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Female entrepreneurship, remittance dependency and economic growth: an exploratory analysis of post-soviet transition economies

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This exploratory study investigates the intricate connections between economic growth, health indicators, remittance dependency, and female entrepreneurship in post-soviet transition economies. We examine the impact of gender-inclusive entrepreneurship and migration-related financial flows on economic performance by employing Partial Least Squares Structural Equation Modeling (PLS-SEM) with cross-sectional data from 14 countries. Our results suggest that economic growth is positively influenced by female self-employment ($\beta = 0.553$, $p < 0.01$). Conversely, elevated under-five mortality rates ($\beta = –0.852$, $p < 0.001$) and remittance dependency ($\beta = –0.624$, $p < 0.001$) demonstrate negative correlations. The findings enhance comprehension of the varied impacts of transition policies, specifically emphasizing the underutilized potential of female entrepreneurship and the macroeconomic drawbacks associated with high remittance dependency in Central Asian republics. The research offers initial evidence supporting policy interventions aimed at promoting gender-inclusive economic development and diversification strategies in economies reliant on remittances.

Keywords: female entrepreneurship, remittance dependency, economic growth, post-soviet economies, transition, gender equality

The transition from centrally planned to market economies in post-soviet republics constitutes one of the most notable economic experiments of the late 20th century *(Aslund, 2013; Roland, 2000)*. Three decades post-independence, these economies display significant diversity in their developmental paths. For instance, the Baltic States have attain European integration, whereas the

Central Asian republics continue to rely substantially on commodity exports and labor migration *(Cieślik–Goczek, 2018; World Bank, 2022).* This diversity provides a unique laboratory for understanding the differential impacts of transition policies and market institutions on economic development.

Current issues confronting post-soviet economies encompass enduring gender disparities in entrepreneurship, significant reliance on remittances in various Central Asian nations, and differing degrees of human capital development reflected in health outcomes *(Estrin–Mickiewicz, 2011).* Tajikistan and Kyrgyzstan demonstrate remittance-to-GDP ratios of 51% and 31% respectively, whereas countries such as Georgia and Moldova reflect lower levels of dependency *(World Bank, 2022).* The observed patterns indicate that the outcomes of transitions have been influenced by a combination of initial conditions, reform strategies, and various demographic and social factors, such as gender equality and migration trends. The shift towards a market economy in post-soviet nations has yielded a variety of outcomes, with certain regions experiencing swift growth while others confront stagnation and disparities. For instance, Kazakhstan and Azerbaijan have leveraged their abundant natural resources to drive economic development, whereas Kyrgyzstan and Tajikistan have faced enduring poverty and a significant dependence on remittances *(Kireyev, 2006; Danzer–Ivaschenko, 2010; Habibov, 2013; Kroeger–Anderson, 2014).*

Despite extensive research on post-soviet economic transitions, there are still three significant gaps in the existing literature. First, limited attention has been paid to the specific role of female entrepreneurship as a driver of economic growth in the contexts of post-soviet countries, despite evidence from other regions showing positive effects *(Noguera et al., 2013).* Second, although remittances are generally regarded as beneficial transfers at the household level, their broader macroeconomic effects have been relatively underexplored. Especially, dependency effects and potential Dutch disease symptoms require deeper investigation in post-soviet contexts *(Chami et al., 2018).* Third, the relationships among health outcomes, entrepreneurial activity, and financial flows related to migration have yet to be rigorously analyzed through comprehensive modeling approaches.

This study aims to address these gaps by pursuing three distinct research objectives. First, we analyze the relationship between female self-employment and economic growth. Here we rely on institutional theories that underscore the necessity of inclusive growth strategies *(Aidis et al., 2007)*. Second, we examine the macroeconomic consequences of reliance on remittances. Here we evaluate whether significant inflows of foreign currency create structural imbalances which hinder sustained economic growth *(de Haas, 2010).* Third, we analyze the

relationship between health indicators and economic growth. Here we used under-five mortality rates as proxies for human capital development to access its impact on overall economic growth *(Barro, 2013; Bloom et al., 2004).*

Using Partial Least Squares Structural Equation Modeling (PLS-SEM), the study provides a comprehensive understanding of these relations. It also questions the traditional view of remittances as a universally beneficial tool for developing or underdeveloped countries. We explore remittances' macroeconomic long-term effects, including remittances dependency and brain drain.

Based on the literature, the following hypotheses are proposed:

H1: Female self-employment has a positive impact on economic growth in post-soviet countries.

