



Research article

Does financial inclusiveness matter for the formal financial inflows? Evidence from Pakistan

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Abstract: The remittance inflows are the major source of financial transfers received by households to maintain their livelihood. However, the formal inflows can play an immense role in improving the indigenous economy by affecting household welfare, these flows further strengthen the economy at micro and macro levels. Previously, various studies found a determinant relationship between supply-side factors and financial inclusion. Whereas, this paper emphasizes a sweltering issue of formal financial inflows in Pakistan especially focusing on the demand side factors on the household level. The analysis uses Heckman Selection Technique to assess the demand for formal financial inclusion which can only be realized for the households receiving remittances, where the determinants for both depend upon the distinctive demographic, individuals and household characteristics. The study appraises household survey data from the Household Integrated Economic Survey (HIES) for the period 2013–2014. The results demonstrate the strong effects of households' demand-side factors on financial inclusion. The demographic features such as education and the highest earner's age are found to have a positive and significant impact on financial inclusion. Whereas, the household characteristics such as household living conditions, asset accumulation, household savings, and borrowings also strongly affect the formal financial inclusive decision. It is therefore suggested to employ a comprehensive policy regarding the enhancement of households' awareness by the spread of formal and financial literacy.

Keywords: financial inclusion; remittances; household dynamics; Heckman Selection Model

JEL Codes: G21, F24, R20, C31, C34

1. Introduction

The financial progression is of crucial importance to Pakistan's perspective. Though Pakistan receives a substantial amount of remittances, lack of financial access and usage obstructs households to exploit maximum advantages out of these remittances. However, the recent decade witnessed immense growth in the literature on the penetration of financial inclusion. The extent of access and usage of the financial sector has captured the attention of academia, entrepreneurs, capitalists, financial institutions and policymakers all around the world and in Pakistan as well. The literature addressing the issue, however, has either explored the effects of the remittance inflows or the financial inclusion, neglecting the combined effect of formal financial inflows-remittances. Regarding remittances, research literature merely focuses on the trends of remittance inflows and outflows and their impact on household wellbeing. Whereas, studies on financial inclusion mainly focus on factors determining the accessibility towards financial inclusion, emphasizing on the supply side and overlooking the demand side. The demand for financial inclusion depends on the household's idiosyncratic or distinctive attributes—the segmentation of formal or informal sources of finance available, leading the need to explore the impact of the financial system at the household level. Similarly, financial inflows such as remittances are affected by the household's decision to be formally included or remain excluded. However, the benefits of observing the demand side are manifold. For example, the assessment of demand-side factors will be helpful for financial institutions and policymakers to make efforts in bringing the deprived and marginal households in the formal financial channel. This analysis would also help in observing the extent of financially inclusive and exclusive proportions in Pakistan.

Conceptually, the study has based its hypothesis on the fact that remittance inflows can be formal or informal and how the formal financial inclusiveness fosters the foreign financial inflows? Here, the choice of households plays a detrimental role inducing them to divert the remittance inflows through formal or informal sources of finance. For this, the study explores the household characteristics, their exposure to the financial sector and other circumstances as the foundation for the households' decision to remain financially inclusive while receiving remittances. The study first accentuates the significance of financial inclusion in the economy. Then it further emphasizes the crucial role of the formal financial sector. Both formal and informal sources of finance are the substitute for each other. The main aim of the study is to explore the barriers which restrict the households from using the formal channels of finance and rather opting for the informal ones which are unorganized, out of the course of institutional regulation and supervision. This is because informal financial sources are unreliable, risky, and insufficient. In contrast, the formal channels are the transparent and eminent source to bring foreign exchange in the economy.

The study assesses its objective using (HIES) for the period 2013–2014. The empirical evidence in the study indicates that the demand side factors affect both the remittance transfers and the decision of formal financial inclusion. There exist various factors at the household level which can affect the financial inclusion situation and the study verifies that the household conditions and characteristics play a fundamental role in determining financial inclusion.

In short, the prevalence of poverty and unemployment in the economy and the lack of accessibility, i.e. shortage of financial services from supply-side have always been considered as the fundamental cause of low determination of financial inclusion. There are studies, such as; (Fowowe et al., 2016; Hamma, 2016) which measure the impacts of the formal financial sector on the

potentials of remittance inflows for economic growth and individual welfare. But in Pakistan, the household features along with individualistic characteristics are also considered to be strong demand-side factors that impact the household decision to use formal or informal financial services. The identification of these demand factors for the financial inclusion using households receiving remittances is the core empirical contribution of the paper which was previously ignored. To the best of the knowledge, this study is the first attempt using microdata of HIES and providing an appropriate methodological contribution accordingly for the determination of financial inclusion in Pakistan. The study offered a thoughtful analysis of the determinants and barriers of financial inclusion.

