Relationship between Gender Inequalities and Economic Growth: A Case Study of Pakistan

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ABSTRACT

Pakistan is ranked at 144 in gender inequality as per World Economic Forum (WEF)'s Global Gender Gap Report 2016 which is one of the main hurdles in the economic growth of Pakistan. Therefore, this study analyzed the co-integration between the gender inequality and economic growth of Pakistan by using the time series data for the period 1985-2014. The construction of gender inequality index is a main contribution of this study which encompasses the education, health, and labor force participation. The empirical result of this study found that the co-integration exists between gender inequality and economic growth of Pakistan. Consequently, the study proposes to enhance the level of women participation in every domain of live.

***Keywords*:** Gender Inequality, Economic Growth, Co-integration.

JEL Classification: J10, J16, J18

1. INTRODUCTION

The gender inequality issue has received a special attention in a couple of decades especially when the United Nations (UN) set it in their mandates as a part of the Millennium Development Goals (MDGs). Nonetheless, the gender inequality issue has got the global attention, it is a harsh reality that it has hardly achieved in a few countries partially and no country in the world has fully achieved it yet (Saadia and Augusto, 2005). Nevertheless, one must realize that it is a slowly growing phenomenon because it largely bases on human attitude in any specific society. Gender equality is one of the important determinants for socioeconomic empowerment and it serves as a mandatory ingredient in morality and ethics. It is basically women's birth-right,

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provided by the God Almighty. Besides holistic proposition, the contemporary societies have agreed to provide such rights to the women in this era of digitalization. Proper distribution of due rights to both men & women can enhance the level of happiness among them (Organization of Economic Corporation and Development, 2011).

The world has already been started working on Gender inequality and women empowerment as they had included these concepts in MDGs. Despite such efforts the gender inequality still prevails not only in the developing countries but in developed countries too. Resultantly, deprivation of women's right to get education is a lethal cause of higher fertility and infant mortality. Also, it is a main cause of low workforce participation and low level of health and education of children in the long run (Mitra et.al, 2015). The gender-inequality hits the economic growth from the multiple fronts such as the channel of low level of health and education, low workforce participation, and a high level of population growth through the unawareness or non-adoption of modern fertility control techniques.

2. LITERATURE REVIEW

The role of women in economic development has always been pronounced in academic and policy debates. For nearly half a century, women's participation in many developed and developing economies had significantly been increased. In this era, the labor participation rate of female in many countries has been closer to male, and the wage gap has reduced (Duflo, 2010). The global female labor participation rate has risen from 50.2 percent in 1980 to 51.8 percent 2009 so as the labor force participation rate of male has dropped from 82 percent to 77.7 percent, resulting a lower gender difference from 32 percent to 26 percent (World Bank, 2012). However, there is still a lack of use and the misappropriation of women's skills and talents. The inequality of access to quality education between girls and boys has had a negative impact on the ability of girls to establish human and social capital. Eventually, less opportunities of jobs and wages in the labor market in many developing countries, and there are still substantial obstacles to participation of women in the labor market (Elborgh-Woytek et. al., 2013). Lower demand in any economy limits women's equal access to employment, development of skill, and equitable income.

Gender inequality in education, employment and health has been exhibited considerable in developing countries. For example, Mortality rate of Chinese and South Asian's girls and women are high which is called missing women (Sen, 1989; Kalsen, 1994). Moreover, large discrepancies in South Asia and Sub-Saharan Africa have been found between genders in education. Finally, in most developing regions gender inequality in employment has also been observed (UNDP, 1995). It is analyzed that there is a negative association between economic growth and gender inequality in Pakistan (Ali, 2015). The same conclusion was drawn by Chaudhary and Rahman (2009) while using the survey data of Muzaffar Garh, and Punjab, in Pakistan which completely contradicted the findings of Seguino (2000). Furthermore, it is found that there is negative associate between education and economic growth (Pervaiz et. al, 2011). In addition to this, the relationship implies that exclusion of intelligent women from education enhance lower standard level, sum of skills, and human resource. Khayaria and Fekihis (2015) estimate the impact of gender inequality and investment on economic growth and found that there is a positive impact of investment and negative impact of gender inequality on economic growth. Rakhis (2015) evaluated the effects of gender inequality in education and labor force on economic growth of Middle Eastern countries, and empirically found no significant relationship among them. The relationship between economic growth and gender inequality in Turkey is analyzed by Yumusak et. al. (2013) and concluded that low level of gender equality is negatively associated with economic growth. Kim et. al. (2016) investigated the same hypothesis in Korea and empirically found that the labor force participation rate of female and economic growth increase when gender disparities are completely removed from home and labor markets.

