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MANAGING FINANCIAL RISKS AT HOUSEHOLD LEVEL: EMPIRICAL EVIDENCE FROM FAISALABAD, PAKISTAN

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ABSTRACT

The financial risks and uncertainties undermine the capabilities of households to evade poverty traps. These uncertainties and risks cause income fluctuations and may have consequences on their livelihoods and welfare status. The households must recognize and manage these risks and uncertainties to guarantee smooth consumption at the household level. This study used a dataset of 130 households collected through face-to-face interviews from the district of Faisalabad of Punjab province in Pakistan. A logit model was employed to assess the impact of various socio-economic attributes, respondents' risk perceptions and risk attitudes on their decisions to adopt financial risk management tools at the household level. The results revealed that the socio-economic attributes including age, education and income of the sampled households significantly influenced the decisions to adopt both the ex-ante and ex-post risk coping strategies to manage financial risks. The findings also highlighted the role of respondents' perceptions associated with loss in business and illness of the primary breadwinner that affected respondents' decisions to adopt risk management strategies in dealing with financial risks at the household level. The study recommends that the government and NGOs should educate the residents on how to safeguard themselves from financial risks by enabling them to use the available risk management tools more effectively.

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INTRODUCTION

Risk and uncertainties are crucial parts of household economic decisions as the risks and uncertainties prevail in different forms and are detrimental to the well-being of the households. To enhance well-being, households often make decisions in anticipation of risks or take measures to reduce the likelihood of failure. The most critical risks are those that are as yet influencing the livelihoods of low-income individuals, particularly the death or illness of the primary breadwinner, funerals, property losses and losses in crop yields for farm households due to dry spells and surges (Chantarat et al., 2013; Bhattamishra and Barrett 2010; Collins et al. 2009; Dercon et al., 2008; Cohen and Sebstad, 2005; Cohen et al., 2005). Poor households are more vulnerable to financial shocks owing to a lack of financial assets as well as due to social and political exclusion based on caste, ethnic identification, or gender (O'Donnell, 2009). Even the development of innovative solutions is of little help to the communities often marginalized from the formal economy as they comprise the segment of society with the least access to those

innovative financial tools. One of the essential daily management activities is the risk management. Risks from injury, sickness, or disaster are a critical dimension of poverty and can easily threaten the small savings and fragile livelihoods of poor families (O'Donnell, 2009). Those living in poor groups have less access to formal financing instruments for managing these risks because of weak financial markets and the lack of capability of formal market products to address the issues of poor people, especially those working in the informal economy. The lack of access to viable risk management instruments is a critical factor in what makes numerous poor groups defenceless in case of financial shocks.

Specifically, these types of informal adapting procedures do not stand up well against the shocks. Post-calamity help from governments or compassionate offices may stem the effects of the most extraordinary crises. However, this help is time impromptu, ineffectively focused and neglects to reach or help the most vulnerable segment of the community. Therefore, sincere efforts in ensuring the financing apparatuses can reach the poor to break poverty and lessen the hardships of catastrophic risks. From a risk management point of view, microfinance might be best in helping poor families shield themselves from falling into poverty and expand their capabilities of coping with financial risks at the household level (de Janvry *et al.,* 2006). Families' decisions involve various aspects, such as their choice of residence and employment, methods for saving and investing their resources, and the strategies they adopt, such as education or relocation, to achieve progress and growth.

Financial risk management is an important step towards building resilient societies to cope with the adverse impacts of financial uncertainties and provide sustainable financial solutions to withstand the negative consequences of financial risks. Understanding households' responses as impacted by their socio-economic attributes is the first step in developing state-owned mitigation measures to manage financial risks at the household level.

The literature on risk management is widely available for developed as well as developing countries and Pakistan is no exception to it. For example, Lu et al. (2017); Ullah et al. (2017); Zulfiqar et al. (2016) and Ullah et al. (2016) studied the adoption of risk management tools among farming communities. Shah et al. (2017) analyzed the adoption of various strategies to mitigate the adverse impacts of floods at the household level. However, there is a dearth of literature on the financial risk management of households in Pakistan. The current study is therefore carried out to analyze the strategies adopted at the household level to deal with financial risks. Specifically, this study is designed to seek answers to three research questions: 1) how the risks are perceived and interpreted at the household level; 2) what strategies households adopt to cope with such risks; and 3) what factors contribute to shaping the decisions of adopting management strategies to cope with the financial risks at the household level

