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Access of Rural Employed Women to Social Safety-Net Programs: Empirical Evidence from Bangladesh

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Abstract

In Bangladesh, social safety-net (SSN) programs have been operating for some decades to benefit the poor. However, rural women, considered as one of the vulnerable groups in the country, are more likely to be overlooked by the social security system. The plight of these women is also not helped as they are mostly excluded from formal employments. Trapped in low-paid informal activities, the social and economic conditions of these female workers have further deteriorated. Hence, the assistances under SSN programs for the rural employed women are of high significance. Given this context, the question needs to be asked whether working women in rural Bangladesh are facing any discrimination while receiving supports from SSNs. We try to address the question by exploring the factors that might determine an individual female worker's propensity to receive safety-net benefits. The study further attempts to find out the evidence of any targeting issue in the safety-net programs of rural Bangladesh. Analyzing the data from Bangladesh Household Income and Expenditure Survey (HIES) 2016 and deploying a Probit model, the study reveals that a woman worker is more likely to be covered by safety-nets compared to a male worker. Therefore, this study identifies a positive gender bias in a sense that safety-net programs in Bangladesh actually benefit the socially marginalized community in rural areas. The results also suggest that as age rises, a woman worker's probability of receiving safety-net benefits also increases. However, some other variables, such as marital status, asset, education, and land, are negatively associated with the likelihood of taking safety-net support by female workers. The study did not detect the presence of any target-inefficiency in safety-net programs.

Keywords: Bangladesh; Social safety-net; gender; poverty; rural workforce.

1. Introduction

Social safety-net (SSN) programs have been widely acknowledged as an effective tool to fight poverty with various assistances for impoverished people across the world (Khandker and Mahmud, 2012; Babu, 2003; Giribabu et al., 2019). However, discussions on SSN programs have never been free of controversies and debates. For example, studies have questioned the design, effectiveness and efficacy of safety-net programs, and noted the issue of leakage and targeting-inefficiency of safety-nets (Holzman and Grosh, 2008; Chetty and Looney, 2006; Khandker and Mahmud, 2012). Scholars have also raised concerns about the coverage and 'selection of beneficiaries' of such programs (Ahmed, A. U., et al., 2009; Ahmed, S. S., et al., 2009). Particularly, the gender dimension has often been missing from SSN programs. In fact, World Bank in one of its

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recent reports became critical of leaving out the gender issue from the Bank's evaluation of the safety-net programs (World Bank, 2014). While safety-nets have a direct impact on poverty reduction and consumption hike, they can also lead to gender-specific outcomes, such as, strengthening women's decision-making power, reducing gender bias in education, improving child and maternal health and decreasing the incidence of gender-based violence (World Bank, 2014). Hence, bringing the women under the umbrella of safety-nets would likely to promote gender empowerment. In other words, vulnerable women should not be left out from the coverage of the SSN programs.

In Bangladesh, safety-nets have been functioning for several decades, but concerns indicated above are by and large attached with the social protection strategy of the country. On one hand, targeting-inefficiency of the SSN programs remains a disconcerting issue (Khandker and Mahmud, 2012; Morshed, 2009; Ahmed, S. S., et al., 2009). One study by Ahmed, S. S., et al (2009), for instance, reported that 40% beneficiaries under safety-nets were not eligible (that is not poor). On the other hand, rural women, considered as one of the most vulnerable groups in Bangladesh, are more likely to be overlooked by safety-net programs. Also, the plight of these Bangladeshi rural women is not helped by their limited participation in labour market compared to the men. Except for unpaid household activities, rural women in Bangladesh lag behind the males in all employment categories (Rahman, 2016). However, rural employments are mainly generated by informal sector, which is associated with "chronic poverty, social exclusion and lack of voice" (Kabeer, 2002; 2008). Therefore, the rural working women are mostly trapped in informal activities with a low pay, and any effort to break-out of this situation is stalled due to a set of "gender-related constraints" (Kabeer, 2008). All these have exposed the female workers in rural Bangladesh to deprivation and poverty. Thus, supports from safety-nets are vital for these rural workers. Therefore, the question needs to be asked whether working women in rural Bangladesh are facing any discrimination while receiving supports from SSNs.

Against this context, our objective is to examine the trace of any gender bias in the coverage of safety-nets for Bangladesh's rural workforce. To address this issue, we exploit Bangladesh Household Income and Expenditure Survey (HIES) 2016 data. We investigate the factors that might determine the propensity of an individual female worker to receive safety-net benefits. In the process of analysis, we also attempt to find out evidence of any targeting issue in the safety-net programs in rural Bangladesh.

