

## Fostering Sustainable Rural Development: the Role of Women's Empowerment in Economic Decoupling in Kosovo

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**Abstract:** *As economies pursue sustainable development, reducing dependence on external financial support is especially critical in rural contexts where structural vulnerabilities persist. In Kosovo, rural households often rely on remittances, masking deeper limitations in local economic capacity. This study examines whether women's empowerment can strengthen household economic resilience and reduce remittance dependency, therefore contributing to more self-sustaining rural development. Using a modified version of the Women's Empowerment in Agriculture Index (WEAI), adapted for data constraints, the analysis captures empowerment across all rural households, regardless of their primary economic activity. The analysis relies on a reduced-form Ordinary Least Squares (OLS) regression model to estimate the relationship between women's empowerment and household economic performance, measured as household income excluding remittances, aggregated, and per household member. We utilize data from the 2018 MCC Kosovo Labor Force and Time Use Survey to explore this relationship in Kosovo. This dataset provides insights into household income, asset ownership, labor participation, household decision-making, and time allocation across various demographic groups. Analyzing income without remittances provides a view of household financial resilience, demonstrating empowerment's role in enhancing local economic capacity while contextualizing the current reliance on external income sources. Results show that households with an empowered principal woman have significantly higher local income, particularly income excluding remittances, compared to households with less empowered women. These findings highlight the potential of empowerment to foster rural economic resilience by improving internal income-generating capacity. While the findings offer valuable insights, future research would benefit from longitudinal data and advanced causal techniques to further deepen our understanding of the dynamic relationship between empowerment and household income. This research underlines the need for policies that strengthen women's decision-making power, access to resources, and economic inclusion within rural areas. Policymakers are encouraged to adopt gender-focused strategies that elevate women's roles in rural economies, positioning empowerment as a catalyst for sustainable development across Kosovo.*

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## Introduction

Achieving economic resilience and sustainable development demands a strategic emphasis on minimizing external financial dependencies and empowering local communities. The capability approach, feminist economics, and social capital theory together highlight the critical role of women's empowerment in achieving these objectives, especially in rural areas where gender disparities and economic vulnerabilities are prevalent (Sen, 1999; Elson, 1999). Women's empowerment, defined by increased decision-making authority, improved access to resources, and control over income, has been demonstrated to enhance household welfare and resilience and promote community development (Alkire et al., 2013; Malapit et al., 2019). This study builds upon these theoretical frameworks to explore the transformative potential of women's empowerment in reducing dependency on remittances and improving the economic resilience of rural households in Kosovo. Kosovo's rural economy, primarily centered on agriculture, is vital for the country's stability and growth. Agriculture accounts for around 13% of GDP and provides jobs for a large part of the population, especially in rural areas where more than 60% of the population lives (Kosovo Agency of Statistics, 2023). However, rural development faces significant challenges, such as poor infrastructure, limited market access, a lack of investment in modern farming methods, and a heavy reliance on remittances. These issues not only widen the gap between regions but also limit the economic potential of rural families. Additionally, there are persistent gender inequalities in access to education, credit, land ownership, and decision-making, which prevent women from fully participating in rural development (FAO, 2023). It is crucial to effectively address these challenges to encourage inclusive growth and sustainable development in Kosovo's rural areas.

This study explores the role of women's empowerment as a driver of economic resilience in rural households, focusing on its potential to reduce reliance on remittances. Specifically, it seeks to determine whether empowered women contribute to local income generation, mitigating dependency on external financial inflows. The study also investigates how the interplay between women's empowerment and remittance receipt influences household economic outcomes, providing nuanced insights into empowerment's role in fostering economic independence.

To achieve these objectives, the study employs data from the 2018 MCC Labor Force and Time Use Survey (LFTUS), a nationally representative dataset offering comprehensive insights into household demographics, labor force participation, household decision-making, asset ownership, time allocation, and income sources,

including remittances. A modified version of the Women's Empowerment in Agriculture Index (WEAI) is utilized to measure empowerment across five dimensions: decision-making in agriculture, asset ownership, access to and decisions on credit, leadership, and time use. The analysis incorporates a reduced-form Ordinary Least Squares (OLS) regression model with an interaction term between empowerment and remittance receipt to estimate the association between empowerment and household income while accounting for contextual variables such as household size, education, and regional factors.

The findings underscore the critical role of women's empowerment in fostering local economic capacity and reducing reliance on remittances. Households with an empowered principal woman report significantly higher income levels excluding remittances, highlighting empowerment's potential to enhance financial independence. Conversely, remittance receipt alone is associated with reduced local economic engagement, indicating a dependency dynamic that empowerment can mitigate. The study also identifies education gaps and regional disparities as significant factors influencing household economic outcomes, reinforcing the need for targeted interventions to address these structural barriers.

Through this analysis, the paper contributes to the literature on rural development and gender economics by demonstrating that women's empowerment is not only a matter of social equity but also an economic imperative. Empowerment initiatives can catalyze sustainable rural development in Kosovo by reducing remittance dependency and fostering local economic resilience. As such, policymakers are encouraged to integrate gender-sensitive strategies into national development plans, prioritizing investments in education, financial inclusion, and leadership opportunities for women in rural areas.

## Literature review

Women's empowerment has been extensively studied as a means to enhance household welfare, productivity, and resilience, making it a cornerstone for sustainable rural development. Empowering women is increasingly recognized as a key strategy for fostering economic development in rural households. Studies show that women's participation in income-generating activities significantly enhances household welfare and stability (Yasmin & Ikemoto, 2015; Alkire et al., 2013; Quisumbing et al., 2015). This involvement leads to diversified income sources, reduced poverty, and increased investments in education and health (Malapit et al., 2019; Doss, 2013). As Agarwal (1997) explains, empowering women within households enables more equitable access to resources, fostering better decision-making and enhancing overall economic performance. In Kosovo, where rural households face limited economic opportunities, empowering women through education and skill development could catalyze transformation and help shift households away from subsistence-level existence.

Beyond economic development, women's empowerment is pivotal in building household economic resilience. Resilience refers to a household's ability to withstand and recover from economic shocks, including those arising from remittance dependency. Iteriteka and Niyibizi (2022) emphasize the role of financial inclusion—particularly access to microfinance—in enabling women to manage household finances and invest in sustainable income-generating activities. This in turn reduces household vulnerability to external shocks. Similarly, Mathur and Agarwal (2017) show that collective action through self-help groups strengthens women's adaptability through shared knowledge and social capital. Empowered women contribute to reducing income instability, a crucial outcome in contexts where remittances are vulnerable to macroeconomic fluctuations. In Kosovo, where remittance reliance remains widespread, women's empowerment could foster long-term self-sufficiency and economic stability.

