

## Gender-Based Labour Force Participation and Wage Gap in Pakistan: Does Globalization Matter?

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### ABSTRACT

*This study has investigated the impact of globalisation on gender-based gaps in the labor market (GBGLM) of Pakistan for the period 1982-2017. Particularly, the study has estimated the impact of trade openness (OPEN), foreign direct investment (FDI), workers' remittance inflows (WRI) and exchange rate (ER) on gender-based labour force participation rate differential (LFPRD) and wage differential (WD). The study has applied the Autoregressive Distributed Lag (ARDL) model and Johansen's cointegration approach on two models estimated for LFPRD and WD. The error correction models (ECM) have confirmed an error correction mechanism as reflected by negative and significant coefficients of lagged ECM terms. The study has applied all relevant diagnostic tests to ensure the validity of empirical findings. The results of the study indicated that in the long run, OPEN reduced LFPRD and WD, whereas, FDI augmented LFPRD. ER depreciation decreased LFPRD and augmented WD. WRI also augmented LFPRD and WD. The study concluded that OPEN and Real GDP are prominent factors in reducing WD and LFPRD of Pakistan, whereas, FDI and WRI augmented LFPRD. This is a very important finding in the context of the stagnant real sector of Pakistan where agriculture and industry have performed lower than rapidly growing services sector of Pakistan. Since most of the exports emanate from the real sector of Pakistan, therefore, relatively more focus on real sector as compared to financial inflows can play a crucial role in reducing GBGLM of Pakistan. The policy implication based on results is that to reduce GBGLM of Pakistan, trade liberalisation with special focus on the commodity-producing sector is right policy option in Pakistan.*

**JEL Classification:** F6, J20, J31

**Keywords:** Globalisation, Labor Force Participation Rate Differential, Wage Differential.

### INTRODUCTION

This study has empirically investigated the impact of globalisation on gender-based gaps in the labor market (GBGLM) of Pakistan for the period 1982-2017. There is abundant literature showing a positive impact of globalisation on economic growth. Globalisation indicators like trade openness (OPEN), foreign direct investment (FDI), workers' remittances inflows (WRI) and exchange rate are believed key factors affecting economic growth and employment in developing countries like Pakistan. However, relatively less focused area of research is whether globalisation affects male and female workers differently in developing countries. The purpose of the current study is to address the issue empirically in the context of Pakistan. Conventional theories in international trade suggested that trade provides job opportunities in export-oriented markets, particularly for low skilled female workers. Furthermore, as competition in the domestic market has also increased due to globalisation, firms cannot take the risk of discriminating against females by paying more to men just for the reason that they are male workers, (Becker, 1971) theory of discrimination supports this view (Black & Brainerd, 2004). On the other hand, globalisation comes up with weakening of the relative

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position of females in the labor market because in most of the developing countries females are concentrated in a few sectors having restricted mobility and facing responsibilities in both labour market and the household which limits their availability for work and capability of bargaining for high wages. Additionally, export-oriented industries may lose women as they move towards higher value-added segments and become more proficient over time. These mixed assorted theoretical justifications point out that effect of openness on GBGLM depend upon structural composition of the concerned economy, hence remains an unsolved empirical question (AlAzzawi, 2014).

Recent empirical work at the cross country level on the gendered effects of globalisation has been inconclusive. A strand of literature dealing macroeconomic determinants of GBGLM has emphasised globalisation as a key determinant. Despite producing positive impact of globalisation to reduce GBGLM, a large body of literature has also identified negative effects as well (Assaf, 2018; Ouedraogo & Marlet, 2018; Robertson, Lopez-Acevedo, & Savchenko, 2018). In this scenario, the present study intended to examine the impact of globalisation on GBGLM of Pakistan and contribute to the existing literature. Specifically, the study aims to answer two questions. The first question is whether globalisation affects gender-based labour force participation differential (LFPRD) in Pakistan? The second question is whether globalisation affects gender-based wage differential (WD) in Pakistan?

Results of the study showed that OPEN is beneficial for reducing LFPRD and WD in Pakistan during the data period of the study. The impact of FDI and WRI on GBGLM is positive. Interestingly, ER depreciation has a negative effect on LFPRD. Moreover, the economic growth of Pakistan is found as a prominent factor in reducing GBGLM during the data period. This shows that the increase in real GDP can play an important role in reducing GBGLM.

## REVIEW OF LITERATURE

The available empirical literature has documented different implications of globalisation regarding GBGLM. Most commonly used indicators of globalisation are OPEN and FDI, while a few studies have also assessed the impact of ER fluctuations and WRI on GBGLM.

