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Does representation of women in parliament promote economic growth? Considering evidence from Europe and Central Asia

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Introduction: The relationship between gender equality and economic growth has attracted considerable attention in scholarly research. While existing literature has evaluated the significance of gender inequality in education and employment, the impact of gender disparity in public service on economic growth remains an under examined area of scholarly inquiry. The main aim of this study is to assess the effect of female empowerment in public service on economic growth in Europe and Central Asia (ECA). To the best of our knowledge, this is the first analysis of the relationship between female political empowerment and economic growth at a regional level.

Methods: We rely on several econometric techniques to obtain robust empirical results and resolve various problems encountered when using panel data. We start with the random and fixed effects model to obtain the baseline results. The fixed effects model generates unbiased estimates by reducing the impact of time omitted variables. The core empirical technique used in this study is the twostep system GMM estimator.

Results: The empirical results suggest that female participation in parliament has a positive and significant effect on economic progress. In particular, a 10%-point increase in women's representation in parliament leads to a 0.74%-point increase in GDP growth.

Discussion: Thus, it is essential to further promote female empowerment programmes in developing countries and continue to adopt new measures aimed at increasing the participation of women in public service. Future studies could explore the relationship between female empowerment and economic growth at subnational levels and test whether female empowerment moderates the relationship between financial development, innovation, trade and economic growth.

KEYWORDS

female empowerment, women's participation in parliament, economic growth, Europe, Central Asia

Introduction

The relationship between gender equality and economic growth has attracted considerable attention in scholarly research. The general consensus is that female empowerment is an important driver of economic progress (Lagerlöf, 2003; Kabeer and Natali, 2013; Agénor and Canuto, 2015). Gender inequality indicators were incorporated into conventional economic growth theories (Agénor and Canuto, 2015) and cross-country

growth models (Barro and Lee, 1994). Early studies obtained mixed results, perhaps due to the absence of reliable data for many countries to use in more complex statistical modeling (Barro and Sala-i-Martin, 1995; Caselli et al., 1996). However, more recent studies using panel data econometric methods provide strong evidence that gender inequality indicators have a robust significant negative impact on economic growth (Karoui and Feki, 2018; Xu et al., 2022).

While existing literature has evaluated the significance of gender inequality in education and employment, the impact of gender disparity in public service on economic growth remains an underexamined area of scholarly inquiry. To our knowledge, only a limited number of studies have investigated this relationship using global data (Jayasuriya and Burke, 2013; Cabeza-García et al., 2018). Concurrently, a separate strand of sustainability research has produced strong empirical evidence that female empowerment in public service, proxied by women's participation in parliament, plays a vital role in subjective wellbeing (York and Bell, 2014), managing common pool resources (Salahodjaev and Jarilkapova, 2020), and mitigating CO2 emissions (Ergas and York, 2012). For example, scholars conclude that women in the legislative arena prioritize important societal demands more than men, such as health expenditure (Mavisakalyan, 2014) or gender equality (Atchison, 2015). Additionally, they report that an increase in women's parliamentary representation leads to a more even distribution of happiness within society (Salahodjaev et al., 2021) and the adoption of climate change mitigating policies (Norgaard and York, 2005).

However, from a policy research perspective, policymakers may be interested in understanding the relationship between female representation in parliament, quality of life indicators, and the impact on trajectories of long-run economic growth. The main aim of this study is to assess the effect of female empowerment in public service on economic growth in Europe and Central Asia (ECA). To the best of our knowledge, this is the first analysis of the relationship between female political empowerment and economic growth at a regional level. Conducting this analysis at a regional level has several advantages. Firstly, prior studies have identified that regions such as East Asia or Sub-Saharan Africa may dominate the results in global data analysis (Stokey, 1994; Lorgelly and Owen, 1999). Secondly, research suggests that cultural values and societal norms may mediate the relationship between gender equality and economic growth (Dollar and Gatti, 1999). Therefore, it is important to examine the gender-growth nexus separately for different regions, given that cultural values tend to cluster at regional levels. Thirdly, we use panel data methods for 44 countries in the ECA region to allow for unobserved spatial variability, endogeneity and omitted variable bias—limitations common to early cross-country gender studies (Kabeer and Natali, 2013). Finally, while existing studies focus on global cross-national analysis, empirical evidence for ECA countries is lacking. Conducting this analysis for ECA countries is particularly interesting because these nations share many common socio-economic features yet are at different stages of economic development. Evaluating this relationship is essential as more than 25% of global GDP is generated in ECA countries, and 12% of the world's population lives in ECA regions. With regards to

female empowerment, 31% of parliamentary seats in ECA countries are held by women, which is higher than the global average (26%). Therefore, we aim to determine whether an increase in female empowerment in public service was instrumental to driving economic growth in the region.