The population share of women in Pakistan is about 51% which means a slightly over the half of the population consists of women which ranks Pakistan 144 out of 145 countries in the world (Global Gender Gap Report, 2015). This rank has considerable been reduced over a period of just a decade due to which women in Pakistan are being completely denied access to significant social facilities that explore the gender gap ranking. Gender inequality persists in education employment and health. The Government of Pakistan had tried to reduce the gap by passing a law in 2006 but what was implemented in 2012 by legislation.

The objective of this research is to examine the relationship between gender inequality (education, employment, and health) and economic growth in Pakistan and their short run and long run impacts. To the best of our knowledge, the relationship between economic growth and gender inequality while controlling other economic variables has not been examined yet. Moreover, ARDL econometric approach has not been applied in Pakistan data to explore the association between gender inequality and economic growth. Therefore, this study will fill the gap and contribute to improve the existing body of knowledge. The paper comprises as the section 1 describes the introduction, the section 2 explains the review of previous literature, the section 3 presents data and research methodology, section 4 exhibits the empirical analysis, and the section 5 shows the conclusion and recommendations of this study.

3. DATA AND RESEARCH METHODOLOGY

3.1 Data

To investigate the hypothesis of co-integration between gender inequality and economic growth, this research collected the time series data from 1985 to 2014, from various issue of Pakistan Economic Survey, World Development Indicators, and the United Nation Development Program. Gender inequality and economic growth are main variables of the study, while inflation, investment as a percentage of GDP, Real Effective Exchange Rate, Trade Openness, External Debt, and Political Instability are control variables. Political instability is a dummy variable which contains the value of 0 if the dictatorship and 1 represents the Democracy. To test the co-integration the present study used logarithmic transformation of all variables.

3.2 Model

A huge literature showed that there these exist the co-integration between economic growth and gender-inequality. This research empirically investigates the determinants of economic growth where one of key determinant is gender inequality, which is tested through three dimensions (education, health and labor force). This relationship is shown through the linear regression model which is given below:

$$l\_growth_t = \alpha_0 + \alpha_1\, l\_gi_t + \alpha_2 l\_inv_t + \alpha_3 l\_trade_t + \alpha_4 l\_reer_t + \alpha_5 l\_debt_t + \alpha_6 l\_inf_t + \alpha_7\, pol\_dum_t + \mu_t$$

Gross Domestic Product (GDP) is used to calculate the rate of economic growth and is represented by l_growth_t. Gender inequality index is a composite index, which is constructed by combining the three variables i.e education attainment index, survival index, and labor market index which is represented by l_gi. l_inv represents the impact of investment, l_trade represents the impact of trade openness, l_reer represents the impact of real effective exchange rate, l_debt represents the impact of external debt, l_inf represents the impact of inflation and pol_dum is the impact of political instability on economic growth respectively. These entire variables are in logarithmic form, and all are control variables.