The findings suggest that female workers were significantly more likely to be covered by safety-net programs. Hence, in our study sample the women did not face any discrimination in the SSN programs in Bangladesh. In fact, we find evidence of positive gender bias in that the social security programs have effectively included an otherwise socially and economically deprived community (rural females). This result also implies that since the women in this study are working they tend to enjoy a better mobility and social network, which enable them to receive aid under safety-net. The results further reveal that generally, education was not an important determinant, but educated females were less likely to receive benefits from safety-net programs. In a similar vein, marital status,

household assets and land ownership reduced a working woman's probability of getting safety-net benefits. However, age was positively associated with the coverage of SSN. Furthermore, we did not detect any targeting issue in safety-net interventions.

The current study is important due to a few reasons. First, it complements the empirical research on poverty and safety-nets. The research examines the association between gender and SSN programs and focuses on conditions, which might determine an individual's access to safety-net. Our data set is large, covering most rural areas of Bangladesh. Thus, the paper offers an overarching view on gender and social security in context of Bangladesh.

Second, it is difficult for fiscal measures adopted by any economy to effectively counter a multidimensional aspect like poverty (Kabeer, 2002). Thus, social security initiative cannot afford to be treated as a single and isolated activity; instead, they are required to be "integrated into the overall development strategy of the country" (Suwannarat, 2000; Guhan, 1994). As such, bringing the gender dimension into the social security strategy is of significance.

Third, the recent statistics show that in Bangladesh rural poverty is still significantly higher than urban poverty (HIES, 2016). It might adversely affect gender empowerment across rural societies. As safety-nets' supports have reduced poverty and improved females' bargaining power (World Bank, 2014), the evidence presented in this study might have implications for policy-formulation in SSN programs.

The rest of the paper is organized as follows. Section two reviews various related literature. Section three deals with the data and explains the empirical strategy, while section four presents the results and offers discussions. The last section concludes.

2. Review of literature

Gained importance in development discourse in 1990, the safety-net interventions targeted people going ‘through short-term stress and calamities’ and suffering from ‘economic and social hardships’ (Devereux, 2002; Khuda, 2011). SSN programs have dual objectives. First, they attempt to moderate the poverty situation by inhibiting a fall in the living standard of the poor. Second, safety-nets try to pull individuals out of extreme poverty and deprivation (Dréze and Sen 1989; Ravallion et al., 1995).

Although safety-net programs have been criticized as politically and fiscally not sustainable for least developed economies, they are generally considered as useful anti-poverty interventions across the developing nations (Low et al., 1998; Devereux, 2002). Classical economists in the earlier era had argued for such programs to protect the vulnerable (Rothschild, 1995). Scholars have contended for a greater role of safety-nets to address poverty (Lipton, 1997). The *World Development Report 1990* had even dubbed SSNs “third prong of the new poverty agenda” (Devereux, 2002).

According to Subbarao et al. (1996), safety-nets safeguard people against chronic and transient poverty. In a state of chronic poverty, an individual loses his or her capacity to earn, while transient poverty associates with a condition when people living on the edge of poverty slumped further by losing earning ability. Apart from that, safety-nets usually

target disabled and older people, who could not take any livelihood strategy (Lipton, 1997). Also, an element of "equity and efficiency considerations" is attached to these programs because they tend to assist society's less fortunate quarters (Khuda, 2011).

Devereux (2000) mentioned that poverty, caused by low productivity or dependency, can be mitigated through a host of safety-net programs, such as income generation interventions, old-age support scheme, and direct transfer of cash subsidy. The safety-net interventions are also regarded as relatively less costly options for consumption-smoothing (Chetty and Looney, 2006). These programs had significant success in some African economies as direct transfers from the SSNs were invested in productive activities (Devereux, 2002). Some of the world's largest SSN initiatives, implemented in India, China and Brazil, have contributed to poverty reduction (Giribabu et al., 2019). As a result, governments around the world have started to invest more in safety-net programs (Giribabu et al., 2019).

Safety-nets can also extend assistances towards women, who have been considered most vulnerable than their male counterparts due to various societal and cultural norms (Pradhan and Afrin, 2015). Although SSNs are not mainly aimed at championing women's cause, they can promote gender empowerment by generating employments and giving access to education (World Bank, 2014). For example, in Latin American nations, the cash transfer scheme significantly impacted girl enrollment at the secondary level of education (World Bank, 2014). Public works created through safety-net programs had employed more women in Ethiopia and Argentina (World Bank, 2014).

Additionally, evidence has suggested that benefits from safety-nets improved women's decision-making capability within households, increased their income and consumption, and enhanced the bargaining power in the households (Holmes et al., 2011). The programs also promoted gender equality and inclusiveness by ensuring women’s access to wage employments (Narayanan and Das, 2014). The safety-net initiatives also positively impacted child development through the promotion of women empowerment (Carswell and Neve, 2014).

