

Gender Inequality, GDP And Human Resource Development In Pakistan

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Abstract

Gender discrimination and human resources development are the top priority issues now a day. The present study aims at establishing the relationship between human resource development and gender inequality. The time period range from 1973 to 2022. Outcome variable is Human Resource Development Index (HDI) while input variables are gender inequality index (GII), foreign direct investment (FDI), consumer price index (CPI) and growth rate of gross domestic product (GDPGR). Time series data set is used for Pakistan economy. The ARDL technique is the most appropriate for model estimation. We have found that there exist long term relationship between gender inequality, economic progress in Pakistan and human development. The results interpret that gender inequality has negative relationship with human development. Further outcomes pointed out that consumer price index, gross domestic product and foreign direct investment have positive relationship with human development index in Pakistan. It is suggested that human resource quality may be improved by reducing gender inequality.

Keywords: Human Development, Gender Inequality index, Consumer Price Index, FDI, Pakistan.

1. Introduction

Human capital formation and better human quality are the necessary condition for growing economy. In the Millennium Development Goals which are established by the United Nations is promoting gender equivalence and human development are viable objectives. These are the community strategy program of practically every nation in the globe as gender discrimination cannot be supported on any ethical or philosophical grounds. Despite this, gender inequality exists in nearly every developing nation, as well as in the established world (UNDP, 2010 & World Bank Report, 2001). In the study

(Sen., 1989 & Sen, 1992) missing women is the eminent work, which attests to the persistence of gender disparity all across the world. Social scientists and economists are concerned about the decline in gender inequality as it shackles the base of civilized society. In addition to having a negative impact on children's education and health (Lagerlof, 1999), gender imbalance in schooling may hinder reductions in the fertility rate and infant mortality rate (Murti et al., 1995; Summers, 1994; and Hill and King, 1995). It might also include an impact on economic expansion through a variety of means. These routes, which have both direct

and indirect growth consequences on gender disparity, have received extensive literary discussion, which showed the directly impact on Human Development by gender inequality.

Economic expansion has recently given way to human development as the ultimate goal of human action. Its philosophical forebears can be found in Sen's concept of capacities as well as World Bank's and International Labor Organization's (ILO) previous basic needs approach (UNDP Report., 1990). To the way of expanding people's means that helps them to live long life, good health and more fulfilling life has been termed as human progress (Sen, 1984, Streeten, 1981; Fei et al., 1985). This is obvious with the intention of generating important link among economic growth (EG) and human development (HD). On one hand, EG offers the resources needed to enable long-term advancements in HD. On the other side, advances in the caliber of the working force have a significant role in economic growth (UNDP Report., 1990).

Economic Growth has dual relationship with Consumer Price Index in terms of magnitude. In the study of (Murtaza & Ahmad, 2005) there is a threshold at the level of 6 percent of CPI because the below of 6 percent is beneficial for growth and development and beyond this have an inverse relationship with economic growth and same results also showed by the study of (Shehzad, 2011, Iqbal and Nawaz, 2009) in Pakistan. International economics theory has long placed a premium on the contribution that foreign investment makes to a country's well economic development (Bashir et al, 2021). Setting up new production, purchasing existing enterprises and establishing joint business in countries instead of investor's own are all examples of foreign investment. The

economic growth is defined as the presence of increasing production in the long run, consumption and welfare of the nation. FDI has an impact on this growth.

The key purpose of this research is to check the impact of gender inequality and economic growth in Pakistan on human development index as such association has remained a hot topic to be explored further. Study contributes in the work of (Ali et al., 2021) to find the human development index in Pakistan. There are a few gaps between the previous and this work. The first is previous study found the Economic growth and gender inequality to find their social and economic behavior but impact on human development index not found (Shahbaz et al., 2019; Ahmad et al., 2006; Pervaiz et al., 2011). Second gap is there is no one study found the human development index by inflation and foreign direct investment with gender inequality index in Pakistan but this study find the vast analysis for this purpose in Pakistan. The major purpose of research study is to explore the effect of gender disparity on human development.

2. Literature Review

There is a wide body of literature nowadays that discusses many approaches, factors and effects of human well-being. Here are some of the researches that are most pertinent. In order to achieve gender equality and the eradication of gender inequality, women's empowerment is crucial. In addition to boosting incomes, women's empowerment is crucial for demonstrating leadership skills in family's decision-making and coming up with smart ideas for both domestic and global economies. Additionally, the eradication of gender inequality and the empowerment of women can help in realizing the goals of

economic and development projects Mayoux (2009).