These insights are anchored in several theoretical frameworks. Feminist economics critiques traditional models that undervalue women's contributions—particularly in unpaid labor and agriculture—and highlights how unequal resource access perpetuates inefficiencies and inequalities (Elson, 1999; Doss, 2013). The capability approach, developed by Sen (1999) and Nussbaum (2000), complements this view by focusing on expanding freedoms and capabilities as essential elements of empowerment. In contexts like Kosovo, where entrenched gender norms constrain women's agency, this perspective is especially pertinent. Nussbaum (2000) stresses that improving women's capabilities requires tackling structural inequalities—such as limited access to education, healthcare, and markets—that disproportionately affect rural women. Social capital theory also contributes to this discussion by highlighting the role of networks and collective action. Participation in cooperatives and informal groups enables women to access resources, build leadership capacity, and strengthen community engagement (Pedro et al., 2023).

In Kosovo, cultural and institutional barriers continue to restrict women's economic participation. Lajci et al. (2024) note that traditional gender roles often exclude women from formal labor markets and decision-making processes. Similarly, the FAO (2023) and UNDP (2023) underscore persistent inequalities in land ownership, credit access, and education—factors that severely limit women's ability to contribute to and benefit from rural development. While progress has been made in promoting female leadership, substantial gaps remain. These challenges are exacerbated by poor infrastructure and limited market access in rural regions, which disproportionately affect women. Remittance dependency compounds these issues, as external inflows often substitute for local economic development. However, empowering women to engage more actively in household and community economies can reduce reliance on remittances and increase internal resilience. Bhandari (2023) notes that economic empowerment in agriculture can also curb male outmigration, contributing to more stable rural communities. Similarly, Hernández (2022) emphasizes the role of

women's political participation and collective engagement in achieving broader economic independence.

Measuring empowerment requires a multidimensional framework. The Women's Empowerment in Agriculture Index (WEAI), developed by Alkire et al. (2013), offers such a framework, capturing empowerment across five key domains: production, resources, income, leadership, and time allocation. Its comprehensive scope allows researchers and policymakers to pinpoint gaps and evaluate empowerment's impact on household outcomes. Malapit et al. (2019) found that higher WEAI scores correlate with improved dietary diversity and economic stability, illustrating the index's relevance for assessing development outcomes. Moreover, WEAI captures both individual and intra-household dynamics, making it particularly useful in rural economies where bargaining power is often asymmetrically distributed. Its application in countries like Bangladesh and Niger has yielded actionable insights (Sraboni et al., 2014; Wouterse, 2017), and its adaptation to Kosovo offers a promising avenue for examining local empowerment dynamics and guiding policy design.

Empirical studies analyzing empowerment and household outcomes typically rely on econometric methods. Reduced-form OLS regression is a standard approach, allowing researchers to estimate the association between empowerment and income while controlling for household and regional characteristics (Sraboni et al., 2014; Malapit et al., 2019). Other models, such as fixed effects or instrumental variable approaches, have been used to control for unobserved heterogeneity or potential endogeneity (Dhasmana & Bhandari, 2023). For example, Iteriteka and Niyibizi (2022) show that access to microfinance can serve as a critical mediator, improving women's capacity to contribute to household income and reduce vulnerability to volatile income sources. In data-limited contexts like Kosovo, these econometric models can be adapted to explore empowerment's effect on household income—particularly income excluding remittances—as a proxy for local economic resilience.

Overall, the evidence consistently demonstrates that women's empowerment is integral to sustainable rural development and reduced reliance on remittances. By dismantling structural and cultural barriers, expanding access to credit and education, and supporting collective empowerment, rural households in Kosovo can build stronger, more self-reliant economies. Empowered women drive not only household welfare but also broader community development. As such, WEAI and other quantitative tools offer essential insights into empowerment dynamics and support the development of targeted, evidence-based policies. For Kosovo's rural transformation to succeed, investing in women's empowerment must be a core priority.

## Methodology and Data Description

As the literature suggests, measuring empowerment and its effect on economic variables is a rather complex task due to the multidimensional nature of empowerment. A

few methods, some of them utilizing indices, have been established for this purpose. To capture empowerment in the context of rural households in Kosovo, it was seen adequate to use the Women's Empowerment in Agriculture Index (WEAI), carefully modified and adapted to address the data constraints. This tailored approach ensures that the index reflects the unique socio-economic dynamics of rural Kosovo while maintaining its methodological rigor.

The study adopts an inclusive perspective, analyzing rural households regardless of their primary economic activity to provide a holistic view of empowerment's effects across diverse household types. A reduced-form Ordinary Least Squares (OLS) regression is used to estimate the relationship between empowerment and household income, with an emphasis on income excluding remittances. While the use of a reduced-form OLS regression presents some limitations in addressing endogeneity and causal inference, the research sheds light on the potential of women's empowerment to mitigate reliance on remittances. While this analysis allows for a nuanced understanding of how empowerment can influence economic outcomes at the individual and household levels, it also offers a platform for future research to build on these findings as data availability improves.

Data for the analysis are sourced from the 2018 MCC-LFTUS, a nationally representative dataset offering detailed insights into key aspects of rural households, including demographics, labor force participation, decision-making practices within households, asset ownership, credit opportunities, time allocation, income sources—including remittances—and prevailing social and economic norms. To align the dataset with the study's objectives, only households classified as rural were included, irrespective of their primary income source. Furthermore, the focus was restricted to male and female household members aged 18 to 65, ensuring the analysis concentrated on the working-age population to capture critical patterns in empowerment and economic resilience. Observations with incomplete or invalid data on key variables, such as empowerment indicators, income, and remittance status, were excluded to maintain analytical precision and reliability. After rigorous data-cleaning process, the final dataset consisted of 2,515 rural households, providing a solid foundation for empirical estimation.

