Evaluating the impact of asset transfer on health outcomes of the ultra-poor:

Evidence using household quasi-experimental panel data

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What are my research questions?

- Is it possible to **treat quasi-experimental data** better way?
- If yes, what are the **IMPACTS** of TUP intervention on health outcomes?

Rationale Behind RQs

- Important to treat quasi-experimental data **DIFFERENTLY** for the panel dimension.
- Existing studies **NEGLECTED MEASURING HEALTH IMPACTS** of the TUP intervention from wider perspective.

Why Asset Transfer?

- Traditional development industry (e.g. social protection) for poor has **FAILED** to improve the lives of the poorest of the poor (Morduch, Hulme, Lawson, Matin, Moore, Hashemi…..).
- Ultra-poor are also largely **BYPASSED** by the mainstream development interventions like microcredit.
- Ultra-poor are **NO MORE LIKELY** to be reached by the public assistance programs than their better-off neighbors (Banerjee *et al*., 2007, 2011, 2015).

Why Asset Transfer?

- **Distribution of safety nets** systematically **EXCLUDE** the poorest and least socially connected households.
- These limitations illustrate the need for targeted asset transfer programs for the ultra-poor.
- BRAC pioneered '**CFPR-TUP**' in 2002 , which targets the ultra-poor and now being **Replicated** as many as 20 countries in the Asia and Africa (Banejee *et al*., 2016).

Mapping health and health outcomes

- **Disagreements** about the meaning of health are common as it comprises medical, social, economic, spiritual, and many other components (Larson, 1999).
- Despite such disagreements, this study conceptualizes health outcomes based on formal models: **medical** model, the World Health Organization (**WHO**) model, **wellness** model, and **environmental** model

Definition used in this study

- This study considers health as the physical and mental well-being, which are the dominant aspects of medical, WHO and wellness models. As one of the main objectives of the study is to measure the long-term impact of asset transfer on health outcomes, this study divides physical health outcomes as short- and long-term measures. In addition, we consider environment-related health aspects like water and sanitation.

Data and Methodology

- Quasi-experimental household panel data from BRAC-RED.
- The longitudinal panel data consider the four wave surveys (2002, 2005, 2008 & 2011 to evaluate short-, medium- and long-term impacts.
- **Short-term, medium-term and long-term refer** to the impact on health outcomes in 2005, 2008 and 2011 over 2002.

Data and Methodology

- This study strongly assumes the **validity of parallel trend assumption** such that our estimates are unbiased and consistent.
- This study uses **conditional** difference in difference matching (DIDM) with household fixed effects.

