

Article

Examining the Perspectives of Gender Development and Inequality: A Tale of Selected Asian Economies

Wajid Ali , Ambiya and Devi Prasad Dash *

School of Management and Entrepreneurship, Indian Institute of Technology Jodhpur, Rajasthan 342030, India

* Correspondence: dpdash@iitj.ac.in or devi100.dash@gmail.com

Abstract: The rising concern about gender inequality among the economies in South, South-East, and Eastern Asia motivates us to study the context of gender development in terms of bridging gender disparity. To show the impact, the data has been extracted from various authentic sources- Varieties of Democracy (V-Dem), World Bank Development Indicators database, Sustainable Development Index, The Observatory of Economic Complexity and Human Development Reports of the 24 South, South-East, and East Asian economies from period 2000–2020. This research was carried out empirically using various techniques such as the Ordinary Least Squared Method (OLS), Generalized Methods of Moments (GMM), and Generalised Quantile Regression. The findings of the research show a significant impact of FDI and Economic Complexity in the reduction of gender inequality. Along with this, access to justice and electoral democracy will be providing more representation to women by reducing the gender gaps. Several policy implications have been proposed following the results of the study.

Keywords: gender inequality; foreign aid; democracy; Asia; foreign direct investment



Citation: Ali, Wajid, Ambiya, and Devi Prasad Dash. 2023. Examining the Perspectives of Gender Development and Inequality: A Tale of Selected Asian Economies.

Administrative Sciences 13: 115.

<https://doi.org/10.3390/admsci13040115>

admsci13040115

Received: 29 December 2022

Revised: 14 April 2023

Accepted: 18 April 2023

Published: 20 April 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Simone de Beauvoir, a French social philosopher, penned her magnum opus *The Second Sex* in the mid-twentieth century. In this work, she elaborated on the secondary position of women resulting from social and cultural influences. She famously stated that “a woman is not born, but rather becomes.” She also describes how ‘sex’ (the biological distinction between male and female) evolves into ‘gender’ (a socio-cultural construct) over time. It occurs as a result of primary (family peer groups, community) and secondary socialization (school, college, club, public library, offices, sports, etc.). Half of the population of the world is female, but they have less power over their lives and make fewer decisions than do males. Gender equality was emphasized as one of the eight Millennium Development Objectives, and as vital to attaining the other seven goals by the ([United Nations Population Fund 2013](#)), which was then extended in Sustainable Goal Five which embraces Gender Equality and promotes women’s empowerment. According to the figures estimated in the Sustainable Development Goals Report 2022, despite progress in recent years, the world is still struggling to achieve gender equality by 2030. South Asia looks to be rich in cultural constructs, such as family relationships, social networks, and economic interactions, as well as notions of social peace and the pursuit of spiritual over material values. The brutal reality of divisions and discrimination based on gender, caste, creed, and socioeconomic inequality, however, lies beneath this idealized conceptualisation. While gender inequity in the labour force is widespread, other mindsets, particularly those that treat women as if they were offspring of a lesser deity, are arguably more concerning. Without a fundamental shift, opportunities for women would remain limited, growth would be stifled, inequities would persist, and biases would continue to define society’s ideals, impeding the empowerment process. Disparities due to the caste of the individual, class, religion, and cultural differences are getting worse in the South Asian region due to gender discrimination, which hinders the

advancement and growth of males and females. Current statistics suggest that, despite great advancements (especially in education and health), an extensive amount of gender gap still persists. South Asian nations have patriarchal and societal norms which favour males in both opportunities and control over resources (Narayan et al. 2000). These disparities appear at every stage of life, from childhood to adulthood (Munoz Boudet et al. 2018; Tebaldi and Bilo 2019; Retherford and Roy 2003). Women in most South Asian countries have less access to education and basic healthcare than do men, and they are more likely to be poor (Fikree and Pasha 2004). The household data show relative equality in fast-growing Asia, but its gender inequality is among the greatest on the globe (ILO, various years). In terms of gender equality, Pakistan ranks second to last (WEF 2013). In South Asia, gender inequality is a common issue, which is connected to the socially accepted values in the culture of the particular region. The data indicates that almost 5.5 million males and 5.9 million females are not receiving a primary education. Gender discrimination, coupled with the region's caste, class, religious, and cultural obstacles, is the main reason why females are not getting proper education (Tebaldi and Bilo 2019). The Global Gender Gap Index 2022 provides a list of crucial measures for enabling a population to be empowered, with a particular focus on women. These include access to and participation in the economy, as well as opportunities for education. While the world as a whole would require 132 years to achieve gender parity at current levels, South Asia, the weakest performer, would require over 197 years. Despite considerable advancements in human development in recent years, South Asia continues to suffer major gender discrepancies. Discriminatory societal norms and institutional factors contribute to the denial of a female's rights in all aspects of life. A historically skewed sex ratio is the result of sex-selective abortion and a disregard for health of women. As a result, girls and women confront significant obstacles in health, education, nutrition, and employment. Moreover, women continue to experience considerable barriers to mobility, independence, and access to property. Gender-based violence, including child marriage, is still widely practiced and accepted throughout the area. Furthermore, some of the worst undernutrition rates worldwide are caused by social conventions surrounding nutrition (e.g., the custom of women eating last and least). Gender equality cannot be achieved because of discrimination against women in law and society. Therefore, social protection mechanisms that address these hazards are crucial in the area. Despite improvements in women's education and recent economic progress, South Asia is still at the bottom in terms of female labour force participation globally. Women often find themselves in hazardous and low-paying occupations, because they bear a disproportionate amount of the unpaid work, which is one of the barriers preventing them from entering the workforce. As women continue to have poor participation rates in contributory programs, the need for gender disparity-based systems is essential.

Figures 1 and 2 indicate the diagrammatical representation of the major variables of the current study, which are the Gender Development Index, Access to Justice, and Economic Complexity. The graph indicates that, with the increase in Access to Justice and Economic Complexity, people will invest in health, education, and economic activity and remove the gender gap from among them. Along with this, most females work in the unorganized sector of the economy, frequently in dangerous situations with no social protection. Therefore, strong institutional factors could improve gender equality. Economic complexity will not only increase the income of the individual by producing diversified products, but also the diversification of products in accelerating the human development through technological advancement. The graph of Access to Justice (Figure 2) shows a highly positive impact on GDI, as with the increase in Access to Justice, females and underprivileged women of the society obtain a chance of contributing to the society's development and hence there will be an improvement in the Gender Development Index in 24 Asian countries. Moreover, Table A2 of the Appendix A indicates the Global Gender Report, which examines the state of gender equality in countries around the world. The report provides data and analysis on a range of indicators related to gender equality, including economic participation and opportunity, health and survival, educational attainment, and political empowerment.

According to its statistics, 13 of the 23 South Asian nations have improved their ranking by promoting gender equality. By giving citizens equal opportunities, countries are making progress in closing the gender gap. Laos is the only nation whose score increased; it rose by 0.017 points, joining the Philippines as the highest-scoring nation.

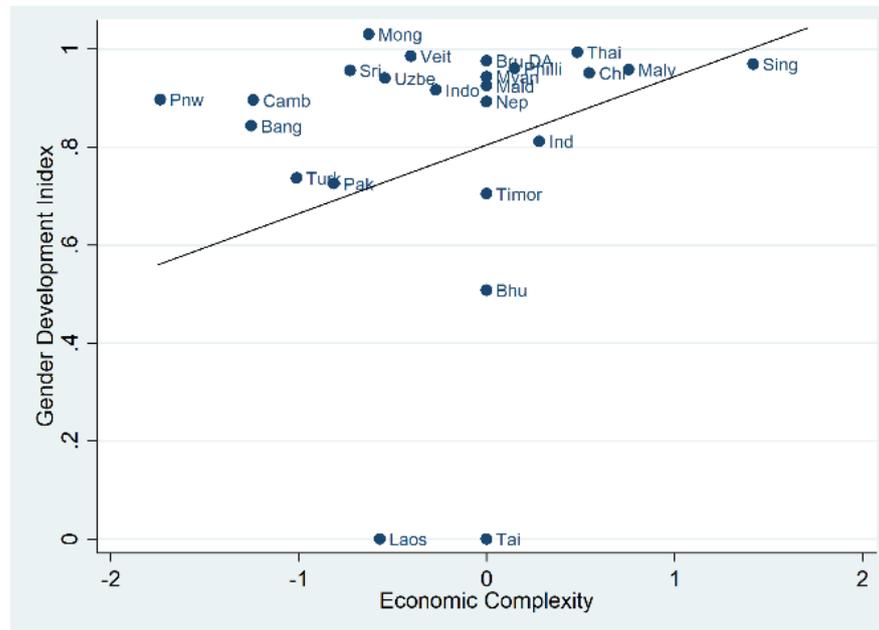


Figure 1. Gender Development Index and Economic Complexity.