The main determinantl_gi, composite index of gender inequality which is calculated by the given formula:

$$I_i = \left[\frac{Sw}{100} + \frac{Sm}{Ri}\right]^{-1}$$

Where Sw represents the relevant population share of women and Sm represents the relevant population share of men. The share of both must be equal to 1. Ri is the magnitude percentage ratio for men to women. When Ii = 100, there is perfect equality. The higher the value of Ri, the higher the index thus higher the inequality. Larger values of Ri make the index insensitive reflecting aversion to inequality. Educational attainment index, survival index and labor force participation index are used to construct gender inequality index. The employed indicators are high stage education enrolment, number of professional college teachers, mortality rate adult, and life expectancy at birth and labor market participation rate. Gender differences are analyzed by composite index. Quality education is basic right to all masses of the society that brings competition between men and women in professional life. Disparities in educational sector is captured through high stage education enrolment and number of professional teachers. Through professional education, participation in labor market increases. These indicators not only show women empowerment but also capture bright future of Pakistani women. Participation in labor force of men and women make a country economically strong. Better health services are key source of healthy mind. Mortality rate adult and life expectancy at birth reflect survival and health conditions of society the health facilities for adults and chronic conditions increase probability of dying. Public health issue will not sustain if health care facilities are provided equally to men and women.

3.3 Testing for Unit Root

The study used times series data to test the level of co-integration between gender inequality and economic growth. Therefore, it is necessary to test the unit root in time series data. For this purpose, the Augmented Dicky Fuller test is used. The null hypothesis of the ADF is unit root. The null hypothesis of unit root is rejected if the probability value is lesser than the conventional level of statistics, which implies that series is stationary.

3.4 Auto-Regressive Distributed Lag (ARDL)

ARDL technique is used in this study as the order of integration of variables is different and to derive coefficients of long run and short run and Error Correction Term (ECM). ECM is the speed of adjustment from disequilibrium to equilibrium position. In application of ARDL, firstly F-test is applied for all variables conducted for first differenced (Bahmani, 2003, Bahmani and Nasir, 2004). Secondly, to find cointegration existence, F-test is conducted. Unrestricted error correction regression is estimated, taken each variable as regressand.

$$\Delta LGGDP = \alpha_0 + \alpha_{1i} \sum_{i=0}^{j} \Delta LINF_{t-i} + \alpha_{2i} \sum_{i=0}^{j} \Delta LINVEST_{t-i} + \alpha_{3i} \sum_{i=0}^{j} \Delta LTRD.OPEN_{t-i} + \alpha_{4i} \sum_{i=0}^{j} \Delta LREER_{t-i} + \alpha_{5i} \sum_{i=0}^{j} \Delta LEXT.DEBT_{t-i} + \alpha_{6i} \sum_{i=0}^{j} \Delta LGI_{t-i} + \alpha_7 LINF_{t-1} + \alpha_8 LINVEST_{t-1} + \alpha_9 LTRD.OPEN_{t-1} + \alpha_{10} LREER_{t-1} + \alpha_{11} LEXT.DEBT_{t-1} + \alpha_{12} LGI_{t-1} + \mu_t$$

where, coefficients α_1, through α_6 represents the short run dynamics and α_7, through α_{12} represents the long run dynamics among variables.

4. EMPIRICAL ANALYSIS

For the time series analysis, data must be free from non-stationarity otherwise results will be spurious. For this purpose, unit root test is examined on individual variable time series data. For examining it Augmented Dickey-Fuller (ADF) is employed. The results of ADF test are given in table 1.

The above table highlights that some variables are stationary at level while other are stationary at first difference. The integrated order of the under considering variables in the model are mixed, so for finding the co-integration Auto-Regressive Distributed Lag (ARDL) method is most appropriate. The study also applied bound testing to get the long run equation, and to test the null hypothesis of no co-integration. Empirically, it is found that the F-Statistical value is 38.39, at 1% significance level which is an indication of co-integration.

Table 1: ADF Unit Root Test

ADF test with Intercept		
Variables	At Level	1st Difference
LGGDP	-3.76*	-7.17*
LINF	-0.41	-2.63***
LINVEST	-1.14	-5.41*
LTRD.OPEN	-2.26	-6.08*
LREER	-6.36*	-4.40*
LEXT.DEBT	-0.17	-4.07*
LGI	-1.23	-4.41*

*, **, *** shows significance at 1%, 5% and 10% significance level respectively

4.1 Long- Run Analysis of Economic Growth Function

Co-integration relationship reveals the long run relationship among the variables. With the help of ARDL model, long-run relationship among GDP growth, Inflation, investment, trade openness, real effective exchange rate, external debt, gender inequality index and political instability have been confirmed. The results are depicted in table 2.

