THE GENDER-POVERTY GAP:
EVIDENCE FROM UKRAINE

by

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Abstract

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The importance of analyzing poverty on gender disaggregated level cannot be exaggerated due to the fact that males and females differ in causes of and vulnerability to poverty and in the capability to escape from it. Often labor market characteristics are better for men than for women and women are more likely to be single parents. Since this is also the case in Ukraine, this paper focuses on estimating the gap in poverty rates for male and female-headed Ukrainian households and determining the extent to which incidence of poverty among both types of households depends on employment, parenthood, marital status, education, etc. The results of this research reveal that there exists a relatively small gender-poverty gap in Ukraine, i.e. female-headed households are only slightly over-represented among the poor households. As the empirical findings indicate the main reason for the gender-poverty gap is the fact that female-headed households are worse off, in comparison to male-headed, in terms of labor market status. Therefore, a government policy aimed at further reducing the gap, should focus both on encouraging women to enter the labor market and improving their qualifications through training.

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C h a p t e r   1

INTRODUCTION

Poverty as a social and economic phenomenon has been under meticulous attention of the government authorities and society for many years. A lot of studies are devoted to determining the causes of poverty, to estimating its impact on economic development, and to elucidating the poverty eradication strategies. In Ukraine, however, the gender-disaggregated analysis of poverty and the measuring of the gender-poverty gap has not really been done yet.

The importance of analyzing gender dimensions of poverty cannot be exaggerated due to the fact that males and females differ in causes of and vulnerability to poverty and in capability to escape from it. In general, labor market characteristics are better for men than for women and women are more likely to be single parents.

The necessity of examining poverty on gender-disaggregated level in Ukraine is best illustrated by the fact that 29%[1] of Ukrainians are poor, i.e. they live below the poverty line. According to this indicator the country takes the fortieth place in the ranking of the countries according to the incidence of the poor. Analysing the gender aspects of poverty will allow defining the causes of poverty by gender and to determine the policy instruments for decreasing their poverty rates.

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[1] *http://www.photius.com/rankings/economy/population_below_poverty_line_2007_0.html*

Therefore, the main purpose of this research is (i) to measure the gender gap in poverty and (ii) estimate the effect of individual and household characteristics on poverty rates for male and female-headed Ukrainian households

Conducting the research, we will test the following hypotheses. First, we test the hypothesis that male- and female-headed households are heterogeneous in order to justify the estimation of the separate poverty models for these types of households. Second, we will check whether a positive change in the amount of alimony, as one of the subsistence sources, plays an active role in reducing the gender-poverty gap. Third, we expect to find that female-headed households are over-represented among the poor households. Fourth, we will test the hypothesis that higher education has a negative impact on poverty rates for male and female headed households.

To investigate the gender aspects of poverty, researchers choose as units of analysis male and female-headed households due to impossibility to differentiate poverty levels for the members of the household. The prediction of poverty for both types of households is mainly based on the set of socioeconomic characteristics of the head of household. Such approach gives the possibility to determine the reasons for the existence and the changes of the gender-poverty gap. The overview of the relevant literature below will demonstrate that these reasons vary. According to the poverty model estimated by *Okojie* (2002) the probability of being poor for female-headed households is higher than for male ones and one of the main determinants of this is education. *Casper et al.* (1994) on the basis of the data from the Luxemburg Income Study empirically show that the gender-poverty gap exists in some developed countries and is mainly caused by employment and parenthood because gender differences in these characteristics are large.

But as the literature on the subject shows (*Pressman* 2002, *Attanasso* 2005, *Lipton and Ravallion* 1995; *Quisumbing et al.* 2001) the gender-poverty gap is not a phenomenon observed only for developing countries, some developed countries also face this problem. What is more, this gap is very big in such rich countries as the United States (18%), Canada (10%), Australia (11%), etc which means that also in these countries the female-headed households are over-represented among the poor households (*Pressman* 2002).

The economic studies on gender analysis of poverty in Ukraine (*Dudwick et al.* 2002, *WB 2007*) are scarce. Therefore, we are going to employ econometric methods to define incidence of poverty for male- and female-headed households and consequently evaluate the gender-poverty gap. What is more, we will make an attempt not only to estimate this gap, but also decompose it using Blinder-Oaxaca decomposition technique. Decomposition of the gap will allow to define the main factors that shape it and to form the government strategy for improving standard of living of the population in Ukraine.

The data for this study come from the Ukrainian Longitudinal Monitoring Survey which is based on the stratified random sample of 3449 households and 7200 individuals. To obtain predicted poverty rate for male and female-headed households and consequently the size of gender-poverty gap we estimate separate poverty models for both types of households.

From a policy viewpoint, the gender-disaggregated analysis of poverty sheds light upon the real possibility for government to solve social problems. The results of this research allow determining the effective government policies to eradicate poverty among female-headed households and, consequently, to decrease the gender gap in poverty. The empirical findings indicate significant effect of the women's labor market status on the gap in poverty rates for male and female

headed households and, thus, point out on the necessity to direct state policy at encouraging women to enter labor market and improving their qualification through training.

The remainder of the thesis is organized in the following way. Chapter 2 presents the theoretical framework including the choice of the unit of analysis for investigating gender aspects of poverty, the determinants of the gender poverty gap, and overview of the empirical findings. The next two chapters describe the data and methodological approach. In Chapter 5 we reveal the results of poverty dominance analysis and regression analysis. In conclusion, Chapter 6, we provide the discussion of the results and policy implications.

Chapter 2

LITERATURE REVIEW

The current paper focuses on estimating the gap in poverty rates between male and female-headed Ukrainian households. Therefore, we first present the theoretical framework including the dual-regime utility model for analyzing poverty, the choice of the unit of analysis for investigating gender aspects of poverty, the poverty model, and the determinants of the gender-poverty gap; and then provide an overview of the empirical findings on the gender-poverty gap in different countries and Ukraine.

The first official definition of poverty, developed by Mollie Orshansky in 1965, was based on the minimum level of daily calorie intake (*Sawhill* 1988). Nowadays this economic and social phenomenon is identified as a failure to achieve a certain level of consumption and education, as unsteady employment, and bad health (*Ravallion* 1994).

Poverty can be understood in a variety of dimensions. Absolute poverty which sometimes is called income poverty refers to the individual's income or expenditure and is usually defined by government authorities in the form of poverty lines. While this type of poverty is observed and can be easily measured, the other type – relative poverty, which indicates the low individual's position in the social hierarchy and other inequalities, is harder to measure.

A distinction between structural and transient poverty is made on the base of its duration. Structural poverty, which is caused by socio-economic and political factors, is experienced by individual or household during a long period of time and often results into intergenerational transmission of poverty. A tendency for

structural poverty is more typical for rural populations mainly because of chronic under-employment or unemployment. In contrast, transient poverty lasts for a short term and results from cyclical unemployment, inflation, natural disasters, etc. In our days, technological changes induce transient poverty among people whose educational and skills level are low (Beneria and Bisnath 1996).

The newest approach to defining poverty – a micro-founded general definition based on the utility theory - was proposed by *Biancotti* (2006). The author distinguishes poverty and non-poverty on the base of "non-satiation": The poor are characterized by a strong need for consumption, while for the non-poor this need is weak. To describe these two welfare statuses a "separate technology of utility production" and the concept of the poverty line as a certain level of consumption of a good are used. The poverty line indicates the structural break in the relationship between consumption and utility.

Biancotti (2006) presents the dual-regime utility model for analyzing poverty. In this model the utility function for each individual who consumes m goods is additively separable:

$$u_i = \sum_{k=1}^{m} v_k \left(q_{ki}, \vartheta_k \left(q_{ki} \right) \right)$$

(2.1)

where v_k is good-specific utility function;

q_{ki} is the quantity of k-th good owned by the i-th individual;

ϑ_k is the a vector of parameters that depend on q_{ki}.

The main assumption of this model is that for the poor individuals further consumption is greater than for non-poor because the former strive for achieving decent standard of living, while for the latter an additional unit of good just

produces some extra pleasure. Following this further, the poverty line is the watershed between the state of strong need for further consumption for the poor and the weak need for those who have already satisfied the basic needs.

The dual-regime utility model implies that at the poverty line, the distance between the indifference curve for the poor individuals and the indifference curve for the non-poor equals zero. Following this further, the individuals with the poverty status poor experience the loss in utility if their level of consumption does not exceed the poverty line. Hence, this model provides a complete understanding of poverty associated with the individual's utility.

Having described the theoretical framework of poverty as whole, we now switch to analysing gender dimensions of this phenomenon. One of the main methodological issues that should be addressed while studying the relationships between gender and poverty is the choice of the unit of analysis. It seems to be logical to define gender-poverty gap by analyzing poverty among men and women. However, as the overview of the relevant literature (*Case and Deaton* 2003, *Deaton et al.* 1989) shows this approach can not be applied for all datasets due to impossibility to provide exact measurement of income and consumption distribution among the household members.

Undoubtedly many goods consumed by household can not be allocated to its members. This problem mainly arises because of the existence of household public goods. For instance, housing in principle can not be allocated to the individuals who live together. Besides, there is lack of transparency even in the consuming of the private goods. For example, one of the mostly private good – food – can be purchased by one family member but actually consumed by another. Taking into consideration the fact that the household public goods and even a lot of private goods are not attributable to specific individuals it is very

hard to define total consumption of each household member and consequently his or her specific poverty status.

To cope with the above-mentioned problem *Deaton et al.* (1989) propose the concept of demographic separability. The main assumption of their model is that the household consists only of adults and includes a certain number of women and men. Each woman's share in the aggregate household income is the same for all females, the same is true for males, however, these shares differ by gender.

The authors use in their model private goods for which there is a possibility to observe separate consumption by men and women who are members of the same household. They investigate if an increase in the household size, by adding one man, has the same effect as the additional unit of income and try to define how an extra woman in the household affects men's consumption of goods and vice versa. Although this approach gives us a possibility to define distribution of income and consumption among the household members, it can only be used when a researcher has a large set of goods that are assignable to a specific gender.

Case and Deaton (2003) point out on the shortcomings of the concept of demographic separability. Specifically, they claim that this model does not take into account how adding a new person to the household affects such important household characteristics as work patterns of its members, their allocation of time, saving, and wealth.

Case and Deaton (2003) also make an attempt to define intrahousehold allocation of consumption in order to disaggregate it by gender. According to their paper, in spite of the fact that many datasets provide statistical information only on the household level, there is a possibility to estimate the amount of consumed private goods by each household member or at least a subgroup of these members. For

instance, some goods like cigarettes are likely to be consumed only by adult household members.

To investigate this problem they specify the following model:

$$w_{ih} = \alpha_i + \beta_i * \ln\frac{x_h}{n_h} + \xi_i * \ln n_h + \sum_{j=1}^{J-1} \gamma_{ij} \frac{n_{jh}}{n_h} + \theta_i * z_{ih} + u_{ih}$$ (2.2)

where w_{ih} is the share of the budget spent on good i by household h;

x_h is total household expenditure;

n_h is household size;

n_{jh} is the number of people in each of J age and gender groups;

z_h is a vector of the vector of other relevant household characteristics.

The authors apply this approach to the Indian NSS data from the 55th round and present empirical evidence on the distribution of consumption of such adult goods as tobacco and intoxicants between men and women in the household. They show that the presence of an adult man has a considerable positive effect on consumption of above-mentioned goods and the presence of adult woman has a smaller but also significant effect. According to the paper there is no gender discrimination in consumption in India.

The main drawback of this approach is that it, as well as the previous one, can not be applicable for all public and private household goods. As a result, this methodology again does not allow defining poverty status separately for each household member and consequently estimating incidence of poverty for men and women.

This is why a majority of studies (*Pressman* 2002, *Okojie* 2002, *Quisumbing et al.* 2001) analyzes the gender aspects of poverty using as a unit of analysis, male and female-headed households and only a few papers (*Casper et al.* 1994, *Elmelech et al.* 2004) test for the difference in poverty rates between males and females per se.

One more methodological issue that should be taking into account while investigating poverty on a gender-disaggregated level is the division of the households on male and female-headed. According to *Quisumbing* (2001) the head of the household is the person who is responsible for most decisions concerning the household. However, the problem is that this requirement frequently is not taken into account by the researchers when defining the household type, which leads to the classification of the household with both spouses as male-headed even under condition that the wife's economic contribution and authority is greater. As a result, most of the households are treated as male-headed and the households without adult male tend to be classified as female-headed. This problem arises not only with the datasets where there is no information about the type of household but even in the cases when the household head is self-reported. The point is that the household member can consider himself\herself as the head even if that member is not the main financial supporter of the family. Therefore, the most widely used approach to identifying the type of the household is to classify it as male-headed if the husband's income exceed wife's and as a female-headed otherwise.

Next we focus on the poverty model. To define the poverty rates for male and female-headed households (or if data allow for men and women) and consequently the gender-poverty gap, a poverty model is estimated for both types of households, or both genders, separately (*Casper et al.* 1994, *Pressman 2002, Okojie 2002, Elmelech et al.* 2004, *Attanasso* 2005, etc). This model has the form of

logistic regression where the probability of being poor is the value of cumulative distribution function F(Z) that is specified as a function of exogenous variables.

The poverty model has the following form:

$$\Pr ob(Poor = 1) = F(Z) = F(\beta_0 + \beta_{1*}X) \qquad (2.3)$$

where $F(Z) = e^z / (1 + e^z)$ is the cumulative logistic distribution,

X is the vector of exogenous variables.

The set of explanatory variables in this model vary and mainly depends on the goal of the paper. *Casper et al.* (1994) are particularly interested in the impact of parenthood and employment status on gender gap in poverty. Therefore, they treat poverty as a function of the following explanatory variable- "age, education, marital status, parenthood, single parenthood, and employment." *Elmelech et al.* (2004) add to this set race\ethnicity in order to estimate the extent to which the gender poverty gap is shaped by racial and ethnic difference in gender inequality. *Attanasso* (2005) claims that the household poverty status can be completely explained by "household size, household dependency ratio, the level of schooling of the household head, his/her age, and professional status."