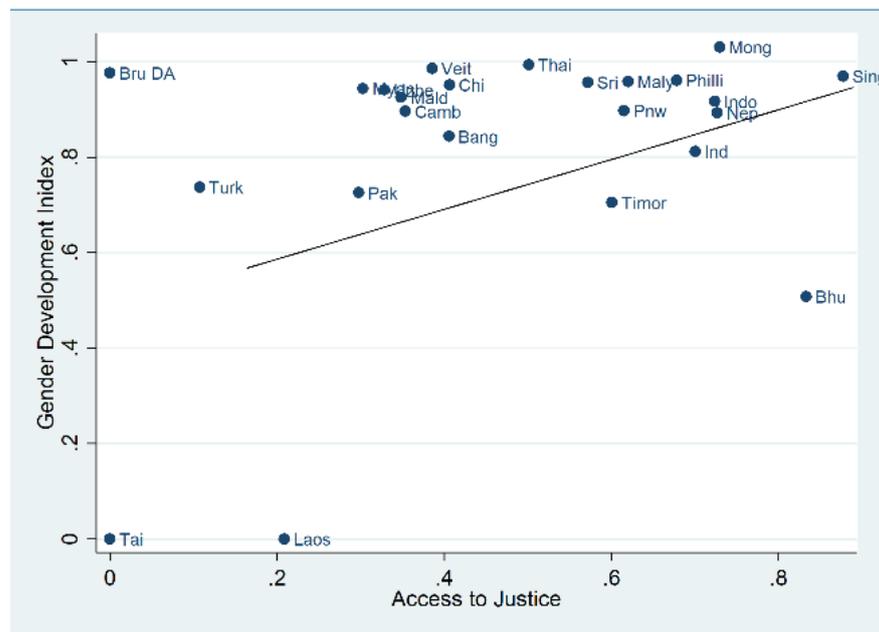


Figure 2. Gender Development Index and Access to Justice.

Therefore, in our critical view of both theoretical and empirical papers, our first objective is to create a link between the Gender Development Index and Economic Complexity. Our next goal is to analyse the effect of macroeconomic institutions on the Gender Development Index, since a more complex economy can create new job opportunities for women and foster a more diverse and inclusive workforce. Hence, to address the above objective we incorporated the GDI as a dependent variable; it is a composite index that

measures gender disparities in development levels between men and women. It is calculated by the United Nations Development Programme (UNDP) and is based on three components: health, education, and income. The GDI measures the same dimensions of human development as the Human Development Index (HDI), however, it adjusts for gender disparities in each of the three components. The GDI is used to track progress towards gender equality over time and to compare gender disparities between countries. The UNDP created a number of gender-related indicators to track progress towards the Sustainable Development Goals (SDGs), especially SDG 5, which aims to achieve gender equality and give all women and girls more power.

The primary aim of this study is to address a gap in the literature by introducing a link between Economic Complexity and the Gender Development Index. Economic Complexity (EC) refers to the diversity and complication of a country's economic activities, as well as how well it can make and sell complex products. EC theory suggests that countries that develop more complex and diverse economies over time are more likely to achieve sustained economic growth and prosperity. This could impact gender inequality by affecting job opportunities and wage levels. Along with this, another important variable is Electoral Democracy, which is a type of political system characterized by regular, free, and fair elections in which citizens have the right to vote and the ability to choose between competing political parties or candidates. Further, it promotes the representation and inclusion of women in political decision-making, while access to justice is the principle that all individuals, regardless of their background, should have equal opportunities to seek and obtain effective remedies for grievances through formal and informal legal systems. Additionally, access to justice could provide legal protection against gender-based violence and discrimination. These factors are crucial for promoting gender equality and creating more inclusive and equitable societies.

Therefore, when Economic Complexity increases there will be a rise in the Gender Development Index. As with the increase in technological advancement, people will increase investments in health, education, and economic activity, which will contribute to the minimizing gender gap. In addition to an increase in electoral democracy and access to justice, females will obtain the opportunity to contribute to economic development which will further improve the Gender Development Index by decreasing disparities while increasing health, education, and economic activity among them. According to, (Beer 2009), long-term democracy, along with female rights, should create additional opportunities for women to advocate their interests through mobilization and elections. This will assist in increasing the Gender Development Index by decreasing gender disparities in a particular country.

Considering the perspective of the gender development scenario in the selected Asian economies, our study has come up with certain unique findings. First, we found that after the 1990s, the gender development scenario has improved significantly with the uptick of economic complexity and sustainable development in the region. Even improved domestic investment and rising foreign aid have resulted in significant gender development in the region. Second, our empirical results demonstrated that greater access to justice and improved democracy have enhanced the scope of gender freedom and gender-inclusive development. Third, our results pointed out certain growing concerns in terms of a negative association between gross enrolment rate and gender development. This theory states that improved education and literacy result in limiting, rather than increasing, gender freedom and development in the region. This shows that the education system and enrolment at all levels should initiate gender-sensitive and gender-inclusive education patterns and development, which would in turn promote a wider sustainable development in the future.

In light of the persistent gender disparities in South Asian nations, this study investigates the role of gender development in a selected set of Asian economies. The remaining parts of the paper are organized as follows: Section 2 contains a Review of the Literature, Section 3 consists of Data and Analysis, Section 4 consists of Data and Empirical Methods, and Section 5 includes Discussions and Results. Section 6, finally, concludes with suitable policy suggestions.

2. Literature Review

This section presents the building blocks from earlier literature in the domains of gender development, inequality and the reasons behind this, globally speaking. The presence of unequal global gender development is attested through various factors, as cited in various development literature in this section. First, we have focused on the importance of feminism, followed by the waves of development in the importance of gender across the literature globally. Next, we cite the earlier literature in this field by corroborating various factors to see how gender development has translated into unequal gender development over the years.

The term “feminism” refers to a collection of social, economic, and political groups and ideologies that are focused on eliminating gender discrimination and ensuring that men and women have equal access to the justice system. In the western world, the progression of the feminist movement is sometimes described in terms of “waves of change,” each of which reflect the movement’s various high points and low points.

The first wave emerged in the western world in the late nineteenth and early twentieth centuries, with the fundamental goal of winning political voting rights (Shugart 2001). The second wave of feminism brought attention to inequalities in areas such as paid employment, unpaid home labour, childbirth and child-raising, gender identity, and abortion; this wave was viewed, though, as being primarily for white women who were in the middle class and heterosexual. In fact, the second wave has received criticism for leaving out women from minority groups, women who consider themselves non-heterosexual, and women from different socioeconomic groups (Dean 2009). Nonetheless, some feminists are concerned about gender inequality and expect more from the ongoing feminist moment. As a result, there is significant disagreement about who initiated the feminist third wave; many attribute it to Rebecca Walker (1995), who proclaimed in 1992 that she proposed the third wave of feminism. Building on the concepts of second-wave feminism (Dean 2009), the third wave is anchored in and formed by the political situation from the mid-1980s to the present (Kinser 2004). According to (Parry and Fullagar 2013), various tendencies such as sexual freedom, self-determination, gender equality, and popular culture will collectively support the third wave of feminism in order to resolve the severe relationship between patriarchal and cultural representation (Kinser 2004). Hence, the third wave of feminism is committed to addressing gender inequality in all its forms, recognizing the complexity of the issues that contribute to it, and promoting inclusivity and diversity in the feminist movement.

Gender equality has been thoroughly studied in the literature in relation to key areas such as health (King et al. 2018), education (Odaga 2020), economic complexity (Nguyen 2021), and democratic regime (Beer 2009). Asia-Pacific countries are some of the most distinct in terms of politics, economy, and culture. Despite tremendous economic progress and greater educational possibilities in recent decades, the region continues to experience multiple socioeconomic inequities, including gender disparity. The workforce of women in Asia continues to be low in comparison to others. Nguyen’s 2021 study suggests that, while women’s employment as self-employment, i.e., their contribution as family workers, and unsafe employment, will have a detrimental effect, their labour participation in service sectors or industry, in addition to wage and salaried employment, will help in improving economic complexity. Moreover, improved women’s health, equality in education, and women’s socio-economic empowerment and rights are favourable elements for economic complexity. There are several important variables that drive economic complexity, including improved government rules and regulations (Sweet and Eterovic Maggio 2015; Vu 2020), the use of digital platforms such as the internet (Lapatinas 2019), and import and export, defined as FDI (Kannen 2020). According to Nguyen (2021), the number of patents has a good impact, and financial development has a mixed effect. Whereas many economists have concluded that a diverse range of production (economic complexity) will boost the GDP of the country (Hidalgo and Hausmann 2009), the underlying causes of economic complexity remain unknown (Hidalgo 2021). Therefore, knowing the factors

