Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4, 1144-1156
2024
Publisher: Learning Gate
DOI: 10.55214/25768484.v8i4.1489

Statistical analyses of gender disparities in unpaid work in Georgia

Simon Gelashvili[1], Mariam Okruashvili[2*]
[1]Department of Economic and Social Statistics, Faculty of Economics and Business, Ivane Javakhishvili Tbilisi State University, 11 University Str., 0186, Tbilisi, Georgia; simon.gelashvili@tsu.ge (S.G.).
[2]Faculty of Economics and Business, Ivane Javakhishvili Tbilisi State University, 11 University Str., 0186, Tbilisi, Georgia; mariam.okruashvili538@eab.tsu.edu.ge (M.O.).

Abstract: Using data from the Labour Force Survey (LFS) with a quarterly sample size of 6,400 households and the Georgia Time Use Survey (GTUS) covering 3,680 households nationwide, this article investigates gender disparities in unpaid work in Georgia and their impact on individual welfare. Employing international methodologies, we calculated new statistical indicators and refined existing ones, including the improvement of Sustainable Development Goal indicator 5.4.1 (SDG 5.4.1). Regression analysis identified education level as a significant factor influencing unpaid work. Our findings underscore significant gender disparities in unpaid work, leading to heightened workloads and temporary poverty for women. These disparities persist across various demographic factors. This research contributes to understanding the dynamics of unpaid work and its implications for gender equality and welfare.

Keywords: *Gender inequality, Labour market, Unpaid work, Wages, Welfare.*

1. Introduction

The dearth of scientific inquiry into gender inequality in unpaid work in Georgia necessitates a focused investigation to address this critical issue. Within the framework of the research, anonymized databases from Labour Force Survey and Time Use Survey will be processed. Using international methodologies, new statistical indicators will be calculated, and existing indicators will be improved. The research primarily utilizes the methodology for calculating indicators of the United Nations Sustainable Development Goals and the methodological guidelines of the International Labour Organization (ILO), ensuring the production of internationally comparable indicators. The objective of this study is to fill this gap by utilizing data from the LFS and the GTUS to examine various facets of gender disparities in labour markets. Specifically, we will calculate mean, modal, and median wages by gender using the LFS database to assess the impact on welfare of not employed population and losses due to unpaid work.

Additionally, we will analyse SDG 5.4.1 indicator on the proportion of time spent on unpaid domestic and care work by gender and region using GTUS database, visualizing the results on a map of Georgia for enhanced visibility. Regression models will be constructed to explore the effects of education levels on unpaid work and examine the relationship between gender, wages, and economic inactivity on Gross Domestic Product (GDP).

Through rigorous analysis of these databases, we aim to provide insights into the current state of gender inequality, elucidate underlying causes, and propose recommendations for mitigation. This study contributes to advancing understanding and addressing gender disparities in labour markets, with potential implications for policy formulation and social welfare enhancement.

* Correspondence: mariam.okruashvili538@eab.tsu.edu.ge

2. Literature Review

Gender statistics, particularly research on unpaid work, is an emerging field in Georgia, holding significant implications for state institutions, legislative bodies, and civil society. This study aims to contribute to this burgeoning area by examining the complexities of gender disparities in unpaid work and their impact on individual welfare, with a particular focus on monitoring the SDG 5.

The interest of academic community in gender equality is highlighted by various publications and scholarly works. Notably, "Gender Statistics" manual on gender statistics provides a comprehensive overview of theoretical, methodological, and practical considerations [1]. Additionally, discussions in article "The Role of Gender Imbalance and Feminism in Global Business" highlights the critical role of gender equality in economic development, particularly in developing countries where cultural norms and traditions exacerbate gender disparities [2]. In addition, a series of articles have been published by the scientific community that reflect the widespread gender inequality within the country, especially in the labour market [3]. Notably, the articles primarily focus on paid work, emphasising the scarcity of scholarly endeavours addressing unpaid work within the country. Consequently, our article serves as a pioneering effort to address this research gap.

Empirical studies, such as the 2018 survey by UN Women, in which respondents were asked to indicate approximately how much time they spend on various domestic and care work activities, shed light on the unequal distribution of unpaid care work, emphasizing its detrimental effects on women's economic activity and welfare. Despite gender inequalities being common globally in unpaid and paid work, Georgia stands out due to strong patriarchal norms. These norms assign most family duties to women, and both men and women uphold these social expectations [4]. While this research provides a broad understanding of unpaid work both within Georgia and globally, its scope limits a thorough examination of its ramifications on individual welfare and the multifaceted factors influencing unpaid work beyond reproductive age. Consequently, our study aims to address these aspects by contextualizing the impact of unpaid work on individual welfare and exploring additional determinants within the Georgian context.

Similarly, "A Georgian Woman's Burden" examines an in-depth analysis of unpaid work, revealing significant disparities in its allocation, particularly stark in developing countries. Notably, women undertake 80.2 percent of all unpaid work in such contexts, underscoring pervasive gender imbalances. The research highlights the profound repercussions of gender inequality in the labour market, elucidating its detrimental impact on women's economic status and poverty. Moreover, the study clarifies how the burden of unpaid work encroaches upon women's time for educational pursuits, exacerbating existing disparities [5]. This research extends beyond descriptive analyses, employing regression models to explain the intricate relationships between GDP, economic inactivity, wages, and gender. Through regression analysis, the study outlines the nuanced interplay between unpaid work and achieved and current education level, highlighting the compounding effects on poverty rates stratified by gender. Furthermore, the study offers insights into the gendered implications of the pandemic, noting a marked increase in unpaid work among men in neighbouring Turkey, attributable to remote work arrangements. Contrastingly, within the Georgian context, the burden of unpaid work on women surpasses the average rate observed in developing nations, comprising 82.7 percent of total household responsibilities.

