WELFARE IMPACT OF TARGETED SOCIAL ASSISTANCE PROGRAMS: A STUDY ON INDIA'S WIDOW PENSION SCHEME

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Abstract: This study aimed to evaluate the impact of Indira Gandhi National Widow Pension Scheme (IGNWPS) on the household consumption expenditure. The present study uses IHDS round I (2004-2005) and IHDS round II (2011-2012) data on the IGNWPS beneficiaries to conduct a comparative evaluation on the programme impact on the household consumption expenditure. The present study uses a propensity score matching method to compare the impact of the programme on the beneficiaries in comparison to the non- beneficiaries of the IGNWPS. A set of covariates are selected to create a counter factual for the treatment group. The study provides evidences for a positive impact of the programme on consumption expenditure and its components.

Index Terms -**Welfare impact, IGNWPS, Propensity score matching.**

I. INTRODUCTION

Poverty eradication policies plays a vital role in the context of a developing country like India. The role of social assistance programs in poverty reduction is well recognized in the Sustainable Development Goals. In this paper, the welfare impact of India's widow pension scheme, specifically, Indira Gandhi National Widow Pension Scheme (IGNWPS) - a social assistance program targeted at low-income widows in India - taken for the analysis. The Indira Gandhi National Widow Pension Scheme (IGNWPS) is one of the wide spread pension scheme in India, aimed to ensure the social benefit of widows. The scheme was launched by the central government in 1995 as a part of the National Social Assistance Programme. Based on the eligibility criteria, a widow with age of 40 years and above in the BPL category are eligible for a monthly pension of 300 rupees provided by the central government. Given that there are very few institutionalized social security arrangements focused on the poor and widows, this paper examines about a program that pioneered the cause of providing a social security arrangement for the widows.

II. THEORETICAL AND EMPIRICAL LITERATURE

There are two economic rationales behind cash transfer programmes being targeted at women. The first rationale is based on the non-unitary household model that suggests expenditure allocations made by men and women are different. Empirical work suggests that cash transfers given to women result in better development outcomes than those given to men (Duflo, 2003, and Samson et al., 2004). The second economic rationale for transfers to be targeted at women is that they are economically vulnerable. The joint utility maximization theory suggests that the pension beneficiaries share the benefit of the pension programme with the other household members and with the pension not only the particular individual but the entire family get benefited. Family economics offers various estimates of the extent to which children and grandchildren share pension income. Bestangli et al. (2016) explained the theory of change behind cash transfer programme on the consumption expenditure. The most immediate response of recipients to a cash transfer programme is to increase their general household consumption expenditure, food expenditure, and spending on other necessities. The arrival of additional income also eases the money deficit faced by the household, and this can have a positive effect on the household assets. Cash transfers targeted at women tend to increase the bargaining power of women and this favours consumption expenditure decisions favoured by them (Bergolo and Galvan (2018), Armand et al., (2016) etc.).

It was explained in many previous works that compare to men; women suffer more after the loss of their partner. Also, they tend to be more depend or their children or relatives for living (Posel et al. (2006)). Duflo (2000) analyzed the effect of the Old Age Pension programme in South Africa which took place in the early 1990's on child health. The results show a positive impact of the Old Age Pension programme on the health and nutrition of children. The impact is higher when the pension was received by women than men. However, the pension had an effect on the nutrition of female children, only when it was received by a woman.

Considering Indian studies, Rajan (2001) scrutinizes the effectiveness of National Social Assistance Scheme and its components on poor elderly in India. The paper criticizes the programme on the basis of the adequacy of the amount received and identifying the beneficiaries. They conclude by suggesting revamping the social security schemes with new eligibility conditions and an increase in the pension amount received. Garroway (2013) has conducted an ex-post evaluation of the National Social Assistance Programme (NSAP) using Indian Human Development Survey (IHDS) I (2004-05) data. The study found a positive impact on household consumption expenditure by the widow pension scheme.

III. RESEARCH METHODOLOGY

The study employs India Human Development Survey data, conducted in 2004-2005 and 2011-2012. This survey is a nationally representative, multi topic panel survey of 42,152 households in 384 districts, 1420 villages and 1042 urban neighborhoods across India. 83% of individuals interviewed as part of IHDS-II were interviewed for the first time in 2004-2005 as part of IHDS-I. Both surveys cover all states and union territories of India with the exception of Andaman/Nicobar and Lakshadweep.

For the estimation of impact of the widow pension scheme we apply a propensity score matching method.

The impact of the programme or the causal effect that we are interested in, is the Average Treatment Effect on the treated (ATT, π). ATT is the difference in the outcome variable (Y) when a household `I' receives treatment (Y_{i1}), and when the same household (i) does not receive treatment (Y_{i0}), estimated on the sub-population of treatment receiving households (T_i=1).