Becker (1971) gave the view that trade openness reduces gender discrimination in the labor market through increasing competition while Darity and Williams (1985) argued that trade openness exacerbates women empowerment as it decreases women wages. Further, the study argued that because of low bargaining power women face discrimination in the labor market. Juhn, Ujhelyi, and Villegas-Sanchez (2014) have studied the implications of OPEN regarding gender inequality in Mexico using firm-level data for the period 1991-2000. The study concluded that trade liberalisation and technological up-gradation in the industries positively affected women employment in blue-collar jobs but negatively in white-collar jobs. A recent study conducted by Kimura (2016) examined the impact of OPEN on WD for the period 1995-2005. The findings of the study suggested that OPEN has significantly reduced the WD related to low as well as medium skills jobs.

A large body of literature has assessed the impact of FDI on WD and LFPRD. However, the available evidence documents contradictory evidence on the impact of FDI on GBGLM. A recent study conducted by Ouedraogo and Marlet (2018) for 94 developing countries using panel dataset for the period 1990-2015 found that FDI has reduced gender inequality.

However, this effect is found weaker for those countries where females have low access to economic resources. Another study conducted by Rasekhi and Hosseinmardi (2012) using a panel regression with a sample of 21 developing countries for the period 2000-2007 found that FDI inflows reduced the WD. The study argued that WD could widen as some firms only seek to benefit from female workers' lower wages and weaker bargaining power. Whereas, Carr (2016) has found an insignificant impact of FDI on the gender wage gap using data of 91 countries during the period 1972-2013. A study conducted by Vijaya and Kaltani (2007) showed the widening impact of FDI inflows on WD in the manufacturing sectors of 19 countries for the period 1987-2001. Moreover, Timmermans (2014) has found a positive relationship between FDI and FLFP in countries which are considered rich in minerals.

Most of the available literature has documented the widening impact of WRI on GBGLM, as the LFP decision depends on reservation wage- the lowest wage on which a particular worker decides to enter in the labour market. Thus increase in WRI also raises the reservation wages of the workers resulting in low LFPR. In this scenario, (Nguyen & Purnamasari, 2011) have found that WRI reduced labour supply and working hours of the remaining household members in Indonesia. Moreover, Hanson (2007) concluded that WRI reduced FLFPR in rural Mexico, particularly, females from high-migration states become less likely to work relative to females from low-migration states. A study conducted for El Salvador (Acosta, 2006) found that WRI is negatively related to the female LFPR, whereas, male LFPR remains unaffected. A recent study conducted by Chami, Ernst, Fullenkamp, and Oeking (2018) also argued that WRI negatively affected LFPRD. The study found that WRI reduced LFPR of male and females, but the negative effect is stronger for female workers.

Literature related to the impact of ER depreciation on GBGLM is relatively scant. In the case of Uruguay, Munyo and Rossi (2015) found that ER depreciation affected gender-based labour force participation and wages differently because of their different representation among various sectors. On the one hand, in developing countries ER depreciation expands the tradeable sector, which increases the demand for the female workers who are usually unskilled and relatively cheap labourer tends to reduce LFPRD. On the other hand, due to the weak bargaining power of females, their wages didn't rise in contrast to male workers. Hence, the wage gap widened. A very recent empirical evidence produced by Erten and Metzger (2019) argued that undervaluation boosts FLFPR, and this effect is stronger for developing countries. The study concluded that undervaluation not only increased FLFPR but also helpful in reducing LFPRD.

In the case of Pakistan, only a few studies have assessed the impact of globalisation on GBGLM. Asghar, Naveed, and Saleem (2017) have conducted research related to the impact of globalisation on gender inequality index(GII) by using data for Pakistan for the period 1980-2014. Results of the study pointed out the significant negative impact of economic and social globalisation on GII. Moreover, (Mujahid, 2014) has identified OPEN and FDI as essential determinants of FLFPR in Pakistan. There is scant literature on the impact of globalisation indicators on GBGLM (Jaffri, Sana, & Asjed, 2015).

## **METHODOLOGY**

To estimate the impact of globalisation on LFPRD, this study has an augmented model originally developed by Siegmann (2006) and applied by Mujahid (2014). For the testing

impact of globalisation on WD, the study augmented model originally developed by Oostendorp (2004). All variables used in the model are in natural log form.

$$LFPRD_t = \alpha_0 + \alpha_1 OPEN_t + \alpha_2 FDI_t + \alpha_3 WRI_t + \alpha_4 ER_t + \alpha_5 ICT_t + \alpha_6 RGDP_t + \alpha_7 TFR_t + \alpha_8 LITD_t + \mu_t \dots \dots \dots (Model 1)$$

$$WD_t = \beta_0 + \beta_1 OPEN_t + \beta_2 FDI_t + \beta_3 ICT_t + \beta_4 ER_t + \beta_5 WRI_t + \beta_6 PCI_t + \beta_7 GCF_t + \mu_t \dots \dots \dots (Model 2)$$