H2: High mortality rates have a negative impact on economic growth in post-soviet countries.

H3: Remittance dependency has a negative impact on economic growth in post-soviet countries.

These hypotheses are tested using PLS-SEM, which allows for the examination of complex relationships between latent variables and their indicators.

The paper is arranged as follows. Section 2 presents a review of the literature on economic development, female entrepreneurship, remittance dependency, and health indicators, with a particular emphasis on post-soviet countries. Section 3 covers the study methodology, which includes the PLS-SEM strategy, data sources, and model details. Section 4 shows the outcomes of the PLS-SEM analysis. Section 5 discusses the implications of the findings and compares them to prior studies. Finally, Section 6 concludes the paper by summarising the key findings, emphasizing the study's contributions.

1. Literature Review

1.1 Institutional theory and post-soviet economic development

Institutional theory provides a foundational framework for understanding economic development in post-soviet contexts *(North, 1990)*. The shift from centrally planned to market economies required significant changes in formal laws, enforcement methods, behavior, and even way of thinking *(Roland, 2000).*

However, institutional change has been uneven across the post-soviet region. These inconsistencies have created different environments for entrepreneurship, human capital development, and economic growth *(Estrin et al., 2013b).*

Social expectations from the Soviet era continue to influence women's entrepreneurship in contemporary Russia. These persistent stereotypes could hinder women from realizing their maximum potential as entrepreneurs *(Welter–Smallbone, 2010).* Similarly, in Central Asian countries, patriarchal norms often mean that women running a business are not widely accepted. Especially, if a woman becomes the family's primary breadwinner there will be additional pressure from traditionalists *(Welter–Smallbone–Mirzakhalikova, 2006; Smagulova–Goncalves, 2023; Kasimov–Farkas, 2025)*. In contrast, women in Baltic States generally experience less social pressure of this nature, benefitting from more robust formal institutional support and EU integration *(Aidis et al., 2007).*

These institutional factors are particularly relevant for understanding why some post-soviet economies have achieved rapid growth while others remain dependent on resource exports or remittance inflows.

1.2 Female entrepreneurship and economic growth

Schumpeter (1934) argued that "creative destruction" is what really drives an economy forward. At its core, this process depends on entrepreneurs to shake things up. Recent researches builds on this by looking at how including more women entrepreneurs might help. Especially, how gender-inclusive entrepreneurship can enhance economic growth through increased labor force participation, innovation diversity, and market expansion *(Elam et al., 2019; McAdam, 2022).* The resource-based view suggests that female entrepreneurs may possess distinct capabilities and market insights that complement male-dominated business networks *(Brush et al., 2009).* This is especially interesting in post-soviet countries. Even though the Soviet system officially pushed for gender equality, traditional roles frequently persisted silently. Today, female-led business remains as less utilized asset in these regions *(Vershinina et al., 2020).*

Research on female entrepreneurship in post-soviet contexts reveals significant barriers but also substantial potential. In countries like Russia or Ukraine, women often struggle to get bank loans or find helpful government programs *(Aidis et al., 2007).* Despite these constraints, entrepreneurs in the post-soviet region demonstrate high levels of education and strong entrepreneurial desire among younger populations *(Estrin et al., 2013a).* International evidence supports the growth-enhancing effects of female entrepreneurship. Research

from India shows that women hire more women, suggesting that efforts to boost female entrepreneurship will increase female labor force participation and growth *(Ghani–Kerr–O'Connell, 2013a; Ghani–Kerr–O'Connell, 2013b).* Recent studies by *Huang et al. (2025)* and *Wang et al. (2024)* using complex PLS-SEM modeling also indicate that gender equity in this area has a measurable impact on economic growth.

Historical analysis reveals interesting patterns in post-soviet entrepreneurship development. In Russia, the early transition period (1991-99) and early growth years (2000-07) showed greater positive effects of historical entrepreneurial activity compared to later periods, possibly due to economic shocks and increased state intervention (*Berkowitz–DeJong, 2011; Belitski et al., 2024).* Female entrepreneurs in post-soviet countries face multiple institutional barriers. Limited access to financial resources, weak institutional support systems, and persistent cultural norms constrain women's entrepreneurial activities *(Welter–Smallbone, 2010).* It appears that surviving Soviet-era mindsets still dictate how women navigate the business world today *(Sätre, 2016; Klapper–Parker, 2011).*