There were not much evidence linking economic growth and gender disparity. In some literary works, there was a direct relationship among economic growth and gender disparity, but in other works, there was a negative correlation. According to (Galor & Weil, 1996) high birth rates and slow economic growth is caused by gender differences in education and wages. Lagerlof (1999) presented the same findings in a framework of overlapping generations. The reduction in fertility and the good benefits of mothers' education on their children's education are just two of the ways that female education is seen to contribute to economic prosperity (Hill and King, 1995). When gender dissimilarity was evaluated by the investment differential involve man and women learning, it had an inverse force on economic growth. Cross-country regressions of some empirical investigations had also documented the opposite situation, in which gender disparity in teaching had a favorable impact on economic growth (Hill and King, 1995).

The usual quantity of human assets shown to be lower as a result of gender imbalance in education, and brilliant females are kept out of educational opportunities where they could outperform boys. It hypothesized that gender-based educational inequality degrades human capital quality and slowed the rate of economic growth (Klasen S., 1999). Similar conclusions had been made by considering the externalities produced by women teaching, such as a decrease in birth rates (King et al., 2008).

The primary barrier to women's reproductive health in poor nations is non-dependence in household decision-making. The study

(Mumtaz et al., 2009) took into account the freedom to make decisions, gender disparity at society level, civilization and political affairs as well as the economic challenges encountered by rural women in Punjab, Pakistan. The inadequacy of self-reliance when taking into account the effects of gender variation on female's reproductive fitness as well as the ideas and suggestions of health programs in South Asia particularly Pakistan. Making decisions for the household and taking part in economic activity can empower women (Varghese, 2011). Due to the little marital status of female in Oman, efforts to empower women are ongoing. Through the means of female's empowerment, female become more able to obtain their rights and more reliant upon their ability to clinch with the opportunities that was finish their under-level status. In Oman, female are well-positioned to make domestic and financial decisions, but they are less empowered on the social front.

Suguna (2011) sorted out the issues Indian women face due to their high percentage of illiteracy. He thought that the state administration and people are fully cognizant of the importance of teaching in achieving the empowerment of female in state society and advancing the nation. Therefore, education was the only means by which Indian women can overcome the obstacles in their lives. Women had an extremely low rate of schooling in rural India. The author (Suguna., 2011) also made the point that the only way to empower women and give them a significant voice in domestic and economic issues is through education for women. The research study of (Ashraf et al., 2021, Bashir et al., 2021) gave the same results in his study to measures the poverty intensity by education in the male and female. The

findings were significant and showed that less education gives the higher poverty level.

The participation of women in the job market was far lower than that of men (John Bauer, 1992). The difference between males and women in China's education and workforce used to be quite wide, but it had recently started to close, making China's involvement of female in the working force one of the highest in the world. The study (Almquist, 2013) had significant discrepancies between men and women members of minority groups in the US because minority groups used the country's resources less freely than majority groups because they had less access to education and the labor market. Minority's women suffered in the form of low birth rates and low earning as a result of the men from such groups being unable to participated in the labor marketplace and yet obtain a basic education. Due to their lack of education, minority group mothers are unable to care for their children, which caused their kids to struggle with malnutrition and a host of other health issues.

The study (Jacobs, 1996) had sociological research on the role of female in US at academia. Women had no authority as the faculty member but study stated that women are forever side by side to male at the every level. In order to decrease the achievement gap among women and men higher education, it has been advised that more study on gender inequality in higher education be conducted. In the study of (Jehan, 2000) showed different factors of development decide country will go to richness and advancement. Progress, according to hopeful wisdom, refers to achievement of important societal conditions. A nation should have goals and aspirations to dedicate resources toward in order to achieve better growth and development.

Men and women have equal rights in every area of life, according to this study (Lagerlöf, 2003), gender equality has a favorable effect on durable economic growth. The working force contributed the rate of female increases with higher per capita income. The population will decrease as a result of the fall in reproduction rates, which will also lead to a rise in family income and a faster long-term growth rate, when human capital is equalized and both partners work in the market.

According to The report of Economic Adviser's Wing which is published in 2010–2011, Pakistan's economy suffered greatly from several disentangle and significant macroeconomic differences. Each elected official, democratic government, and dictatorship have worked to address these pressing issues and have proposed various solutions, such as increasing educational opportunities and halting the decline in literacy rates. In comparison to woman employment force contribution, which is the lowest woman involvement to service globally, the men working participation rate in Pakistan is almost equal to the global rate. In South Asia as a whole, Pakistan has slightly lower women working force contribution than Bangladesh and it is second-lowest in the area.

The impacts of gender inequality on economic growth have been the subject of several researches, yet the findings are still controversial. Thus, more research needs to be done on the problem. Previous researches have considered several aspects of gender disparity by employing the wage difference, service gap and educational breaks as proxy for gender disparity. To examine how gender inequality affects economic growth, using a complete unitary index may be a valuable exercise.