Descriptive statistics reveal key differences between remittance-receiving and non-receiving households. Non-receiving households reported a higher annual average job income (€11,784) compared to receivers (€9,218), suggesting greater reliance on locally generated income. Conversely, total household income was significantly higher among remittance-receivers (€24,496) than non-receivers (€19,520), highlighting the importance of remittances as an external financial shield. However, excluding remittances, income dropped sharply among recipients, reinforcing the dependency dynamic. Per capita income followed a similar pattern. The average education gap—defined as the difference in years of schooling between the principal male and female in each household—was approximately 2.45 years, underscoring

persistent gender disparities in human capital. Employment patterns also differed, with higher male employment in non-receiving households (67% vs. 56%) and similarly low female employment across both groups (~24%). These figures contextualize the socio-economic environment and inform the selection of control variables in the empirical models.

Table 1: Description of variables and summary statistics

	Non-receiver		Receiver		Total	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Household job income	11784.0	15693.5	9218.0	17305.4	11190.2	16113.7
Household total income	19520.5	36389.3	24496.4	42300.9	20671.9	37888.9
Household total income (excluding remittances)	19520.5	36389.3	13535.4	23098.5	18135.5	33871.9
Per capita income (excluding remittances)	3141.0	4533.1	2169.4	3118.3	2916.2	4267.0
Per capita income	3141.0	4533.1	4146.8	5539.0	3373.8	4802.3
Per capita income (only job income)	1989.7	2396.3	1520.4	2585.5	1881.1	2448.9
Working age persons in HH	4.3	1.8	4.1	1.7	4.3	1.8
HH Size	5.9	2.4	5.6	2.5	5.8	2.4
Age of principal male	50.9	11.1	53.4	11.7	51.5	11.3
Age of principal female	46.9	10.7	49.0	11.1	47.4	10.9
Education of principal male	10.4	3.1	9.9	3.2	10.3	3.2
Education of principal female	7.9	3.4	7.4	3.2	7.8	3.3
Education gap (male/female)	2.5	3.5	2.4	3.6	2.5	3.5
Employed principal female	0.2	0.4	0.2	0.4	0.2	0.4
Employed principal male	0.7	0.5	0.6	0.5	0.7	0.5
Borrower	0.2	0.4	0.2	0.4	0.2	0.4
Ferizaj	0.2	0.4	0.1	0.3	0.2	0.4
Gjakova	0.1	0.3	0.3	0.5	0.2	0.4
Gjilan	0.1	0.3	0.1	0.3	0.1	0.3
Mitrovica	0.2	0.4	0.1	0.3	0.2	0.4
Peja	0.2	0.4	0.2	0.4	0.2	0.4
Pristina	0.1	0.3	0.1	0.2	0.1	0.3
Prizren	0.1	0.4	0.2	0.4	0.2	0.4
<b>Observations</b>	<b>2515</b>					

Source: MCC LFTU Survey Data. Author's calculations

### *Construction of the Modified Empowerment Index*

The modified empowerment index adapts the original Women's Empowerment in Agriculture Index (WEAI) to the MCC-LFTUS data constraints while maintaining its five domains' core structure. Two domains—Leadership and Time Use—required



the use of proxy indicators due to the dataset's limited coverage of specific empowerment-related questions. To maintain the integrity of the index, the weights of these proxy domains were adjusted downward to reflect their reduced validity compared to the original WEAI indicators. This adaptation ensures that the index remains robust and meaningful for assessing women's empowerment in rural Kosovo.

The modified index includes five domains, each capturing distinct aspects of empowerment. The decision-making domain measures women's ability to influence productive decisions, highlighting their autonomy and resource allocation capabilities, which are central to bargaining power (Doss, 2013). Asset ownership, another critical domain, evaluates control over key assets such as land and livestock, emphasizing the role of economic security and gender equity in empowerment (Quisumbing et al., 2015). Similarly, access to and decisions on credit capture women's financial inclusion, a cornerstone for reducing economic vulnerability and further enhancing decision-making (Fletschner & Kenney, 2014). The leadership domain measures formal or informal group membership, thus reflecting social capital and collective action potential, which are vital for community influence (Agarwal, 2010). Lastly, time use assesses the balance between productive and domestic tasks. However, its representation here is limited to time allocation data due to the absence of satisfaction-related measures in the dataset. This domain underscores the link between equitable time use and economic productivity and empowerment (Johnston et al., 2018). The table below summarizes domains as modified in this analysis, their respective definitions, and the weight they hold in the empowerment score used for this study.

Table 2: Description of domains, definition of adequacy, and respective weights in the calculations of empowerment score

Domain	Indicator	Definition of Adequacy (=1)	Weight
Production	Input in productive decisions	Sole or joint participation in at least one decision related to one or more productive activities within household	0.25
Resources	Asset ownership	Sole or joint ownership of at least one major household asset	0.25
	Access to and decisions on credit	Sole or joint control or participation in decision-making on credit from at least one source	
Income	Control over use of income	Sole or joint control over income for at least one productive activity within household	0.20
Leadership	Group membership	Reported a certain number of hours spent in voluntary activities	0.15
Time	Workload	Spend less than or equal to 10.5 hours on paid and unpaid work during the previous day	0.15

Source: Alkire (2013), Diiro et al. (2018), Author's modifications

The limitations of the MCC-LFTUS dataset justify the reliance on proxy indicators for Leadership and Time Use domains. For the Leadership domain, the dataset



lacked detailed questions on formal group participation or community leadership. Instead, participation in voluntary activities was used as a proxy. Similarly, for the Time Use domain, the dataset offered detailed data on time allocation across productive and domestic activities. However, it did not include measures of satisfaction with leisure time, a key component of the original WEAI. As a result, the analysis uses available time allocation data to approximate this domain, ensuring that its relevance to empowerment is preserved despite the constraint. While not identical to the original WEAI measures, these proxies still provide meaningful insights into leadership capabilities and social capital.

The index aggregates the weighted sum of inadequacies across all five domains to calculate the empowerment score. The empowerment index (EI) for each individual is calculated as a weighted sum of inadequacies across the five domains:

$$EI = \sum (Indicator \times Weight)$$

Where Indicator = 1 if inadequate and 0 otherwise.