To evaluate incidence of poverty for male and female-headed households the separate poverty models are estimated for them. This information is necessary to define the gender-poverty gap which shows what type of households, male or female-headed, is more likely to be poor. The gap can be computed by finding the ratio or difference in poverty rates. *Pressman* (2002) argues that the second approach is more advantageous because only this approach gives us important information. Suppose that the poverty rate for female-headed households is equal to 2 percent and for male-headed – to 1 percent then their ratio indicates

that the former are twice as likely to be poor as the latter. The same conclusion could be made if 20 percent of female-headed households and 10 percent of male-headed are poor. Hence, in order to distinguish between these two cases we better focus on poverty rate differences for identifying gender-poverty gap.

Now we briefly discuss the reasons for the existence and for the changes of the gender-poverty gap. Human capital theory focuses on education and experience as the major factors that cause difference in earnings between genders and, as a result, amplify or shorten poverty gap (*Blau and Kahn* 1994, *Oxaal* 1997, *Lokshin and Mroz* 2003). According to the poverty model estimated by *Okojie* (2002) the probability of being poor for female-headed households is higher than for male ones and one of the main determinants of this is education. *Casper et al.* (1994) on the basis of the data from the Luxemburg Income Study empirically show that the gender poverty gap exists in some developed countries and is mainly caused by employment and parenthood because gender differences in these characteristics are large. *Elmelech et al.* (2004) posit that in the United States the gap is wider among whites than among Asian, Cuban, Mexican, and Native American minorities and directly results from a significant difference in labor-force participation rates between white men and white women.

Attanasso (2005) investigates the determinants of income poverty for male and female-headed households in the Republic of Benin in order to define the main causes of the gender poverty gap. According to this paper, a person's professional status does not affect poverty rate for rural female-headed households. As for male-headed households, men who are farmers have higher probability of being poor than those who are salaried employees. Increase in the number of dependents has a significant positive effect on the household poverty status independently what is the gender of the household head. There is little evidence that the age of the head of household affects risk of poverty. The level of

education of the heads seems to be the most important determinant of poverty for both types of the households. In other words, women's and men's illiteracy is the main cause of poverty. Determinants of poverty status for male and female headed households in urban area are very similar to those in rural except such factor as household head's age which has considerable impact on the risk of a rural household (male and female-headed) becoming poor.

Casper et al. (1994) state that we should distinguish the factors that affect poverty rates for male and female-headed households from the determinants of gender poverty gap. Following this further, even under condition that, for example, marital status, educational level, and age have significant impact on the poverty status for both types of households, such factors may not cause a gender difference in poverty. This situation can be explained by the fact that gender poverty gap is caused by those characteristics in which men and women are not similar. For instance, labor market characteristics are better for men than for women and the latter are more likely to be single parents.

A full understanding of the determinants of gender poverty results in the possibility to use these results as part of a poverty alleviation policy. *Casper et al.* (1994), *Pressman* (2002), and *Zuckerman* (2002) claim that poverty eradication interventions provided by government are successful only if gender specific poverty causes are taken into account. For instance, if the key reason for a high incidence of poverty among females is low rate of employment the state policy should focus on encouraging women to enter labor market. If the source of problem even among employed women is single parenthood, protecting them from poverty through cash transfers could be an effective strategy. The effectiveness of such kind of social policy could have a subsequent positive effect on changing the poverty gap.

Next, we focus on the empirical findings concerning gender poverty gap. As the literature on the subject shows (*Casper et al* 1994, *Pressman* 2002, *Attanasso* 2005, *Lampietti and Stalker* 2000, *Lipton and Ravallion* 1995; *Quisumbing et al.* 2001) the difference in poverty rates between genders is persistent in some countries (Australia, Canada, Germany, Russia, United States, Israel, Benin, Ethiopia, Hungary, Poland, etc) while there is no evidence for it in the others (Luxemburg, Italy, Switzerland, Slovak Republic, Ecuador, Guatemala, Romania, Kazakhstan, etc). Surprisingly, the gender poverty gap is not a phenomenon observed only for developing countries. Some developed countries also face this problem. What is more, this gap is very big in such rich countries as the United States (18%), Canada (10%), Australia (11%), etc which means that in these countries female-headed households are over-represented among the poor households (*Pressman* 2002).

On the contrary, some studies (*Lipton and Ravallion* 1995, *Quisumbing et. al.* 2001) point out that female-headed households are not over-represented in the poor households. What is more, the incidence of poor male-headed households exceeds the same indicator for females in 8 out of 58 countries explored by the World Bank (*Lampietti and Stalker* 2000).

The economic studies on poverty (*Prykhodko* 2006, *Povoroznyk* 2006, *Yatskulyak* 2004) and especially gender analysis of poverty in Ukraine (*Dudwick et al.* 2002, WB 2007) are scarce. Their results do not point out how significant or insignificant is the impact of demographic and socioeconomic characteristics of the men and women on the poverty rates for male and female-headed households and what type of the policy will provide the reduction of poverty.

Dudwick et al. (2002) provide statistical analysis of the data collected by Ukraine State Committee of Statistics for nine months of a year 2000 in order to

investigate gender poverty in Ukraine. The findings of this paper illustrate that female-headed households are more poor than the male-headed; the gender poverty gap is relatively small for all households (3%), however, its size is larger (7%) for households with children. Although the authors define gender gap in poverty for different types of male and female-headed households separately, namely for households with children, for rural and urban, they dot not clarify what factors and to what extent shape this gap. In other words, the results of this research do not shed light on the possible government strategies for alleviation poverty among certain groups of households.

The newest paper about poverty in Ukraine (*WB 2007*) indicates the fall in poverty rate to 8 percent in 2005 that resulted from considerable increase in labor productivity, public sector wages and transfers, pension payments, and childbirth assistance. However, in this study limited attention is paid to gender dimensions of poverty, to be specific, the authors only calculate percent of male and female headed households below the poverty line and state that the data of the Household Budget Survey does not illustrate significant difference in the poverty rates between these two types of the households: the gender poverty gap in Ukraine in 2005 was approximately equal to 1 percent.

In contrast to these researches, we are going to employ econometric methods to define poverty rates and consequently gender-poverty gap. What is more, we will make an attempt not only to estimate gender-poverty gap but also decompose this gap using Oaxaca decomposition technique in order to define factors which shape it. Our research, thus, could improve standard of living of the population in Ukraine.

In conclusion, there is clear evidence that the methodological approach for analysing gender dimensions of poverty is well-developed and can be used to

formulate poverty reduction policy. Nevertheless, only a few studies focused on the investigation of gender-disaggregated poverty in Ukraine. Therefore, this paper aims to provide Ukrainian policymakers with an effective gender differentiated poverty alleviation strategy.

Chapter 3

DATA DESCRIPTION

The study utilizes data of Ukrainian Longitudinal Monitoring Survey conducted by Kyiv International Institute of Sociology in 2004. The survey is a nationally representative sample of 3449 households and 7200 individuals that includes individual-level data on personal, human capital, labor market characteristics and household information about demographic structure and different types of expenditure that are necessary to investigate gender aspects of poverty. Of importance is the fact that up today there is no research that estimates the gender-poverty gap on the basis of the ULMS datasets.

As it was stated above, the impossibility to define poverty status of each member of household separately causes the necessity to estimate the incidence of poverty not for men and women but for male and female-headed households. To indicate the type of each household the ***dataset of individuals***, which provides us with the information about income of each member of household, is used. Following this further, we employ the concept described in the previous chapter and treat the household as male-headed if the financial contribution of some man in the family is the greatest and as female-headed under condition that some woman earns more than any other household member. Using this approach, we indicate the head of household in each of 3449 households and, therefore, only 3449 observations on the individual-level data are used for estimating gender-poverty gap. This number decreases to 3441 after merging individual and household datasets and dropping the households with undefined poverty status due to the absence of complete information about household expenditures. As a result, we get that 1690 households are male-headed and 1751 female-headed. Our final

sample includes 1643 male-headed households and 1713 female-headed households because of the missing values on other variables in the datasets.

Usually, empirical findings indicate (*Okojie* 2002, *Elmelech et al.* 2004, *Attanasso* 2005, etc) that the proportion of households headed by men is higher, however, the Ukrainian case is not unique because, for example, in such African country as Botswana 58 percent of households are female-headed (*Quisumbing* 2001). One of the possible explanations of this distribution of households by the gender of household head refers to the demographic structure of households. We will see later that the number of one-person female households is almost four times greater than the same type of male ones; approximately 400 households are female-headed not because a woman in every of them earns more than the men but due to the fact that these households consists only of one person – female. Therefore, the level of income is not the only factor that contributes to the division of households on male and female-headed and, consequently, we can not claim that women earn more than men.

Descriptive statistics of *personal characteristics* of the household head are presented in Table 3.1. The heads of both types of households are very similar in such characteristic as average age, for males this indicator is equal to 48 and female heads of households are on average one year older.

The gender-poverty gap to a great extent is shaped by those factors in which males and females are very different. Having examined marital status, one may point out on the considerable difference in this personal characteristic of men and women. The proportion of divorced female household heads is equal to 16 and is three times greater than the corresponding male indicator. What is more, a significant share of the heads of female-headed households, 21 percent, has as marital status 'widow', while among the heads of male-headed households, the

percentage of widowers doesn't exceed 3. It is then not surprisingly, that the number of married men, no matter what kind of marriage we take into account registered or non-registered, is significantly larger.

Table 3.1. **Descriptive Statistics of Personal Characteristics of the Household Head**

Variable	Type of household			
	Male-headed households		Female-headed households	
	Number of observations	Proportion of households with certain characteristic	Number of observations	Proportion of households with certain characteristic
Age (average)	1643	48	1713	49
Marital status				
Widowed	1643	0.04	1713	0.21
Divorced	1643	0.05	1713	0.16
Married registered	1643	0.75	1713	0.50
Married non-registered	1643	0.07	1713	0.04
Single	1643	0.07	1713	0.06

Human capital and labor market characteristics of the household head are presented in Table 3.2. Here we again are interested how much these characteristics differ for both types of households. Descriptive statistics of variables on employment status indicates that the heads of male-headed households have an advantage in comparison with the heads of female-headed households. More men than women are employed; however, more women are out of labor force as pensioners. The overwhelming majority of workers, no matter males or females, are employee and only some of them are self-employed, but the number of those

who have their own business is twice greater for the heads of male-headed households. The negative phenomenon, observed for the heads of female-headed households, is that a lot of them are unskilled workers, on the contrary, a lot of men have a job that require some skills.

Table 3.2. **Descriptive Statistics of Labor Market Characteristics of the Household Head**

| | Type of household | | | |
| | Male-headed households | | Female-headed households | |
Variable	Number of observations	Proportion of households with certain characteristic	Number of observations	Proportion of households with certain characteristic
Employment status				
Employed	1643	0.62	1713	0.56
Unemployed	1643	0.01	1713	0.01
Pensioner	1643	0.31	1713	0.39
Self-employed	1643	0.06	1713	0.03
Employee	1643	0.61	1713	0.55
Sector of employment of the head of household				
Public sector	1643	0.70	1713	0.81
Private sector	1643	0.30	1713	0.19
Type of job				
Unskilled worker	1643	0.12	1713	0.14
Technician	1643	0.05	1713	0.11
Manager	1643	0.06	1713	0.03
Skilled worker	1643	0.23	1713	0.06
Professional	1643	0.07	1713	0.11
Service worker	1643	0.02	1713	0.07
Clerk	1643	0.02	1713	0.05
Types of additional income				
Salary 13th	1643	0.08	1713	0.05
Bonuses	1643	0.17	1713	0.14
Social benefits	1643	0.54	1713	0.49

Figure 3.1 illustrates the distribution of male and female-headed households by the level of *education* of the household head. Significant disparities in the education between the heads of both types of households are seen only for middle

educational levels: while 28% of men have vocational education, the corresponding share of women is considerably lower, 16%, however, females dominates in such categories as secondary or incomplete higher professional education. Besides, more female than male heads have bachelor's or specialist `s degree. As a matter of fact, education may be one of those factors that form gender-poverty gap because of difference in the educational levels of males and females.

Figure 3.1. **Distribution of Male and Female-headed Households by the Level of Education**
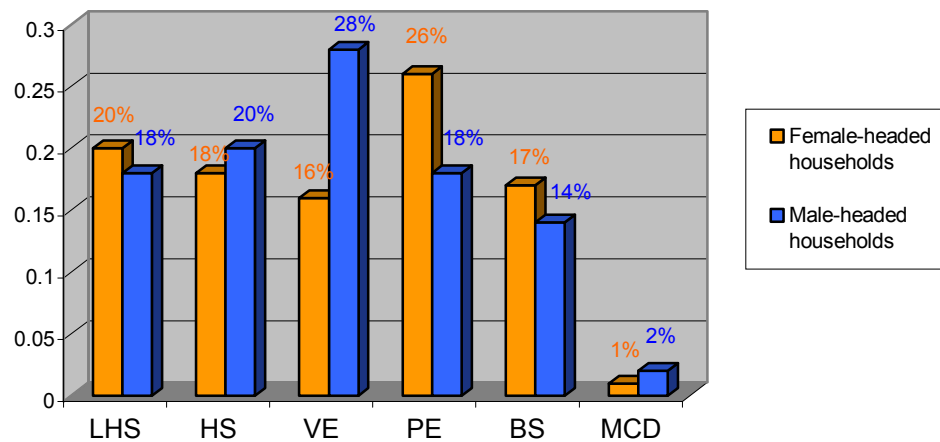
LHS – less than high school

HS – high school

VE – vocational education

PE – professional education

BS- bachelor's or specialist's degree

MCD – master, candidate of sciences or doctor of sciences

The next table shows the distribution of male and femaleheaded households by the *type of settlement*. It can be easily seen that the difference in the preferences concerning the type of area is very small. This is the only aspect in which both types of households are so similar. The largest share of households lives in village, a lot of them are inhabitants of cities and large cities, and small part of the population prefers towns.

