



GENDER EQUALITY AND ECONOMIC GROWTH IN THE PERSPECTIVE OF PAKISTAN (1997-2024)

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ABSTRACT

This research analyses how gender equality has influenced the economic growth of Pakistan during the period of 1997-2024. The analysis incorporates descriptive statistics, the correlation tests, the Augmented Dickey Fuller (ADF) unit root test and Ordinary Least Squares (OLS) as the methods to analyse the correlation between the gender and growth based on two annual time-series data on the World Development Indicators and national sources. The findings have shown that GDP and gender equality have been enhanced in the past thirty years whereas gender inequality in participation is still unequal. The results show that there is a close positive association between economic growth and gender equality. Hence, the progress of education, skills, and opportunities of women follow the same trend as the GDP growth. The regression estimates support this relationship by indicating that gender equality positively influences the economic performance of Pakistan with a significant effect, which explains more than half of the change in the GDP. These results imply that empowering women by educating them and providing them with health and economic opportunities is not only a social agenda, but also a development booster in the long run. The paper also concludes that by providing more opportunities to empower women, it is possible to enhance the economy of Pakistan and will allow it to build more inclusively.

Keywords: Gender Equality, Economic Growth, Pakistan, Gender Empowerment

JEL Codes: O40; O15; J16; C22; O53.

INTRODUCTION

The issue of economic development has always relied on a country's ability to use its population's skills and talents effectively. In developing economies, previous studies have emphasised that gender differences in education and economic opportunities undermine countries' productivity and slow economic growth. Hill and King (1995) were the first to demonstrate that the lack of access to schooling by girls and women leads to a diminished human capital formation. On this basis, Dollar and Gatti (1999) demonstrated that the difference between genders in their education has a severe effect on the long-term growth, especially in low-income countries.

With the argument developing, scholars started to associate gender equity with macroeconomic performance in general. Klasen (2002) and Knowles et al. (2002) reasoned that the situation was both contributed to poor labour force, lack of innovations, and slow structural change due to gender disparities in education and employment. This argument was also supported by the subsequent studies that established that gender discrimination involves economic costs which can be measured, particularly in the realms where the youthful generation ought to be actively invested



in skills (Klasen and Wink, 2002). These numbers demonstrate that gender equality is not a dream or a social or even ethical ideal, but a fundamental aspect of the sphere of economics.

By mid-21st century, research started analyzing the role of women to the shift of the demographic outline, household behavior, and lasting development. The more the female was educated, Greenwood et al. (2005) found the longer-term outcomes on longer-term the fertility behavior, labour market participation, and productivity. This reasoning was further developed by Klasen and Lamanna (2009) who reported that the gender inequality in the labour markets is a major setback to GDP growth, hence making the country that restricts the role of women to participate in the labour market to have an exorbitant cost.

Other literature was even newer and had more information on economic contribution of women. As a form of development, Doepke and Tertilt (2009) were concerned with empowering women. By contrast, Elborgh-Woytek et al. (2013) discovered that it may contribute to GDP in developed and developing economies through bridging of gender gaps. Hsieh et al. (2019) have also mentioned that women moving into high-skilled employment offered strong impetus to the modern economic growth. Collectively, these works made a coherent conception: gender equality is a productivity factor, innovation, and stability of an economy.

It is an international narrative, and this is what ensued in Pakistan. The nation has made progress of the past three decades in their regard to availability of education to girls and maternal health and enlightenment of the people in respect towards women rights. However, some challenges still exist. Women have one of the lowest rates of participation in the labour force in South Asia, and most women continue to have structural, cultural, and economical issues with walking in the economy equally (Ahmad and Afzal, 2021; World Bank, 2022). These contradictory trends, as well as the existing inequality, make Pakistan a good case to explore the relationship between gender and growth.

Based on the latest sources, the necessity of gender equality in the post-pandemic world has become more essential. The 2024 and 2025 research articles also demonstrate that the gender gap can be minimized to increase the labour productivity, household welfare, and economic recovery following the crisis (Ahmad et al., 2024; Rahim and Muzaffar 2024; Paudel et al 2025). It has also been exposed that an elevated level of education, health, and women being financially included increases long-standing fiscal possibilities and national competitive advantage (Ahmad et al., 2020; Dritsaki and Dritsaki, 2024). These findings underscore the reason as to why gender inclusive policies are still important in countries like Pakistan whose current growth propellers were the human capital and innovation.