In Bangladesh, assistances from SSN programs have always been an essential part of public spending by its government. Initiated as a measure for people suffering from seasonal shocks, the safety-nets in Bangladesh over the years have turned out to be an integral segment of “a sustainable anti-poverty strategy” (Khandker and Mahmud, 2012). The programs under safety-nets in Bangladesh basically have a dual objective: to promote social security and social empowerment (Titumir, 2014). To achieve the former purpose, the Bangladesh government resorted to transferring cash to vulnerable groups of people, and a host of food security programs. As for social empowerment, the government implemented microcredit and skill- development programs (Titumir, 2014).

The programs under safety-nets generate employments through various public works; encourage human development by providing stipends for school-going children; promote skill development through training to women; support vulnerable groups like old-age people and destitute women with allowances, and ensure food security through various schemes (Khandker and Mahmud, 2012). In 2010, roughly 25% of people

received assistance from safety-nets, with 30% rural and 9.4% urban population came under the coverage (HIES, 2016). The ratio of rural beneficiaries jumped to approximately 36%, and urban ratio increased to nearly 11% in 2016 (HIES, 2016).

SSN programs in Bangladesh have brought about positive changes in the living-standard of the beneficiaries. For instance, the cash transfer program enhanced income and ensured food security amongst Bangladeshi households. Also, the skill development program had significantly reduced poverty (del Ninno and Dorosh, 2003). One study found that 60% beneficiaries of a public work program had broken the cycle of poverty, gained access to productive resources and became owner of house (Khanum, 2000). Another study revealed that allowance received from old-age programs was invested in poultry and livestock rearing, which positively impacted livelihood in the long-run (Begum and Paul-Majumdar, 2001).

It may be mentioned that most of the studies on Bangladesh have thrown light on the impact of safety-nets on livelihood of less fortunate people. However, to the best our knowledge, the question of gender has rarely been addressed. The current paper seeks to fill this gap by bringing the gender dimension in the empirical analysis. More precisely, we would examine whether the social protection system displays any bias toward employed women in rural Bangladesh.

3. Methodology

3.1 Data

This study used the HIES 2016 data, which is a nationally representative large data collected at the household level from Bangladesh's urban and rural areas. The data, amongst other things, contain individual level of information on safety-net coverage. We only considered rural individuals who were employed.

3.2 Variables and unit of measurement

It is already mentioned that the objective of this study is to trace any gender gap in the coverage of the SSN programs in rural Bangladesh. The study also examined what other factors determine the coverage. We assume that a number of individual and household factors determine a rural worker’s safety-net access. As for individual factors, we included basic demographic variables, such as age, marital status, education, employment status (either in farm or non-farm) and credit access. We further employed electricity access, ownership of farmland and asset as household factors.

It is expected that old female would be more likely to receive benefits under social protection. Also, marriage could be a source of security for rural women. Therefore, married women would be less probable to receive safety-net assistances. At the same time, women with education, assets, farmland and electricity access are less likely to be the recipients of benefits from safety-net programs. Also, employment in non-farm sector might exert a negative impact on safety-net access by rural women because the sector is known to yield a higher return than the farm sector.

The dependent variable is *safety-net*, which is coded as one if an individual rural worker takes safety-net benefits. As for the independent factors, *Gender* equals one if individual

is a female worker. While the control variable *Age* is continuous and measured in years. The variable *Educated* takes one if the individual is educated. Similarly, *Married* obtains one if the worker is married, and *Non-farm* is coded as one for a non-farm worker. For workers with access to credit and electricity, and having farmland, the variables *Credit*, *Electricity* and *Land* equal one. Another variable *Rich in asset* obtains one if a household is asset-rich. To determine whether a household is asset-rich, we added the values (in Bangladesh Taka) of farm-level assets, agricultural production, livestock and other assets. Any household with asset value more than the mean value of the sample was regarded as asset-rich.

3.3 Empirical strategy

In line with the research objective, we regressed the likelihood of receiving safety-net benefits by an individual rural worker on gender and a host of other explanatory factors, which might impact the outcome variable. Thus, we estimate the following model.

$$Safety - net_i = \alpha + \beta\,(Gender_i) + \pi X_i + \mu Z_i + \theta R_i + V_i \quad \text{---} \quad (1)$$

Here, the three vectors X_i, Z_i and R_i represent the individual, household and regional factors, respectively, while V_i denotes the random error term.

To examine whether some other factors might affect a woman's probability of getting supports from SSN programs, we estimated the following models controlled for several interaction terms.

$$Safety - net_i = \alpha + \beta\,(Gender_i) + \pi X_i + \mu Z_i + \theta R_i + \sigma(Gender \times Q_i) + V_i \quad \text{---} \quad (2)$$

Here, $(Gender \times Q_i)$ is the interaction term, where *Gender* interacted with Q_i, which represents either one of the individual or household factors. The subsequent specifications of equation (2) have been controlled for one of the interaction terms.