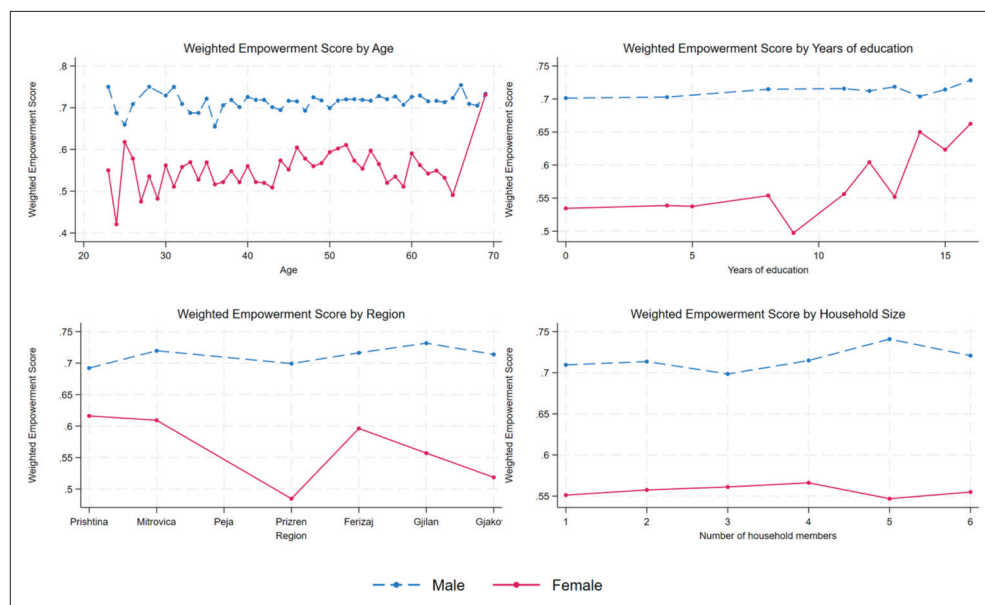
Households with an empowerment index exceeding 0.65 are classified as “empowered,” a threshold aligned with prior studies adapting the WEAI, such as Alkire et al. (2013) and Sraboni et al. (2014). This classification demarcates between empowered and non-empowered households, facilitating meaningful comparisons in the analysis and aligning with international standards in empowerment research.

### *Descriptive Insights from the Modified Empowerment Index*

To provide a clearer understanding of empowerment patterns in rural Kosovo, descriptive statistics of the modified WEAI are presented across key household and individual characteristics. Figure 1 illustrates the weighted empowerment scores disaggregated by age, education, region, and household size for male and female household members. Across all dimensions, women consistently report lower empowerment scores than men, highlighting persistent gender disparities in rural Kosovo. For example, while male empowerment scores remain relatively stable across age groups (hovering around 0.72–0.75), female scores fluctuate and remain significantly lower, particularly between ages 25 and 60. This gap reflects gendered roles in productive and household labor, where women's decision-making and control over resources tend to be constrained across the life cycle. Similarly, educational attainment reveals a strong gradient in empowerment. Women with higher education (particularly above 12 years) show marked increases in empowerment scores, suggesting that education plays a crucial role in enhancing agency and access to resources. However, even among the most educated women, their empowerment scores do not match those of men with similar educational backgrounds, indicating systemic structural barriers

that education alone may not overcome. Regional disparities are also evident. While men's scores remain relatively high and uniform across Kosovo's regions, women's scores vary more dramatically. In particular, women in Prizren and Gjakova report the lowest empowerment levels, pointing to the need for regionally tailored interventions. Household size shows a marginal relationship with empowerment for both genders, although women in smaller households tend to report slightly higher empowerment, possibly due to lower caregiving burdens.

Figure 1: Weighted empowerment scores by age, education, region, and household size

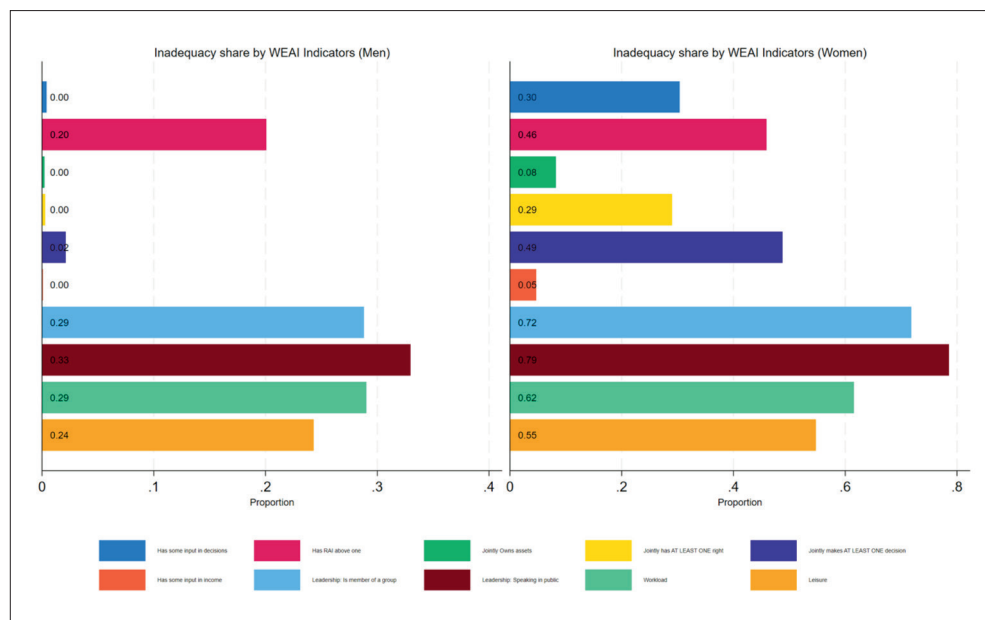


Source: MCC LFTU Survey Data. Author's calculations

Figure 2 provides further insights by breaking down the share of inadequacies by WEAI indicators for men and women. Women exhibit much higher rates of inadequacy across nearly all indicators, especially in access to and decision-making on credit (72%), workload (62%), and group membership (79%). In contrast, men report minimal inadequacies across all indicators, with the highest being workload and asset ownership, both at only 29%. These findings reveal that not only are women significantly disadvantaged overall, but their disempowerment is concentrated in critical economic and social domains that strengthen agency and resilience. These descriptive insights reinforce the rationale for applying the modified WEAI in Kosovo and justify the binary empowerment classification used in the analysis. The persistent gender gaps and variability across age, education, and region call for urgent,

targeted interventions to close empowerment deficits and promote inclusive rural development.

Figure 2: Share of inadequacies by WEAI indicators for men and women



Source: MCC LFTU Survey Data. Author's calculations

### *Description of variables*

The variables used in this analysis are selected to capture key dimensions of household economic well-being, women's empowerment, and contextual factors affecting rural households in Kosovo. These variables are categorized into dependent variables, key independent variables, and control variables to examine the relationships and dynamics within the dataset comprehensively.