Table 3.3. **Distribution of Households by the Type of Settlement**

Variable	Type of household			
	Male-headed households		Female-headed households	
	Number of observations	Proportion of households with certain characteristic	Number of observations	Proportion of households with certain characteristic
Small town	1643	0.02	1713	0.02
Urban settlement	1643	0.12	1713	0.12
Large city	1643	0.16	1713	0.20
City	1643	0.20	1713	0.22
Medium town	1643	0.14	1713	0.12
Village	1643	0.36	1713	0.33

By taking a brief glance at statistics in Table 3.4, we may note that women's health is much worse than men's. Data indicates that 54 percent of women have problems with their health, what is more, even larger share of them, 64 percent, suffer from chronic illnesses. Comparison of the health statuses of males and females leads to the conclusion that even though the share of individuals with average health is similar for both groups the number of women with bad health is approximately 1.5 times greater than men.

Table 3.4. **Distribution of Households by the Health Status**

Variable	Type of household			
	Male-headed households		Female-headed households	
	Number of observations	Proportion of households with certain characteristic	Number of observations	Proportion of households with certain characteristic
Health problems	1643	0.37	1713	0.54
Chronic illnesses	1643	0.47	1713	0.64
Health bad	1643	0.17	1713	0.28
Health average	1643	0.55	1713	0.58
Health good	1643	0.25	1713	0.14
Health very good	1643	0.02	1713	0.01

Of special interest for us is the impact of *alimony* on household poverty status and only ULMS 2004 gives the possibility to arise this issue. Exploring the relationship between poverty and the amount of alimony, two aspects should be taken into account. On the one hand, those households that receive alimony benefit in terms of additional family income, but, on the other hand, those who pay them suffer from decreasing there welfare.

Table 3.5. **Distribution of Alimony between Male and Female-headed Households**

	Type of household	
	Male-headed households	Female-headed households
Number of households that pays alimony	18	9
Number of households that receive alimony	14	26
Maximum amount of paid alimony	255	300
Maximum amount of received alimony	500	230

Statistical information in Table 3.5 allow us to state that female-headed households have advantage because they are among those who mainly receive alimony, while male-headed households spend their financial resources on this type of payments. To be precise, the number of male-headed households who pays alimony is exactly twice greater that the analogous indicator for female-headed households and looking on such variable as receiving alimony payments, the one may see that 26 female-headed and only 14 male-headed households have this type of income.

The **_household dataset_** that includes detailed information on the relationship between household members and their age allow defining demographic structure of the family. Using this data, we construct such variables as *number of children* and *number of adults* in household. The results, presented in Table 3.6, indicate that on average male-headed households are bigger.

Comparing the distribution of male and female-headed households by the number of adults, we can say that the latter type of households prevails only in such category as one-person family and this may be one of the reasons for the gender-poverty gap. Most children are members of the male-headed households, among which several families have as many as 5 children.

Table 3.6. **Demographic Structure of the Households**

Type of household			
Female-headed households		Male-headed households	
Number of adults in household	Proportion of households with certain number of adults	Number of adults in household	Proportion of households with certain number of adults
1	0.221	1	0.061
2	0.406	2	0.512
3	0.234	3	0.264
4	0.105	4	0.121
5	0.024	5	0.033
6	0.009	6	0.007
7	0.001	7	0.002
-	-	8	0.001
Number of children in household	Proportion of households with certain number of children	Number of children in household	Proportion of households with certain number of children
0	0.629	0	0.597
1	0.264	1	0.256
2	0.093	2	0.128
3	0.013	3	0.012
4	0.001	4	0.003
5	-	5	0.004

Statistical information about the number of children and number of adults in household and its food and non-food expenditure gives the possibility to define the household *poverty status*. On the base of the data on household demographic structure, we compute the number of adult equivalents (AE), using the formula from the previous chapter. Summing up the expenditure on food, which include 67 variables, and non-food expenditure, by adding 51 variables, we get total household expenditure. This value is divided by the number of adult equivalents and the result is compared to the poverty line which will be discussed in Chapter 5. If the aggregate expenditure is lower than a certain poverty line, a household

lives in poverty, otherwise it is considered as non-poor. Hence, we constructed the dependent variable Poverty Status, which is binary and takes value 1 for poor households and 0 for non-poor.

One possible problem with the dataset – the absence of the information about the type of the household depending on the gender of the household head– is resolved by making proper approximation and dividing the households on male and female-headed by comparing male's and female's income. Another possible disadvantage of the dataset that may lead to the biased estimators concerns the issue of household expenditure. By taking a look on the amount of certain type of expenditure and, especially, on their aggregate monthly amount, one may claim that some households conceal their real expenditure because for some families they are very low. However, this point of view is to great extent subjective and the proportion of such families is insignificant. In general, ULMS 2004 is very advantageous not only because of large sample size, but also because of wide range of variables that allow providing a detailed analysis of gender poverty.

C h a p t e r   4

METHODOLOGY

A. Poverty Dominance Analysis

Analyzing gender aspects of poverty requires defining the proper indicator of household poverty status. In the corresponding literature (*Attanasso* 2005, *Quisumbing et al.* 2001, etc.), consumption expenditure is preferred to income because it reflects the standard of living of the family better than income, is reported more accurately, and varies less over time.

Undoubtedly, consumption of the family members differs, especially, if we compare children and adults levels of consumption. This fact underlines the importance of measuring household size not in the number of family members but in the number of "adult equivalents" using the following formula:

$$AE = 1 + 0.7(N_{adults} - 1) + 0.5N_{children} \qquad (4.1)$$

where AE in the number of "adult equivalents", N_{adults} and $N_{chidren}$ – number of adults and children in the household respectively (*World Bank Institute, 2005*). Usually, adjusted household size (AE) is larger in developing countries.

 Suppose that real per-capita household expenditure, y_i, are ranked in the following way:

$$y_1 \leq y_2 \cdots y_m \leq z < y_{m+1} \ldots \leq y_n \qquad (4.2)$$

where z is the poverty line, m is the number of poor individuals, n is the total population. Dividing household expenditure by adjusted household size (AE) we get the average consumption expenditure of every household member, y_i. If the result is less than z=7.11 UAH per day, absolute poverty line set by the World Bank, we define household and consequently all its members as poor (World Bank Institute, 2005). Taking into consideration the fact that it is impossible to define level of consumption separately for every household member and consequently his/her poverty status, we assume that poverty status, being poor or non-poor, is the same for all members of the household.

Of importance is the fact that the incidence of poverty to a great extent depends on the choice of poverty line, therefore, the empirical findings may differ with changing the size of poverty line. To eliminate this drawback *poverty dominance analysis* as an application of stochastic dominance is usually employed *(Madden and Smith 2000)*. The essence of this analysis is to provide rankings of distributions of male and female-headed households in terms of poverty.

Suppose that the distributions of male and female-headed households` expenditure are described by the cumulative distribution functions *CDM(y)* and *CDF(y)*, respectively. These functions are referred to as "***Poverty Incidence Curves***" where each point indicates the proportion of households at and below a certain level of adult equivalent expenditure. Under condition that the poverty line is unknown but we are sure that it does not exceed z^{max}, we claim that for all poverty lines up to z^{max} *CDM(y)* first-order stochastically dominates *CDF(y)* if and only if

$$CDF(y) \geq CDM(y) \qquad\qquad (4.3)$$

In other words, if this condition holds that independently of the poverty line female-headed households are poorer than the male ones.

If the ranking is ambiguous, the establishment of dominance is impossible by using this procedure, thus, the second-order dominance tests should be conducted. They involve analyzing "**Poverty Deficit Curves**" and comparing integrals of the cumulative expenditure distribution functions for male and female-headed households. If the Second Order Stochastic Dominance Condition

$$\int_{0}^{z^{\max}} CDF(y)dy \geq \int_{0}^{z^{\max}} CDM(y)dy \tag{4.4}$$

is satisfied, the incidence of poverty is higher for female-headed households.

The absence of guarantee that the ranking is defined after conducting the above described analysis, require utilizing the concept of third-order dominance that implies examining of "**Poverty Severity Curves**" for both types of households and determining who is poorer by juxtaposing second integrals of $CDM(y)$ and $CDF(y)$.

B. Regression Analysis

Poverty model

Determination the relationship between the gender of the household head and the family poverty status is realized by employing poverty model in the form of logistic regression. As poverty is a household characteristic we estimate the logit model for the heads of male and female-headed households, not just for men and

women, in order to eliminate possibility of biased results. To amplify the focus of the analysis, a set of exogenous variables used in the previous studies on poverty (*Casper et al.* 1994, *Pressman 2002, Okojie 2002, Elmelech et al.* 2004, *Attanasso* 2005, etc) was extended with the sector of employment of the head of household, the type of job, the types of additional income, and the payment/receipt of alimony.

The logit model for estimating the effect of demographic, geographic, and labor market characteristics on the household poverty status can be written as:

$$prob\left(poverty\right) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_{1i} + ... + \beta_p x_{pi})}} \qquad (4.5)$$

where **prob(poverty)** = dummy which indicates poverty status; it takes value 1 if the household is poor and 0 otherwise;

$\mathbf{X_{1....}X_p}$ = the set of independent variables which includes:

I. Personal and demographic characteristics:

age of the household head– a continuous variable;

number of children in the household– three dummy variables: one child, two children, three or more children;

number of adults in the household – a continuous variable;

marital status – three dummy variables: married registered, married non-registered, single;

single parenthood – dummy variable: 1 – single parent with children, 0 – otherwise;

II. Human capital and labor market characteristics:

education status – four dummy variables: vocational education; professional education; bachelor's or specialist's degree; master, candidate or doctor of sciences;

employment status– (i) three dummy variables: employed, unemployed, pensioner; (ii) two dummy variables: employee, selfemployed;

sector of employment of the head of household – 1 for public sector, 0 for private sector;

type of job – four dummy variables: unskilled worker, manager, skilled worker, professional;

types of additional income – three dummy variables: thirteen salary, bonuses, and social benefits;

alimony – two dummy variables: receiving alimony and paying alimony;

III. Geographic characteristics:

type of residence – three dummy variables: village, city, and town.

Having estimated separate poverty models for male and femaleheaded households, we can measure the gender gap in poverty by finding the difference in the predicted poverty rates for both types of households.

For comparison purposes we will estimate a so-called *welfare model* using OLS procedure. The dependent variable in this model is the level of adult equivalent expenditure and the set of independent variables is the same as in the poverty model.

Explanatory variables

Age of household head has a direct impact on the household poverty status (*Elmelech et al.* 2004). Usually, the older is the head of the household the better is the standard of living of its members. However, his/her retirement may cause the decline of the household income. Therefore, a negative relationship is hypothesized between poverty and age if the latter is less than the retirement age and a positive relationship otherwise.

Education of household head negatively influences poverty (*Blau and Kahn* 1994, *Oxaal* 1997, *Lokshin and Mroz* 2003). The point is that well-educated person has better chances to find a prestigious and well-paid job.

Number of children in the household is expected to have a positive effect on the probability of poverty for the household (*Attanasso 2005*). If the number of children increases more resources are required to meet their needs and, as a result, the household is more likely to be poor.

The number of adults in household has an ambiguous effect on its poverty status (*Attanasso 2005*). On the one hand, if all of them are employed and make a financial contribution to the household budget, the probability for the family to be poor is low. On the other hand, unemployed adult members increase the probability of poverty for all household members.

Marital status provides information about the dependency ratio. Marriage can be beneficial in monetary terms if the two spouses are employed. In this case the likelihood for the family to live in poverty can be less compared to the situation when the household consists only of one earner with children. Thus, the coefficient near such dummy variable as married is hypothesized to have a negative sign (*Casper et al.* 1994, *Elmelech et al.* 2004).

Single parenthood increases the dependency ratio and, as a result, the probability of poverty (*Casper et al.* 1994, *Gindling and Oviedo* 2008). We expect a strong positive effect of this explanatory variable on the household poverty status due to the fact that Ukraine faces a serious problem with early motherhood of unmarried women and a very high divorce rate.

Employment as a labor market characteristic of the household head is supposed to have the greatest effect on the household poverty status (*Elmelech et al.* 2004). Following this further, employment of the household head implies his/her financial contribution to the family budget. Usually, this contribution is the largest under condition of full-employment and may equal to zero under condition of unemployment or being out of labor force. Hence, a negative relationship is hypothesized between poverty and employment. The coefficient near such variable as unemployment or out of labor force should be positive.

Sector of employment of the household head. There is a high probability that workers employed at public sector of the economy have lower income in comparison with those who work in the private enterprises.

Type of job to the great extent determines the person's salary; therefore, it affects his/her welfare status (*Attanasso* 2005).

The type of area where family live is included in the set of the exogenous variables since the incidence of poverty varies between villages and cities. The gap in the wage level between rural and urban area leads to the situation where rural inhabitants are more likely to be poor.

Tests

The estimation of the separate logistic regressions for male and female-headed households is justified only under condition that regression coefficients and variances are different for both groups of households. For this purpose the *poolability test* is carried out, the essence of which is the following. We run the regressions for the two groups of households and then check the null hypothesis that all parameters of the separate regressions are equal to corresponding pooled parameters. If the null hypothesis is rejected, it gives us the possibility to estimate poverty models for male and female-headed households separately.

Test of predictive performance is conducted in order to analyze the predictive power of the poverty model. To define the percent of observations with positive and negative outcomes that are correctly classified, we estimate the "sensitivity" and "specificity" ratios. In other words, this test measure the fraction of poor ("sensitivity" ratio) and non-poor households ("specificity" ratio) for which poverty status is correctly classified (*Okojie 2002*). The predictive power of the poverty model can be estimated by using STATA command *lroc* that compute the area beneath ROC ("receiver operating characteristic curve") curve. The predictive power of the model is perfect if the corresponding area is equal to 1.0 and the absence of this necessary characteristic is indicated by the size 0.5.