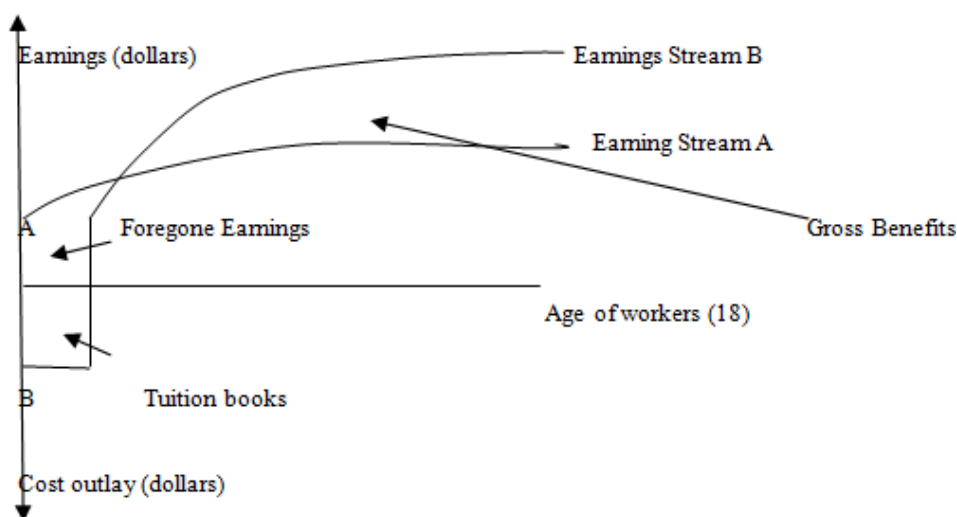
3. Theoretical Framework

American economist Gary Becker nicely worked to make the money for family or Neo-classical beliefs gave the important tip of vision about the male and female in the family (Bhandari & F.J., 1997). According to his study family circle has important and different activities for their child care and social and household activities. Becker investigates that due to gender difference men and women can't be substituted instead of work as a complements. Both female and male can contribute in the social and household activities for their children and for their survival if they will work cooperatively then their children surely take care. The participation of men and women are need for the allocated well in the sense of time and investment on children. There will be well-organized economic development where men use their skills outside the family and women will use their skills on children and housekeeping. On this fabulous work great Becker got the Nobel Prize with the acceptance of his theory. This theory has the based on our work that if female workers have more contribution at work then the family income will be high, and gender inequality should be low for the economic development.

Ronald and Robert (2000) elaborate the theory on human capital in their book "Modern Labor Economics: Theory and Public Policy". The work is about the asset on human wealth because schooling and trainings have long run results. Lot of people learns the skills and education and they will earn the more money in future. According to study theory has cost and benefits that should be keep in mind like as tuition and books cost, opportunity of work during their education and lots of energy during education. With these all costs theory tells that longterm output would be more than not getting education. Cost and benefits in education has been explains through a figure which is given below.

The worker age is put for adult age which is horizontal line and the earning of uneducated with arc A and the earning of educated people showing with arc B. In the start of figure the earning of students is negative which shows by foregone earnings because they have not work but the uneducated workers start from point A with positive earnings. In the start educated people don't work but in future their gross benefits are lot of more than their tuition books. The major aim of work is while investment will be on human asset than future outcome will be high and ultimately state's economic growth will push up.

Fig 1



A.C Pigou was the creator of welfare economics theories and Neo-classical, he identifies that female be supposed to be free hand in making the decision about every social activities or have in all types of work to compete their men with free hands participation (Blumberg, 2005). According to their study women cannot take the part in every job because in some jobs they cannot perform efficient as their men and in that work women should be avoid those types of work.

4. Research Methodology

4.1 Data Collection

Generally findings of the results to other situations or people may be constrained by the use of data from a particular nation. It's crucial to understand the data's limitations and the possibility that the results may not be relevant to other nations or locations. Due to data viability, only Pakistan is covered by the data. The analysis is limited to the years 1973 to 2022. To check the collision of gender dissimilarity index on human expansion index annually data is utilized for this purpose. World Development Indicators (World Bank) data and United Nation (UNDP) are used for the sources of data. Data sources and measurement level are summarized in Table 1.

