

EVALUATING THE EFFECTS OF EXTERNAL REMITTANCES ON LABOUR FORCE PARTICIPATION IN PAKISTAN: EVIDENCE FROM PANEL DATA TECHNIQUES

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Abstract

Developing economies like Pakistan are facing slower economic growth. Lower labour force participation may be responsible for this slower growth. So, economists take an interest in finding the factors affecting it. This study analyzes household behaviour in labour force participation after having received remittances in the case of Pakistan. For this purpose, the study uses pooled data estimated from Pakistan Social and Living Standard Measurement Surveys for the period 1998/99 to 2018/19. The study applies the Generalized Methods of Moment (GMM) approach to explore the effects of remittance on labour force participation. The results show that labour force participation (LFP) of left-behind household members is inversely related to remittances. It is also inversely associated with education and positively related to gender parity. Policy implications are that the Government should provide such incentives to the households receiving remittances and the educated people so that they could become a part of the labour force. Moreover, the Government should also focus on female education to increase gender parity.

JEL classification: I22, F24, D10, D63, J21.

1. Introduction

Remittances have emerged as a significant source of foreign inflow of financial resources in developing countries. There are an estimated 281 million international migrants around the world, comprising 3.6 percent of the world population in 2020 (UN, 2022). South Asia is the world's primary source of the cheap labour force. A large number of workers move from here to other regions every year. Especially, the developing countries of Asia such as Bangladesh, India, and Pakistan, export labour and empower their youth to stabilize their economic condition through remittances (ILO, 2021). The amount migrants send to their home countries is a significant financial flow for the developing nations. These inflows protect the economy from different economic shocks and tend to

help when countries domestically suffer from dire economic situations (Azizi, 2018).

Pakistan is the 5th largest country in terms of population, with an estimated population of 245.5 million and a growth rate of 1.8 percent in 2024, according to the Population Division (UN Pakistan, 2024). It is also the sixth-largest in the world and the second-largest nation in South Asia in terms of receiving foreign remittances globally (World Bank, 2022). Pakistan also stands second among the labour or workforce-exporting nations in South Asia (ILO, 2020). An estimated 13.65 million people, as officially registered till Jun 2024, moved abroad. Of them, more than 96 percent were placed in Arab countries (Pakistan Bureau of Emigration and Overseas Employment, report 2024). Migration can raise the living, educational, and health standards of the recipient households.

Workers' migration is the main source of remittances in developing nations (Ahmed & Zarzoso, 2013).

Low labour participation is a problem in developing countries. The theoretical framework of the neoclassical model of work and leisure is the trade-off model, which describes the decision of a person to participate in the labour force or not and determines the willingness to work hours at the current wage rate. A person must make a rational decision to maximize his utility by allocating time between work and leisure in a day (Elu & Price, 2017; Nwokoye, 2017). Many developing nations export excess labour to other nations because the employment opportunities are not expanding quickly.

Pakistan is positioned amongst the top ten leading labour force nations in the world. According to official statistics, the labour force expanded from 65.5 million in 2018 to 71.76 million during the fiscal year 2021. According to the most recent labour force survey, Pakistan's unemployment rate decreased from 6.9 percent to 6.3 percent between 2019 and 2021. The employment ratio to population was reported at 42.1 percent in 2021, with males having a 19.4 percent higher ratio than females. Creating enough working possibilities for such a huge labour is quite difficult, in its domestic work (GOP, 2022).

Labour force is measured as the sum of individuals employed and unemployed who are in the working-age population between 15 to 64 years. Kim (2007) disclosed that the household with the source of remittances has greater reservation wages and, are moving out from LFP in Jamaica. On the other hand, the remittances are considered non-labour income, which increases the reservation wage for those households who are receiving foreign remittances and they reduce labour participation in developing nations (Azizi, 2018). Remittances may decrease household member's participation in the domestic labour supply in the domestic economy (Acosta et al., 2009). Foreign remittances can affect the labour participation decisions of the remaining household members, it potentially plays a major role in the domestic labour market, and the improvement of human capital (Demurger & Wang, 2016).

Several in the literature at the international level have been found in the context of relationships between remittances and the LFP. Most researchers revealed the inverse relationship between foreign remittances and labor force participation, by supporting different justifications for this inverse relationship. A few studies showed that the remaining household members reduced their labour force participation due to the reservation wage (Chami et al., 2005; Acosta et al., 2007; Chami, et al., 2012; Azizi, 2018). The other researchers discovered that some households receiving the remittances reduced LFP because they considered remittances as a non-labour income (Acosta et al., 2009; Afsar 2009; Azizi, 2018; Chami et al., 2012).