Decomposition of the Gender-Poverty Gap

To estimate the extent to which differences in characteristics of the heads of both types of households affect the gender gap in poverty we use the *Blinder-Oaxaca decomposition technique to the logit model (Fairlie 2006)*. This new approach to decomposing the male/female gap, in contrast to the standard Blinder-Oaxaca decomposition that can be used only for linear regression, gives the possibility to decompose non-linear equation $Y = F\left(X\widehat{\beta}\right)$. The decomposition of the gender poverty gap can be written as:

$$\overline{Y}^m - \overline{Y}^f = \left[\sum_{i=1}^{N^m} \frac{F\left(X_i^m \widehat{B}^f\right)}{N^m} - \sum_{i=1}^{N^f} \frac{F\left(X_i^f \widehat{B}^f\right)}{N^f}\right] + \left[\sum_{i=1}^{N^m} \frac{F\left(X_i^m \widehat{B}^m\right)}{N^m} - \sum_{i=1}^{N^m} \frac{F\left(X_i^m \widehat{B}^f\right)}{N^m}\right] \qquad (4.5)$$

where $\overline{Y}^m$ and $\overline{Y}^f$ are the average values of the dependent variables in the poverty models for male and female-headed households respectively,

X_i^m and X_i^f are the row vectors of the independent variables for male and female-headed households respectively,

$\widehat{B}^m$ and $\widehat{B}^f$ are the column vectors of coefficient estimates for male and female headed households respectively,

N^m and N^f are the sample size for both types of households.

The first term in brackets in the equation (3.5) defines the part of the gender poverty gap determined by the group differences in the distributions of X, and the second term captures the portion of the gap due to the discrimination effect.

Fairlie (2006) states that equation (3.5) will hold exactly only for the logistic regression with the constant term because in this case the average value of dependent variable "poverty status" equals the average of the predicted probabilities of being poor.

Suppose we want to see what the poverty rate for the heads of female-headed households would be if they had the same education as the heads of male-headed households. In this case we plug the intercept, coefficients, means for all independent variables (except education) obtained from the model for the heads of female-headed households, and the mean value of the education composition for the heads of male-headed households into the poverty model. Then we find the difference in poverty rates for the heads of female (obtained by using above described approach) and male-headed households. This difference gives us the possibility to answer the question what the gender-poverty gap would be if the heads of female-headed households had the same education as the heads of male ones.

The purpose of decomposing gender gap in poverty is to identify the factors which contribution to shaping this gap is the largest. To be precise, the decomposition results show what is the effect of personal, human capital, labor market characteristic of the household head on the gap. Accomplishment of this purpose is of great importance because the results of decomposition are necessary to inform the state policy that targets the eradication of poverty.

C h a p t e r   5

ESTIMATION RESULTS

A. Poverty Dominance Analysis

In this section we provide the results of poverty dominance analysis using both a graphical and analytical approach. The essence of this analysis is to conduct stochastic dominance tests in order to determine what type of households, male or female-headed, are poorer. The presence of dominance at first will be investigated over the range of expenditure values up to the maximum poverty line. In case of impossibility to define the stochastic dominance relationship over the entire range from zero to upper bound of the poverty line, we will explore poverty dominance over the certain range of expenditure, between lower and upper bounds of the poverty line.

This analysis is based on drawing the graphs of the cumulative expenditure distribution functions and calculating Foster-Greer-Thorbecke indexes using the concept of relative poverty lines. To set the bounds of poverty lines we transform the aggregate household expenditure into the adult equivalent expenditure by employing the above-described approach. Maximum poverty line z_{max} is defined as sixty percent of the mean of adult equivalent expenditure for male-headed households and minimum of this indicator, z_{min}, equals to forty percent of the median of adult equivalent expenditure for female-headed households. Therefore, in our case lower, z_{min}, and upper bound, z_{max}, estimates of the poverty line are equal to 4.16 UAH per day rep adult equivalent and 12.7 UAH, respectively. We set the bounds in this way because in our case, as we will see later, it is impossible to compare cumulative distributions for the low levels of poverty lines due to the curves crossing and this is common procedure for defining bounds (Madden and

Smith,2000). As we are interested in the wide range of poverty lines, we calculate a lower bound taking into account median expenditure of those households that are poorer, in our case female-headed, and upper bound, in order to be higher, is computed on the base of average expenditure for male-headed households.

To determine whether the first-order stochastic dominance holds we at first visually inspect Figure 5.1 with the Poverty Incidence Curves for male and female-headed Ukrainian households.

Figure 5.1. **Poverty Incidence Curves for Male and Female-headed Households**
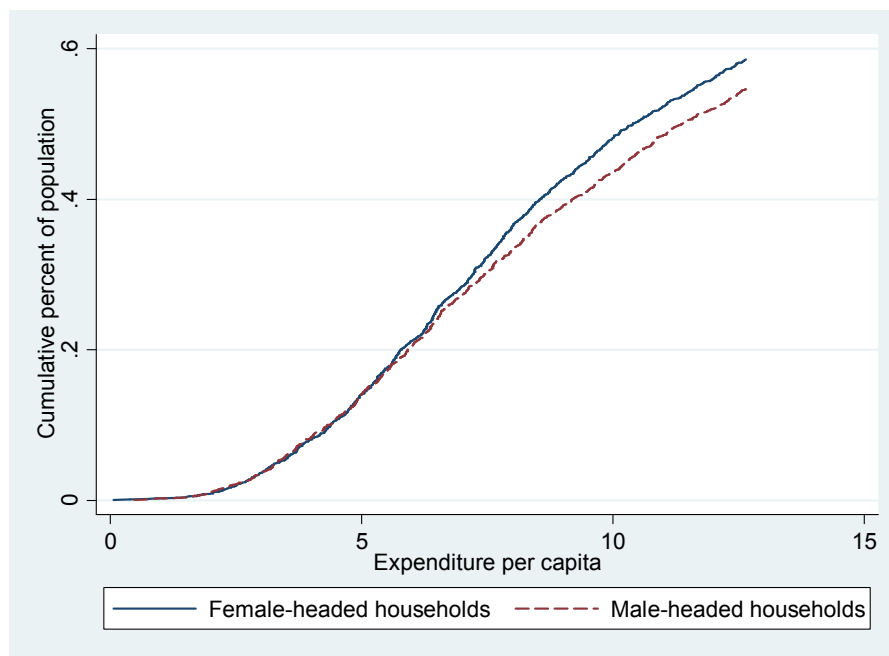
The x-axis represents the level of adult equivalent expenditure and y-axis indicates the proportion of households (headcount index), with at least x amount of expenditure per capita.

Figure 5.1 illustrates that over the range of expenditure from zero the 12.7 UAH, maximum poverty line, the ranking of cumulative distributions for male and female-headed households is ambiguous. While the first-order stochastic dominance condition doesn't hold for the whole range of expenditure because poverty incidence curves crosses at low levels, this condition is satisfied for the levels of 6 UAH and above.

Further investigation of the dominance relationship is based on the Poverty Deficit Curves for male and female-headed households presented on Figure 5.2. The vertical distance between two curves indicates the size of gender poverty gap as the difference between poverty-gap indexes that are equivalent to integral of the cumulative percent of population.

Figure 5.2. **Poverty Deficit Curves for Male and Female-headed Households**

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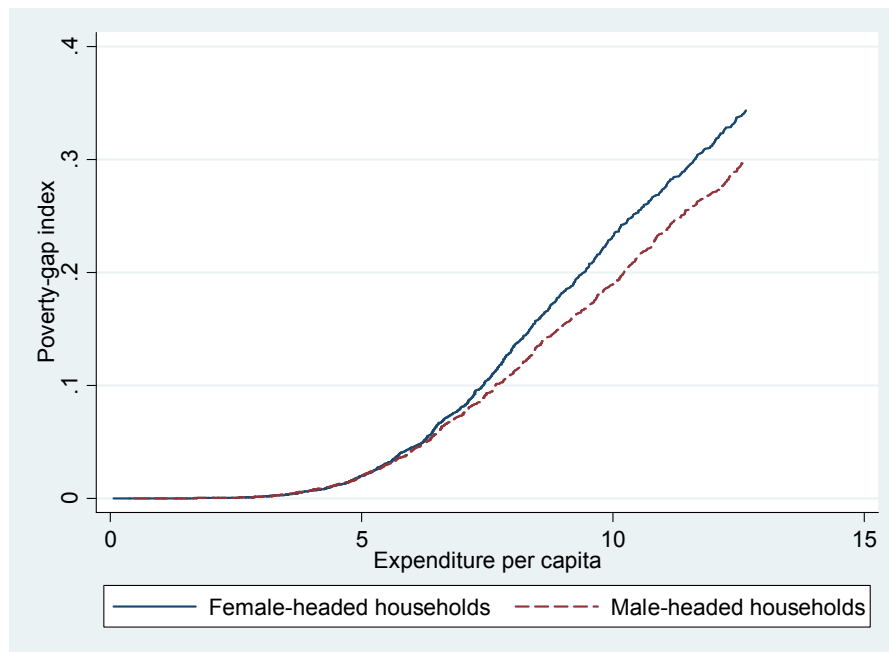
According to the figure female-headed households with the adult equivalent expenditure above approximately 6 UAH per capita are poorer than male ones. However, there is no clear evidence what type of households experience more poverty over the range zero-six because the curves are very close and sometimes crosses on the interval of expenditure from zero to 6 UAH, as a result, the gap is very small and its direction is difficult to define. As the establishment of dominance is impossible on the base of second-order poverty dominance test, there is a necessity to continue investigation by comparing second integrals of the cumulative expenditure distribution functions.

Poverty Severity Curves on the Figure 5.3 also do not allow to make unambiguous conclusions regarding the issue who are poorer.

Figure 5.3. **Poverty Severity Curves for Male and Female-headed Households**
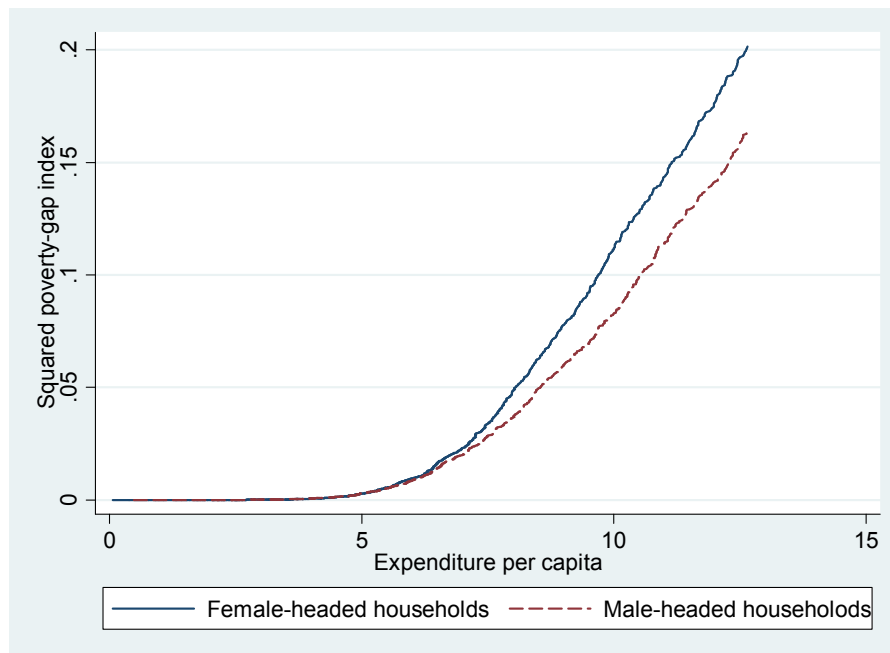
Therefore, the most striking result of all figures is that it is difficult to observe stochastic dominance of either male or female-headed households up to the maximum poverty line. Nevertheless, the figures show that the female-headed households are poorer than male-headed households over the wide range of the relative poverty lines.

The drawback of the graphical approach is that mere visual inspection of the cumulative distribution functions overlooks the issue of sample variation. In other words, the gender-poverty gap as the difference in distributions may completely reflect sampling variation and be insignificant in the statistical sense. To eliminate this drawback we will test statistical significance of this gap for the range of poverty lines, from lower to upper bounds. The results of the stochastic dominance tests up to the third order are presented in Table 5.1.

Table 5.1. **The Results of the First-Order**

Stochastic Dominance Test

Poverty line	Headcount index for female-headed households	Headcount index for male-headed households	Difference between indexes (distributions)	Test Statistics
4.16	0.08567	0.09172	-0.00605	**-25.86****
4.45	0.10451	0.10592	-0.00141	**-5.57****
5.37	0.16619	0.16213	0.00406	13.33**
6.17	0.21873	0.21479	0.00394	11.63**
6.28	0.22787	0.22249	0.00538	15.68**
7.65	0.33352	0.31479	0.01873	48.68**
8.34	0.38607	0.35325	0.03281	82.72**
9.32	0.44260	0.40473	0.03787	93.27*
11.01	0.52313	0.48521	0.03792	92.28**
12.7	0.58595	0.54675	0.03921	96.24**

Stochastic dominance test is conducted for the wide range of adult equivalent expenditure, from minimum, $z_{min}=4.16$, to maximum poverty line, $z_{max}=12.7$.

First-order dominance doesn't hold on this interval because poverty incidence curves cross at around 5 UAH. This statement follows from the fact that for the first two levels of poverty lines the difference between distributions is negative and statistically significant but for all others lines the headcount indexes for female-headed households exceeds the corresponding indicator for male ones. In other words, for the low levels of adult equivalent expenditure proportion of poor male-headed households is greater, as indicated by the headcount indexes, and for higher expenditure levels female-headed households are poorer.

The second-order dominance test, which is shown in Appendix A, elucidates the difference in poverty-gap indexes for male and female-headed households and also contributes to the fact that from low to upper bounds of the poverty lines only the mixed dominance holds. The third-order dominance condition isn't satisfied for this interval as the differences between squared poverty-gap indexes change the sign from negative to positive and point out on crossing of the poverty severity curves.