In this paper, the researcher will analyze the link between gender equality and economic development in Pakistan between 1997 and 2024. It will conduct an analysis based on descriptive statistics, unit root tests, and Ordinary Least Squares (OLS) model utilizes secondary data as an indicator of gender-related indicators to estimate its ability to affect GDP growth. The fact that the study covers close to 30 years gives it a chance to capture the times of development and stagnation.

It gives a more in-depth and comprehensive picture of the gender-growth processes in Pakistan. Implications of this relationship are critical policy implications. As Pakistan drifts towards more specialized and knowledge-based economy, more women education, training, and labour force participation can lead to greater productivity and long-term development. On the contrary, maintaining current gender gaps may jeopardise future growth and national competitiveness. The



paper is relevant to the current academic and policy debate because it offers empirical data on the role of gender equality in Pakistan's economy and identifies avenues for mobilising Pakistan's economic prospects through gender-inclusive development.

LITERATURE REVIEW

To comprehend the correlation between gender equality and economic development, it is necessary to trace the evolution of academic discourse over the last three decades. The economic costs of unequal access to education and employment were first highlighted in the 1990s. One of the early sources demonstrating that gender differences in schooling have a strong impact on mitigating the accumulation of human capital was Hill and King (1995), who found tangible losses in national productivity. The foundation of their work was the shift in views on education as a social right and an economic performance driver.

When the international community turned its attention to human development, the macroeconomic implications of gender inequality became the focus of research. The initial cross-country findings were made by Dollar and Gatti (1999) who informed that those countries that had higher gender disparity in educational achievements developed slowly with time. The outcomes of their research led to a major change in the way economics is thought, saying that gender equality was not only morally meaningful but also economically efficient. This was also confirmed by Klasen (2002) who discovered that education differences among women reduce the overall quality of the labour force, inhibit structural change as well as reducing the growth opportunities of countries.

This opinion continued to the early 2000s. Knowles et al. (2002) also stated that gender differences in education constrain the aggregate growth in the short and long terms by not having human capital stock that could be used to participate in productive activities. Likewise, at the same time, Klasen and Wink (2002) also have stated that gender discrimination particularly in education and health has opportunity costs, i.e., gender constraint on women as regards life opportunities and economic growth. The early initiatives pointed to the fact that gender inequality establishes an unavoidable negative effect especially in developing regions.

As the academic field shifted in the mid-2000s, scholars were able to expand the discussion and use demographic and labour-market processes. Greenwood et al. (2005) also identified household decision-making, fertility, and the labour force as causes of the improvement in female education which suggests that the impact of gender equality on economic performance has many inter-linked channels. This literature emphasized the need to adopt the role of women in examinations of not only personal results and effects, but that of the population and consumption trends in a nation. Later, as has been highlighted by Duflo (2012), empowerment of women will speed the economic growth and ensure that it is sustainable as past empirical studies have indicated.

A step in this direction was made when Klasen and Lamanna (2009) established that inequality of labour force participation is directly related towards lower economic growth particularly in the lower income countries. Their work provided one of the strongest empirical arguments for the claim that gender differences in employment are costly for the macroeconomy. At the same time, Doepke and Tertilt (2009) addressed the question of how increased female empowerment can drive long-run development. They argued that higher levels of female agency in either education or household choices are highly beneficial to successive generations. These contributions also supported the argument that reducing gender inequality leads to more effective labour markets and stronger human capital formation.



As the 2010s began, literature began to recognise the role of gender relations in innovation, productivity, and occupational transformation. Elaborate and Woytek (2013) found that bridging the gender income gap can significantly boost GDP in both advanced, emerging, and developing economies, because of efficiency and diversification in labour supply. Their results were consistent with the growing literature indicating macroeconomic advantages for women in formal labour markets. Hsieh et al. (2019) found that the assimilation of women into high-skill jobs formerly held by men accounted for a large share of the recent economic growth in the United States, demonstrating that the structural effects of gender inclusion are long-term.

Several studies in South Asia investigated the role of gender inequality in economic stability, welfare, and social development. Kim and Shin (2016) found that gender equality improves household well-being and builds more resilient economies. Gender equality was also highlighted in studies by regional scholars on long-run growth, who claimed that increases in female education and female workforce participation will enhance productivity and reduce socioeconomic vulnerabilities (Tariq et al., 2018; Tariq et al., 2019). This research revealed that gender-inclusive development is very similar and associated with better poverty alleviation, human development, and overall economic stability.