Table 1: Variables, Measurement and Data Source

Variables	Measurement	Source
Dependent Variable		
HDI	$\frac{1}{3} \times (\text{life expectancy index} + \text{education index} + \text{income index})$	UNDP
Independent Variables		
GII	$\sqrt[3]{\left(\frac{\text{mortality ratio}}{100000 \text{ live births}}\right) \times (1 - \text{female education index}) \times (1 - \text{female labor force participation rate})}$	Author calculation
GDPGR	GDP growth rate	WDI

CPI	Consumer Price Index (percentage)	WDI
FDI	Foreign Direct Investment (% of GDP)	WDI

In order to examine the association among gender inequalities and economic developments, a secondary data set with a sample size of 50 was used in this study (1973-2022). For the simplicity of data first check the Descriptive statistics and Correlation matrix of the data. Before going to regression analysis check the stationary of data or not by Augmented Dickey-Fuller (ADF) unitroot test. In this research study for the purpose of multiple regression analysis there have been ARDL Bound test and Autoregressive Distributed Lag Model (ARDL) is used.

4.2 Model and Variables

In terms of human development in Pakistan, this empirical research takes into account the GDP growth rate, the consumer price index, the gender inequality index, and foreign direct investment. Ali et al. (2021), Awan et al. (2019), and Khurshid et al. (2020) are a few research that have utilized a framework for empirical analysis that is comparable to the one utilized in this study. To check the association of outcome variable and predictor variables as given below:

$$HDI_t = \alpha + \beta_1 GII_t + \beta_2 GDPGR_t + \beta_3 CPI_t + \beta_4 FDI_t + \mu_i$$

Where, HDI represents the human development index, GII represents gender inequality index; GDPGR represents the growth rate of gross domestic product, CPI represents consumer price index and FDI represents the foreign direct investment. α shows intercept of the model and μ_i is the error term in the upper regression model. This means that if the independent variables do not produce a change in the dependent

variable, then there may be other factors that do. These other factors are what we include in our regression model as an error term.

Analysing long-term trends in various economic, social, and environmental variables typically involves using annual data from 1973 to 2022 and gathering the data from WDI. However, it is advisable to use caution when employing linear imputation (LI) to replace missing data. More information on the variables including their units of measurement is probably presented in Table 1. Table 2 is supposed to provide summary statistics and correlation matrix for each variable, including measures of variability (such as deviation and series) as well as central tendency (such as average and median). The distribution of each variable may be better understood and any outliers or odd values that can affect the analysis can be found by using these statistics.

4.3. Unit Root Test

This research found at how economic growth, gender inequality, foreign investment and inflation affected people's development from 1973 to 2022. According to Nelson and Ploser (1982), time series data have a unit root issue which causes to produce false findings. Dickey-Fuller test (1979), Augmented Dickey-Fuller (1981), Perron (1989) and Phillips Perron (PP) (1988) are four well-known models. The non-stationary data are eliminated from this research by uses ADF unit root test. Others well-known co-integration tests includes on Engle-Granger (1987), Johansen (1991/1992), Johansen-Juselious (1990), Perron (1989, 1997), and Leybourne and Newbold (2003) test. In this

study empirical research uses Autoregressive Distributive Lag (ARDL) model created by Pesaran et al., (2001). In statistical analysis, consider the case where two variables are combined.

$$X \sim I(1) \quad \text{and} \quad Y \sim I(1)$$

The method through which we may evaluate each variable's individual influence was devised by Johansen in 1988.

$$\Delta Y_t = (a_1 - 1)Y_{t-1} + e_t$$

According to ADF test, Y_{t-1} is significant so, we may write

$$-X_t = A_t X_t - 1 + u_t$$

X_t represent the vector variable so,

$$\begin{aligned} \Delta X_t &= A_t X_t - 1 X_t - 1 + \varepsilon_t \\ &= (A_t - 1) X_t - 1 + \varepsilon_t \\ &= \pi X_t - 1 + \varepsilon_t \end{aligned}$$

$$\begin{aligned} \pi_{11} X_{1t} + \pi_{22} X_{2t} + \pi_{33} X_{3t} \\ + \dots \dots \pi_{1n} X_{nt} = 0 \end{aligned}$$

$$\begin{aligned} \pi_{21} X_{1t} + \pi_{22} X_{2t} + \pi_{33} X_{3t} \\ + \dots \dots \pi_{2n} X_{nt} = 0 \end{aligned}$$

$$\pi_{n1} X_{1t} + \pi_{n2} X_{2t} + \dots$$

It is the most sophisticated co-integration technique and offers a number of theoretical and technical benefits over more conventional techniques.