Table 2: Long –run Coefficients of Economic Growth

Dependent Variable: LGGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEX.DEBT	-6.43	0.74	-8.72	0.00
LINF	-1.62	0.22	-7.41	0.00
LGI	28.61	4.32	6.62	0.00
LREER	-8.78	1.27	-6.90	0.00
LTRD.OPEN	2.92	0.75	3.90	0.01
POL.S	-0.59	0.16	-3.60	0.01
LINVEST	-6.15	1.26	-4.87	0.00
C	-59.97	11.57	-5.18	0.00

The above table shows that all variables have negatively affected on the economic growth in the long run except the gender inequality and trade openness. The results highlighted that long run elasticity of economic growth with respect to external debt is negative which implies that as the

external debt increase by 1 percent so the economic growth of Pakistan will fall by 6.432 percent. A major portion of national income goes to pay the debts and its interest which will adversely affect economic growth. Similarly, the long-run elasticity of economic growth with respect to CPI is negative which shows that as the inflation rises by 1 percent the economic growth will decrease by 1.616 percent, because a rise in inflation will nullify the positive impact of economic growth. Further results reveal that long run elasticity of economic growth regarding gender inequality is positive which reveals that as the gender inequality increases by 1 percent so the economic growth will increase by 28.613 percent. There are numerous reasons behind it such as male dominant society brings more growth, less empowerment is given to women as resources are not allocated efficiently by them and most of married women leave their job due to pre and post maternal leave and increase in responsibilities of looking after their children and home. That is why, the long run impact of gender equality is negligible. The long run analysis of economic growth function also reveals that the long run elasticity of economic growth is inversely related to real effective exchange rate. It exhibits that if real effective exchange rate rises by 1 percent, the economic growth will decrease by 8.779 percent, because depreciation of real effective exchange rate will worsen the trade balance (due to higher import bills) as well as increase the debt burden on economy. In contrast, long-run elasticity of economic growth about trade openness is positive and statistically significant which reveals that 1 percent increase in trade openness will rise the economic growth by 2.925 percent. Moreover, results of this study show that democratic government in Pakistan will slow down the economic growth in the long run. It's because of inconsistent behavior of ruling government in completing previous projects. Most of development projects and policies do not complete smoothly as they should be. Lastly, long run elasticity of economic growth is significantly and inversely related with investment. It tells that in the long run, 1 percent increase in investment will decrease the economic growth by 6.15 percent. No doubt, Pakistan land contains abundant natural resources, but the problem is that lack of finance and government attention towards these resources, most of the natural resources have not been explored yet. So, in the context of investment, regardless of its type (i.e. domestic investment, foreign direct investment (FDI) or portfolio investment in different sectors of economy), requires some raw materials and machinery etc. which have to be imported even on the expense of negative balance of payment which definitely have some negative effects on the economy.

4.2 Short- Run Analysis of Economic Growth Function

In short run analysis of economic growth function, short-run relationship among GDP growth, Inflation, investment, trade openness, real effective exchange rate, external debt, gender inequality index and political instability have been estimated. In ARDL model, short-run analysis also states the dynamics of short run in the form of error correction term. Error correction term tells the pace of adjustment from disequilibrium move forwards the long run equilibrium. The findings are represented in table 3.