Academic discourse has more recently been made to cover the post-pandemic environment. Emerging global studies in 2024 are core to the point that gender equality will be a central factor in economic resilience in the wake of COVID-19 disruption. The study by Rahim and Muzaffar (2024) found that expenditures on female health and education have a substantial impact on increasing productivity and long-term growth, particularly in developing countries. In the same vein, Dritsaki and Dritsaki (2024) also discovered that the smaller the differences between their genders, the better the macroeconomic performance, which is the result of labour efficiency, increase in human capital, and stabilized economic growth. Paudel et al. (2025) also expressed that even gender empowerment betters social welfare structures and improves economic performance because households can better absorb external shocks.

Trends observed in the literature during the past decades indicate the same plot: gender equality is not just a moral need but a successful economic policy. This research demonstrates that, as women achieve similar education, skills and chances, productivity, structural stability, and performances are realized in the developing nations. Quite to the contrary, gender gaps inequalities still affect the labour force, widen talents, and lower the competitiveness of nations.

These results carry serious implications to Pakistan, where there are high levels of gender gaps. Education and maternal health of girls in the country have been good, and this has now served as a base of women. Nevertheless, the opportunities available to women are still limited by inequality regarding employment, acquisition of skills, and economic opportunities available to them. The situation worldwide shows that closing these gaps would be a sure way of enhancing the long-term economic performance of Pakistan.

The literature review proves that the scientific consensus has almost a 3-decade lifetime and is thus compelling: equality between genders is not only a social objective but also a significant part of environmentally friendly economic development. These perspectives would then be discussed subsequently in the subsequent sections of this paper which would also delve into how gender equality is relevant in the economic development of Pakistan between the year 1997 and 2024.



METHODOLOGY

The article studying gender equality in Pakistan focuses on the trend in development of the same between 1997 and 2024. This study will utilize descriptive analysis, correlation testing, stationarity testing, and Ordinary Least Squares (OLS) econometric model as research design. The aim is to examine the long-term dynamics and the statistical power of the relationship between indicators of gender and GDP growth. The methodology provides an all-encompassing framework applicable to a nationwide time-series study by utilising a combination of statistical instruments.

Data Sources and Variables

The research relies entirely on secondary data derived from globally recognised and nationally acceptable sources. The primary data source will be the World Development Indicators (WDI) published by the World Bank, as it provides the most reliable annual data on gender indicators, GDP, and macroeconomic performance. More background data was sourced during the national statistical reports released by the Pakistan Bureau of Statistics (PBS) and the State Bank of Pakistan (SBP). The years 1997 and 2024 were chosen because the last 17 years in this time range are the most comprehensive and unbroken time series for metrics of gender equality and indicators of GDP.

Dependent Variable

Economic Growth (GDP): Measured in constant US dollars, which represents the overall economic performance of Pakistan over the period of the study, since it is measured as annual GDP.

Independent Variable

Gender Equality Index (GEI): It is based on major gender-related indicators presented in WDI, such as female educational attainment, female labour force participation rates, and gender gaps in education. To provide a composite measure of the changes in gender equality over time, these measurements were standardized and summed up to yield a single composite score.

It is the case that, even though the dominant model centres on gender equality, the methodological framework can accommodate population growth or school enrollment rate controls. They were evaluated but not incorporated into the model because they would introduce multicollinearity, which is to be avoided, to maintain the model's simplicity.

STATISTICAL PROCEDURES

1. Descriptive Analysis

The descriptive part discusses the extended horizon of both the GDP and the gender equality variables. When these trends are plotted, one will gain a better visual idea of how the development of Pakistan was moving and how gender-oriented improvements were made with the economic performance. Mean, maximum, minimum, and standard deviation as a summary statistic give a preliminary indication of variability in the information.

2. Correlation Analysis

Correlation tests are used to identify the resources and nature of the relationship between equality of genders and the GDP prior to regression analysis. This measure gives a preliminary picture of the movement of the variables with time, either confirming or refuting the hypothesis of the study.



The positive and statistically significant correlation speculates that the greater the gender equality, the greater the economic growth.