Our article draws upon a rich body of international scholarship, particularly exemplified by Antonopoulos' seminal work, which underlines the critical role of unpaid care activities in perpetuating gender disparities. By illuminating the systemic undervaluation of caregiving responsibilities primarily carried by women, Antonopoulos suggests policy reforms aimed at rectifying these entrenched inequalities. The study underscores the imperative of contextualizing such analyses within the Georgian labour market landscape, emphasizing the need to evaluate the nexus between paid and unpaid work to comprehensively assess its socio-economic ramifications [6].

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

Collaborative efforts by organizations such as UNECE and UN Women further emphasise the imperative of reducing women's unpaid workload as a keystone of gender empowerment. Focusing on the Europe and Central Asia region, the report encompasses an examination of unpaid work within neighbouring countries of Georgia, namely Azerbaijan, Armenia, and Turkey [7]. The inclusion of an analysis specific to Georgia enriches the comprehensiveness of the report. Notably, the report endeavours to estimate the proportion of unpaid work within the GDP. Such metrics will similarly be computed by the authors for Georgia, serving to augment the comparative framework. Beyond the outlined content, the report delves into the SDG 5.4.1 indicator. Furthermore, the report explores factors influencing unpaid labour, elucidates causal relationships, and undertakes additional analytical pursuits.

Similarly, the report by the International Labour Organization (ILO) on "Work and Family Relations in Azerbaijan" offers insights into the cultural and institutional factors influencing gender inequality in labour markets [8]. Despite legislative provisions purportedly encouraging to gender equity, disparities persist, with Georgia exhibiting a gender inequality ratio in unpaid work 1.7 times higher than its Azerbaijani counterpart. Insights gleaned from publication endeavours by Ferranti, Pesando, and Novacka emphasise the intricate interplay between unpaid care, labour force participation, wages, and achieved level of education [9]. While existing research delineates the inverse relationship between achieved and current level of education and unpaid work, the study advocates for a more nuanced examination of how ongoing formal education levels intersect with unpaid work dynamics, as elucidated through rigorous regression analyses.

To sum up, the literature review sets the stage for our study by providing a comprehensive overview of theoretical frameworks and prior empirical research on gender inequality and unpaid work. By synthesizing existing scholarship, this study aims to contribute new insights into the dynamics of unpaid work in Georgia and its implications for gender equality and economic development.

3. Statement of the Problem

This study addresses several key issues pertaining to the gender inequality in Georgia. The datasets utilized include the GTUS and LFS, both collected through random sampling methodologies from households within Georgia, excluding institutional households and those residing in the occupied territories of Abkhazia and Tskhinvali but the sampling size allows for the computation of representative indicators across various demographic characteristics.

The primary research questions guiding this study involve understanding the relationship between GDP, inactivity and wages. To address these questions, regression models have been constructed. However, limitations exist, notably the small time series available for analysis (n=13) due to data unavailability over an extended period. Despite this constraint, the regression models remain suitable for drawing meaningful conclusions.

In particular, the regression model examining the relationship between time spent on unpaid work and achieved and current level of education reveals significant insights. While factors such as employment also influence unpaid work, a strong correlation between employment and education introduces multicollinearity concerns. Consequently, the model includes both achieved and current level of formal education as explanatory variables to mitigate this issue.

The design decisions made are carefully justified within the context of the research questions, ensuring robustness and validity in the subsequent analysis.

4. Methodology

The research employs two primary databases:

1) The Labour Force Survey (LFS), featuring a quarterly sample size of 6,400 households. This survey follows to International Labour Organization (ILO) standards.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

2) The Georgian Time Use Survey (GTUS), which covers 3,680 households nationwide. This survey included 6,074 respondents who completed 5,721 weekday and 5,713 weekend time-use survey diaries.

Within the scope of the study, the authors computed the SDG 5.4.1 indicator by region: proportion of time spent on unpaid domestic and care work. This calculation involved applying statistical weights derived from the following formula:

$$\frac{5}{7} \times \frac{\text{total time spent on the relevant main activity (unpaid domestic and care work)in all weekday diaries}}{\text{total number of workday diaries}} + \frac{2}{7} \times \frac{\text{total time spent on the relevant main activity in all weekend diaries}}{\text{total number of non} - \text{working days}}$$

This computation expresses proportion of 24 hours allocated to unpaid work by the total population, irrespective of their direct involvement in these activities.

Drawing from these databases, the research undertook various analytical procedures. This included data grouping, calculation of relative values and gender difference indicators, time series analysis, construction of linear regression models, correlation analysis, and other pertinent statistical analyses.