As the dependent variable is dichotomous, (that is an individual worker either received or did not receive benefits) the study employed a Probit regression model to estimate specification (1) and (2). Alternatively, we could have used a Logistic regression model to estimate both equations. However, estimates from both Logit and Probit models are almost similar, as a result, choosing between these two has turned out "arbitrary" (Gujrati et al., 2009; Brooks, 2014).

4. Results and discussions

4.1 Descriptive statistics

First, we summarized the univariate descriptive statistics in Table 1. It shows that 8% of the rural workers had received benefits from safety-nets. Female workers constituted 12% of the study sample. The average age of individual worker was roughly 37 years, with 84% being married. Fifty-four per cent were educated, a mere 13% had access to credit and non-farm sector employed 44% of the rural workers in our sample. Roughly, 58% of workers lived in a household that had electricity. Approximately 20% households were rich in asset, while 31% owned farmland.

Table 1: Descriptive statistics

Variables	Mean	SD	Min	Max
Safety-net	0.08	0.28	0	1
Gender	0.12	0.32	0	1
Age	37.14	11.79	15	64
Married	0.84	0.37	0	1
Educated	0.54	0.5	0	1
Non-farm	0.44	0.5	0	1
Credit	0.13	0.34	0	1
Electricity	0.58	0.49	0	1
Rich in asset	0.20	0.4	0	1
Land	0.31	0.46	0	1
Barisal	0.08	0.26	0	1
Chittagong	0.19	0.39	0	1
Khulna	0.17	0.38	0	1
Mymensingh	0.05	0.22	0	1
Rajshahi	0.15	0.35	0	1
Rangpur	0.16	0.37	0	1
Sylhet	0.08	0.27	0	1
Dhaka	0.13	0.33	0	1

The study also presented some other information from the data regarding the SSN programs. For example, what were the most important programs, how the beneficiaries were informed about them, and what selection-criteria were employed.

Table 2: Important SSN programs (in %)

Programs' name	All	Female
Vulnerable group feeding (VGF)	25	16
Gratuitous relief (GR)-food/cash	22	14
Test relief (TR)-food/cash	13	6
Vulnerable group development (VGD)	6	8
Old age allowance	5	12
Destitute women allowance	4	25

Source: Own calculation from HIES 2016 data

As for all the safety-net beneficiaries, 60% were covered by subsidy and employment generation program; while only 36% women got benefits from such programs. Another 37% of women received allowances under old age, and destitute women support schemes (Table 2).

Table 3: Sources of information about the SSN programs (in %)

Sources	All	Female
From local influential	49	52
Friends, family, neighbors	27	23

Source: Own calculation from HIES 2016 data

Table 4: Criteria for selecting the beneficiaries (in %)

Selection criteria	All	Female
HH head is day labour	40	12
HH head is destitute woman	8	41
Other member in HH (not head) is day labour	6	2
No adult male in HH	3	9
Insufficient land	9	4
No productive resource	7	3
Beneficiary is old	5	6
Beneficiary is widow	0.13	8
Others	0.33	4

Source: Own calculation from HIES 2016 data.

4.2 Bivariate analysis

First, we conduct a simple bivariate analysis to determine whether the explanatory variables are significantly correlated with receiving benefits under safety-nets. We report the results in Table 5.

Table 5: Bivariate relationship between receiving SSN support and independent variables

Explanatory variables	% of individuals received SSN benefits	p-value
Gender		
Female	11.54***	0.000
Male	7.89	
Marital status		
Married	8.59***	0.0009
Not-married	6.90	
Education		
Educated	6.94***	0.000
Not-educated	9.97	
Employment		
Farm	8.7**	0.02
Non-farm	7.83	
Credit access		
Has	12.34***	0.000
Does not have	7.72	
Electricity access		
Has	6.27***	0.000
Does not have	11.14	
Asset		
Rich in asset	6.76***	0.000
Not rich	8.72	
Land		
Has land	7.71**	0.03
Does not have	8.59	
Age		
Under safety-net	42.52(yr)***	0.000
Not-under safety-net	36.64 (yr)	

Note. (***) and (**) denote statistical significance at 1% and 5% level respectively. The p-values are associated with z-test. The p-value corresponding to age is associated with t-test.

It is noted from Table 5 that 11.54% were benefitted from SSN programs amongst the female workers, while for the male workers, the ratio was 7.89%. This gender gap, favouring female, is statistically significant (p=0.000). It is also observed that significantly (p=0.000) higher proportion of beneficiaries were married, not educated, employed by farm sector and had access to credit. By contrast, we found statistically lower share of recipients amongst the individuals who hailed from a household that was rich in asset, had electricity access and owned farmland. As for age, workers under safety-nets were about 6 years older than those who were not under safety-net, and the age difference is significant (p=0.000).