4.3. ARDL methodology

Autoregressive Distributed Lag (ARDL) technique for co-integration or bound test is using for a long-run connection by Pesaran and Shin (1995) and Pesaran et al. (1996). So, applying the ARDL technique to co-integration will produce accurate and reliable predictions. The ARDL technique to co-

integration aids in detecting the co integrating vector, in contrast to the Johansen and Juselius (1990) co-integration procedure. The ARDL model of the co integrate vector is emphasized into ECM if just one co-integrating vector is found. The result provides the long-run connection of the variables in a single model as well as short-run dynamics. The conversion of model of the given study into long-run estimation is given below,

$$\begin{aligned} (HDI)_t &= \beta_0 + \beta_1 (HDI)_{t-1} + \beta_2 (GII)_{t-1} \\ &+ \beta_3 (GDPGR)_{t-1} \\ &+ \beta_4 (CPI)_{t-1} \\ &+ \beta_5 (FDI)_{t-1} + \varepsilon_t \end{aligned}$$

The following equation was created to assess the long-term connection between the study's variables.

$$\begin{aligned} \Delta HDI_t &= \alpha_0 + \beta_1 (HDI)_{t-1} + \beta_2 (GII)_{t-1} \\ &+ \beta_3 (GDPGR)_{t-1} \\ &+ \beta_4 (CPI)_{t-1} + \beta_5 (FDI)_{t-1} \\ &+ \omega_i ECT_{t-1} + \varepsilon_t \end{aligned}$$

Finally, it explains the short-run dynamics of the model, where ω_i represent the speed of adjustment. To test for the stability of the model, can be use diagnostic tests such as the Breusch-Godfrey test or the ARCH test.

5. Results and Discussion

It is crucial to use a bounds co-integration testing technique, if the variables in your research are co-integrated over the long run. For the purpose of to check the central tendency finds the descriptive statistics which shows that 0.45 percent is the human development index on average and 4.80 percent was the growth rate in GDP. Gender inequality in Pakistan is very high about 132 percent which creating the disturbance in the society. The FDI mean is 0.92 percent of GDP during these years and the inflation rate is 51.71 percent on average. The human

development index has 0.43 percent mid value and the gender inequality is 132.53 percent. This dissimilarity is more than expected value, so should be fall by policy makers. There is 0.63 percent of foreign investment share in GDP for the mid value and growth rate of economic expansion mid value is 4.20 percent. Inflation rate was very high during these years approximately 38 percent.

To overcome the problem of multicollinearity, we use the correlation matrix test, which are shown in Table 2. The data has significant relation between different variables in terms of association. Study shows that there is strong negative and high

association between gender inequality index (GII) and human development index (HDI) which is 0.98, gender dissimilarity or inequality and consumer price index (CPI), growth rate of gross domestic product (GDPGR) and gender inequality index during the 1973 to 2022 in the data, which have the more than 80 percent values. On the other hand between the years in data there is physically powerful positive association between growth rate of GDP and human development index (HDI), growth rate of GDP and consumer price index (CPI). Only foreign direct investment and human development index, and foreign investment and growth rate of GDP have moderate association between the data.

Table 2: Descriptive Statistics and results of Correlation Matrix

Correlation Probability	Mean	Median	HDI	GII	GDPGR	FDI	CPI
HDI	0.45	0.43	1.00				
GII	132.11	132.53	-0.98 0.00	1.00 -----			
GDPGR	4.80	4.20	0.90 0.00	-0.87 0.00	1.00 -----		
FDI	0.92	0.63	0.63 0.00	-0.63 0.00	0.39 0.00	1.00 -----	
CPI	51.71	38.44	0.95 0.00	-0.92 0.00	0.99 0.00	0.46 0.00	1.00 -----

Table 3 shows the outcome of the Augmented Dickey-Fuller (ADF) test and Phillips-Perron (P-P) test, which are utilized to check the serial stationarity in time series data. Results indicate that the GDP growth rate of gross

domestic product and foreign direct investment have stationarity significant at level I(0). The consumer price index, human development index, and gender inequality index have stationarity at first different I(1).

Table 3: Unit Root Test

Augmented Dickey-Fuller Test					Phillips-Perron Test			
	I(0)		I(1)		I(0)		I(1)	
Variables	T-Stat	Prob.	T-Stat	Prob.	T-Stat	Prob.	T-Stat	Prob.
HDI	-2.644	0.263	- 3.506	0.000***	- 2.834	0.192	- 8.732	0.000***
GII	-3.331	0.073	- 3.508	0.000***	- 3.423	0.054	- 7.541	0.000***
GDPGR	-5.330	0.000***	----	----	- 5.353	0.000***	----	----
FDI	-3.546	0.045***	----	----	- 3.812	0.020***	----	----
CPI	-3.529	1.000	- 5.585	0.000***	- 2.004	0.584	- 5.585	0.000***

Notes: *** denote significance at 1% level.