5. Core Content

5.1. Labour Force Survey Analyses

Gender inequality in the labour market manifests prominently, particularly in wage differentials. In 2022, the average monthly nominal salary for employed women was 1,247.7 GEL, notably lower than the 1,827.0 GEL earned by men [10]. Delving deeper into gender-distributed wages, analysis from Labour Force Survey databases further highlights disparities, with women earning an average monthly salary of 630.7 GEL, compared to 862.8 GEL for men. Examining modal wages by gender reveals notable trends. A significant proportion of women reported income falling within the 601–800 GEL range, with a modal value of 687.8 GEL. Conversely, the majority of men reported salaries ranging from 1,001–1,500 GEL, with a modal value of 1,049.3 GEL. The uneven distribution of incomes in the country, as indicated by the Gini coefficient, underscores the gravity of the situation [11]. For a comprehensive understanding, the median wage serves as a robust indicator: women's median wage stands at 532.3 GEL, significantly lower than men's median wage of 778.0 GEL.

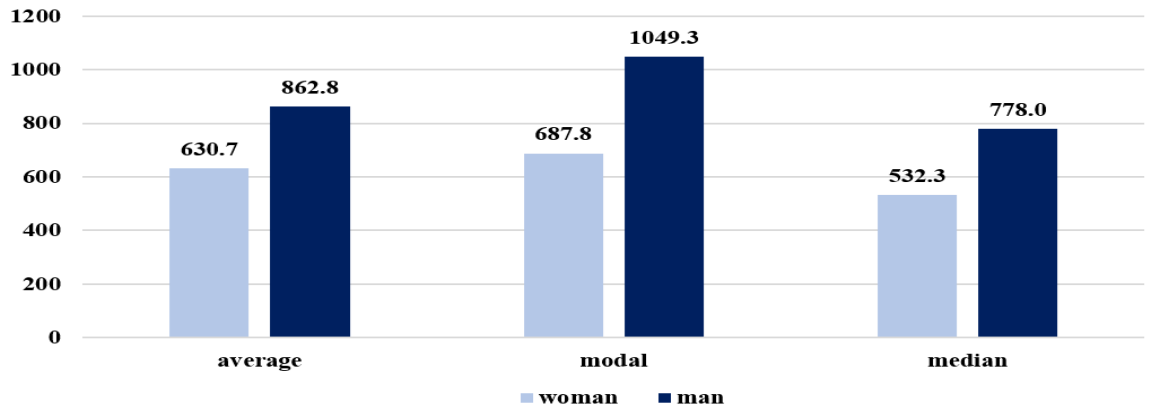

Figure 1.
Average, modal and median disposable income, by gender.
Source: Calculated by authors based on Labour Force Survey database.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

Despite varying wage levels, both genders experience the smallest wages during the median wage, with notable gender discrepancies in all three cases. A man's salary is 36.8% higher during the average wage, 52.6% higher during the modal wage, and 46.2% higher during the median wage.

Table 1.
Share of population under absolute poverty line by sex and GDP.

Year	Share of population under absolute poverty line (%)[1]		GDP per capita (USD)[2]
	Woman	Man	
2010	36.8	37.9	3,232.7
2011	34.0	34.3	4,022.8
2012	30.0	30.1	4,421.9
2013	25.8	26.7	4,623.7
2014	23.3	23.7	4,738.8
2015	21.3	22.0	4,012.6
2016	21.2	22.9	4,062.1
2017	21.6	22.4	4,358.5
2018	20.2	20.0	4,722.0
2019	19.4	19.6	4,696.2
2020	20.9	21.7	4,255.7
2021	17.1	17.9	5,023.2
2022	15.3	15.8	6,671.9*

Source: Absolute poverty, national statistics office of Georgia. Gross domestic product, national statistics office of Georgia.

Table 1 illustrates the share of the population under the absolute poverty line by sex and GDP. While poverty rates are decreasing for both sexes, GDP shows an increasing trend, highlighting the negative relationship between them.

The Pearson correlation coefficient further elucidates this negative relationship, standing at -0.7 for both women and men. Notably, the coefficient for men is higher by 2.9%, suggesting a stronger negative correlation between poverty and GDP in the case of men.

The economic condition of the country is significantly influenced by labour market dynamics. A linear regression model, with gross national product per capita as the outcome variable and economic inactivity and wages as factor variables, emphasises this relationship. The model is constructed independently for both female and male. Concurrently, the influence of the total domestic product on the former variable diminishes, whereas it exhibits an ascending trend concerning the latter variable.

The econometric model developed for women examines the regression relationship between GDP and the levels of economic inactivity and wages. The resulting regression equation is formulated as follows:

$$\hat{y}_t = 5850 - 79.5x_{1t} + 3.9x_{2t}$$

In the regression model, the coefficient b_1 (equal to -79.5) indicates the change in the mean value of the dependent variable GDP (y_t), ceteris paribus, consequent to a unit alteration in the level of women's inactivity (x_{1t}) while holding wage (x_{2t}) constant. Conversely, b_2 (equal to 3.9) delineates the net impact of an unit increment in wages (x_{2t}), on the mean value of the GDP (y_t) when the women's inactivity (x_{1t}) is constant. Consequently, a unit change increase in the level of women's inactivity leads to a reduction of 79.5 units in GDP, while corresponding increase in wages results in 3.9-unit rise in GDP.

It is evident from the discussion of coefficients b_1 and b_2 that x_{1t} exerts a more substantial influence on y_t than x_{2t}. However, direct comparison of these regression coefficients is inappropriate due to the

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

disparate units of measure of the factors in the regression equation. To facilitate meaningful comparison, it is imperative to standardize the regression coefficients.