4.3 Multivariate analysis

This study examined the relationship between gender and the probability of obtaining benefits from safety-nets controlling for other factors associated with the outcome variable. We first computed equation (1). Three specifications have been estimated: the first one only measured the impact of gender; while the second and third specifications were controlled for additional covariates. We controlled all three specifications for regional fixed effects, which captured the unobserved factors influencing the outcome variable. The results are presented in Appendix Table A1.

The results suggest that gender is highly significant at 1% level across all the specification. Being a female worker had increased the odds of getting safety-net support by 1.9% to 3.8%. Apart from that, the likelihood of safety-net access goes up by 0.3% (p=0.000) with a per cent rise in an individual worker's age. Also, a worker with credit facility is 3.7% (p=0.000) more probable in receiving safety-net assistance. By contrast, electricity access, household-level asset and ownership of farmland significantly decreased such probability by 4.3% (p=0.000), 1.4% (p=0.000) and 0.9% (p<0.05) respectively.

However, sector of employment (farm or non-farm), which was significant in bivariate analysis, emerged as insignificant. Likewise, education appeared marginally significant at 10% level. Notably, the direction of marital status variable reversed in the multivariate analysis, although the statistical precision (p=0.000) still holds. As other covariates are controlled for, the possibility of getting assistance from SSNs for a married worker reduced significantly by 1.7%.

Next, we estimated equation (2), which is controlled for a number of interaction variables. The independent variable *Gender* is interacted with other covariates used in the model. These interaction terms will assess the factors that influence a woman worker's probability of receiving benefits from SSN programs. The results are presented in Appendix Table A2.

We observe from the results that once the interaction terms were accounted for, the signs, direction and statistical precessions of the main covariates remained consistent with our findings reported in Appendix Table A1. However, as all the specifications were controlled for an interaction term involving *Gender*, we should not put much weight on the coefficient of *Gender* (from column 1 to column 8 of Appendix Table A2).

The findings from Appendix Table A2 reveal that except for a couple of interaction terms, namely, *Gender×Non-farm* and *Gender×Electricity*, all other interaction variables appeared as statistically significant at 1% level. However, we could not directly interpret the "sign, size or significance" of the coefficients of interaction variables employed in a non-linear model (Babbitt, 2015). Studies have suggested to "provide visualization" to correctly interpret these coefficients (Babbitt, 2015; Mitchell and Chen, 2005).

We illustrated five interaction plots in Appendix FiguresA1 to Figure A5, where *Gender* interacted with marital status, education, credit access, asset-richness and land ownership. Appendix FigureA1 suggests that married working women were 15% less likely to take assistance from safety-nets than an unmarried working female. As for education is concerned, the odds of having safety-net access for an educated employed woman were roughly 4% less than an uneducated worker (Appendix FigureA2).

However, credit access had extremely little impact (although significant) on the likelihood of receiving safety-net benefits by a woman worker (Appendix Figure A3). To provide a plausible explanation for such statistical outcome, we need to look at the value of the coefficient of *Gender× Credit* variable reported in Appendix Table A2. From column 5 of Appendix Table A2, we find that the size of the coefficient is -0.043. But, this negative impact is offset by exactly the same but positive impact of *Credit* variable (+ 0.043; also reported in column 5 of Appendix Table A2).

Furthermore, employed women from asset-poor household were 6% more likely to receive safety-net assistance than those from asset-rich households (Appendix FigureA4). At the same time, working women with no-land were approximately 4% more probable in getting access to safety-net benefits (Appendix FigureA5).

As for robustness checks, we estimated equation (2) for a couple of sub-samples: farm workers and non-farm workers. The results are reported in Appendix Tables A3 and A4. The overall findings presented in the paper are by and large robust to these reduced sample sizes.

4.4 Discussions

It is observed that female workers in rural Bangladesh are more covered by SSN programs than their male counterparts. Hence, this study does not find any evidence of discrimination against women in the coverage of safety-net programs. Rather, the finding suggests a positive gender bias in a sense that the safety-net programs advantage the disadvantaged community (rural women) in Bangladesh. Also, the working women are likely to have higher mobility and greater social network, which could have helped them in securing benefits under SSN programs.

The probability of SSN access is also significantly high for a rural female worker who is relatively old and has credit facility. On the other hand, asset-richness, land ownership and electricity access exert negative impact on the possibility of receiving benefits from safety-nets. In a similar vein for an employed woman, asset and agricultural land have reduced the odds of getting safety-net support. It appears that asset richness and farmland are associated with high income, which enabled a woman worker to live by decently without the safety-net support.