Household income, excluding remittances, serves as a primary dependent variable. It serves to isolate the local economic capacity of households. By excluding remittance inflows, this measure focuses on the households' internal income-generating activities, emphasizing their reliance—or lack thereof—on external financial sources (Adams & Cuecuecha, 2013). As a direct indicator of economic well-being and resilience, total household income reflects the overall financial health of households and provides insights into their capacity to adapt to economic shocks (Deininger et al., 2003). To account for differences in household size, income per household member is also included, calculated by dividing total household income by household size.

This variable normalizes income, making it comparable across diverse household structures and highlighting resource availability on an individual basis (Wooldridge, 2010).

The primary independent variables in this study include the Empowerment Index (EI) and remittance status. The modified WEAI-based index captures women's empowerment in each household through five domains: production, resources, income, leadership, and time use. As measured by the EI, empowerment is posited to contribute to household resilience by enabling better financial management and resource optimization (Alkire et al., 2013). In parallel, remittance status serves as a binary variable that indicates whether a household receives remittances (1 = yes, 0 = no). While remittances often act as a financial lifeline for rural households, they can also create dependency, diminishing local economic engagement and hindering sustainable development (World Bank, 2018). Together, these key variables facilitate an in-depth exploration of how empowerment interacts with remittance reliance to shape household economic outcomes.

Several control variables are included to account for household characteristics and contextual factors. This ensures robust results by comparing similar households. Household size reflects the total number of household members. It balances the potential economies of scale with higher consumption demands often observed in larger households (Sraboni et al., 2014). The number of working-age members, defined as individuals aged 15–64, is another critical variable representing the household's labor capacity and economic productivity (Quisumbing et al., 2015). Educational attainment, measured as the years of schooling completed by male and female household heads, captures the role of education in income generation, decision-making, and empowerment. The education gap, defined as the difference in years of schooling between the principal male and the principal female household head (Principal male education - Principal female education), is included to account for potential gender disparities in human capital. Education is a fundamental determinant of economic outcomes and gender equity. Higher levels of education link to improved household decision-making and resource allocation (Glewwe, 1999; Sraboni et al., 2014).

Age, another important control variable, reflects the age of the male and female household heads. Age often correlates with experience and authority in decision-making, potentially influencing household dynamics and economic performance (Doss, 2013). Borrowing status, a binary variable indicating whether the household has access to credit, serves as a proxy for financial inclusion. Access to credit is critical for enabling households to invest in productive activities, enhancing their capacity to generate income and achieve economic resilience (Fletschner & Kenney, 2014). Lastly, regional fixed effects capture the categorical variations across Kosovo's regions. These variables account for differences in economic opportunities, access to resources, and local market conditions, ensuring that the analysis considers the geographic disparities influencing household outcomes (Quisumbing et al., 2015).

By integrating these dependent, independent, and control variables, the study adopts a comprehensive approach to examining the multifaceted nature of women's empowerment and its impact on rural household resilience. This structured framework facilitates a deeper understanding of economic dynamics in rural Kosovo and ensures that the analysis remains robust and contextually relevant.

### *Model Specification*

The econometric model used in this study is designed to estimate the impact of women's empowerment on household income and to explore its interaction with remittance dependency. This approach provides a robust framework for understanding how empowerment influences economic outcomes, both directly and indirectly, in the context of rural households in Kosovo. By incorporating an interaction term between empowerment and remittance receiver and relevant control variables, the analysis ensures a nuanced evaluation of the complex dynamics between empowerment, income, and external financial reliance. While the use of Ordinary Least Squares (OLS) regression is a common starting point for such analysis, the study acknowledges its limitations in addressing endogeneity, particularly potential reverse causality between income and empowerment. Due to data constraints and the lack of strong instrumental variables, more advanced identification strategies such as panel estimation or IV methods could not be applied, which remains a limitation and an avenue for future research.

The model introduces an interaction term to investigate whether empowerment mitigates reliance on remittances. This interaction model tests the hypothesis that the relationship between empowerment and household income is influenced by remittance status, offering insights into the role of empowerment in fostering economic independence. The dependent variable ( $Y_i$ ) encompasses household income, excluding remittances, both at the aggregate and per household member levels. The primary independent variables include  $WEAI_i$ , the modified Women's Empowerment in Agriculture Index, and  $WEAI_i \times Remittances_i$ , an interaction term capturing the interplay between empowerment and remittance receipt. By including this interaction term, the model evaluates whether the effect of empowerment differs between households that receive remittances and those that do not. The model also incorporates a vector of control variables ( $Z_i$ ) that includes household characteristics, demographic factors, and regional fixed effects to account for potential confounding influences. The model is specified as follows:

$$Y_i = \beta_0 + \beta_1(WEAI_i) + \beta_2(WEAI_i \times Remittances_i) + \beta'Z_i + \varepsilon_i$$

$Y_i$ : household job income, total household income without remittances, job income per household member, income without remittances per household member,

*WEAI<sub>i</sub> – Modified Women Empowerment in Agriculture Index*

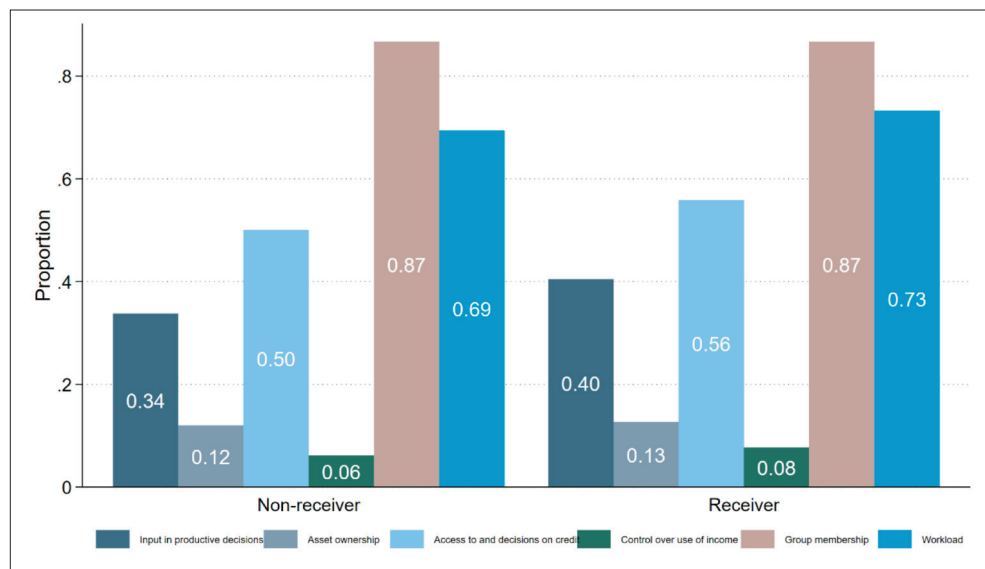
*WEAI<sub>i</sub> x Remittances<sub>i</sub> – An interaction term between WEAI and remittance status*