There are many studies available that provide policy recommendations for the improvement in financial inclusion based on supply-side factors. However, the empirical results of this study support the fact that demand-side factors have a significant effect on the determination of financial inclusion in Pakistan. Hence, framing policies by focusing merely on one dimension (supply side) would be less likely to provide the expected increase in the level of financial inclusion. Therefore, the study attempts to include the demand side through the households' perspective.

Lastly, the study uses an innovative econometric approach of the Heckman Selection Technique, to estimate the determinants of financial inclusion through the inflow of foreign remittances. For the analysis, households receiving remittances were non-randomly or systematically selected from the population. Therefore, the Heckman Selection Technique has been considered, as an appropriate approach.

The article is arranged as follows. The section "Theoretical foundation" facilitates to build the model by using both theoretical and empirical evidence found in the literature. The section "Methodology and data" provide a detailed framework of the Heckman Selection Model and sources of data employed; it further justifies the econometric technique for the estimation of the model. The section "Results" provides a detailed debate on the findings, and finally, the section "Conclusions" concludes the study along with the practical policy recommendations proposed to improve the financial inclusion in Pakistan.

2. Theoretical foundation

This section first develops an understanding of the visible worth of formal financial system and formal financial inflows by citing various national and international studies. Then it offers knowledge on how the demand side factors from households determine the level of formal financial inclusiveness in the economy. It further provides economic validation of the theory based on existing literature and emphasized on the importance of these factors along with the repercussions of their ignorance. For this, the evidence from international and Pakistan perspective are cited first and subsequently, the gaps in existing empirical literature are also highlighted.

Above all the availability, usage and accessibility of the formal financial system are valid for the progression and sustenance of marginal households. On the other hand, high costs of financial exclusion push them to a vicious circle of poverty (Aduda et al., 2012; Sangmi, 2013; Nkwede, 2015). The remittances have the potential to leverage financial inclusion. Because, it has been empirically observed that the migrant remitters and the remittance-receiving households are more likely to use financial system for the credible, low cost and instant money transfers (Li et al., 2014; Orozco et al., 2015). Furthermore, remittance inflows along with the access to financial services reduce households' vulnerability (Mashayekhi, 2013; Munyegera et al., 2014).

On the demand side, various international studies have shown empirical importance of individual and household characteristics for the assessment of demand for formal financial inclusion. Moreover, households receiving their annual income through formal remittances also found to be formally financially inclusive in the study by Camara et al. (2014). Such as, the individual characteristics like age plays a vital role in determining financial inclusion. Age and specifically the highest earner's age explain disparities to save, own a bank account, borrow and access to finance (Demirguc-Kunt, 2012; Camara et al., 2014).

According to (Allen, 2012; Wachira et al., 2012; Camara, 2014) education level in a family plays a vital role in determining the advance and deep financial inclusion. Even individuals completed primary education are found to be less formally financially inclusive. Further, the provision of financial literacy related to low cost, fair, transparent, risk-free and impartial formal financial services and products is imperative to divert people from using informal financial channels such as hundi or hawala because of their unreliability, risk, insufficiency, and costs (Raza et al., 2016; Li et al., 2014).

In contrast with other individual characteristics, the saving behavior has been considered as the direct measure for financial inclusion. The habit of saving persuades the household to be formally financially inclusive and thus smoothen the consumption and improve well-being by maintaining total and retirement savings (Dupas et al., 2013; Wichara, 2012). Similarly, the remittances have been found to have a positive association with savings and having an account at the formal financial institutes (Anzoategui et al., 2011). The more the household financially literate, the more it will be formally financially inclusive. Whereas, those with low financial literacy are found to be hesitant to use the formal financial system (Van Rooij et al., 2012).

Furthermore, there are various household characteristics which create demand for formal financial services and product. Household borrowings; credit and financial needs affect the choice to use the formal financial channels, which further enables the creditworthy consumers to avail of mortgage loans, overdraft and credit card facilities to meet the unanticipated financial emergencies (McCloskey et al., 2014). Empirical findings in Camara (2014) shows a positive and significant impact of household expenditures on formal financial inclusion. Moreover, the use of formal products like plastic money, debit and credit cards can ease financial issues and make transactions safer. Through these services, people not only adjust their spending but they can also meet the emergencies based on their expected future incomes (Subhani et al., 2011).

Demirguc-Kunt (2013) further discovered that the countries where people hold household assets, they have more chances to access the formal financial sources. Does asset ownership show how well off the household is? Higher the value of household assets, the higher the formal financial inclusion. Household living conditions such as ownership of house and land by household greatly affect the use of formal financial institutional services, because it enables households to fulfill the documentation requirements and guarantees against their assets (Camara et al., 2014). Furthermore, the occupational characteristics significantly affect in improving and maintaining the formal financial status. Furthermore, occupational skills are effective in financial management (Demirguc-Kunt, 2013). Employment, occupational skills, and status of the highest earners in the family can also affect the decision of family members to go abroad.

