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ÖZGÜN ARAŞTIRMA / ORIGINAL ARTICLE

Effects of Economic Development Indicators on Gender Inequality: Evidence from High-Income Countries

Ekonomik Kalkınma Göstergelerinin Cinsiyet Eşitsizliği Üzerindeki Etkileri: Yüksek Gelirli Ülkelerden Kanıtlar

[1]Eda DİNERİ
[2]Feyza ÖZDİNÇ

Abstract

Aim: The purpose of this paper is to investigate the effects of economic development indicators on gender inequality by using data from high income countries. Gender inequality covers many complex dimensions such as education, politics, socioeconomic developments, cultural structures and the concentration of women in various sectors. In this research is investigated the gender inequality in different dimensions such as economic growth, education, political participation and life expectancy.

Method: For this purpose, this paper employs gender inequality index, GDP per capita, female life expectancy at birth, the proportion of seats held by women in national parliaments and expected years of schooling for females. We examine the correlation between gender inequality and women's involvement in parliament, as well as the education rate, life expectancy at birth, and economic growth from 2005 to 2021 applying the dynamic panel data methods.

Findings: The analysis results indicate that higher levels of women's involvement in parliament, women's education rates, life expectancy at birth, and economic growth are associated with a decrease in gender inequality. Finally, it has been demonstrated that there is a bilateral causal relationship between gender inequality, the level of women's representation in parliament, women's educational attainment, life expectancy at birth, and economic growth.

Conclusion: In high-income countries, gender inequality diminishes as female life expectancy at birth, predicted years of schooling, economic growth, and the share of women in parliaments increases. A bidirectional causality relationship between gender inequality and the variables is expected, and it is confirmed by the panel causality test conducted in this paper.

Keywords

Economic Growth, Education, Gender Inequality, Life Expectancy, Political Participation, Panel Data Analysis.

JEL Codes

C33, D72, I29, J13, J16

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[1]Assoc. Prof. Dr., Hasan Kalyoncu University, Faculty of Economics, Administrative and Social Sciences, Department of Economics, Gaziantep, Türkiye.
✉ eda.dineri@hku.edu.tr

[2]Dr., Gaziantep University, Faculty of Economics and Administrative Sciences, Department of Economics, Gaziantep, Türkiye
✉ feyzaozdinc@gantep.edu.tr

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Öz

Amaç: Bu çalışmanın amacı, yüksek gelirli ülkelerden elde edilen verileri kullanarak ekonomik kalkınma göstergelerinin toplumsal cinsiyet eşitsizliği üzerindeki etkilerini araştırmaktır. Toplumsal cinsiyet eşitsizliği, eğitim, siyaset, sosyoekonomik gelişmeler, kültürel yapılar ve çeşitli sektörlerde kadınların yoğunlaşması gibi birçok karmaşık boyutu kapsar. Bu araştırmada, toplumsal cinsiyet eşitsizliği ekonomik büyüme, eğitim, siyasi katılım ve yaşam beklentisi gibi farklı boyutlarda ele alınmaktadır.

Yöntem: Bu amaçla, bu çalışmada cinsiyet eşitsizliği endeksi, kişi başına düşen GSYİH, kadınların doğumda beklenen yaşam süresi, ulusal parlamentolarda kadınların sahip olduğu koltuk oranı ve kadınlar için beklenen eğitim süresi verileri kullanılmıştır. Bu doğrultuda, 2005-2021 yılları arasında, dinamik panel veri yöntemi kullanılarak, cinsiyet eşitsizliği ile kadınların parlamentoya katılımı, eğitim oranı, doğumda beklenen yaşam süresi ve ekonomik büyüme arasındaki ilişki incelenmektedir.

Bulgular: Analiz sonuçları, kadınların parlamentoya katılımının, kadınların eğitim oranlarının, doğumda beklenen yaşam süresinin ve ekonomik büyümenin daha yüksek seviyelerinin cinsiyet eşitsizliğinde bir azalma ile ilişkili olduğunu göstermektedir. Ayrıca, cinsiyet eşitsizliği, kadınların parlamentodaki temsil düzeyi, kadınların eğitim düzeyi, doğumda beklenen yaşam süresi ve ekonomik büyüme arasında ikili yönlü nedensellik ilişkisi olduğu ortaya konmuştur.

Sonuç: Yüksek gelirli ülkelerde, kadınların doğumda beklenen yaşam süresi, öngörülen eğitim yıl sayısı, ekonomik büyüme ve parlamentodaki kadınların oranı arttıkça cinsiyet eşitsizliği azalmaktadır. Cinsiyet eşitsizliği ile değişkenler arasında çift yönlü bir nedensellik ilişkisi ortaya konmuştur ve panel nedensellik testi ile de bu ilişki doğrulanmıştır.

Anahtar Kelimeler

Ekonomik Büyüme, Eğitim, Cinsiyet Eşitsizliği, Yaşam Beklentisi, Siyasi Katılım, Panel Veri Analizi.

JEL Kodları

C33, D72, I29, J13, J16.

Introduction

Gender inequality can be defined as the observable absence of equal rights, responsibilities, and opportunities for women in comparison with men in a myriad of social and economic indicators, including education, health, labor force participation, wages, access to productive inputs and resources, legal rights, and political representation (Cuberes and Teignier, 2014; Klasen, 2018; Tisdell, 2021; Shang et al., 2022). Gender inequality refers to the unequal treatment and opportunities experienced by women compared to men. This inequality can manifest in various ways, depending on the economic, social, and cultural factors present in a society. Typically, women face greater disadvantages than men and are not afforded the same privileges and opportunities (Lorber, 2001). Gender inequality leads to women's exclusion from equal chances, resulting in their social, political, and economic deprivation.

There is a global pushback against women's rights, and it is jeopardizing even long-established liberties and safeguards. Hence, the need to explore the issue has deepened. Gender equality is an important concern because it promotes equity and justice issues in education, health, employment, and wages, as well as social welfare (Klasen and Lamanna, 2009). Since gender equality is a critical issue worldwide, it continues to gain attention from researchers and policymakers, especially from underdeveloped and developing countries (Cuberes and Teignier, 2014). In UN Women's 2023 Report on Progress on Sustainable Development Report-Gender Snapshot, it is mentioned that progress in social equality was limited and emphasized that past prejudices continue regarding lack of access to health services, lack of equal representation in politics, economic inequality, and the inadequacy of legal defenses, and therefore that more urgent and consistent concrete steps must be taken to promote gender equality.

There are still serious steps that need to be taken to obtain gender equality. According to the UN Women's 2022 Report on Gender Equality, we are very far from achieving the targets of the Gender equality goal in 2030. Hence, one of the Sustainable Development Goals (SDGs) for 2030 that UN Member States adopted in 2015 is gender equality.

Certainly, the COVID-19 pandemic, climate change, and increased economic and political uncertainty affect the gender equality goal plan adversely. These crises have not only stalled the progress on gender equality; they have even reversed the progress. Rapid technological developments after the COVID-19 pandemic have caused the acceleration of digitalization in business life. Due to this rapid digitalization, women now face greater disadvantages in the business world compared to men, contributing to the overall issue of gender inequality. Incorporating technological advancements into women's professional lives is crucial for boosting job opportunities and fostering

economic expansion (Baumgart et al., 2023). Economic and social developments affect gender inequality depending on a country's income level. The table below shows the countries with the highest and lowest gender inequality. Countries with the highest gender inequality are generally less developed and have low per capita income, while countries with the lowest gender inequality are generally those with high per capita income.

Table 1. Gender Inequality Index Ranking (2023)

Countries with a lower gender inequality index	**Countries with a higher gender inequality index**
Denmark	Yemen
Norway	Nigeria
Sweden	Somalia
Switzerland	Chad
Netherlands	Afghanistan

Source: United Nations Development Program's Gender Inequality Index (GII).

In fact, gender inequality is a complex matter with multiple dimensions, and various factors contribute to it, in addition to the effects mentioned above. The role of gender in development started to attract attention in the 1970s. Still, it was not until the 1990s that policymakers began to actively address this matter, coinciding with the increasing recognition of gender (Wong, 2012). While gender inequality was described as an injustice until the 1990s, studies examining the relationships between gender inequality and economic performance began to increase in the 1990s (Klasen, 2018).

Researchers studying feminism argue that gender is one of the most important macroeconomic indicators and affects economic growth and development. (Seguino, 2000). As stated in Esteve-Volart (2004), failure to benefit from women's talents for religious or cultural reasons affects economic performance by keeping women away from the mainstream economy. Generally, in studies examining the relationship between gender inequality and economic growth, there is a bilateral relationship. Underinvesting in women slows economic growth and lowers income levels (Dollar and Gatti, 1999). According to Dollar and Gatti (1999), there are four different dimensions to measure gender inequality:

(i) access to education and success,
(ii) improvements in health quality
(iii) legal and economic equality of women in society and marriage
(iv) empowerment of women in the political platform.