METHODOLOGY

Study Area and Sampling

This study has employed a multistage sampling technique to select the study areas and sample respondents. Punjab province was purposively selected in the first stage of the sampling technique as Punjab province is the most populated province of Pakistan and the largest contributor to the GDP of Pakistan (GOP, 2017). In the second stage district, Faisalabad was purposively selected as Faisalabad is the second most populated district in Punjab and the third most populated district in Pakistan. In the third stage, stratified random sampling is used to select two union councils one each from rural and urban locations. The union councils of district Faisalabad were first grouped into rural and urban UCs and then one union council from each rural and urban location were selected at random. In the fourth stage of the sampling procedure, two villages were randomly selected from the selected union councils. In the fifth stage of the sampling procedure, 65 households were randomly selected from each union council using a list of all households shared by the administrative head (head of the local government at the UC level) of each Union Council (UC).

Sampling and Data Collection

The field survey for the primary data collection has been carried out between January and May 2018. A total of 130 sampled households (65 each from rural and urban areas) targeting mainly heads of households were interviewed face-to-face to collect the required information. All ethical considerations were kept in mind while collecting the required data including explaining the objectives of the study, privacy of the information and prior consent of the respondents was

asked before collecting the data. Data on respondents' socio-economic attributes including age, education, employment status, family size, income, etc., respondents' perceptions of the financial risk sources, their attitude towards risks and their responses to cope with the financial crises were collected through a questionnaire.

Empirical modelling

Logit Model

A logit model was used to assess the impact of various factors on households' responses to financial crises. A logit model is used where the dependent variables are dichotomous. In our case, the dependent variable is comprised of the household's decision to adopt a particular risk-coping tool to manage financial risks at the household level. The general form of the model is provided as under;

$$\text{Logit Y [P/1-P]} = \alpha + \sum x_i \beta_i + \varepsilon \qquad \text{(eq. 1)}$$

Where Y is a binary dependent variable taking a value of 1 if the respondent has adopted the specific strategy in response to financial crises at household and 0 otherwise. ß₀ is constant, and ßi represents the coefficient vector (to be estimated) while Xi represents observed variables. The present study considered 4 most prominent financial risk management strategies under two broad categories namely, ex-ante risk management strategies including diversifying income sources and investing in secure enterprises and ex-post financial risk management strategies including the use of household savings to smooth consumption in times of financial shocks and borrowing money. The logit model was empirically estimated separately for each risk management tool's adoption decision in Stata v.12.

Explanatory Variables

Risk Perceptions

The risk perceptions of the sampled respondents were quantified using a risk matrix. The respondents were asked to rank their perceptions of the incidence and severity of various risk sources on a 5-point Likert scale. The reported scores on incidence and severity were combined in the risk matrix (given below) and were further categorized into high-risk perceptions if the score is above 5 and low-risk perceptions if the score is 5 and below.

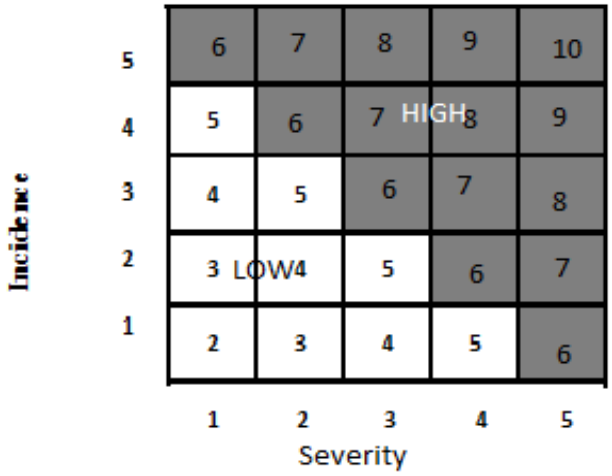

Figure 1. Risk Matrix.

Risk attitude

Farmers' attitude towards risk was computed with the toss/game technique. Each farmer was asked to choose an option from A to E for a toss with equal probability of success (S) and failure (F). The amount in the numerator is associated with the event of success while the amount in the denominator reflects the payoffs in case of a failure.