that influence economic complexity will not only have a big impact on the literature, but also a significant effect on how policy is implemented. Increasing gender equality results in a more diverse labour force altogether and, more crucially, diversifies the production system's knowledge and abilities (Saxena 2014; Schneider and Northcraft 1999). Women have an edge in certain occupations that call for feminine work (Brynin 2006), which 'pumps up' the economy by presenting improvements within the economy by means of introducing new goods or economic activity (Paludi and Denmark 2018). Additionally, economic complexity is found to be significantly influenced by human capital (Sadeghi et al. 2020), and research shows that social reproduction is the main driving force of economic development (Braunstein et al. 2020). Consequently, gender equality can significantly reduce the complexity of the economy, particularly if human capital is improved. The result shows that these advancements in human capital have a favourable effect on economic complexity (Zhu and Li 2017). In the recognized sector, employers prefer to recruit trained individuals and did not prefer untrained females; gender variations in education can result in employment gaps (Hakura et al. 2016; Klasen 1999; Klasen and Lamanna 2009). Additionally, if women face obstacles to finding employment, parents may believe daughters are not advantageous for the family, and they may decide not to finance their daughters' educations, which will build disparity in the case of education (King and Mason 2001; Cabeza-García et al. 2018). The majority of studies have discovered a linkage between women's increased employment opportunities and economic growth (Elborgh-Woytek et al. 2013; Balamoune-Lutz 2007; Irfan et al. 2012; Klasen and Lamanna 2009). According to some studies, gender parity in pay promotes economic growth by increasing women's labour market involvement and lowering fertility rates (Galor and Weil 1993; Cavalcanti and Tavares 2016). Furthermore, women prefer children's education over other things, and therefore women assign a higher portion of their income to their health and education (Kabeer 2018). A rise in the average number of school years (AYS) contributes to a decrease in economic and educational disparity (Lin 2007). Gender disparity in education is responsible for the decrease in literacy rates. (Summers 1994; King 1995). Human development can also be achieved by investing in education which can minimise inequality and poverty in the country. The region-wide rate of literacy in South Asian countries is around 62.4%, while in secondary and tertiary levels, enrolment ratios are quite low (ADB 2015). In South Asian nations, students from lower socio-economic backgrounds have a low chance to complete education, which is a significant issue, particularly in Sri Lanka, Nepal, and Bangladesh. In Sri Lanka and Bangladesh, admittance to further education for women increased from 1990 to 2009, reaching a rate of around 57%. However, approximately one-third of the women in Pakistan enrolled in higher education, while India made less progress during that time. Along with the conventional factors behind gender development, development literature also realizes the importance of roles of agricultural and ecological factors in the process of gender-led growth. Based on a cross-country perspective, Hazarika et al. (2019) examines the relationship between ancestral ecological endowment and sex ratio in the population. Their analysis finds that more missing women are evident in those economies where the ecological endowment is lesser. The literature has argued further the importance of agriculture in the process of gender development. Findings by Alesina et al. (2013) and Hansen et al. (2015) have demonstrated that economies with longer histories of agricultural practices tend to follow the pattern of less equal gender role importance in the developmental process. Another recent study, by utilizing the observations from waves of World Values Survey, has stated that the roles of agricultural and ecological factors remain pivotal in shaping the attitudes towards women and gender development in the society (Jha et al. 2023).

According to Paxton's (1997) theory, democracies will have a larger proportion of women in parliament because they remove barriers to power. According to McDonagh (2002), democracy works best for women when it is paired with a monarchy that is open to women as well as the constitutionalized provision of social welfare. Several empirical studies have concluded that women's status is positively correlated with democracy Richards

and Gelleny (2007). The primary assertion made by (Inglehart et al. 2002) is that modernity produces cultural shifts that result in democracy and gender equality. As a result, in their perspective, there is no connection between democracy and gender equality. The empirical research on FDI and gender disparity has also shown conflicting findings. While some studies indicate that FDI has had favourable effects, others indicate adverse effects. The research on the uneven distribution of salaries and employment opportunities has developed to stress an increased level of complexity by looking at things from a gender-based perspective. There is conflicting evidence regarding whether foreign ownership affects gender disparity. Some of the results are favourable for reducing gender inequality, while other results are unfavourable (Bui et al. 2018). The authors of (Coniglio et al. 2017), working in Vietnam, found that more opportunities would be there for the female workforce if foreign business were to take part in the country. On the other hand, Juhn et al. (2014) discovered that the North American Free Trade Agreement's tariff reductions, which prompted the adoption of contemporary technologies, had a positive impact on female workers' employment and wages. According to the study by Sharma (2018), in India FDI will play a significant role in gender equality, particularly in the pay of women employees. In her view, a rise in FDI inflows will increase the hiring of women who are unskilled compared to unskilled male workers. However, it will negatively impact both the gender wage gap and the wages of female unskilled workers.

Depending on the above explanation, we have formed two hypotheses.

Hypothesis 1. *Improved macroeconomic institutions can contribute positively towards Gender Development.*

Hypothesis 2. *Economic complexity and trade can enhance Gender Development.*

3. Data and Empirical Methods

3.1. Data and Variables

The panel data used in this research work was extracted from several databases; in total, we studied 24 South Asian, South-East Asian, and East Asian economies for the period of 2000–2020 to evaluate the impact of Economic Complexity, FDI, Foreign Aid, Sustainable Development Index, Electoral Democracy, Access to Justice, Gross Capital Formation, and Enrolment Ratio on the Gender Development Index.

The variables that are incorporated in the quantitative estimates were those that are highly used in research on Gender Development Index and GDP growth. To capture gender inequality, we took variables from the Human Development Index of UNDP. More explicitly, we have used the Gender Development Index, which delivers the three conditions of gender inequality: Education, Health and Economic Resources. Education indicates female and male expected years of schooling for children as well as adults (above 25 years of age); Health indicates male and female life expectancy at birth; and command over Economic Resources shows male and female estimated earned income. We incorporated the fundamental drivers of growth and models for governmental laws, such as the primary features of trade: FDI, Economic Complexity, and Foreign Aid; the condition for government regulations are Electoral Democracy and Access to Justice. Additionally, we took the Gross Capital Formation or Investment and Enrolment ratio so as to document the investment of a country within the South Asian market. Economic Complexity has been used as the main independent variable, one which indicates the level of sophistication and diversity of a country's economy, as well as its ability to produce a wide range of goods and services using a variety of inputs and technologies. Another important variable is Electoral Democracy, which indicates regular, free, and fair competitive elections that allow for the peaceful transfer of power from one group or party to another. Moreover, Access to Justice indicates that all individuals, regardless of their background, should have equal opportunities to seek and obtain effective remedies for grievances through formal and informal legal systems. Further, the control variables have been described in Appendix A.

3.2. Empirical Strategy

This study aimed at examining the non-linear effect of Gender Development-Democracy to analyse the effect of various institutional and economic factors on the dependent variable. This study contains non-linear panel cross-country research by using OLS, generalized quantile regression, and generalized method of moments. We present our analysis with a dataset of 24 Asian economies in which the regressor is the Gender Development Index for the period 2000-2020 over the set of variables described in Appendix A.

The model we used is as follows:

Model 1:

$$GDI_{i,t} = \beta_0 + \beta_1 \cdot EC_{i,t} + \beta_2 \cdot FDI_{i,t} + \beta_3 \cdot LnFA_{i,t} + \beta_4 \cdot SDI_{i,t} + \beta_5 (ED_{i,t} * AJ_{i,t}) + \beta_6 \cdot LnGCF_{i,t} + \beta_7 \cdot LnER_{i,t} + \epsilon_i + \epsilon_t + \epsilon_{i,t} \quad (1)$$

Model 2:

$$GDI_{i,t} = \beta_0 + \beta_1 \cdot EC_{i,t} + \beta_2 \cdot FDI_{i,t} + \beta_3 \cdot LnFA_{i,t} + \beta_4 \cdot SDI_{i,t} + \beta_5 (ED)_{i,t}^2 + \beta_6 \cdot AJ_{i,t} + \beta_7 \cdot LnGCF_{i,t} + \beta_8 \cdot LnER_{i,t} + \epsilon_i + \epsilon_t + \epsilon_{i,t} \quad (2)$$

Model 3:

$$GDI_{i,t} = \beta_0 + \beta_1 \cdot EC_{i,t} + \beta_2 \cdot FDI_{i,t} + \beta_3 \cdot LnFA_{i,t} + \beta_4 \cdot SDI_{i,t} + \beta_5 \cdot (LnER)_{i,t}^2 + \beta_6 \cdot AJ_{i,t} + \beta_7 \cdot LnGCF_{i,t} + \beta_8 \cdot ED_{i,t} + \epsilon_i + \epsilon_t + \epsilon_{i,t} \quad (3)$$

where EC is Economic Complexity, FDI indicates Foreign Direct Investment, LnFA shows a log of Foreign Aid, SDI is the Sustainable Development Index, ED indicates Electoral Democracy; AJ shows Access to Justice; LnGCF shows a log of Gross Capital Formation and LnER shows a log of gross Enrolment Ratio. Values i and t are indicated as Country $i = 1, 2, 3, 4 \dots 24$ and Time $t = 2000-2020$, where ϵ is error term.

The above non-linear equation indicates the impact of EC on the GDI. Equation (1) demonstrates AJ as a moderator variable along with ED. This effect will indicate the impact of free and fair elections on the quality of justice and ensure that individuals have access to impartial and fair judicial processes, which can be particularly important for those who are marginalized or who face discrimination.

The impact of Economic Complexity (EC) and Electoral Democracy (ED) on the Gender Development Index is seen in Equation (2). Since we discovered that the impact of ED varies with GDI level, squaring the ED helps to reflect the interaction effect on GDI. As a result of squaring ED, we have acquired more robustness and have increased the accuracy of our prediction. Similarly, Equation (3) demonstrates the more robust relationship between dependent and independent variables by showing the interaction effect of the LnER.