One of the most important dimensions in which gender-based inequalities manifest is human capital accumulation and its acquisition through education. Gender inequality in education is the main factor that affects socioeconomic life directly (Bertocchi and Bozzano, 2020). Research suggests that gender inequality in education leads to a lack of human capital and therefore, prevents increased economic growth (Altuzarra et al., 2021). In theory, increasing the education level of women is expected to cause an increase in economic development through the creation of human capital for the next generation and a decreased gender gap (Klasen and Lamanna, 2009). Along with economic opportunities, participation in education also has social impacts, especially on the child mortality rate, women's fertility, individual health, and investments in education and the health of future generations (Baliamoune-Lutz and McGillivray, 2014; Theveno and Del Pero, 2015).

For instance, Cuberes and Teignier (2014) examine the reduction of gender inequality by economic growth in terms of labor force participation and state that gender inequality can be reduced through the income flexibility channel, technological progress, changes in women's ownership rights, and the expansion of the service sector. They consider income elasticity in terms of fertility and labor force participation, based on the theory of Becker and Lewis (1973).

In addition to education, another aspect of gender equality is health. One of the indicators of gender inequality in health is life expectancy at birth. Life expectancy at birth, one of the most important indicators of welfare in society, is defined by the OECD (2023) as "how long a newborn baby will live on average if current mortality rates do not change." Various socioeconomic and environmental factors have an impact on life expectancy. According to Hasnawati et al. (2023), improvements in the working and living environment, preventive care, higher education levels, and increased per capita income are associated with an increase in life expectancy.

The theory of Becker and Lewis (1973) was discussed in terms of the relationship between the time cost of raising the child, the resource cost of education, and the income earned by the woman. In their study, they state that as the

cost of human capital investment in children increases, fertility will decrease, and, therefore, it will facilitate women's participation in the labor market, thus reducing gender inequality (Becker and Lewis, 1973; Cuberes and Teignier, 2014).

It is crucial that individuals have equal rights to access both health and education and to participate in development activities regardless of gender (Zalukhu and Collyn, 2021). While the main purpose of a nation for development should be to increase the welfare level of its citizens regardless of their social status, race, religion, and gender, each nation shapes its own policies regarding gender inequalities. Yet, the policies implemented by each country may differ from nation to nation (Baten et al., 2021). Nevertheless, the common result derived from all of these factors is that development fosters greater educational opportunities for women, heightened urbanization, increased female engagement in the labor market, a decline in the fertility rate, women transitioning away from conventional gender roles, and shifts in attitudes. These developments are determinants that augment women's political resources and enhance their political engagement (Shvedova, 2005).

It is well established that countries that have a greater proportion of women in parliament have had more rapid economic growth (Jayasuriya and Burke, 2013). According to Baskaran et al. (2018), female legislators have a lower likelihood of engaging in criminal and corrupt activities, have higher effectiveness, and are less susceptible to political opportunism. Also, Ngwakwe (2019) finds that an evenly balanced parliament of female and male participants is a determinant of increasing economic growth. As Blumberg (2015) states, women's economic empowerment not only reduces gender inequality but also allows them to have more say in household matters and gain competence in many issues such as nutrition, health, and social services, fertility, children's education, and the use of their money. Blumberg (2015) also adds that the more educated the girls, the lower the fertility rate is, and that there is a negative relationship between the fertility rate and national income. Women's participation in politics is closely linked to social capital. Turgut (2022) demonstrated that the lack of social capital among women in Türkiye stems from traditional gender roles, leading to low political participation. The insufficiency of women's social networks, their lack of social and family support, and their inability to establish mutual and strong relation bonds are hindering factors in their participation in politics (Bilal and Ahmad, 2021). Anissa et al. (2020) revealed that social capital has a significant impact on women's participation in politics for Indonesia.

The overall findings of the studies indicate an increase in women's involvement in politics and their engagement in political decision-making processes worldwide. The UN Women in Politics Map (2023) report has disclosed that women's involvement in policy decision-making processes has risen; however, gender inequality remains unattained politically.

Thus, in this study, the focus will be on these dimensions by employing parliament participation (politics-related), schooling rate (education-related), life expectancy (health-related), and GDP (economic activity-related). With this purpose in mind, it is important to demonstrate how ensuring gender equality affects economic development. Therefore, this study aims to illustrate that relationship exists between gender inequality and GDP, participation in parliament (legal representation), life expectancy, and schooling rate (education). The remaining sections of this study consist of the literature review, data and methods, results and conclusion, and discussion.

Literature Review

Gender equality might stem from a myriad of factors, such as social and cultural differences. After analyzing literature studies, it becomes evident that gender inequality is a pervasive issue worldwide; however, a closer examination reveals that it is particularly pronounced in the Middle East, North Africa, and South Asia regions. It has been indicated that there is a correlation between high levels of gender inequality and slow economic growth in these particular regions.

Gender Inequality and Economic Growth

Studies in literature typically analyze the influence of gender disparity on economic growth. For instance, Perrin (2015) specifically looks at how gender equality played a factor in the development process that allowed economies to emerge from a protracted period of stagnation and into a condition of sustained economic growth. The analysis, which is based on a new cliometric approach, contends that the rise in gender equality was a significant catalyst for the switch to modern growth. Perrin (2015) examined 19th-century Europe and demonstrates that gender equality was a decisive factor that enabled France to transition from Malthusian stagnation to modern economic growth before other European countries.

Kim et al.'s (2016) research came to the conclusion that promoting gender equality in Asian nations will lead to an increase in per capita income and economic growth. It has been demonstrated that economic growth will expand

as long as women participate in the labor force because this will lead to the accumulation of human capital period 2005-2010. However, this will also lead to a fall in women's fertility and, consequently, a decline in the population. Mammen and Paxson (2000) analyze the relationship between economic growth, educational investment, labor force participation, paid work participation, and fertility rates in 90 countries from 1970 to 1980, applying regression and nonparametric regression techniques. Researchers have observed a positive correlation between women's educational attainment and economic development. Furthermore, when women transition from being unpaid workers in family enterprises to becoming paid workers, they observe a decline in fertility. Therefore, they deduce that gender inequality diminishes as education and economic development progress. Altuzarra et al. (2021) provide empirical evidence on how gender equality in schooling, the labor market, and institutional representation affected economic growth in 105 developing countries from 1990 to 2017, applying the panel data analysis. They find that gender equality in education has a greater impact on economic growth in comparison with other determinants, and there is a negative correlation between increased women's participation in parliament and economic growth in Sub-Saharan African (SSA) countries. Koengkan et al. (2022) use an ordinary least squares (OLS) model with fixed effects to investigate the impact of gender inequality on economic growth in Latin America and the Caribbean region between 1990 and 2016. As a result of the analysis, they draw the conclusion that gender inequality hinders economic growth.

The following studies are examined on an individual country level rather than grouping countries together. As Ali (2015) has concluded, the economic growth of Pakistan between 1980 and 2009 was positively impacted by gender equality. Esen and Seren (2022) employ the Dynamic Ordinary Least Squares (DOLS) and Fully Modified Ordinary Least Squares (FMOLS) estimation methods to examine the influence of gender inequality in education and employment on economic growth in Turkey from 1975 to 2018. They conclude that regulations for gender equality in terms of education and employment rate have a positive long-term impact on Turkey's economic growth. According to Adeleke et al.'s (2024) study in Nigeria, which looked at the years between 1991 and 2022, gender inequality in education has a long-term negative impact on economic development but a short-term positive impact.

As evident from the previously mentioned, research investigating the influence of gender disparity on economic growth typically focuses on less developed and emerging nations. In contrast to the aforementioned samples, Khan et al. (2016) conducted a study using panel data methodology to analyze 20 high-income OECD countries. They found that the gender equality index for education level had a positive impact on economic growth between 1980 and 2015. The authors also emphasized the need for significant policy reforms in the health and labor markets to ensure the sustainability of economic growth. Özdemir and Altay (2021) investigated the correlation between gender equality and economic growth in 36 OECD member nations from 2010 to 2017, employing the panel data methodology. The study categorized countries into two income groups and found that an improvement in gender equality in education, labor force participation, and parliamentary representation resulted in economic progress. Therefore, in research investigating the relationship between gender disparity and economic growth, it is widely believed that economic growth will be enhanced as gender inequality diminishes.

Gender Inequality and Education

An analysis of research investigating the causes of gender inequality in schooling reveals that cultural beliefs, monetary limitations, and religious perspectives are the primary factors contributing to this disparity. For example, Akinbi and Akinbi (2015) suggest that the reasons for gender inequality in education in Nigeria are the predominance of women's traditional role as mothers, high birth rates, the inadequacy and functional incompleteness of literacy programs, and the lack of women's self-confidence. While addressing issues regarding gender inequality, they suggested providing basic education free of charge, raising awareness of gender equality, and increasing practices for gender equality awareness in schools as solutions.