The other studies indicated an inverse association between foreign remittances and LFP due to the income effect (e.g., wealth effects) because when they have more income, they prefer more leisure as compared to work (Raihan et al., 2018). Khan and Valatheeswaran (2016) showed the inverse relationship between remittances and LFP in female household members, but there is no change in male household members. Whereas Thapa (2016) revealed that remittances decreased the LFP of both male and female members in a household. At the national level in Pakistan, the first study that was conducted on the relationship between foreign remittances and LFP in Pakistan, used single survey data for the year 2007-08 and revealed an inverse relationship (Thapa, 2016). The other study in Pakistan was conducted on said relationship, in two provinces, Punjab and Khyber Pakhtunkhwa (KPK) of Pakistan by conducting a household questionnaire survey and revealed a negative relationship between remittances and LFP (Shair & Majeed 2021). Still, some researchers used only time series macro-level data of Pakistan for a different period (Ahmed & Martinez-Zarzoso, 2013; Asad et al., 2016; Faridi & Mehmood, 2014; Hassan et al., 2013; Hussain & Anjum, 2014; Iqbal et al., 2013). Thus, they used almost more interpolated values than the actual ones. Further, they took foreign remittance data from other sources, like world development indicators. To the best of our knowledge, this is a little evidence to focus on the impacts of foreign remittances on LFP using consistent data

from the same source over time in Pakistan. The main objective of the study is to analyze the effect of foreign remittances on LFP over time using the pooled data estimated from 1998-99 to 2018-19.

The study's scheme is as follows: After the introduction, the second section deals with literature reviews. The third section presents the theoretical background, and section four represents the data and methodology applied to determine the relationships. Section fifth shows the results and discussions, and the final section represents the study's conclusion and suggestions.

2. Literature review

Literature reviews are considered an integral part of research and help scholars discover information gaps in the relevant study. It assists investigators in understanding vital concepts and leads to the use of new empirical development techniques and theoretical frameworks. The literature in this study is the foreign remittances and LFP.

Chami et al. (2005) disclosed that the rise in external remittances could increase the reservation wages, which would become the source of reduction in the LFP rate, particularly in the situations where the prevailing wage rate was lower as compared to the worker's reservation wage. (Kim, 2007) disclosed that the households with the source of remittances had greater reservations about wages and moving out of LFP in Jamaica. Afsar (2009) conducted research in Bangladesh and revealed that female emigrants' wages actually decreased by 33 percent because of the higher moving costs and the low pay for females.

Emilsson (2011) examined how foreign remittances affected household labour decisions by using the neo-classical model of labour-leisure choice by collecting data from household earnings and spending surveys from the Department of Statistics in Jorda for the years 2002, 2006, and 2008. The study used regression analysis, and the findings revealed that the remittances had an inverse effect on both men's and women's decisions about LFP throughout the whole period. These results were consistent with neoclassical ideas about leisure as a basic benefit. The benefits of remittances are countered by a decline in LFP.

The researcher also discovered by splitting household heads into different age groups that remittances had an inverse impact on domestic labour supply for some age groups, but it did not appear to be continuous. Nguyen and Purnamasari (2011) applied an instrumental variable estimation method, by using historical migration networks as instruments for migration and remittance receipts in Indonesia, and found that migration reduced the working hours of remaining household members.

Paoli and Mendola (2012) examined the consequences of migration on child labour by employing a cross-country dataset of developing nations. Empirically, numerous child labour equations were calculated, and it was shown that moving abroad might greatly lessen or even cancel out child labour associated with unfavourable labour market conditions. The study discovered that the cross-country variation in the relationship between parental competence and child labour was solely attributable to the composition of skill gaps between immigrants and natives. Whereas the young children residing in rural regions are the winners of the outmigration for heterogeneous sub-samples. The researcher discovered that, on average, female emigration had a greater influence on child labour, and this effect was substantially more prominent in households led by women.