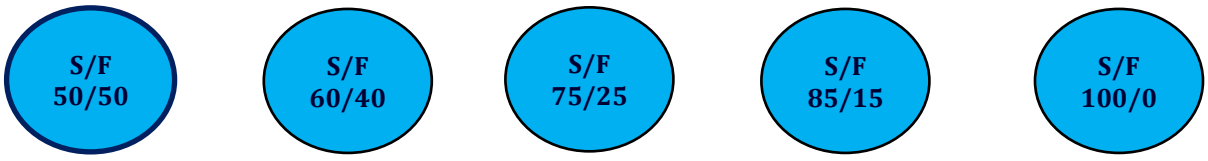

Figure 2. Eliciting Risk Attitude.

Farmers opting for options A and B are considered to be risk averse as they are trying to avoid risk while farmers choosing options D and E are categorized as risk seekers. Farmers choosing option C are regarded as risk-neutral.

Location Dummy

A location dummy is incorporated to figure out whether the adoption is higher in a rural area or in an urban area. For this purpose, this variable is constructed such that it

has a value of 1 for individuals belonging to rural areas and 0, otherwise.

RESULTS AND DISCUSSION

Table 1 provides the descriptive statistics of the variables included in the model. As evident from the table, the majority of the sampled respondents used income diversification as an ex-ante risk management strategy to mitigate the adverse impacts of financial shocks to their households. This was followed by households investing in secure enterprises to minimize the chances of financial shocks. Among the ex-post risk management strategies, the dominant strategy was to use household savings in times of need followed by borrowing money to meet household financial needs in times of financial shocks.

Table 1. Descriptive Statistics of Variable.

Variable			Frequency	Percentage
Dependent Variables (Risk Management Strategies)				
Ex-ante Risk Management Strategies				
Diversification			62	47.8
Investment in secure enterprise			34	26.2
Ex-post Risk Management Strategies				
Consume Savings			84	64.6
Credit			51	39.2
Explanatory Variables				
Risk Perceptions and Attitudes				
Losses in Business			43	33.1
Illness of Primary Bread Winner			81	62.3
Accidental Injuries/Deaths of Family Members			78	60
Natural Calamities			37	28.5
Unforeseen Health Expenditures			24	18.5
	Highly Risk Averse		67	51.5
	Moderately Risk Averse		18	13.8
Risk Attitude (Risk averse)	Risk Neutral		8	6.2
	Moderately Risk Seeker		30	23.1
	Highly Risk Seeker		7	5.4
Variable	Mean	Standard Deviation	Minimum	Maximum
Age	50.57	14.45	25	78
Education	7.86	5.01	0	18
Income	81329.48	111991.03	5000	900000

Source: Authors' Calculations from Survey Data

The dominant risk source considered by the sampled households was the illness of the primary breadwinner (62.3%) followed by accidental injuries/deaths of family members (60%) that can cause financial shocks to the sampled households. Losses in business (33.1%), natural calamities (including earthquakes, floods, storms etc.) (28.5%) and unforeseen health expenditures (18.5%) are also considered to be potential threats affecting households' financial status. Most of the sampled respondents were risk averse and tended to avoid risky prospects even with higher but uncertain payoffs while 23 percent of the sampled respondents reflected a moderate risk-seeking attitude. The risk-seeking attitude translates into their decisions to take moderate levels of risks to maximize their benefits.

Logit model estimates of ex-ante risk management strategies

The estimated parameters of the logit model for factors affecting the adoption of the two dominant ex-ante

financial risk management strategies, i.e. diversification of income sources and investing in a secure enterprise are provided in Table 2. The estimated coefficient of age reveal that older respondents are reluctant to diversify their income sources to mitigate financial crises at the household level and will prefer to stick to their routine business activities. This result is however insignificant which indicates that the effect of age on the adoption of diversification of income sources is not significant. These results are in line with the findings of Mesfin et al. (2011) and Ashfaq et al. (2008) who also found a negative relationship between age and adoption of diversification. However, Rehima et al. (2013) and Deressa et al. (2010) found a positive impact of age on the adoption of diversification. The coefficient of education in Table 2 has a positive impact on the adoption of diversification as a strategy to cope with the financial risks at the household level. More educated respondents are likely to adopt diversification as they have more ability to assess the merit of diversification as a strategy to cope with the negative shocks resulting from unfavourable events. Our results are in line with Tavernier and Onyango (2008), Kouame (2010) and Ashfaq et al. (2008) who also found a positive relationship between education and the adoption decisions of diversification as a risk management strategy. The finding is, however, insignificant indicating that the impact of education on the adoption decision of diversification is inconclusive. The empirically estimated coefficient associated with income highlights that higher income encourages the use of diversification compared to low incomes as the coefficient is positive however this result is also insignificant. Our result is in line with Rehima et al. (2013) and Deressa et al. (2010) who also reported a positive relation between income and the use of diversification. However, Ashfaq et al. (2008) found a negative relation of income with the adoption of diversification to manage risks in farm enterprises.