Various research has explored the correlation between gender inequality in education and economic growth. Studies usually use the schooling rate as a metric to measure educational inequality. The consensus among these studies is that as gender inequality in education rises, economic growth declines (Klasen and Lamanna, 2009; Kabeer and Natali, 2013).

In one of the earliest studies on schooling rates, Barro and Lee (1996) found that between 1960 and 1990, the education participation rate of women aged 15 and over in OECD countries was higher than that of women aged 15 and over in developing countries, sub-Saharan African countries, the Middle East, North Africa, South Asian countries, Central Asian African countries, and centrally planned economies. Caselli et al. (1996) demonstrate in their research the potential of women's education to enhance economic growth. Dollar and Gatti (1999) investigate the relationship between gender inequality, income, and growth in 80 countries. They conclude that gender inequality in education negatively affects economic growth, and when women's secondary education success increases, it affects economic

growth positively. They found that exogenous variables, such as religious variables, regional factors, civil liberties, etc., were influential in girls' access to education and made a better contribution to economic growth, especially in middle-income countries. They reveal that countries that invest in girls have more growth and increased income than countries that do not prefer to invest.

Filmer (2000) investigates the relationship between economic growth and gender inequality in education in Western and Central Africa, North Africa, South Asia, Eastern and Southern Africa, Central America and the Caribbean, East Asia and the Pacific, South America, and the Middle East and Central Asia. This study on educational enrollment rates concludes that gender disparity will negatively impact economic development. Klasen and Lamanna (2009) conclude that inequality in education reduced economic growth in the Middle East, North Africa, South Asia, and East Asia between 1960 and 2000. Mukherjee and Mukhopadhyay (2013) explore how gender inequality in education and labor force participation affects economic development using cross-country regressions. In their research, they use data from 61 developing nations in Africa, Asia, and Latin America for the year 2010. According to their findings, gender inequality in schooling has a negative influence on economic growth. Baliamoune-Lutz and McGillivray (2014) find that gender inequality in literacy has a greater impact on economic growth in Arab nations, examining the selected years between 1972 and 2000. Licumba et. al. (2015) investigate the relationship between education and economic growth in Southern African countries, and they capture a positive relationship between equality and economic growth and suggest that policymakers should take this into consideration in these countries between 1972 and 2000. Thevenon and Salvi Del Pero (2015) discover that the increase in women's educational attainment from 1960 to 2018 in OECD countries has positively impacted economic growth in the past five years**.** Their research has established that the increase in women's enrollment rates in school has a greater impact on economic growth compared to men. Atiq and Qadri (2021) investigate the relationship between gender inequality and economic growth among 48 Asian countries for the period of 2003–2018 and conclude that eliminating gender inequality in tertiary education has a beneficial impact on economic growth. Furthermore, the study underlines the need to increase women's education and reduce gender inequality at all levels of educational attainment to promote long-run and short-run economic potential. Baten et al. (2021) found that gender inequality in education escalated in 21 sub-Saharan African countries during the colonial era. Following independence, the difference in gender inequality diminished, but these countries still lagged behind other developing nations.

Gender Inequality and Political Participation

Jennings (1983) states that the low participation of women in politics is due to their traditional roles as wives, mothers, and housewives. Due to the traditional roles they have acquired, it becomes difficult for women to access resources such as time, money, communication, and organizational activities needed for political participation. Low participation of women in politics means that women's rights are less represented; therefore, their issues and rights are less represented as well. For this reason, women's participation in politics is important due to their high rates of non-representation (Grasso and Smith, 2022). Promoting women's inclusion in politics enhances the rate of representation, augments the diversity of views in political discourse, and yields benefits for policies that cater to broader parts of society. Furthermore, the increase in women's decision-making authority demonstrates their greater commitment to enhancing family well-being, obtaining higher education and healthcare, and utilizing items and services stemming from these sectors (Dahlum et al., 2022). The majority of the studies analyzed demographic and attitudinal disparities in relation to the involvement of women and men in politics.

Coffé and Bolzendahl (2010) explore gender gaps in 18 advanced Western countries and conclude that demographic and attitudinal characteristics differentiate the participation of men and women in politics. Since having a participatory public in politics is one of the necessary conditions for democratic sensitivity, a lower presence of women in politics poses a threat to political equality and democracy. Grasso and Smith (2022) examine gender inequality in political activism in 9 European countries in 2018 and approach consistent results with Coffé and Bolzendahl (2010). In their paper, Grasso and Smith (2022) focus on young women and men and determine that the extent of political inequality was less than expected and that women and men were active in different fields. They find that young women were active in petitioning, boycotting, and volunteering in the community, while men were more active in broader political participation, such as more institutional forms of participation linked to organizations and parties, various forms of online political participation, and internal political activity. Liu (2022) investigates the gender gap in political participation in 13 countries in Asia. He highlights that while women and men vote equally in elections, gender inequality is revealed in their participation in other political activities.

Mohamed (2022) examined the effect of female human capital on economic growth, female labor force participation, and female participation in the national parliament in Sudan between 1975 and 2021. The existence of a long-term

relationship between education, health, and economic growth, which is one of the human capital variables, has been revealed. In the short run, increased women's participation in parliament has a positive and significant effect on economic growth. In another study conducted across 182 nations, Dahlum et al. (2022) found conclusive evidence that the political empowerment of women had a favorable impact on economic growth. Mirziyoyeva and Salahodjaev (2023) found that the empowerment of women in politics had a positive impact on the economic growth of 44 countries in Europe and Central Asia.

Gender Inequality and Life Expectancy

Life expectancy at birth is a measure that reflects the mortality rates and health outcomes of a population, and it also highlights the disparities in health between women and men (Kolip and Lange, 2018). Various factors, such as biology, environment, socio-demographics, and differences in health risk behaviors, contribute to the gender disparity in life expectancy at birth (Kolip and Lange, 2018; Allel et al., 2021; Pinho-Gomes et al., 2022).

For instance, Barro and Lee (1994) demonstrated in their research that higher levels of education among both women and men are associated with increased life expectancy and decreased newborn mortality rates. Williamson and Boehmer (1997) assert that factors such as women's degree of education, economic standing, and reproductive autonomy positively influence their life expectancy at birth. Recent research on the correlation between education level and life expectancy has uncovered a negative relationship between low education levels and life expectancy in countries. Conversely, when the level of education grows, life expectancy also tends to rise (Mackenbach et al., 2019).

Kolip and Lange (2018) investigated the potential impact of gender inequality on life expectancy at birth in 28 EU member states. By utilizing the gender inequality index, they determined that gender inequality affected both life expectancy and the gender gap in terms of life expectancy. In addition to these factors, Allel et al. (2021) incorporated public health policies as a variable in their research to examine the impact on the disparity in life expectancy at birth between genders. They found that life expectancy at birth has risen in developed nations, with women outliving men.

Pinho- Gomes et al. (2022) conducted a study on 27 European Union nations and found that the rise in life expectancy between 2010 and 2019 had a more significant impact on men than women, resulting in a reduction of the gender gap. Leao et al. (2024) found that there was a correlation between life expectancy, healthy life expectancy, and gender equality when studying the same set of nations. In their study encompassing 152 nations, Matoes et al. (2022) discovered a direct correlation between gender equality and life expectancy in the European region and America. Conversely, they saw an inverse link in Africa.

Table 2. Literature Studies in Recent Years

Authors	Country	Methods	Variables	Results
Akınwade et al. (2024)	Nigeria 1980-2020	Spectral Granger, Pairwise Granger causality	Gender Inequality Financial Development Inflation Economic Growth	Spectral granger results show that gender inequality granger causes economic growth in the long, medium, and short term. Pairwise Granger causality results show that gender inequality granger cause economic growth
Mbodji (2024)	17 Sub-Saharan countries 2000-2019	Fixed- effect panel data model	Gender Inequality Public expenditure Gross enrollment rates at primary, secondary and high levels The number of years of study for adults Remittances Economic Growth	Gender inequality has a negative impact on primary and secondary school enrollment rates.
Wani et al. (2024)	India 1995-2021	Nonlinear Autoregressive Distributed Lag (NARDL)	Gender Inequality Economic Growth Per capita household expenditure	Positive shocks in economic growth reduce gender inequality.
Çakır Gündoğdu and Gündoğdu (2025)	22 OECD countries 1991-2021	Panel data analysis	Gender Inequality index Woman Political Participation index Wage and Salaried Workers	Women's political participation and labor force participation reduce gender inequality.