The results by Phillips-Perron test show same findings that two variables are stationary at level and other three variables are stationary at the first difference I(1). However in the Phillips-Perron and ADF test the outcomes are little bit change. The auto regressive distributed lagged bound test approach (ARDL) suggested by Engle and Granger in (1987). Akaike information criterion (AIC) is used for appropriate selection of lag length criteria in the ARDL model. To check the basis of ARDL the Bound test was utilized to cointegration between the variables in the model. Bound test shows that either long run relationship exist or not and the outcomes are described in the table 3. Bound test result presented at the different level of significance, 1 percent, 5 percent, 10 percent respectively (Bhandari, & Smith, 1997).

Co-integration denotes a long-term link between the variables, which is significant to keep in mind since it indicates that changes in one variable will ultimately be reflected in

the other variables in the system. The aforementioned plan demonstrated the long-term relationships between development, gender disparity, growth rate, inflation, and foreign investment. A popular econometric method for examining the long-run and short-run relationship between variables is the autoregressive distributed lag (ARDL) approach. We are utilizing it to look at the connections between Pakistan's GDP growth rate, inequality, human development, and foreign investment. The computed value of F-statistics has 5.271 that are larger than the upper bound at 1 percent level of significance. According to the rule of thumb these results reject the null hypothesis which is Cointegration is not exist in given model and accept the alternative hypothesis. The cointegration between the series estimates that there is long-run and short-run connection among the human development index, economic growth and others variable in the model.

Table 4: ARDL co integration bound test.

Bound test	Ho: No co-integration exist				Remarks
	Value	Significance	Io Bound	I1 Bound	
F-stat	5.271****	10%	2.27	3.36	
K	5	5%	2.63	3.80	
		2.5%	2.97	4.19	
		1%	3.42	4.69	Co-integration exist

****, ***, **, and * represent the level of significance at 1, 2.5, 5, and 10%, respectively.

Table 5 shows the long run results of ARDL model. The model shows that there are two variables have significant and negative relation with human development index. The coefficient value of gender inequality index and consumer price index shows that when these both variables will increase in the model by 1 percent then human development index will decrease by 0.9 and 0.5 unit in long run respectively. The results have same relation as the studies of (Khurshid et al. (2020) and Ali et al. (2021)), because if economy have gender disparity and inflation then development will be low. Gender inequality has positive relation with income, and due to low income people will be low investment on capital and per capita income will be low, as well as human development will be low because per capita income is a part of human development index Kalediene and Petrauskiene (2000). Moreover high inflation affects the status of human development because due to high prices people cannot purchase basic need to fulfill their necessities. If prices are high then the consumption of household will be low as volume of goods. People will not spend on their health, education and investment, due to these factors income and investment will be low that will affect their health and these factors are the sub types of HDI, so human

development will be low. These economic interpretations having the same effect as the research study by Mumtaz et al. (2009). Economic expansion in the economy has positive relationship with human development in the given study and the model showing that if growth rate increases by 1 percent then human development will also increase by 0.2 percent in long run. In stabilize economy, foreign direct investment plays a key role in the economy. In this research study FDI has positive and significant relation with human development. If foreign investment increases by one percent then human development will increase by 0.6 percent in the long run. This relation could make a wise sense because foreign investment creates the high supply of money and jobs. In economy when FDI will increase the production income level of domestic people will increase, so the consumption level and tax level will also increase. This relation relates with previous studies (Khurshid et al. (2020), Esteve-Volart (2009), Pervaiz et al. (2011)). Higher the income levels mean higher the tax returns for Govt. and higher the expenditure level, so these economic senses have direct relationship with human development ((Seguino (2000), Klasen (2002), Salatin and Shaaeri (2015)).

Table 5: ARDL Long-Run Estimation with diagnostic tests

Variable	Coefficient	P-value
GII	-0.009	0.000
GDPGR	0.002	0.013
FDI	0.006	0.029
CPI	-0.005	0.716
Constant	1.874	0.001
Statistics		
R ²	0.7227	
Adjusted R ²	0.4890	
F-stat.	3.5217	0.0076
Diagnostic tests		
Chi sq. Normal	4.033	0.133
Chi sq. SERIAL	0.413	0.665
Chi sq. ARCH	0.424	0.519
Chi sq. HETERO	0.514	0.764
Chi sq. REMSEY	0.454	0.547

In the previous literature (Bardhan, & Klasen, 1999, Murti et al., 1995, Summers, 1994, and Hill and King, 1995) had same results as our results. In the study three variables are significance in which foreign investment, gender inequality index and growth rate of gross domestic product because these all variables have less than 0.05 p-values. While consumer price index has p-values greater than 0.05 that shows the insignificant result in the model. If foreign investment will reduces by 1 percent shares in GDP then human development index will also increase by 0.6 percent respectively. The overall results showed the model has significant and long run relationship with gender inequality and human development. There are three variables that are significant in long run at 5 percent level of significance and one variables is insignificant e.g.