Female political empowerment and economic growth: theoretical underpinnings

Previous research has established a positive correlation between gender equality and economic growth (Diebolt and Perrin, 2013). For example, Agénor and Canuto (2015) found that promoting gender equality significantly impacted long-run economic growth in Brazil under the assumptions of the Overlapping generations model. Similar results were reported by Giron and Kazemikhasragh (2022), who suggested that gender inequality hinders economic growth in developing countries, such as in Asia and Africa. In addition, several studies report a positive relationship between female political empowerment and economic growth. For example, Dahlum et al. (2022) examined the relationship between female political empowerment and economic growth in 182 countries and found that it promotes both economic growth and technological development, particularly in non-Western nations. Jayasuriya and Burke (2013) investigated the relationship between the proportion of women in the national parliament and economic growth for 119 countries from 1970 to 2008 and found that countries with higher levels of female political empowerment experienced faster GDP growth rates. Altuzarra et al. (2021) explored the influence of various facets of gender empowerment on economic growth across 105 developing economies between 1990 and 2017 and found that the presence of females in national parliament had a considerable influence on economic growth, while the female-male ratio within the labor market was not statistically significant. Additionally, Mitra et al. (2015) suggested the relationship between gender equality and economic growth may be explained by gender equality in outcomes. Using data from 101 countries, they show that female empowerment, proxied by various indicators, including the share of women in national parliament, had a significant positive effect on GDP growth.

We now turn to a consideration of the different mechanisms through which female political empowerment can theoretically impact economic growth. First, related research indicates that an increase in female political participation can lead to an improvement in the quality of governance. For example, Dollar et al. (2001) argued that female parliamentarians are particularly effective in advancing honest government, and empirical results show that the percentage of women in parliament is positively associated with the quality of anti-corruption policies. Jha and Sarangi (2018) corroborate these findings by using the instrumental variable regression methods for a sample of 120 countries and demonstrating a causal, positive effect of women's presence in the legislative environment on institutional quality. Similarly, Garcia-Sanchez et al. (2013) used the CHAID algorithm to explore the determinants of government effectiveness in a

sample of 202 countries between 2002 and 2008, finding that government effectiveness is predicted by human capital, GDP, and representation of women in national parliament.

Numerous studies also confirm that institutional arrangements significantly impact long-run economic growth (Nguyen et al., 2021; Azam, 2022) as well as sustainable development and environmental challenges (Ambrosio et al., 2022; Demchuk et al., 2022; Hall et al., 2022; Mišić and Obydenkova, 2022). It is likely institutions also impact certain socio-political and economic gender issues, such as the presence of women in national parliament has been shown to improve government effectiveness, reduce regulatory uncertainty, and foster policies aimed at promoting innovation (Dahlum et al., 2022). Single-country studies provide additional evidence of the positive relationship between gender and good governance. For example, Powley and Anderlini (2003) assessed the contribution of increased female political empowerment on good governance in Rwanda by conducting interviews and field-based case studies. The authors found that women's contribution to improved governance included cross-party coordination on vital issues such as food security or land rights, as well as increased inclusivity of policies aimed at women and youth. Araujo and Tejedo-Romero (2016) argue that the presence of women in public service has influenced the efficient functioning of the Spanish government by increasing transparency and decreasing information asymmetry. The authors refer to social role theory (SRT) and suggest that due to gender differences in values, women in parliament are more likely to endorse citizen participation, promote accountability, and display qualities associated with collaboration and openness. Efficiently functioning institutions or "rules of the game" as defined by North (1990), create reliable arrangements that facilitate market transactions and cooperation and explain economic progress.