This study differs from the aforementioned studies in that it examines the multidimensional impact of economic development indicators on gender inequality by jointly considering education, health, politics, and growth. Furthermore, it was observed that literature is relatively sparse in studies examining high-income groups. We can say that this study contributes by examining this income group. There is a reciprocal relationship between gender inequality and the factors contributing to it. This study also examines the impact of changes in these indicators on gender inequality. The study displays both correlation coefficients and causal relationships and provides short- and long-term forecasts. In summary, the aim of this study is to examine the impact of education, health, political participation, and economic growth on gender inequality in high-income countries between 2005 and 2021. To achieve this goal, we will use dynamic panel data analysis methodologies.

In this regard, the hypotheses presented are as follows:

H1: Economic growth has a negative impact on gender inequality.

H2: Female life expectancy at birth has a negative impact on gender inequality.

H3: The proportion of seats held by women in national parliaments has a negative impact on gender inequality.

H4: The expected years of schooling have a negative impact on gender inequality.

Data, Model, and Methodology

Data

The Gender Development Index addresses gender inequalities in three dimensions of human development: education, health, and economic gains. The criteria used by the Gender Development Index (GDI) include life expectancy at birth in the health dimension, educational attainment rates, and the typical number of years that women over 25 spent in school, and estimated women's earned income.

For this analysis, we have identified five variables: gender inequality index, per capita GDP, female life expectancy at birth, parliament participation, and expected years of schooling.

The data for GDI and expected years of schooling has been obtained from Human Development Reports (UNDP, 2022). The data for per capita GDP, female life expectancy at birth, and parliament participation rate have been obtained by pooling the World bank Database (see Table 1).

Table 3. Variables, Definitions, and Data Source

Variables	Definitions	Source
loggii	Gender Inequality Index	Human Development Reports
loggdp	Per capita GDP (constant 2015 US$)	World Bank Database
logle	Female life expectancy at birth (years)	World Bank Database
logpr	The proportion of seats held by women in national parliaments (%)	World Bank Database
logeys	Expected Years of Schooling Female (Years)	Human Development Reports

Model

All variables have been log-transformed to minimize problems with multicollinearity and heteroscedasticity in the data, as well as to reduce dispersion in the data. Additionally, compared to the simple linear form, the log-linear transformation data yield more consistent and efficient outcomes (Sinha and Shahbaz, 2018; Zafar et al., 2019). Based on this notion, the multivariable log-linear model is expressed as follows:

$$loggii_{i,t} = \alpha_0 + \alpha_1\, loggdp_{i,t} + \alpha_2\, logle_{i,t} + \alpha_3\, logpr_{i,t} + \alpha_4\, logeys_{i,t} + \varepsilon_{i,t}$$

In the model, the subscripts (i = 1, 2, …, 18…) and (t=2005, 2006, …, 2021) denote country i and year t, $\varepsilon i,t$ is the error term of the relevant models. The data set for the high-income country group contains thirty-eight countries, which are: Austria, Australia, Barbados, Canada, Chile, Cyprus, The Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea Republic, Latvia, Lithuania, Luxembourg, Malta, New Zealand, the Netherlands, Norway, Panama, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, the United States of America, the United Kingdom and Uruguay.

Where loggdp denotes the per capita real gross domestic product (constant 2015 US$) and expected sign on gender inequality is negative. The previous studies indicate that gender inequality is expected to decline due to income increases. The variable of logle is defined as how long an individual will live on average from birth. The expected sign of the logle variable is negative. An increase in women's life expectancy strengthens their role in society by increasing

their access to health and education, improving their nutritional status, improving their quality of life, and enabling their active participation in the labor market, thereby reducing gender inequality. The logpr is named the proportion of seats held by women in national parliaments (%) and expected sign is negative. As women's representation in parliament increases, concrete steps towards empowering women in society will increase and contribute to the reduction of gender inequality. An increase in women's expected years of schooling (logeys) contributes to reducing gender inequality. Therefore, the expected sign of logeys variable is negative.

Methodology

Data analysis for time-dependent panel data involves several sequential processes to accomplish the required objectives. In the following section, we explain a list of the procedures for econometric analysis used for this study. First, by using CD tests, the existence of a cross-sectional dependence and slope homogeneity test are investigated. Second, based on the results of the slope homogeneity and cross-section dependency tests, tests using dynamic panel data analysis were done to see if there was a link between the variables. To estimate the long-run coefficient of the relationship between the variables, CCEMG (Common Correlated Effects Mean Group) was employed. Lastly, to explain the causality relationship between variables, the Dumitrescu-Hurlin Panel Causality test has been applied. Therefore, we empirically interpreted the research using the following econometric methodologies:

Cross-sectional dependence (CSD) approach

These countries may exhibit cross-sectional dependencies due to their diverse interconnections, including economic, geographical, socio-cultural, and political aspects. According to Musah et al. (2021), failure to account for cross-sectional dependence can result in skewed estimates, which in turn can lead to inaccurate conclusions. Hence, we employed the Pesaran (2015) CD test to investigate the existence of cross-section dependency and slope uniformity among high-income countries.

Pesaran (2015) recommends the following CD test statistic:

$$CD = \sqrt{\frac{2T}{N(N-1)}} \sum_{i=1}^{N-1} 0 \sum_{j=i+1}^{N} \hat{\rho}_{ij} \quad (1)$$

$$\hat{\rho}_{ij} = \hat{\rho}_{ji} = \frac{\sum_{t=1}^{T} \hat{\mu}_{jt,} \hat{\rho}_{jt}}{\left(\sum_{t=1}^{T} \hat{\mu}_{it}\right)^{1/2} \left(\sum_{t=1}^{T} \hat{\mu}_{jt}\right)^{1/2}} \quad (2)$$

In equation (2) $\hat{\rho}_{ij}$ is the coefficient of correlation.

Slope of homogeneity

The existence of significant cross-sectional dependence may lead to comparable economic development processes in each nation, and ignoring slope heterogeneity could bias regression analysis and result in incorrect hypothesis testing. In order to evaluate the homogeneity of the slope, Swamy (1970) proposes a foundation for the assumption of homoscedasticity for panels that set N relative to T. Therefore, we use the Swamy test extension by Pesaran and Yamagata (2008) to determine whether the slope coefficients were homogeneous or heterogeneous.

This model can be illustrated as follows for large panels where N → ∞ and T → ∞. In equation (3) $\tilde{S}$ shows the adjusted Swamy test (slope homogeneity test by Pesaran and Yamagata), and in equation (4) $\tilde{\Delta}$ represents the normal distribution statistic.

$$\tilde{S} = \sum_{i=1}^{N} \left(\hat{\beta}_i - \tilde{\beta}_{WFE}\right) \frac{x_i M_\tau x_i}{\tilde{\sigma}_i^2} \left(\hat{\beta}_i - \tilde{\beta}_{WFE}\right) \quad (3)$$

$$\tilde{\Delta} = \sqrt{N} \left(\frac{N^{-1}\tilde{S} - K}{\sqrt{2K}}\right) \quad (4)$$

Long-Run Estimation: Common Correlated Effects Mean Group (CCEMG)

Since in the presence of cross-sectional dependence (CSD), standard techniques like OLS and GLS offer biased estimates (Phillips and Sul, 2003) and FE and RE models produce inconsistent and untrustworthy findings (Sarafidis and Robertson, 2009), Pesaran (2006) proposed using the CCEMG estimator to ensure robustness if CSD is identified. When CSD is detected, combining the cross-sectional averages of independent and dependent variables with the nonobserved common effects solves this issue. In equation (5), f_t denotes the unobserved common effects, α_i is the heterogeneous factor loading, X_{it} and Y_{it} are the independent and dependent variables, respectively, and $ß_i$, α_i, and ω_{it} stand for the slope, heterogeneous fixed effects, and error, respectively.

$$Y_{it} = \alpha_{it} + \beta_i X_{it} + \delta \bar{Y}_{it} + \theta\, i\bar{X}_{it} + \phi_i f_t + \omega_{it} \quad (5)$$

The average slope of each unit yields the CCEMG estimator MG, as shown in equation (6) below:

$$CCEMG = \frac{1}{N}\sum_{i=1}^{N}\hat{\beta}_i \quad (6)$$

Dumitrescu and Hurlin's Non-Causality Approach

The direction of causation plays a critical role in panel data analysis when assessing the impact of the long-term link between the series. Moreover, given that the variables exhibit a correlation with economic growth, it is imperative to investigate any potential causal connections between our variables to formulate suitable policy recommendations (Hashmi et al., 2021). Therefore, to evaluate and validate the causality direction in a heterogeneous data panel, we employ the Dumitrescu and Hurlin (2012) non-causality test. For panel data, the Dumitrescu and Hurlin (DH) method makes it easier to find the cause by considering unobserved variation and cross-sectional dependence (Dumitrescu and Hurlin, 2012).