Guha (2013) discovered the connection between foreign remittances and the labour market in Pakistan by employing the HIES data for the year 2007-08 and the Probit model and Propensity Score Matching methods. The researcher revealed that internal and foreign remittances have a tendency to reduce the number of working hours that the households were willing to work. This effect was more substantial for women and young people. The effect was more robust in the countryside, and people in households were more likely to enrol in school if they got money from abroad. The research analysis showed that foreign remittances played a more substantial role in the labour market than domestic remittances from the country. The researcher declared that with the rise in non-labour income, like external remittances, the household's members preferred more leisure than work.

Khan and Valatheeswaran (2016) explored the effects of migration on the left-behind household members' labour supply by using the migration survey data, conducted in 2010 in Kerala. This survey was conducted by the research unit of Kerala, based on 15,000 households through random sampling. The instrument variable Probit approach was used to remove the endogeneity issue. The study revealed that female labour participation was reduced due to wage differences and the problem of relocation. The heterogeneity of international migration revealed that the effect was greater in rural areas as compared to urban areas. Asad et al. (2016) analyzed the effect of external remittances on macroeconomic variables using a bivariate and multivariate co-integration approach in Pakistan. The results showed that there was a long-term association among remittances, labour migration, and economic growth, in Pakistan.

Azizi (2018) revealed that increased human capital directly enhances labour participation. On the other hand, remittances are non-labour income, which increases the reservation wage for families with foreign remittances and reduces labour participation in developing nations. The result suggested that a ten percent rise in remittances reduced 17 percent of total LFP. Still, this reduction is greater among female workers as compared to males. Owing to the cultural features of developing countries, households have a source of remittances, whereas the reservation wage for women is more sensitive than for men. Raihan et al., (2018) showed a negative relationship between foreign remittances and LFP because those households that received remittances were less interested in LFP. So, they preferred leisure.

Nwokoye, et al., (2020) examined the effect of remittances receiving households and LFP in Nigeria by using the General Household Survey (GHS) in Nigeria's 2015/16. The sample was collected from the thirty-six states, based on 22,200 individuals. The researchers used the Heckman two-step benchmark model along with propensity score matching. The study revealed that remittances receiving households invested in new businesses, and remittances become an attraction, especially for the younger generation, who have raised economic activity by a greater percentage.

Shair and Majeed (2021) explored the connection between foreign remittances and labour market participation of remaining household members in the two cities Lahore and Peshawar in Pakistan. The research used a sample of 300 households. The primary data was collected from a survey conducted in Lahore and Peshawar at the household level. The researcher used the 2SLS method due to the endogeneity of remittances and the Tobit model for unbiased and consistent estimates. The result revealed that remittances significantly negatively affect LFP among remaining household members. It showed that the household members did not participate in labour participation; they preferred voluntary unemployment. The research also revealed that the remittance income enlarged the reservation wage for non-migrated members of a household, that's why they did not participate in the labour force.

Murakami (2021) explored the effect of remittances on labour market participation in Tajikistan at the household level by using primary data based on 800 households for the period 2015 to 2017 on a survey in Tajikistan. Due to the endogeneity problems, different estimation techniques were used because simple OLS delivered a biased estimate. The IV, FE, and RE approaches were also applied. The results showed remittances reduced the labour supply of remaining household members by 10.2 percentage points. The findings of the study suggested that reservation wages have a significant influence on domestic labour supply. Ayalew, H. A., & Mohanty, P. C. (2022) explored the relationship between remittances and labour participation decisions in Ethiopia by using the panel data obtained from the Ethiopian Socioeconomic Survey (ESS) 2013-14 and 2015-16. The study employed logit and Tobit models as econometric methods and found that overseas remittances have a detrimental effect on adult labour participation decisions and hours worked in Ethiopia, with the impact varying depending on home location, gender, and employment. Domestic remittances also have a significant impact, but it depends on the residence location regarding the decision to engage in non-domestic labour activity. The study also found that urban people's decisions about labor involvement have decreased, while

rural ones' have increased. It also has a favourable impact on decisions about labour involvement in temporary paid employment. The researcher suggested it is imperative to conduct further research to identify the root causes of the detrimental impacts on labour participation and working hours before developing an effective strategy. Nevertheless, policies that encourage domestic remittances are crucial as they enhance adult labour participation in rural regions and temporary paid work.