Apart from governance, the inclusion of women in legislative processes may lead to the adoption of policies that have positive implications for labor productivity and economic growth, since political studies show that men and women have different policy preferences (e.g., Khan, 2017). The significant effect of women's presence on political policy adoption has been confirmed globally. In Sweden, elected female legislators exhibit attitudinal inclinations that are distinct from their male colleagues and are more likely to adopt policies that increase equality in labor market participation and reduce gender wage gaps (Wängnerud and Sundell, 2012). In different countries, female policymakers are more likely to support pro-growth policies, for example, increase in educational attainment (e.g., Park and Liang, 2021), rapid renewable energy adoption (e.g., Salamon, 2023), increase in health expenditure (e.g., Fokam et al., 2021), reduction in the size of informal economy (e.g., Ngouhou and Njaya, 2020), and support for women's rights (e.g., Eniola, 2018). It is worth noting that these variables have been linked to economic growth (Pink-Harper, 2015; Atilgan et al., 2017; Ntanos et al., 2018).

Apart from governance and institutions, female political empowerment may increase economic progress via human capital accumulation. Cross-national research shows that female political empowerment results in improved education outcomes (Dutta and Maus, 2021), school completion rates (Hornset and de Soysa, 2022), and social inclusion (Tusalem, 2022). Recent research on

40 Sub-Saharan African countries between 1995 and 2014 shows that female representation in parliament has a positive effect on public health expenditure (Fokam et al., 2021). Similarly, Clayton and Zetterberg (2018) found that gender quota shocks increased female representation in parliament in 139 countries from 1995 to 2012, which, in turn, positively impacted government expenditure on human capital. Studies have also shown that higher spending on education and health is positively linked to economic growth (Pradhan, 2010; Im et al., 2011).

Furthermore, Trabelsi (2018) showed that the effect of public spending on economic growth is stronger in countries with higher governance quality levels, correlated to women's representation in parliament. Inclusive institutions and good governance provide systematic incentive frameworks to encourage investment in human capital as women politicians prioritize public goods (Swiss et al., 2012).

In addition, higher levels of women's representation in parliament are associated with implementing policies that promote sustainable economic development. Salahodjaev and Jarilkapova (2019) found that countries with greater political gender equality have increased national savings adjusted for environmental degradation. Mirziyoyeva and Salahodjaev (2022) reported from a large global dataset between 2015 and 2019 that women's parliamentary participation contributes to progress toward Sustainable development goals (SDGs), while DiRienzo (2019) revealed that women in government play a vital role in maintaining social stability and a peaceful environment, which are essential for economic growth (Detotto and Otranto, 2010). Additionally, women's presence in parliament has been positively correlated with renewable energy consumption (Salamon, 2023), allocation of aid (Lu and Breuning, 2014), and welfare spending (Bolzendahl and Brooks, 2007). Therefore, increasing women's participation in parliament is proposed to have a causal effect on long-run economic growth, as female parliamentarians prioritize the efficient allocation of resources toward sustainable development. In fact, a meta-analysis of 17 studies on natural resource management found that increasing women's participation in managing councils improves governance and promotes the conservation of natural resources (Leisher et al., 2016).

Increased female participation in parliament can promote economic growth via other channels such as inequality and inclusion. For example, Wang and Naveed (2021) explored the association between female empowerment and income inequality in 134 countries from 1945 to 2012. The empirical results reveal that female political empowerment can mitigate income inequality, with a stronger effect observed in middle-income countries. This relationship has been corroborated in other recent studies involving 142 countries (Hortas-Rico and Rios, 2022) and 96 countries (Li, 2022). Goltz et al. (2015) posits that female political empowerment may positively impact female entrepreneurship, particularly when the political presence of women enhances the quality of governance, such as through rule of law. The analysis of data from 53 countries between 2002 and 2008 indicates that proportion of seats held by women in parliament and rule of law index have a significant positive impact on female participation in the private sector. Similarly, Ghosh and Vinod (2017) and Ghosh (2022) show that

women's political empowerment increases financial inclusion and access in India.

