the difference between the actual and the expected values of \(\ln(\text{rpce})\) for the \(i\)th household.

It is desirable in this case to explore quantile regressions other than at the median, and these can be defined by minimizing the following:

\[
\Phi_q = -(1 - q) \sum_{y \leq x' \beta} (y_i - x' \beta) + q \sum_{y > x' \beta} (y_i - x' \beta)
\]

\[
= \sum_{i=1}^{n} [q - 1(y \leq x' \beta)] (y_i - x' \beta), \quad (11)
\]

where \(0 < q < 1\) is the quantile of interest, and the value of the function \(1(z)\) signals the truth (1) or otherwise (0) of the statement \(z\). In the context of the models specified in expressions (10) and (11), quantile regressions allow us to estimate the \(\beta\) parameters at any quantile. These estimates allow us to establish the magnitudes of the ceteris paribus effects of the covariates at different points of the conditional \(\ln(\text{rpce})\) distribution.

The determinants of changes in \(\ln(\text{rpce})\) for specific quantiles of the welfare distribution were examined. The estimation of a set of conditional quantile functions potentially allows a more detailed portrait of the relationship between the conditional distribution of welfare, and the selected covariates. This allows focusing on returns to characteristics for poor households, at lower quantiles, and for the relatively rich households, at higher quantiles. In contrast to the OLS approach, the quantile regression procedure is arguably less sensitive to outliers and provides a more robust estimator in the face of departures from normality. This approach appears to have a significant intuitive appeal and may also have better properties than the OLS ones in the presence of heteroscedasticity (Deaton 1997).

Results and discussions

The poverty line used for this study is the national poverty line of ETB 1075\textsuperscript{3} which was constructed based on the cost of the basic needs method in the 1995/1996 household survey. First, the food poverty line is defined by choosing a bundle of food typically consumed by the poor. The quantity of the bundle of food is determined in such a way as to supply the predetermined level of minimum calorie requirement (2200 kilocalories). This bundle is valued at local prices. Then a specific allowance for the non-food goods consistent with the spending pattern of the poor is added to the food poverty line. To account for the non-food expenditure, the poverty food line is divided by the food share of the poorest quintile (MoFED 2002).

In this study, consumption expenditure is used as the metric to measure poverty. However, for consumption to be an indicator of the household’s welfare, it has to be adjusted for differences in the calorie requirements of different household members (age and sex). This adjustment was made by dividing household consumption expenditure by an adult equivalent scale that depends on the nutritional requirement of each family member. The household consumption expenditures have also been adjusted for differences in prices across regions and at different points in time to take care of the differences in the cost of basic needs between areas and over time. Then, the real household consumption expenditure is obtained by deflating the nominal household consumption expenditure for temporal price changes disaggregated at the regional level. And the real per capita adult equivalent household consumption expenditure is obtained by dividing the real household consumption expenditure by the adult equivalent household size. Accordingly, the poverty line 1075 ETB per adult equivalent at 1995/1996 national average...
constant prices was used for the analysis of poverty in this study.

Poverty profile of urban Ethiopia

The extent of poverty in urban MHHs and FHHs has shown improvements. Table 1 presents the poverty indices: Headcount \( \left( P_0 \right) \), depth \( \left( P_1 \right) \) and severity \( \left( P_2 \right) \) of poverty by sex of household head for the year 1999/2000 and 2004/2005. It shows that in the year 1999/2000, the headcount index for FHHs was significantly higher than MHHs where this difference has fallen to around 3% in 2004/2005. In addition, the income shortfall below the poverty line and the severity of poverty have shown improvements for both MHHs and FHHs.

The trend of the poverty rate over the period 1999/2000 and 2004/2005 shows a decline for both MHHs and FHHs, and the reduction was higher for FHHs. The poverty decrease for FHHs in urban Ethiopia between 1999/2000 and 2004/2005 has been significant for a lower level of poverty line where the welfare of FHHs in 2004/2005 dominates the welfare of FHHs in 1999/2000.