In Central Asia, the informal nature of female-led enterprises is often due to opportunity constraints, such as poor access to finance and skills, forcing women into informal work as an adaptive strategy *(Franzke et al., 2022).* In contrast, the South Caucasus exhibits similar challenges, with studies from both Georgia and Azerbaijan highlighting persistent barriers for female entrepreneurs within their distinct cultural and institutional contexts *(Hajiyeva et al., 2025; Natsvlishvili, 2017; Jashi, 2004).* The Baltic States are a bit different. Their formal business sectors are more advanced. Despite this, women continue to be underrepresented among entrepreneurs and encounter gender-based sectoral segregation. They also face fewer structural barriers and have still limited access to leadership roles *(Rugina, 2019).*

1.3 Remittance dependency and macroeconomic performance

Studies on the relation between migration and development offer conflicting views on how remittances actually affect a country *(de Haas, 2010).* Some researchers are optimistic. They point out how these funds help families escape poverty or pay for things like school fees and home repairs *(Adams–Page, 2005).* Others take an opposite view. They worry about "Dutch disease" symptoms, where local industries suffer, or reduced incentives for domestic economic development *(Chami et al., 2018).*

In post-soviet contexts, remittances primarily flow from Russia to Central Asian countries, reflecting historical labor market integration and continued

economic dependencies *(Marat, 2009).* It makes countries like Tajikistan, Kyrgyzstan, and Uzbekistan very vulnerable. If the Russian economy dips, face economic shocks, or Moscow changes its work visa rules, these countries will feel the impact immediately *(Ratha –Kim, 2022; Nyshanbayev et al., 2024).*

The economies of Central Asia, especially Tajikistan and Kyrgyzstan, demonstrate significant dependence on remittances, constituting almost 51% of Tajikistan's GDP and 31% of Kyrgyzstan's GDP in 2022, positioning them as global leaders in remittance reliance *(World Bank, 2022).* The inflows, primarily from Russia, constitute the principal source of hard currency, financing essential imports, household consumption, and poverty reduction initiatives that have decreased extreme poverty rates by approximately ~9-12% in recipient households *(Murodova, 2018; Hellhake, 2025).*

Uzbekistan, while the region's one of the largest remittance recipient in absolute terms (16.9 billion in 2022), has a relatively lower GDP share of 21%, reflecting greater economic diversification through raw materials exports, manufacturing growth, and foreign direct investment *(World Bank, 2022).* Similarly to neighbors 85% or about $14.5 billion of transfers come from Russia in 2022 *(Tashkent times, 2023).* This diversification enables Uzbekistan to mitigate some risks associated with remittance dependency, unlike its neighbors, where remittances dominate economic stability. Remittance inflows and trade with larger regional economies closely tie growth trajectories in Central Asia, leaving economies vulnerable to exogenous shocks.

The concentration of migrants in low-skilled occupations abroad while their home countries face shortages of educated workers creates long-term human capital challenges. *Ivakhnyuk (2009)* characterizes brain drain as a significant consequence of migration, whereby qualified professionals relocate in pursuit of better opportunities elsewhere. *Cooray (2012)* and *Barajas et al. (2012)* contend that remittances exhibit threshold effects, whereby excessive reliance reduces economic advantages, highlighting the need for a balanced migration policy. Volatility in commodity prices, reliance on remittance inflows, and dependence on Russian and Chinese markets pose ongoing risks to the stability of Central Asian economies. Some scholars propose that moderate remittance levels can promote economic growth, while excessive reliance on them may lead to negative consequences *(Barajas et al., 2012).* The GDP ratios of 30-50% in Tajikistan and Kyrgyzstan are indeed above permissible thresholds, leading to structural imbalances that impede long-term developmental prospects.

1.4 Health indicators and human capital development

Sen (1999) argued that health is not just a side effect of wealth, but a core part of human development and growth. Under-five mortality rates serve as comprehensive indicators of healthcare system effectiveness, poverty levels, human capital, and overall social development *(Barro, 2013; Habibov et al., 2019).*

In post-soviet contexts, health outcomes reflect the complex interaction of transition-related stresses, healthcare system reforms, and socioeconomic changes. The dissolution of Soviet-era universal healthcare systems created significant challenges for maintaining population health. Some countries managed health reforms better than others, depending on reform strategies and resource availability *(Balabanova et al., 2012).*

The post-soviet health transition has been characterized by significant mortality crises in some countries, particularly Russia and Central Asian republics. Meanwhile, Baltic States achieved rapid improvements through European integration *(Rechel–McKee, 2009).* Under-five mortality rates provide particularly sensitive indicators of these trends. It tends to react quickly when families lose access to clean water, reliable nutrition, or basic medical clinics.