Where,

LFPRD<sub>t</sub> = Labor force participation rate differential

WG<sub>t</sub> = Wage Differential between average wages of male and female workers in Pakistan

OPEN<sub>t</sub> = Trade openness measured as trade to GDP ratio

FDI<sub>t</sub> = Foreign direct investment inflow

WRI<sub>t</sub> = Workers' remittances inflows

ER<sub>t</sub> = Exchange rate between Pak rupee and US dollar

ICT<sub>t</sub> = Information and communication technology

RGDP<sub>t</sub> = Real gross domestic product

TFR<sub>t</sub> = Total fertility rate

LITD<sub>t</sub> = Literacy differential

PC<sub>t</sub> = Per capita income

GCF<sub>t</sub> = Gross capital formation

μ = Stochastic error term

There are at least three channels through which trade openness/liberalisation affects GBGLM (Gaddis & Pieters, 2017)

- a) Becker (1971) has pointed out that due to taste-based discrimination, workers might be discriminated based on gender. As a result of trade liberalisation, competition does not warrant such discrimination against female workers if male and female workers are substitutes. Thus trade liberalisation results in convergence through narrowing LFPRD. However, benefits of trade liberalisation may be compromised in the presence of imperfect substitutability of male and female workers.
- b) Since male and female workers are different in physical strength and mental capabilities (popularly known as difference in brain and brawn), therefore, skill-based technological change will worsen the LFPRD in skill-based sectors where females are less educated and skilled.
- c) According to Heckscher-Ohlin theory trade openness causes reallocation of resources from importable to exportable and as a result, has implications for GBGLM. If male and female workers are perfect substitutes, than GBGLM will reduce provided that there are no frictions in the mobility of female workers to expanding the exportable sector. Further, unbalanced care-giving responsibilities to female workers also hinder their ability to capture any benefits of trade liberalisation.

Available literature has argued that FDI plays a vital role for narrowing the gap between the labour force participation rate if the FDI received in sectors where females have high job opportunities and vice versa (Aguayo-Tellez, Airola, Juhn, & Villegas-Sanchez, 2014). Further, it is commonly believed that multinational companies and foreign-owned firms are more technologically advanced as compared to domestic firms, which create a technological spillover effect in the host country. The local firms are eager to adopt new technology by hiring newly trained workers on high wage premium and reduce the wage gap (Glass & Saggi,

2002). On the same line, if the new technology is more compatible with female workers than their demand will inevitably increase and vice versa (Razavi, 2012).

The depreciation in the real exchange rate stimulates the tradeable sectors due to cheaper exports; if women are working extensively in the tradeable sector, then the real exchange rate depreciation will result in higher labour force participation and the wages of females relative to males. Otherwise, the opposite is true (Munyo & Rossi, 2015). It is observed from available empirical evidence that WRI may have either a positive or a negative impact on FLFP. Receiving remittances in the host country, reservation wage of the females also rises as a result of their need to work (for low wages) may be reduced and in turn, this may reduce women's labour market participation and increases wage gap. They may prefer to do unpaid household work rather spend time in the market on low wages (Chami et al., 2018). For empirical estimation of model 1, the study used data for the period 1982-2017 whereas, model 2 is estimated for the period 1986-2017 due to unavailability of gender-based wages data for the complete period. Data is collected from publications of Pakistan Bureau of Statistics (PBS), World Bank and Ministry of Finance, Pakistan.

## RESULTS AND DISCUSSION

To empirically test the hypothesis, the first step is to check the stationarity of the underlying series. Table 01 presents the results of the Augmented Dickey-Fuller (ADF) test which is applied to check the presence of stationarity of variables selected for model 1 (LFPRD).

**Table 1:**  
*Augmented Dickey-Fuller Test*

Variable	At Level		At First Difference		Decision
	Intercept	Trend & Intercept	Intercept	Trend and Intercept	
	Test Statistics (Prob)	Test Statistics (Prob)	Test Statistics (Prob)	Test Statistics (Prob)	
LFPRD	0.2880[0] (0.9745)	-1.8250[0] (0.6722)	-5.2193[0] (0.0001)	-5.2894[0] (0.0006)	I(1)
OPEN	-2.7517[0] (0.0752)	-2.7078[0] (0.2394)	-7.6852[0] (0.0000)	-7.6351[0] (0.0000)	I(1)
FDI	-1.2578[0] (0.6386)	-3.8682[3] (0.0247)	-5.2724[0] (0.0001)	-5.1860[0] (0.0008)	I(1)
WRI	0.5117[0] (0.9849)	-1.1009[0] (0.9153)	-4.7079[0] (0.0005)	-4.9425[0] (0.0016)	I(1)
ER	-2.2043[0] (0.2028)	-0.7902[0] (0.9575)	-4.6893[0] (0.0006)	-4.1134[0] (0.0165)	I(1)
ICT	-2.1969[1] (0.2108)	-2.1138[1] (0.5210)	-5.9382[0] (0.0000)	-5.9202[0] (0.0002)	I(1)
RGDP	-1.1011[1] (0.7048)	-3.5351[4] (0.0519)	-3.6010[0] (0.0107)	-3.60945[0] (0.0430)	I(1)
TFR	-1.8531[6] (0.349)	-3.8000[4] (0.0292)	-2.8324[5] (0.0654)	--- ---	I(0)
LITD	-2.7805[0] (0.0708)	-3.0589[0] (0.1313)	-5.7745[0] (0.000)	-5.7549[0] (0.0002)	I(1)

Note: Values in parenthesis ( ) represent probabilities and [ ] represents optimal lags selected through SIC.