Individual's risk perceptions and their risk-taking behaviour also influence their decisions regarding the adoption of tools to mitigate the impacts of financial crises at the household level. The study considered five potential risk sources that can influence individual decisions regarding the adoption of financial risk management tools at the household level. The empirically estimated coefficient associated with the respondents' perceptions of risk of loss in business has a positive and significant influence on the adoption of diversification. An individual considering the loss in business to be a potential threat that can alter household financial condition is more likely to diversify income sources to mitigate the risk. The illness of the primary breadwinner, however, has an inverse relationship with the adoption of diversification and suggests that respondents perceiving the illness of the primary breadwinner to be a major risk source are less likely to adopt diversification. Respondents' perceptions of accidental injuries/deaths of family members, natural calamities and unforeseen health expenditures are reported to be encouraging factors in the adoption of diversification as a household financial risk management tool as the coefficients associated with respondents' perceptions of these risk sources are positive however insignificant. Risk attitude also has a positive impact on the adoption of diversification to manage household financial risks however the finding is insignificant. The positive coefficient associated with risk attitude in the adoption equation of diversification suggests that a more risk-seeking individual will tend to adopt diversification to manage household financial risks. Kouame (2010) also found a significant positive effect of high-risk aversion with the adoption decisions of diversification. The location dummy suggests that the adoption of diversification is more common in rural areas compared to urban areas as the residents in rural areas have more opportunities to diversify their income sources (farm and off-farm diversification). The finding is statistically significant suggesting that the adoption rate is significantly higher in rural areas compared to urban areas.

While making any investment, risk is considered an important component. Institutional and individual investors take good care of the expected rate of return and risk associated with that investment. Therefore, individual investors with a certain level of financial risk tolerance appear to be a crucial factor affecting the preference for financial investment and the use of savings in financial markets (Bayar, et. al, 2020). The estimated results point to the importance of age in the decisions to use the strategy of investment in secure enterprise to overcome adverse impacts of financial risks in households. Older and experienced individuals tend to invest in an enterprise that guarantees smooth returns. The education level of the individuals also encourages them to invest in secure enterprises as

evidenced by the positive and significant coefficient associated with education in the model.

Table 2. Parameters estimate of the logit model for ex-ante risk management strategies.

Variables	Diversification		Secure Enterprise	
	Coefficient	Std. Err.	Coefficient	Std. Err.
Socio-economic Attributes				
Age	-0.005	0.015	0.037**	0.017
Education	0.059	0.044	0.152**	0.061
Income	0.00000148	0.00000242	0.00000316	0.00000283
Risk Perceptions and Attitude				
Loss in Business	1.730***	0.529	1.843***	0.581
Illness of Primary Bread Winner	-0.312	0.441	-0.416	0.553
Accidental Injuries/Deaths of Family Members	0.543	0.416	0.223	0.523
Natural Calamities	0.514	0.516	0.669	0.613
Unforeseen Health Expenditures	0.905	0.591	-0.083	0.641
Risk Attitude	0.047	0.129	-0.153	0.154
Location Dummy and Constant				
Location	-1.077**	0.453	0.670	0.535
Constant	-0.589	1.003	-5.318***	1.290
Log Likelihood	-74.073		-56.023	
LR Chi^2 (10)	28.94***		36.76***	
Pseudo R^2	0.163		0.247	

Note: Age, Education, Location and Loss in Business represent significance at 10% and 5%

Higher education levels enable individuals to evaluate the risk factors in alternative enterprises and choose the one with minimum risk involved. Similarly, higher incomes also encourage investment in secure enterprise as the coefficient associated with income in the model is positive however, the impact of income on the adoption of investment in secure enterprise to manage financial risks is statistically insignificant. Individuals' perceptions of loss in business significantly enhance their chances to invest in secure enterprises. Respondents perceiving higher risks of losses in business tend to invest in an enterprise with minimum risks. The influence of individual perceptions of illness of the primary breadwinner, accidental injuries and death of family members, natural calamities and unforeseen health expenditure are mixed and insignificant on individuals' decisions to invest in secure enterprise. Similarly, the risk-seeking attitude of individuals is expected to discourage them from investing in secure enterprises.

