Long-term Effects of the Targeting the Ultra Poor Program

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Abstract

This paper studies the long-run effects of a "big-push" program providing a large asset transfer to the poorest Indian households. In a randomized controlled trial that follows these households over 10 years, we find positive effects on consumption (0.6 SD), food security (0.1 SD), income (0.3 SD), and health (0.2 SD). These effects grow for the first seven years following the transfer and persist until year 10. One main channel for persistence is that treated households take better advantage of opportunities to diversify into more lucrative wage employment, especially through migration.

Development economics has long posited that the poor may be poor for no good reason other than the fact that they started poor (for some early work see, Leibenstein (1958), Dasgupta and Ray (1986), Banerjee and Newman (1993), Galor and Zeira (1993)). This is the idea of a poverty trap which has the implication that a one-time capital grant that makes very poor households significantly less poor ("big push") might set off a virtuous cycle that takes them out of poverty. Forty three countries now embrace some version of this idea and make large transfers to over 3.1 million of their poorest households[1]. In particular, the "Targeting the Ultra Poor" (TUP)

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[1]Partnership for Economic Inclusion "State of the Sector" report, 2018.

intervention, pioneered by BRAC in Bangladesh, employs a multi-faceted approach, offering poor households an asset transfer, consumption support, savings, and training in the hopes of unlocking a poverty trap.

Short and medium-run evaluations across a number of contexts find large and positive treatment effects of the TUP program on poor households' economic wellbeing, including on measures of net worth, income, consumption, and health (Banerjee et al. (2015), Bandiera et al. (2017), Bedoya et al. (2019)). The policy push for these programs was in large part based on these evaluations, which showed that if the results were persistent over time, in the long run, the program benefits would be larger than the (considerable) initial costs. Balboni et al. (2020) provides evidence that the pattern of short and medium run impacts in Bangladesh is indeed consistent with the presence of a poverty trap: if the program pushes household wealth above some threshold, they escape poverty, but if they were too poor to start with, they slide back into poverty.

However, evidence of long-term impacts of such programs remains scarce. This paper fills this gap by tracking the 4, 7 and 10 year impacts of a TUP program in West Bengal, India. Observing both treatment and control households over time is key to establishing the existence (or the lack thereof) of a poverty *trap*, because it tells us whether households would have escaped poverty on their own over many years absent any intervention through their own efforts, potentially aided by larger, macroeconomic, tides that "raise all boats".

The results show large improvements in household wellbeing even for those who were not assigned to the program. Average household per capita consumption was \$1.35 (2018 PPP) at baseline in the control group, and \$2.9 by year 10. Nevertheless, measures of economic wellbeing (consumption, wealth, health, income) improve significantly and substantially faster among treated households until year 7 from the asset transfer, and the resulting treatment control gap persists between year 7 and 10. Their per capita consumption is \$0.6 per day (0.6 standard deviations) higher than the control group at both year 7 & 10, and income is 0.3 standard deviations higher. This temporal pattern of growing effects followed by persistence is consistent with the alleviation of a poverty trap, what BRAC describes as the graduation of treated households. However, it is also consistent with there being persistent effects without actually getting out of a trap: the control households do become less poor over time, and the treatment households are still not very rich by the time the treatment effect stabilizes (although their average consumption is above the World Bank threshold for "moderate poverty"). It would take an even longer follow up to conclude that the treatment households have reached a permanently higher steady state.

What are the actual channels through which the effect of a one-time shock persists? This is the subject of much theoretical work (see for example, Dasgupta and Ray (1986), Banerjee and Newman

(1993), Galor and Zeira (1993), Banerjee (2000) among others). These papers emphasize the idea that poor households are unable to reach the threshold level of investment at which productivity rises steeply, either because they cannot raise or save enough capital or because they are unwilling to absorb the accompanying increase in risk. The capital grant pushes them over that threshold, and as a result their income goes up sharply allowing them to sustain the new higher level of investment. A more recent literature emphasizes psychological factors; becoming wealthier makes households more optimistic about the future and therefore more willing to save and/or put in effort (Banerjee and Mullainathan (2010), Genicot and Ray (2017)) or more able to focus and take good decisions (Mullainathan and Shafir (2013)).