Keller, M., & Mulangu, F. (2024) examined how remittances affected the availability of labour in the Comoros, the country that receives the second-highest share of remittances in Africa. The household survey data for the period 2014 and 2020 were used in the propensity score matching estimation technique. The results found that there was no significant difference between the likelihood of labour market participation among remittance receivers and non-receivers. In other words, the majority of the results indicate that remittances have no impact on individuals' participation in the labour market. The remittance receivers have a lower probability of having wage-based employment, but they have a higher probability of having informal jobs or being self-employed. The study also revealed that there are notable differences based on the source and volume of remittances received. The study found that remittances from overseas have a stronger correlation with noteworthy outcomes compared to those from domestic sources, the individuals who received large remittances had a significant impact on labour participation rates. Conversely, individuals who received low to medium amounts of remittances showed a greater effect on hours worked, self-employment, and wage-based employment.

Thousands of Pakistani migrants abroad have contributed remittances, which have helped the nation's economy by enhancing livelihoods and relieving pressure during economic hardships including energy crises, food shortages, and increasing foreign loan repayments. According to recent studies, remittance inflows to Pakistan were strong throughout the COVID-19 epidemic, despite all expectations.

3. Theoretical relationship between remittance and labour force participation

The neoclassical model of work and leisure is the trade-off model, which describes the decision of a person to participate in the labour force and determines the number of hours willing to work at the existing wage rate. A person must make a rational decision to maximize utility by allocating time between work and leisure. (Elu & Price, 2017; Nwokoye, 2017).

Neoclassical migration theory states that wage disparity between two geographic locations, which depends on labour demand and supply in these locations, is the primary driving force behind the labour movement. While locations with a strong labour supply and a deficit of capital have lower comparative wages and workers who want higher wages are more likely to relocate from low-wage regions to high-wage regions, places with a scarcity of labour but a surplus of capital have a higher comparative pay (Lewis, 1954).

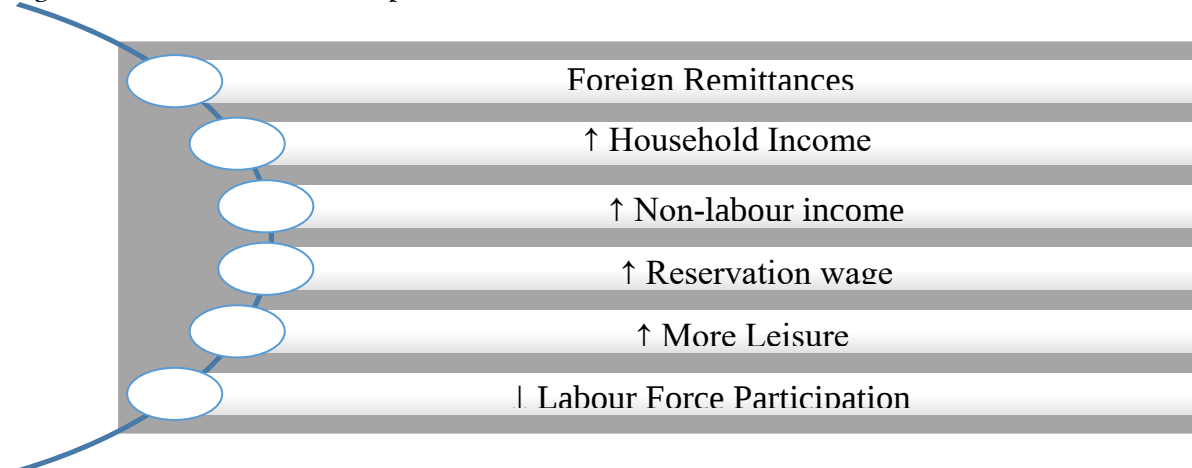
According to the dual labour market hypothesis, the attraction of higher wages in developed nations is mainly caused the immigration. It is assumed that the labour market in industrialized nations is divided into two parts: the primary sector, which requires highly trained people, and the second segment, which is exceptionally labour-intensive but calls for low-skilled individuals because the local workers do not want to work in low-status and low-paying jobs. Immigrants typically find employment in the secondary market. Foreign remittances received in a household raise the household income. The increase in household income is treated as non-labour income, which enhances the reservation wage for left-behind household workers (e.g., the reservation wage is the minimum wage that a worker is willing to accept for a specific type of job). The rise in reservation wage increases the demand for leisure, which reduces the probability of individual labour participation.