Now we explore the dominance relationship separately for rural and urban households. Once again visual inspection of Figure 5.4. indicates a crossing of the poverty incidence curves for rural male and female-headed households.

For rural households lower and upper bounds of the poverty lines differ from those for the whole sample, due to the difference in mean and median expenditure, and are equal to 3.31 and 10.19, respectively. Along this interval poverty incidence curves crosses twice, as can be inferred from the Table 5.4, what is more, this crossing is significant. Hence, rural female-headed households are poorer than male-headed for all poverty lines from approximately 6 UAH and larger and for poverty lines below this level only the mixed dominance holds.

Figure 5.4. **Poverty Incidence Curves for Rural Households**
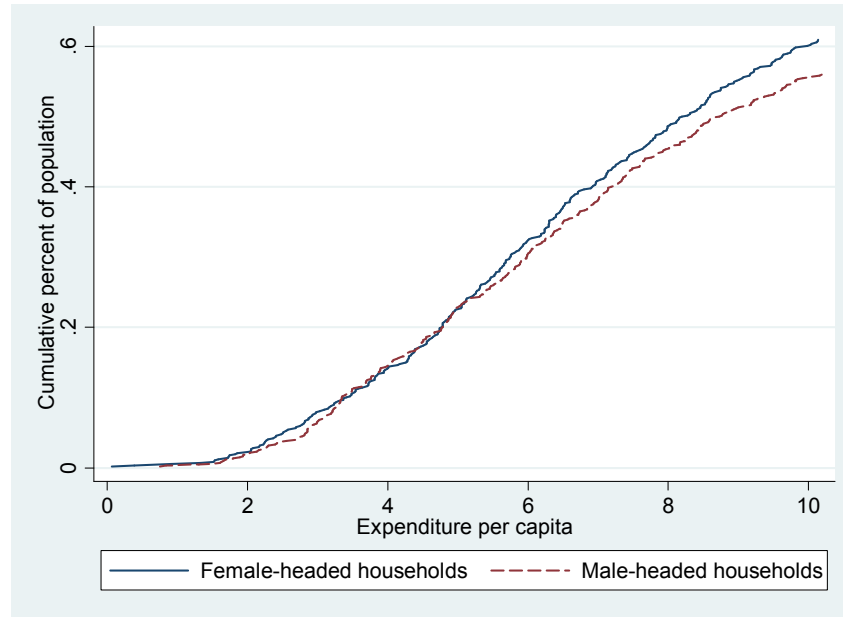
Table 5.2. **The Results of the First-Order Stochastic Dominance Test for Rural Households**

Poverty line	Headcount index for female-headed households	Headcount index for male-headed households	Difference between indexes (distributions)	Test Statistics
3.31	0.09507	0.09167	0.00340	8.29**
4.22	0.14789	0.15833	-0.01045	**-20.55****
5.97	0.31866	0.29833	0.02033	31.18**
6.23	0.33275	0.32167	0.01108	16.73**
6.84	0.39613	0.36667	0.02946	42.97**
7.33	0.43486	0.40667	0.02819	40.46**
7.76	0.46479	0.44167	0.02312	32.91**
8.77	0.54049	0.50167	0.03883	55.09**
9.09	0.55634	0.51333	0.04300	61.13**
10.19	0.60915	0.56000	0.04915	70.74**

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Comparison of the cumulative distribution functions for male and female-headed urban households, using Figure 5.5, clearly illustrates the absence of guarantee that the ranking can be determined for the whole range of poverty lines up to the maximum. It is not surprising that the lower and upper bounds of poverty line for urban households are considerably higher than those for rural households, of course, due to the discrepancies in mean and median expenditure, and equals to 4.68 and 14.68, respectively. As can be inferred from Figure 5.5 the poverty incidence curves cross only in the left tail but for the long interval of expenditure the cumulative distribution for female-headed households are higher than corresponding curve for male-headed ones.

Figure 5.5. **Poverty Incidence Curves for Urban Households**
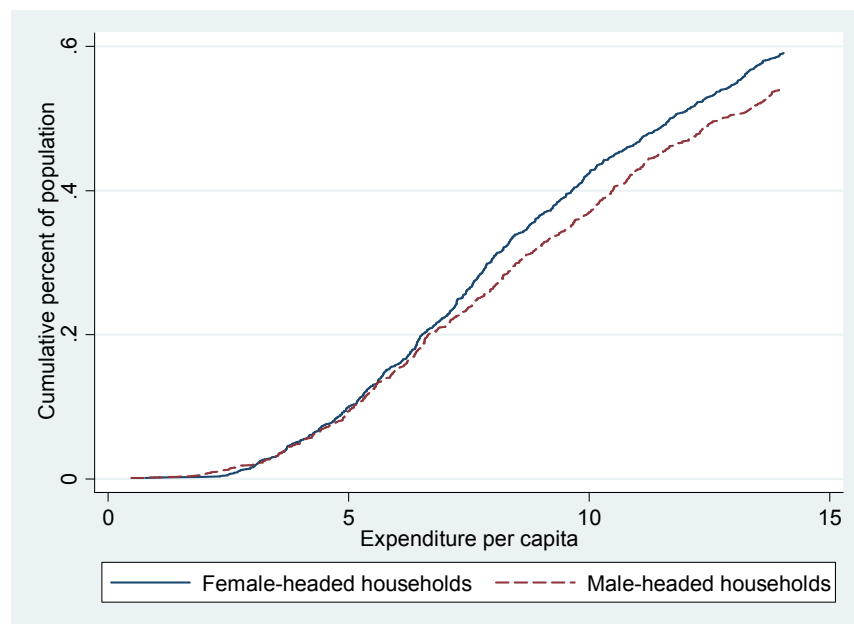
Table 5.3 presents the application of first-order stochastic dominance criteria to the poverty incidence curves for male- and female-headed urban households. The results prove to be statistically significant and give the possibility to claim that

over the entire range of poverty lines the proportion of poor female-headed households are higher than the same indicator for male-headed households.

Table 5.3. **The Results of the First-Order Stochastic Dominance Test for Urban Households**

Poverty line	Headcount index for female-headed households	Headcount index for male-headed households	Difference between indexes (distributions)	Test Statistics
4.68	0.08030	0.07615	0.00416	15.30**
5.69	0.14117	0.13578	0.00539	15.40**
6.84	0.21640	0.20550	0.01089	26.38**
7.41	0.25528	0.23119	0.02409	55.51**
7.52	0.26374	0.23853	0.02520	57.46**
10.67	0.45393	0.40826	0.04567	91.18**
11.83	0.50634	0.46514	0.04120	81.46**
12.72	0.53846	0.49725	0.04121	81.49**
13.82	0.58326	0.53670	0.04657	92.68**
14.68	0.61285	0.55780	0.05505	110.42**

To sum up, we have established first-order poverty dominance for rather wide range of adult equivalent expenditure. In other words, female-headed households are poorer than male-headed for the levels of expenditure of approximately 6 UAH and higher, however, for low values of poverty measure the dominance relationship is ambiguous because over this range curves either coincide, which means that poverty rates are the same for both types of households, or crosses creating very small and different in sign gaps. But broadly speaking, male-headed households are not poorer over this range because the graph of the cumulative distribution function for them is not above the corresponding graph for female-headed households.

Tests

To test the hypothesis about the heterogeneity of male and female-headed households, i.e. to check whether it is necessary to estimate separate poverty models for male- and female-headed households, we employ likelihood ratio test. Its result justifies running separate logistic regressions for both types of households as can be inferred from the Table 5.4.

Of great importance for us is the high predictive power of the poverty model because the estimation of the gender-poverty gap is based on the predicted poverty rates for male- and female-headed households. To examine the degree of the predictive power, we calculate sensitivity and specificity ratios, the results are illustrated in Table 5.4, and then make ROC analysis by plotting ROC curves.

Table 5.4. **Tests of Poolability and Predictive Performance**

1	Test of poolability	
	Likelihood ratio test LR chi2 Probability> Chi^2	 63.67 0.0000
2	Test of predictive performance for the pooled model	
	Sensitivity – percent of poor correctly classified Specificity – percent of non-poor correctly classified Percent of sample correctly classified	24.37% 93.96% 74.13%
3	Test of predictive performance for the male-headed households	
	Sensitivity – percent of poor correctly classified Specificity – percent of non-poor correctly classified Percent of sample correctly classified	29.03% 92.98% 74.94%
4	Test of predictive performance for the female-headed households	
	Sensitivity – percent of poor correctly classified Specificity – percent of non-poor correctly classified Percent of sample correctly classified	29.48% 92.28% 73.94%

Test of predictive performance for the pooled model evinces that specificity or percent of non-poor households correctly classified is very high (93.96%), however, the sensitivity or the percent of poor households with correctly defined poverty status is rather low (24.37%), and percent of sample correctly classified is quite high (74.13%). Our results are in accordance with those in the corresponding papers and even better than in some of them (*Okojie 2002*).

Comparison of the predictive performance of the separate poverty models allows to state that the results of the test are very similar for the both models. The sensitivity ratios are low, however, specificity ratios are very high and equal to 92.98% for male-headed households and 92.28% for female-headed. The percent of sample correctly classified is rather high for both types of households, but for the male-headed ones is slightly higher.

The evaluation of the predictive power of the poverty models for both types of households can be made by estimating the area beneath the ROC curves.

Figure 5.6. **ROC Curve for the Female-headed Households**

Area under ROC curve = 0.7578

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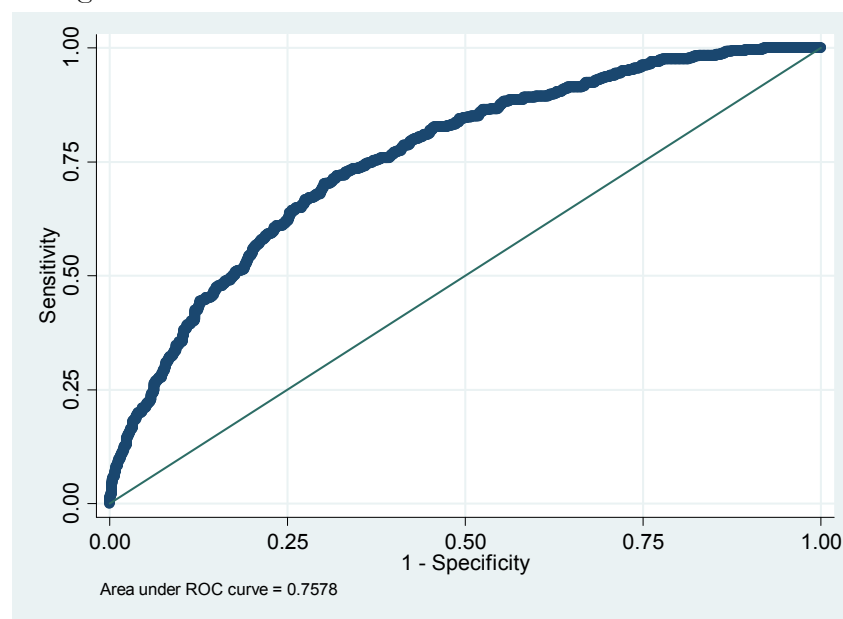
The greater is this area, the higher is the predictive power of the model, i.e. the model can more precisely predict the probability to be poor. The ROC curves are presented on Figure 5.6 and Figure 5.7 where the x-axis indicates the difference between one and the level of specificity and the y-axis shows the sensitivity ratio. The area under the ROC curve for the female-headed households is equal to 0.7578 and the corresponding indicator for male-headed is slightly lower, 0.7454. These results allow to claim that the given models predict the probability of poverty with the high degree of certainty.

Figure 5.7. **ROC Curve for the Male-headed Households**
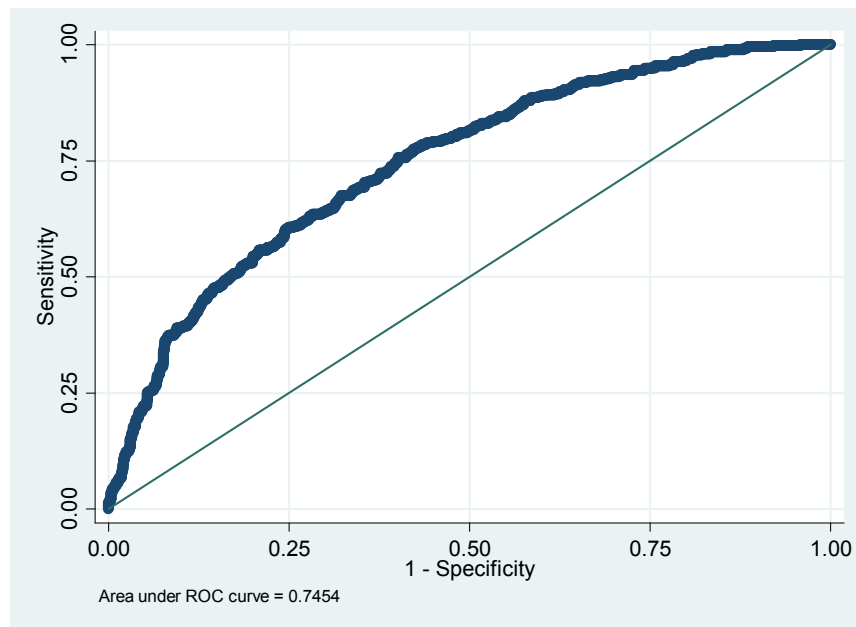
B. Regression Analysis

The purpose of our regression analysis is to estimate the effect of a set of factors on the household poverty status and to examine how different are male and female-headed households in terms of this effects. We run separate logistic regressions for the male- and female-headed households and then use the coefficient estimates for predicting poverty rates for both types of households and subsequently the evaluation of the gender-poverty gap.