These models conceptualize the effect of the "big push" as a one-time shift to a different mode of production. Our data, on the other hand, suggests a more complex dynamic response: initially (i.e at 18 months) these TUP beneficiaries are mainly richer because they have the asset that was transferred (mainly livestock). At 3 years they have diversified into new businesses in addition to the livestock and have significantly more earnings from non-farm micro-enterprises than the control group. This divergence gets even more amplified by year 7, when the non-farm micro-enterprise earnings in treatment is nearly twice that in control. However we also see the emergence of a third major source of divergence: wage income. There is no treatment effect on wage earnings at 18 months or 3 years, but by year 7 the gap between treatment and control is the same order of magnitude as the effect on non-farm micro-enterprises and twice the impact on livestock earnings. This seems to be almost entirely driven by a difference in the earnings of migrants from the family between treatment and control households.

By year ten, we see another shift. The treatment effect on non-farm microenterprises attenuates relative to year 7 (though it is still higher than in year 3), but the effect on remittances more than doubles. In other words, the household is increasingly specialized in labor earnings, coming mainly from migrants.

These multiple shifts are not *per se* inconsistent with the theory since the idea of the production technology in these models is sufficiently abstract to accomodate doing different things at different points of time. However it does provide a quite different perspective on what is going on. The first transition, from livestock to non-farm micro-enterprises may not be particularly surprising, since the households were not given much choice on what assets they can get from the program and they can use the earnings from the livestock to fund a move towards what they see as a better opportunity. The shift towards more labor earnings demands more of an explanation since in many models (e.g. Banerjee and Newman (1993)) the labor market is seen as the alternative that can be accessed even by those who have no capital. However migration often requires an upfront investment (Bryan et al.

(2014)) and it is possible that treated households are better placed to pay for that.

This last observation has another important implication: while it is of course true that a macro shock that creates new opportunities for everyone can eliminate a poverty trap and therefore make a TUP-like intervention unnecessary, it is also possible that the intervention made it easier to take advantage of new opportunities. This kind of macro shift seems to have transpired in our setting; in the control group wage earnings go up by a factor of 3 between the first endline (at 18 months) and the last (at 10 years), probably because of a combination of growth in India and a demographic shift, coming from the fact that the children of the women who were selected for the study are now old enough to enter the labor market. However the treatment group is better able to take advantage of these new opportunities–for one, compared to the control group, members of treated families are less likely to migrate to the nearest big city, Kolkata, as against to urban centers further away[2], and they migrate for longer. By year 7, wage earnings are almost 30% larger in the treatment group.

This could be because they have more access to capital and migrating (especially migrating far) is expensive. Or it could be that they are better informed or more confident as a result of the headstart they receive (Banerjee et al. (2020b) makes the case that the TUP intervention in Ghana raises labor supply through such psychological mechanisms). Whatever the explanation, the important insight is that an intervention like TUP might empower beneficiaries to take better advantage of whatever new opportunities arise over time and for that reason, positive macroeconomic shifts may be complementary to a big push intervention rather than a substitute.

This paper is most closely related to a small number of recent papers studying whether a one-time positive shock has long term impact on the lives of the poor. The closest two are perhaps Blattman et al. (2020) who find that a big push intervention in Uganda has a large impact 4 years after the intervention, which disappears by year 9 as the control group catches up with the treated group due to opportunities for wage employment, and Bandiera et al. (2017) which studies TUP in Bangladesh and finds a positive impact 7 years after the intervention, using a combination of experimental and non-experimental methods to deal with the fact that the control group was treated in year 4.

1 Experimental Design and Data

The NGO Bandhan ran the TUP program in West Bengal starting in 2007. The poorest households were identified in two steps. First, residents across 120 village hamlets ranked households into five

[2]Delhi is the most common urban destination for out-of-state migrants from Bengal (eci (2018)).

wealth quintiles. Among households ranked in the bottom quintile Bandhan then verified eligibility per seven criteria: (i) presence of an able-bodied female member (to manage the asset), (ii) no credit access, (iii) landholding below 0.2 acres, (iv) no ownership of productive assets, (v) no able-bodied male member, (vi) presence of school-aged children who are working instead of attending school, and (vii) primary source of income being informal labor or begging. Households had to meet the first two and at least three of the remaining five criteria in order to be eligible for the TUP intervention. In total, nine hundred seventy eight (978) households were deemed eligible. Roughly half of these (514) were randomly assigned to receive the intervention, with stratification at the hamlet level. Of these, only 266 accepted treatment. All reported estimates are intent-to-treat (ITT) estimates.