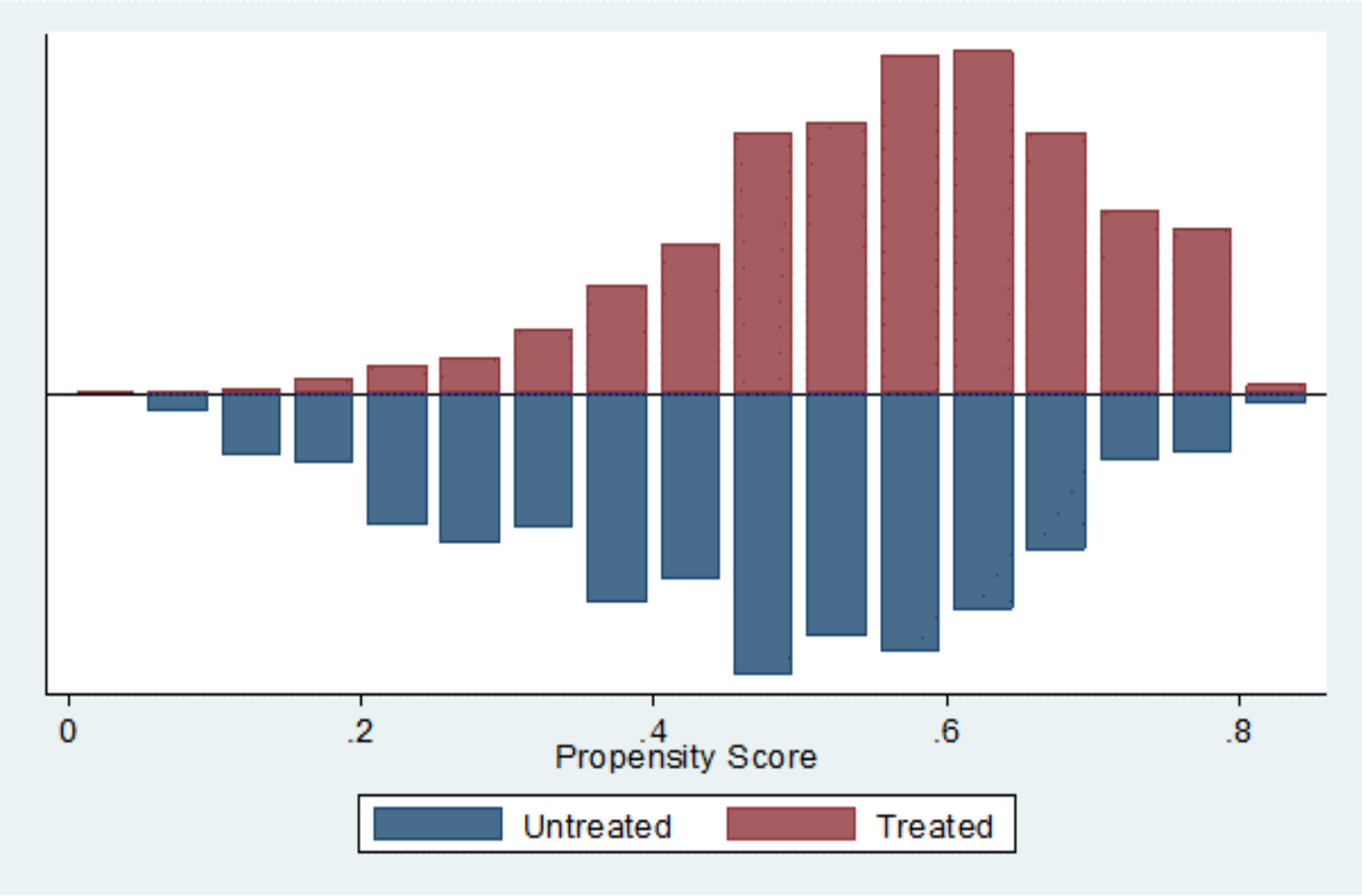
Estimated equation

$$xtreg\ H_{it} = \alpha_0 + \alpha_1 d_{2005} + \alpha_2 d_{2008} + \alpha_3 d_{2011} + \alpha_{1K}(d_{2005} * d_K) + \alpha_{1K}(d_{2005} * d_K) + \alpha_{2K}(d_{2008} * d_K) +$$

$$\alpha_{2K}(d_{2008} * d_K) + \alpha_{3K}(d_{2011} * d_K) + \alpha_{3K}(d_{2011} * d_K) + X_i' \prod + \beta_1(d_{2005} * T) + \beta_2(d_{2008} * T) +$$

$$\beta_3(d_{2011} * T) + \varepsilon_{it}, fe\ i(idno)\ robust$$

Propensity score graph after balancing property is satisfied



Propensity score graph for the matched treatment and control groups

Mean Difference Test on Baseline Characteristics

	Matched sample			Full sample		
	T_1	T_0	$T_1 - T_0$	SUP	NSUP	SUP – NSUP
Demographic characteristics						
Household size	3.8529	4	-0.1471	3.6523	3.9299	-0.2776***
			(0.0971)			(0.0541)
Age of household head (years)	43.3774	43.2007	0.1766	43.4630	42.9955	0.4675
			(0.7335)			(0.4017)
Female household head	0.2643	0.2228	0.0415*	0.4007	0.2465	0.1542***
			(0.0244)			(0.0144)
Single female household head[1]	0.2180	0.1842	0.0338	0.3468	0.2104	0.1363***
			(0.0228)			(0.0138)
Literate household head	0.0300	0.0166	0.0134	0.0445	0.0942	-0.0497***
			(0.0087)			(-.0078)
Education (years)	4.5588	4.5909	-0.0321	4.5315	5.3227	0.7912***
			(0.6595)			(0.2601)