3.2.1. Simple Linear Regression

As we employ the non-linear models for the estimation process, all three equations can therefore be estimated by using OLS simple regression. Researchers typically employ the traditional OLS regression, which calculates the conditional mean as well as the factor influencing the outcome variable. The correlation among the variables can alter between the places on the dependent variable's conditional distribution because the statistical distribution of data frequently exhibits unequal variance. Therefore, estimates relying on mean values, such as pooled OLS, may produce inaccurate results (Cade and Noon 2003). Furthermore, due to heterogeneity of data and skewed distribution, the OLS regression may produce falsely low regression coefficients. Therefore, to accommodate endogeneity, we have employed a fixed effect model taking the year, the country, and both variables into consideration.

3.2.2. Generalised Quantile Regression

We create a model of quantile regression:

$$GDI_{i,t} = \delta_{\theta} Y'_{i,t} + \epsilon_{i,t}; \text{Quant}_{\theta}(GDI_{i,t}) | Y_{i,t} = \delta_{\theta} Y'_{i,t}$$

where, $Y'_{i,t}$ is a vector consisting of independent variables EC, FDI, LnFA, SDI, AJ, ED, LnGCF, and LnER; $\varepsilon_{i,t}$ is an error term; and $Quant_{\theta}(GDI_{i,t})$ indicates θ^{th} conditional quantile of GDI given Y.

The empirical approach applied in this research is Powell's generalized quantile regression (GQR) (Powell 2020), which contains some priority in comparison to the simple quantile regression which has been used in previous studies. The GQR estimator generates consistent estimates of causal effect, even in the presence of covariates. The standard conditional quantile regression method has the constraint of assuming a correlation between independent variables and the measured variable based on unobserved factors. As a result, when the unobserved variables are included as covariates to the equation of the quantile model, the significance of the parameters of panel data changes dramatically.

The general quantile regression approach permits the explained variable to be conditional on independent as well as on control variables (Koenker and Bassett 1978). Traditional quantile regression fails, as this method does not handle the problem of potential endogeneity. Contrastingly, GQR allows for the separation of independent variables into control and treatment variables. As a result, GQR allows conditioning of casual effect on the explained variable but not on control variables. Therefore, GQR is a straightforward approach for simulating counterfactual distributions for various dependent variable values. Hence, GQR has certain benefits over other methods, as it will look out for potential endogeneity. Additionally, quantile regression and IVQR are both special instances of GQR.

3.2.3. Generalised Method of Moments

The generalised method of moments was first developed by Hansen in 1982. It is one of the most crucial econometric modelling methods for analysing the panel, timeseries, and cross-sectional datasets of economics and finance. This econometric technique will allow equations and models to be analysed even when there are some undesirable assumptions, including some amount of error distributions. The GMM approach necessitates a specific number of conditions before its application to panel data. These initial conditions are also indicated by functions of the equation's parameter and the data so that there are zero true values to the parameters. This approach then minimises a specified norm of the instant condition's sample averages. This estimator is also considered to be efficient and consistent in comparison to all the estimators that do not look into variables other than the instant condition. OLS estimation will present biased results just because of the presence of multicollinearity and endogeneity among dependent and independent variables. GMM is one of the best approaches in the group of instrumental variables estimators. Some prior studies have concluded that two-step GMM is more beneficial than one-step, especially when the variations are predicted to be heteroskedastic in large sample data taking in a long time period (Bond 2002; Roodman 2009; Blundell and Bond 1998).

4. Results and Discussion

4.1. Results of Simple Linear Regression

Table 1 shows the outcome of the non-linear OLS estimates of model 1 for panel data for all the developing countries from south Asia. Column 1 reports the estimates from the basic simple linear regression. Columns 2, 3 and 4, however, show the fixed effects estimate with three different conditions: the Country and Time effects, only the Country effect, and only the Time effect.

Table 1. Results of Simple Linear Regression 2000–2020 for 24 Asian Economies. Dependent variable: Gender Development Index (United Nations Reports).

GDI	Without Time and Country Effect	With Country and Time Effect	With Country Effect	With Time Effect
EC	0.052 *** (0.018)	0.018 (0.02)	0.046 ** (0.021)	0.073 *** (0.017)
FDI	0.012 *** (0.002)	0.001 (0.002)	0.003 * (0.002)	0.015 *** (0.002)
LnFA	0.013 *** (0.004)	0.001 (0.003)	-0.003 (0.003)	0.021 *** (0.003)
SDI	0.332 *** (0.048)	0.324 *** (0.059)	0.093 ** (0.36)	0.601 *** (0.052)
ED×AJ	0.225 *** (0.074)	0.622 *** (0.81)	0.805 *** (0.084)	0.102 (0.068)
LnGCF	0.103 *** (0.022)	-0.07 *** (0.018)	-0.084 *** (0.019)	0.112 *** (0.02)
LnER	-0.005 *** (0.022)	-0.027 * (0.015)	-0.011 (0.015)	-0.027 (0.02)
Cons	0.376 *** (0.032)	0.62 *** (0.064)	0.889 *** (0.052)	0.113 ** (0.057)
Observations	528	528	528	528
R-squared	0.327	0.849	0.815	0.473

Notes: Author's own compilation. Standard error in the parenthesis. *, **, ***: significant at 1, 5 and 10 percent levels (** $p < 0.01$, * $p < 0.05$, * $p < 0.1$), respectively.

The results found that the initial gross LnER coefficient was negative, which suggests that a 1% increase in the LnER will decrease (by 0.005, 0.027, 0.011, and 0.027 percent, respectively) the GDI, as GDI defines the loss of human development caused by Gender Inequality. The result is in line with much of the empirical literature, which shows that Gender Inequality in schooling has an adverse impact on income (Baliamoune and Mcgillivray 2015). The EC variable held a positive sign and is statistically significant, which indicates a 1% increase in diversity of production and output in the country will increase the GDI (by 0.052, 0.018, 0.046 and 0.073 percent, respectively) and therefore decrease Gender Inequality. The result is consistent with the empirical literature, which indicates that, with the increase in EC, human development will increase (Caous and Huanng 2020). Since the Industrial Revolution, the economy and industry have undergone numerous changes. With a shift in social actors during the evolution of economic progress, new goods were produced and have assisted human development. The FDI shows a positive sign and is statistically significant, which indicates that a 1% increase in Foreign Direct Investment will increase the GDI by decreasing Gender Inequality. The result is consistent with several empirical papers in the literature that indicate that FDI inflows will decrease gender inequality by increasing employment opportunities for female workers (Tang and Zhang 2017; Ouedraogo and Marlet 2018; Rasekhi and Hosseinmardi 2012). Regarding our main non-linear variable with the 1% increase in ED and AJ, there will be an increase in the GDI (by 0.225, 0.62, 0.805 and 0.102 percent, respectively), which is statistically significant. This result is also consistent with several works in the empirical literature which show that democracy will have a significant impact on gender equality (Beer 2009) and (Paxton 1997) demonstrate that democracies will have more women in the legislature because they remove arbitrary and artificial barriers to power.

Table 2 presents the results of the non-linear OLS estimates of Model 2 for panel data for all the developing countries from the region.

Table 2 shows the results of simple OLS and fixed effects in non-linear estimation taking the square of ED; the results confirm the hypothesis of enhancing the GDI by improving gender equality. The coefficient of the ED variable shows that with a 1% increase in a democracy, the GDI will increase by (0.17, 0.755, 0.83, and 0.164 percent, respectively). Therefore, an essential component of a democratic society is gender equality. Public organizations should offer services that promote the equality of the rights of women and men while taking into account their unique needs and experiences. Results indicate that a 1% increase in AJ will improve the GDI in simple OLS regression by 0.04%. Results from EC

and FDI show a positive and significant impact on the GDI. Therefore, FDI, LnFA, and EC assist in enhancing the well-being of women and reducing gender gaps, particularly in the areas of health and education. However, the results show that, with the country effect, FA will help in improving GDI, as FA will promote the female labour force participation rate and will help minimize the differences across the gender work participation rate. Gender inequality has been discussed in much of the literature by taking three conditions into account. First, according to human capital theory, salary disparities are caused by skewed human capital endowments and disparities in expected lifetime labour force participation. Second, there is some gender discrimination in the workplace. Third, it is claimed that gender segregation in the labour market contributes to the wage discrepancy between men and women, since women tend to specialise in low-paying informal jobs (Polachek and Polachek 2004). Results indicate that a 1% increase in SDI will improve GDI (0.331, 0.334, 0.079, 0.609 percent, respectively). This result is in line with the previous literature, which shows that SDGs can be used effectively and will assist in enhancing gender and climate (Koehler and Koehler 2016). Results also indicate the negative coefficient of the gross LnER, which shows a 1% increase in the enrolment ratio will decrease the GDI by the loss of human development and increased gender inequality.

Table 2. Results of Simple Linear Regression 2000–2020 for 24 Asian countries. Dependent variable: Gender Development Index (United Nations Reports).