Based on the results of the ADF test presented in table 01, ARDL approach is selected to be used for statistical analysis. Since the series under consideration are representing mix order of integration I(1) and I(0), it is a prerequisite of the ARDL approach that the dependent variable should be I (1) while independent variables could be of mix order of I (1) and I (0). In the next step, the optimum lag length is selected.

**Table 2:**  
*Lag Selection Criteria Based on VAR Model*

Lag	AIC	SC	HQ
0	-9.98065	-9.58071	-9.84259
1	-27.0517	-23.0522	-25.6710
2	-31.5601*	-23.9611*	-28.9369*

Results obtained from different information criteria are presented in Table 02. The Optimum number of lags to be included in the model is 2, which is suggested by AIC, SC and HQ.

To test the existence of long-run relationship among the variables, the first step of (Pesaran & Shin, 1998) ARDL Bounds Testing Approach involves the estimation of equation (1) by OLS method and then conduct F-test for the joint significance of the coefficients of lagged levels of the variables as given below.

$$\begin{aligned} \Delta LFPDR_t = & \alpha_0 + \alpha_{1j} \sum_{j=1}^k \Delta LFPDR_{t-j} + \alpha_{2j} \sum_{j=1}^k \Delta OPEN_{t-j} + \alpha_{3j} \sum_{j=1}^k \Delta FDI_{t-j} + \alpha_{4j} \sum_{j=1}^k \Delta WRI_{t-j} + \\ & \alpha_{5j} \sum_{j=1}^k \Delta RGDP_{t-j} + \alpha_{6j} \sum_{j=1}^k \Delta ER_{t-j} + \alpha_{7j} \sum_{j=1}^k \Delta ICT_{t-j} + \alpha_{8j} \sum_{j=1}^k \Delta TFR_{t-j} + \\ & \alpha_{9j} \sum_{j=1}^k \Delta LITD_{t-j} + \alpha_{10} LFPDR_{t-1} + \alpha_{11} OPEN_{t-1} + \alpha_{12} FDI_{t-1} + \alpha_{13} WRI_{t-1} + \alpha_{14} RGDP_{t-1} + \\ & \alpha_{15} ER_{t-1} + \alpha_{16} ICT_{t-1} + \alpha_{17} TFR_{t-1} + \alpha_{18} LITD_{t-1} + \varepsilon_t \text{(Equation 1)} \end{aligned}$$

Where the null hypothesis is, there doesn't exist long-run relationship among study variables; however, the alternative hypothesis is: there exists a long-run relationship among study variables.

**Table 3:**  
*ARDL Bounds Results*

Model Estimated	LFPDR	
F-Statistics	7.34222*	
Selected Lag Length	(02)	
	Critical bounds	
Critical bound values	Lower Bound Value	Upper Bound Value
10%	1.85	2.85
5%	2.11	3.15
1%	2.62	3.77

The calculated F-statistics for model 1 is (7.3422), which is higher than upper critical bound at 1 percent level of significance, thus confirming the existence of a cointegration relationship among study variables in the model.

**Table 4:**  
*ARDL Estimates*

Long Run Results				
Dependent Variable: LFPRD				
Variables	Coefficient	Standard Error	t-statistics	Probability
C	9.0203	0.5050	17.8585	0.0000
OPEN	-0.0448	0.0218	-2.0448	0.0543
FDI	0.0299	0.0070	4.2738	0.0004
WRI	0.0212	0.0108	1.9544	0.0648
ER	-0.1163	0.0477	-2.4359	0.0243
ICT	-0.0126	0.0187	-0.6745	0.5077
RGDP	-0.3899	0.0527	-7.3886	0.0000
TFR	-0.1222	0.0275	-4.4412	0.0003
LITD	0.0317	0.0172	1.8361	0.0813
Short Run Results				
Dependent variable: DLFPRD				
DOPEN	-0.0154	0.0132	-1.1658	0.2574
DFDI	0.0206	0.0032	6.2685	0.0000
DWRI	0.0171	0.0056	3.0490	0.0063
DER	0.0117	0.0202	0.5788	0.5691
DICT	-0.0124	0.0086	-1.4346	0.1668
DRGDP	0.1448	0.0528	2.7427	0.0125
DTFR	-0.7043	0.0701	-10.0479	0.0000
DLITD	-0.0024	0.0067	-0.3573	0.7246
ECM(-1)	-0.8297	0.0825	-10.0551	0.0000
Diagnostic Tests				
Jarque-Bera Normality Test (Probability)			1.7650 (0.4137)	
Breusch-Godfrey Serial Correlation LM Test (Probability)			2.7330 (0.0972)	
ARCH Heteroscedasticity Test(Probability)			0.3280 (0.5660)	
CUSUM			Stable	
CUSUM SQ			Stable	