Mean Difference Test on Baseline Characteristics

Economic characteristics						
Per capita real income (Taka)	2570.4630	2448.0610	**122.4020**	2494.861	2806.269	**- 311.4081*** **
			(100.4605)			**(68.0862)**
Proportion with cash savings	0.0381	0.0368	**0.0013**	.0913777	.2114228	**-0.1200*** **
			(0.0108)			**(0.0109)**
Proportion with land owning	0.5722	0.5856	**-0.0134**	.497657	.6422846	**-0.1446*** **
			(0.0280)			**(0.0153)**
Has cow	0.0027	0.0074	**-0.0046**	.0346767	.1102204	**-0.0755*** **
			(0.0039)			**(0.0079)**
Has goat	0.0681	0.0497	**0.0184**	.0646673	.0946894	**-0.0300*** **
			(0.0135)			**(0.0084)**
Has poultry	0.3202	0.3241	**-0.0040**	.3336457	.4664329	**-0.1328*** **
			(0.0265)			**(0.0151)**
Has rickshaw/van	0.0054	0.0037	**0.0018**	.0135895	.0370741	**-0.0235*** **
			(0.0039)			**(0.0048)**
Tinshed roof	0.4196	0.4070	**0.0126**	.4311153	.5415832	**-0.1105**
			(0.0279)			**(0.0155)**
House ownership	0.9523	0.9540	**0.0016**	.9268978	.9514028	**-0.0245*** **
			(0.0120)			**(0.0075)**

Impact on physical health, health-care seeking, health status and health improvement

	Conditional DID matching fixed effects estimates from the matched sample (DIDM-FE)			Conditional DID fixed effects estimates from the BRAC-sample (DID-FE)		
	d_{2005}*T (short-term impact 2005-2002)	**d_{2008}*T (medium-term impact 2008-2002)**	**d_{2011}*T (long-term impact 2011-2002)**	**d_{2005}*SUP (short-term impact 2005-2002)**	**d_{2008}*SUP (medium-term impact 2008-2002)**	**d_{2011}*SUP (long-term impact 2011-2002)**
Indicators of physical health and health care-seeking						
Illness of any member in the household (dummy)	-.0543869* (.0278798)	-.0539277* (.0288116)	.0135584 (.016326)	-.0448305** (.0172467)	-.044380*** (.0143983)	-.0061167 (.0120565)
Health care seeking behavior						
Home service from modern practitioner (dummy)	.0098685 (.0135119)	.042327*** (.0147838)	.0123429** (.0056114)	.017553** (.0068457)	.0047938 (.0124895)	-.0006312 (.0046752)
MBBS (dummy)	.0299002** (.0126755)	.0293732 (.0322224)	.0264164 (.0300423)	.0027488 (.012157)	.0215829 (.0149295)	.0000903 (.0199632)
Modern practitioner (dummy)	.0394546** (.0189803)	.0656391* (.036601)	.038454 (.0286916)	.0213727 (.0154161)	.0235258 (.0195038)	-.0003651 (.022302)
Indicators of psychological health						
Health status	.0624592 (.0518069)	.0183204 (.0343112)	-.0206886 (.0316271)	.0155726 (.0366292)	.0217638 (.0298504)	-.057286** (.023743)
Health improvement	.1526086*** (.0489235)	.0123311 (.0612633)	-.0109901 (.0345145)	.1099304*** (.0346003)	.0398919 (.0305632)	-.0438695 (.0299544)
p<0.10, **p<0.05, ***<0.01; village cluster robust standard errors in the parentheses						