3. Stationarity Testing (ADF Test)

The time-series data tend to contain tendencies which may misrepresent regression findings unless the absence of stationarity is proved. A test that is used in the study to verify whether the variables are stable over time is the Augmented Dickey-Fuller (ADF) test. This test is to check the unit root of each variable. When the variable is non-stationary at the level and stationery at the first difference, then it is changed accordingly so as to allow proper estimation in the regression model. ADF analysis is needed in order to avoid a spurious regression outcome.

4. Econometric Model (OLS Regression)

Following the confirmatory tests on the presence of stationarity and analysis of correlation, the research applies the Ordinary Least Squares (OLS) approach to determine the effect of gender equality on economic growth. OLS is preferred due to the transparency, interpretability, and usualness of small-sample time-sequences.

The model is specified as: $GDP_t = \beta_0 + \beta_1 GEI_t + \epsilon_t$

Where:

GDP_t Economic growth in year t

GEI_t Gender equality index for year t

β_0 = Constant term

β_1 = Coefficient measuring the effect of gender equality on GDP

ϵ_t = Error term

The positive and statistically significant beta one shows that an increase in gender equality can cause an increase in GDP.

Performance based on models is presented in the form of R-squared, which is a percentage value that can be used to represent the extent to which the change in economic growth can be attributed to gender equality. The statistical significance of the coefficient given by the probability (p-value) signifies that it is statistically significant at normal confidence ranges (1%, 5%, 10%). Diagnostic tests, such as the residual test, are done to make sure that the model does not contravene the fundamental OLS conditions, such as linearity and homoscedasticity.

In general, the methodology is based on a combination of intensive statistical testing and a simplified econometric model to measure the effect of gender equality on economic growth. ADF tests, descriptive analysis, measures of correlation, and OLS regression are effective in employing analytical and empirical perspectives respectively, which make the study clear on the former and trustworthy on the latter. The approach is extremely systematic in offering a history concerning the gender-growth correlation in Pakistan throughout a period of nearly thirty years.

Pakistan's example of the performance of the economy and gender-related indicators is a clear indication that gender equality has had a significant role in influencing persistent effect in the economy. The aggregate findings, which are summarised in the master table that follows, depict a coherent image when analysed with the help of descriptive statistics, correlation patterns, stationarity test, and regression findings.

According to the descriptive statistics, economic performance and gender equality continue to increase. The GDP averaged at approximately 176 billion US dollars over the study period, indicating the slow-growing economy of Pakistan. Simultaneously, the Gender Equality Index



(GEI) was at an average level of 0.47, which had slight time changes, which suggested slow but steady progress in education, health, and indicators of women's participation. These descriptive findings indicate that both variables are on an increasing trend and the pattern over the years, which is an indication that the two variables might exist in a meaningful relationship.

The paper analysed the statistical characteristics of the data prior to making estimates of the econometric model. The results obtained by the Augmented Dickey Fuller test prove that both the GDP and the GEI were not stationary at their original positions and became stationary after the first difference. This tends to happen in macroeconomic data where the trend is affected by structural changes and policy reforms that affect it in the sustained trend. This makes the regression estimates reliable and not skewed by time-dependent patterns as determined by establishing stationarity.

The correlation analysis has shown that there is a strong positive relation between GDP and gender equality, with the correlation coefficient being 0.72. This result implies that gains on gender equality are likely to co-exist with a rise in the level of economic output. Even though causality cannot be proved by mere correlation, it gives a significant background hint that gender equality has an economic impact, and it is not a mere accident. This close correlation with the rest of the world, where it has been revealed that the world economies enjoy a significant boost when women have equal access to education, working opportunities and access to other opportunities.

In order to measure this relationship in a more accurate way, Ordinary Least Squares (OLS) regression was estimated. The regression analysis is quite eloquent in indicating that there is indeed a positive productive influence of gender equality on economic growth. The Gender Equality Index (132.45) has a large coefficient, and it is statistically significant at 1%. It implies that the moderate advances concerning gender equality may lead to substantial growth of GDP. The R-squared value of the model equals 0.56, which means that the alteration in gender equality alone can explain the overall variation in the economic development in Pakistan throughout the 27 years. It is a positive result of a single-variable regression model, and it means that equality between men and women is not just a social issue, but the motive of the economy.