Households in the treatment group who chose to participate chose a productive asset from a menu of options (2 cows, 4 goats, 1 cow and 2 goats, nonfarm microenterprise inventory, etc). About 82% chose livestock. In addition to the asset they received weekly consumption support for 30-40 weeks[3], access to savings, and weekly visits from Bandhan staff over a span of 18 months. These visits were designed to deliver training on generating income from the chosen asset, life skills coaching, and health information. Bandhan had no contact with beneficiary households starting 18 months after the asset transfer[4].

To collect information on baseline household characteristics the research team administered a survey prior to the distribution of assets in 2007-2008, recording household demographics, consumption, food security, asset ownership, income, income sources, financial inclusion, adult time use, and physical and mental wellbeing. Online Appendix Table A2 confirms balance between treated and control households on baseline characteristics. Treated households had on average 3.9 members, including 1.6 children under 14 years old. They had monthly per capita consumption of $40 (2018 USD PPP) and owned less than 0.1 acres of land. The median TUP recipient was a female aged 44 years old in 2007.

We track economic and health outcomes for treated and control households through four subsequent survey waves administered at 18 months, 3 years, 7 years, and 10 years following the transfer of productive assets. These surveys capture the same information as described above. Importantly, to study if constraints are alleviated inter-generationally, we track economic outcomes (income sources, migration, remittances) for all household members and not just the TUP recipient. All program activities had ceased by the first endline survey. Online Appendix Table A1 details the timeline of program and survey activities.

[3]The exact duration was 30 weeks for households receiving goats and 40 weeks for households receiving cows. The allowance of Rs.90/week ($7.6 in 2007 USD PPP) was meant to aid subsistence.

[4]Unless they became microfinance clients, which was rare.

Of 978 original households, 71% are tracked across all four survey waves (83% in endline 1, 89% in endline 2, 88% in endline 3, 90% in endline 4). Online Appendix Table A3 shows that attrition is not systematically different between treated and control households and Table A7 shows that results are unchanged when restricting to households tracked across all four waves.

2 Results

2.1 Long-term effects of the TUP program

2.1.1 Empirical Strategy

First, we consider how the TUP intervention affects households' economic wellbeing over time. Our results estimate TUP's causal effects on five economic indices capturing household wealth, per capita consumption, food security, financial inclusion, and income and revenues at the time of each of the four survey waves. These indices are constructed using the same methodology as in Banerjee et al. (2015), which studied the TUP's impact 3 years post the delivery of assets.

All indices are created by first constructing z-scores (i.e. subtracting the baseline mean and dividing by the baseline standard deviation) for each variable, averaging over all variables that comprise the index, and standardizing to the baseline value of the index. Results are reported in units of baseline standard deviations of the index. One exception is the income and revenue index, for which we do not have baseline information about some sub-components; it is therefore standardized to the control mean and results are reported in units of control group standard deviation. The variables used in the construction of each index are described in detail in the following section.

Since the program was randomly assigned, the following regression specification estimates causal average treatment effects at each survey wave t.

$$Y_{iht} = \alpha_{1t} + \beta_{1t} Treat_i + \kappa_{1t} Y_{ihbaseline} + \gamma_{1ht} + \epsilon_{iht} \tag{1}$$

Y_{iht} is the outcome of interest for household i residing in hamlet h during survey wave t. The coefficient β_{1t} on an indicator for treatment $Treat_i$ at time t provides the average treatment effect of the program on studied outcomes at that wave. Since treatment was stratified by hamlet, all specifications include hamlet fixed-effects (γ_{1h}). The specification controls for the baseline value of

the outcome ($Y_{ihbaseline}$) and reports heteroskedasticity-robust standard errors. Similar regressions are estimated with individual level outcomes (index of physical health, mental health, productive time use, and political involvement of adult members) with standard errors clustered by household.

Both household and adult outcomes (variables in Table 1) are the same as in Banerjee et al. (2015), with the timeframe extended to 10 years post the asset transfer[5]. The effect on political involvement is reported in Appendix Table A4 because of column restrictions.