Results reported in Table 04 for LFPRD show that all the coefficients of variables are statistically significant (except ICT) and their signs are according to the prior expectations. The coefficient of OPEN is negatively and significantly related to LFPRD. Due to a 1% increase in OPEN, there is 0.044 percent decrease in LFPRD. Results support the findings of (Gaddis & Pieters, 2017).

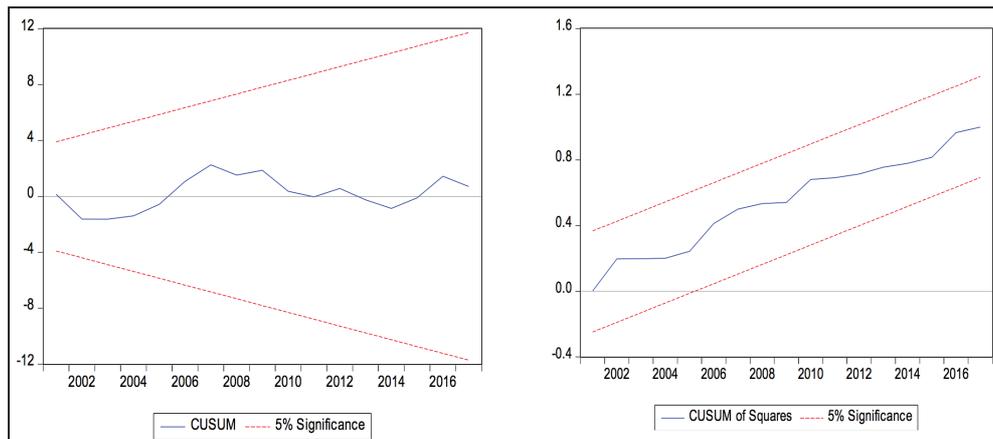
The positive sign of the coefficient of FDI showed that due to a 1% increase in FDI, the LFPRD has increased by 0.029 percent. The FDI is found responsible for widening the gap between male and female LFPR. In the case of Pakistan, major FDI has been received in four sectors: banking, power, services sector and oil and gas. These are male concentrated sectors, while females are mostly related to the agriculture sector. Therefore, LFPRD expands with an increase in FDI. Similar evidence is provided by (Jaffri, Sana, & Asjed, 2015; Ouedraogo & Marlet, 2018).

WRI is also significantly and positively associated with LFPRD. WRI estimates show that due to a 1% increase in WRI, the LFPRD increased by 0.021%. It has been argued in the

literature that with the increase in WRI, reservation wages of females increase and they prefer to reduce their LFPR and increase domestic work. This finding is also consistent with (Chami et al., 2018). ER depreciation is found significantly lowering LFPRD during the data period. Due to a 1% increase in ER, the LFPRD has decreased by 0.11 percent. ER depreciation expands the tradeable sector in contrast to the non-tradable sector, a majority of the females in developing countries are engaged in the tradeable agriculture sector. Therefore, an ER depreciation reduces LFPRD. Results are in line with (Munyo & Rossi, 2015).

RGDP is inversely related with LFPRD showing that due to 1% increase RGDP, LFPRD reduced by 0.38 percent. Economic growth increases the job opportunities relatively more for females; hence there is a reduction in the LFPRD. TFR tends to decrease LFPRD as a sign of the coefficient is negative and highly significant. The theoretical justification behind the negative correlation between TFR and LFPRD lies on (Butz & Ward, 1979) framework which explained that income effect of female wages, increase in purchasing power to purchase daycare facility and flexible working hours may be responsible for a positive relation between TFR and LFPRD. These results are in line with the findings of (Ahn & Mira, 2002). Impact of all indicators of globalisation is reducing LFPRD except the impact of FDI. RGDP is a prominent factor in achieving low LFPRD in Pakistan.

The coefficient of ECM (-1) reported above is negative and lies between zero and one (-0.82%), implies that error correction process converges to equilibrium with the speed of 82% from current to next time period. Results of standard diagnostic tests are also reported in Table 04, which confirm the validity of estimation results. The probabilities of Jarque-Bera test, serial correlation LM test and ARCH heteroscedasticity test are greater than 0.05, thus indicating that residuals are normally distributed, there is no serial correlation among disturbances and residuals are homoscedastic. Moreover, the plot of CUSUM and CUSUMSQ test in Figure 01 is revealing that model is correctly specified.