Moreover, the residence status such as rural or urban affects the level of penetration of financial inclusion (Demirguc-Kunt, 2013) regional disparities play a vital role in determining financial inclusion because of lower accessibility of rural natives due to the higher documentation costs and

lower proximity to financial institutions (Allen, 2012; Camara, 2014). Studies have found that the diffusion of financial activities is not similar across the region depending upon socio-economic and cultural norms. Sometimes geographical hindrances such as remote and isolated inhabitants make the access difficult. Moreover, households living in rural areas due to limited access to the Internet are also less likely to use internet banking hence remain formally financially excluded (McCloskey et al., 2014).

Keeping in mind the importance of the households' choice to become formally financially inclusive depending upon the diverse characteristics they possess. The research endeavors to assess those factors which persuade and dampen their demand to use formal financial sources. Moreover, the literature on the research of formal financial inflows seriously lacks concerning Pakistan's economy. Therefore, the study attempts to explore the impact of remittance inflows in the presence and absence of accessibility and usage of formal financial services and products.

3. Data and methodology

The study used data set from random household surveys (HIES) providing information on various social indicators also covering income and consumption sides, collected and organized by the Pakistan Bureau of Statistics (PBS) for the period 2013–2014. This survey offers comprehensive information on demographic features of individuals and households on numerous socio-economic facets to explore the demand side for financial inclusion and remittance inflows. The survey conducted on a rather disaggregate level included approximately 17,989 randomly selected households, provides data of different population groups on a regional and provincial basis. Such type of microdata very well supports the analysis of demand-side which directly emanates from households. The assessment process faces a limitation that financial inclusion can only be realized when the household receiving remittances. The study used variables such as household annual income, highest earner's age and occupation¹, household size, education level of family, annual savings, investments, and loans borrowed, index of durable assets and living conditions etc.

3.1. Determination of financial inclusion

Initially, the study employs the OLS approach for the determination of financial inclusion by remittance receivers. The technique has been considered to find out the factors which stimulate the households' choice to practice formal financial activity instead of using informal services for receiving remittances.

For the estimation, the study considers the following model,

$$FI_i = \alpha_0 + \alpha_1 X_i + \epsilon_i \quad (1)$$

where, FI_i is the dependent variable of financial inclusion (amount receive formally in Rs.) which is conditional upon the foreign remittance inflows. This variable captures the decision to become formally financially inclusive while receiving remittances by the i th household, X_i is the $(n \times 1)$ vector of the exogenously determined demand factors. Such as household expenditures, highest

¹ The dummies for Highest earner's occupation on skill levels have been taken from *International Standard Classification of Occupations (ISCO-08)*. For further details see (Table 01, page 14).

earner's age, highest education in the family, financial literacy and other household characteristics across regions and provinces.

Thus, the demand for formal inclusion is based on the hypothesis that households would prefer to use the formal financial sector when they reach a satisfactory income level. Higher household annual expenditures show higher living standard, therefore, raises the possibility for the household to receive the remittances through formal financial channels. For the possible reason that when people are prone to make more expenditures, they are more likely to expose to financial activities by using plastic money and credit cards, etc. The adults are expected to indulge in more financial activities, actively participating when they are earning. Therefore, the highest earners belonging to this age group are expected to be more formally financially inclusive.

The household saving, investment, and loans borrowed from financial sources have been taken as the proxy to measure financial literacy in the household. Because the household maintaining any of them, shows that they are well-aware of the financial system in the economy. Therefore, there are more chances for them to become a part of the formal financial system while receiving remittances too. Various household characteristics such as a number of earning members in the family, household living conditions, asset accumulation by households are also considered important while households forming decisions to be formally financially inclusive. Along with the education level in a household, which also increases the possibility for a household to receive foreign remittances using formal financial channels. Because a highly educated person is likely to avail of the formal financial facilities much more than that with less education.

Hence, the determination of financial inclusion can be written as,

$$FI = \alpha_0 + \alpha_1 HH_Exp + \alpha_2 HE_Age + \alpha_3 \sum_{k=1}^m F_Lit + \alpha_4 \sum_{l=1}^n H_Char + \alpha_5 Province + \alpha_6 Region + \epsilon_i \quad (2)$$

However, the dependent variable (variable of interest) i.e. the financially inclusive household is observable only if the household is receiving foreign remittances.

The OLS results were good enough to examine the hypothesis of the study. However, the study further investigates the applicability of OLS and its results by exploring the circumstances in which the sample has been taken for estimation. This brings to the main concern of selection bias that may occur when one tends to choose a specific sample systematically from the population. As the presented study needed to estimate the determinants of financial inclusion through the foreign remittance inflows for which the access was limited only to those households who were receiving foreign remittances. The determination of financial inclusion from selected subpopulations may introduce biases. Since the households receiving remittances were non-randomly or systematically selected from the population. Therefore, the study consequently used the Heckman Selection (two-step) Technique to resolve this problem.