The framework of "social determinants of health" helps us understand why these inequalities stick around *(Marmot–Wilkinson, 2005).* Poor governance, corruption in healthcare systems, and inadequate public investment have prolonged health inequities and constrained human capital development *(Footman et al., 2013).*

2. Methodology and data analysis

2.1 Sampling

This research uses an exploratory cross-sectional design for exploring the relationship between female entrepreneurship, remittance dependency, health indicators, and economic development in post-soviet economies. The group of states comprises 14 countries from the former Soviet Union, chosen according to data availability as of 2022.

The sample comprises both Commonwealth of Independent States (CIS) members and non-members: Armenia, Azerbaijan, Belarus, Estonia, Georgia,

Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Ukraine, and Uzbekistan (see Table 1). Turkmenistan is omitted due to inadequate data availability. This sample exemplifies varied transition experiences, ranging from the comparatively prosperous Baltic States to fossil fuel-rich nations and remittance-dependent countries.

Table 1

Sample countries

Membership	Countries
CIS members (Commonwealth of Independent States)	Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, and Uzbekistan.
CIS non members	Ukraine, Georgia, Estonia, Latvia, and Lithuania

Source: Author's construction.

2.2 Variable selection

Economic growth is assessed through GDP per capita at purchasing power parity (PPP) in constant 2021 international currencies, as reported by World Bank indicators (World Bank, 2022). This measure accounts for price level variations among countries and yields analogous income levels that reflect their respective economic development accomplishments. Female self-employment is quantified as the proportion of female employment designated as self-employed, derived from modeled International Labour Organization (ILO) estimates obtained from World Bank indicators. This captures formal and informal entrepreneurial activity among women. Under-five mortality rate (per 1,000 live births) serves as a proxy for human capital development and healthcare system effectiveness. This indicator is highly sensitive to socioeconomic conditions and reflects overall development levels. Personal remittances received as a percentage of GDP, measuring the relative importance of foreign currency inflows from migrant workers. This captures the degree of economic dependency on overseas labor migration (see Table 2).

Table 2

Latent variables and the manifest construct measures

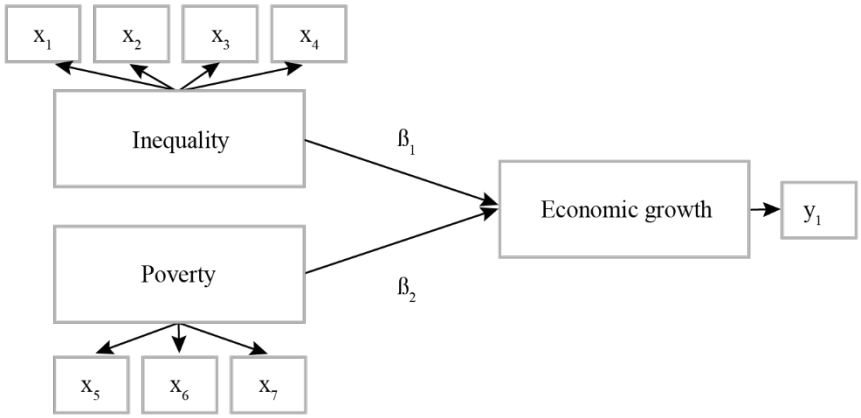
Latent variable	Construct measure	Type of variable	Source
Poverty	Mortality rate, under-5 (per 1,000 live births)	Independent	World Bank indicators
	Mortality rate, under-5, male (per 1,000 live births)	Independent	World Bank indicators
	Mortality rate, under-5, female (per 1,000 live births)	Independent	World Bank indicators
Inequality	Self-employed, total (% of total employment) (modeled ILO estimate)	Independent	World Bank indicators
	Self-employed, male (% of male employment) (modeled ILO estimate)	Independent	World Bank indicators
	Self-employed, female (% of female employment) (modeled ILO estimate)	Independent	World Bank indicators
	Personal remittances, received (% of GDP)	Independent	World Bank indicators
Economic growth	GDP per capita, PPP (constant 2021 international $)	Dependent	World Bank indicators

Source: Author's construction.

Figure 1 illustrates that, variables $x_1 - x_7$ and y_1 are the construct variables. The path coefficients (β) represent the causal relationships among the primary variables examined in the study.