The regression equation in the standardized scale is expressed as follows:

$$W_t = 5850 - 0.22z_{1t} + 0.96z_{2t}$$

Contrary to expectations, the GDP is more profoundly impacted by changes in wages than by changes in the level of economic inactivity.

To justify the significance of the coefficients, a t-test utilizing the Student's distribution table for the 5% significance level yields, $t_{crit} = 2.45$. Accordingly, only $t_{b_2} > t_{crit}$, indicating the rejection of the null hypothesis for only this coefficient.

The 95% confidence intervals for the coefficients are delineated as follows:

$$-10\,051.31 < B_0 < 21\,751.29$$
$$-399.18 < B_1 < 240.23$$
$$0.29 < B_2 < 7.54$$

Among the intervals obtained, solely the third interval does not span zero on the number line. Hence, the null hypothesis is rejected only for this coefficient. While it is rule to exclude unimportant variables from the equation, retaining the aforementioned variables in the model is suitable due to their economic significance. The increase in the level of the economically inactive population has negative impact on the total GDP per capita.

To evaluate the significance of the multiple regression equation, the F test, coefficient of determination, and adjusted coefficient of determination are used. The regression model, assessed through the F tests with $F = 5.6$ and $F_{crit} = 5.14$, is considered significant. Thus, the dispersion of the dependent variable explained by the multiple regression model is essential, and the obtained equation as a whole is deemed suitable for drawing conclusion.

The coefficient of determination describes the proportion of dispersion by the regression in the total dispersion of the dependent variable. For the above-mentioned regression equation, the coefficient of determination stands at 0.8. the proximity of R^2 to 1 highlights the significance of the multiple regression model.

However, the unqualified use of the coefficient of determination to evaluate the regression model's quality is inappropriate, as it is a non-decreasing function of the number of explanatory variables. Therefore, to mitigate the effect stemming from the increase of factors, adjusting the coefficient of determination is prudent. Consequently, the adjusted coefficient of determination, calculated as 0.5, indicates a substantial value of the coefficient of determination relative to the number of explanatory variables. Nonetheless, the adjusted coefficient of determination also emphasises the significance of the multiple regression equation.

The regression model constructed for men similarly assesses the regression of GDP concerning both the level of inactivity and wages. Accordingly, the regression equation has the following form:

$$\hat{y}_t = 5254.6 - 121.3x_{1t} + 2.9x_{2t}$$

In the regression model, the coefficient b_1 (equal to -121.3) indicates the change in the mean value of the dependent variable GDP (y_t), ceteris paribus, consequent to a unit alteration in the level of men's inactivity (x_{1t}) while holding wage (x_{2t}) constant. Conversely, b_2 (equal to 2.9) delineates the net impact of an unit increment in wages (x_{2t}), on the mean value of the GDP (y_t) when the men's inactivity (x_{1t}) is constant. Consequently, a unit change increase in the level of men's inactivity leads to a reduction of 121.3 units in GDP, while corresponding increase in wages results in 2.9-unit rise in GDP.

It is evident from the discussion of coefficients b_1 and b_2 that x_{1t} exerts a more substantial influence on y_t than x_{2t}. However, even in this scenario, the regression coefficients are not directly comparable, necessitating the expression of coefficients in standardized units for meaningful interpretation.

The regression equation in the standardized scale is expressed as follows:

$$W_t = 5254.6 - 0.27z_{1t} + 0.95z_{2t}$$

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

Based on the mentioned findings, it can be emphasised that, conversely, in the case of men, changes in salary exert a more pronounced impact on the GDP than changes in the level of economic inactivity.

To justify the significance of the coefficients, a t-test utilizing the Student's distribution table for the 5% significance level yields, $t_{crit} = 2.45$. Accordingly, only $t_{b_2} > t_{crit}$, indicating the rejection of the null hypothesis for only this coefficient.

The 95% confidence intervals for the coefficients are delineated as follows:

$$-3894.92 < B_0 < 14\,404.18$$
$$-405.87 < B_1 < 163.23$$
$$0.97 < B_2 < 4.91$$

As anticipated, solely the third interval on the number line fails to encompass zero. Hence, the null hypothesis is rejected only for this coefficient. However, retaining these variables in the model for both women and men is appropriate, as an escalation in the level of the economically inactive population adversely affects the GDP per capita.

The significance of the multiple regression equation is evaluated through the F test.

In the case of men, the value of F test for the constructed regression model stands at 7.2, surpassing the critical value $F_{crit} = 5.14$. Additionally, the coefficient of determination is observed to be 0.84, with the adjusted coefficient of determination calculated as 0.6. These results underscore the correctness of the multiple regression equation for drawing meaningful conclusions in this context.

5.2. Time Use Survey in Georgia Analyses

Drawing from the preceding analysis, it becomes evident that the inefficient utilization of human capital poses a considerable detriment to both the national economy and individual welfare. Leveraging data extracted from the GTUS and LFS databases, an assessment was conducted to quantify the impact of the substantial economically inactive population on the country's economics. Given that the GTUS was conducted over the period of 2020-2021, comparable figures were extrapolated utilizing the LFS database for the year 2021. This facilitated a comprehensive examination of the economic implications associated with the economically inactive population, thereby enhancing the robustness of the analysis.