GDI	Without Time and Country Effect	With Country and Time Effect	With Country Effect	With Time Effect
EC	0.053 *** (0.019)	0.009 (0.02)	0.041 * (0.022)	0.081 *** (0.017)
FDI	0.012 *** (0.002)	0.001 (0.002)	0.003 (0.002)	0.016 *** (0.002)
LnFA	0.013 *** (0.004)	−0.001 (0.003)	−0.006 * (0.003)	0.021 *** (0.004)
SDI	0.331 *** (0.048)	0.334 *** (0.058)	0.079 ** (0.037)	0.609 *** (0.052)
ED	0.17 *** (0.101)	0.755 *** (0.091)	0.836 *** (0.098)	0.164 *** (0.092)
AJ	0.046 (0.069)	−0.314 *** (0.097)	−0.197 * (0.105)	−0.066 (0.063)
LnER	−0.004 (0.022)	−0.01 (0.015)	0.008 (0.016)	−0.024 (0.02)
LnGCF	0.104 *** (0.022)	−0.053 *** (0.015)	−0.071 *** (0.02)	0.116 *** (0.02)
Cons	0.374 *** (0.032)	0.692 (0.068)	0.959 *** (0.061)	0.126 ** (0.058)
Observations	528	528	528	528
R-squared	0.325	0.852	0.812	0.474

Notes: Author's own compilation. Standard error in the parenthesis. *, **, ***: significant at 1, 5 and 10 percent levels (** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$), respectively.

Table 3 presents the results of the non-linear OLS estimates of Model 3 for panel data for 24 Asian economies.

Table 3 indicates the third nonlinearity condition by squaring the gross LnER. The results of ED indicates a positive sign in all the estimations which directs that a 1% increase in ED will increase the GDI (by 0.333, 0.73, 0.859, and 0.241 percent, respectively), which is consistent with the other two equations. Overall results demonstrate that strategies are needed to strengthen Democracy and human rights so as to emphasize female empowerment. Therefore, equal rights for all are the key to democracy; more and more research suggests that more female participation increases the likelihood of successful human development. Results also indicate that a 1% increase in EC and FDI will improve the GDI. The result is in line with previous empirical research which shows that an increase in FDI and EC will help in improving the three dimensions of gender inequality, which are Health, Education, and Income (Ouedraogo and Marlet 2018; Saâd 2019). The result of the non-Linear variable, i.e., the Enrolment Ratio, shows no impact on the Gender Development Index. Additionally,

we have found positive and significant impacts of SDI on GDI. The result illustrates that with improved health, education and economic resources country can improve Gender Development Index by minimising the gender inequality gap.

Table 3. Results of Simple Linear Regression 2000–2020 for 24 Asian Countries. Dependent variable: Gender Development Index (United Nations Reports).

GDI	Without Time and Country Effect	With Country and Time Effect	With Country Effect	With Time Effect
EC	0.062 *** (0.019)	0.009 (0.019)	0.042 ** (0.021)	0.082 *** (0.017)
FDI	0.011 *** (0.002)	0.001 (0.002)	0.003 * (0.002)	0.015 *** (0.002)
LnFA	0.012 *** (0.012)	−0.002 (0.003)	−0.005 * (0.003)	0.02 *** (0.004)
SDI	0.315 *** (0.044)	0.28 *** (0.057)	0.063 * (0.035)	0.571 *** (0.049)
AJ	−0.116 (0.079)	−0.485 *** (0.101)	−0.427 *** (0.108)	−0.175 ** (0.072)
ED	0.333 *** (0.088)	0.73 *** (0.078)	0.859 *** (0.081)	0.241 *** (0.081)
LnGCF	0.096 *** (0.021)	−0.06 *** (0.018)	−0.076 *** (0.019)	0.104 *** (0.019)
LnER ²	0 (0)	0 (0)	0 (0)	0 (0)
Constant	0.381 *** (0.033)	0.648 *** (0.066)	0.879 *** (0.057)	0.151 *** (0.057)
Observations	528	528	528	528
R-squared	0.342	0.857	0.824	0.480

Notes: Author's own compilation. Standard error in the parenthesis. *, **, ***: significant at 1, 5 and 10 percent levels (** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$), respectively.

4.2. Results of Generalised Quantile Regression

Table 4 presents the results of generalised quantile regression for cross-country panel data estimation of 24 Asian countries for Model 1.

Table 4. Results of Generalised Quantile Regression 2000–2020. Dependent variable: Gender Development Index (United Nations Reports). 24 Asian Countries.

GDI	q25	q50	q75	q90
EC	0.047 ** (0.021)	0.027 ** (0.011)	0.015 (0.009)	0.027 *** (0.008)
FDI	0.014 *** (0.005)	0.002 ** (0.001)	0.002 ** (0.001)	0.004 *** (0.001)
LnFA	0.008 (0.007)	−0.002 (0.003)	−0.002 (0.002)	−0.001 (0.002)
SDI	0.722 ** (0.35)	0.129 ** (0.041)	0.033 (0.028)	0.007 (0.021)
ED *AJ	0.043 (0.071)	0.020 (0.043)	0.012 (0.037)	0.088 *** (0.029)
LnGCF	0.216 (0.204)	0.020 (0.017)	−0.006 (0.013)	−0.011 (0.010)
LnER	−0.016 (0.023)	−0.007 (0.012)	0.003 (0.010)	−0.005 (0.008)
_cons	0 (0.033)	0.839 *** (0.043)	0.952 *** (0.029)	0.981 *** (0.022)

Notes: Author's own compilation. Standard error in the parenthesis. *, **, ***: significant at 1, 5 and 10 percent levels (** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$), respectively.

In studying the effect of Institutional and economic variables we have employed generalised quantile regression for 1st model. The results reported at different quantile (from 25th to 90th) of Gender Development Index is shown in Table 4.

Table 4 shows the results for 24 Asian countries that confirmed some regulations found in the literature. In all the estimations the non-linear estimation of the product of ED and AJ shows a 1% increase in institutional quality will increase the Gender development index (0.043, 0.020, 0.012, and 0.088% in all four quantiles). This shows with the increase in the quality of institutional variables there will be an increase in gender equality therefore it will enhance GDI. The results indicate that EC, FDI, and SDI show a positive impact from the 25th to the 90th quantile. This shows beyond the 25th quantile the Sustainability will help in promoting Gender equality. Additionally, the SDG 5th goal of Human development also promotes gender equality and rights for women. Unequal and controlled access to economic resources to women will lead females to poverty. Therefore, the removal of restrictions will help in promoting gender equality and enhancing the GDI. The results observed that LnGCF shows a positive impact from the 25th to 50th quantiles whereas the 75th to 90th quantile shows a negative impact on GDI in all three equations. This indicates at a higher quantile the investment will increase gender inequality. Results show 1% increase in LnFA will decrease GDI from the 50th to 90th quantile, which indicated as LnFA increases gender inequality will increase.

Table 5 presents the results of generalised quantile regression for cross-country panel data estimation of 24 Asian countries for Model 2.

Table 5. Results of Generalised Quantile Regression 2000–2020 (In presence of the enhanced democratic pattern).

GDI	q25	q50	q75	q90
EC	0.027 (0.022)	0.028 ** (0.011)	0.017 * (0.010)	0.027 *** (0.008)
FDI	0.015 *** (0.015)	0.002 ** (0.001)	0.002 ** (0.001)	0.003 *** (0.001)
LnFA	0.012 (0.012)	−0.001 (0.003)	−0.002 (0.002)	−0.001 (0.002)
SDI	0.618 ** (0.273)	0.105 *** (0.038)	0.038 (0.028)	0.004 (0.022)
ED ²	−0.191 * (0.113)	0.040 (0.07)	0.063 (0.065)	0.181 *** (0.060)
AJ	0.300 * (0.16)	−0.018 (0.049)	−0.035 (0.043)	−0.036 (0.037)
LnGCF	0.154 (0.185)	0.022 (0.017)	−0.009 (0.014)	−0.015 (0.011)
LnER	−0.016 * (0.023)	−0.006 (0.012)	0.007 (0.010)	−0.005 (0.008)
_cons	0 (0.03)	0.856 *** (0.045)	0.957 *** (0.034)	1.000 *** (0.027)

Notes: Author's own compilation. Standard error in the parenthesis. *, **, ***: significant at 1, 5 and 10 percent levels (** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$), respectively.

Table 5 indicates the results of non-linearity taken by the square of democracy. Results show EC, FDI, and SDI have a positive and significant impact on GDI from the 25th to the 90th quantile. The coefficient of the non-linear variable named square of Electoral Democracy shows the positive impact of Democracy on the GDI at a higher quantile from the 50th to 90th quantile. Results indicate 1% increase in investment will increase the GDI (by 0.154 and 0.022 percent) at the 25th and 50th quantile. While at high quantiles in South Asian Developing countries with the increase in investment, the GDI will decrease at the 75th to 90th quantile. The effect of the LnER shows a negative impact on GDI as we move from the 25th quantile to the 90th quantile.

Table 6 presents the results of generalised quantile regression for cross-country panel data estimation of 24 Asian countries for Model 3.

Table 6. Results of Generalised Quantile Regression 2000–2020 (In presence of Higher Enrolment Rate).