However, scholars also acknowledge that contribution of female parliamentarians to economic growth may be limited by factors that facilitate the under-representation of women in parliaments. Studies have revealed that biases against women by parties (Esteve-Volart and Bagues, 2012) may hinder the performance of female politicians. Furthermore, characteristics of parties or municipalities may influence the behavior of women in parliament and determine their preferences for policy choices (see e.g., Hessami and da Fonseca, 2020 for a thorough overview). Several studies point out that the historical and social context may also influence the policy responsiveness of female legislators. For example, Ban and Rao (2008), using data from natural experiment of random reservation of seats for women in village councils in India, find no overall gender differences in political performance, and "women perform better than men in situations in which they have more political experience ..." (p. 501). In another study, Clots-Figueras (2011) also shows that socio-cultural background of legislators plays important role in determining the effect of politician's gender on legislative outcomes in India, with social class moderating the relationship between gender and social expenditures. Research conducted in Asia suggests that electoral and party systems plays more important role in explaining cross-country variation in the representation of women in parliament compared to factors such as urbanization or literacy rates (Joshi and Kingma, 2013). As more data becomes available, there is a growing interest in using methodologies that can assess the causal and long-term effects of female political empowerment on economic outcomes.

Female empowerment and economic growth: a review of recent empirical findings

Recently, the empirical literature has consistently explored the effect of female political empowerment on economic growth using large-N samples. For example, Jayasuriya and Burke (2013) confirmed the contributing relationship between female representation in parliament and economic growth in 119 democratic countries, using a system GMM estimator. Mitra et al. (2015) included female political empowerment as one of the dimensions of gender equality to assess its effect on economic growth, estimating from 101 countries over the period 1990–2000 that gender equality is a significant determinant of economic growth, and the effect depends on the level of economic development. Cabeza-García et al. (2018) examined whether economic growth in 127 countries was driven by gender variables, relying on dynamic panel data methods to assess the causal links. They also concluded that an increase in female political empowerment triggers economic growth across countries. Khorsheed (2019) used advanced machine learning methods to delineate the long-run effect of female representation in parliament on economic growth across 20 developed countries, confirming that gender equality in public service leads to a significant increase in GDP per capita. Mishra et al. (2020) examined the relationship between various measures of female empowerment and economic

growth in the context of 30 Asian countries for the years 1997–2015. The study, using autoregressive panel methods, showed that female empowerment in education, legislative policies, and employment has a significant positive effect on economic growth. In a more recent study, Dahlum et al. (2022) assessed the effect of female political empowerment on technological innovation, one of the main drivers of economic growth according to conventional growth theories (Romer, 1986). The authors, using data from 182 countries covering more than 200 years of data, showed that female political empowerment has a long-lasting impact on economic growth. While the abovementioned studies offer robust evidence that female parliamentarians have a significant long-run effect on global economic growth, to the best of our knowledge, as previously stated, no study has been conducted to examine the relationship between female political empowerment and economic growth in a regional context. Therefore, based on the theoretical underpinnings we anticipate that an increase in presence of women in parliament will have a positive effect on national economic growth.

H1: Women's parliamentary representation at country level will have a positive influence on economic growth in ECA region.

Data and methodology

The analysis of the impact of female empowerment on economic growth is carried out in 48 countries within Europe and Central Asia. The study period spanned from 2000 to 2018 and was selected based on the availability of reliable data to avoid economic turbulences that transition countries underwent in the 1990s. The dependent variable in this study is annual GDP growth (*EG*) from the World Bank. The independent variables is the proportion of seats held by women in national parliaments (*WP*). The choice of these variables is in line with related studies (Jayasuriya and Burke, 2013; Libman and Obydenkova, 2014; DiRienzo, 2019; Salahodjaev et al., 2021; Mirziyoyeva and Salahodjaev, 2022).

We include a vector of control variables to reduce the omitted variable bias and the complexity of economic growth. This approach has been empirically examined by Altuzarra et al. (2021) to model the relationship between gender inequality and economic growth in a sample of 105 developing countries. The set of controls includes investment rate (*INV*), trade openness (*OPEN*), and average years of schooling (*EDUC*). We include government consumption (*GC*), as there is evidence that government size and economic growth are interrelated (Roy, 2009). Finally, we add lagged GDP per capita (*GDP*) to account for the convergence in economic development across countries.

Considering the abovementioned discussion, we estimate the following empirical model:

$$EG_{it} = \beta_0 + \beta_1 EG_{it-1} + \beta_2 WP_{it} + \beta_3 GDP_{it-1} + \beta_4 INV_{it} + \beta_5 OPEN_{it} + \beta_6 EDUC_{it} + \beta_7 GC_{it} + \varepsilon_{it} \quad (1)$$

Where *i* denotes country, *t* stands for time (year), β are parameters to be estimated, and ε is an error term.