We further notice that a married woman insignificantly less likely to receive assistance. In our sample, a quarter of female beneficiaries are the recipients of destitute allowance (Table 2). Destitute women in rural Bangladesh have limited earning capacity (Katona-Apte, 1988). Therefore, marriage appears to have provided a sense of security for the women worker as their spouse could be the principal or an additional earner in the household. We also find that the overall impact of education was relatively weak. But, educated female workers were significantly less likely to be assisted by SSN initiatives, implying that education is a pathway out of poverty.

However, the overall positive effect of credit access on safety-net benefits merits further explanation. Rural credit is mainly sourced from various microfinance organizations and NGOs. Obtaining loans from NGOs or microfinance organization may be an indication of the rural worker's strong social network. As mentioned earlier, such network often enables one to take assistance from SSN programs. Also, loan sizes in rural economy are often small. Although the loan is primarily provided to assist small venture creation, it is sometimes used to repay past debt or for consumption. In our study, a worker could be using the loan for non-productive purpose, which might lead the individual to debt-trap. It may have impoverished the condition of the workers, which compels them to take safety-net assistance.

By contrast, the impact of credit for women has been found negative and highly significant. It appears that credit access seems to improve the economic condition of a female worker. But, as we mentioned that the effect size was very small and negligible, the finding regarding the credit effect for employed female has appeared quite ambiguous. The current study could not offer a plausible explanation. Future research might further explore this issue to get a conclusive answer.

Nevertheless, we find that most of the covariates had expected impacts on safety-net access. The most vulnerable group (women) in rural society and older people were more likely to receive benefits from SSN programs. At the same time, workers, especially females, in an advantageous position with education, land and assets, were less likely to have safety-net access. Thus, the criteria to select beneficiaries appear to function properly, which implies target efficiency on the part of the safety-net programs.

5. Concluding remarks

This article attempts to examine the links between safety-net access and gender using HIES 2016 data of Bangladesh. We evaluated some other factors, which are perceived to be important in getting safety-net benefits. The study focused on employed women in rural Bangladesh as most of them are in a disadvantageous position due to the informal nature of rural activities.

Analyzing the data quantitatively, we did not trace evidence of any gender gap in safety-nets' coverage because compared to male workers, female workers were more likely to receive safety-net benefits. Thus, we find that safety-net programs have effectively rendered benefits to a marginalised community like rural women in Bangladesh. The study further reported that as age rose the probability of a woman's receiving benefits also increased. Some other variables, such as marital status, asset, education and land, were negatively related with the likelihood of taking SSN supports. All these suggest the functioning of the beneficiary-selection criteria, thereby confirming the target-efficiency of the SSN programs.

The current study contributes to the extant literature of gender and safety-net programs by examining the factor influencing a woman's likelihood of obtaining safety-net assistance. Based on the findings, it also provides some policy recommendations. As the results show that rural employed women endowed with education are less likely to take benefits from SSNs, the government's policy response needs to stress on ensuring quality education for male and female alike. Furthermore, our findings have pointed out that role of age and marital status in obtaining benefits under safety-nets for rural workers, notably women. Therefore, the government requires strengthening the coverage of old-age allowance and destitute programs.

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Appendix

Table A1: Determinants of obtaining benefits from safety-net

Independent variables	1	2	3
Gender	0.038***	0.025***	0.019***
	(0.005)	(0.005)	(0.005)
Age		0.003***	0.003***
		(0.000)	(0.000)
Married		-0.018***	-0.017***
		(0.006)	(0.006)
Educated		-0.014***	-0.007*
		(0.004)	(0.004)
Non-farm		-0.003	-0.000
		(0.004)	(0.004)
Credit		0.035***	0.037***
		(0.005)	(0.005)
Electricity			-0.043***
			(0.004)
Rich in asset			-0.014***
			(0.005)
Land			-0.009**
			(0.004)
N	22097	22097	22097
Pseudo-R-square	0.04	0.08	0.09
Chi-square	554	1016	1175

Note. Dependent variable safety-net is coded as one if individual took benefits; zero otherwise. Marginal effects are reported from probit model. Standard errors are in parenthesis. All specifications are controlled for regional fixed effects. (***) and (**) denote statistical significance at 1% and 5% level respectively.