This method yields more reliable results than the traditional Granger causality test based on VECM. The non-causality test, according to Usman and Hammar (2021), accounts for slope heterogeneity and cross-sectional dependence while also removing potential econometric problems. Furthermore, the DH panel causality approach does not provide any individual panel estimates and shows increased efficiency when working with smaller data sets (Azam, 2019; Dinçer et al., 2017; Yildirim and Yasa, 2014). The DH panel causality model has the following linear functional form, as shown in equation (7):

$$\mathcal{Y}_{i,t} = \alpha_i \sum_{k=1}^{K}\gamma_i^{(k)}\mathcal{Y}_{i,t-k} + \sum_{k=1}^{K}\beta_i^{(k)}x_{i,t-k} + \varepsilon_{i,t} \quad (7)$$

In equation (7), y and x are two variables that are paired together, and i and t indicate the cross-section (1,2,3..N high-income countries) and time periods, respectively.

Analysis Results

The panel data analysis begins with a cross-sectional analysis test to investigate how a shock in one nation affects other nations. Table 2 presents the results of the cross-sectional analysis.

Table 4. Cross-Sectional Dependence Results

	High- Income Countries	
	CD test	**p- value**
loggii	90.568*	0.000
loggdp	60.680*	0.000
logle	90.242*	0.000
logpr	50.972*	0.000
logeys	40.795*	0.000

Notes: *, **, and *** indicate the rejection of the Ho hypothesis at the level of significance at 1%, 5%, and 10%.

Table 2 scrutinizes the existence of cross-sectional dependence in each series, concluding that each series rejects the null hypothesis (Ho) at the 1% significance level. This indicates a robust interdependence among the countries in the panel. The study's findings indicate that a shock in one country has a ripple effect on other countries. Following the cross-sectional dependence test, the slope heterogeneity test established by Pesaran and Yamagata (2008) was utilized to investigate if individual nations exhibit unique shocks. Table 3 presents the Delta test results and provides information on whether the slope coefficients are homogeneous or heterogeneous.

Table 5. Test for Slope Homogeneity Results

	High- income	
	Test statistics	**p-value**
Δ test	17.248*	0.000
Adjusted Δ test	21.443*	0.000

Note: * denotes the level of significance at 1%.

Table 3 displays the parameter values and probability values obtained from the delta test results. The delta test rejects the null hypothesis of slope homogeneity at the %1 significance level. Therefore, we can state that the slope coefficients exhibit heterogeneity. We can say that a change in the variables in the panel countries, which are the

subject of the research, differs from country to country in terms of gender inequality. The study continues with the second generation panel unit root test, which considers cross-sectional dependence and slope heterogeneity tests. Table 4 presents the outcomes of the CIPS unit root test, which is one of the second generation panel unit root tests.

Table 6. CIPS Unit Root Test

Variables	At level, constant	At first difference, constant
loggii	–1.450	–3.378*
loggdp	-0.959	-2.443*
logle	-1.390	-4.075*
logpr	-1.879*	-3.785*
logeys	-0.929	-2.882*

Note: *, **, and *** indicate significance levels at the 1%, 5%, and 10%.

Table 4 displays the stationarity of the series using the CIPS unit root test, which considers the cross-sectional dependence. The CIPS unit root test, which is derived from the average of the CADF test, indicates that the series are non-stationary at the level, except for the "logpr" variable. However, all series are stationary at first difference. The coefficient estimation utilized the CCEMG estimator, which disregards the stationarity levels, based on the results obtained from the unit root test. Table 5 provides the estimated coefficients for the long term.

Table 7. CCEMG Results of Model Estimation

High- Income Countries		
Variables	**Coefficient**	**prob.**
loggdp	-0.076 (0.172)	0.000
logle	-4.709 (1.554)	0.000
logpr	-0.0769 (0.118)	0.000
logeys	-1.514 (0.827)	0.067***

Note: *, **, and *** indicate significance levels at the 1%, 5%, and 10%.

The findings show a statistically significant and inverse correlation between economic growth and gender inequality. It might be asserted that as economic growth increases, gender inequality decreases. This is consistent with the findings of Dollar and Gatti (1999), who showed that an increase in per capita income leads to advancements in gender inequality in different measures. In their study analyzing OECD countries, Özdemir and Altay (2021) have determined that there is a positive correlation between economic growth and gender equality. In their theoretical studies, Khasana and Sasana (2022) have posited that as economic activities grow, job opportunities will expand, leading to increased income through enhanced productivity and the emergence of new job markets. This, in turn, will result in greater economic participation. Consequently, as individuals' incomes rise, the gender gap in health, education, and nutrition is expected to diminish. Thus, the results and our findings are consistent.

A negative and statistically significant correlation was discovered between life expectancy at birth and gender inequality. An increase of 1% in life expectancy at birth results in a decrease of 4.70% in gender inequality. These findings derived from this investigation align with the research conducted by Pinho-Gomes et al. (2022). The higher coefficient estimates for life expectancy at birth compared to other variables may be due to its representation of the population's general health indicator. Life expectancy at birth influences numerous social and economic factors, including consumer spending trends, human capital investments, retirement spending, public finances, and economic growth. Increases in life expectancy at birth have multiple positive effects, including improved working and living conditions, improved access to healthcare and education, improved lifestyles, and increased income (Roffia et al., 2023; OECD,2022).

Evidence demonstrates that the increase in women's parliamentary representation contributes to the reduction of gender inequity. Upon analyzing the coefficients, it is evident that a 1% increase in the number of seats in parliament results in a reduction of gender inequality by -0.07%. The disparity between genders diminishes as the anticipated duration of education for women increases. A negative and statistically significant correlation is observed in the

research. Specifically, for every 1% increase in projected years of schooling, there is a corresponding decrease of 1.51% in gender inequality. Evidence has demonstrated that the hypotheses made in the initial phase of the study are substantiated.

We employed the Dumitrescu and Hurlin (2012) test to investigate the direction of the association between the variables after estimating the CCEMG coefficient. The causality relationship between the variables is shown in Table 6.

Table 8. The Causality Test Results

High- Income Countries		
	W-bar	**Z- bar**
loggii>loggdp	2.882	8.204*
loggdp>loggini	3.886	12.582*
loggii>logle	4.144	13.715*
logle>loggii	2.362	5.938*
loggii>logpr	3.389	10.415*
logpr>loggii	3.517	10.974*
loggii> logeys	2.269	5.535*
logeys>loggii	3.3511	10.248*

Note: *, **, and *** represent 1%, 5%, and 10% levels of significance

The findings suggest that there is a two-way causality between the gender inequality index and economic growth. We can say that as economic growth is associated with lower levels gender inequality. In the other hand, changes in gender inequality also affect economic growth. The same results are observed for women's life expectancy at birth, expected years of schooling, and rates of political participation. There is a bidirectional relationship between these variables and gender inequality. For high-income countries, the results suggest that gender inequality decreases when economic growth, female life expectancy at birth, expected years of schooling, and seats held by women in parliament increase, as expected.

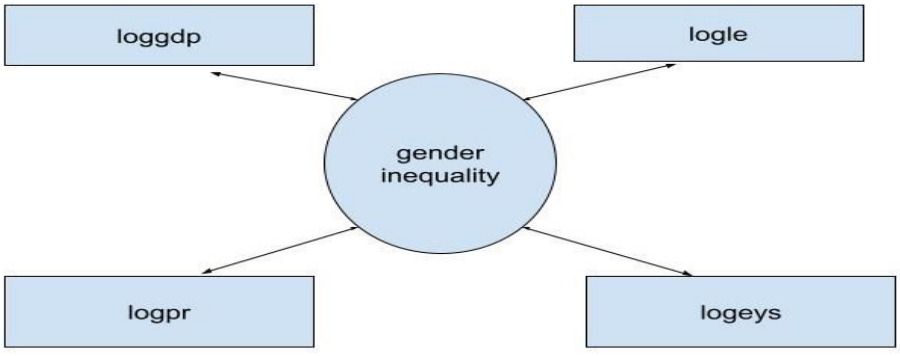

Figure 1. The two-way relationship between variables

Conclusions and Proposals

This study examines the impact of economic growth, expected female school enrollment rates, the number of seats held by women in parliament, and women's life expectancy at birth on gender inequality in high-income countries by analyzing the common correlated effects mean group (CCEM) estimator data from 2005 to 2021. In doing so, we have been able to find evidence on the extent to which economic growth and the increased role of women in society in high-income countries have had an impact on the reduction of gender inequality. Our findings highlight that in high- income countries, gender inequality decreases when female life expectancy at birth, expected years of schooling, economic growth, and seats held by women in parliaments increase. At the same time, a bidirectional causality relationship is expected between gender inequality and the variables, and the existence of a bidirectional causality relationship between gender inequality and the other is confirmed by the panel causality test result. Although economic indicators show that gender inequality is decreasing, the inequalities that women face in health, education and economic opportunities persist. The primary objective of the 2030 Sustainable Development Goals (SDGs) is to eradicate all types of gender-based discrimination against women and girls. Upon analyzing the existing

literature, it becomes evident that gender inequality poses a significant hindrance to both economic progress and social development.