The descriptive statistics are provided in [Table 1](#). Once we have discarded missing observations, our sample included the following countries: Albania, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Bosnia and Herzegovina, Belarus, Switzerland, Cyprus, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, United Kingdom, Georgia, Greece, Croatia, Hungary, Ireland, Iceland, Italy, Kazakhstan, Kyrgyz Republic, Lithuania, Luxembourg, Latvia, Moldova, North Macedonia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Sweden, Tajikistan, Turkey, Ukraine, and Uzbekistan.

We rely on several econometric techniques to obtain robust empirical results and resolve various problems encountered when using panel data. We start with the random and fixed effects model to obtain the baseline results. The fixed effects model generates unbiased estimates by reducing the impact of time-omitted variables. In contrast, the random effects model offers efficient estimates under the assumption of the absence of the omitted variable bias issue. Following nascent studies on economic growth, we compare the estimates using the Hausman test ([Doran et al., 2018](#)) to choose between the fixed and random effects models. The fixed effects method was used by empirical studies to model the drivers of economic growth ([Czernich et al., 2011](#); [Menegaki and Ozturk, 2013](#)).

The core empirical technique used in this study is the two-step system GMM estimator proposed by [Arellano and Bover \(1995\)](#). There are several reasons why the two-step system GMM is particularly advantageous to our study. First, the number of countries in our sample significantly exceeds the number of years ($N = 49, T = 18$). Second, this technique accounts for endogeneity problems and omits variable bias by using “internal instruments.” The consistency of the estimates computed by the system GMM estimator are confirmed by a Hansen test p -value and AR(1) and AR(2) tests.

Moreover, the two-step estimator overcomes the limitations of the one-step GMM in cases when the variable's current values are missing and prevent data loss. In addition, the econometric model parameters derived via the two-step GMM estimator are more efficient and consistent when applied to a balanced panel dataset ([Arellano and Bover, 1995](#)). Lastly, we included a lagged dependent variable to account for the inertia in economic growth. This may lead to a correlation between unobserved country-specific effects and lagged dependent variables, generating inconsistent regression coefficients. In this case, the two-step system GMM estimator yields consistent estimates using internal instruments for endogenous variables ([Arellano and Bover, 1995](#)). Examples of how the two-step system GMM estimator was used in related methodological approaches are to model CO₂ emissions ([Jiang and Khan, 2023](#)), while other studies tested the long-term impact on CO₂ and public health ([Nazarov and Obydenkova, 2022a,b](#)), on economic growth ([Umurzakov et al., 2022](#)), and life expectancy ([Anser et al., 2020](#)).

Results

The baseline results are reported in [Table 2](#). Column 1 reports the estimates for the OLS estimator. Columns 2 and 3 are obtained

by random and fixed effects, respectively. The Hausman test shows that the fixed effects method is superior to the random effects method. Column 4 reports the results for fixed effects regression with Driscoll-Kraay standard errors that consider the problem of cross-sectional and temporal dependence in panel data ([Armeanu et al., 2018](#)).

[Table 2](#) highlights that female representation in parliament is significantly and positively related to economic growth in the ECA region across all econometric methods. The coefficient of determination (R²) ranges from 31% (Column 3) to 40% (Column 1). For example, in the fixed effects regression, a 10% point increase in the proportion of seats held by women in national parliaments, leads to a 0.42% point increase in GDP growth rates. This captures the direct and indirect effects of women in parliament on economic growth. As an indirect effect, the impact of WP may operate via economic, social, and institutional transitions driven by a greater female presence in public service. For example, the improvement in the quality of institutions promotes financial development and foreign direct investment (FDI), which increases economic growth ([Sirag et al., 2018](#)). As discussed earlier, female empowerment in public service also enhances human capital, which then stimulates economic activities. Considering control variables, we find that investment rate and trade openness are positively linked to GDP growth. The positive effect of investment and trade openness on economic growth is also confirmed by related studies ([Libman and Obydenkova, 2014](#); [Sakyi et al., 2015](#); [Keho, 2017](#)). The coefficient for average years of schooling is positive, although insignificant. Economic growth is inversely related to the general government's final consumption expenditure. Our results are very similar to previous results reported in a survey of related literature by [Bergh and Henrekson \(2011\)](#).