Household head characteristics and poverty indices

This section provides the incidence \( \left( P_0 \right) \), the depth \( \left( P_1 \right) \) and the severity \( \left( P_2 \right) \) level of poverty by sex of household head for different urban centers, and educational level of household head for the period 2004/2005. This enables one to compare MHHs and FHHs in terms of some indicators of poverty.

Poverty indices by sex of household head and geographic area in 2004/2005

Table 2 reports the incidence \( \left( P_0 \right) \), the depth \( \left( P_1 \right) \) and the severity \( \left( P_2 \right) \) level of poverty by sex of household head for different geographic areas. In some major towns such as Bahir Dar, Jimma, Adama, Hawassa and Addis Ababa, the headcount poverty index is higher for FHHs as compared to MHHs. In fact, of all major towns, the gender poverty difference is statistically significant in Addis Ababa, the capital city of Ethiopia. In Addis Ababa, FHHs are poorer than MHHs with 31.6% and 26.6%, respectively. In addition, the income shortfall below the poverty line and severity of poverty are higher for FHHs as compared to MHHs and the difference is significant.

In other non-major towns, FHHs make the largest proportions of poor people but the gender headcount difference is not statistically significant. However, the poverty gap and severity of poverty are significantly larger for FHHs.

In aggregate, in urban Ethiopia, FHHs are poorer than MHHs with 36% and 33.1% headcount, respectively. The difference is statistically significant at 5% level of significance. In addition, FHHs have a higher average deprivation and relative deprivation as they are evaluated with MHHs and the difference is significant.

Poverty indices by sex of household head and educational level in 2004/2005

Table 3 reports the poverty indices for different educational levels of household heads. The level of the headcount index decreases for both MHHs and FHHs as the educational level of the head increases to a higher level. In addition, for the same level of education, FHHs are less poor relative to MHHs and the gender headcount difference is significant for primary, college and university and above levels of education. This implies that educating women plays a significant role in reducing poverty in the country. The severity of poverty is larger for FHHs at a lower level of education but lower at a higher level of education relative to MHHs.

The discussions so far where poverty is decomposed between MHHs and FHHs by towns and educational level of household head have some implications on the country’s future status. As opportunities and options are available for women, there can be possibilities of further reductions of poverty. Similarly, as women’s educational level increases, they are less poor as compared to men, which makes the country’s hope of poverty reduction more trustworthy since education is expanding throughout
the country and even reaching the very poor. However, the gender poverty differences where females were disadvantaged were significant in Addis Ababa and other non-major urban towns. This could possibly show that women in the city suffer from a high unemployment rate and those who are employed are engaged in the informal

Table 2. Poverty indices by sex of household head and geographic area.