Hence, considering our analysis results and supporting literature, we suggest a number of policy recommendations. First and foremost, to build gender equality, education reforms should implement policies that enable equal access to education for girls and boys, and girls should be encouraged in particular. Additionally, impediments such as gender stereotypes, early marriages, and cultural prejudices should be removed. It is critical to prioritize educational and job market opportunities for women because they have a direct impact on economic development. Furthermore, we must adopt arrangements like flexible work and improved parental leave options to effectively increase female employment in the labor market. Lastly, addressing gender discrepancies in political representation is crucial for fostering more comprehensive decision-making processes.

Secondly, empowerment programs should be established that both economically and socially empower women. For instance, vocational training programs specific to women should increase, entrepreneurship should be encouraged among women, and women should be provided with the tools and resources to support them in engaging in the economy. Lack of access to digital opportunities, especially after the pandemic, has further exacerbated inequality between men and women. It is vital that women not only have access to technology but also develop their skills in using it. Policymakers must design measures to enhance women's access to technology and proficiency in its utilization.

Thirdly, gender-positive health services should increase in order to improve women's access to high-quality healthcare, including reproductive health, family planning, maternity care, and gender-specific services. Additionally, to increase the political participation of women, policies that expand women's representation in political decision-making bodies, such as quotas, election changes, and encouragement of women's political leadership and involvement, should be implemented. Also, laws protecting women's rights, such as those prohibiting gender-based uneven pay should be strengthened and enforced by implementing legal reforms.

Finally, it is imperative to initiate public awareness campaigns that question gender norms, foster understanding of women's rights, and advocate for gender parity in all spheres of existence. It is important to promote favorable portrayals of women and girls in media, entertainment, and cultural settings, as well as media content that is sensitive to gender issues.

Not only should policymakers prioritize gender equality, but also institutions and stakeholders should promote gender inclusive policies and practices. Considering the conditions and events of this century, it is no doubt a necessity to promote gender equality in terms of economic growth rather than being a moral imperative. Thus, gender equality should be prioritized in economic and social development policies, leading to a fairer and more affluent future.

Limitations of the Study and Recommendations

This study analyzes the data for high-income countries for the 2005-2021 period. Because we do not cover lower- and middle-income countries, we only cover challenges faced in high-income countries. Also, since our time period ends in 2021, it may not cover the full effects of recent global events such as COVID-19. Furthermore, the study's analysis does not categorize the education variable as elementary school, secondary school, or university. Therefore, it is not possible to interpret which degree of education is more influential in terms of gender inequality and economic development.

The incorporation of democracy variable through further investigations has the potential to improve the study. Furthermore, we can broaden the analysis within the context of the Kuznets curve. In addition, the incorporation of social and cultural aspects may be of use in adding depth to the research.

Declarations

Conflict of interest: We, the authors, declare no conflict of interest.

References

ADELEKE, O. R., DURU, M. C., YAKUBU, A., & IKUBOR, J. O. (2024). Impact of Gender Inequality in Education and Labour Force Participation on Economic Growth in Nigeria. *Social Science Research*, *10*(2).

AKINBI, J. O., & AKINBI, Y. A. (2015). Gender disparity in enrolment into basic formal education in Nigeria: Implications for national development. *African Research Review, 9*(3), 11-23. https://doi.org/10.4314/afrrev.v9i3.2

AKINWADE, T. S., TURUC, F., Seraj, M., & OZDESER, H. (2025). The link between gender inequality, financial development, and economic growth in Nigeria: A spectral Granger causality approach. *Sustainable Development*, *33*(2), 2429-2439.

ALI, M., & DECKER, A. (2015). Effect of gender inequality on economic growth. Case of Pakistan. *Journal of Economics and Sustainable Development*, *6*(9), 10-10

ALLEL, K., SALUSTRI, F., HAGHPARAST-BIDGOLI, H., & KIADALIRI, A. (2021). The contributions of public health policies and healthcare quality to gender gap and country differences in life expectancy in the UK. *Population Health Metrics, 19*(40), 1-11. https://doi.org/10.1186/s12963-021-00271-2

ALTUZARRA, A., GÁLVEZ-GÁLVEZ, C., & GONZÁLEZ-FLORES, A. (2021). Is Gender Inequality a Barrier to Economic Growth? A Panel Data Analysis of Developing Countries. *Sustainability, 13*(1), 367. https://doi.org/10.3390/su13010367

ANNISA, M., SETIYONO, B., YUWANTO, Y., & SARDINI, N. H. (2020). *The effect of social capital on women's political participation*. *Palarch's Journal of Archaeology of Egypt/Egyptology*, 17(6), 2599-2610

ANTONIO, A., & TUFFLEY, D. (2014). The gender digital divide in developing countries. *Future Internet*, *6*(4), 673-687. https://doi.org/10.3390/fi6040673

ATIQ, F., & QADRI, F.S. (2021). Does Gender Inequality Affect Economic Growth? Empirics from Asian Countries. *International Journal on Women Empowerment, 7*(1), 11-20. https://doi.org/10.29052/2413-4252.v7.i1.2021.11-20

AZAM, M. (2019). Relationship between energy, investment, human capital, environment, and economic growth in four BRICS countries. *Environmental Science and Pollution Research, 26*(33), 34388–34400. https://doi.org/10.1007/s11356-019-06533-9

BALIAMOUNE-LUTZ, M., & MCGILLIVRAY, M. (2014). *Gender inequality and growth in Sub-Saharan Africa and Arab countries*. Available at SSRN: https://ssrn.com/abstract=1442977

BARRO, R. J., & LEE, J. W. (1994, June). Sources of economic growth. In Carnegie-Rochester conference series on public policy (Vol. 40, pp. 1-46). North-Holland

BARRO, R. J., & LEE, J. W. (1996). International measures of schooling years and schooling quality. *The American Economic Review*, *86*(2), 218-223.

BASKARAN, T., BHALOTRA, S., MIN, B., & UPPAL, Y. (2018). Women Legislators and Economic Performance. *IZA Discussion Paper Series,* IZA DP No. 11596.

BATEN, J., DE HAAS, M., KEMPTER, E., & MEIER ZU SELHAUSEN, F. (2021). Educational gender inequality in Sub-Saharan Africa: a long-term perspective. *Population and Development Review*, *47*(3), 813-849. https://doi.org/10.1111/padr.12430

BAUMGART, L., BOOS, P., & BRAUNSMANN, K. (2023). A Circulatory Loop: The Reciprocal Relationship of Organizations, Digitalization, and Gender. *Social Inclusion 11*(4), 160-171.

BECKER, G. S., & LEWIS, H. G. (1973). On the interaction between the quantity and quality of children. *Journal of Political Economy*, *81*(2, Part 2), 279-288.

BERTOCCHI, G., & BOZZANO, M. (2020). Gender gaps in education. In K.F. Zimmermann (Ed.), *Handbook of Labor, Human Resources and Population Economics* (pp. 1-31). Springer International Publishing.

BILAL, M., & AHMAD, A. (2021). Feminine Social Capital and Women's Political Participation in Khyber Pakhtunkhwa (Pakistan). *The Discourse*, *7*(1), 17-24.

BLUMBERG, R. L. (2015). "Dry" versus "wet" development and women in three world regions. *Sociology of Development, 1*(1), 91-122, https://doi.org/10.1525/sod.2015.1.1.91

CASELLI, F., ESQUIVEL, G., & LEFORT, F. (1996). Reopening the convergence debate: a new look at cross-country growth empirics. *Journal of Economic Growth*, *1*, 363-389.

COFFÉ, H., & BOLZENDAHL, C. (2010). Same game, different rules? Gender differences in political participation. *Sex Roles*, *62*, 318-333.

CUBERES, D., & TEIGNIER, M. (2014). Gender inequality and economic growth: A critical review. *Journal of International Development, 26*(2), 260-276. https://doi.org/10.1002/jid.2983

ÇAKIR-GÜNDOĞDU, B., & GÜNDOĞDU, E. (2025). Reducing Gender Inequality Through Women Political Participation and Female Labor Force: The OECD Case. *Multidisciplinary Journal of Gender Studies*, *14*(2), 98-119.

DAHLUM, S., KNUTSEN, C. H., & MECHKOVA, V. (2022). Women's political empowerment and economic growth. *World Development*, *156*, 105822. https://doi.org/10.1016/j.worlddev.2022.105822

DOLLAR, D., & GATTI, R. (1999). *Gender inequality, income, and growth: are good times good for women?* Policy Research Report on Gender and Development Working Paper Series, No. 1, The World Bank.