According to the relative deprivation theory, one of the leading causes of labour migration is the realization of the economic disparity between neighbours or other houses in the foreign region. High levels of economic disparity encourage more people to migrate; remittances may initially contribute to an increase in inequality, but over time, they may even work to lessen it. Workers migrate in two stages: first,

they invest in themselves by building up their human capital, and then they use it to acquire or extract its advantages. Successful immigrants may then utilize their newly acquired cash to

provide better housing, schools, and living conditions for their families, which will ease their constraints even more (Docquier & Rapoport, 2003).

Figure 1 Theoretical relationship between remittances and LFP



As the remittance income increases in a household, the reservation wage also increases reducing the labor force participation in the domestic economy. On the other hand, if the remittance income is considered a non-labour income, then the remaining household prefers leisure than work. Based on these theoretical reasons, this study assumes that households, in prerequisite of additional resources, choose to migrate their members abroad for jobs. These migrant workers send remittances to their left-behind families or households. Remittances allow non-migrant household members to relax their financial restrictions and increase their reservation wages by lowering their involvement in LFP.

4.Data and Methodology

4.1. Data

The study aims to estimate the impacts of foreign remittances on LFP over time. However, there is no time series data available for all of the variables being used in Pakistan. However, there are some Pakistan Social and Living Standard Measurement Surveys for the periods from 1998-99 to 2018-19. Pakistan is consisting of four provinces with the rural and urban break-up. This study estimates all of the variables for all the provinces with rural-urban break-up. Therefore, for one year there are eight observations. There are 10 data sets for the years-

1998-99, 2001-02, 2004-05, 2005-06, 2007-08, 2010-11, 2011-12, 2013-14, 2015-16 and 2018-19, but there is one data set for the year 2004-05 in which the variable- remittance is missing. So, the study estimates the all of the variables using these 9 data sets and pools the data making 72 observations.

4.2. Estimation Technique

The panel data estimation techniques are used to estimate the relationship between foreign remittances and LFP in Pakistan. To determine the relationship, the following model is estimated:

$$LFP_{it} = \alpha_o + \beta_1 Remitf_{it} + \beta_2 Edu15_{it} + \beta_3 Gparity_{it} + \beta_4 Hsize_{it} + U_i + \mu_{it} \quad (1)$$

Where α_o = intercept

LFP_{it} = LFP is calculated on the basis of labour force divided by the working-age population between 15 to 64 years.

$Remitf_{it}$ = Foreign Remittances

Edu_{it} = mean years of schooling at the age of 15 years (HDI) by (Max Roser 2014)

$Gparity$ = Gender parity is measured as the ratio of female enrollment at the primary level to male enrollment.

$Hsize_{it}$ = is the number of persons living in a household, during a specific period.

U_i = fixed effect or Random effects

μ_{it} = Error term

$it = i$. for cross-sectional and t . for time.

$H_0: \beta_1 = 0$ (there is no relationship between LFP and Foreign Remittances),

$H_1: \beta_1 \neq 0$ (there exists some relationship between LFP and Foreign Remittances).

Keeping in view the nature of the data, panel data techniques are applied to determine the relationships. Firstly, the study estimates the Fixed Effect (FE) model and applies the F-test to know whether we should estimate pooled regression or a fixed-effect model. The F-test concludes that we should estimate the fixed effect model. Then the study estimates the Random Effect (RE) model. The Breusch-Pagan LM test determines. Further, the study applies the modified Wald test to detect heteroskedasticity and the Wooldridge test for autocorrelation issues.

On remittances, numerous researchers have also concentrated on methodological concerns, such as the endogeneity problem (Azizi, 2018; Khan & Valatheeswaran, 2016). The problem of endogeneity of foreign remittances was also pointed out in the literature (Azizi, 2018). There are different techniques to control the endogeneity problems, such as instrumental variable (IV), 2nd stage least square (2SLS), and GMM.

The GMM is a widely used technique for estimating model parameters in economics.

When the fixed and random effects fail to capture the problem of endogeneity, the generalized methods of movement techniques are applied to control this issue. The GMM eliminates endogeneity by “internally converting the transformation of a variable’s previous value from its current value; this refers to a statistical procedure (Roodman, 2009). This process reduces the number of observations, and this procedure improves the efficiency of the generalized methods of movement model (Wooldridge, 2012). GMM model on the relationship between remittances and LFP is as; Model-2

$$LFP_{it} = \alpha_0 + \beta_1 LFP_{(it-1)} + \beta_2 Remitf_{it} + \beta_3 Hsize_{it} + \beta_4 Gparity_{it} + \beta_5 Edu_{it} + \varepsilon_{it}$$

The GMM method, used for panel data, provides more consistent results, in the presence of endogeneity caused by different sources (Wintoki et al., 2012).