| Geographic area       | 2004/2005 |
|-----------------------|-----------|
|                       | $P_0$     | $P_1$     | $P_2$     |
|                       | Index     | s.e       | Index     | s.e       | Index     | s.e       |
| Mekelle               |           |           |           |           |           |           |
| Male                  | .352      | (.044)    | .073      | (.011)    | .0197     | (.0039)   |
| Female                | .295      | (.047)    | .068      | (.013)    | .022      | (.006)    |
| Diff.                 | -.058     | (.064)    | -.005     | (.017)    | .002      | (.007)    |
| Bahir Dar             |           |           |           |           |           |           |
| Male                  | .268      | (.037)    | .069      | (.012)    | .022      | (.004)    |
| Female                | .299      | (.048)    | .097      | (.021)    | .042      | (.012)    |
| Diff.                 | .031      | (.06)     | .027      | (.023)    | .02       | (.012)    |
| Gonder                |           |           |           |           |           |           |
| Male                  | .392      | (.042)    | .109      | (.015)    | .04       | (.007)    |
| Female                | .334      | (.041)    | .102      | (.015)    | .0399     | (.008)    |
| Diff.                 | -.058     | (.059)    | -.007     | (.021)    | -.0001    | (.011)    |
| Dessie                |           |           |           |           |           |           |
| Male                  | .356      | (.037)    | .0789     | (.011)    | .025      | (.005)    |
| Female                | .304      | (.04)     | .0785     | (.013)    | .027      | (.006)    |
| Diff.                 | -.052     | (.05)     | -.0013    | (.017)    | .002      | (.008)    |
| Debre Ziete           |           |           |           |           |           |           |
| Male                  | .296      | (.0349)   | .076      | (.0113)   | .0255     | (.0047)   |
| Female                | .264      | (.049)    | .061      | (.017)    | .023      | (.0084)   |
| Diff.                 | -.0324    | (.0597)   | -.0154    | (.0201)   | -.0029    | (.0096)   |
| Jimma                 |           |           |           |           |           |           |
| Male                  | .313      | (.0336)   | .085      | (.0118)   | .0304     | (.0057)   |
| Female                | .3194     | (.0518)   | .0989     | (.0199)   | .0368     | (.00995)  |
| Diff.                 | .0066     | (.062)    | .005      | (.0232)   | .0064     | (.0114)   |
| Adama                 |           |           |           |           |           |           |
| Male                  | .303      | (.0365)   | .071      | (.0103)   | .0233     | (.004)    |
| Female                | .325      | (.049)    | .098      | (.021)    | .0412     | (.0124)   |
| Diff.                 | .022      | (.062)    | .027      | (.023)    | .019      | (.013)    |
| Hawassa               |           |           |           |           |           |           |
| Male                  | .314      | (.035)    | .085      | (.012)    | .029      | (.005)    |
| Female                | .337      | (.059)    | .085      | (.017)    | .026      | (.006)    |
| Diff.                 | .023      | (.068)    | .00007    | (.021)    | -.003     | (.008)    |
| Addis Ababa           |           |           |           |           |           |           |
| Male                  | .266      | (.013)    | .052      | (.0032)   | .014      | (.0012)   |
| Female                | .3157     | (.016)    | .0767     | (.005)    | .026      | (.0023)   |
| Diff.                 | .0498     | (.021)**  | .025      | (.006)*** | .012      | (.003)*** |
| Dire Dewa             |           |           |           |           |           |           |
| Male                  | .319      | (.039)    | .054      | (.009)    | .013      | (.004)    |
| Female                | .317      | (.045)    | .077      | (.015)    | .026      | (.007)    |
| Diff.                 | .002      | (.0595)   | .023      | (.018)    | .012      | (.008)    |
| Other non-major urban towns |     |           |           |           |           |           |
| Male                  | .359      | (.013)    | .091      | (.004)    | .0298     | (.002)    |
| Female                | .389      | (.016)    | .122      | (.006)    | .051      | (.0035)   |
| Diff.                 | .03       | (.0203)   | .0311     | (.007)    | .0212     | (.0039)   |
| Urban Ethiopia        |           |           |           |           |           |           |
| Male                  | .331      | (.009)    | .079      | (.003)    | .025      | (.0011)   |
| Female                | .358      | (.011)    | .104      | (.004)    | .041      | (.0022)   |
| Diff.                 | .027      | (.014)**  | .025      | (.005)*** | .016      | (.0024)*** |

Source: Own calculation using the 2004/2005 household survey. The value in parentheses represents the standard errors.
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.
sector, which is characterized by low income, poor working conditions and minimal prospects. This aggravates the income inequality between men and women that breeds a gender difference in poverty.

Welfare measurements in urban Ethiopia: model results

Table 4 presents the OLS, Probit and Quantile model estimates over the indicator of the living standards. The living standard indicator used is the per capita adult equivalent expenditure. The first column displays the OLS result, the second column shows the estimated marginal effects of the probit model and the remaining columns show quantile estimates (10th, 25th, 50th, 75th and 90th, respectively).

Household head characteristics

From the estimated regressions of probit, OLS and Quantile models, the following results were obtained. Individuals living in MHHs face lower probabilities of decreasing poverty and higher living standards as compared to FHHs but lower living standards at the top of the expenditure distribution. The probability of being poor is lower, on average and ceteris paribus by about 7.4 percentage points and they experience about 5.6% higher per capita expenditure.

The advantage faced by those MHHs appears to be lower at a higher expenditure distribution: among those at the bottom of the distribution, the expenditure difference is around 16% higher for MHHs than FHHs while at the top the difference diminishes and is lower by about 0.2% for MHHs than FHHs.