DUMITRESCU, E. I., & HURLIN, C. (2012). Testing for Granger non-causality in heterogeneous panels. *Economic Modelling*, *29*(4), 1450-1460. https://doi.org/10.1016/j.econmod.2012.02.014

ESEN, Ö., & SEREN, G. Y. (2021). The impact of gender inequality in education and employment on economic performance in Turkey: evidence from a cointegration approach. *Equality, Diversity and Inclusion: An International Journal*, *41*(4), 592-607. https://doi.org/10.1108/edi-04-2021-0099

ESTEVE-VOLART, B. (2004). Gender Discrimination and Growth: Theory and Evidence from India. *STICERD Discussion Paper DEDPS42*, London: LSE. https://ssrn.com/abstract =1127011.

FILMER, D. (2000). The structure of social disparities in education: Gender and wealth. Available at SSRN: https://ssrn.com/abstract=629118.

GARCIA-ESCRIBANO, M. Low Internet Access Driving Inequality. Retrieved May 15, 2023, from https://www.imf.org/en/Blogs/Articles/2020/06/29/low-internet-access-driving-inequality.

Gender Development Index (GDI). https://hdr.undp.org/gender-development-index#/indicies/GDI

GIRON, A., & KAZEMIKHASRAGH, A. (2022). Gender equality and economic growth in Asia and Africa: Empirical analysis of developing and least developed countries. *Journal of the Knowledge Economy*, *13*(2), 1433-1443. https://doi.org/10.1007/s13132-021-00782-1

GRASSO, M., & SMITH, K. (2022). Gender inequalities in political participation and political engagement among young people in Europe: Are young women less politically engaged than young men?. *Politics*, *42*(1), 39-57.

HASHMI, S. H., FAN, H., HABIB, Y., & RIAZ, A. (2021). Non-linear relationship between urbanization paths and CO2 emissions: A case of South, South-East and East Asian economies. *Urban Climate*, *37*, 100814. https://doi.org/10.1016/j.uclim.2021.100814

HASNAWATI, S., USMAN, M., FAISOL, A., & ELFAKI, F. A. M. (2023). Analysis and modeling gross domestic product, carbon dioxide emission, population growth, and life expectancy at birth: Case study in Qatar. *International Journal of Energy Economics and Policy, 13*(2), 467–483. https://doi.org/10.32479/ijeep.14069

JAYASURIYA, D. S., & BURKE, P. J. (2013). Female parliamentarians and economic growth: Evidence from a large panel. *Applied Economics Letters, 20*(3), 304-307.

JENNINGS, M. K. (1983). Gender roles and inequalities in political participation: Results from an eight-nation study. *Western Political Quarterly*, *36*(3), 364-385.

KABEER, N., & NATALI, L. (2013). Gender equality and economic growth: Is there a win-win?. *IDS Working Papers*, *2013*(417), 1-58. https://doi.org/10.1111/j.2040-0209.2013.00417.x

KHASANAH, U., & SASANA, H. (2022). Empirical relationship between gender equality and socio-economic developments: An error correction model. *Arthatama*, *6*(1), 12-25. Retrieved from https://lifescifi.com/journal/index.php/art/article/view/200

KHASANAH, U., & SASANA, H. (2022). The Significance of Gender Equality in Economic Growth. *Research Horizon*, *2*(2), 374-380. https://doi.org/10.54518/rh.2.2.2022.374-380

KIM, J., LEE, J. W., & SHIN, K. (2016). A model of gender inequality and economic growth. *Asian Development Bank Economics Working Paper Series*, No. 475, Available at SSRN: https://ssrn.com/abstract=2737844.

KLASEN, S., & LAMANNA, F. (2009). The impact of gender inequality in education and employment on economic growth: New evidence for a panel of countries. *Feminist Economics*, *15*(3), 91-132. https://doi.org/10.1080/13545700902893106

KLASEN, S. (2018). The impact of gender inequality on economic performance in developing countries. *Annual Review of Resource Economics*, *10*(1), 279-298. https://doi.org/10.1146/annurev-resource-100517-023429

KOENGKAN, M., FUINHAS, J. A., BELUCIO, M., KAZEMZADEH, E., POVEDA, Y. E. M., ALAVIJEH, N. K., & SANTIAGO, R. (2022). The Consequences of Gender Inequality on Latin America's Economic Growth: Macroeconomic Evidence. *Sexes*, *3*(3), 396-412. https://doi.org/10.3390/sexes3030030

KOLIP, P., & LANGE, C. (2018). Gender inequality and the gender gap in life expectancy in the European Union. *European journal of public health*, *28*(5), 869-872. https://doi.org/10.1093/eurpub/cky076

LEÃO, T., DOETSCH, J., HENRIQUES, A., & FRAGA, S. (2024). Is gender equality associated with a longer healthier life? Ecological evidence from 27 European countries. *Journal of Public Health*, *46*(1), 136-143.

LICUMBA, E.A., DZATOR, J.A., & ZHANG, J.X. (2015). Gender equality in education and economic growth in selected Southern African countries. *The Journal of Developing Areas, 49*, 349-360. https://doi.org/10.1353/jda.2015.0102

LIU, S. J. S. (2022). Gender gaps in political participation in Asia. *International Political Science Review*, *43*(2), 209-225. https://doi.org/10.1177/0192512120935517

LORBER, J. (2001). *Gender Inequality: Feminist Theories and Politics*. Roxbury Publications.

MAMMEN, K., & PAXSON, C. (2000). Women's work and economic development. *Journal of economic perspectives*, *14*(4), 141-164.

MATEOS, J. T., FERNÁNDEZ-SÁEZ, J., MARCOS-MARCOS, J., ÁLVAREZ-DARDET, C., BAMBRA, C., POPAY, J., ... & BAUM, F. (2022). Gender equality and the global gender gap in life expectancy: An exploratory analysis of 152 countries. *International Journal of Health Policy and Management*, *11*(6), 740. https://doi.org/10.34172%2Fijhpm.2020.192

MBODJI, Y. C. (2024). Inclusive education, gender inequality and public expenditure in sub-Saharan Africa. *Review of Education*, *12*(1), e3452.

MIRZIYOYEVA, Z., & SALAHODJAEV, R. (2023). Does representation of women in parliament promote economic growth? Considering evidence from Europe and Central Asia. *Frontiers in Political Science*, *5*, 1120287. https://doi.org/10.3389/fpos.2023.1120287

MITRA, A., BANG, J. T., & BISWAS, A. (2015). Gender equality and economic growth: Is it equality of opportunity or equality of outcomes?. *Feminist Economics*, *21*(1), 110-135. https://doi.org/10.1080/13545701.2014.930163

MOHAMED, E. S. (2022). Female Human Capital and Economic Growth in Sudan: Empirical Evidence for Women's Empowerment. *Merits*, *2*(3), 187-209. https://doi.org/10.3390/merits2030014

MUKHERJEE, P. & MUKHOPADHYAY, I. (2013). Impact of gender inequality on economic growth: A study of developing countries. *IOSR Journal of Humanities and Social Science, 13*, 61-69.

MUSAH, M., KONG, Y, MENSAH, I.A., ANTWI, S.K., DONKOR, M. (2021). The connection between urbanization and carbon emissions: a panel evidence from West Africa. *Environment, Development and Sustainibility, 23*(8), 11525–11552. https://doi.org/10.1007/s10668-020-01124-y

NGWAKWE, C.C. (2019). Relating Women in Parliament and Economic Growth in an Emerging Economy – South Africa. ŒCONOMICA, 15 (1), 253-266.

https://www.oecd.org/en/data/indicators/life-expectancy-at-birth.html?utm_source=chatgpt.com

ÖZDEMIR, E. A., & ALTAY, A. (2021). Toplumsal Cinsiyet Eşitliği ve Ekonomik Kalkınma İlişkisi: OECD Ülkeleri Analizi. İzmir İktisat Dergisi, *36*(3), 601-665. https://doi.org/10.24988/ije.202136307

PESARAN, M.H. (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica*, *74*(4), 967-1012. https://doi.org/10.1111/j.1468-0262.2006.00692.x

PESARAN, M.H. (2014). Testing weak cross-sectional dependence in large panels. *Econometric Reviews, 34*(6–10), 1089-1117. https://doi.org/10.1080/07474938.2014.956623

PESARAN, M.H., & YAMAGATA, T. (2008). Testing slope homogeneity in large panels. *Journal of Econometrics, 142*(1), 50–93. https://doi.org/10.1016/j.jeconom.2007.05.010

PERRIN, F. (2015). An exploration of the cliometric relationship between gender equality and economic growth. *Economics and Business Review*, *15*(1), 34-54.

PHILLIPS, P. C., & SUL, D. (2003). Dynamic panel estimation and homogeneity testing under cross section dependence. *The Econometrics Journal*, *6*(1), 217-259. https://doi.org/10.1111/1368-423X.00108

PINHO-GOMES, A. C., VASSALLO, A., CARCEL, C., PETERS, S., & WOODWARD, M. (2022). Gender equality and the gender gap in life expectancy in the European Union. *BMJ Global Health*, *7*(2), e008278.