GDI	q25	q50	q75	q90
EC	0.025 (0.022)	0.022 ** (0.011)	0.010 (0.010)	0.021 *** (0.008)
FDI	0.013 * (0.007)	0.002 * (0.001)	0.001 (0.001)	0.001 (0.001)
LnFA	0.011 (0.010)	0.000 (0.003)	−0.001 (0.002)	−0.001 (0.002)
SDI	0.622 * (0.622)	0.055 (0.034)	0.015 (0.027)	0.015 (0.020)
AJ	0.120 (0.207)	0.010 (0.058)	−0.027 (0.051)	−0.061 (0.039)
ED	−0.036 (0.133)	0.009 (0.063)	0.004 (0.058)	0.035 (0.046)
LnGCF	0.192 (0.248)	0.003 (0.014)	−0.004 (0.012)	−0.021 (0.009)
ER ²	0.000 (0)	0.000 ** (0.000)	0.000 *** (0.000)	0.000 *** (0.000)
_cons	0 (0.032)	0.869 *** (0.040)	0.960 *** (0.030)	1.009 *** (0.023)

Notes: Author's own compilation. Standard error in the parenthesis. *, **, ***: significant at 1, 5 and 10 percent levels (** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$), respectively.

Table 6 shows the results of non-linear estimation by taking the square of the Enrolment Ratio into consideration. Results indicate EC, FDI and SDI show a positive impact on the GDI from the 25th to the 90th quantile. The coefficient of LnFA shows a positive impact on GDI between the 25th and 50th quantile while indicating a negative impact as we move towards the 75th and 90th quantile. Regarding our main variables ED indicates a positive impact on GDI as we move from the 50th to the 90th quantile while it indicates a negative impact on the initial quantile. AJ shows a negative impact on GDI at the 75th to 90th Quantile.

4.3. GMM Estimates

Table 7 shows the estimates of GMM under the presence of non-linear growth components of all three models.

Table 7 demonstrates the non-linear variables of institutional quality such as ED and product of ED and AJ will show a positive impact on the GDI. This indicates with a 1% increase in ED, GDI will Increase by 0.974%. This indicates an increase in institutional quality there will be an increase in the Gender Development Index by decreasing the gap of gender inequality. These results are in line with previous literature which suggests that democracy has a positive impact on gender equality and development and higher levels of democracy will promote gender development by minimising inequality which will improve female-to-male life expectancy, lower fertility rates, and higher percentages of women participating in the labour force (Beer 2009). Results show democracy is positively related to the social welfare of women and according to the study of most of the metrics of women's status such as the the United nation report GDI and GEM are positively correlated with democracy (Richards and Gelleny 2007). The economic development variables such as EC, FDI, LnFA, and SDI show a positive relationship with GDI in all three models. These results are in line with several empirical results which indicate that distinct levels of human capital and economic complexity have a positive impact on both long-term and short-term growth. EC and human capital have a beneficial interaction effect on economic growth (Zhu and Li 2017). Previous empirical work has concluded that, once certain thresholds are reached for education, government spending, and trade openness, these variables promote the positive effects of economic complexity on lowering income disparity (Khanh and Phuong 2020). Therefore, empirical results support SDG's fifth goal of human development, which promotes gender equality and rights for women. Unequal and

controlled access to economic resources for women will lead females to poverty. Therefore, the removal of restrictions will help in promoting gender equality and enhancing the Gender Development Index.

Table 7. Results of Generalised Method of Moments 2000–2020. Dependent variable: Gender Development Index (United Nations Reports). 24 Asian Economies.

GDI	Model 1	Model 2	Model 3
EC	0.166 ** (0.082)	0.145 (0.093)	0.165 * (0.086)
FDI	0.002 (0.003)	0.002 (0.004)	0.002 (0.003)
LnFA	0.018 ** (0.009)	0.009 (0.01)	0.01 (0.009)
SDi	0.241 ** (0.116)	0.282 ** (0.282)	0.234 (0.145)
(ED) ^2		0.974 ** (0.457)	
AJ		1.315 *** (0.501)	0.825 ** (0.418)
ED			1.132 *** (0.321)
ED*AJ	2.288 *** (0.602)		
LnGCF	0.2 * (0.114)	0.145 * (0.145)	0.13 (0.13)
LnER	−0.01 (0.043)	−0.013 (0.046)	
(LnER)^2			0 (0)
Constant	−0.075 (0.156)	−0.296 (0.289)	−0.263 (0.248)
Number of observations	528	528	528
Arellano-Bond test for AR (1) (Pr > z)	0.010	0.123	0.042
Arellano-Bond test for AR (2) (Pr > z)	0.091	0.104	0.125
Sargan test P value	0.000	0.000	0.000
Hansen test of P Value	1.000	1.000	1.000

Notes: Author's own compilation. Standard error in the parenthesis. *, **, ***: significant at 1, 5 and 10 percent levels (** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$), respectively.

5. Empirical Results and Discussion

Studies on the Gender Development Index have increased drastically over the past few decades, as individuals have been concerned about the importance of women and gender equality. The past trends show that there has been some progress in support of gender equality by the addition of equality in access to education, whether primary or secondary education, equality in the place of work, and the discussion in Parliament of quotas that include gender.

Regardless of the current progress, gender inequality is still a big question in most countries worldwide. In most cases, inequality has been present in the developing countries of the world. The main problem the world is facing is there are a lesser number of opportunities for women in participating economically due to a lack of basic education, health issues, and workplace issues. Gender Inequality assists the world in human development; therefore, in this vein, our results conclude that with the increase in economic complexity and FDI, there will be an increase in the Gender Development Index. This indicates that, with the increase in both variables, people will invest in health, education, and economic activity and remove the gender gaps among them. The results from the institutional variable show that a highly positive impact on GDI results, since with the increase in Electoral Democracy and Access to Justice, females and underprivileged women of the society secure

a chance of contributing to its development, and hence there will be a decline in the gender gap. In addition, high gender equality will also contribute to country's peace, economic activity and national growth. Therefore, policies to improve democracy and human rights should place a focus on women's empowerment and eradicating the gender gap in every part of the workplace. Attempts to achieve the removal of inequality should include an emphasis on paying particular attention to issues of color, age, ethnicity, religion, and sexual orientation.

There exist some studies on whether increasing women's participation in parliaments has changed the manner of politics in parliaments. Major studies in this area have mainly focused on western parliaments, and the conclusions of the above studies are contradictory (Stockemer 2011). Some of the studies also concluded that females had a different way of doing work, as they mostly focused on improving the root cause of the problem. In addition, women representatives in Parliament have added a new form of policy framework, highlighting the problem of inequality and violence against women (Devlin and Elgie 2008). This research has filled the gap by looking into the institutional as well as the economic impact of human development by including the gender development variables. We have also argued that focusing on gender equality is not just a topic of proving justice socially as well as economically but will also help in contributing to the sustainable growth of countries. However, further study can be carried out on women's quota-based seats in parliaments and other government offices by comparing developed and developing countries.

6. Conclusions

In extending the present empirical and theoretical research on the Gender Development Index (GDI), gender inequality, economic complexity, and various institutions, this study addresses filling the gap in the literature by examining the impacts of economic complexity and various institutions on GDI.

Specifically, this study will contribute to the literature on gender inequality in human development within 24 Asian economies by using several indicators such as SDI, Foreign Direct Investment, Foreign Aid, Access to Justice, Democracy, and Investment. To handle the endogeneity in the main estimates we have used Powell generalized quantile regression, a two-Step GMM model. The results indicate a positive impact of Economic Complexity, Electoral Democracy, and Access to Justice on the Gender Development Index. This means that diversified production and a strong democratic institution will decrease gender inequality by improving health, education, and the contribution of females in economic activities.

The present study undoubtedly comes up with few policy suggestions for improving gender roles in the developing economies. First, democratic structures must devise certain female-centric inclusive developmental systems in terms of providing space in policymaking spheres and increasing their representation at both local and national policymaking bodies. Second, employment policies need to adopt and strengthen the technical, vocational, and other types of skills required for women, especially at technical and non-technical sectors, at a massive scale in these economies. Third, it has been found that women in rural areas in these developing Asian economies are highly prone to encountering a lack of access in economic opportunities, discrimination, domestic violence, illiteracy, and inequality. Women in rural areas must be given basic and advanced access in terms of economic opportunities, just as urban women in these countries are, to bridge gap of developmental inequality. Fourth, an improved literacy and enrolment rate for women at tertiary and higher education levels need to be emphasized by federal governments in order to attain a greater gender-based sustainable development.

Our empirical findings demonstrate the manner in which gender development in our selected sample is being impacted by the developments of sustainability, economic growth, varying enrolment rates, various macroeconomic developments, and changes in the democratic system. In the light of these findings, we still feel that this current study poses certain limitations. First, given the current gender roles within the developmental process,

the analysis could have been extended to a global scale. Second, the aspects of financial development, environmental standards and ecological wellbeing have not been considered in this analysis, one where gender roles play a significant role. It is consistent with the fact that no economies globally can attain robust financially- and ecologically-inclusive growth by denying gender roles in the developmental process. Third, from the perspective of the time period, the study could have extended the analysis to the 1980s to capture, how gender has had a role to play historically in the economic development process globally. Fourth, the inclusion of several political variables, such as autocracy within the regime, transparency, political representation, political voice in policy formulation and women's access to basic economic opportunities at the cross-country level should have been incorporated in order better to capture the gender development dynamics. Even considering the limitations of the current study, we still feel that this study will provide a basic platform for carrying out more robust works in the domains of gender roles, growth and sustainability in future, especially as to the cross-country dynamics.