The probability of poverty increased with the age of the household head but was lower at very low and very high levels (as indicated by the negative coefficient of its square).

Having an educated household head is estimated to have a positive effect on the household’s per capita expenditure and a negative impact on the probability of being poor. At the mean, belonging to a household where the parents of a household head had received some education increases current living standards by around 19% and 13% at the 10th percentile. At higher percentiles of conditional expenditure distribution, household head education has a greater positive impact on living standards.

The probability of being poor for a household member whose head is an employer is lower and has higher per capita expenditure. In addition, the per capita expenditure increases in the top of the consumption expenditure distribution. Similarly, if the head is an employed NGO worker, it will have a higher per capita expenditure and lower probability of being poor. Moreover, as we move up to higher

| Educational level of household head | 2004/5 |
|-----------------------------------|--------|
|                                   | \( P_0 \) | \( P_1 \) | \( P_2 \) |
|                                   | Index   | s.e     | Index   | s.e     | Index   | s.e     |
| No education                      |         |         |         |         |         |         |
| Male                              | .458    | (.0185) | .119    | (.0062) | .0412   | (.0029) |
| Female                            | .426    | (.014)  | .126    | (.0057) | .0512   | (.0031) |
| Diff.                             | -.032   | (.23)   | .0077   | (.0085) | .01     | (.0043) |
| Primary Level                     |         |         |         |         |         |         |
| Male                              | .378    | (.0144) | .0888   | (.0042) | .0274   | (.0017) |
| Female                            | .318    | (.0195) | .0901   | (.0075) | .035    | (.0039) |
| Diff.                             | -.061   | (.24)** | .0012   | (.0086) | .0077   | (.0043)*|
| Secondary level                   |         |         |         |         |         |         |
| Male                              | .231    | (.015)  | .048    | (.004)  | .014    | (.0015) |
| Female                            | .182    | (.027)  | .0413   | (.0067) | .0124   | (.0025) |
| Diff.                             | -.048   | (.31)   | .007    | (.0078) | -.0013  | (.0029) |
| College level                     |         |         |         |         |         |         |
| Male                              | .109    | (.018)  | .021    | (.004)  | .0055   | (.0015) |
| Female                            | .059    | (.022)  | .016    | (.0064) | .0052   | (.0027) |
| Diff.                             | -.049   | (.28)** | -.005   | (.0076) | -.0032  | (.003)  |
| University and above              |         |         |         |         |         |         |
| Male                              | .024    | (.011)  | .002    | (.001)  | .0003   | (.0015) |
| Female                            | 0       | (0)     | 0       | (0)     | 0       | (0)     |
| Diff.                             | -.024   | (.11)** | -.002   | (.001)** | -.0003  | (.0002)**|

Source: Own calculation using the 2004/2005 household survey. The value in parentheses represents the standard errors.

*Significant at 10%.
**Significant at 5%.
***Significant at 1%.
| HH Characteristics | OLS   | Probit | 10th  | 25th  | 50th  | 75th  | 90th  |
|-------------------|-------|--------|-------|-------|-------|-------|-------|
| Head age          | .0054 | .0014  | −.00014 | .002  | .0038 | .0082 | .01766 |
|                   | (.0026)** | (.002035) | (.0044) | (.0038) | (.0028) | (.0035)** | (.006)***** |
| Head age square   | −.00004 | −.00015 | 4.276−.07 | −.00001 | −.00003 | −.0001 | −.0002 |
|                   | (.00003) | (.000022) | (.00005) | (.00004) | (.00003) | (.0001)* | (.001)** |
| Sex of head (male)| .056  | −.074  | .163  | .1087 | .0666 | .0143 | −.00218 |
|                   | (.182)** | (.0129)** | (.022)** | (.018)** | (.0226)** | (.0311) | (.04256) |
| Head education (some) | .1952 | −.0964 | .1305 | .144 | .178 | .1965 | .2244 |
|                   | (.19)** | (.0141)** | (.0205)** | (.021)** | (.022)** | (.0267)** | (.045)** |
| Active females    | .067  | −.02099 | .0462 | .0405 | .0612 | .0776 | .083 |
|                   | (.094)** | (.0059)** | (.0102)** | (.011)** | (.011)** | (.015)** | (.025)** |
| Active males      | −.00024 | −.00005 | .0083 | −.017 | −.013 | −.0201 | .0197 |
|                   | (.0099) | (.0063) | (.0109) | (.0127) | (.0116) | (.0134) | (.0225) |