Figure 1

Proposed structural of the model



Source: Author's construction.

2.3 Analytical approach

We begin with multivariate linear regression to establish basic relationships and assess model fit. Principal Component Analysis (PCA) identifies underlying factor structures in the data. Hierarchical cluster analysis groups countries based on remittance dependency and development levels. Partial Least Squares Structural Equation Modeling (PLS-SEM) is particularly appropriate for this exploratory research given the small sample size (n=14) and non-normal data distributions common in cross-country studies *(Hair et al., 2011; Hair et al., 2012; Hair et al., 2019).* PLS-SEM does not require multivariate normality assumptions and performs well with limited observations. The PLS technique entails estimating both a measurement model, which displays the connection between each construct and its indicators, and a structural model, which depicts the routes between construct measurements *(Kazar, 2014; Maket, 2021; Alwago, 2023; Shaghaghi, 2024).* Convergent and discriminant validity tests are used to validate the latent constructs. Smart PLS software is used to calculate PLS-SEM analyzes. Before using PLS-SEM analyses we used SPSS software to analyze multivariate regression, principal component analysis and cluster analysis. Cluster analysis is used to identify country groups based on particular variables. Model evaluation follows established PLS-SEM criteria such as Cronbach's Alpha, Composite Reliability, Fornell-Larcker criterion and path coefficients *(Hair et al., 2019; Okwan–Kovács, 2019; Khouangvichit, 2025).*

3. Results

To evaluate the theoretical model, this study employs a multivariate linear regression model to provide an overall understanding of the data.

The model is robust, as evidenced by an R^2 value of 96%. This means that 96% of the variance in GDP PPP among post-soviet Union countries can be attributed to the combined effects of mortality rate, self-employed females, and personal remittances. The remaining 4% is due to other factors. The average discrepancy between the observed and predicted GDP PPP values is 0.1699 percentage points.

Additionally, to assess the partial effects, it is essential to examine multicollinearity by reviewing the VIF measures. VIF values for all variables are below 5, suggesting that multicollinearity is not a concern, thus allowing for the interpretation of partial effects. Based on the unstandardized coefficients, the theoretical model can be expressed as follows:

GDP PPP = 10.594 – 0.852 * mortality rate under five + 0.472 *
self-employed females – 0.25* personal remittances receive (% in GDP) (1)

If the mortality rate under five, self-employed females, and personal remittances receive are all zero, then the GDP PPP is 10.594 percentage points. If the under-5 mortality rate increases by 1 per thousand kids under five years old, the estimated GDP PPP decreases by an average of 0.852 percentage points, assuming the levels of self-employed females and personal remittances remain constant. If the percentage of self-employed females increases by 1 percent, the estimated GDP PPP increases by an average of 0.472 percentage points, assuming constant levels of under-5 mortality rate and personal remittances receive. Similarly, if personal remittances receive increase by 1 percent, the estimated GDP PPP decreases by an average of 0.25 percentage points, assuming the under-5 mortality rate and self-employed females remain constant. Additionally, we can assert that the under-five mortality rate has the strongest impact, with a standardized coefficient beta of –0.941, compared to self-employed females, which have a standardized coefficient beta of 0.623. Personal remittances receive have the weakest effect, with a standardized coefficient beta of –0.598.

Residual statistics indicate that the standardized residuals are all less than 3, suggesting that there are no outliers in the samples (standardized residuals minimum is –1.328 and maximum is 1.280). Therefore, there is no need for filtering. Principal Component Analysis (PCA) was conducted to create latent

variables, or non-observable variables, from the variables in the theoretical model. KMO measure of 0.562 surpasses the minimum threshold of 0.5, indicating that the variables are suitable for conducting principal component analysis. Based on the communalities it can be concluded that the importance of each variable exceeds the required minimum value (>0.4). First two components account for 75.11% of the total variation, meeting the minimum required criterion (>60%). Based on the component matrix, names can be assigned to the components. Variables with correlation coefficients higher than 0.5 are considered to be significantly related to the respective component.

The next step involves conducting Cluster Analysis using the Hierarchical cluster method. Since Cluster Analysis is sensitive to strong correlations between variables, correlations were checked. The correlations between all variables are below 0.9, indicating that Cluster Analysis can be applied. Personal remittances received (% of GDP) exhibit significant differences between groups, and mortality rates serve as indicators of well-being. Consequently, the authors categorised the groups as follows: Relatively developed countries, countries with lower dependence on remittances, and countries highly dependent on remittances (See table 3).