ROFFIA, P., BUCCIOL, A., & HASHLAMOUN, S. (2023). Determinants of life expectancy at birth: a longitudinal study on OECD countries. *International Journal of Health Economics and Management*, *23*(2), 189-212. https://doi.org/10.1007/s10754-022-09338-5

SARAFIDIS, V., & ROBERTSON, D. (2009). On the impact of error cross-sectional dependence in short dynamic panel estimation. *The Econometrics Journal, 12*(1), 62-81. https://doi.org/10.1111/j.1368-423X.2008.00260.x

SEGUINO, S. (2000). Gender inequality and economic growth: A cross-country analysis. *World Development*, *28*(7), 1211-1230. https://doi.org/10.1016/S0305-750X(00)00018-8

SHANG, Y., SIVERTSEN, G., CAO, Z., & ZHANG, L. (2022). Gender differences among first authors in research focused on the sustainable development goal of gender equality. *Scientometrics*, *127*(8), 4769-4796. https://doi.org/10.1007/s11192-022-04430-6

SHVEDOVA, N. (2005). Obstacles to women's participation in parliament. *Women in parliament: Beyond numbers*, *33*(1), 22-45.

SINHA, A. & SHAHBAZ, M. (2018). Estimation of environmental Kuznets curve for CO2 emission: role of renewable energy generation in India. *Renewable Energy, 119*, 703-711. https://doi.org/10.1016/j.renene.2017.12.058

SWAMY, P.A. (1970). Efficient inference in a random coefficient regression model. *Econometrica, 38*, 311-323. https://doi.org/10.2307/1913012

THEVENON, O., & DEL PERO, A. S. (2015). Gender equality (f) or economic growth? Effects of reducing the gender gap in education on economic growth in OECD countries. *Annals of Economics and Statistics/Annales d'Économie et de Statistique*, *117/118*, 353-377. https://doi.org/10.15609/annaeconstat2009.117-118.353

TISDELL, C. A. (2021). How has India's economic growth and development affected its gender inequality?. *Journal of the Asia Pacific Economy*, *26*(2), 209-229. https://doi.org/10.1080/13547860.2021.1917093

TURGUT, S. T. (2022). Türkiye'de kadınların siyasal katılımı ve sosyal sermaye ilişkisi. *Nosyon: Uluslararası Toplum ve Kültür Çalışmaları Dergisi*, (10), 134-145.

UNITED NATIONS DEVELOPMENT PROGRAMME (n.d.). *Gender Inequality Index (GII)*. HDR Data Center. https://hdr.undp.org/data-center/thematic-composite-indices/gender-inequality-index#/indicies/GII

UN Women. (2023). Women in Politics 2023, Map. Retrieved June 10, 2024, from https://www.unwomen.org/en/digital-library/publications/2023/03/women-in-politics-map-2023

USMAN, M., & HAMMAR, N. (2021). Dynamic relationship between technological innovations, financial development, renewable energy, and ecological footprint: fresh insights based on the STIRPAT model for Asia Pacific Economic Cooperation countries. *Environmental Science and Pollution Research, 28*, 15519–15536. https://doi.org/10.1007/s11356-020-11640-z

WANI, I. U., HASEEN, S., & KHANDAY, I. N. (2024). Modelling the asymmetric impact of economic growth and poverty on gender inequality: Evidence from India using nonlinear ARDL analysis. *Journal of Public Affairs*, *24*(3), e2931. https://doi.org/10.1002/pa.2931

WILLIAMSON, J. B., & BOEHMER, U. (1997). Female life expectancy, gender stratification, health status, and level of economic development: A cross-national study of less developed countries. *Social Science & Medicine*, *45*(2), 305-317.

WONG, Y. N. (2012). World Development Report 2012: Gender equality and development. *Forum for Development Studies*, *39*(3), 435–444. https://doi.org/10.1080/08039410.2012.722769

YILDIRIM, Z., & YASA, A.A. (2014). The relation between the budget deficit and energy demand in the selected European countries and Turkey: Panel cointegration analysis. *International Journal of Trade, Economics and Finance, 5*(6), 482-489. https://doi.org/10.7763/IJTEF.2014.V5.420

ZAFAR, M.W., SAUD, S. & HOU, F. (2019). The impact of globalization and financial development on environmental quality: Evidence from selected countries in the Organization for Economic Co-operation and Development (OECD). *Environmental Science and Pollution Research, 26*, 13246-13262. https://doi.org/10.1007/s11356-019-04761-7

ZALUKHU, R. S., & COLLYN, D. (2021). Determinant analysis of gender inequality in human development in Indonesia. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal), 4*(4). https://doi.org/10.33258/birci.v4i4.2708

https://www.oxfam.org/en/what-we-do/issues/gender-justice-and-womens-rights#:~:text=Gender%20inequality%20is%20one%20of,to%20increasing%20gender%2Dbased%20violence.

https://www.un.org/development/desa/disabilities/envision2030-goal5.html

https://www.unwomen.org/en/news-stories/in-focus/2022/08/in-focus-sustainable-development-goal-5 Retrieved May 13, 2023.

https://www.unwomen.org/en/news-stories/feature-story/2023/09/global-gender-equality-in-2023-urgent-efforts-needed-to-reach-2030-goals Retrieved March 3, 2024.

https://data.oecd.org/healthstat/life-expectancy-at-birth.htm Retrieved April 5, 2023

Özet

Cinsiyet eşitsizliği, eğitim, sağlık, işgücüne katılım, ücretler, üretken girdilere ve kaynaklara erişim, yasal haklar ve siyasi temsil dâhil olmak üzere çeşitli sosyal ve ekonomik göstergelerde kadınların erkeklere kıyasla deneyimlediği eşitsiz muamele ve fırsatları ifade eder. Bu eşitsizlik, bir toplumda mevcut ekonomik, sosyal ve kültürel faktörlere bağlı olarak çeşitli şekillerde ortaya çıkabilir. Kadınlar genellikle erkeklerden daha fazla dezavantajla karşı karşıyadır ve aynı ayrıcalıklara ve fırsatlara sahip değildir.

Cinsiyet eşitsizliği konusu, eğitim, sağlık, istihdam, ücretler ve sosyal refahta eşitlik ve adalet sorunlarını teşvik ettiği için dünya çapında önemli bir endişe kaynağıdır. Ancak, geçmişteki önyargılar, sağlık hizmetlerine erişim eksikliği, siyasette eşit temsil eksikliği, ekonomik eşitsizlik ve yasal savunmaların yetersizliği nedeniyle sosyal eşitlikteki ilerleme sınırlı kalmıştır.

Cinsiyet eşitliği konusu eğitim, siyaset, sosyoekonomik gelişmeler, kültürel yapılar ve kadınların çeşitli sektörlerde yoğunlaşması gibi birçok faktörden etkilenen karmaşık bir konudur. Birleşmiş Milletler'in 2030 hedeflerinden biri cinsiyet eşitliğini sağlamak ve tüm kadınları ve kızları güçlendirmektir. Uluslararası platformlarda cinsiyet eşitsizliğini

azaltmak için ciddi adımlar atılmış olsa da dünyanın her yerindeki kadınlar ayrımcılık ve eşitsizlikle karşı karşıyadır. Her iki cinsiyet de insan sermayesinin bileşenleri olduğundan, kadın işgücünü ve istihdamını bir politika olarak teşvik etmek ekonomik büyümeye ve kalkınmaya katkıda bulunacak ve bireysel refahı artıracaktır.

Bu çalışma, başlangıçta cinsiyet eşitsizliği ile ekonomik kalkınma arasındaki korelasyona ilişkin mevcut literatürü değerlendirerek ve eğitim, sağlık ve siyasi güçlendirme alanlarına odaklanmıştır. Bu çalışmada, 2005-2021 dönemi için cinsiyet eşitsizliği ile kadınların parlamentoya katılımı, eğitim oranı, doğumda beklenen yaşam süresi, ekonomik büyüme arasındaki ilişki incelenmektedir. Bu çalışma dinamik panel veri modeli kullanarak yüksek gelirli ülkeler için gerçekleştirilmiştir.

Analiz sonuçları, kadınların parlamentoda daha yüksek düzeyde katılımının, kadınların, eğitim oranlarının, doğumda beklenen yaşam süresinin ve ekonomik büyümenin cinsiyet eşitsizliğinde bir azalma ile ilişkili olduğunu göstermektedir. Son olarak, cinsiyet eşitsizliği, kadınların parlamentodaki temsil düzeyi, kadınların eğitim düzeyi, doğumda beklenen yaşam süresi ve ekonomik büyüme arasında ikili bir nedensellik ilişkisi olduğu sonucuna ulaşılmıştır.