Author Contributions: Conceptualization, D.P.D.; Methodology, W.A.; Software and Validation, D.P.D. and W.A.; Formal Analysis, W.A.; Resources, A.; Data Curation, W.A.; Writing—Original Draft Preparation, W.A. and A.; Writing—review and editing, D.P.D.; Supervision, D.P.D.; Visualization, D.P.D. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data can be shared based upon the request to the authors.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Details of Data Collection.

Variable	Label	Sources	Description
Gender Development Index	GDI	Human Development Reports	GDI measures gender Inequality by measuring three dimensions of human development: health, education and economic resources.
Economic Complexity	EC	The observatory of economic complexity	Economic complexity is an indicator that measures the diversification of production and correct utilisation of resources to promote human development.
Foreign Direct Investment	FDI	World Bank	FDI is a cross border investment which shows an entity outside country taking care of funds in another nation.
Foreign Aid	FA	World Bank	Foreign aid defines net aid flows from one country to another.
Sustainable Development Index	SDI	Sustainable development Index	SDI measures human development by taking care of the three dimensions Life Expectancy, Education and Income.
Access to Justice	AJ	Variety of Democracy (V-Dem)	Defines whether citizens of the country have secure and effectiveness in Justice or not.
Electoral Democracy	ED	Variety of Democracy (V-Dem)	The amount of democracy people have in a particular country, and it ranges from 0 to 1.
Gross Capital Formation	GCF	World Bank	GCF is also called Investment and measured as increase in assets of public, government and household.
Enrolment Ratio	ER	World Bank	Enrolment ratio defines the ratio of total population enrolment with no age foundations.

Source- Author's own compilation.

Appendix B. Global Gender Gap Index 2021 and 2022

Country Wise depiction of GGG 2022



Map Indicates South, South-East and East Asian economies countries of Global Gender Gap 2022 Report by World Economic Forum.

Table A2. Comparative Points of GGG 2021 and 2022.

Country	2021	2022
Bangladesh	0.719	0.714
Bhutan	0.639	0.637
Brunei Darussalam	0.678	0.68
Cambodia	0.684	0.69
China	0.682	0.682
India	0.625	0.629
Indonesia	0.688	0.697
Laos	0.75	0.733
Malaysia	0.676	0.681
Maldives	0.642	0.648
Mongolia	0.716	0.715
Myanmar	0.681	0.677
Nepal	0.683	0.692
Pakistan	0.556	0.564
Papua New Guinea	0.635	N.A
Philippines	0.784	0.783
Singapore	0.727	0.734
Sri Lanka	0.67	0.67
Iran	N.A	N.A
Thailand	0.71	0.709
Timor Leste	0.72	0.73
Turkmenistan	N.A	N.A
Uzbekistan	N.A	N.A
Vietnam	0.701	0.705

Author's own compilation.

References

- Alesina, Alberto, Paola Giuliano, and Nathan Nunn. 2013. On the origins of gender roles: Women and the plough. *The Quarterly Journal of Economics* 128: 469–530. [\[CrossRef\]](#)
- Asian Development Bank. 2015. *Key Indicators for Asia and the Pacific 2015*, 46th ed. Mandaluyong: Asian Development Bank.
- Balioune, Mina, and Mark McGillivray. 2015. The Impact of Gender Inequality in Education on Income in Africa and the Middle East. *Economic Modelling* 47: 1–11. [\[CrossRef\]](#)
- Balioune-Lutz, Mina. 2007. Globalisation and Gender Inequality: Is Africa Different? *Journal of African Economies* 16: 301–48. [\[CrossRef\]](#)
- Beer, Caroline. 2009. Democracy and Gender Equality. *Studies in Comparative International Development* 44: 212–27. [\[CrossRef\]](#)

- Blundell, Richard, and Stephen Bond. 1998. Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics* 87: 115–43. [\[CrossRef\]](#)
- Bond, Stephen R. 2002. Dynamic Panel Data Models: A Guide to Micro Data Methods and Practice. *Portuguese Economic Journal* 1: 141–62. [\[CrossRef\]](#)
- Braunstein, Elissa, Rachid Bouhia, and Stephanie Seguino. 2020. Social Reproduction, Gender Equality and Economic Growth. *Cambridge Journal of Economics* 44: 129–56. [\[CrossRef\]](#)
- Brynin, Malcolm. 2006. Gender, Technology and Jobs. *British Journal of Sociology* 57: 437–53. [\[CrossRef\]](#)
- Bui, Thi Mai Hoai, Xuan Vinh Vo, and Duy Tung Bui. 2018. Gender Inequality and FDI: Empirical Evidence from Developing Asia–Pacific Countries. *Eurasian Economic Review* 8: 393–416. [\[CrossRef\]](#)
- Cabeza-García, Laura, Esther B. Del Brio, and Mery Luz Oscanoa-Victorio. 2018. Gender Factors and Inclusive Economic Growth: The Silent Revolution. *Sustainability* 10: 121. [\[CrossRef\]](#)
- Cade, Brian S., and Barry R. Noon. 2003. A Gentle Introduction to Quantile Regression for Ecologists. *Frontiers in Ecology and the Environment* 1: 412–20. [\[CrossRef\]](#)
- Caous, Emilie Le, and Fenghueih Huarng. 2020. Economic complexity and the mediating effects of income inequality: Reaching sustainable development in developing countries. *Sustainability* 12: 2089. [\[CrossRef\]](#)
- Cavalcanti, Tiago, and José Tavares. 2016. The Output Cost of Gender Discrimination: A Model-Based Macroeconomics Estimate. *Economic Journal* 126: 109–34. [\[CrossRef\]](#)
- Coniglio, Nicola, Rezart Hoxhaj, and Adnan Seric. 2017. Foreign Firms and the Gender Gap in Employment: Evidence from Vietnam. *UNIDO Inclusive and Sustainable Development Working Paper Series* 5: 2017. [\[CrossRef\]](#)
- Dean, Jonathan. 2009. Who's Afraid of Third Wave Feminism? *International Feminist Journal of Politics* 11: 334–52. [\[CrossRef\]](#)
- Devlin, Claire, and Robert Elgie. 2008. The Effect of Increased Women's Representation in Parliament: The Case of Rwanda. *Parliamentary Affairs* 61: 237–54. [\[CrossRef\]](#)
- Elborgh-Woytek, Katrin, Monique Newiak, Kalpana Kochhar, Stefania Fabrizio, Kangni Kpodar, Philippe Wingender, Benedict Clements, and Gerd Schwartz. 2013. Women, Work, and the Economy: Macroeconomic Gains from Gender Equity. *Staff Discussion Notes* 13: 1. [\[CrossRef\]](#)
- Fikree, Fariyal F., and Omrana Pasha. 2004. Role of Gender in Health Disparity: The South Asian Context. *British Medical Journal* 328: 823–26. [\[CrossRef\]](#)
- Galor, Oded, and David N. Weil. 1993. *The Gender Gap, Fertility, and Growth*. 4550. Cambridge: National Bureau of Economic Research. [\[CrossRef\]](#)
- Hakura, Dalia, Mumtaz Hussain, Monique Newiak, Vimal Thakoor, and Fan Yang. 2016. *Inequality, Gender Gaps and Economic Growth: Comparative Evidence for Sub-Saharan Africa*. IMF Working Paper 16/111. Washington, DC: International Monetary Fund, pp. 1–29.
- Hansen, Casper Worm, Peter Sandholt Jensen, and Christian Volmar Skovsgaard. 2015. Modern Gender Roles and Agricultural History: The Neolithic Inheritance. *Journal of Economic Growth* 20: 365–404. [\[CrossRef\]](#)
- Hazarika, Gautam, Chandan Kumar Jha, and Sudipta Sarangi. 2019. Ancestral Ecological Endowments and Missing Women. *Journal of Population Economics* 32: 1101–23. [\[CrossRef\]](#)
- Hidalgo, César A. 2021. Economic Complexity Theory and Applications. *Nature Reviews Physics* 3: 92–113. [\[CrossRef\]](#)
- Hidalgo, Cesar, and Ricardo Hausmann. 2009. The building blocks of quality. *The Health Service Journal* 119: 15.
- Inglehart, Ronald, Pippa Norris, and Christian Welzel. 2002. Gender Equality and Democracy. *Comparative Sociology* 1: 321–46. [\[CrossRef\]](#)
- Irfan, Muhammad, Sajjad Ahmad, Zahid Pervaiz, Muhammad Irfan Chani, Sajjad Ahmad Jan, and Amatul R. Chaudhary. 2012. Munich Personal RePEc Archive Gender Inequality and Economic Growth: A Time Series Analysis for Pakistan. *Middle-East Journal of Scientific Research* 10: 434–39.
- Jha, Chandan Kumar, Sudipta Sarangi, and Ishita Tripathi. 2023. Do Historical Agro-Ecological Factors Shape Current Attitudes towards Women's Rights and Abilities? *Indian Economic Review*, 1–18. [\[CrossRef\]](#)
- Juhn, Chinhui, Gergely Ujhelyi, and Carolina Villegas-Sanchez. 2014. Men, Women, and Machines: How Trade Impacts Gender Inequality. *Journal of Development Economics* 106: 179–93. [\[CrossRef\]](#)
- Kabeer, Naila. 2018. Gender Equality and Economic Growth. In *Women and Girls Rising*. Milton Park: Routledge, pp. 205–19. [\[CrossRef\]](#)
- Kannen, Peter. 2020. Does Foreign Direct Investment Expand the Capability Set in the Host Economy? A Sectoral Analysis. *World Economy* 43: 428–57. [\[CrossRef\]](#)
- Khanh, Lan, and Dung Phuong. 2020. How Does Economic Complexity Influence Income Inequality? New Evidence from International Data. *Economic Analysis and Policy* 68: 44–57. [\[CrossRef\]](#)
- King, Elizabeth M. 1995. Women's Education and Economic Well-Being. *Feminist Economics* 1: 21–46. [\[CrossRef\]](#)
- King, Elizabeth, and Andrew Mason. 2001. *Engendering development. Through Gender Inequality in Right, Resources, and Voice*. Washington: The World Bank. [\[CrossRef\]](#)
- King, Tania L., Anne Kavanagh, Anna J Scovelle, and Allison Milner. 2018. Associations between Gender Equality and Health: A Systematic Review. *Health Promotion International* 35: 27–41. [\[CrossRef\]](#)
- Kinser. 2004. Negotiating spaces for/through third-wave feminism. *NWSA Journal* 16: 124–53. [\[CrossRef\]](#)
- Klasen, Stephan, and Francesca Lamanna. 2009. The Impact of Gender Inequality in Education and Employment on Economic Growth: New Evidence for a Panel of Countries. *Feminist Economics* 15: 91–132. [\[CrossRef\]](#)