3.2. Using Heckman Selection Technique for the determination of financial inclusion

Heckman Selection Model has been introduced by Heckman J. (1979), in which he considered the sample selectivity bias as the specification error. The study uses Heckman Selection Model because it helps to control the problems such as sample selection bias and correlations between two equations at the micro-level. Heckman Selection Model is a two-step regression model. The first model is the choice model—whether the selected financially inclusive household receives

remittances or not? This will be a model with the latent variables which depend linearly on the observable independent variables. In the first stage, the model for the determination of remittances based on the economic premise has been formulated. From this stage, the estimated model yields the predicted probability for each of the households which can further use in the second stage to obtain the Mills ratio ultimately.

Now starting again with the model (1), exclusively observable for the households that receive foreign remittances, the study formulated another model. (First stage Heckman model) exploring the demand for remittances.

Thus, the equation for the determination of remittance inflows can be formulated as,

$$Rem_i = \gamma_0 + \gamma_1 Z_i + \mu_i \quad (3)$$

This model assesses the pattern of remittances received by households, the pattern differs across formally financially inclusive or exclusive households. Where, Rem_i measures the remittances received by i th household through different financial channels, i.e. (the proportion of financially inclusive remittance receivers). This measure two variants, first the probability that a household receives remittances through formal or informal financial sources, and then the amount of remittances received in the past twelve months. Furthermore, a full set of controls that is Z_i is the $(k \times 1)$ vector of other variables. Such as, annual income, highest earner's information, household characteristics, access to technology and financial sector along with regional and provincial dummies which influence the remittance inflows.

The model of remittance receivers uses these variables due to their considerable significance. The variable of annual income has been considered as a valid aspect of the study to affect remittance inflows in a household. Usually, a low level of annual income persuades the family members to go abroad for their livelihood. Highest earner's information like their age, occupation also affect the decision to receive foreign remittances.

Household characteristics such as dependency ratio, household size, and education level also considered as crucial indicators for remittance-receiving. The increase in the dependency ratio, borrowings, and household size usually raise pressure on the head or the adult members to migrate and earn income for their family. Whereas, the education level in the family also affect the migration decision, because the qualification and skill level of individuals influence them to seek work abroad. Furthermore, if the households are technologically aware as per the global environment, they will be less reluctant to foreign mobility.

Therefore, the condition to realize the formal inflows(financial inclusion) or to observe FI_i only when household receiving remittances, is the sample selection bias.

Explicitly Sample Selection can be expressed as,

$$FI_i = \begin{cases} > 0 \text{ if Remittances received via formal financial channels} \\ = 0 \text{ if Remittances received via informal financial channels} \end{cases}$$

Hence, the expected value for Equation (1) conditional upon remittance-receiving Equation (3) can be written as,

$$E(FI_i | Rem_i = 1, X_i) = E(FI_i | X_i, Z_i, \mu_i) \quad (4)$$

$$E(FI_i | Rem_i = 1, X_i) = E(FI_i | X_i, Z_i, \mu_i) = \alpha_1 X_i + E(\epsilon_i | X_i, Z_i, \mu_i) \quad (5)$$

From this one can recognize that the expected value of X given X is itself, i.e. $E(X|X) = X$. That is X_i is independent of the error terms in the model (1) and (2).

Finally, the term $E(\epsilon_i|X_i, Z_i, \mu_i)$ justify that selection through remittance depends just on Z_i, μ_i and not upon X_i . Specifically,

$$E(FL_i|Rem_i = 1, X_i) = \alpha_1 X_i + E(\epsilon_i|Rem_i = 1) = \alpha_1 X_i + E(\epsilon_i|\mu_i > -Z_i\gamma) \quad (6)$$

The second stage model would use the predicted values as the independent variable. Here, we will examine the effect of the independent variable on the outcome. In the second stage, the correction for the selection biases can be resolved by incorporating the predicted financial inclusion probabilities as the supplementary explanatory variable. Hence providing the unbiased results in the presence of sample selectivity. We know that each stage will have a residual for the observations that are unobservable unknowns.

Therefore, the final Probit model estimated to explain the determinants of remittances is as follows,

$$Rem_rec_i = \beta_0 + \beta_1 Ann_Inc + \beta_2 \sum_{j=1}^i HE_Info + \beta_3 \sum_{k=1}^m H_Char + \beta_4 \sum_{l=1}^n F - T_Lit + \beta_5 Province + \beta_6 Region + \mu_i \quad (7)$$

The Heckman Selection model strictly follows the assumptions that firstly the residuals of both the models are normally distributed with 0 mean and variance.

$$(\epsilon, \mu) \sim N(0, 0, \sigma_\epsilon^2, \sigma_\mu^2) \quad (8)$$

Secondly, the residuals or unobserved variables of both stages are correlated shown by the significant value of coefficient correlation (ρ).

$$(\rho_{\epsilon, \mu}) \geq 0 \quad (9)$$

Thirdly, both the unobserved residuals are uncorrelated with the other set's observed explanatory variables.

$$(\epsilon, \mu) \text{ independent of } Z_i, X_i \quad (10)$$

To check the selection bias, we need to observe the relationship between the unobserved variables—residuals from both the stages. The simultaneity is captured assuming the correlation between the error terms of both the models. If the residuals of the selected choice model are correlated with the residuals of the second-stage model, then we have selection bias estimates in the OLS model. This would mean that the decision to be included in a financially inclusive system here is affected by the possibility of receiving remittances. If the unobservable—residuals of model 1 are uncorrelated with the residuals of the second model, then we can say that the households' decision of becoming financially inclusive or remain exclusive is not because of whether they receive the remittances or not. Then one can say that the sample of the second stage has been a random process and unaffected by different unobserved variables. That is the choice of variables for the model is accurate, leaving few unobserved variables which might lower the chances of selection bias in the model.