*Z<sub>i</sub>: Working Age Persons within Household, Household size, Age, Age Squared, Education, Education Gap, Borrowing opportunities, Employment, Decision Power, Regional Factors.*

The primary focus of this model is the coefficient of the interaction term ( $\beta_2$ ), which provides insight into how empowerment interacts with remittance receipt to influence household income. A negative and statistically significant  $\beta_2$  would indicate that empowerment reduces household dependency on remittances, enhancing local economic resilience. This finding would underscore the role of women's empowerment as a transformative factor in reducing external financial reliance and promoting sustainable economic development.

The figure 3 below illustrates the proportion of inadequacies across each empowerment domains, comparing households that receive remittances with those that do not. Non-receiving households exhibit slightly lower inadequacies in productive decision-making (0.34) compared to remittance-receiving households (0.40), suggesting a marginally higher level of empowerment in decision-making among the former. However, in terms of asset ownership, remittance-receiving households fare better, with a lower inadequacy proportion (0.50 versus 0.56), indicating that remittances may improve access to and control over assets. Both groups show minimal differences in access to and decisions on credit, with similarly high inadequacy levels (0.12 for non-receivers and 0.13 for receivers), highlighting a widespread challenge in financial inclusion. Interestingly, remittance-receiving households exhibit slightly higher inadequacies in control over income (0.08 versus 0.06), suggesting that financial autonomy might not significantly improve with remittance inflows. Notably, both groups share a significant inadequacy in group membership (0.87), reflecting a persistent barrier to leadership and collective participation. Additionally, workload inadequacies are higher among remittance receivers (0.73) compared to non-receivers (0.69), indicating greater challenges in balancing productive and domestic tasks. Overall, while remittances appear to alleviate some economic inadequacies, such as asset ownership, they do not uniformly enhance empowerment across all dimensions. Persistent gaps, particularly in group membership and workload, underscore the need for targeted interventions to address empowerment deficits comprehensively.

Figure 3: Inadequacy by remittance-receiving status, for each domain



Source: MCC LFTU Survey Data. Author's calculations

The density plots below depict the distribution of the natural log of household income (excluding remittances) based on empowerment and remittance status, offering insights into the economic dynamics of rural households. In the left panel, among disempowered households, those receiving remittances (blue line) have a slightly lower peak and broader income distribution compared to non-receivers (red line), suggesting greater variability in local income-generation capabilities among receivers. However, the income distribution for non-receivers is more concentrated, indicating that these households, though disempowered, might rely more consistently on local income sources for their economic stability.

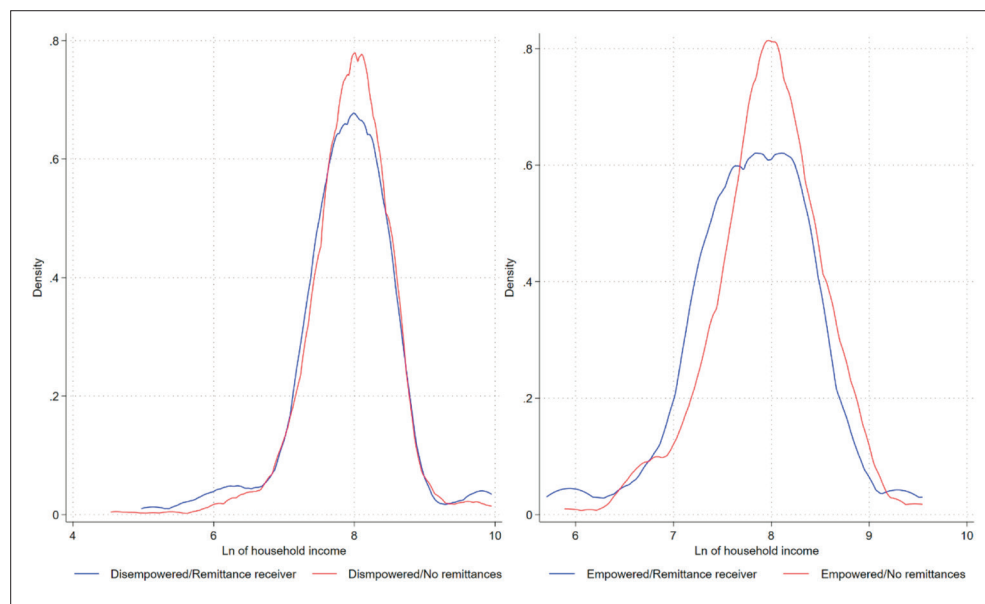
In the right panel, for households with an empowered principal woman, the income distributions exhibit a notable shift. Remittance-receiving households (blue line) display a broader income spread but are slightly skewed toward higher income levels than non-receivers (red line), highlighting how empowerment may enhance income generation even for households dependent on remittances. While exhibiting less income variability, Empowered non-receivers maintain a more centralized distribution, suggesting stable but potentially lower local income levels compared to their remittance-receiving counterparts.

Overall, these patterns suggest that empowerment reduces income variability and enhances economic stability, especially for remittance-receiving households. The greater income variability among receivers suggests potential dependency on volatile remittance flows, whereas empowered non-receivers demonstrate the capacity



for more consistent local income generation. These findings underscore the transformative role of women's empowerment in reducing remittance reliance and fostering economic resilience among rural households.