A more risk-lover individual will tend to invest in an enterprise that promises higher returns with some degree of risk involved. The coefficient of location dummy suggests that the use of investment in secure enterprise as a strategy to mitigate financial risks at the household level is more common among urban residents.

Factors affecting the adoption of ex-post risk management strategies

The empirically estimated coefficient of the logit models for the adoption of ex-post risk management strategies is provided in Table 3. The coefficient associated with age suggests that older individuals are more likely to consume savings as an ex-post strategy to mitigate any financial shock to their household. Older individuals are less vibrant and will prefer to use their savings instead of searching for other income-generating alternatives. This result is, however, insignificant. Similarly, with a higher level of education, individuals are expected to use household savings as a strategy in response to financial crises at the household level. Income levels encourage the use of consumed savings as a strategy to manage financial risks at the household level. With higher incomes, households' savings increases. These savings can be used in an adverse situation when households are faced with financial shocks. The result is statistically significant at a 1 percent probability level. Individuals perceiving a loss in business are expected to avoid the strategy of consumed savings and will seek to mitigate

the adverse impacts of financial shocks by adopting other sophisticated risk management tools.

Table 3. Parameters estimate of the logit model for ex-post risk management strategies.

Variables	Consumed Savings		Loans	
	Coefficient	Std. Err.	Coefficient	Std. Err.
Socio-economic Attributes				
Age	0.021	0.018	0.029*	0.015
Education	0.042	0.050	-0.111**	0.046
Income	0.0000384***	0.00000971	-0.0000135***	0.00000462
Risk Perceptions and Attitudes				
Loss in Business	-0.249	0.593	1.225**	0.531
Illness of Primary Bread Winner	1.590***	0.537	-0.829*	0.485
Accidental Injuries/Deaths of Family Members	-0.057	0.474	0.146	0.441
Natural Calamities	0.132	0.551	-0.369	0.504
Unforeseen Health Expenditures	0.691	0.692	0.785	0.569
Risk Attitude	0.216	0.147	-0.029	0.469
Location Dummy and Constant				
Location	-0.409	0.522	0.883*	0.469
Constant	-4.003***	1.366	-0.657	1.005
Log Likelihood	-58.847		-72.103	
LR Chi^2 (10)	49.16***		28.05	
Pseudo R^2	0.294		0.163	

Note: Age, Illness of Primary Bread Winner, Location, Education, Loss in Business and Income represent significance at 10%, 5% and 1%.

The coefficient shows an inverse and insignificant relationship between higher perceptions of loss in business and consumed savings as an ex-post financial risk management strategy. Higher perceptions of illness of primary breadwinners, on the other hand, encourage the strategy of using household savings in times of need. The perceptions of illness of primary breadwinner induce households to save some portion of their incomes which can be used when households are faced with adverse conditions. This relationship is statistically significant at a 1 percent probability level. Individuals' perceptions associated with accidental injuries/deaths of family members discourage the use of household savings as a strategy to mitigate financial risks as the empirically estimated coefficient suggests an inverse relationship of perception of accidental injuries/death of a family member with individual's decisions on relying on household's savings in adverse situations. Risk perceptions of natural calamities and unforeseen health expenditures encourage individuals to use household savings when faced with financial crises as the coefficients suggest a positive association of these risk factors with the individual's decision to use household savings in times of financial crises.

Risk-seeking individuals are expected to rely on household savings as a strategy to manage household financial risks as the empirically estimated coefficient suggests a positive association of risk-taking behaviour with their decision to use household savings in times of financial shocks. The result is however statistically insignificant. The location dummy suggests that using a household's savings as an ex-post strategy to mitigate financial risk at the household level is more common in rural areas compared to urban areas.

CONCLUSION

The main conclusion drawn from the study is that most of the respondents in the study area used both ex-ante and ex-post financial risk management tools to safeguard their income and consumption from financial risks. Socioeconomic attributes of the sampled respondents, their perceptions of various financial risk

sources and their attitude towards risk are the factors that shape individuals' decisions to adopt available strategies to manage financial risks at the household level. The findings can be used to guide policymakers and other stakeholders in designing appropriate policies to enable individuals to manage their households' risks more effectively and efficiently. As more educated individuals tend to make rational decisions regarding risk management at the household level it is suggested that the government and other NGOs should, therefore, work for a better educational environment, particularly in rural areas where literacy rates are generally low. The government should also launch awareness campaigns to educate people regarding the adoption of various financial risk management instruments.

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