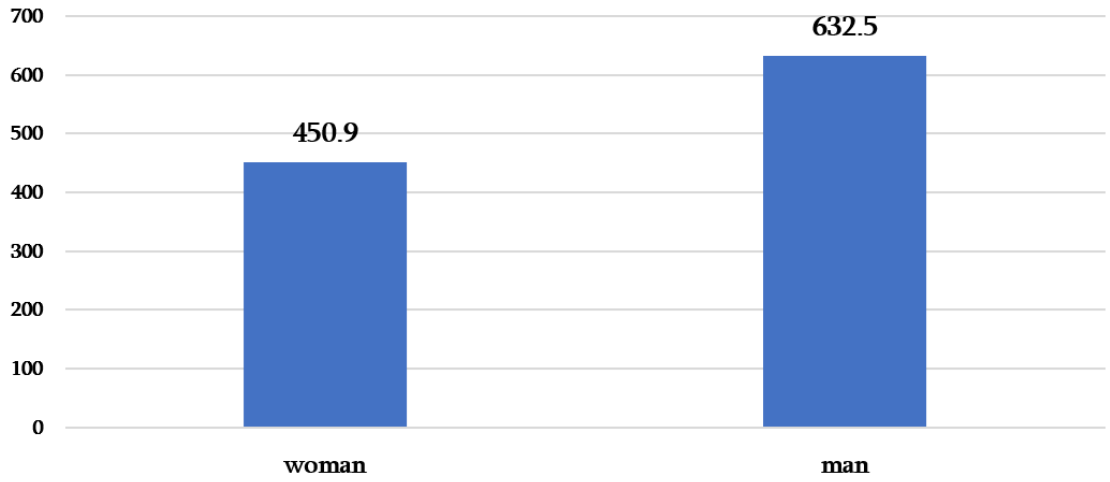

Figure 2.
Disposable median earnings, 2021.
Source: Calculated by authors based on LFS database.

The indicator stood at 450.9 GEL for women and 632.5 GEL for men. In 2021, the economically inactive population comprised 956,902 women and 519,750 men. Consequently, considering the median

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

wage, women incurred monthly losses of approximately 431.4 million GEL, whereas men faced losses totalling 328.7 million GEL. Despite men earning 40.3% more than women on median wages, the latter suffered 31.2% higher losses. Regarding losses caused by unemployment, women experienced a total loss of 483.7 million GEL, compared to 455.4 million GEL for men.

Additionally, attention must be directed towards losses stemming from unpaid work. In 2021, full-time female employees worked an average of 38.2 hours per week at their primary job, whereas their male counterparts logged 44.0 hours [12]. Crucially, unpaid work performed by full-time employees, amounting to 2.7 hours daily for women and 0.5 hours for men, was pivotal [13]. This equated to 18.9 hours weekly for women and 3.5 hours for men. Consequently, women dedicated 57.1 hours per week to paid and unpaid work, representing a 20.2% disparity compared to men's 47.5 hours.

Considering median wages, a full-time employed woman lost approximately 223.3 GEL monthly due to unpaid work, whereas the corresponding figure for men was 50.3 GEL. Accounting for the number of employees, women incurred monthly income losses of 119.8 million GEL, while men suffered losses totalling 34.3 million GEL. Despite men earning substantially higher wages, women's losses exceeded those of men by 249.6%.

The mentioned elucidates the magnitude of population loss attributed to the inefficient utilization of human capital. While complete eradication of such losses may be unattainable, mitigation efforts promise significant improvements in overall population welfare.

Moreover, a thorough analysis of the GTUS results, which underpinned the calculation of the SDG 5.4.1 indicator, is imperative. This assessment encompasses Proportion of time spent on unpaid domestic and care work, according to the type of settlement, gender, and age groups. Notably, these research findings have substantially enhanced gender statistics within the country, as affirmed by Open Data Watch, ranking Georgia 5th out of 185 countries. In this progress, the results of the mentioned research played one of the most important roles [14].

The diagram below shows the proportion of time spent on unpaid domestic and care work by the population of Georgia, by type of settlement and gender.

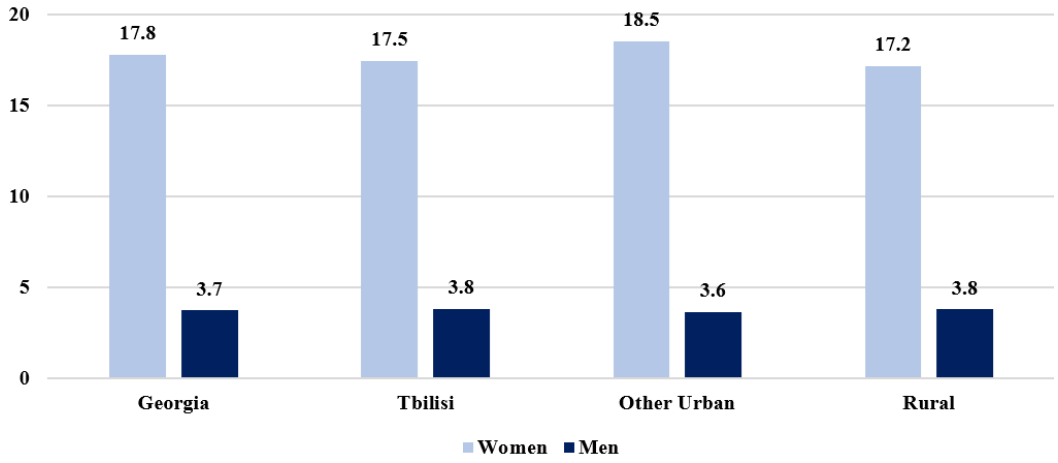

Figure 3.
Proportion of time spent on unpaid domestic and care work, by settlement type, age groups and sex.
Source: The figure was constructed by authors based on Geostat data.