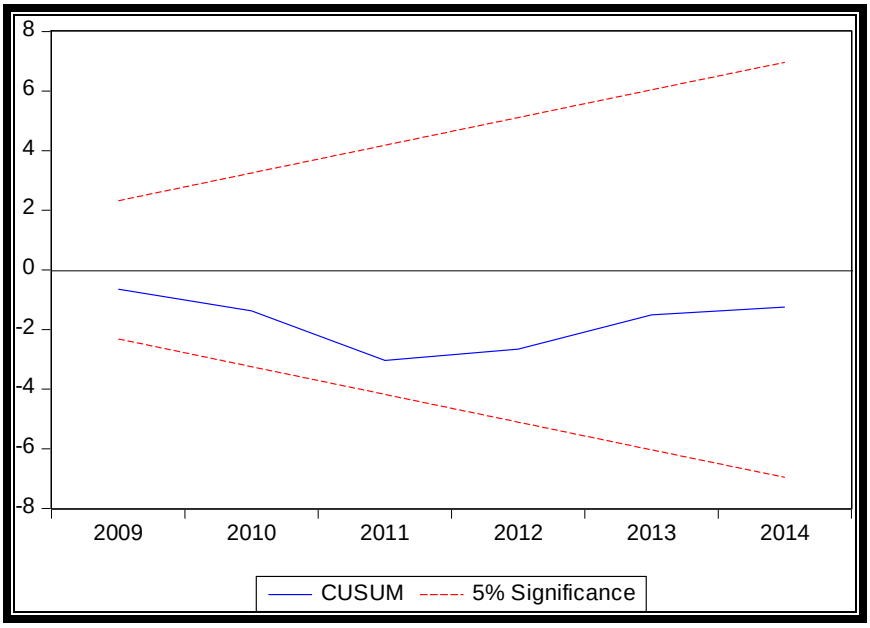
Table 3: Short-run Coefficients of Economic Growth

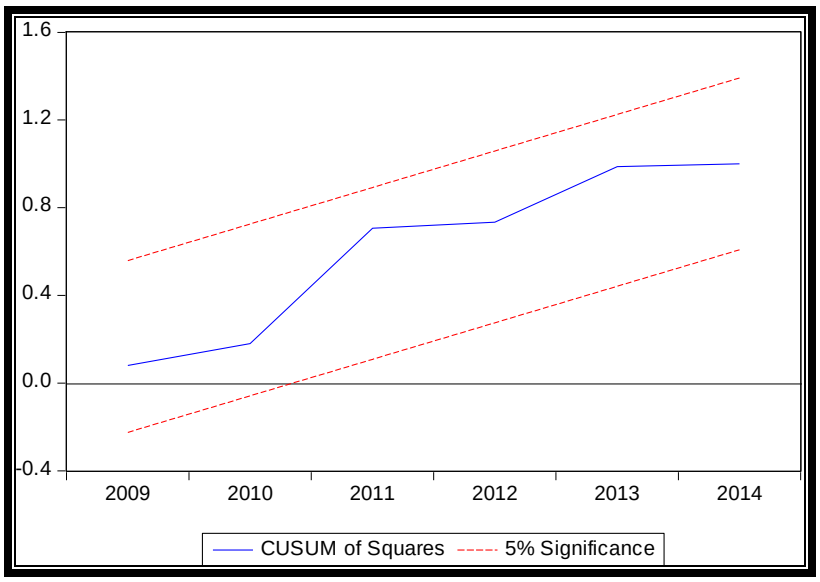
Dependent Variable: LGGDP					
Variable	Coefficient	Std. Error	t-Statistic	F-Test	Prob.
D(LGGDP(-1))	-0.361221	0.167398	-2.157861		0.0743
D(LEXT.DEBT)	-13.708563	1.112356	-12.323903	76.591(0.0001)	0.0000
D(LEXT.DEBT(-1))	8.154041	0.893979	9.121067		0.0001
D(LINF)	-17.075151	1.542555	-11.069395	69.946(0.0001)	0.0000
D(LINF(-1))	15.030843	2.958708	5.080205		0.0023
D(LGI)	47.288518	5.208423	9.079240	49.223(0.0002)	0.0001
D(LGI(-1))	-49.971315	5.668554	-8.815531		0.0001
D(LREER)	-9.755488	1.619237	-6.024744	19.171(0.0025)	0.0009
D(LREER(-1))	-5.106136	1.272306	-4.013293		0.0070
D(LTRD.OPEN)	3.707064	0.631983	5.865768	44.942(0.0002)	0.0011
D(LTRD.OPEN(-1))	-8.574073	0.967709	-8.860174		0.0001
D(POL.S)	-0.663225	0.264291	-2.509446		0.0459
D(LINVEST)	-3.494989	0.940223	-3.717193		0.0099
CointEq(-1)	-2.039881	0.217683	-9.370896		0.0001
Diagnostic Test					
	F statistics		Probability		
Serial correlation (LM)	6.6286		0.0537		
Heteroscedasticity (Breusch-pagan-Godfrey)	2.14974		0.1738		
Normality (JB)	0.1593		0.9234		