[Table 3](#) offers the findings obtained from the two-step system GMM estimator. The Hansen J-test and second-order autocorrelation [AR(2)] tests confirm the validity of the instruments based on the difference and level equations. The results show that the coefficient for female parliamentary representation is statistically significant and positively impacts GDP growth. This implies that an increase in the proportion of females in parliament promotes economic growth in Europe and Central Asia. For example, a 10%-point increase in women's representation in parliament leads to a 0.92% point increase in GDP growth. The findings underline the importance of female empowerment in public service in ECA regions and are in line with related global studies ([Jayasuriya and Burke, 2013](#)). Similarly, investment and trade openness have a positive effect on economic growth (see [Table 2](#)), which implies that there's a 10% points increase in gross fixed capital formation and trade as the percentage of GDP will increase GDP growth by 0.97 and 0.17% points, respectively.

We include the economic freedom index (EFI) from Heritage Foundation in Column 1 of [Table 4](#) as it has been shown to have a significant relationship with economic growth in the cross-country setting ([De Haan and Sturm, 2000](#)). The level of various freedom indexes has been also associated with various studies on the impact of history and historical legacies on such issues as public behavior or public health services, among other factors ([Nazarov and Obydenkova, 2022a,b](#)). Moreover, inclusion of the

TABLE 1 Summary statistics.

Variable	Description	Mean	Std. dev.	Min	Max
EG	Annual GDP growth, %	2.9817	4.4022	-15.3069	34.5000
GDP	GDP per capita, at PPP, logged	10.0564	0.8245	7.1891	11.7006
INV	Gross fixed capital formation as % of GDP	23.2982	5.8237	6.2957	64.0087
OPEN	Trade as % of GDP	101.1510	47.8523	22.4922	380.1042
EDUC	Average years of schooling	11.0280	1.4582	5.5450	14.1517
GC	General government final consumption as % of GDP	18.7578	5.6641	5.9410	48.5991
WP	The proportion of seats held by women in national parliaments	22.8506	10.4815	0.0000	50.0000

Source: World Bank Development Indicators database.

TABLE 2 Preliminary results.

	I (OLS)	II (FE)	III (RE)	IV (FE with DK)
EG _{t-1}	0.377 (6.50)***	0.234 (2.79)***	0.377 (5.59)***	0.234 (2.03)***
GDP _{t-1}	-0.799 (-6.52)***	-3.520 (-7.67)***	-0.799 (-6.97)***	-3.520 (-3.50)***
WP	0.027 (2.00)**	0.046 (1.78)*	0.027 (2.34)**	0.046 (3.45)***
INV	0.073 (2.52)**	0.120 (2.33)**	0.073 (2.95)***	0.120 (3.17)***
OPEN	0.008 (3.46)***	0.033 (3.07)***	0.008 (4.27)***	0.033 (2.24)**
GC	-0.149 (-4.66)***	-0.583 (4.20)***	-0.149 (-3.41)***	-0.583 (2.50)**
EDUC	0.118 (1.41)	0.352 (1.16)	0.118 (1.67)*	0.352 (1.82)*
Cons	7.741 (5.92)***	34.828 (7.53)***	7.741 (5.93)***	34.828 (2.84)**
N	878	878	878	878
F-stat	50.67	26.02	228.64	11.98
R-sq	0.40	0.31	0.40	0.37

T-statistics are reported in parenthesis, *p < 0.1, **p < 0.05, ***p < 0.01.

TABLE 3 Two-step system GMM estimator.

	I	II
EG _{t-1}	0.457 (15.89)***	0.468 (18.03)***
GDP _{t-1}	-1.100 (-9.47)***	-1.030 (-6.46)***
WP	0.074 (4.04)***	0.064 (3.50)***
INV	0.085 (5.57)***	0.101 (4.47)***
OPEN	0.015 (3.85)***	0.017 (2.73)***
GC	-0.081 (-1.37)	-0.084 (-1.09)
EDUC	0.221 (1.40)	-0.126 (-0.43)
Cons	5.702 (3.07)***	12.079 (4.61)***
N	878	796
F-stat	1871.48	648.82
AR(2)	0.348	0.439
Hansen p-value	0.26	0.71

T-statistics are reported in parenthesis, ***p < 0.01.