Table 6: Short-Run Estimation of ARDL

Variable	Coefficient	P-value
D(HDI(-1))	-0.394	0.017
D(HDI(-2))	-0.339	0.000

consumer price index (Sen, 1984,. Streeten, 1981, Fei, et al., 1985).

Table 6 explains the short run link amongst the outcome variable and independent variable. The worth of cointegration coefficient rate identifies the junction and departure of short run towards long run. The ARDL short run relationship in the model which describes those more than 9 parameters is significant at 5 percent level of significance. In the model took the three lags in human development and gender inequality while in consumer price index (CPI) and gross domestic product growth rate took only one lag in the model of short run estimates. The outcomes of short run converge towards long run due to the rate of cointegration coefficient is inverse.

D(HDI(-3))	-0.419	0.014
D(GII)	-0.005	0.095
D(GII(-1))	0.001	0.157
D(GII(-2))	-0.000	0.677
D(GII(-3))	0.001	0.016
D(GDPGR)	0.000	0.011
D(GDPGR(-1))	0.001	0.201
D(FDI)	0.002	0.056
D(CPI)	-0.000	0.031
D(CPI(-1))	-0.000	0.108
CointEq(-1)	-0.308	0.001

The coefficient rate of previous year HDI is -0.394 which indicates that previous year HDI has inverse affiliation with present year HDI. Previous two years HDI also has negative relationship with current year HDI as the coefficient value is -0.33878. Coefficient value -0.41917 of previous three years HDI also indicate a negative relationship with current year HDI (Shehzad, 2011, Iqbal and Nawaz, 2009, Murtaza., and Ahmad, 2005). There is an inverse and irrelevant affiliation between gender inequality index and HDI as it is reflected that one unit increase in gender inequality index would lead to -0.00049 unit decrease in HDI. Gross domestic product growth rate has positive relationship with HDI as results showed that due to one percent increase in growth rate of gross domestic product there would be 0.000 unit increases in HDI. There is a positive relationship

between HDI and foreign investment because due to one percent positive change in foreign direct investment there would be 0.002 unit increase in HDI. There is insignificant and negative relationship between consumer price index and HDI as results reflected that one unit increase in consumer price index would lead to -0.000 unit decreases in HDI.

The coefficient of Error correction term (ECM) has the value -0.308 and significant at 1 percent of level. Extremely significant and inverse sign shows that ECM strengthens the survival of long-run affiliation along with the parameters. Yet the long run speed of adjustment from past year disequilibrium in gender inequality value inserted to current year equilibrium only 30.80%. It will still three years require more to become at the equilibrium.

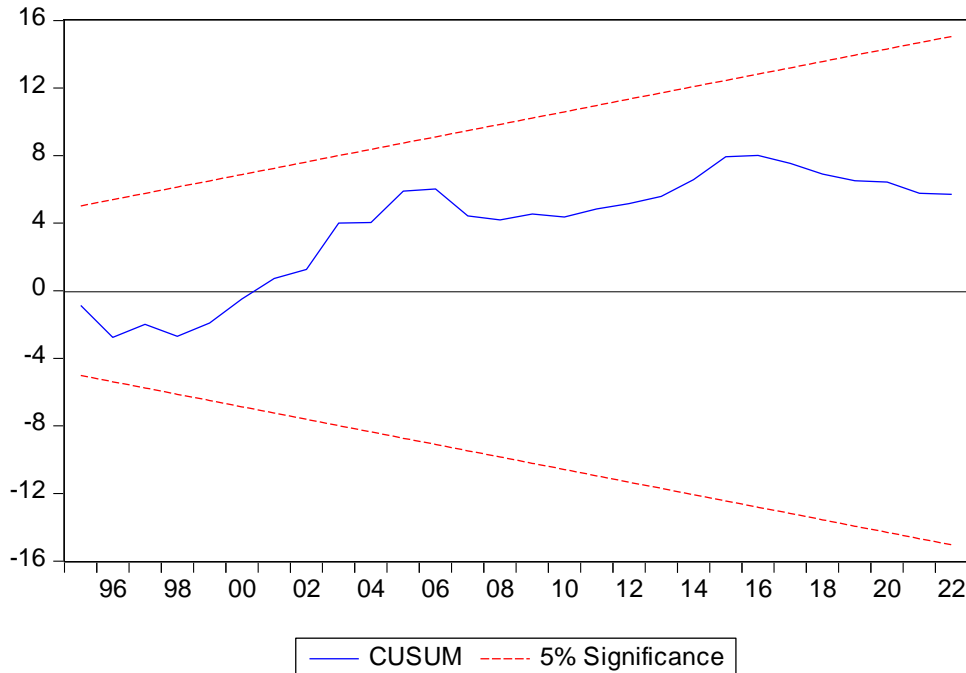


Figure A: Cumulative of recursive residuals estimation

Cumulative of recursive residuals and cumulative sum of squares of recursive residuals are used for the stability diagnostic for the selected ARDL based on ECM. These test techniques was presented by Brown et al. (1975). These are shows in Figure A and figure B. Both plots show that overall model is structurally stable within critically bound at 5 percent level of significance. It therefore follows that current model does not have any econometric issues.