Table A2: Determinants of obtaining benefits from safety-net (controlling for various interaction terms)

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender	-0.047**	0.146***	0.035***	0.011	0.027***	0.014**	0.027***	0.028***
	(0.020)	(0.012)	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)	(0.006)
Age	0.003***	0.002***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	-0.011*	0.055***	-0.013**	-0.016***	-0.016***	-0.017***	-0.015**	-0.015**
	(0.006)	(0.009)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Educated	-0.006	-0.004	-0.002	-0.007*	-0.006*	-0.007*	-0.006	-0.007*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Non-farm	-0.001	-0.001	0	-0.003	0	-0.001	0	0
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Credit	0.037***	0.036***	0.037***	0.037***	0.043***	0.037***	0.036***	0.036***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Electricity	-0.043***	-0.043***	-0.043***	-0.044***	-0.043***	-0.045***	-0.043***	-0.043***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Rich in asset	-0.014***	-0.013***	-0.014***	-0.015***	-0.015***	-0.014***	-0.009*	-0.014***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Land	-0.009**	-0.007	-0.009**	-0.010**	-0.010**	-0.010**	-0.009**	-0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Gender× Age	0.002***							
	(0.000)							
Gender× Married		-0.173***						
		(0.013)						
Gender× Educated			-0.043***					
			(0.011)					
Gender× Non-farm				0.017				
				(0.010)				
Gender× Credit					-0.043***			
					(0.014)			
Gender× Electricity						0.012		
						(0.010)		
Gender× Rich in asset							-0.068***	
							(0.019)	
Gender× Land								-0.036***
								(0.013)
N	22097	22097	22097	22097	22097	22097	22097	22097
Pseudo-R-square	0.0937	0.1068	0.094	0.093	0.094	0.093	0.094	0.093
Chi-square	1187	1353	1190	1178	1186	1177	1190	1183

Note. Dependent variable safety-net is coded as one if individual took benefits; zero otherwise. Marginal effects are reported from probit model. Standard errors are in parenthesis. All specifications are controlled for regional fixed effects. (***) and (**) denote statistical significance at 1% and 5% level respectively.

Table A3: Determinants of obtaining benefits from safety-net (controlling for various interaction terms; only farm workers)

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender	0.019**	-0.041	0.145***	0.029***	0.025***	0.012	0.025***	0.027***
	(0.008)	(0.032)	(0.017)	(0.009)	(0.009)	(0.01)	(0.009)	(0.009)
Age	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	-0.017*	-0.013	0.048***	-0.015*	-0.017*	-0.017*	-0.016*	-0.016*
	(0.009)	(0.009)	(0.013)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Educated	0.009*	0.009*	0.011**	0.013**	0.010*	0.009*	0.010*	0.009*
	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Credit	0.045***	0.045***	0.042***	0.045***	0.049***	0.044***	0.044***	0.044***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Electricity	-0.031***	-0.031***	-0.032***	-0.031***	-0.031***	-0.033***	-0.031***	-0.031***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Rich in asset	-0.009	-0.008	-0.008	-0.009	-0.009	-0.009	-0.005	-0.009
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)
Land	-0.003	-0.003	-0.001	-0.003	-0.003	-0.003	-0.003	0
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Gender× Age		0.001**						
		(0.001)						
Gender× Married			-0.166***					
			(0.020)					
Gender× Educated				-0.038**				
				(0.018)				
Gender× Credit					-0.034*			
					(0.020)			
Gender× Electricity						0.021		
						(0.016)		
Gender× Rich in asset							-0.057**	
							(0.028)	
Gender× Land								-0.029
								(0.018)
N	12481	12481	12481	12481	12481	12481	12481	12481
Pseudo-R-square	0.065	0.0652	0.0549	0.0652	0.065	0.065	0.065	0,065
Chi-square	477	481	744	481	480	478	481	480

Note. Dependent variable safety-net is coded as one if individual took benefits; zero otherwise. Marginal effects are reported from probit model. Standard errors are in parenthesis. All specifications are controlled for regional fixed effects. (***) and (**) denote statistical significance at 1% and 5% level respectively.

Table A4: Determinants of obtaining benefits from safety-net (controlling for various interaction terms; only non-farm workers)

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender	0.023***	-0.031	0.139***	0.041***	0.032***	0.016	0.030***	0.029***
	(0.007)	(0.026)	(0.015)	(0.010)	(0.008)	(0.010)	(0.008)	(0.008)
Age	0.003***	0.003***	0.002***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	-0.014*	-0.009	0.057***	-0.01	-0.013*	-0.015*	-0.013*	-0.013*
	(0.008)	(0.008)	(0.012)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Educated	-0.026***	-0.025***	-0.023***	-0.020***	-0.025***	-0.026***	-0.025***	-0.026***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Credit	0.024***	0.024***	0.025***	0.025***	0.033***	0.024***	0.024***	0.024***
	(0.007	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)
Electricity	-0.055***	-0.055***	-0.053***	-0.055***	-0.055***	-0.058***	-0.054***	-0.055***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)
Rich in asset	-0.022***	-0.022***	-0.020**	-0.021***	-0.022***	-0.022***	-0.015*	-0.022***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Land	-0.016**	-0.015**	-0.014**	-0.016**	-0.017**	-0.016**	-0.016**	-0.012*
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Gender× Age		0.001**						
		(0.001)						
Gender× Married			-0.164***					
			(0.018)					
Gender× Educated				-0.038***				
				(0.015)				
Gender× Credit					-0.044**			
					(0.018)			
Gender× Electricity						0.014		
						(0.0140)		
Gender× Rich in asset							-0.057**	
							(0.025)	
Gender× Land								-0.029
								(0.019)
N	9616	9616	9616	9616	9616	9616	9616	9616
Pseudo-R-square	0.15	0.15	0.17	0.152	0.15	0.15	0.152	0.151
Chi-square	794	799	886	801	800	795	800	796