Impact on environment-related health indicators

	Conditional DID matching fixed effects estimates from the matched sample (DIDM-FE)			Conditional DID fixed effects estimates from the BRAC-sample (DID-FE)		
	d_{2005}*T (short-term impact 2005-2002)	d_{2008}*T (medium-term impact 2008-2002)	d_{2011}*T (long-term impact 2011-2002)	d_{2005}*SUP (short-term impact 2005-2002)	d_{2008}*SUP (medium-term impact 2008-2002)	d_{2011}*SUP (long-term impact 2011-2002)
Using sanitary latrines (dummy)	.3556662*** (.0466723)	.1096798** (.0409311)	-.104688*** (.027057)	.2845036*** (.0377228)	.0780515*** (.0229264)	-.060454*** (.0180773)
Drinking water from tube well (dummy)	.0522931** (.0221251)	.0181326 (.0217013)	-.0056022 (.0092012)	.0146235 (.0108958)	-.0012793 (.0118856)	-.0077061 (.0084819)
Cooking water from tube well (dummy)	.0571884** (.0217081)	.0217865 (.0218952)	-.0124074 (.0076684)	.0224362 (.0139293)	.0058608 (.0115231)	-.0074006 (.0065678)
p<0.10, **p<0.05, *<0.01; Village cluster robust standard errors in the parentheses*						

Impact on food consumption and health-care expenditure

	Conditional DID matching fixed effects estimates from the matched sample (DIDM-FE)			Conditional DID fixed effects estimates from the BRAC-sample (DID-FE)		
	d_{2005}*T (short-term impact 2005-2002)	**d_{2008}*T (medium-term impact 2008-2002)**	**d_{2011}*T (long-term impact 2011-2002)**	**d_{2005}*SUP (short-term impact 2005-2002)**	**d_{2008}*SUP (medium-term impact 2008-2002)**	**d_{2011}*SUP (long-term impact 2011-2002)**
Food consumption						
Per capita monthly food expenditure	-	49.06936*** (15.82748)	15.73261** (7.29707)	-	49.63346*** (8.16127)	7.264229 (4.301796)
Sub-category						
Fish consumption	-	162.9111** (78.19019)	108.7914 (70.44498)	-	145.1812** (67.37576)	55.58452 (38.03959)
Meat	-	99.72954*** (30.80966)	78.78655*** (24.49884)	-	84.40407*** (24.3021)	50.96711*** (18.21818)
Milk	-	-164.0247 (378.9103)	264.7225 (256.788)	-	88.95109 (162.329)	58.9545 (92.962)
Health-care expenditure						
Health care expenditure (BDT)	-45.53354 (52.72692)	100.0563 (86.47848)	91.65939* (50.216)	8.173202 (24.39644)	60.6626 (36.34204)	107.0427*** (35.54767)

p<0.10, **p<0.05, ***<0.01; Village cluster robust standard errors in the parentheses

Conclusion

- Negative and statistically significant **short- and medium-term impacts on illness** of the household members are evidenced in our study.
- There are positive **short- and medium term** significant impact are observed for visiting modern practitioners.
- Though this study finds **no significant impact on self-reported health status**, there is a significant short-term positive impact on self-reported health improvement.
- There are also significant and positive **short- and medium-term impacts on environment-related health indicator** like the usage of sanitary latrines. However, it does not sustain over the long-term.

Conclusion

- **Significant positive short-term** impacts on **drinking and cooking water** from tube-well are evidenced.
- We find statistically significant and positive **medium- and long-term impact on per capita food consumption expenditure** of the ultra poor households with literate household heads.
- **Long-term impact on health care expenditure** is observed.
- Finally, this study confirms that it is possible to make more robust sustainable improvements in the health outcomes of the ultra poor with a relatively short-term intervention.