Table 3

Case Summaries

Grouping by Ward Method	Country
Less remittance dependent countries	Armenia
	Azerbaijan
	Georgia
	Moldova
	Ukraine
Relatively developed countries in the region	Belarus
	Estonia
	Kazakhstan
	Latvia
	Lithuania
	Russian Federation
Highly remittance dependent countries	Tajikistan
	Kyrgyzstan
	Uzbekistan

Source: Author's calculations.

PLS-SEM is a statistical method employed to examine connections between latent variables by estimating path coefficients and evaluating model adequacy. It is particularly advantageous in situations involving small sample sizes or non-normal data distributions, rendering it adaptable for diverse research applications.

Reliability can be assessed by comparing Cronbach's Alpha and Composite Reliability, both of which should exceed 0.7. Table 4 shows that Cronbach's Alpha and Composite Reliability for both Mortality and Self-Employed variables are above 0.7, indicating they pass the reliability test. In addition, Average variance extracted values are higher than 0.5, which fulfils the minimum requirement.

Table 4

CIS Cross tabulation

Denomination	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Mortality	1,000	1,000	1,000	1,000
Selfemployed	0,995	0,996	0,997	0,990

Source: Author's calculations in Smart PLS.

When evaluating the outer model, it's important to consider outer loadings, which should exceed 0.7. All variables meet this criterion as indicated in the analysis. The square root of each construct should exceed the highest correlation in any given row or column, which is observed to be the case in our analysis (see Table 5).

Table 5

Discriminant validity (Fornell-Larcker criterion)

Denomination	GDP PPP	Mortality	Remittances	Selfemployed
GDP PPP	1,000			
Mortality	–0,814	1,000		
Remittances	–0,830	0,631	1,000	
Selfemployed	–0,488	0,781	0,601	0,995

Source: Author's calculations in Smart PLS.

Heterotrait-monotrait ratio (HTMT) – Matrix value should be lower than 0.9 and we meet that criterion (See Table 6).

Table 6

Discriminant validity (Heterotrait-monotrait ratio (HTMT) – Matrix)

Denomination	GDP PPP	Mortality	Remittances	Selfemployed
GDP PPP				
Mortality	0,814			
Remittances	0,830	0,631		
Selfemployed	0,489	0,782	0,603	

Source: Author's calculations in Smart PLS.

In addition, bootstrap algorithm was checked. A large number of subsamples (e.g., 5000) were created from the original sample. Parameter estimation is conducted for each subsample, and parameters derived from these subsamples are then tested.

Table 7

Bootstrap Algorithm

Denomination	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Mortality –> GDP PPP	–0.852	–0.867	0.216	3.942	0.000
Mortality –> Selfemployed	0.781	0.786	0.090	8.696	0.000
Remittances –> GDP PPP	–0.624	–0.660	0.177	3.523	0.000
Selfemployed –> GDP PPP	0.553	0.593	0.236	2.343	0.019

Source: Author's calculations in Smart PLS.

Bootstrap analysis with 5,000 subsamples provides robust parameter estimates and significance testing. All path coefficients demonstrate statistical significance ($p < 0.05$):

H1 is supported: female self-employment positively affects economic growth ($\beta = 0.553$, $p = 0.019$)