To conduct a more nuanced examination of unpaid work, a regression model with two independent variables was constructed. Here, the duration dedicated to unpaid work served as the dependent variable, while the levels of achieved education and current formal education were designated as the explanatory variables. It merits attention that, aside from education, employment status exerted a

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

considerable influence on unpaid work. However, the inclusion of all three variables simultaneously in the regression model was considered unsuitable due to the evident correlation between education and employment. This interrelation would intensify issues of multicollinearity, thereby compromising the integrity of the analysis.

In the case of women, the regression model has the following form:

$$Y = 524.1 + 4.8X_1 - 45.7X_2$$

Based on the mentioned model, there is an increasing relationship between the time spent on unpaid work and the achieved level of education, as well as a decreasing relationship with the level of current formal education. Initially, this trend suggests that women with higher levels of education tend to devote more time to unpaid work, with their educational pursuits often not directly impacting their involvement in domestic and caregiving responsibilities. On the contrary, it implies that women with higher education engage in these activities with greater responsibility. However, when women are engaged in formal education, this diminishes the time allocated to unpaid work, likely due to the acute experience of time poverty among women during such periods. Notably, the coefficients expressed in standardized scale, which are 0.04 and -0.22 respectively, suggest that the impact is relatively smaller than expected.

All three coefficients are statistically significant at the 5% significance level, as indicated by $|t_b| > t_{crit}$, where $t_{crit} = 1.96$, with $|t_{b_0}| = 28.3$, $|t_{b_1}| = 2.1$, and $|t_{b_2}| = 12.0$.

The 95% confidence intervals for coefficients B_0, B_1, and B_2 are as follows:

$$487.7 < B_0 < 560.4$$
$$0.3 < B_1 < 9.3$$
$$-53.2 < B_2 < -38.2$$

None of the obtained intervals encompass zero on the number line, leading to the rejection of the null hypothesis in all three cases, underscoring the significance of the coefficients. Furthermore, the F tests satisfies the condition $|F| > F_{crit}$ $(81.9 > 3.0)$, indicating that the resulting equation is suitable for drawing conclusions.

Accordingly, the regression equation for men has the following form:

$$Y = 154.4 + 3.8X_1 - 10.2X_2$$

Based on the model, there is an increasing relationship between the time spent on unpaid work and the achieved level of education, as well as a decreasing relationship with the level of current formal education. Nevertheless, as for women, the standardized coefficients, 0.07 and -0.09 respectively, indicate a considerably smaller impact in case of men. On the other hand, notably women's involvement in ongoing formal education leads to a larger reduction in unpaid work compared to men.

All three coefficients are statistically significant at the 5% significance level, as indicated by $|t_b| > t_{crit}$, where $t_{crit} = 1.96$, with $|t_{b_0}| = 13.0$, $|t_{b_1}| = 2.5$, and $|t_{b_2}| = 3.5$.

The 95% confidence intervals for coefficients B_0, B_1, and B_2 are as follows:

$$131.1 < B_0 < 177.8$$
$$0.8 < B_1 < 6.8$$
$$-15.9 < B_2 < -4.4$$

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

Figure 1.
Proportion of time spent on unpaid domestic and care work, by regions and sex, %
Note: The information is not available for the population living in the occupied territories of Georgia (Autonomous Republic of Abkhazia and Tskhinvali region).
Source: Calculated by the authors based on an anonymized GTUS database.

In the regression model constructed for men, none of the intervals obtained for the three coefficients encompass zero on the number line. This again rejects the null hypothesis for all three cases, highlighting the significance of the coefficients. Concerning the model's significance for men, the F test satisfies the condition $|F| > F_{crit}$ $(11.2 > 3.0)$, indicating that the derived equation is conducive to drawing specific conclusions.

As part of the GTUS, the Sustainable Development Goals SDG 5.4.1 indicator was computed to reveal the proportion of time spent on unpaid domestic and care work across different settlement types, age groups, and sex. The outcomes of this survey carry significant regional implications, prompting a deeper analysis of the indicator's distribution across regions and genders, based on anonymized survey data.

To enhance the visibility of the analysis on the proportion of time spent on unpaid domestic and care work, these indicators have been visually represented on the map of Georgia, delineating regional disparities across genders.

According to the mapped data, regions were identified where individuals spend considerable time on unpaid work, delineated by gender. For women, Shida Kartli emerges as the region where they allocate the most time to unpaid work, amounting to 5.0 hours per day, constituting 20.7% of their daily activities. Following closely are Samtskhe-Javakheti and Kvemo Kartli, where women spend approximately 4.4 hours on unpaid work, representing 18.5% and 18.4% of their day, respectively.

Conversely, men residing in these regions allocate significantly less time to unpaid work. In Shida Kartli, men dedicate only 0.7 hours per day to unpaid work, while in Kvemo Kartli and Samtskhe-Javakheti, they spend 0.8 hours. Consequently, the disparity in unpaid work between genders is high in these regions, with women's contributions far outweighing those of men. In Shida Kartli, for instance,

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

women spend 7.2 times more time on unpaid work than men, while in Kvemo Kartli and Samtskhe-Javakheti, this ratio stands at 5.3 and 5.6 times, respectively.