Employment status of head

| Unemployed          | .312  | −.1206 | .204  | 2084 | .3019 | 307 | .4668 |
|                     | (.552)** | (.0161)** | (.0526)** | (.066)** | (.0542)** | (.0688)** | (.1678)*** |
| Employer            | .1656 | −.0746 | .124  | .0956 | .127 | 2108 | 3204 |
|                     | (.029)** | (.016)** | (.035)** | (.032)** | (.027)** | (.0395)** | (.054)** |
| Formal self-employed | −.0233 | −.0023 | −.0086 | −.0365 | −.0197 | −.01017 | .0213 |
| Informal self-employed | .0141 | −.018 | .0413 | .0059 | .0239 | .01539 | .0147 |
| Formal employed worker | .04977 | (.0206) | .0352 | (.0354) | .0301 | (.03636) | (.059) |
| Informal employed worker | −.148 | .088 | −.0742 | −.128 | −.1322 | −.15886 | −.16598 |
|                     | (.3442)** | (.0309)** | (.0383)** | (.0397)** | (.041)** | (.0422)** | (.073)** |
| Public worker       | .1619 | −.0813 | .1418 | .1556 | .1686 | .183 | .177 |
| Employed NGO worker | .2035 | −.1046 | .2136 | .1464 | .2235 | .2525 | .2655 |
|                     | (.047)** | (.021)** | (.052)** | (.0544)** | (.0752)** | (.068)** | (.102)** |
| Employed domestic worker | −.1977 | .07197 | −.1016 | −.1783 | −.165 | −.191 | −.258** |
| Unpaid family worker | .0707 | −.0545 | .160871 | .0247 | .118 | .1404 | .045 |
| Household size      | −.314 | .1397 | −.3061 | −.342 | −.328 | −.329 | −.327 |
|                     | (.0098)** | (.007)** | (.014)** | (.0134)** | (.0114)** | (.016)** | (.018)** |
| Household size square | .0165 | −.0066 | .016 | .0185 | .0173 | .0183 | .0187 |
| Dependency ratio    | −.0765 | .0278 | −.0454 | −.0589 | −.0668 | −.077 | −.09526 |
| Female ratio        | −.06114 | −.0336 | −.0495 | −.038 | −.0561 | −.05597 | −.0613 |
| Literacy ratio      | .2065 | −.0812 | .1999 | .191 | .2138 | .239 | .27998 |
|                     | (.028)** | (.0197)** | (.034)** | (.029)** | (.031)** | (.039)** | (.055)** |

Area of residence

| Mekelle           | −.047985 | .0774 | −.0827 | −.1165 | −.0842 | .0334 | .0769 |
|                  | (.041369) | (.0312)** | (.041)** | (.035)** | (.0464)* | (.067) | (.0856) |
| Bahir Dar         | −.233024 | .0429 | −.15211 | −.20214 | −.2501 | −.275 | −.302 |
|                  | (.032)** | (.0293) | (.048)** | (.031)** | (.035)** | (.0354)** | (.06)** |
| Gonder            | −.29148 | .1227 | −.2474 | −.325 | −.333 | −.2652 | −.2424 |
|                  | (.037)** | (.033)** | (.0397)** | (.0396)** | (.0436)** | (.064)** | (.082)** |
| Desse             | −.3602 | .1418 | −.2394 | −.3344 | −.3816 | −.41088 | −.5205 |
|                  | (.0374)** | (.0347)** | (.0482)** | (.031)** | (.048)** | (.049)** | (.056)** |
| Debre Ziete       | −.1955 | .0671 | −.1352 | −.1568 | −.1944 | −.21707 | −.2229 |
|                  | (.033)** | (.0301)** | (.043)** | (.035)** | (.044)** | (.046)** | (.082)** |
| Jimma             | −.30132 | .0625 | −.2194 | −.257 | −.3175 | −.3203 | −.4175 |
|                  | (.033)** | (.028)** | (.045)** | (.039)** | (.032)** | (.045)** | (.063)** |
| Adama             | −.2167 | .0435 | −.1742 | −.2191 | −.2087 | −.23156 | −.26818 |
|                  | (.324)** | (.0268)** | (.045)** | (.043)** | (.0402)** | (.045)** | (.065)** |

(Continued)
percentiles, the per capita expenditure increases as compared to the unemployed head.