**Figure 1:** Plot of Cumulative Sum and Cumulative Sum of Squares of the Recursive Residuals

Results reported in Table 05 showed that all the variables selected for model 2 (WD) are non-stationary at level, but their first difference is stationary. In this case, when all variables, including the dependent variable, are integrated of order I (1), the most preferred econometric technique is Johansen's cointegration approach.

**Table 5:**  
*Augmented Dickey-Fuller Test*

Variable	At Level		At First Difference		Decision
	Intercept	Trend & Intercept	Intercept	Trend and Intercept	
	Test Statistics (Prob)		Test Statistics (Prob)		
WD	0.8475 (0.9935)	-2.6920 (0.2458)	-4.4091 (0.0014)	-4.4816 (0.0059)	I(1)
OPEN	-2.7517 (0.0752)	-2.7078 (0.2394)	-7.6852 (0.0000)	-7.6351 (0.0000)	I(1)
FDI	-1.2578 (0.6386)	-3.8682 (0.0247)	-5.2724 (0.0001)	-5.1860 (0.0008)	I(1)
WRI	0.5117 (0.9849)	-1.1009 (0.9153)	-4.7079 (0.0005)	-4.9425 (0.0016)	I(1)
ER	-2.2043 (0.2028)	-0.7902 (0.9575)	-4.6893 (0.0006)	-4.1134 (0.0165)	I(1)
ICT	-2.1969 (0.2108)	-2.1138 (0.5210)	-5.938 (0.0000)	-5.9202 (0.0002)	I(1)
PCI	-0.2316 (0.9248)	-2.7120 (0.2384)	-3.6895 (0.0088)	-3.5985 (0.0449)	I(1)
GCF	-1.7670 (0.3900)	-2.4984 (0.3269)	-5.9773 (0.0000)	-5.8848 (0.0001)	I(1)
GCF	-1.7670 (0.3900)	-2.4984 (0.3269)	-5.9773 (0.0000)	-5.8848 (0.0001)	I(1)

In the next step, lag order is selected through lag length criteria; the lag selection is based on SIC, suggested one lag as optimal lag to be included in this model.

**Table 6:**  
*Results of Johansen's Cointegration Test*

Trace Test				Max Test			
Null Hyp.	Altr.Hyp	LR	5 % CV	Null Hyp.	Altr.Hyp	LR	5 % CV
r = 0	r > 0	232.5955*	159.529	r = 0	r = 1	88.6223*	52.362
r ≤ 1	r > 1	143.9731*	125.615	r = 1	r = 2	44.5483	46.2314
r ≤ 2	r > 2	99.4246*	95.7536	r = 2	r = 3	36.5684	40.0775
r ≤ 3	r > 3	62.85637	69.8188	r = 3	r = 4	23.4113	33.8768
r ≤ 4	r > 4	39.44500	47.85613	r = 4	r = 5	18.8706	27.5843
r ≤ 5	r > 5	20.57440	29.79707	r = 5	r = 6	13.2077	21.1316
r ≤ 6	r > 6	7.366688	15.49471	r = 6	r = 7	7.15184	14.2646
r ≤ 7	r > 7	0.214842	3.84146	r = 7	r = 8	0.21484	3.84146

Results of Johansen Cointegration test are reported in Table 06, both trace and max test have revealed that there exists cointegration among study variables. Trace test has shown there are three cointegrating relationships for the model (WD) while Max test has pointed out 01 cointegrating relationships.