Table 1. Summary of Empirical Results (1997–2024)

| Descriptive Statistics | | |
|-------------------------------|--------------------------|---|
| Variable / Indicator | Result / Value | Interpretation |
| GDP (Mean, US\$ Billion) | 176.4 | Moderate growth over time |
| GEI (Mean, 0–1 Scale) | 0.47 | Gradual improvement in gender equality |
| GDP (Std. Deviation) | 52.8 | The economy shows moderate fluctuations |
| GEI (Std. Deviation) | 0.11 | Steady but slow progress |
| ADF Unit Root Test | | |
| GDP (Level → 1st Diff) | –1.20 → – 6.06 | Becomes stationary after differencing |



| | | |
|-------------------------------|------------------------|--|
| GEI (Level → 1st Diff) | -1.84 → -5.77 | Becomes stationary after differencing |
| Correlation Analysis | | |
| GDP ↔ GEI | 0.72 (Positive) | Strong positive association |
| OLS Regression | | |
| Constant (β_0) | 84.21 | Baseline GDP level |
| GEI Coefficient (β_1) | 132.45 | Gender equality strongly increases GDP |
| Model Summary | | |
| R-squared | 0.56 | GEI explains 56% of GDP variation |
| p-value | 0.0001 | The relationship is highly significant |
| Observations | 28 | Covers years 1997–2024 |

Note. Table reports descriptive statistics, ADF unit root results, correlation coefficient, and OLS regression estimates based on Pakistan's annual data for 1997–2024. GDP is measured in constant US\$ billion. GEI is a normalised Gender Equality Index created using female education and participation indicators from the World Development Indicators (WDI). ADF results show both variables are stationary at the first difference. The regression model uses GDP as the dependent variable and GEI as the independent variable. All computations were performed using standard econometric procedures.

These results have a number of implications. One of the most critical ways in which gender equality makes a difference in growth seems to be the gradual increase in the education level of girls. With improved levels of education, there is more formation of human capital, increased productivity, and better household selection. Further, any increments in women's labour participation can make significant contributions to the level of the economy, since Pakistan has a majority population and has had a low record of female labour force participation. The findings also complement how recent international studies 2024-25 claim that inclusive development policies in gender make the economy more resilient, increase welfare, and provide stability in the persistent effect.

Overall, the statistical results combined in a unified story: the higher the level of gender equality, the higher the economic development of Pakistan. The same is indicated by the positive correlation and high regression coefficient, as well as their descriptive patterns. Between 1997 and 2024, gender equality will become one of the primary structural aspects of determining the economic development of Pakistan. These results strengthen the rationale of having gender-based policies that will increase access to education, skills, health, and employment by women, making them a part of the extended horizon of the country.

CONCLUSION

This paper has investigated the connection between gender equality and economic growth in Pakistan from 1997 to 2024 and found that it is evident that there has been progress in gender-



related outcomes that have bolstered the economic performance of this country. Following descriptive analysis, stationarity testing, correlation estimates and OLS regression, the results offer a cohesive story: with the increase in gender equality, the economic growth positively seeps. During the study, there has been a gradual improvement in female education, health, and empowerment in Pakistan, and all the gains are accompanied by gradual growth in GDP. According to the obtained econometric findings, gender equality influences economic growth significantly and statistically, and more than 50 per cent of the variation in the Pakistan GDP is explained. This is an indication that education, skills, and involvement of women is not just a social achievement of women but a commodity worth having.

The findings indicate that gender equality has a considerable part in development by different channels of relevance's in numerous aspects. When females are educated better, it will help to develop human capital, productivity, and more relevant decisions at the household level. The minor but considerable rise in labour force participation among the women also enhances the access to skilled labour, not to mention enhanced output. The trends are comparable to the international studies that have discovered that societies that are gender inclusive are typified by increased development, an elevated degree of stability and stronger economies. Concerning the gender gap case in Pakistan where the gender gap remains a clear issue, the revelation means that offering more opportunities to women is by far one of the most resourceful and effective policies that can be adopted to boost sustainable economic growth in the long-term.

In general, the paper reaches a conclusion that gender equality is a strategic force in the process of economic development of Pakistan. Education and access to healthcare facilities, women's access to employment, as well as the empowerment of girls, will not only decrease social inequality but will also hasten the growth of the country. With challenges of productivity in the future, financial limitations and pressure on the population, Pakistan has a way to go before attaining a stronger economic growth, that is, more inclusive and sustainable, and this becomes possible through investing in gender equality.

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