Thus, the use of an estimated omitted variable can solve the problem of sample selection bias. Specifically, we can model this as follows,

$$E[(\varepsilon_i | u_i > -Z_i\gamma)] = \rho_{\varepsilon u} \sigma_\varepsilon \lambda_i(-Z_i\gamma) = \beta_\lambda \lambda_i(-Z_i\gamma) \quad (11)$$

where;

$\lambda_i(-Z_i\gamma)$ is “just” the inverse Mill’s ratio and β_λ is an unknown parameter and if $\lambda_i(-Z_i\gamma) > 0$ it shows the selection effect and justifies the use of Heckman Selection Technique.

4. Results

This section first presents some facts related to foreign remittances, formal inflows, and financial assets in Pakistan. It provides a comprehensive descriptive analysis of key variables used in the study. Then, it discusses the empirical results obtained from model (1) and (2).

4.1. Descriptive Analysis

This section describes the present standing of Pakistan on foreign financial transfers, financial inclusion, and financial assets accumulation. For the analysis, we consider the data consist of 17,989 households from whom approximately 6.6% of the households are receiving foreign remittance. The data also shows that about 82% of them are receiving formal remittance inflows. As the researchers emphasized that these formal inflows are of crucial importance. Because the formal financial institutions offer several options to the households to dispose of their earnings and provide an opportunity to save and invest their inflows. These formal inflows play a vital role in bringing foreign transfers in the financial-economic system as well. Further enables credit creation and inclusion of more households in the formal financial sector through credit borrowings. Besides this, financial activities such as saving and investment are the fuel for financial and economic growth. Thus, it has been observed that about 1754 households maintained their savings in formal financial institutes in 2013–2014, while those with the formal annual investments were around 234. Pakistan has gone through a drastic increase concerning the formal inflows from 2005–2006 to 2013–2014 which is about 46%. This change exhibits an increase in financial inclusion with an upsurge in financial awareness and literacy. As households are becoming more formally inclusive they are more inclined to use formal financial products and services for saving and investment purposes. Corresponds to what our data reveals, with a 46% increase in formal inflows, the formal savings increase by approximately 200 Million. Whereas, the investment was raised around 62% from 2005–2006 to 2013–2014. Hence this discloses that it is of crucial importance to emphasize the demand-side factors which determine the formal financial inclusion.

- *Total Number of Households*= 17,989
- *Remittance Non-receivers* = 16,806
- *Remittance Receivers* = 1,183
- *Formal Receivers in 2005-06* = 674
- *Formal Receivers in 2013-14* = 981
- *Change in Financial Inclusion from 2005-06 to 2013-14* = 46% ↑
- *Total Remittance Inflows* = Rs. 343 Million
- *Amount of Formal Inflows* = 297 Million
- *Number of Savers (2005-06)* = 2,770
- *Total Savings (2005-06)* = 469 Million

4.2. Empirical analysis

This section includes the discussion on the results of the estimation of Equations (1) and (2) through the OLS and Heckman Selection Model. Firstly, it discusses (table-1) the estimated results of Equation (1) using OLS along with the test of robustness. Then discusses the results of Equation (1) and (3) obtained by the application of the Heckman Selection Technique.

Table (1) shows the estimated results of Equation (1) where the factors such as annual household expenditures, index of accumulated durable assets by households, highest education level in the family, household savings, all provincial and regional dummies are turned out positive and significantly determining the household's preference for the formal financial system while receiving remittances, except household annual expenditure which is insignificant. While, the variables of highest earner's age, index of household living conditions, loans borrowed by household, number of earning members in the family, household investment are found to be negatively and significantly affecting the dependent variable while the variable of highest earner's age and household investment were not found significant.

Table 1. Determinants of financial inclusion.