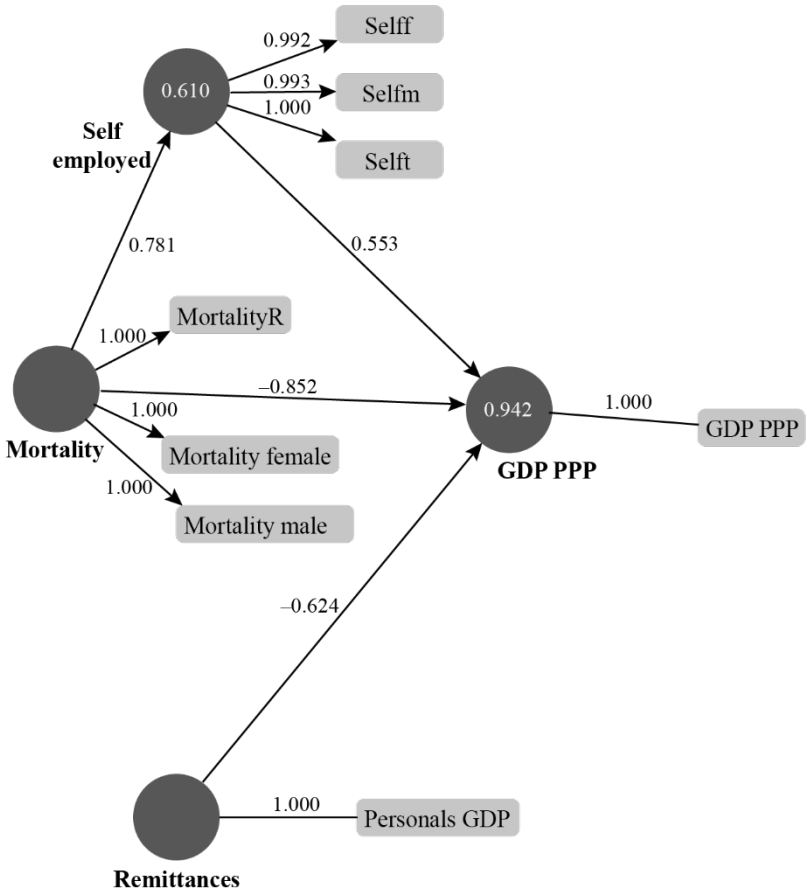
H2 is supported: under-five mortality negatively affects economic growth ($\beta = –0.852$, $p < 0.001$)

H3 is supported: remittance dependency negatively affects economic growth ($\beta = –0.624$, $p < 0.001$)

The structural model explains substantial variance in economic growth outcomes, with mortality rates showing the strongest negative association, followed by remittance dependency, while female self-employment demonstrates positive but smaller effects.

Figure 2

Result of the model



Source: Author's construction using Smart PLS software.

4. Discussion

4.1 Female entrepreneurship and economic development

The results show a positive link between female self-employment and economic growth (β = 0.553). This support for H1 fits well with global trends regarding gender-inclusive growth. This finding extends *Schumpeter's (1934)* entrepreneurship theory to post-soviet contexts, where female entrepreneurial potential remains underutilized due to institutional constraints.

Our results complement findings showing high levels of education and entrepreneurial desire among younger populations in post-soviet regions. Since women's economic roles were historically overlooked, the positive coefficient here suggests that supporting female founders could lead to a real jump in growth. While this effect is smaller than what we see with mortality or remittances, it still points to a massive opportunity.

Research on Russia and Ukraine highlights ongoing challenges in access to financial and government support for women entrepreneurs, suggesting considerable scope for policy improvement *(Aidis et al., 2007)*. Furthermore, government support and initiatives for women's education through quotas and financial assistance enhance their business skills and financial literacy *(Kasimov, 2025; Kasimov–Farkas, 2025).* The results align with international evidence from India showing that women hire more women, creating multiplier effects for female labor force participation *(Ghani–Kerr–O'Connell, 2013b).* Moreover, it is in line with Global Entrepreneurship Monitor (GEM) report. The GEM 2024/2025 Global Report indicates that female entrepreneurship levels are increasing globally, with an increasing number of economies where women new entrepreneurs outnumber men, for instance, in Thailand, Mexico, and UAE. In contrast, in case of post-soviet countries men entrepreneurs are still dominating *(GEM, 2025).* Among post-soviet economies, the absolute difference between male and female Total early-stage Entrepreneurial Activity (TEA) rates shows the largest gap in Armenia (approximately nine percentage points), indicating that women are still less active in early-stage entrepreneurship than men in most cases (see Appendix 1).

4.2 Health outcomes and human capital

The strong negative association between under-five mortality and economic growth (β = –0.852) supports H2 and confirms *Sen's (1999)* capability approach emphasizing health as fundamental to development. This indicates the most significant impact within our framework, underscoring the essential role of human capital advancement in post-soviet environments.

The results of our study build upon earlier investigations into health transitions in the post-soviet context *(Balabanova et al., 2012)* by providing a quantitative analysis of the economic implications associated with adverse health outcomes. The findings indicate that allocating resources towards healthcare systems and social protection may result in significant growth benefits by enhancing human capital.