5. Results and discussion

To estimate the relationship between foreign remittances and Labor force participation, the study estimates the FE model and the RE model results and the results are presented in Table 1.

Table 1. Relationship between labour force participation and foreign remittances in Pakistan

Variables	FE	RE	FE	RE
Constant	67.03 (16.03) ***	90.24 (17.82) ***	62.52 (14.87) ***	67.76 (14.64) ***
Remittances	0.03 (-0.49)	-0.07 (-0.48)	-0.05 (-0.58)	-0.05 (-0.55)
Household size	0.208 (0.58)	-2.36 (-7.16) ***	0.64 (1.77) *	0.051 (0.14)
Edu	-0.972 (-3.58) ***	-1.19 (-6.89) ***	~	~
Gender Parity	~	~	-3.67 (-1.89) *	-4.016 (-2.00) **
F-test / Breusch Pagan LM-test	33.48	0.00	40.05	76.03
(P-value)	(0.000)	(1.00)	(0.000)	(0.000)
Diagnostic tests				
Autocorrelation Wooldridge test result	13.53			
(p-value)	(0.0130)			
Test of endogenous Regressor	7.93			
(p-value)	(0.0048)			

Notes: t-values are shown in the brackets. *** = significant at 0.01 level, ** = significant at the 0.05 level, * = significant at the 0.10 level. The diagnostic results show that there does not exist autocorrelation, there are hetero problems in the data.

Source: author's estimation

Table 1 the results of fixed and random effects are insignificant due to the endogenous regressor included in the model, which raises the problem of endogeneity, where the explanatory variable is correlated with the error term. Remittances, gender parity, and education may have some relationship with unobserved factors or the dependent variable. (Azizi, 2018) also points out the endogeneity of remittances in the literature. There are different techniques to control the endogeneity problems, such as instrumental variable (IV), 2nd stage least squares (2SLS), and GMM.

When the fixed and random effects fail to capture the problem of endogeneity, the generalized methods of movement techniques are used to control this issue. The GMM

estimation eliminates endogeneity by “internally converting the transformation of a variable’s previous value from its current value; this refers to a statistical procedure (Roodman, 2009). This process reduces the number of observations, and this procedure improves the efficiency of the generalized methods of movement model (Wooldridge, 2012). The GMM method, used for panel data, provides more consistent results in the presence of different sources of endogeneity (Wintoki, Linck, & Netter, 2012). In the presence of endogeneity and autocorrelation problems, the difference GMM is the more appropriate technique (Arellano and Bond 1991). The results of the GMM estimation are shown in Table 2.

Table 2. Relationship between labour force participation and foreign remittances in Pakistan

Variables	Pakistan
Constant	57.85 (46.60) ***
Lag(LFP)	0.0463 (2.77) ***
Remittances	-0.21 (-2.52) ***
Edu15	-1.2099 (-7.51) ***
Gender Parity	16.937 (4.63) ***
R-squared	0.56
Instrument	
Household size	yes

Notes: T-values are shown in the brackets. *** = significant at the 0.01 level, ** = significant at the 0.05 level, and * = significant at the 0.10 level. Remittances measured in hundreds of rupees.

Source: author's estimation.

Table 2 shows the GMM result using household size as an instrumental variable. It depicts that remittances have an inverse relationship with labour force participation (LFP) of the left-behind household members. The result is statistically significant at the one percent level of significance. A one percent change in foreign remittances will reduce the labour force participation rate by 0.21 percent. In the

previous literature, there were two reasons for this negative relationship between remittances and labour force participation rates. Firstly, it is due to the reservation wage because people expect more wages as compared to the prevailing wage rate. That’s why they prefer leisure as compared to work. Secondly, remittances are treated as a non-labour income for the left behind household members; that is why they

reduce labour force participation due to an increase in the non-labour income. These results are consistent with the previous studies (Airola, 2008; Funkhouser, 1992; Kim, 2007; Sharma, 2020).

Education also revealed the inverse relationship with labour force participation; a one-unit rise in education improvement led to a reduction of 1.20 units in LFP. The result is statistically significant at the one percent significance level. As the education level rises, people expect more wages as compared to the prevailing wage rate, and then the LFP drops due to reservation wages (Ionescu & Cuza, 2012).