EFI allows for testing whether the quality of economic institutions moderates the effect of female political empowerment on GDP growth. Another factor which can affect both economic growth

and representation of women in parliament is female education. Therefore, we include female primary school enrolment rates in column 2 of Table 3. Ongo Nkoa et al. (2022) have shown that information communication technologies (ICT) diffusion had a significant impact on women’s political empowerment in Africa over the period 1996–2017. The importance of ICT diffusion for economic progress has also been acknowledged in empirical literature (Niebel, 2018). Hence, in Column 3 Internet users as % of the population (World Bank), is added. Finally, a number of studies assert that democracy is among potential factors that impact public behavior, attitude, trust, economic growth and sustainable development, as well as potential gender equality (Helliwell, 1994; Stockemer, 2009, 2011; Obydenkova and Arpino, 2018; Arpino and Obydenkova, 2020). Along with tradition developed by these multiple studies, we include the democracy index (Polit V project) in Column 4. Recently, Awoa et al. (2022) showed that natural resource dependence has a significant negative effect on economic growth and representation of women in parliament. Consequently, in Column 5 total resource rents as % of GDP from the World Bank is included. Across all models, representation of women in parliament has a significant and positive effect on economic growth. Moreover, this effect is not moderated by ICT, democratization or economic institutions.

TABLE 4 Two-step system GMM estimator: robustness test.

	I	II	III	IV	V
WP	0.060*** (3.78)	0.038* (1.78)	0.060*** (3.46)	0.064*** (3.50)	0.073*** (3.92)
EFI	-0.053** (2.07)				
EDUC		0.020 (1.06)			
ICT			-0.028** (2.57)		
DEM				-0.024 (0.70)	
RENT					0.031 (0.91)
N	871	818	869	796	878
F-stat	2167.94	1486.18	1387.73	648.82	1231.08
AR(2)	0.311	0.531	0.567	0.439	0.392
Hansen <i>p</i> -value	0.652	0.696	0.626	0.715	0.353

T-statistics are reported in parenthesis, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; control variables and constant term are included but not reported.

Conclusion

Given the growing interest in gender equality and female empowerment in recent years, this research attempts to examine the relationship between the integration of women into public service and economic growth in Europe and Central Asia. Our analysis suggests that more women in national parliaments can promote economic growth. By reviewing published scholarly evidence, we can highlight that this research is the first to explore this relationship at the regional level.

Related studies and our empirical findings offer policy implications that can be used to ensure women's political empowerment. First, evidence from developing countries shows that a lack of financial resources, specific historical legacies, and the absence of party support reduce the effective participation of women in parliamentary activities (Prodip, 2021) as well as in private companies and firms (Iman et al., 2022). Therefore, one possible solution is to increase women's access to financial resources to promote female empowerment. Second, cultural stereotypes, membership in regional organizations, and history might affect in different ways public opinion, public behavior, formation of public attitudes (e.g., Libman and Obydenkova, 2013, 2019; Lankina et al., 2016; Izotov and Obydenkova, 2021). A study from India by Chakrabarti and Biswas (2012) shows that awareness campaign programs to shift gender-related social norms may be a successful tool to increase female empowerment. Therefore, it is essential to devote more resources toward reducing gender gaps in both education and skills. This would boost female participation in public service and increase economic growth via human capital accumulation. Third, since female participation in parliament can improve the quality of institutions, governments should devote more efforts to embedding female empowerment targets in national development strategies, as well as to confront various challenges of sustainable development faced by Eurasia (e.g., Obydenkova, 2022a,b). For example, the EU Gender Equality Strategy 2020–2025 among others envisages closing gender gaps

in the labor market and political service in EU member states (EU, 2020).

This study has a few limitations which set opportunities for future research. Our study assesses whether female political empowerment has an effect on economic growth in the ECA region. However, due to the lack of a longer time frame, we could not use more complex empirical tools to assess the short- and long-run effect of female parliamentarians on GDP growth. Apart from that prospective studies should identify other proxies for female empowerment in public service to identify their impact on economic growth. Future studies could explore the relationship between female empowerment and economic growth at sub-national levels and test whether female empowerment moderates the relationship between financial development, innovation, trade and economic growth.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found here: World Bank.

Author contributions

RS: data collection, methodology, and analysis. ZM: conceptualization, theory, and writing—original draft preparation. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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