2.1.2 Results: growing positive effects until year 7, persistence between years 7 and 10

Consumption and Income over time: graphical evidence

Figure 1 shows per capital consumption, food security, and household income in treatment and control households. Values are in 2018 USD, corrected for purchasing power parity. The control group consumes \$1.35 at baseline[6], \$1.8/day by 18 months, \$2.2/day by year 3, \$2.4/day by year 7, and \$2.9/day by year 10. Per the World Bank's official definition of poverty, they move on average from a state of extreme poverty (under \$2.1/day) to a moderate one (under \$3.5/day) [7]. The treated group consumes the same as control at baseline, but consistently more across all four endline surveys: \$2/day by 18 months, \$2.5/day by year 3, \$3.1/day by year 7, and \$3.53/day by year 10. Thus, by year 10, the treatment group's average just reaches beyond moderate poverty.

Panel (b) plots another marker of extreme poverty: the share of households reporting that all households members had enough to eat for all days. In the control group, this variable increases from 10% to 70% between baseline and year 10, a considerable improvement. The treatment group does better every year, with treatment effects that are increasing until year 7 and stabilizing between year 7 and year 10.

Panel (c) tracks income: control households earn \$144 per month by 18 months, \$271 by year 3, \$412 by year 7, and \$497 by year 10. Treated households on average earn more per month than the control group at each of the 4 endlines: \$170 by 18 months, \$313 by year 3, \$617 by year 7, and \$680 by year 10.

Household outcomes

Table 1 (Columns 1-5) reports the TUP program's effects on households' economic wellbeing.

[5]Women's empowerment was also included in Banerjee et al. (2015) but is not included here because it was not measured after the first endline.

[6]Table A1 in online appendix

[7]The World Bank defined extreme poverty as living on less than \$1.9/day and moderate poverty as living on less than \$3.1/day in 2011. We update these to 2018 USD corrected for PPP.

The program had large, positive, and growing effects on wealth, income, consumption, and food security over the first seven years following the asset transfer. The effects on consumption, income, and food security persist even ten years later.

The asset index in Column 1 is constructed using principal component analysis aggregating ownership of livestock, other productive assets (e.g. bicycle or sewing machine), and durable household items (e.g. TV, refrigerator). Treated households have 0.2 SD higher asset ownership than the control group at 18 months ($p < 0.05$), and 0.4 SD higher asset ownership at 3 years ($p < 0.01$). This effect grows to 0.8 SD by 7 years ($p < 0.01$).

Treatment effects on assets at year 10 continue to be positive (0.35 SD), but smaller than in year 7. This is largely attributable to treated households diversifying out of livestock and non-farm micro-enterprises and into labor income. We document the magnitude and importance of these changes in the following section.

Per capita consumption in Column 2 is constructed using a detailed consumption module asking about households' food, non-food and durable purchases. It rises among treated households for the first 7 years following asset transfer, being 0.3 SD higher than the control group at 18 months and 3 years ($p < 0.01$) and growing to 0.7 SD higher at 7 years. It remains persistently higher by 0.6 SD at 10 years ($p < 0.01$).

The food security index in Column 3 aggregates whether everyone in the household gets enough food every day, whether it is not the case that any adult skipped a meal in the last year, that no household member went without food for a day, no children skipped meals, and everyone in the household regularly ate 2 meals a day. Treated households are 0.2 SD more food secure than the control group by 18 months and 0.25 SD by year 3 ($p < 0.01$). This effect grows to 0.4 SD by year 7 and remains at 0.13 SD by year 10 ($p < 0.05$). Table 2 disaggregates treatment effects on consumption and food security into individual components, finding similar patterns of growth and persistence by year 7 and 10 respectively for consumption, and declining impact on food security, which are probably coming from an improvement in the situation in the control group, as show in in figure 1.

The index in Column 4 aggregates measures of income from livestock ownership, micro-enterprise, and other self and wage employment activities of household members (including remittances) as reported in the household roster. Treated households earn 0.14 SD more than the control group by 18 months and 0.17 SD by year 3 ($p < 0.05$). This effect grows to 0.3 SD by year 7 and persists at this level until year 10 ($p < 0.01$).