That is,

$$\pi|t = 1 = E(\pi_i|T_i = 1) = E(Y_{1i}|T_i = 1) - E(Y_{0i}|T_i = 1) \tag{1}$$

The problem with the estimation of ATT is that we cannot observe outcome variables on the same household both in the presence and absence of treatment. With the help of a propensity score model, we can apply the condition treatment assignment on a range of covariates (x). This method helps in constructing a counterfactual group which is similar to the treatment group but has not received the treatment. However, an absolute matching based on every single covariate (X) is not possible.

Rosenbaum and Rubin (1984) proposed matching based on a propensity score. They suggested conditioning treatment assignment on p(X), which is the probability score generated on a vector of observable characteristics X.

$$E(Y_{1i}|T_i = 1, X) - E(Y_{0i}|T_i = 1, X) \tag{2}$$

That is,

$$\pi|t = 1 = E(Y_{1i} - Y_{0i}|T_i = 1, p(X)) \tag{3}$$

Equation (2) estimates the difference between treatment and control groups after conditioning treatment assignment on covariates (X). Meanwhile, in equation (3) treatment assignment is conditioned on the probability score p(X).

To use a propensity score framework, we need to make certain assumptions which include conditional independence, unconfoundedness, and overlap. The conditional independence assumption implies that the treatment status is random conditional on observable characteristics (X). This assumption is satisfied when a vector of 'X' covariates is included in both treatment assignment and potential outcome estimation. The 'X' covariates included should be such that they affect treatment assignment and potential outcomes, but not vice versa. The assumption also denotes that selection into treatment assignment and potential outcomes is based only on observable characteristics that are included in the model (unconfoundedness). Matching requires another assumption, and that is overlap or common support. The common support assumption states that households with similar characteristics have a positive probability of being in the treatment and control groups. This assumption asserts that a treatment and control variable is available for each match on 'X'.

IV. EMPIRICAL ANALYSIS

The Table 1 provides the description of the variables included in the model and the Table 2 provides the descriptive statistics of the sample as a whole.

Table 1: Description

Variable	Description	Measurement
L_MC_P	Log of per capita monthly consumption expenditure	Rupees
L_MFC_P	Log of per capita monthly food consumption expenditure	Rupees
L_MNFC_P	Log of per capita monthly non-food expenditure	Rupees
OPB	Beneficiary or Non-Beneficiary	1 Yes / 0 No
HEM	Have an elderly member in the family	1 Yes / 0 No
BPL	Have BPL card	1 Yes / 0 No
Antodaya	Have Antodaya card	1 Yes / 0 No
HH_EDU	Highest education in the HH	0 – None 1 -Primary (1-5) 2 -Secondary (6-10) 3 -Higher sec & above
news_W	Women have access to news paper	1 Yes / 0 No
Gov_R	Have any acquaintance with gov. officials	1 Yes / 0 No
CGTV	Household have TV	1 Yes / 0 No
URBAN	Rural/Urban	1Urban / 0 Rural

The variable OPB indicates the household is an IGNWPS beneficiary or not. It assumes value 1 for the beneficiary (treatment group) and 0 for the non-beneficiary (control group). L_MC_P, L_MFC_P and L_MNFC_P are the dependent variable for the analysis. All the other variables are the covariates that we used for the calculation propensity scores.

Table 2: Descriptive Statistics

Variable	IHDS I					IHDS II				
	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max
L_MC_P	36,192	7.366	0.645	5.077	11.34	35779	6.519	0.703	4.133	10.57
L_MFC_P	36,192	6.558	0.504	3.401	9.011	35779	5.865	0.527	2.120	8.532
L_MNFC_P	36,192	6.676	0.849	3.114	11.33	35779	5.629	1.017	1.476	10.54
OPB	36,192	0.066	0.249	0	1	35779	0.018	0.134	0	1
HEM	36,192	0.474	0.499	0	1	35779	0.328	0.469	0	1
BPL	36,192	0.390	0.488	0	1	35779	0.315	0.465	0	1
Antodaya	36,192	0.070	0.255	0	1	35779	0.023	0.151	0	1
HH_EDU	36,192	1.845	1.047	0	3	35779	1.730	1.081	0	3
news_W	36,192	0.315	0.469	1	1	35779	0.301	0.459	0	1
Gov_R	36,192	0.071	0.257	0	1	35779	0.352	0.478	0	1
CGTV	36,192	0.637	0.481	0	1	35779	0.264	0.441	0	1
URBAN	36,192	0.298	0.457	0	1	35779	0.360	0.480	0	1

The Table 2 provides the descriptive statistics for the dependent variables and the covariates used for the analysis. In IHDS I there are 41554 households are interviewed, however after omitting the missing observations for the selected variables, balancing the data and selecting the observations in the common support the sample size is reduced to36,192. In the same way in IHDS II the were 42152 households and after the sample selection it is reduced to 35779.