The model has also met the assumptions requirements of an ordinary linear regression

model. To test the diagnosis of ARDL model, information of diagnostic shown in Table 5. There are five different test used for the diagnostic. The first test was Jarque-Bera for normality that shows is data having normality or not. The results show that data have normally distribution with positive results. The second test is used to check the serial correlation between variables and results indicating that there is no such serial auto correlation. The non-normality of the error term is not a concern in the short-run model.

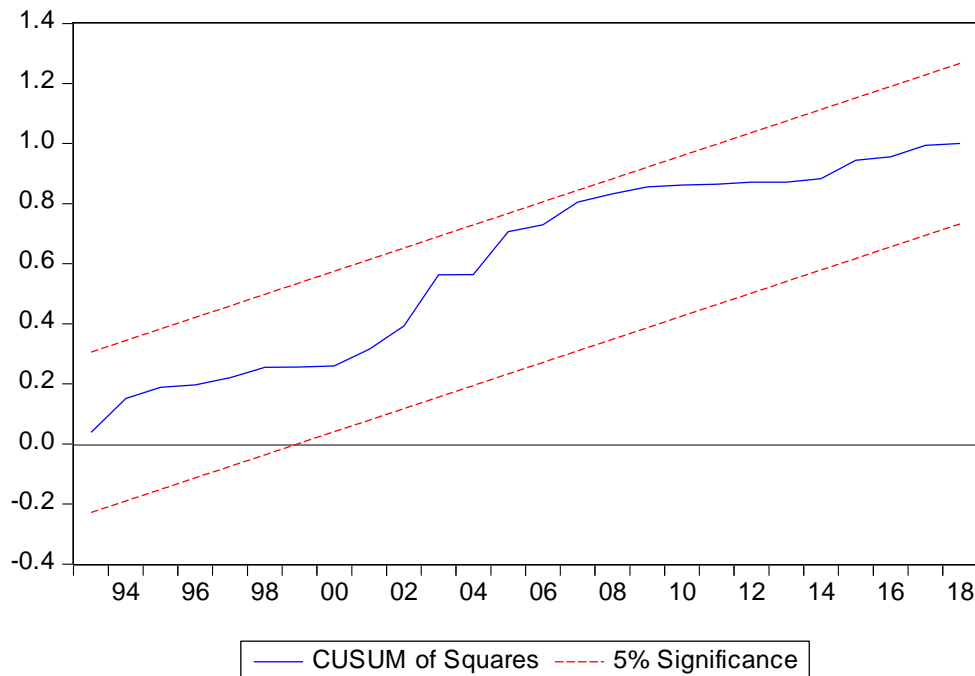


Figure B: Cumulative sum of square of recursive residuals estimation

The third test is ARCH which is used for check the future volatility in the time series data and outcomes have significant results. While the heteroskedasticity and ARCH is not supported by any empirical data. The fourth test is Heteroskedasticity and fifth is REMSEY test, which is use for the general specification of linear model. The Ramsey-Reset test validates the short-run model specification, which is well-formulated.

6. Conclusion and Policy Implication

The main goal of this recent research has been to clarify the connection between gender disparity and Pakistan's economic progress. To ascertain the long term effect of gender difference on economic development, we employed the ARDL model. According to empirical data, gender disparity has together long term and short-term delayed belongings on economic growth. Additionally, this investigation revealed that gender equality is in appalling condition. Result shows

diminished positions of women in various sectors of life. To address the effects of gender inequality and promote economic development, a comprehensive strategy is required. Access for women to higher education and health care can significantly reduce gender disparity. Additionally, the government has to implement legislation that will give women more opportunities of employment. Moreover, foreign direct investment should be promoted in every economy as it leads to development.

If the government effectively distributes resources in the form of equal educational possibilities and employment prospects for men and women, economic growth can be boosted. We can make use of the talent and skills of women if they are given the same educational possibilities and job prospects as males. A nation must grant women with the fundamental rights if it wants to experience the kind of economic growth depicted in the model above. The paper concludes that the state in our nation does not provide female

population with their fundamental rights. The main contributors to this include culture, ignorance includes government laws, and a predilection for men. Growth rate should be more for the development of the economy and the health of the people. Consumer price index should be at 6 percent for sustainable human development.

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