Figure 4: Distribution of household income (excluding remittances) for empowered and disempowered women for remittance and non-remittance receiver households

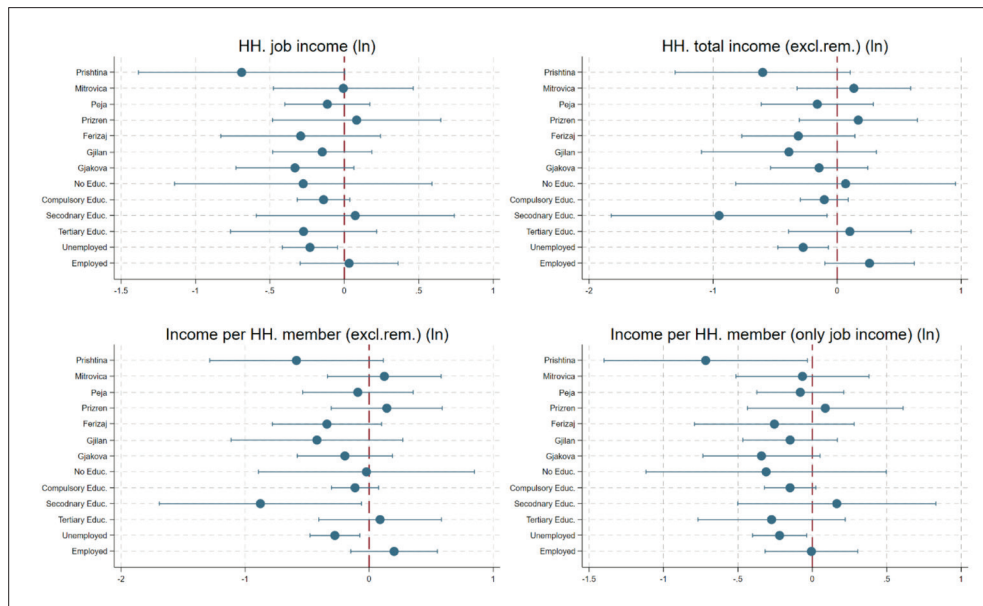


Source: MCC LFTU Survey Data. Author's calculations

The following figure illustrates the observed heterogeneity, emphasizing the necessity of addressing structural and regional disparities in Kosovo to promote equitable and sustainable rural development. Regions such as Prishtina and Peja show stronger economic performance, likely benefiting from better infrastructure, proximity to urban markets, or greater access to economic opportunities. In contrast, regions like Gjakova and Mitrovica exhibit weaker performance, highlighting the challenges posed by limited infrastructure, market access, or employment opportunities in these areas (FAO, 2023). These disparities call for targeted investments to bridge regional gaps, ensuring balanced growth across the country. Further, education emerges as a pivotal determinant of household income. The strong association between tertiary education and higher income levels reinforces the findings of Glewwe (1999) and Quisumbing et al. (2015), which emphasize education's role in enhancing earning potential and resource allocation. Additionally, employment is another critical driver of income, which highlights the need for job creation strategies tailored to

less-developed regions, where unemployment or underemployment remains a barrier to economic growth. The weaker income performance observed when remittances are excluded is particularly pronounced in regions heavily reliant on migration-related inflows, further underscoring the urgency of fostering local economic capacity and income diversification.

Figure 5: Heterogeneity Testing



Source: MCC LFTU Survey Data. Author's calculations

The results in table 3 demonstrate a complex interplay between having an empowered principal woman, remittance receipt, and household income excluding remittances. Households with an empowered principal woman exhibit a significant positive effect on income excluding remittances ( $\beta=0.122$ ,  $p<0.01$ ) and per capita income excluding remittances ( $\beta=0.153$ ,  $p<0.01$ ), emphasizing the critical role of empowerment in fostering local economic engagement and improving financial independence. In contrast, remittance receipt alone has a significant negative effect on both total income excluding remittances ( $\beta=-0.196$ ,  $p<0.01$ ) and per capita income excluding remittances ( $\beta=-0.176$ ,  $p<0.01$ ), indicating a dependency dynamic where households that receive remittances rely less on local income-generating activities. Importantly, the interaction term between empowerment and remittance receipt is negative and statistically significant across all models (e.g.,  $\beta=-0.172$ ,  $p<0.10$  for income excluding remittances), suggesting that empowerment mitigates the suppressive effect of remittances on local income generation. Additionally, control variables highlight the

importance of the education gap between male and female heads, which has a small but significant positive effect ( $\beta=0.012$ ,  $p<0.05$ ), indicating that narrowing the gender gap in education contributes to higher household income. The employment of the principal male ( $\beta=0.492$ ,  $p<0.01$ ) emerges as another critical factor driving income, whereas principal female employment ( $\beta=-0.006$  - not significant for total income excluding remittances) has limited direct impact.

Table 3: Econometric results estimating the effect of empowerment in reducing remittance reliance

	Model 1	Model 2	Model 3	Model 4
	HH. job income (ln)	HH. total income (excl.rem.) (ln)	Income per HH. member (excl.rem.) (ln)	Job income per HH. member (ln)
Empowered women	0.066** (0.033)	0.122*** (0.039)	0.153*** (0.040)	0.085*** (0.033)
Remittance receiver	0.054 (0.056)	-0.196*** (0.062)	-0.176*** (0.061)	0.059 (0.054)
Empowered x Remittance receiver	-0.183** (0.083)	-0.172* (0.093)	-0.188** (0.091)	-0.184** (0.082)
Working-age members in HH	0.248*** (0.016)	0.327*** (0.018)	0.318*** (0.018)	0.235*** (0.016)
HH Size	-0.013 (0.010)	0.013 (0.012)	-0.133*** (0.013)	-0.149*** (0.011)
Age of principal male	-0.003 (0.004)	0.001 (0.004)	0.004 (0.004)	-0.001 (0.004)
Age of principal male squared	-0.201 (0.277)	-0.668** (0.327)	-0.697** (0.326)	-0.247 (0.283)
Age of principal female	0.006 (0.004)	0.008* (0.004)	0.008* (0.004)	0.006 (0.004)
Education gap (male-female)	0.013*** (0.004)	0.012** (0.006)	0.011** (0.006)	0.012*** (0.004)
Borrower	0.038 (0.035)	0.193*** (0.040)	0.186*** (0.040)	0.034 (0.035)
Employed principal female	-0.090** (0.037)	-0.006 (0.044)	0.001 (0.044)	-0.081** (0.037)
Employed principal male	0.182*** (0.038)	0.492*** (0.041)	0.489*** (0.041)	0.193*** (0.038)
Decision power	0.084*** (0.030)	0.102*** (0.038)	0.062 (0.038)	0.053* (0.030)
Ferizaj	-0.121** (0.058)	-0.135** (0.062)	-0.128** (0.061)	-0.114** (0.058)
Gjakova	0.016 (0.049)	-0.033 (0.076)	-0.005 (0.077)	0.035 (0.048)
Gjilan	-0.111** (0.052)	-0.235*** (0.058)	-0.228*** (0.058)	-0.108** (0.052)