Based on the selected covariates the propensity scores are estimated. The estimated propensity scores for the treated and the control groups are presented in Figure 1.
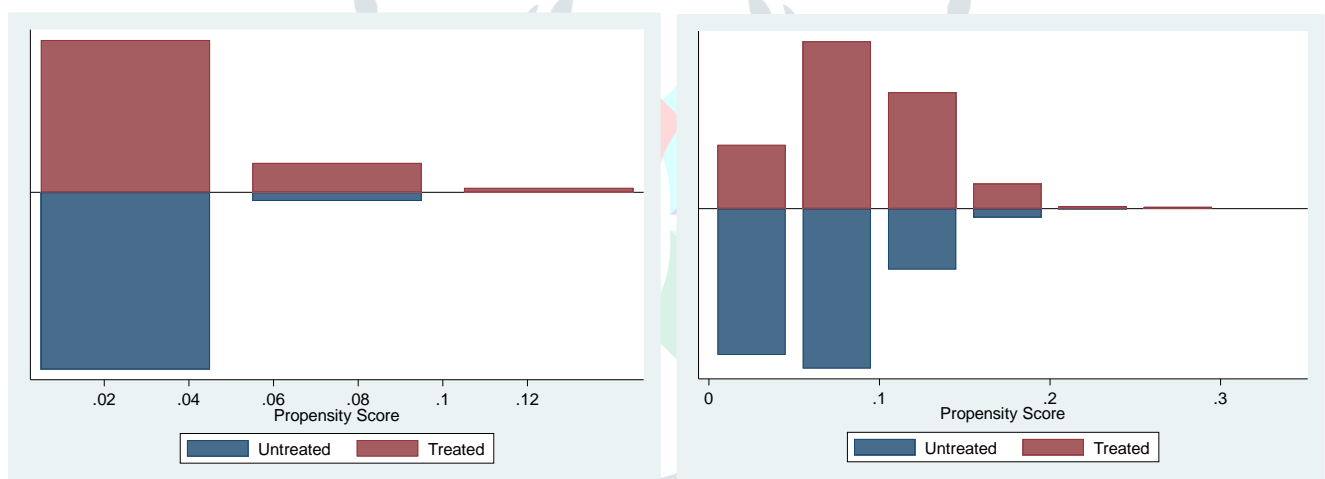

Figure 1 *IHDS I & IHDS II*

The region of common support for IHDS I is [.00340877, .13115375] and for IHDS II [.01358345, .2996695]. We only selected those observations that came under the common support.
Based on these observations and applying nearest neighbouring matching (each treated observation is matched with counterfactual which having an equal or nearest equal propensity score of the treated observation) we calculated the average treatment effect on the treated.

Table 3: Average Treatment Effect on the treated

Variable	IHDS I					IHDS II				
	n. treat.	n.contr.	ATT	Std.	t	n. treat.	n.contr.	ATT	Std.	t
L_MC_P	733	35459	0.049	0.027	2.702	1899	33880	0.019	0.015	3.266
L_MFC_P	733	35459	0.039	0.021	6.198	1899	33880	0.004	0.012	3.146
L_MNFC_P	733	35459	0.057	0.038	4.819	1899	33880	0.031	0.019	2.938

Table 3 provides the Average Treatment Effect on the treated for IHDS I and IHDS II. Based on the outcome, in IHDS I the per capita monthly consumption expenditure for the treated group is around 5 per cent higher the non-treated group or the counter factual

group. The per capita monthly food consumption expenditure and the per capita monthly non-food consumption expenditure shows an increase of around 4 and 6 per cent respectively. All these values are statistically significant since the t value is greater than 2. In IHDS II the per capita monthly consumption expenditure (2 per cent), per capita monthly food consumption expenditure (0.4 per cent) and per capita monthly non-food expenditure (3 percent) shows a statistically significant increase.

V. CONCLUSION

Based on the estimation results it is clear that the participation of the IGWPS increased the per capita monthly consumption expenditure and its components for the beneficiaries in comparison to the non-beneficiaries. Both the round the nonfood consumption expenditure is found to be have higher impact than the other variables. However, the impact is found to be lesser in IHDS II than the same in IHDS I. Thus, over the time with inflations and the changes that occurred in the society the programme does not changed and the impact is reduced. With changed situations the benefit amount is not changed and it is very lesser compare to the expenses. Thus, the policy amount needed to be increased in order to meet the current world expenses

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