The robustness of this association illustrates the multifaceted character of under-five mortality as a measure of development, encompassing the efficacy of healthcare systems, socioeconomic status, and environmental factors *(Habibov et al., 2019).*

4.3 Remittance dependency and growth constraints

The negative association between remittance dependency and economic growth (β = –0.624) supports H3 and challenges optimistic views of remittances as unambiguously beneficial development tools. This finding aligns with critical perspectives emphasising macroeconomic costs of excessive remittance dependency *(Chami et al., 2018).*

Our results provide empirical support for Dutch disease theories in remittance-dependent economies *(Makhlouf–Mughal, 2013).* Countries such as Tajikistan (51% of GDP) and Kyrgyzstan (31% of GDP), which exhibit the highest remittance ratios, also reveal significant negative correlations with economic growth. This indicates potential threshold effects, where an overreliance on remittances may hinder progress.

These findings present a divergence from previous optimistic evaluations regarding the poverty alleviation effects of remittances *(Adams–Page, 2005),* emphasizing macroeconomic impacts over those at the household level. Although remittances can alleviate individual poverty, our findings indicate that they may concurrently hinder broader economic development due to dependency effects and diminished motivation for domestic investment.

The relationship between remittances and growth in our sample reflects specific post-soviet migration patterns, where Central Asian economies' growth trajectories are closely tied to remittance inflows, leaving them vulnerable to exogenous shocks. This vulnerability became apparent during recent economic uncertainties affecting Russia, the primary source of remittances.

4.4 Policy implications and development strategies

The results of our study indicate a number of key policy priorities for economies in the post-soviet context. First, policies that promote gender-inclusive entrepreneurship have the potential to yield substantial growth advantages. This encompasses enhancing access to microfinance, providing business training, providing HEI quotas and scholarships, and offering institutional support specifically aimed at female entrepreneurs. The positive coefficient associated with female self-employment indicates significant potential returns on these investments.

Second, the enhancement of the healthcare system is identified as a vital strategy for growth. The pronounced negative correlation between mortality rates and economic growth suggests that allocating resources towards maternal and child health, enhancing healthcare infrastructure, and strengthening social protection systems may result in significant economic advantages in addition to humanitarian gains.

Third, economies reliant on remittances ought to emphasise the importance of economic diversification and the creation of domestic employment opportunities to alleviate migration pressures. The persistent challenges posed by fluctuations in commodity prices and reliance on remittances necessitate the implementation of structural transformation strategies that prioritise local entrepreneurship and value-added production.

5. Conclusions

This exploratory study presents initial findings regarding the connections among female entrepreneurship, remittance dependency, health indicators, and economic growth within post-soviet transition economies. The PLS-SEM analysis

conducted across 14 countries yields three significant findings that enhance our comprehension of the development dynamics within this region.

First, female self-employment exhibits favorable correlations with economic growth, indicating significant unrealized potential for development strategies that prioritise gender inclusivity. In light of the institutional constraints that persist from the Soviet era, it is evident that women's entrepreneurial endeavors play a significant role in enhancing economic performance, thereby reinforcing the case for specific policy interventions.

Second, the health outcomes, as indicated by under-five mortality rates, exhibit the most pronounced negative correlation with economic growth in our analysis. This finding highlights the essential role of developing human capital and enhancing healthcare systems as fundamental components for achieving sustainable economic growth in post-soviet environments.

Third, significant reliance on remittances seems to hinder rather than promote sustainable economic growth, especially in Central Asian republics where remittances account for over 30% of GDP. The findings question the prevailing optimistic perspectives on migration and remittances as universally advantageous instruments for development, underscoring the necessity for strategies aimed at economic diversification.

This research adds to various theoretical frameworks. This study expands upon existing theories of entrepreneurship by highlighting the distinct impacts of gender within post-soviet environments. This study offers empirical evidence for Sen's capability approach through the quantification of the economic impacts of health outcomes. Our work enhances the field of migration-development studies by providing a detailed analysis of the macroeconomic implications associated with an overreliance on remittances.

Appendix

Appendix 1

Diversity in entrepreneurial activity by gender

(%)

Denomination	Total early-stage Entrepreneurial Activity (TEA) by gender		Established Business Ownership (EBO) by gender	
Country	women	men	women	men
Armenia	13.3	22.4	7.9	14.1
Belarus	16.1	17.1	3.6	6.8
Estonia	11.0	15.7	3.6	9.3
Kazakhstan	9.0	10.3	2.5	2.8
Latvia	10.0	14.2	5.6	12.2
Lithuania	11.6	11.6	2.0	4.4
Ukraine	12.5	13.1	3.9	5.9

Source: GEM 2024/2025 Global Report Entrepreneurship Reality Check *(GEM, 2025)*

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