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
	<b>HH. job income (ln)</b>	<b>HH. total income (excl.rem.) (ln)</b>	<b>Income per HH. member (excl.rem.) (ln)</b>	<b>Job income per HH. member (ln)</b>
Mitrovica	0.029 (0.047)	-0.151** (0.061)	-0.131** (0.061)	0.041 (0.047)
Peja	-0.020 (0.052)	-0.027 (0.068)	-0.014 (0.067)	-0.014 (0.051)
Prizren	0.016 (0.050)	-0.121** (0.058)	-0.090 (0.058)	0.037 (0.048)
Constant	8.294*** (0.099)	7.310*** (0.111)	6.376*** (0.111)	7.338*** (0.100)
Observations	1388	1868	1868	1388
Standard errors in parentheses * $p < 0.10$ , ** $p < 0.05$ , *** $p < 0.01$				

Source: MCC LFTU Survey Data. Author's calculations

These findings align with broader evidence that women's empowerment enhances economic resilience by enabling households to diversify income sources and reduce reliance on remittances (Alkire et al., 2013; Malapit et al., 2019). The significant positive effect of empowerment reflects how decision-making autonomy and resource control improve women's ability to contribute to local economic activities, counteracting the dependency associated with remittances (Doss, 2013). Empowered women are more likely to participate in household-level financial decision-making, allocate time more efficiently between productive and domestic tasks, and invest in long-term income-generating strategies (Agarwal, 1997; Johnston et al., 2018). These mechanisms are widely supported in the literature and offer plausible pathways for the observed effects. For instance, increased bargaining power and control over assets often lead to improved expenditure allocation and household welfare (Quisumbing & Maluccio, 2003). The negative association between remittance receipt and income-excluding remittances highlights a potential disincentive for engaging in productive local activities, as remittances often serve as a financial safety net (Adams & Cuecuecha, 2013). However, the mitigating effect of empowerment suggests that when women are empowered, they can redirect household focus toward sustainable income-generating activities, reducing vulnerability to volatile remittance flows.

The positive effect of the education gap underscores the critical role of reducing gender disparities in human capital. Narrowing this gap may reflect a greater inclusion of women in economic decisions and activities, fostering improved income outcomes (Quisumbing et al., 2015). The strong impact of male employment underscores the traditional role of men as primary income earners. In contrast, the limited significance of female employment highlights structural barriers to women's economic participation, such as unpaid domestic work or limited access to formal labor markets (Fletschner & Kenney, 2014). The negative regional fixed effects in several areas emphasize the importance of geographic disparities in shaping income opportunities,

suggesting that households in certain regions face structural disadvantages, such as limited infrastructure or market access. Overall, these findings reinforce the importance of targeted policies that simultaneously promote women's empowerment, address regional disparities, and reduce remittance dependency to foster resilient and self-reliant rural economies.

## Conclusions and Policy Implications

This study highlights the transformative potential of women's empowerment in fostering economic resilience and reducing remittance dependency among rural households in Kosovo. It focuses on women's empowerment as a critical mechanism for sustainable rural development, it addresses persistent gender disparities while enhancing household self-sufficiency. Empowerment is shown to not only improve individual household welfare but also promote inclusive economic growth in rural areas. Using a modified Women's Empowerment in Agriculture Index (WEAI) tailored to the MCC Labor Force and Time Use Study (LFTUS) data, combined with econometric models incorporating an interaction term between empowerment and remittance receipt, the study provides a nuanced analysis of how empowerment influences household income and reduces reliance on external financial inflows. Results show that households with an empowered principal woman generate higher local income, particularly income excluding remittances, underscoring empowerment's role in enhancing economic capacity. However, significant regional disparities and education gaps constrain income potential in less-developed areas, emphasizing the need to address both individual and structural barriers for sustainable development.

Results of this study indicate the importance of gender-sensitive strategies into national development plans to foster women's decision-making autonomy, access to resources, and economic participation. Investments in education, particularly in closing the gender gap, are critical for building long-term household resilience and enhancing economic performance. Expanding access to financial services and credit for rural women is essential to empower them to engage in productive activities. Furthermore, targeted regional development initiatives, such as improving infrastructure and market access in underserved areas, can mitigate geographic disparities and unlock the economic potential of rural households. By embedding women's empowerment into Kosovo's rural development agenda, policymakers can promote a balanced, inclusive, and sustainable economy that fosters broader social equity and economic growth.

While this study provides meaningful insights into the relationship between women's empowerment and rural household economic performance, several limitations must be acknowledged. First, the cross-sectional nature of the 2018 MCC-LFTUS dataset restricts the ability to identify causal relationships or assess temporal dynamics in empowerment and income. Future research should incorporate longitudinal

data to better capture changes over time and strengthen causal inference. Second, due to dataset constraints, proxy indicators were used for certain WEAI dimensions, particularly in the Leadership and Time Use domains. Although adjusted weights were applied to maintain internal consistency, the multidimensional nature of empowerment may not have been fully captured, potentially affecting the precision of the empowerment index. Third, endogeneity remains a potential concern. While the analysis provides robust correlational findings, the direction of causality between women's empowerment and household income may be bidirectional—higher income could, in turn, enhance empowerment. Recognizing this issue, multiple potential instrumental variables were tested during the research process. However, none met the necessary criteria for relevance and strength. This limitation reflects a broader challenge of working with data from Kosovo, where structural constraints and the limited availability of repeated surveys hinder the application of advanced identification strategies such as instrumental variable or panel data methods. Future studies with access to richer or longitudinal datasets could build upon this work to further address these methodological challenges. Finally, although the models control for regional fixed effects, unobserved heterogeneity—such as cultural norms and local variations in gender roles—may still influence empowerment and income outcomes. Qualitative or mixed-methods research at the local level could provide deeper contextual insights into the mechanisms of empowerment, particularly in marginalized or underserved communities.

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### *Conflicts of interest/Competing interests*

There is no conflict of interest/Competing interests.

### *Availability of data and material*

The data utilized for this study are publicly accessible through Social Impact via the Millennium Challenge Corporation's website: *Kosovo Threshold – Labor Force & Time Use Survey: Baseline Questionnaire*. Washington, DC. Available at: <https://mcc.icpsr.umich.edu/evaluations/index.php/catalog/2175>.

### Code Availability

The computer program results are shared through the tables in the manuscript.

### Authors' Contributions

The author solely undertook all contributions to this work.

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