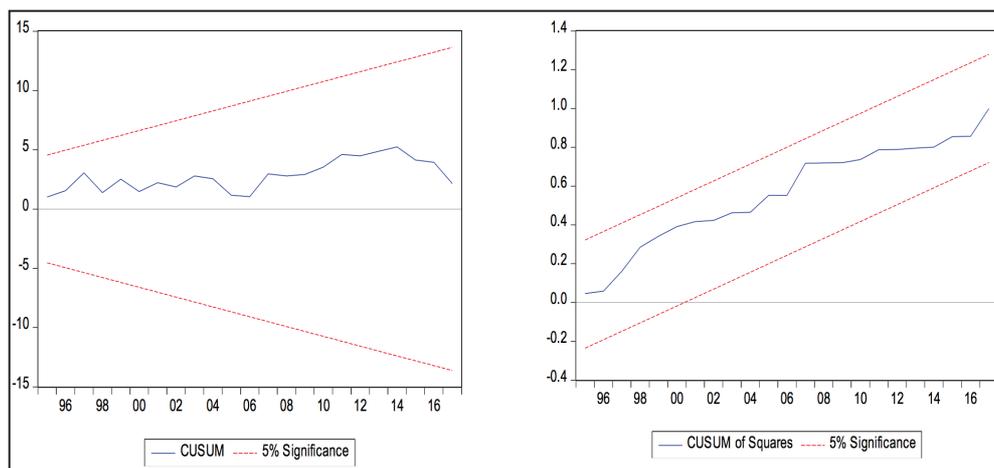
**Table 7:**  
*Estimation Results*

Long Run Cointegration Results			
Variables	Coefficient	Standard Error	t-statistics
OPEN	-1.6275	0.1552	-10.4856
FDI	-0.0015	0.0470	-0.0315
ICT	-0.1909	0.1268	-1.5054
ER	2.8338	0.1652	17.148
WRI	0.5999	0.0391	15.338
PCI	-4.8558	0.8095	5.9985
GCF	4.8583	0.3490	13.917
Short Run Results			
DWD(t-1)	0.7488	3.2485	0.0035
DOPEN(t-1)	-0.4905	-2.4061	0.0246
DFDI(t-1)	-0.0089	-0.2240	0.8247
DICT(t-1)	0.4155	2.9843	0.0066
DER(t-1)	-0.1137	-0.3072	0.7615
DWRI(t-1)	-0.1993	-1.9008	0.0699
DPCI(t-1)	1.4750	1.1367	0.2674
DGCF(t-1)	-0.8287	-2.4297	0.0233
DUM1991	0.2964	3.0948	0.0051
ECM(t-1)	-0.1761	0.0832	-2.1153
Diagnostic Tests			
R <sup>2</sup>	0.5259		
AdjR <sup>2</sup>	0.3198		
F-statistics (prob)	2.5570 (0.0306)		
Jarque-Bera Normality Test (Probability)	0.0401 (0.9801)		
Breusch-Godfrey Serial Correlation LM Test (Probability)	0.6214 (0.7329)		
ARCH Heteroscedasticity Test (Probability)	0.4472 (0.5037)		
CUSUM	Stable		
CUSUM SQ	Stable		

The results in the above table for model 2 indicated that all coefficients of variables are statistically significant, and their signs are according to the prior expectations. OPEN is negatively related to WD, and coefficient is statistically significant, the WD has decreased by 1.62 percent due to a 1 percent increase in OPEN. These results are consistent with Kimura (2016) study, which says OPEN has increased low- and medium-skilled jobs where most females are concentrated, thus increasing their bargaining power which has resulted in a decrease in WD.

Impact of rupee depreciation against US dollar is found positive on WD. Due to 1 percent depreciation of the rupee, on average WD widened by 2.83 percent. These findings are in line with (Munyo & Rossi, 2015). Impact of WRI on WD is also found positive and significant. Due to a 1% increase in WRI, WD declined by 0.59 percent. Due to a 1% increase PCI, WD reduced by 4.85 percent. Only OPEN is reducing WD, GDP is again a prominent factor in reducing WD in Pakistan during the data period.

The coefficient of ECM (-1) reported above is negative and lies between zero and one (-0.17%), implies that error correction process converges to equilibrium with the speed of 17% from current to next time period. Results of standard diagnostic tests are also reported in Table 07, which confirm the validity of results estimation. Moreover, Plot of CUSUM and CUSUMSQ test in Figure 02 is revealing that model is correctly specified.



**Figure2:** Plot of Cumulative Sum and Cumulative Sum of Squares of the Recursive Residuals

## CONCLUSION

This study has examined the impact of globalisation on GBGLM of Pakistan for the period 1982-2017. Results of the study have shown that OPEN is beneficial for reducing LFPRD and WD in Pakistan. The impact of FDI and WRI on GBGLM is observed augmenting. Interestingly, ER depreciation has a negative effect on LFPRD due to expansion of the exportable sector, the relative demand for females also increase, but it has a positive effect on WD because of their weaker bargaining power. Moreover, the economic growth of Pakistan is found as a prominent factor in reducing GBGLM during the data period. Based on these results, the study concluded that FDI should be attracted particularly in those sectors where mostly females are engaged to reduce GBGLM. It is important to use WRI for gender diversity through developing entrepreneurial skills of females of recipient households. The gender-based wage gap is also subject to a relatively low level of skills and education of females as compared to males. Improving educational opportunities for females will not only allow them to get better jobs in trade benefited industries but also will increase women's wages. The policy implication is that Pakistan should tightly monitor implications on their female labour market while adopting globalisation.

## REFERENCES

- Acosta, P. (2006). Labor supply, *School attendance, and remittances from international migration: the case of El Salvador*: The World Bank.
- Aguayo-Tellez, E., Airola, J., Juhn, C., & Villegas-Sanchez, C. (2014). Did trade liberalisation help women? The case of Mexico in the 1990s *New analyses of worker well-being* (pp. 1-35): Emerald Group Publishing Limited.