Variables	Coefficients	Robust Standard Error	t-test(p-value)
Formally Received Remittances (dependent variable)			
Household Expenditure	0.258	0.207	1.25 (0.213)
Education level	0.110*	0.035	3.16 (0.002)
Highest Earner Age	-0.002	0.006	-0.27(0.791)
Durable Asset Index	2.65*	0.866	3.06(0.002)
Housing Living Index	-1.88**	0.793	-2.37(0.018)
Earning Members	-0.273**	0.137	-1.99(0.047)
Household Investments	-0.407	0.418	-0.98(0.330)
Household Savings	1.02*	0.279	3.65(0.000)
Borrowed Loans	-1.53*	0.303	-5.05(0.000)
Province			
Punjab	2.10*	0.286	7.35(0.000)
Sindh	2.56*	0.627	4.09 (0.000)
Baluchistan	2.93*	0.590	4.97 (0.000)
Dummy of Urban	0.785*	0.283	2.78(0.006)
Constant	4.83	2.50	1.93(0.053)
F (16, 16033)			23.00 (0.0000)
R-squared	0.224		

Note: *, ** and *** represent significance at 1%, 5% and 10% significance level, respectively.

The Equation (1) that is the model of formal financially receiving remittances has been estimated on the systematically selected sample of remittance receivers which consist of approximately 1,183 households from the random sample of the population of about 17,989 households. Since the data set for the analysis of formal financial inclusion shrinks to the specific number of households of interest; that is only to those who receive remittances, leaving the sample of non-receivers constituting a huge proportion of the population outweighing their impact on the dependent variable. Therefore, even though the model was quite considerable and highly significant but raises reservations (as discussed earlier).

For example, there exists an uncertainty in the estimated results because the study used data on the sample of foreign remittance receivers which has been selected non-randomly from the data source(population). This non-random sample selection elevates the circumstances in which the obtained results might be biased. Therefore, to remove this ambiguity; the study re-estimated equation 1 using the Heckman Selection Technique (see section 3 for details).

Table 2. Determinants of Financial Inclusion (Using Heckman Selection Technique).

Variables	Coefficients	Robust Standard Error	t-test(p-values)
Formally Received Remittances (dependent variable)			
Household Expenditure	0.229***	0.138	1.65 (0.098)
Education Level	0.081**	0.033	2.46 (0.014)
Highest Earner Age	0.012***	0.007	1.65 (0.099)
Durable Asset Index	2.53*	0.772	3.28 (0.001)
Housing Living Index	-1.59**	0.808	-2.47 (0.013)
Earning Members	-0.085	0.145	-0.58 (0.560)
Household Investments	-0.933	2.41	-0.39 (0.699)
Household Savings	0.981*	0.316	3.10 (0.000)
Borrowed Loans	-1.59*	0.282	-5.64 (0.000)
Province			
Punjab	2.53*	0.312	8.13 (0.000)
Sindh	4.37*	0.932	4.69 (0.000)
Baluchistan	4.50*	1.01	4.46 (0.000)
Dummy for Urban	1.06*	0.319	3.31 (0.001)
Constant	6.95	1.84	3.77 (0.000)
Remittance Received (two step)			
	Average Marginal Effects	Delta Method Standard Error	t-test(p-values)
Log Annual Income	-0.013*	0.002	-4.66 (0.000)
Dependency Ratio	0.003*	7.89e-04	3.51 (0.000)
Household Size	0.003*	5.94e-04	5.73 (0.000)
Access to Internet	0.059*	0.007	7.93 (0.000)
Highest Earner Age	-7.7e-04*	1.0e-04	-7.29 (0.000)
Highest Earner Occupation			
1 st _skill	-0.171*	0.011	-15.85 (0.000)
2 nd _skill	-0.152*	0.011	-13.77 (0.000)
3 rd _skill	-0.154*	0.007	-22.46 (0.000)
4 th _skill	-0.153*	0.007	-22.53 (0.000)
Education Level	0.003*	4.1e-04	6.64 (0.000)
Borrowed Loans	2.89e-08*	7.44e-09	3.89 (0.000)
Province			
Punjab	-0.043*	0.006	-7.27 (0.000)
Sindh	-0.112*	0.005	-20.38 (0.000)
Baluchistan	-0.109*	0.006	-18.92 (0.000)
Dummy for Urban	-0.017*	0.004	-4.66 (0.000)
Constant	-0.983*	0.236	4.17 (0.000)
mills			
lambda	-1.50*	0.445	-3.36 (0.001)
rho	-0.35		
sigma	4.33		

Note: *, ** and *** represent significance at 1%, 5% and 10% significance level, respectively.

Table (2), shows the results obtained by the two-step Heckman Selection Technique. As a first step Equation (3) is estimated—taking household if receiving remittances equal 1 otherwise zero as the dependent variable. The results show that the possibility of receiving remittances significantly influenced by all the variables included in the study. The factors such as education level in the family, dependency ratio, household size, household accessibility to the internet, and the loans currently borrowed by any family member in the household are estimated to be positively determining the dependent variable. While the variables of highest earner's age, household annual income, all dummies of the highest earner's occupation, provinces and regions negatively influence the possibility to receive remittances.

After, the results obtained from the first step of the Heckman Selection Technique, based on the Probit model, raised the need to obtain marginal effects of the results for a better understanding of estimated coefficients. For the application of the Heckman procedure, the unconditional marginal effects can be calculated considering the assumption that the dependent variable of remittances receives in the first stage is the latent variable of 0 or 1. In this case, the first stage assessing the remittances received by the household has considered the latent variable of receiving foreign remittances depends linearly on the observable independent variables.