Note. Dependent variable safety-net is coded as one if individual took benefits; zero otherwise. Marginal effects are reported from probit model. Standard errors are in parenthesis. All specifications are controlled for regional fixed effects. (***) and (**) denote statistical significance at 1% and 5% level respectively.

Figure A1: Probability of receiving safety-net benefits by gender and marital status.

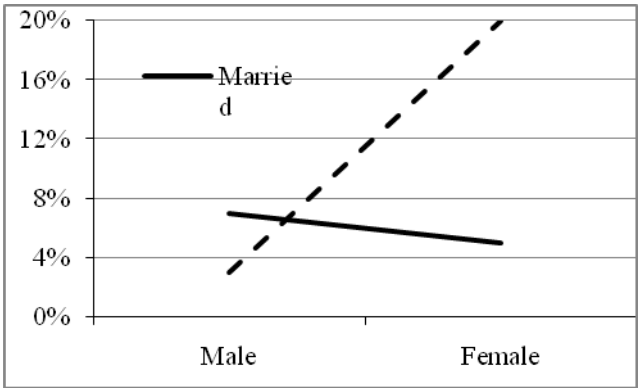

Figure A2: Probability of receiving safety-net benefits by gender and education.

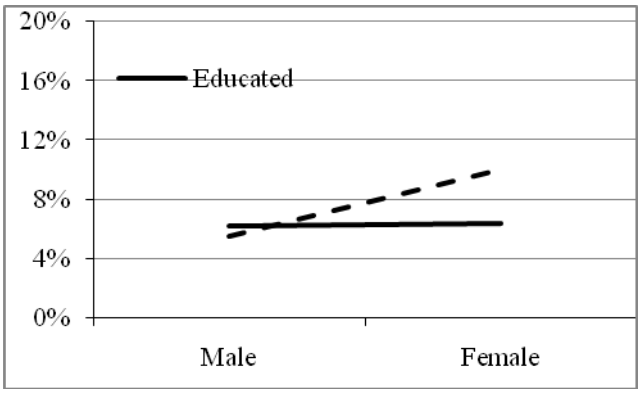

Figure A3: Probability of receiving safety-net benefits by gender and credit access.

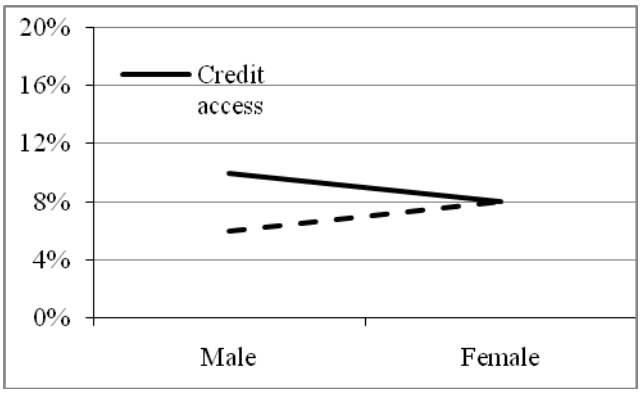

Figure A4: Probability of receiving safety-net benefits by gender and asset-richness.

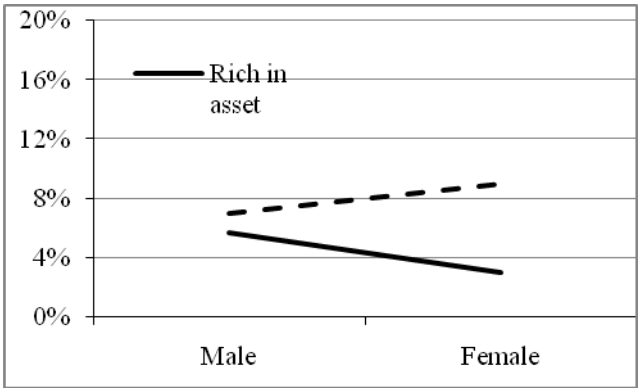

Figure A5: Probability of receiving safety-net benefits by gender and land ownership.