Determinants of Poverty for Male-headed Households

The empirical findings based on the estimation of the six poverty models for male-headed households are presented in Table 5.5. In these models the dependent variable poverty status is constructed using certain level of poverty line. We took five relative poverty lines, where z_{min} =7.0 UAH and equals to 33% of the average adult equivalent expenditure, z_{max}=12.7 UAH and is computed as 60% of average income. The absolute poverty line, as we said before, is set to be equal to 7.11 UAH. The majority of marginal effects are very similar in all six models in terms of value and the same in the direction of impact. However, some of them are not robust to level of poverty line and even change the sign .

The relationship between demographic structure of the households, namely the presence of **children,** and poverty are in accordance with the theory; namely, f there is one child in the household it has small effect on the poverty status, but when there are two or more children the male-headed household tends to be poorer.

Single parenthood has very strong, although statistically insignificant, negative impact on the household poverty for the poverty lines up to 7.5 UAH, in other

words, as the marginal effect for the corresponding variable is positive it means that the households with single parent are more likely to be poor.

The results indicate that with **age** males become less better-off and this effect becomes more significant, in statistical and economic sense, with the increase in the poverty line. Marital status also affects poverty, to be precise, the most beneficially in terms of avoiding poverty is to be in **registered marriage** as the marginal effect is negative and statistically significant

Table 5.5. **Determinants of Poverty for Male-headed**
Households by the Poverty Line
(marginal effects after logit)

	Poverty line z in UAH					
	z=7.0	z=7.1	z=7.5	z=8.5	z=10.6	z=12.7
Three children	0.165	0.151	0.176*	0.168	0.204**	0.234***
	[0.103]	[0.132]	[0.092]	[0.110]	[0.035]	[0.002]
Two children	0.141***	0.144***	0.160***	0.157***	0.130***	0.140***
	[0.002]	[0.001]	[0.001]	[0.001]	[0.005]	[0.001]
One child	0.051*	0.053*	0.056*	0.069**	0.039	0.055
	[0.093]	[0.084]	[0.081]	[0.048]	[0.283]	[0.114]
Single parent	0.275	0.27	0.266	0.201	0.056	-0.05
	[0.296]	[0.303]	[0.305]	[0.436]	[0.828]	[0.843]
Number of adults	0.057***	0.063***	0.071***	0.086***	0.094***	0.087***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Age	0.002	0.002	0.001	0.003*	0.004**	0.005***
	[0.179]	[0.265]	[0.341]	[0.072]	[0.017]	[0.002]
Married non-registered	-0.04	-0.046	-0.052	-0.054	-0.120**	-0.119*
	[0.340]	[0.278]	[0.247]	[0.307]	[0.044]	[0.067]
Married registered	-0.092**	-0.103***	-0.101**	-0.108**	-0.154***	-0.138***
	[0.016]	[0.009]	[0.013]	[0.013]	[0.001]	[0.001]
Never married	-0.019	-0.021	0.023	0.025	-0.03	0.034
	[0.682]	[0.667]	[0.679]	[0.678]	[0.643]	[0.591]
Vocational education	-0.018	-0.019	-0.014	-0.019	-0.009	0.019

Table 5.5. Continued

	[0.469]	[0.473]	[0.605]	[0.543]	[0.801]	[0.580]
Professional education	-0.092***	-0.086***	-0.079***	-0.070**	-0.070*	-0.039
	[0.000]	[0.001]	[0.006]	[0.036]	[0.067]	[0.314]
Bachelor`s or specialist`s degree	-0.100***	-0.120***	-0.113***	-0.152***	-0.116**	-0.106**
	[0.002]	[0.000]	[0.001]	[0.000]	[0.014]	[0.032]
Master`s or doctor`s degree	-0.106	-0.085	-0.095	-0.121	-0.126	-0.138
	[0.133]	[0.271]	[0.247]	[0.182]	[0.248]	[0.215]
Self-employed	-0.171***	-0.171***	-0.185***	-0.213***	-0.309***	-0.289***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Employee	-0.036	-0.032	-0.01	-0.068	-0.137	-0.053
	[0.708]	[0.746]	[0.928]	[0.559]	[0.272]	[0.670]
Unemployed	0.098	0.159	0.202	0.238	0.217	0.127
	[0.429]	[0.242]	[0.171]	[0.124]	[0.154]	[0.400]
Employed	-0.058	-0.071	-0.113	-0.052	-0.078	-0.157
	[0.597]	[0.530]	[0.356]	[0.686]	[0.576]	[0.233]
Pensioner	-0.126***	-0.123***	-0.128***	-0.124***	-0.126***	-0.109**
	[0.000]	[0.000]	[0.000]	[0.003]	[0.008]	[0.024]
Professional worker	0.014	0.059	0.034	0.038	0.015	-0.003
	[0.826]	[0.391]	[0.611]	[0.597]	[0.827]	[0.969]
Skilled worker	0.002	-0.002	-0.008	-0.015	0.016	0.001
	[0.948]	[0.948]	[0.833]	[0.707]	[0.707]	[0.979]
Manager	-0.108**	-0.105**	-0.135***	-0.176***	-0.244***	-0.271***
	[0.031]	[0.046]	[0.009]	[0.002]	[0.000]	[0.000]
Unskilled	0.088*	0.107**	0.105**	0.110**	0.143***	0.132***
	[0.051]	[0.021]	[0.027]	[0.026]	[0.004]	[0.004]
Social benefits	-0.085**	-0.081*	-0.081*	-0.104**	-0.054	-0.021
	[0.036]	[0.051]	[0.066]	[0.031]	[0.303]	[0.687]
Bonuses	-0.095***	-0.106***	-0.111***	-0.110***	-0.129***	-0.099**
	[0.002]	[0.000]	[0.000]	[0.003]	[0.001]	[0.015]
13th salary	-0.111***	-0.100***	-0.123***	-0.153***	-0.104*	-0.178***
	[0.002]	[0.007]	[0.001]	[0.000]	[0.050]	[0.001]
Public sector	0.004	0.004	0.019	0.021	-0.027	-0.002
	[0.888]	[0.890]	[0.545]	[0.545]	[0.482]	[0.952]
Receiving alimony	-0.001	-0.001	-0.001	-0.002	-0.003	-0.003*
	[0.362]	[0.333]	[0.287]	[0.227]	[0.111]	[0.081]
Paying alimony	-0.006*	-0.006*	-0.007*	-0.006*	-0.004**	-0.002*
	[0.096]	[0.092]	[0.084]	[0.057]	[0.032]	[0.092]
Health bad	0.035	0.036	0.044	0.067*	0.084**	0.069*
	[0.268]	[0.263]	[0.199]	[0.073]	[0.037]	[0.082]

Table 5.5. Continued

Health good	-0.036	-0.036	-0.050*	-0.058*	-0.028	-0.026
	[0.155]	[0.173]	[0.067]	[0.054]	[0.409]	[0.427]
City	-0.003	-0.003	-0.003	0.022	0.055	-0.002
	[0.941]	[0.945]	[0.944]	[0.640]	[0.252]	[0.957]
Town	0.108***	0.110***	0.124***	0.158***	0.212***	0.156***
	[0.009]	[0.008]	[0.004]	[0.000]	[0.000]	[0.000]
Village	0.142***	0.146***	0.165***	0.184***	0.197***	0.119***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.003]
Observations	1643	1643	1643	1643	1643	1643

Absolute value of z-statistics in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

To analyze an impact of education on poverty, we choose four levels of education, as shown in the Table 5.5, and omit such levels as high school and less than high school. The most advantageous level of education for males is ***bachelor's or specialist's degree,*** but ***professional education*** also substantially reduces poverty. Another finding that merits attention, and contribute to our hypothesis that increase in the educational level does not always decrease the likelihood of poverty, is that those with the ***master's or doctor's degree*** benefits less from their education in terms of well-being in comparison to people with bachelor's or specialist's degree However, this conclusion may arise from the fact that there is a small number of observations in this category.

The negative sign associated with ***good health*** implies that those male heads of households with such good health status are able to provide proper financial contribution for the family budget and in this way to decrease the probability of poverty for the whole family. Such factor as ***bad health*** of the household head has opposite impact on poverty but in some of the models affects it to a lesser extent.

The effect of alimony on the incidence of poverty for maleheaded households is somewhat intriguing. The findings reveal that those households that *get alimony* payments are less poor and is in accordance with the theoretical view, however, it is surprising that the families that *pay alimony* benefit from it by reducing their probability of poverty. The possible explanation for this result could be that mainly non-poor pay alimony which results into the reverse causality. However, the credibility of the marginal effects is lowered by the fact that the number of households who get or pay alimony is very low.

An important group of factors that influence poverty rate are labor market characteristics of the household head. The most considerable effect on the male headed household poverty status has *self-employment* of its head. The corresponding marginal effect is significant in the statistical sense; it does not differ much among six models. The results show that male *employees* are worse off in comparison to self-employed. The incidence of poverty for male-headed household to the great extent depends on such factor as *unemployed* head of the household; the strongest positive relationship between poverty and unemployment is for the poverty line at 10.6 UAH. However, this effect is not statistically significant.

Type of job also contributes to the incidence of poverty. As can be inferred from the Table 5.5, those males who work as the *managers* have higher standard of living in comparison with *professional, skilled, and unskilled* workers.

Type of residence has direct impact on the household's probability of poverty; those who live in *rural area* are most likely to experience poverty, households that are *town* inhabitants are wealthier but this type of residence also is associated with the high incidence of poverty, and the most beneficially is to be *city* resident.

Hence, the findings reported in Table 5.5 evince that the strongest negative impact on the poverty rate for male-headed households has self-employment of the household head and the positive effect first of all is associated with the demographic structure of the household and the type of residence (rural area).

Determinants of Poverty for Female-headed Households

Now we focus on the determinants of poverty for female-headed households and display the empirical findings in Table 5.6. Having juxtaposed the marginal effects in the poverty models for male and female-headed households, one may note that family structure is a more important factor for female-headed households than for male ones. In this case greater and statistically significant are impact of such factors as presence of **one child**, **two children, and three children** in the household.

Females also become poorer with **age** but to the higher degree and the marginal effect for this variable is significant under the condition that poverty line is set to be equal or higher than 7.1 UAH. **Marriage**, no matter whether it is registered or non-registered, decreases the likelihood of poverty for female-headed households. The marginal effects reveal that **single** women are more likely to live in poverty than single men.

Moving to the question under study, **educational** attainment contributes more to the probability of poverty for females than for males, i. e. under condition that women and men have the same level of education women are more likely to be poor.

Table 5.6. **Determinants of Poverty for Female-headed**

Households by the Poverty Line

(marginal effects after logit)

| | Poverty line z in UAH | | | | | |
	z=7.0	z=7.1	z=7.5	z=8.5	z=10.6	z=12.7
Three children	0.149	0.147	0.210*	0.227*	0.229**	0.200**
	[0.196]	[0.204]	[0.077]	[0.051]	[0.023]	[0.019]
Two children	0.260***	0.263***	0.262***	0.218***	0.207***	0.197***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
One child	0.047	0.047	0.055	0.061*	0.079**	0.093***
	[0.150]	[0.152]	[0.108]	[0.091]	[0.029]	[0.007]
Single parent	0.01	0.005	0.025	0.002	0.046	0.081
	[0.856]	[0.932]	[0.687]	[0.980]	[0.507]	[0.218]
Number of adults	0.065***	0.067***	0.073***	0.081***	0.068***	0.064***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Age	0.002	0.002*	0.003*	0.005***	0.007***	0.009***
	[0.121]	[0.099]	[0.079]	[0.006]	[0.000]	[0.000]
Married non-registered	-0.045	-0.053	-0.05	-0.082	0.036	-0.004
	[0.345]	[0.261]	[0.341]	[0.155]	[0.594]	[0.950]
Married registered	-0.065**	-0.066**	-0.055*	-0.072**	-0.070**	-0.091***
	[0.014]	[0.013]	[0.052]	[0.020]	[0.032]	[0.005]
Never married	0.032	0.024	0.009	0.035	0.121*	0.179***
	[0.593]	[0.687]	[0.885]	[0.592]	[0.052]	[0.000]
Vocational education	-0.071**	-0.076***	-0.058*	-0.019	-0.025	-0.003
	[0.014]	[0.010]	[0.077]	[0.621]	[0.551]	[0.942]
Professional education	-0.045*	-0.050*	-0.053*	-0.054	-0.047	-0.052
	[0.099]	[0.069]	[0.073]	[0.102]	[0.193]	[0.151]
Bachelor's or specialist`s degree	-0.075**	-0.063	-0.056	-0.033	-0.071	-0.127**
	[0.040]	[0.101]	[0.177]	[0.477]	[0.152]	[0.010]
Master`s or doctor`s degree	-0.128	-0.134	-0.173**	-0.180*	-0.081	-0.062
	[0.125]	[0.118]	[0.038]	[0.087]	[0.510]	[0.596]
Self-employed	-0.087	-0.097	-0.084	-0.099	-0.065	-0.098
	[0.165]	[0.120]	[0.245]	[0.233]	[0.506]	[0.326]
Employee	0.116	0.12	0.076	0.168	0.158	0.15
	[0.338]	[0.331]	[0.539]	[0.216]	[0.234]	[0.231]
Unemployed	0.084	0.154	0.115	0.18	0.287**	0.189
	[0.520]	[0.267]	[0.403]	[0.210]	[0.011]	[0.101]