Considering the marginal effect, it has been found that a 1-year increase in education in the family increases the probability to receive remittances by 0.0027. The variable of education level in the family has been considered important because a rise in education level persuades people to go abroad to search for better employment opportunities. Further, as per the analysis, and the increase in dependency ratio will tend to increase the probability to receive remittance by 0.0027. The higher the dependency ratio in the family, it would impulsively force the adult members to look for a better opportunity for higher earnings, hence it may affect the decision to migrate. In connection to this, household size also matters for the mobility of individuals from the household. The results show that an increase of 1 member in the family increases the probability to receive remittances by 0.0034. A bigger household size stimulates the family members to migrate to earn a living when they have many people to take care of in their family.

Additionally, instead of exploring the role of household head, the study has explored the role of the highest earner in making a decision regarding moving abroad in search of a job. In this regard, the highest earner's age has been taken in the study because as the age rises people are less likely to leave their jobs at home countries to go abroad and search for new ones. The results show that a 1-year rise in the age of highest earner reduces his choice for foreign jobs by trivial probability. The occupation of the highest earner also affects the dependent variable; all dummies of the highest earner's occupation predict that choice to go abroad declines if the highest earner employed in any occupation regardless of his skills.

Moreover, household access to the internet provides a sense of connection between the family members at home and the migrant country hence raises the confidence to travel abroad. Thus, empirically an increase in access to the internet increases the possibility to receive remittance inflows by 0.059.

Furthermore, if the borrowings by family members increases it would affect the mobility of individuals. If people are unable to earn enough and need to borrow for their necessities in their origin country, then they rather prefer to migrate to some other country for earning. However, the result shows that an increase in the borrowings raises the probability to move abroad slightly.

The log of household annual income, excluding remittances—a proxy of household economic status, shows a negative impact on the foreign movement for earning purpose. This is reasonable

because households with high-income levels are not enforced to move for their livelihood, thus an increase in annual income will reduce the probability of going abroad and negatively affect remittance inflows by 0.013. Finally, all the provincial and regional dummies reflect the sturdy negative impact, exhibits strong effects of social and cultural norms on the decision to receive remittances by households.

After correcting the selection biases, the study re-estimated equation 1—the amount of remittances received from the formal financial system as the dependent variable. The model (2) reports that the factors such as log of annual household expenditures, highest earner's age, index of accumulated durable assets by households, highest education level in the family, household savings, all provincial and regional dummies assessed are positively and significantly determining the household's preferences for formal financial inclusion while receiving remittances. The explanatory variables such as the index of household living conditions and loans borrowed by households are found to be significant and have an inverse effect on the dependent variable. Similarly, a number of earning members in the family and household investment also have a negative impact on financial inclusion but found insignificant.

Precisely, results show that a 1% increase in household expenditures increases the household tendency to receive the remittances from formal financial sources by 0.23% point. This is because, when people indulge in regular transactions or spend excessively, they prefer to use plastic money (credit or debit cards) due to their various advantages. Further, with the emergence of e-Market, innovative offers and the introduction of new products by formal institutions, people are more inclined to buy online and make online utility payments instead of waiting in long queues. There is no doubt that the use of formal financial sources increases the usability of money and consumers' proximity to the international markets. Nowadays, when people spend more they prefer to be more formally inclusive because it provides convenience, ease, affordability, safety and even style (Khurana et al., 2011).

Whereas, an increase of 1% in the accumulation of durable assets by households affecting the decision to receive remittances via formal financial channels by approximately 2.53% point. This is for the reason, that owners of the property and other assets are more likely to avail of the formal financial services through the credentials they attain for the application of mortgage loans or credit management. Moreover, the higher index of durable asset accumulation displays higher social and economic standing, which unveils the opportunity to save or invest the idle financial assets of households for the secure future.

Then the level of education in the family demonstrates that a 1% increase in education level would stimulate the household decision to be formally financially inclusive by 0.08% point. Low education hinders individuals from using formal services because of the difficulties they face in the documentation and understanding the terms and conditions. Further, lack of education can also be considered as an obstacle because it keeps them unaware of the different financial institutions and banking options such as (mobile and internet banking, saving products, credit instruments, etc.).

The household savings are also expected to have an impact on our dependent variable. In the present analysis, saving has been considered as a proxy of financial knowledge. Thus, as per our findings, a 1% increase in household savings increases the possibility to receive remittances through formal financial sources by 0.98 percentage points. The household savings are also likely to affect our dependent variable because these savings make the households aware of the formal financial

sources. People prefer formal institutions for the accumulation of savings because they enable them to prepare for future financial difficulties by mitigating their financial risks and asset diversification.