- Klasen, Stephan. 1999. Does Gender Inequality Reduce Growth and Development? *Policy Research Report Working Paper 7*: 1–38.
- Koehler, Gabriele, and Gabriele Koehler. 2016. Tapping the Sustainable Development Goals for Progressive Gender Equity and Equality Policy? *Gender & Development* 24: 53–68. [CrossRef]
- Koenker, Roger, and Gilbert Bassett Jr. 1978. Regression Quantiles. *Econometrica: Journal of the Econometric Society* 46: 33–50. Available online: <https://www.jstor.org/stable/1913643> (accessed on 28 December 2022). [CrossRef]
- Lapatinas, Athanasios. 2019. The Effect of the Internet on Economic Sophistication: An Empirical Analysis. *Economics Letters* 174: 35–38. [CrossRef]
- Lin, Chun Hung A. 2007. Education Expansion, Educational Inequality, and Income Inequality: Evidence from Taiwan, 1976–2003. *Social Indicators Research* 80: 601–15. [CrossRef]
- McDonagh, Eileen. 2002. Political citizenship and democratization: The gender paradox. *American Political Science Review* 96: 535–52. [CrossRef]
- Munoz Boudet, Ana Maria, Paola Buitrago, Benedicte Leroy De La Briere, David Newhouse, Eliana Rubiano Matulevich, Kinnon Scott, and Pablo Suarez-Becerra. 2018. *Gender Differences in Poverty and Household Composition through the Life-Cycle: A Global Perspective*. World Bank Policy Research Working Paper 8360. Washington, DC: World Bank. [CrossRef]
- Narayan, Deepa, Raj Patel, Kai Schafft, Anne Rademacher, and Sarah Koch-Schulte. 2000. *Can Anyone Hear Us?* New York: Oxford University Press, Washington, DC: World Bank, pp. 1–334.
- Nguyen, Canh Phuc. 2021. Gender Equality and Economic Complexity. *Economic Systems* 45: 100921. [CrossRef]
- Odaga, Geoffrey. 2020. Gender in Uganda's Tertiary Educational Distribution. *Social Sciences & Humanities Open* 2: 100023. [CrossRef]
- Ouedraogo, Rasmané, and Elodie Marlet. 2018. Foreign Direct Investment and women empowerment: New evidence on developing countries. *IMF Working Papers* 18: 1. [CrossRef]
- Paludi, Michele A., and Florence L. Denmark. 2018. *Women and Leadership*. Berlin: Springer. [CrossRef]
- Parry, Diana C., and Simone Fullagar. 2013. Feminist Leisure Research in the Contemporary Era: Introduction to the Special Issue. *Journal of Leisure Research* 45: 571–82. [CrossRef]
- Paxton, Pamela. 1997. Women in National Legislatures: A Cross-National Analysis. *Social Science Research* 464: 442–64. [CrossRef]
- Polachek, Solomon W., and Solomon W. Polachek. 2004. How the Human Capital Model Explains Why the Gender Wage Gap Narrowed. *SSRN*, 527142. [CrossRef]
- Powell, David. 2020. Quantile Treatment Effects in the Presence of Covariates. *Review of Economics and Statistics* 102: 994–1005. [CrossRef]
- Rasekhi, Saeed, and Haniyeh Hosseinmardi. 2012. An Impact of Globalization on Gender Wage Inequality: A Case Study of Selected Developing Countries. *International Journal of Business and Development Studies* 4: 27–40.
- Retherford, Robert D., and T. K. Roy. 2003. Factors Affecting Sex-Selective Abortion in India. *NFHS Bulletin*, 21.
- Richards, David L., and Ronald Gelleny. 2007. Women's Status and Economic Globalization. *International Studies Quarterly* 51: 855–76. [CrossRef]
- Roodman, David. 2009. How to Do Xtabond2: An Introduction to Difference and System GMM in Stata. *Stata Journal* 9: 86–136. [CrossRef]
- Saad, Myriam Ben. 2019. Economic Complexity and Gender Inequality in Education: An Empirical Study. *Economics Bulletin* 39: 321–34.
- Sadeghi, Pegah, Hamid Shahrestani, Kambiz Hojabr Kiani, and Taghi Torabi. 2020. Economic Complexity, Human Capital, and FDI Attraction: A Cross Country Analysis. *International Economics* 164: 168–82. [CrossRef]
- Saxena, Ankita. 2014. Workforce Diversity: A Key to Improve Productivity. *Procedia Economics and Finance* 11: 76–85. [CrossRef]
- Schneider, Sherry K., and Gregory B. Northcraft. 1999. Three Social Dilemmas of Workforce Diversity in Organizations: A Social Identity Perspective. *Human Relations* 52: 1445. [CrossRef]
- Sharma, Shruti. 2018. Heterogeneity of Imported Intermediate Inputs and Labour: Evidence from India's Input Tariff Liberalization. *Applied Economics* 50: 1171–87. [CrossRef]
- Shugart, Helene A. 2001. Isn't It Ironic?: The Intersection of Third-Wave Feminism and Generation X. *Women's Studies in Communication* 24: 131–68. [CrossRef]
- Stockemer, Daniel. 2011. Women's Parliamentary Representation in Africa: The Impact of Democracy and Corruption on the Number of Female Deputies in National Parliaments. *Political Studies* 59: 693–712. [CrossRef]
- Summers, Lawrence H. 1994. Investing in All the People. *The Pakistan Development Review* 3: 367–404. [CrossRef]
- Sweet, Cassandra Mehlig, and Dalibor Sacha Eterovic Maggio. 2015. Do stronger intellectual property rights increase innovation? *World Development* 66: 665–77. [CrossRef]
- Tang, Heiwai, and Yifan Zhang. 2017. Do Multinationals Transfer Culture? Evidence on Female Employment in China. *Journal of International Economics* 133: 103518.
- Tebaldi, Raquel, and Charlotte Bilo. 2019. *Gender and Social Protection in South Asia: An Assessment of the Design of Non-Contributory Programmes*. (No. 38). Research Report. Published by International Policy Centre for Inclusive Growth (IPC-IG), UNICEF Retrieved April 19, 2023. Available online: https://ipcig.org/sites/default/files/pub/en/RR38_Gender_and_social_protection_in_South_Asia.pdf (accessed on 19 April 2023).
- United Nations Population Fund. 2013. *Realizing the Potential*. United Nations Population Fund Annual Report. Published on 12 September 2014. New York: United Nations Population Fund.

- Vu, Trung V. 2020. Does Institutional Quality Foster Economic Complexity? *SSRN Electronic Journal*, 2293. [[CrossRef](#)]
- Walker. 1995. *To Be Real: Telling the Truth and Changing the Face of Feminism*. New York: Anchor Books.
- World Economic Forum. 2013. *Global Gender Gap Report*. Geneva: World Economic Forum.
- Zhu, Shujin, and Renyu Li. 2017. Economic Complexity, Human Capital and Economic Growth: Empirical Research Based on Cross-Country Panel Data. *Applied Economics* 49: 3815–28. [[CrossRef](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.