

EXPLORING THE RELATIONSHIP BETWEEN FEMALE POLITICAL EMPOWERMENT AND HUMAN CAPITAL SPENDING: EVIDENCE FROM A GLOBAL PANEL (1995–2022)

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Abstract:

This study explores the relationship between female political empowerment and human capital development, with a particular focus on government expenditure on education as a proxy for human capital investment. Using panel data from 178 countries spanning from 1995 to 2022, the paper applies several econometric models, including Fixed Effects, System GMM, and Panel-Corrected Standard Errors (PCSE), to identify potential causal relationships. The results suggest a significant and positive association between women's representation in parliament and education spending in fixed effect and PCSE models, although the system GMM model shows an insignificant relationship. These findings support the idea that increasing women's political participation may enhance investments in human capital, and they encourage further research and policy intervention to support gender equality in governance.

1.Introduction

In recent decades, women's political empowerment has emerged as a key determinant of inclusive governance and sustainable development. The dataset comprises 178 countries from all major world regions, including both developed and developing nations, across various income groups and political systems. This global scope allows for a broad examination of whether female political representation has a consistent impact on education spending across different

institutional and socio-economic contexts. Gender representation in policymaking bodies influences not only equity but also decision-making patterns in crucial sectors such as health, education, and social protection. Among these, investment in education—an essential component of human capital—has drawn particular attention from researchers aiming to assess whether gender-diverse parliaments impact developmental outcomes.

This study investigates the linkage between female parliamentarism and human capital spending using global panel data from 1995 to 2022. The chosen dependent variable is government expenditure on education, measured as a percentage of GDP. The central question is whether increasing female representation in legislative bodies correlates with a rise in education spending, and thus reflects a commitment to human capital development. This research fills a gap in empirical studies that examine the intersection between gender representation and fiscal priorities on a global scale.

2. Literature Review

A growing body of empirical literature explores how women's political empowerment influences socioeconomic outcomes. For instance, Chen (2008) identified a positive link between female parliamentary representation and education spending across 19 OECD countries. Similarly, Jayasuriya and Burke (2013) found that a higher proportion of female legislators is associated with accelerated economic growth, particularly in countries with pronounced gender gaps.

Mavisakalyan (2014) employed an instrumental variable approach to show that female legislators significantly increase health-related expenditures. Other studies have linked women's political participation to reduced corruption (DiRienzo, 2018), greater peace and stability, the abolition of capital punishment (Moreland & Watson, 2016), and stronger environmental policies (Mavisakalyan & Tarverdi, 2018). These findings suggest that female politicians are more likely to prioritize inclusive, long-term development policies.

In parallel, literature on public education spending has examined factors such as state wealth, governance quality, and demographic pressures. Edam and Eturoma (2014) demonstrated that investment in teacher salaries and educational infrastructure yields improved outcomes in Nigeria. Chatterji et al. (2015) emphasized the roles of income and corruption in shaping state-level education spending in India. Similarly, Abrigo et al. (2017) showed that private and public investments in human capital reinforce fiscal stability in Asia.

Despite these insights, the direct relationship between women's political empowerment and education spending remains underexplored at the global level—an empirical gap this paper aims to address.

3. Methodology

This study employs panel data collected from 178 countries between 1995 and 2022. The countries included span Africa, Asia, Europe, Latin America, North America, and Oceania. The data includes low-income, lower-middle, upper-middle, and high-income economies based on World Bank classifications. A full list of countries is available in the Appendix for transparency and reproducibility. The dependent variable is government expenditure on education (*educexp*), measured as a percentage of GDP. The key independent variable is female representation in parliament (*parlam*). Control variables include GDP per capita (*ln_ppp*), democracy index (*democr*), age dependency ratio (*ln_agedep*), corruption control (*wgicorr*), female life expectancy (*lifefemale*), and political stability (*wgipolit*).

The analysis begins with a Fixed Effect (FE) model to control for time-invariant unobserved heterogeneity. Then, Generalized Method of Moments (GMM) is applied to address potential endogeneity, particularly reverse causality. Finally, the Panel-Corrected Standard Errors (PCSE) method is used to correct for heteroskedasticity and contemporaneous correlation across panels.

4. Empirical Results

4.1 Fixed Effects Model

The FE estimation reveals a statistically significant and positive relationship between female parliamentarism and education spending. Specifically, a 1 percentage point increase in women's representation in parliament leads to a 1.5% increase in government expenditure on education. This result supports the hypothesis that women's political empowerment fosters greater investment in human capital.

Other findings from the FE model include:

- GDP per capita and democracy show a negative correlation with education spending.
- Age dependency ratio has a positive but statistically insignificant impact.

These results highlight the importance of gender in shaping fiscal priorities, particularly in education.

4.2 Generalized Method of Moments (System GMM)

The system GMM model provides a more conservative estimate and accounts for the endogeneity of explanatory variables. Interestingly, in this model, the relationship between female representation and education spending becomes statistically insignificant. Although the coefficient remains positive (0.00569), it lacks statistical robustness.

This result may be influenced by the choice of instruments or the variability of female representation across countries and over time. Nonetheless, it raises the importance of continuing this research with more refined specifications and longer timeframes.

4.3 Panel-Corrected Standard Errors (PCSE)

To address heteroskedasticity and autocorrelation, PCSE estimates were introduced. The coefficient of female parliamentarism remains significant at the 5% level. According to PCSE, a 1 percentage point increase in women in parliament leads to a 1.15% increase in education spending. Control variables such as control of corruption and political stability also show significant and positive relationships with human capital investment.

5. Discussion

The mixed results across different models point to several key interpretations. While the fixed effect and PCSE models affirm the positive impact of female empowerment on education spending, the system GMM model suggests caution in interpreting these results as causal.

Nevertheless, the general trend is clear: increasing the proportion of women in parliament is associated with better outcomes in human capital investment. Women leaders may prioritize long-term societal benefits such as education, health, and youth development—policy areas often overlooked by traditional male-dominated governance structures.

6.Limitations

One limitation of this study is the insignificance of the System GMM model, which may result from weak instrumentation or insufficient within-country variation in the short term. Furthermore, while the study covers 1995 to 2022, some countries may still be underrepresented due to data availability. Future research could refine the model using different indicators or narrower regional scopes.

7. Policy Implications

Based on the findings, several policy recommendations emerge:

1. Implement Gender Quotas:

Countries should consider constitutional amendments or legislative acts that mandate a minimum quota for female representation in parliament. As observed in Rwanda, such policies can rapidly enhance gender diversity in governance.

2. Invest in Political Education for Women:

Governments and NGOs should support programs that train and mentor women in political engagement. Political literacy campaigns and leadership academies can help bridge the gender gap in public administration.

3. Strengthen International Commitments:

Ratification and enforcement of international conventions such as CEDAW (Convention on the Elimination of All Forms of Discrimination Against

Women) should be prioritized to ensure institutional support for women's political participation.

4. **Promote Inclusive Budgeting:**

Gender-responsive budgeting practices should be mainstreamed into national budget processes to ensure that women's needs and priorities are reflected in fiscal decisions.

8. Conclusion

This study contributes to the growing literature on gender and development by empirically analyzing the relationship between female political empowerment and human capital spending using global data from 1995 to 2022. The findings suggest that female representation in parliament is positively associated with education expenditure in fixed effect and PCSE models. Although system GMM results are inconclusive, they do not refute the potential long-term relationship between these variables.

Therefore, encouraging female political participation not only enhances democratic inclusivity but also aligns national priorities with long-term developmental goals. Further research is recommended to explore these dynamics in specific regions or within the context of evolving global norms around gender and governance.

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