The variable of the highest earner's age is also considered to be effective while framing financial decisions. Hence it is predicted that a 1-year increase in the age of highest earner, increases the probability to receive remittances through formal financial channels by 0.01% point. Because it has been observed that age is a significant individualistic characteristic for the legal and documentation requirements. Since the nature of a few documents such as employment and work permit or ownership certificates of various assets requires the eligible and legal age. Therefore, it is necessary to reach a permissible age to enter various savings, investment, mortgage, and credit contracts.

Moreover, the household choice of using formal financial sources while receiving remittances is negatively affected by various factors. The variable of the index of household living conditions (which comprise of the ownership of residence and accessibility to necessities) can have an impact on the dependent variable as 1% increase brings an approximate decrease in the household choice for the formal system by 1.99% point. Where one possible reason for this negative relationship could be, that as per our analysis; the lower housing conditions express an acute deprivation of households from fundamental needs which prompt their family members to travel abroad to raise their livelihood. Further, it might make them liable to receive government grants or transfer payment which to some extent make them exposed to the financial sector hence raise the chances for them to receive remittances from formal financial channels. Thus, the results correspond with the ones obtained in the study of Collins et al. (2009) that is the marginal households who are in severe financial needs are more likely to refer to the formal financial sources.

Furthermore, the possibility of loans borrowed by a household if increased by 1% brings about a 1.58 percentage point decrease in the selectivity of the formal financial system, which might show the loss of confidence of households in the formal financial sector. This is because equal credit opportunities and the trust of individuals on formal financial institutions are the fundamental criteria. Otherwise, if individuals lose their confidence, feel discriminated or face a lack of conviction by financial institutions they are discouraged to use the formal channels and become reluctant for future use. Because for borrowing purposes, the equal credit opportunities and confidence of individuals on formal financial institutions are the prerequisites (Allen et al., 2012; Camara, 2014).

As per the analysis, the number of earning members in the family shows that an increase of 1 earning member in the household decreases their decision to be formally financially inclusive for remittance inflows by 0.08% point. This is because, an increase in the number of earning members in the family probably reduces the utmost need to migrate abroad; which negatively affects the remittance inflows in the family. Therefore, it might lower the possibility to be formally financially inclusive while receiving remittances. The obtained results are further compared with the ones in the Camara et al. (2014) due to the substitution effect between income receivers in household and financial inclusion.

Moreover, the variable of investment has been considered as a strong financial literacy. Along with school education, financial knowledge also helps the household to make decisions about their assets, cash flow and credit management, saving and investment activities. Thus, a 1% increase in household investment is observed to be affecting the dependent variable by 0.93% point which is found to contradict the theoretical inferences. It is for the very reason that the ratio of households maintaining annual investment is very low in Pakistan, therefore the results might not reflect the true picture. Furthermore, all the provincial and regional dummies reflect a strong positive impact on the model and suggest that the ethnic and societal characteristics play a vital role in the household's decision making.

5. Conclusions

The evidence obtained from existing literature supports the argument that formal financial inclusion in the economy is described by both the usage and accessibility. Where accessibility has already been explored to enormous scope, presenting supply-side effects on formal financial inclusion. On the other hand, usage expressing the demand from households' perspectives for formal financial services remains unexplored to a great extent. Thus, this study particularly focused on the demand-side factors arising from households, depending upon their distinctive individual, demographic and domiciliary characteristics. The research specifically focused on remittance-receiving households, as it has been observed that the household receiving remittances are more likely to use formal financial channels when sending or receiving remittances. The study is therefore contingent on the remittance-receiving possibility and then assesses the factors determining the behavior of households to select between the formal or informal financial sectors.

For empirical purpose study employed the Heckman Selection Model, where the first stage revealed the possibility of remittance inflows depending upon the household features (demand-side factors) which induce them to go and earn abroad. While the second stage measures the demand-side factors motivating individuals or households to use the formal financial sector. The outcomes of the study suggest that the demand side effects on the selection of formal financial sector are extremely apparent. That is, the lack of education, financial literacy, and people's confidence in the formal institutions are the fundamental barriers discouraging them to become formally financially inclusive. Therefore, there is an utmost need to explore barriers that restrict the households and firms by using the formal financial sources on the primary level and help them recognize the benefit and welfare in the inclusion. Besides, an extensive survey on financial inclusion should be a priority of financial institutions and the government to identify the formal financial standing of the users and non-users. This also helps in examining the causes and consequences of formal financial exclusion.

Consequently, it is extremely relevant to pay considerable attention to the corresponding side of household demand (usage of financial products and services) for financial inclusion along with the supply side (provision of financial services) while framing relevant guidelines and policies. Thus, this research proposes that the provision of universal elementary education is imperative to raise the socio-economic status of the individuals which would enable them to make rational choices. Besides, the efforts by institutional authorities and policymakers to spread financial awareness and build their credentials on household-level are very crucial. Because these barriers diminish an individual's opportunities to reach financial inclusion and results in their social and financial deprivation.

Conflict of interest

Authors of the paper declare that they have no competing interest.

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