These disparities are partially attributed to the prevalence of ethnic minorities in these regions. In Shida Kartli, where inequality is most noticeable, agricultural activities are actively pursued, resulting in men spending more time on agricultural production for self-consumption compared to women (the difference being approximately 0.23 hours per day, accounting for 56.9%). Nonetheless, despite these considerations, gender inequality in unpaid work remains significantly high.

5. Conclusion

Inequality within the labour market presents not only a pressing social challenge but also a significant economic concern, profoundly impacting both individual well-being and the overall economy of a nation. Gender disparities within the labour market manifest across various dimensions, with particular emphasis on the inequities prevalent in the economically inactive population and wages.

The disproportionate representation of women in the economically inactive population stems largely from entrenched gender stereotypes, notably those associated with unpaid domestic and care work. Furthermore, gender-based wage disparities persist despite comparable levels of educational attainment between men and women in regions like Georgia. Analysis of the LFS data reveals a disparity in work experience rates, with not employed women lagging behind not employed men at 10.6% and 12.5%, respectively, over the last eight years.

Considering mention reasons, a corrected gender salary gap is used to account for factors contributing to the gender gap. By 2022, the adjusted monthly gender gap was 23.0%, significantly lower than the unadjusted gender gap of 46.4%. The hourly salary difference, at 15.4%, is even smaller, attributable in part to women working shorter hours than men, influenced by gender stereotypes. While the monthly wage gap in most positions exceeds the hourly wage gap, certain professions such as specialist-professionals, plant and machine operators, and assemblers exhibit even higher hourly wage gaps, aggravating gender inequality and discrimination.

The regression model constructed for both women and men is statistically significant, allowing us to draw certain conclusions. The outcome variable is GDP, while the factor variables are the level of economic inactivity and wages. In both cases, the t-test revealed that wages are the statistically significant variable, showing an increasing dependence on GDP. As a rule, unimportant variables should be excluded from the equation. However, due to the economic significance of the variable, it is appropriate to retain it in the model. This is because an increase in the level of the economically inactive population negatively impacts the total domestic product per capita.

The analysis of the GTUS results, which formed the basis for calculating the SDG 5.4.1 indicator, has proven to be crucial. This assessment, which measures the proportion of time spent on unpaid domestic and care work by settlement type, gender, and age group, has significantly improved gender statistics in Georgia. Open Data Watch has recognized this progress by ranking Georgia 5th out of 185 countries. The results of this research have played a pivotal role in achieving this high ranking, underscoring its importance in advancing gender equality and providing valuable insights for policy-making. This underscores the importance of conducting a more in-depth and complex study and analysis of the Time Use Survey database.

According to the Time Use Survey, a regression model was constructed to show the relationship between unpaid work, achieved education, and current formal education. This model was built separately for men and women. The model is statistically significant, allowing us to draw certain conclusions, and the regression coefficients evaluated by the t-test are also statistically significant. In both cases, the current level of formal education has a greater influence on unpaid work, showing a decreasing relationship with unpaid work. However, the same cannot be said for the level of achieved education; an increase in this variable leads to an increase in unpaid work. This may be due to higher responsibility and greater awareness among the given population.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

Considering the median wage, economically inactive women incurred monthly losses of approximately 431.4 million GEL, whereas men faced losses totalling 328.7 million GEL. Despite men earning 40.3% more than women on median wages, the latter suffered 31.2% higher losses. Regarding losses caused by unemployment, women experienced a total loss of 483.7 million GEL, compared to 455.4 million GEL for men. Full-time female employees worked an average of 38.2 hours per week at their primary job, whereas their male counterparts logged 44.0 hours. Crucially, unpaid work performed by full-time employees, amounting to 2.7 hours daily for women and 0.5 hours for men, was pivotal. This equated to 18.9 hours weekly for women and 3.5 hours for men. Consequently, women dedicated 57.1 hours per week to paid and unpaid work, representing a 20.2% disparity compared to men's 47.5 hours. Considering median wages, a full-time employed woman lost approximately 223.3 GEL monthly due to unpaid work, men - 50.3 GEL. Accounting for the number of employees, women incurred monthly income losses of 119.8 million GEL, while men suffered losses totalling 34.3 million GEL. Despite men earning substantially higher wages, women's losses exceeded those of men by 249.6%.

According to the database of Time Use Survey, data reveal significant gender disparities in the distribution of time spent on unpaid work across regions. In Shida Kartli, Samtskhe-Javakheti and Kvemo Kartli, women devote a significant part of their day to unpaid work, and in Shida Kartli women spend the most time, 5 hours a day. In contrast, men in these regions spend significantly less time on unpaid work, leading to pronounced gender inequality. The ratio of time spent on unpaid work between women and men is particularly sharp in Shida Kartli, where women spend 7.2 times more time on unpaid work than men. This difference is also noticeable in Kvemo Kartli and Samtskhe-Javakheti, 5.3 and 5.6 times, respectively. Although agricultural activity contributes to these differences, especially in Shida Kartli, where men devote more time to subsistence agricultural production, gender inequality in unpaid work remains markedly high. These findings highlight the need for targeted interventions to address and reduce gender inequality in unpaid work in these regions.