The above table shows that the error correction term is negative and highly statistically significant which represents that from previous year's disequilibrium, approximately 2.039 percent will take adjustment towards the long-run equilibrium after a year. Furthermore, short

run causality with the help of Wald test is also examined wherein it restricted the coefficients of relevant variable along with lags by equating to zero. In the Wald test, if the calculated F-statistic is higher than the tabulated we can reject the null hypothesis and conclude the existence of causality among relevant variables and dependent variable. The above results of Wald test reveals that all the considering variables in the model such as Inflation, investment, trade openness, real effective exchange rate, external debt, gender inequality index and political instability are highly statistically significant which shows that it is causing or affecting the economic growth in the short run.

Additionally, to make sure that economic growth function is free from recognizable econometric problems, some diagnostic tests are applied on ARDL regression. The result of LM test shows that there is no serial correlation in the model. The normality test validates the normality of residuals of the model, while Breusch-pagan-Godfrey test confirms that residuals of the model are free from the problem of heteroscedasticity. For finding the structural stability of the ARDL model under consideration time period, the test of CUSUM and CUSUM SQUARE are employed on estimated parameters of the ARDL model. The graph of CUSUM and CUSUM SQUARE confirms the stability of parameters throughout the sample period.





5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusions

This study investigated the economic growth function, to estimate the effect of gender inequality accompanied by inflation, investment, trade openness, real effective exchange rate, external debt, and political instability on Pakistan's economic growth with the help of yearly data from 1985 to 2014. The Augmented Dickey-Fuller (ADF) test shows that some variables are stationary at level while others are stationary at first difference so Autoregressive Distributed Lag Model (ARDL) method is more suitable. The result of ARDL co-integration illustrates that economic growth is co-integrated with inflation, investment, trade openness, real effective exchange rate, external debt, gender inequality index and political instability. The inflation, external debt, investment, political stability and real effective exchange rate (REER) are established to have a negative impact on economic growth which suggests that an increase in inflation, external debt, investment, political stability and real effective exchange rate (REER) may reduce the long-run economic growth. The trade openness and gender inequality have a substantial positive impact on economic growth which proposes that economic growth is considerably dependent on trade liberalization and gender inequality. In addition, this paper also carried out the analysis of short-run dynamics of economic growth of Pakistan. The results demonstrate that about 2.04 percent variation in economic growth will be adjusted in a year. The dynamics of short run causality among economic growth with its determining factors such as Inflation, investment, trade

openness, real effective exchange rate, external debt, gender inequality index and political instability are very significant which shows that they are affecting the economic growth of Pakistan in the short run.

5.2 Recommendations

Pakistan should need to make sound policies which are more favorable to export parallel with seek to expand the international market base for exported-commodities. In addition, there is a need to ensure sustainable women participation in every field of life, otherwise, it will not reflect the true picture of women participation in economic growth of Pakistan. Moreover, consistency and completion of development projects are essential because it drastically required to optimize the limited resources. The competent authorities must ensure the spillover effects of macro-level growth to the common man in order to enhance the standard of living of Pakistan people for a better today and prosperous tomorrow.

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