- Ahn, N., & Mira, P. (2002). A note on the changing relationship between fertility and female employment rates in developed countries. *Journal of Population Economics*, 15(4), 667-682.
- AlAzzawi, S. (2014). Trade liberalisation, industry concentration and female workers: the case of Egypt. *IZA Journal of Labor Policy*, 3(1), 20.
- Asghar, N., Naveed, T. A., & Saleem, S. J. S. A. S. (2017). Impact of Social, Political and Economic Globalisation on Gender Inequality Index in Pakistan: A Time Series Analysis. 32(2), 415-430.
- Assaf, A. A. (2018). Evaluating the Impact of Trade Openness on Women's Job Opportunities: An Analysis for Middle East Countries. *Global Journal of Economics Business*, 4(1), 99-110.
- Becker, G. S. (1971). *The economics of discrimination*: University of Chicago Press.
- Black, S. E., & Brainerd, E. (2004). Importing equality? The impact of globalisation on gender discrimination. *ILR Review*, 57(4), 540-559.
- Butz, W. P., & Ward, M. P. (1979). The emergence of countercyclical US fertility. *The American economic review*, 69(3), 318-328.
- Carr, S. (2016). *Investing in Equality: A Case for Motivating Gender Empowerment Through Foreign Direct Investment*. Georgetown University.
- Chami, R., Ernst, E., Fullenkamp, C., & Oeking, A. (2018). Are Remittances Good for Labor Markets in LICs, MICs and Fragile States? Evidence from Cross-Country Data. *International Monetary Fund. WP/18/102*.
- Darity, W. A., & Williams, R. M. (1985). Peddlers forever?: Culture, competition, and discrimination. *The American economic review*, 75(2), 256-261.
- Erten, B., & Metzger, M. (2019). The real exchange rate, structural change, and female labor force participation. *World Development*, 117, 296-312.
- Gaddis, I., & Pieters, J. (2017). The gendered labor market impacts of trade liberalisation evidence from Brazil. *Journal of Human Resources*, 52(2), 457-490.
- Glass, A. J., & Saggi, K. (2002). Multinational firms and technology transfer. *Scandinavian Journal of Economics*, 104(4), 495-513.
- Hanson, G. H. (2007). *Emigration, remittances and labor force participation in Mexico (Working Paper ITD= Documento de Trabajo ITD; 28)*: BID-INTAL.
- Jaffri, A. A., Sana, M., & Asjed, R. (2015). Impact of Globalisation on Gender Inequality in Labour Market of Pakistan. *Pakistan Economic Social Review*, 1-16.
- Juhn, C., Ujhelyi, G., & Villegas-Sanchez, C. J. J. o. D. E. (2014). Men, women, and machines: How trade impacts gender inequality. 106, 179-193.
- Kimura, N. (2016). *Does trade liberalisation help to reduce gender inequality? A cross-country panel data analysis of wage gap*. Retrieved from
- Mujahid, N. (2014). Determinants of female labor force participation: A micro analysis of Pakistan. *International Journal of Economics*, 2(5), 211-220.
- Munyo, I., & Rossi, M. A. (2015). *The effects of real exchange rate fluctuations on the gender wage gap and domestic violence in Uruguay*. Retrieved from
- Nguyen, T., & Purnamasari, R. (2011). *Impacts of international migration and remittances on child outcomes and labor supply in Indonesia: How does gender matter?:* The World Bank.
- Oostendorp, R. (2004). *Globalisation and the gender wage gap*: The World Bank.
- Ouedraogo, R., & Marlet, E. (2018). *Foreign direct investment and women empowerment: new evidence on developing countries*: International Monetary Fund.

- Pesaran, M. H., & Shin, Y. (1998). An autoregressive distributed-lag modelling approach to cointegration analysis. *Econometric Society Monographs*, 31, 371-413.
- Rasekhi, S., & Hosseinmardi, H. (2012). An impact of globalisation on gender wage inequality: A case study of selected developing countries.
- Razavi, S. (2012). World development report 2012: Gender equality and development—A commentary. 43(1), 423-437.
- Robertson, R., Lopez-Acevedo, G., & Savchenko, Y. (2018). Globalisation and the Gender Earnings Gap: Evidence from Sri Lanka and Cambodia 1992-2015.
- Siegmann, K. A. (2006). Globalisation, Gender, and Equity—Effects of Foreign Direct Investment on Labour Markets in Rural Indonesia. *European Journal of Economics*, 3(1), 113-130.
- Timmermans, C. (2014). Foreign Direct Investments and gender labour force participation: An empirical study on Sub-Saharan Africa between 1990-2009.
- Vijaya, R. M., & Kaltani, L. (2007). Foreign direct investment and wages: a bargaining power approach. *Journal of World-Systems Research*, 13(1), 83-95.