Table 5.6. Continued

Employed	-0.184	-0.192	-0.157	-0.277*	-0.228	-0.244*
	[0.196]	[0.183]	[0.267]	[0.063]	[0.111]	[0.061]
Pensioner	-0.042	-0.042	-0.018	-0.059	-0.064	-0.095**
	[0.255]	[0.265]	[0.656]	[0.177]	[0.168]	[0.040]
Professional worker	-0.124***	-0.130***	-0.128***	-0.171***	-0.186***	-0.149**
	[0.003]	[0.002]	[0.005]	[0.001]	[0.001]	[0.011]
Skilled worker	-0.021	-0.014	-0.017	-0.007	-0.031	-0.039
	[0.689]	[0.804]	[0.762]	[0.912]	[0.617]	[0.512]
Manager	-0.115*	-0.125**	-0.163***	-0.191***	-0.187**	-0.236***
	[0.068]	[0.044]	[0.008]	[0.008]	[0.028]	[0.008]
Unskilled	0.064	0.061	0.097**	0.137***	0.128***	0.093**
	[0.128]	[0.148]	[0.031]	[0.003]	[0.004]	[0.025]
Social benefits	-0.041	-0.046	-0.053	-0.057	-0.033	-0.037
	[0.411]	[0.368]	[0.324]	[0.322]	[0.582]	[0.527]
Bonuses	-0.062*	-0.056	-0.055	-0.077*	-0.136***	-0.104**
	[0.095]	[0.142]	[0.172]	[0.069]	[0.002]	[0.015]
13th salary	-0.128***	-0.116**	-0.127**	-0.155**	-0.126*	-0.118*
	[0.007]	[0.023]	[0.020]	[0.011]	[0.066]	[0.081]
Public sector	0.041	0.035	0.036	0.056	0.075*	0.083*
	[0.273]	[0.354]	[0.378]	[0.190]	[0.092]	[0.054]
Receiving alimony	0	0	0	0	0.001	0
	[0.739]	[0.935]	[0.656]	[0.681]	[0.466]	[0.916]
Paying alimony	-0.004	-0.004	-0.004	-0.005	-0.005	-0.001
	[0.232]	[0.227]	[0.194]	[0.153]	[0.114]	[0.447]
Health bad	0.065**	0.068**	0.057*	0.049	0.058*	0.038
	[0.021]	[0.019]	[0.055]	[0.132]	[0.088]	[0.266]
Health good	-0.068**	-0.063*	-0.059*	-0.014	-0.033	-0.007
	[0.037]	[0.059]	[0.099]	[0.721]	[0.427]	[0.863]
City	0.043	0.054	0.063	0.025	0.044	0.056
	[0.295]	[0.197]	[0.137]	[0.549]	[0.291]	[0.150]
Town	0.108***	0.114***	0.095**	0.082**	0.105***	0.086**
	[0.008]	[0.005]	[0.020]	[0.044]	[0.009]	[0.021]
Village	0.192***	0.200***	0.190***	0.166***	0.178***	0.147***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	1713	1713	1713	1713	1713	1713

Absolute value of z-statistics in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

As can be inferred from Table 5.6, *alimony* are a more important source of subsistence for male-headed households than for female-headed. The marginal effect for the variable "receiving alimony" points out on the fact that female headed households either do not benefit from alimony payments or these benefits are insignificant in terms of money and in statistical sense. Here again we face the problem of the small number of observations.

The most advantageous type of job for the females is to be *manager* or *professional* because these factors substantially reduce poverty. Those who are *skilled* worker also have less chances to fall in poverty, but, of course,*unskilled* suffer from poverty.

Health is a more important determinant of poverty for female-headed households than for male-headed ones. *Bad health* significantly increases poverty rates, the corresponding marginal effects are similar in all six models and equal approximately 0.04-0.07; *good health* tends to reduce the incidence of poverty, however, the magnitude of the impact varies among six models.

The relationship between type of household residence and its poverty status differs for both types of households. Following this further, female-headed households do not benefit from their location; *city* residents and those who live in *towns* or *villages* have an increased chance to be poor.

For comparison purposes we have estimated the OLS regressions for the absolute poverty line 7.1 UAH and for the relative poverty line 8.5 UAH. Having juxtaposed the of the marginal effects after logit with the coefficient estimates for the linear probability models, we can see that the results are quit similar in terms

of the magnitude and almost in all case the same in terms of the direction of impact.

Estimation and Decomposition of the Gender-Poverty Gap

Having estimated separate poverty models for both type of households, we can define the incidence of poverty, predicted probability to be poor, for every type. To calculate these probabilities we use STATA tools, but the intuition behind it is that we put the coefficients and means of the variables into the poverty models and evaluate the dependent variable. The estimated poverty rates for male and female-headed households, conditional on the level of the poverty line, are presented in Table 5.7.

Table 5.7. **Gender-Poverty Gap by the Level of Poverty Line**

Poverty Line	Incidence of Poverty (predicted probability to fall in poverty)		Gender-Poverty Gap
	Male-headed households	Female-headed households	
7.0 UAH	0.226	0.244	-0.018
7.1 UAH	0.236	0.253	-0.017
7.5 UAH	0.261	0.288	-0.028
8.5 UAH	0.330	0.371	-0.041
10.6 UAH	0.455	0.504	-0.049
12.7 UAH	0.553	0.596	-0.043

The most striking result illustrated in this table is that independently of the poverty line female-headed households have higher predicted probability to live in poverty than male-headed ones, in other words, the former are over-represented among the poor households and this result is accordance with our

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hypothesis. Therefore, there exists a gender-poverty gap which size is conditional on the level of poverty line. This gap equals 5% for the model with poverty line 10.6 UAH and falls in the interval 2%-4% for other five models. According to the results, if the female-headed households had the same distributions of independent variables as male-headed then the former would be less likely to be poor. However, under condition that the effect of all factors on the probability of poverty for female-headed households would be the same as for the male-headed (coefficient estimates would be the same), the former would have higher incidence of poverty.

Of great importance for us is the effect of different factors on the gender-poverty gap and it is illustrated in Table 5.8. The general conclusion is that female-headed households are more poor because their education status, labor market characteristics, health status, and marital status are worse in comparison to male-headed households.

For instance, under poverty line 7.5 UAH, if females have the same labor market characteristics as males, the poverty rate for them would be 6.6 percentage points lower; under condition that men and women have the same health status the female-headed households poverty would decrease on 2.2 percentage points. A similar pattern is observed for the model where relative poverty line is set to be equal to 50% of the average expenditure.

Table 5.8. **Effect of Different Factors on the**

Gender-Poverty Gap

Factor	Effect of certain factor on the incidence of poverty for female-headed households	Absolute change in the poverty rate for female-headed household	Effect of certain factor on the gender-poverty gap
Poverty line 7.5 UAH			
Demographic structure of the household	0.296	0.008	-0.035
Education status	0.268	-0.02	-0.007
Labor market characteristics	0.222	-0.066	0.039
Health status	0.266	-0.022	-0.005
Marital status	0.248	-0.04	0.013
Poverty line 10.6 UAH			
Demographic structure of the household	0.575	0.071	-0.120
Education status	0.498	-0.006	-0.043
Labor market characteristics	0.303	-0.201	0.152
Health status	0.499	-0.005	-0.044
Marital status	0.404	-0.100	0.051

To sum up, the determinants of poverty differs for male and female-headed households which results into the gender-poverty gap. Labor market characteristics and marital status are among those factors that considerably shape a gap in poverty rates for both types of households.

C h a p t e r   6

CONCLUSIONS

The primary goals of this study has been to measure the gender gap in poverty and to assess the extent to which gender-specific characteristics shaped the gap in poverty rates for male and female-headed Ukrainian households. For this purpose we conducted poverty dominance analysis and regression analysis using the individual and household datasets of Ukrainian Longitudinal Monitoring Survey 2004.

 The essence of the poverty dominance analysis is to provide rankings of distributions of male and female-headed households in terms of poverty in order to define what type of the households is poorer over a certain range of the relative poverty lines. Estimation of the separate poverty models for male and female-headed households as an application of the regression analysis reveals the determinants of poverty for two types of households and gives the possibility to measure and decompose the gender-poverty gap.

The major finding of our study is that there exists relatively small gender-poverty gap in Ukraine, i.e. female-headed households are somewhat over-represented among the poor households. The application of stochastic dominance techniques to investigating gender dimensions of poverty indeed allows to claim that female headed households are poorer than male-headed. In other words, for the wide range of poverty lines, from 5 UAH of adult equivalent expenditure to the maximum poverty line 12.7 UAH, the incidence of poverty for female-headed households is higher and the difference in poverty rates for both types of households is statistically significant.

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The results of the regression analysis also contribute to the evidence on the inequality in poverty rates for male and female-headed households. The most striking result is that independently of the poverty line female-headed households have higher predicted probability to live in poverty than male-headed ones. Therefore, there exists gender-poverty gap that equals 5% for the model with the relative poverty line 10.6 UAH and falls in the interval 2%-4% for other five models.

Of great importance for us is the effect of different factors on the gender-poverty gap because on the base of these findings we will form poverty eradication strategy. The general conclusion is that female-headed households are poorer first of all because their labor market characteristics are worse in comparison to male headed households. For instance, under poverty line 7.5 UAH, if females have the same labor market characteristics as males, the poverty rate for them would be on 6.6 percentage points lower. Following this further, the empirical findings indicate that the other reasons for the gender-poverty gap are the facts that female-headed households are worse off, in comparison to male-headed, in terms of health, marital, and education status, and only their demographic structure is better. For instance, under condition that men and women have the same health status the female-headed households poverty would decease on 2.2 percentage points.

The results of this research allow to form a gender-oriented policy for the reduction poverty in Ukraine. The key reason for a high incidence of poverty among female-headed households is the labor market status of the household's head. Hence, the state policy should focus both on encouraging women to enter the labor market and improving their qualification through training. Another strategy would be not only to encourage people to marry but also to foster them to live in marriage.

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APPENDIX

APPENDIX A: POVERTY DOMINANCE ANALYSIS

Table A1. **The Results of the Second- and Third-Order Stochastic Dominance Tests**

Poverty line	Poverty-gap index for female-headed households	Poverty-gap index for male-headed households	Difference between indexes (distributions)	Test Statistics
4.16	0.02328	0.02396	-0.00068	-8.76**
4.45	0.02792	0.02876	-0.00084	-9.82**
5.37	0.04590	0.04664	-0.00074	-6.84**
6.17	0.06525	0.06514	0.00012	0.93
6.28	0.06802	0.06783	0.00019	1.49
7.65	0.10660	0.10407	0.00253	15.93**
8.34	0.12769	0.12295	0.00474	27.70**
9.32	0.15792	0.15016	0.00776	41.61**
11.01	0.20836	0.19533	0.01303	62.74**
12.7	0.25458	0.23806	0.01652	73.96**
Poverty line	Squared poverty-gap index for female-headed households	Squared poverty-gap index for male-headed households	Difference between indexes (distributions)	Test Statistics
4.16	0.00950	0.00957	-0.00006	-1.48
4.45	0.01153	0.01169	-0.00016	-3.28**
5.37	0.01943	0.01981	-0.00038	-6.15**
6.17	0.02820	0.02857	-0.00036	-4.96**
6.28	0.02954	0.02988	-0.00035	-4.61**
7.65	0.04847	0.04828	0.00019	1.94
8.34	0.05938	0.05865	0.00073	6.92**
9.32	0.07607	0.07423	0.00183	15.54**
11.01	0.10669	0.10236	0.00432	31.40**
12.7	0.13791	0.13097	0.00694	44.88**

Table B1. **Determinants of Poverty for Male-headed**

Households by Poverty Line

(coefficient estimates from the poverty model)

	Poverty line z in UAH					
	z=7.0	z=7.1	z=7.5	z=8.5	z=10.6	z=12.7
Three children	0.793*	0.720*	0.789*	0.898*	0.836*	1.083**
	[0.064]	[0.092]	[0.064]	[0.059]	[0.050]	[0.015]
Two children	0.710***	0.708***	0.744***	1.124***	0.525***	0.589***
	[0.001]	[0.000]	[0.000]	[0.000]	[0.006]	[0.002]
One child	0.280*	0.285*	0.282*	0.263*	0.157	0.226
	[0.082]	[0.074]	[0.072]	[0.100]	[0.282]	[0.118]
Single parent	1.238	1.201	1.152	0.119	0.225	-0.201
	[0.241]	[0.253]	[0.269]	[0.681]	[0.828]	[0.843]
Number of adults	0.327***	0.350***	0.368***	0.358***	0.378***	0.351***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Age	0.01	0.008	0.007	0.014*	0.016**	0.020***
	[0.180]	[0.265]	[0.342]	[0.080]	[0.017]	[0.002]
Married non-registered	-0.244	-0.274	-0.29	-0.257	-0.500*	-0.477*
	[0.371]	[0.312]	[0.280]	[0.369]	[0.056]	[0.069]
Married registered	-0.495**	-0.535***	-0.495***	-0.269*	-0.620***	-0.575***
	[0.011]	[0.006]	[0.010]	[0.053]	[0.001]	[0.002]
Never married	-0.114	-0.119	0.117	0.043	-0.121	0.139
	[0.691]	[0.675]	[0.672]	[0.884]	[0.645]	[0.594]
Vocational education	-0.105	-0.104	-0.074	-0.296*	-0.035	0.077
	[0.475]	[0.478]	[0.608]	[0.092]	[0.801]	[0.581]
Professional education	-0.585***	-0.520***	-0.441**	-0.264*	-0.285*	-0.158
	[0.001]	[0.003]	[0.011]	[0.081]	[0.071]	[0.312]
Bachelor's or specialist's degree	-0.658***	-0.778***	-0.666***	-0.285	-0.483**	-0.424**
	[0.007]	[0.002]	[0.005]	[0.197]	[0.018]	[0.033]
Master's or doctor's degree	-0.754	-0.545	-0.573	-1.116	-0.532	-0.556