Gender parity shows a positive relationship with labour force participation. Gender is measured as the ratio between female and male enrollment at the primary level, which means that an increase in female enrollment increases parity. A one-unit improvement in gender parity leads to an increase of 16.93 percent in the labour force participation rate, and the results are of statistical significance at the level of one percent. Literature also confirmed that female participation in the workforce increases with the

increase in their educational level (Banerjee, 2019). There was a positive effect of gender equality through greater female participation in the labour market in the long run (Ruiters & Charteris, 2020). Female labour force participation is positively and significantly affected by the female level of education (Faridi, Malik, & Basit, 2009).

The GMM results at the regional level are shown in Table 3. The urban region shows statistically significant results at one percent and five percent for remittances and education. However, the results are not significant for gender parity when household size was included as an instrument. Remittances reduced the labour force participation rate in urban areas, as one unit change in remittance would reduce the labour force participation rate by 0.001 unit. The education results show an inverse relationship with labour force participation; as one unit increases in the mean year of schooling, the labour participation rises to 1.89 units. The result of gender parties is also insignificant in the urban region.

Table 3 Relationship between Labour Force Participation and Foreign Remittances at the Regional Level

Variables	Urban	Rural
Constant	55.39 (37.23) ***	57.26 (3.22) ***
LagLFP	-0.032 (-1.92) **	0.084 (3.22) ***
Remittances	-0.10 (-4.80) ***	-0.20 (-2.88) ***
Edu15	1.889 (5.48) ***	-8.442 (-8.40) ***
Gender Parity	-2.384 (-0.89)	49.938 (8.73) ***
R-squared	0.43	0.41
Instrument		
Household size	yes	yes

Notes: T-values are shown in the brackets. *** = significant at the 0.01 level, ** = significant at the 0.05 level, and * = significant at the 0.10 level. Remittances measured in hundreds of rupees.

Source: author's estimation,

At the regional level, the result of GMM remains the same as at the aggregate level by using

household size as the instrumental variable, and the results are consistent and significant at the

one percent level. One unit rise in remittances leads to a reduced LFP equal to 0.20 units in the rural area. The result of gender parity shows insignificance at the one percent level, representing that gender parity enhances the LFP because more female education leads to more participation in the labour market.

The result shows that remittances have an inverse relationship with labour force participation (LFP) of the left-behind household members and are statistically significant at the one percent significance level. It shows that a one percent change in foreign remittances will reduce the labour force participation rate by equal to 0.10 percent. The results are consistent with previous studies (Acosta et al., 2007; Acosta, Lartey, & Mandelman, 2009; Azizi, 2018; Chami et al., 2005; Chami, Hakura, & Montiel, 2012).

Theoretically, remittances are treated as a source of non-labour income, which domestically reduces the labour force participation rate of the households (Berker, 2011; Silva, 2014). Further, the basic concept underlying the labour force participation decision is the conception of the reservation wage. The increase in reservation wages reduces the probability of individual labour participation. The increase in the remittance income automatically increases the reservation wage, directly affecting labour participation. Several researchers have observed that remittances are an extra non-labour income for the receiver households. They presumed that the inflow of remittances would drop the labour force participation of the receiver household individuals.

6. Conclusion and Policy Implication

This study analyzes the household behaviour in labour force participation after having received remittances in the case of Pakistan by using the HIES data for the period 1998/99 to 2018/19, the 72 observations are collected through pooling for this analysis. Firstly, we estimate the fixed effect and random effect models, which reported the problem of endogeneity between the variables- remittances and Labor force participation. To overcome the problem of endogeneity we used generalized methods of moment (GMM) approach. The result of the study shows that remittances have an inverse relationship with LFP of left-behind household

members. LFP is also inversely related with education, whereas it is positively associated with gender parity. The imperative concept underlying the labour force participation decision is the conception of the reservation wage. The increase in reservation wage reduces the probability of individual labour participation. When the remittance income increases, the reservation wage also increases, directly affecting labour participation. Several researchers have observed that remittances are an extra non-labour income for the receiver households and imagined that the existence of the remittance's inflow would drop the labour force participation by the receiver household individuals. At a policy level it is suggested that the Government should provide such incentives to the households receiving remittances and the educated people so that they could become a part of the labour force. Moreover, the Government should also focus on female education.

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