The probability of becoming poor is higher for an informal employed worker and as we move up the conditional expenditure distribution, the per capita expenditure of the informal employed worker falls by around 16% lower than in the case of an unemployed head.

**Household characteristics**

A household head with more active females has a higher level of living standards and a lower probability of being poor. The top richest 10% households’ real per capita expenditure will increase by around 8% for any additional active female. The bottom poorest 10% households’ real per capita expenditure will increase by around 4% for any additional active female in a household.

An increase in the size of a household was linked to an increase in the likelihood of being poor and reductions in living standards but at a decreasing rate. The significance of the negative quadratic term suggests the existence of turning points, after which an increase in the household size results in improvements in welfare.

As expected, the dependency ratio increases the probability of being poor and reduces per capita expenditure. In addition, as we go up to higher quantiles the living standards will fall for an increased dependency ratio. The literacy ratio seems to have reduced the probability of poverty. At mean, an increase in the literacy ratio of household members increases the log of real per capita adult equivalent expenditure by 20.6%.

A separate estimation was done for MHHs and FHHs to see whether there was discrimination in the labor market. After a separate estimation of the probit model, the predicted poverty difference shows that there was no discrimination in the labor market, implying that the returns to their assets did not significantly differ in the labor market, and this result is inconsistent with the result found by Bibi and Chatti (2009).

**Conclusions**

This study examined the relationship between gender and poverty in urban Ethiopia. During the period from 1999/2000 to 2004/2005, the level of poverty has shown improvements for both MHHs and FHHs where the rate of reduction was higher for FHHs. Hence, feminization of poverty is a weak argument in urban Ethiopia. However, over the two periods, the income shortfall below the poverty line and severity of poverty were more common in households headed by a female.

The comparisons of FHHs and MHHs in terms of some household characteristics show there were gender poverty differences in terms of location, and educational level of household head. It was found that the gender poverty difference is significant in Addis Ababa where FHHs make the largest proportion of poor people. In addition, the average deprivations and relative deprivations were more common in FHHs than MHHs. In terms of educational level of household head, at all levels of education identified, the level of the headcount index decreases for both MHHs and FHHs as educational level of household head increases to a higher level.

From the regression analysis, the household head’s characteristics and household characteristics matter to the household’s position of whether or not to fall into
poverty. Individuals living in MHHs face lower probabilities of falling into poverty and have higher living standards as compared to FHHs but lower living standards at the top of the expenditure distribution. The probability of being poor is lower, on average and ceteris paribus by about 7.4 percentage points and they experience about 5.6% higher per capita expenditure.

The advantage faced by those MHHs appears to be lower at the higher end of the expenditure distribution: among those at the bottom of the distribution, the expenditure difference is around 16% higher for MHHs than FHHs while at the top the difference diminishes and is lower by about 0.2% for MHHs than FHHs. Heads of households who have some education significantly reduce the probability of being poor.

Households with educated members and active labor force have a lower probability of falling into poverty. An increase in the size of a household was linked to an increase in the likelihood of being poor and reductions in living standards, but at a decreasing rate. Again, the probability of being poor is higher in all towns as compared to Addis Ababa, where it was higher in Dessie followed by Gonder, Hawassa and Mekelle.

Notes
1. Poverty line is the minimum income required to fulfill basic needs.
2. It implies that the individual’s consumption in a given period is determined not by income in that period but by income over his/her entire lifetime. It means consumption is determined by permanent income.
3. ETB, Ethiopian Birr, is the currency of Ethiopia. 1ETB = 8.7 USD during 2004–2005.

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