To address and mitigate the issue, it is imperative to establish a comprehensive legal framework and ensure its effective implementation to eradicate any form of direct or indirect gender-based discrimination within workplaces. Additionally, the provision of care services tailored to support mothers of prekindergarten children should be prioritized, ensuring equitable access for all individuals. Those facing similar challenges should receive sufficient support to engage in remote work, provided it does not impede the operations of the respective enterprise or organization.

Utilizing data from the LFS database, the proportion of employees who engaged in remote work over the past four weeks was assessed. Prior to the pandemic, 6.1% of women and 3.0% of men worked remotely during the same period. During the pandemic, this figure increased, with 10.9% of women and 4.6% of men opting for remote work. Despite the demonstrated feasibility of remote work, the proportion declined post-pandemic, registering at 7.4% for women and 3.7% for men in 2022. Nevertheless, the gender disparity in remote work rates has improved compared to the pre-pandemic period, representing a positive development. Moreover, concerted efforts should be made to create additional employment opportunities, with a particular focus on enhancing women's workforce participation. These measures are essential for mitigating gender imbalances within the labour market, thereby fostering economic success and enhancing the overall well-being of individuals, particularly women.

Copyright:

References

[1] S. Gelashvili, L. Charekishvili, N. Abesadze and M. Okruashvili, Gender Statistics (Theory, Methodology, Practice), Tbilisi: Tbilisi State University Publishing House, 2022.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489

[2] T. Beridze and K. Berishvili, "The Role of Gender Imbalance and Feminism in Global Business," in *Challenges of Globalization in Economics and Business*, Tbilisi, 2017.

[3] S. Gelashvili and M. Okruashvili , "Gender Inequality in Labor Remuneration and Its Impact on the Economy of Georgia," *Economics & Business (1987-5789), Issue 4*, pp. 86-100, 2022.

[4] UN Women, "UNPAID CARE WORK IN GEORGIA," 2022.

[5] Y. Babych, G. Mzhavanadze and D. Keshelava, "ISET Economist Blog," 2021. [Online]. Available: https://iset-pi.ge/en/blog/2937-a-georgian-womans-burden-how-pandemic-affected-distribution-of-household-work-between-men-and-women-and-why-it-matters. [Accessed 5 April 2021].

[6] R. Antonopoulos, The unpaid care work - paid work connection, Geneva: International Labour Organization, 2009.

[7] S. Cantillon and N. Teasdale, "Empowering Women Through Reducing Unpaid Work: A Regional Analysis of Europe and Central Asia," UN Women, UNECE, 2021.

[8] International Labour Organization, "Women and the Economy in Azerbaijan," Work and family relations in Azerbaijan, Moscow, 2010.

[9] G. Ferrant, L. M. Pesando and K. Nowacka, "Unpaid Care Work: The missing link in the analysis of gender gaps in labour outcomes," OECD Development Centre, 2014.

[10] Geostat, "Employment and Wages, Wages," [Online]. Available: https://www.geostat.ge/en/modules/categories/39/wages.

[11] Geostat, "Living Conditions, Poverty and Gini Coefficients," [Online]. Available: https://www.geostat.ge/en/modules/categories/192/living-conditions.

[12] Geostat, "Employment and Wages, Employment and Unemployment," [Online]. Available: https://www.geostat.ge/en/modules/categories/683/Employment-Unemployment.

[13] M. F. Guerrero, "Time Use Survey Georgia 2020-2021," December 2022. [Online]. Available: https://www.geostat.ge/media/50118/GTUS-Report-ENG.PDF.

[14] Open Data Watch, "Gender Data Compass," [Online]. Available: https://gdc.opendatawatch.com/.

[15] I. Ananiashvili, Econometrics, Tbilisi: Meridiani, 2012.

[16] Geostat, "Databases, Labour Force Survey," [Online]. Available: https://www.geostat.ge/en/modules/categories/130/labour-force-survey-databases.

[17] Geostat, "Gender Statistics," [Online]. Available: https://gender.geostat.ge/gender/index.php.

[18] Geostat, "Multiple Indicator Cluster Survey (Round 6)," [Online]. Available: https://www.geostat.ge/en/modules/categories/707/multiple-indicator-cluster-surveys.

[19] Geostat, "Publications, Annual, Gender Statistics," [Online]. Available: https://www.geostat.ge/en/single-categories/115/gender-statistics.

[20] UN Women, "The 17 Goals: Sustainable Development Goals," [Online]. Available: https://www.un.org/sustainabledevelopment/gender-equality/.

[21] S. Gelashvili, "Modern Statistical Trends of Employment and Output of Products in the Regions of Georgia," *International Scientific Journal Innovative Economics and Management*, vol. 10, no. 2, pp. 36-46, 2023.

[22] B. Gabidsaschwili and S. Gelaschwili, "Armut in Georgien," Universität Potsdam, Potsdam, 2007.

[23] S. Gelashvili, "Statistical Imputation Methods in Forecasting Economic Processes," Rome, 2022.

[24] G. Mikeladze and S. Gelashvili, "Econometric and Statistical Modelling of Incomes and Expenditures of Georgian Households by Small Areas: Situation Analysis, Methods and Possibilities," Vienna, 2022.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 4: 1144-1156, 2024
DOI: 10.55214/25768484.v8i4.1489