Table B1. Continued

	[0.248]	[0.354]	[0.330]	[0.157]	[0.280]	[0.224]
Self-employed	-1.428***	-1.355***	-1.340***	-0.454	-1.506***	-1.220***
	[0.001]	[0.001]	[0.001]	[0.300]	[0.000]	[0.001]
Employee	-0.205	-0.177	-0.049	0.374	-0.555	-0.214
	[0.705]	[0.743]	[0.928]	[0.543]	[0.276]	[0.671]
Unemployed	0.497	0.752	0.894	0.514	0.898	0.539
	[0.382]	[0.189]	[0.133]	[0.371]	[0.193]	[0.434]
Employed	-0.323	-0.385	-0.569	-0.757	-0.315	-0.645
	[0.590]	[0.521]	[0.344]	[0.265]	[0.576]	[0.246]
Pensioner	-0.781***	-0.736***	-0.711***	-0.088	-0.519***	-0.441**
	[0.000]	[0.001]	[0.001]	[0.658]	[0.009]	[0.025]
Professional worker	0.079	0.307	0.173	-0.717**	0.061	-0.01
	[0.823]	[0.363]	[0.599]	[0.019]	[0.827]	[0.969]
Skilled worker	0.013	-0.013	-0.04	-0.086	0.063	0.004
	[0.948]	[0.948]	[0.834]	[0.766]	[0.707]	[0.979]
Manager	-0.752*	-0.695	-0.862**	-1.017*	-1.105***	-1.133***
	[0.089]	[0.106]	[0.043]	[0.055]	[0.002]	[0.000]
Unskilled	0.459**	0.539**	0.504**	0.446**	0.576***	0.553***
	[0.035]	[0.012]	[0.018]	[0.023]	[0.004]	[0.006]
Social benefits	-0.483**	-0.445*	-0.416*	-0.258	-0.219	-0.085
	[0.034]	[0.050]	[0.064]	[0.326]	[0.304]	[0.687]
Bonuses	-0.612***	-0.663***	-0.646***	-0.28	-0.536***	-0.399**
	[0.006]	[0.003]	[0.002]	[0.194]	[0.002]	[0.015]
13th salary	-0.764**	-0.651**	-0.761***	-0.732*	-0.430*	-0.720***
	[0.011]	[0.025]	[0.008]	[0.057]	[0.060]	[0.001]
Public sector	0.025	0.024	0.102	0.178	-0.108	-0.009
	[0.888]	[0.890]	[0.549]	[0.390]	[0.481]	[0.952]
Receiving alimony	-0.006	-0.007	-0.008	-0.002	-0.012	-0.012*
	[0.362]	[0.334]	[0.288]	[0.656]	[0.111]	[0.081]
Paying alimony	-0.032	-0.033*	-0.035*	-0.021	-0.017**	-0.007*
	[0.104]	[0.099]	[0.091]	[0.195]	[0.032]	[0.092]
Health bad	0.194	0.194	0.218	0.273*	0.338**	0.285*
	[0.253]	[0.248]	[0.186]	[0.050]	[0.037]	[0.087]
Health good	-0.213	-0.203	-0.267*	-0.303	-0.112	-0.106
	[0.167]	[0.184]	[0.076]	[0.118]	[0.410]	[0.426]
City	-0.018	-0.016	-0.016	0.297	0.221	-0.01
	[0.941]	[0.945]	[0.944]	[0.126]	[0.252]	[0.957]
Town	0.577***	0.576***	0.606***	0.443**	0.861***	0.648***
	[0.006]	[0.006]	[0.003]	[0.017]	[0.000]	[0.000]
Village	0.771***	0.769***	0.817***	0.882***	0.798***	0.487***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.004]

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Table B1. Continued

Constant	-1.416***	-1.345***	-1.301***	-2.383***	-0.888**	-0.717
	[0.004]	[0.006]	[0.006]	[0.000]	[0.045]	[0.102]
Observations	1643	1643	1643	1713	1643	1643

Absolute value of z-statistics in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

APPENDIX C: ESTIMATION RESULTS:

FEMALE-HEADED HOUSEHOLDS

Table C1. **Determinants of Poverty for Female-headed Households by Poverty Line**
(coefficient estimates from the poverty model)

	Poverty line z in UAH					
	z=7.0	z=7.1	z=7.5	z=8.5	z=10.6	z=12.7
Three children	0.699	0.68	0.898*	0.926*	0.989*	0.966*
	[0.151]	[0.161]	[0.059]	[0.055]	[0.051]	[0.062]
Two children	1.178***	1.176***	1.124***	0.894***	0.870***	0.919***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
One child	0.246	0.242	0.263*	0.259*	0.319**	0.394***
	[0.139]	[0.142]	[0.100]	[0.087]	[0.031]	[0.008]
Single parent	0.055	0.026	0.119	0.007	0.185	0.351
	[0.854]	[0.931]	[0.681]	[0.980]	[0.510]	[0.241]
Number of adults	0.352***	0.356***	0.358***	0.348***	0.270***	0.268***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Age	0.012	0.013*	0.014*	0.020***	0.028***	0.035***
	[0.121]	[0.099]	[0.080]	[0.006]	[0.000]	[0.000]
Married non-registered	-0.259	-0.304	-0.257	-0.368	0.145	-0.018
	[0.377]	[0.299]	[0.369]	[0.181]	[0.595]	[0.950]
Married registered	-0.350**	-0.352**	-0.269*	-0.309**	-0.282**	-0.378***
	[0.015]	[0.014]	[0.053]	[0.020]	[0.032]	[0.005]
Never married	0.168	0.125	0.043	0.148	0.492*	0.833***
	[0.579]	[0.679]	[0.884]	[0.587]	[0.061]	[0.002]
Vocational education	-0.416**	-0.435**	-0.296*	-0.082	-0.098	-0.012
	[0.024]	[0.018]	[0.092]	[0.624]	[0.552]	[0.942]
Professional education	-0.25	-0.273*	-0.264*	-0.235	-0.187	-0.213
	[0.110]	[0.078]	[0.081]	[0.108]	[0.194]	[0.148]
Bachelor's or specialist's degree	-0.442*	-0.353	-0.285	-0.145	-0.283	-0.516***
	[0.059]	[0.124]	[0.197]	[0.483]	[0.155]	[0.010]

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Master's or doctor's degree	-0.89	-0.906	-1.116	-0.909	-0.327	-0.253
	[0.262]	[0.253]	[0.157]	[0.174]	[0.517]	[0.590]
Self-employed	-0.543	-0.597	-0.454	-0.453	-0.261	-0.396
	[0.238]	[0.192]	[0.300]	[0.273]	[0.510]	[0.320]
Employee	0.638	0.644	0.374	0.735	0.637	0.623
	[0.347]	[0.341]	[0.543]	[0.229]	[0.242]	[0.235]
Unemployed	0.413	0.708	0.514	0.732	1.310*	0.906
	[0.486]	[0.219]	[0.371]	[0.206]	[0.052]	[0.183]
Employed	-0.972	-0.995	-0.757	-1.198*	-0.929	-1.045*
	[0.190]	[0.178]	[0.265]	[0.073]	[0.125]	[0.076]
Pensioner	-0.232	-0.226	-0.088	-0.255	-0.257	-0.391**
	[0.262]	[0.271]	[0.658]	[0.181]	[0.169]	[0.040]
Professional worker	-0.796**	-0.822**	-0.717**	-0.823***	-0.766***	-0.603**
	[0.017]	[0.012]	[0.019]	[0.003]	[0.002]	[0.011]
Skilled worker	-0.119	-0.073	-0.086	-0.029	-0.123	-0.16
	[0.697]	[0.807]	[0.766]	[0.913]	[0.618]	[0.508]
Manager	-0.76	-0.821	-1.017*	-0.973**	-0.781**	-0.962**
	[0.155]	[0.123]	[0.055]	[0.037]	[0.045]	[0.011]
Unskilled	0.327	0.308	0.446**	0.566***	0.518***	0.402**
	[0.109]	[0.130]	[0.023]	[0.002]	[0.005]	[0.032]
Social benefits	-0.224	-0.243	-0.258	-0.245	-0.132	-0.152
	[0.412]	[0.369]	[0.326]	[0.323]	[0.582]	[0.527]
Bonuses	-0.359	-0.313	-0.28	-0.344*	-0.553***	-0.424**
	[0.122]	[0.170]	[0.194]	[0.083]	[0.002]	[0.014]
13th salary	-0.865**	-0.735*	-0.732*	-0.747**	-0.511*	-0.479*
	[0.043]	[0.070]	[0.057]	[0.030]	[0.076]	[0.078]
Public sector	0.23	0.193	0.178	0.245	0.300*	0.341*
	[0.292]	[0.369]	[0.390]	[0.201]	[0.094]	[0.052]
Receiving alimony	-0.001	0	-0.002	0.001	0.003	0
	[0.739]	[0.935]	[0.656]	[0.681]	[0.466]	[0.916]
Paying alimony	-0.02	-0.02	-0.021	-0.023	-0.018	-0.006
	[0.234]	[0.229]	[0.195]	[0.154]	[0.114]	[0.447]
Health bad	0.341**	0.347**	0.273*	0.207	0.232*	0.158
	[0.017]	[0.015]	[0.050]	[0.128]	[0.090]	[0.270]
Health good	-0.396*	-0.358*	-0.303	-0.062	-0.133	-0.028
	[0.056]	[0.079]	[0.118]	[0.723]	[0.427]	[0.863]
City	0.225	0.276	0.297	0.107	0.176	0.235
	[0.281]	[0.182]	[0.126]	[0.546]	[0.292]	[0.157]
Town	0.548***	0.568***	0.443**	0.347**	0.421***	0.367**
	[0.005]	[0.003]	[0.017]	[0.041]	[0.009]	[0.024]

Table C1. Continued

Village	0.966***	0.986***	0.882***	0.698***	0.725***	0.630***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Constant	-2.493***	-2.483***	-2.383***	-2.190***	-2.130***	-1.959***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	1713	1713	1713	1713	1713	1713

Absolute value of z-statistics in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

*Table D*1. **Determinants of Poverty for Male and Female-headed Households by the Poverty Line (OLS regressions)**

	Male-headed households		Female-headed households	
	Poverty line z in UAH			
	z=7.1		z=8.5	
Three children	0.139*	0.129	0.137*	0.188*
	[0.078]	[0.168]	[0.099]	[0.060]
Two children	0.120***	0.227***	0.122***	0.187***
	[0.001]	[0.000]	[0.001]	[0.000]
One child	0.054**	0.046	0.062**	0.053*
	[0.050]	[0.105]	[0.033]	[0.083]
Single parent	0.262	0.004	0.193	0.003
	[0.179]	[0.949]	[0.347]	[0.955]
Number of adults	0.063***	0.065***	0.075***	0.070***
	[0.000]	[0.000]	[0.000]	[0.000]
Age	0.001	0.002*	0.002	0.004***
	[0.354]	[0.092]	[0.101]	[0.005]
Married non-registered	-0.032	-0.057	-0.032	-0.078
	[0.522]	[0.282]	[0.542]	[0.170]
Married registered	-0.084**	-0.062**	-0.079**	-0.061**
	[0.016]	[0.015]	[0.031]	[0.027]
Never married	-0.015	0.029	0.031	0.035
	[0.765]	[0.560]	[0.550]	[0.519]
Vocational education	-0.091***	-0.055*	-0.066**	-0.052*
	[0.003]	[0.054]	[0.040]	[0.090]
Professional education	-0.019	-0.082**	-0.017	-0.018
	[0.476]	[0.013]	[0.560]	[0.605]
Bachelor's or specialist's degree	-0.110***	-0.072*	-0.128***	-0.037
	[0.004]	[0.065]	[0.001]	[0.380]
Master's or doctor's degree	-0.076	-0.083	-0.097	-0.105
	[0.352]	[0.353]	[0.261]	[0.273]
Self-employed	-0.276***	-0.134*	-0.285***	-0.124

Table B1. Continued

	[0.000]	[0.083]	[0.000]	[0.134]
Employee	-0.035	0.102	-0.066	0.135
	[0.714]	[0.322]	[0.517]	[0.220]
Unemployed	0.177	0.141	0.217*	0.164
	[0.123]	[0.224]	[0.073]	[0.186]
Employed	-0.074	-0.18	-0.055	-0.251**
	[0.492]	[0.118]	[0.626]	[0.042]
Pensioner	-0.118***	-0.037	-0.104***	-0.052
	[0.001]	[0.310]	[0.008]	[0.182]
Professional worker	0.044	-0.076*	0.028	-0.117**
	[0.394]	[0.094]	[0.599]	[0.017]
Skilled worker	-0.006	-0.009	-0.017	-0.007
	[0.845]	[0.862]	[0.611]	[0.891]
Manager	-0.039	-0.073	-0.093	-0.137*
	[0.483]	[0.284]	[0.112]	[0.062]
Unskilled	0.109***	0.06	0.105**	0.130***
	[0.006]	[0.104]	[0.012]	[0.001]
Social benefits	-0.081*	-0.046	-0.094**	-0.051
	[0.052]	[0.329]	[0.033]	[0.308]
Bonuses	-0.077**	-0.034	-0.077**	-0.055
	[0.015]	[0.306]	[0.022]	[0.130]
13th salary	-0.086**	-0.077	-0.125***	-0.107*
	[0.039]	[0.136]	[0.005]	[0.054]
Public sector	0.002	0.024	0.016	0.041
	[0.947]	[0.477]	[0.603]	[0.264]
Receiving alimony	0	0	0	0
	[0.578]	[0.969]	[0.449]	[0.631]
Paying alimony	-0.001*	-0.001	-0.002**	-0.002
	[0.059]	[0.331]	[0.021]	[0.212]
Health bad	0.031	0.071***	0.062*	0.046
	[0.323]	[0.009]	[0.058]	[0.116]
Health good	-0.036	-0.044	-0.051*	-0.007
	[0.164]	[0.172]	[0.062]	[0.845]
City	0.003	0.037	0.021	0.021
	[0.932]	[0.250]	[0.566]	[0.551]
Town	0.088***	0.085***	0.125***	0.067*
	[0.008]	[0.008]	[0.000]	[0.052]
Village	0.136***	0.173***	0.161***	0.145***
	[0.000]	[0.000]	[0.000]	[0.000]
Constant	0.237***	0.041	0.218**	0.061
	[0.005]	[0.640]	[0.014]	[0.515]
Observations	1643	1713	1643	1713

* significant at 10%; ** significant at 5%; *** significant at 1%