Finally, we explore the program's effect on an index of financial inclusion by aggregating monthly loans and savings in Column 5. While the point estimates are positive and economically meaningful

in size (0.12 SD at year 10), they are statistically indistinguishable from zero.

Individual outcomes

We next turn to the TUP program's effects on adult household members' physical health, mental health, productive work, and political involvement. We find a pattern of growing effects until year 7 followed by persistence until year 10, similar to household level outcomes. Table 1 Columns 6-8 and Appendix Table A4 report results.

The physical health index in Column 6 combines measures of individuals' perceived health, whether the individual missed a day of work in the past month due to poor health, and an activities of daily living score. Physical health of treated household members is 0.06 SD higher by 18 months ($p < 0.05$); this grows to 0.13 SD by year 7 and 0.19 SD by year 10 ($p < 0.01$).

The mental health index in Column 7 aggregates measures of life satisfaction, feelings of sadness, and periods of worry. It improves by 0.1 SD for treated households by 18 months, growing to 0.25 SD by year 7 and remaining at this level until year 10 ($p < 0.01$).

Adults in treated households also spend more time on productive activities (Column 8): on average 0.285 SD (60 more minutes) by 18 months, 0.1 SD (21 more minutes) by year 3, and 0.15 SD (30 more minutes) by year 7 and year 10 ($p < 0.01$).

We find no effect on political involvement, which aggregates whether they voted in the last election and ever approached a Gram Pradhan (village head) or booth member about village needs.

Correction for multiple hypothesis testing

As in Banerjee et al. (2015), this paper takes two steps to account for the fact that some outcomes might show statistically significant results by chance. First, we aggregate a number of outcome measures into the 9 indices. Second, we consider these 9 as constituting a family of outcomes and control for the false discovery rate (FDR), or the expected proportion of rejections of the null that are Type I errors. Following the Benjamini-Hochberg step-up method outlined in Anderson (2008), we calculate q-values for each outcome, or the minimum FDR at which the null hypothesis of zero effect on that outcome would be rejected. These are to be interpreted as adjusted p-values and are reported in Table 1. All results are robust to correcting for multiple hypothesis testing.

2.2 Cost-benefit analysis

The intervention cost the equivalent of $2163 USD when corrected for purchasing power parity in 2018, of which 56% constituted a direct transfer to treatment households. Online Appendix Table A8 and the accompanying text provides details of the cost-benefit analysis, which is analogous to

Banerjee et al. (2015). The program breaks even by year 4. Its benefit/cost ratio is 379% by year 10 and would be 1110% if year 10 gains are sustained in perpetuity. These estimates are larger than in Banerjee et al. (2015), which extrapolated year 3 gains over time, because treatment effects rise between year 3 and year 10.

Regardless of whether it permanently unlocked a poverty trap, the program in India is thus highly cost effective and pays for itself 2.8 times over within the first 10 years. Of all the programs studied in Banerjee et al. (2015), however, India has the most favorable cost benefit ratio, with low costs and high benefits in the short run. We extend the cost benefit analysis to four other countries in Online Appendix Table A9. In Ethiopia and Pakistan the program would break even after 10 years if the path of gains over time resembled that in India (i.e. if they increased in the same proportion between years 3 and 7 and years 7 and 10). In Ghana, the program would almost break even (95%), and in Peru it would not. Of course, it remains to be seen whether such persistent benefits also occur in these different settings. As mentioned, Blattman et al. (2020) study a cash transfer program in Uganda, where there is a large impact at year four which vanishes by year nine.

2.3 Channels of persistence

2.3.1 Diversification in household activities

To explore the forces underlying the treatment effects at various points in time, we document changes in the composition of households' economic activities and income.

Table 3 decomposes treatment effects on household income into those attributable to revenue from livestock, micro-enterprise and self-employment, and wages.[8] Income is reported in 2018 USD corrected for purchasing power parity. Three clear and distinct patterns emerge regarding the relative importance of each source over time.

First, TUP households are initially able to leverage transferred livestock to earn higher income than the control group. Monthly livestock revenue among the treated is \$10 and \$8 higher than control at 18 months and 3 years following the transfer (Column 1). This pattern continues through to year 7, when they earn \$27 more livestock revenue than control ($p < 0.01$). The finding of higher livestock income even 7 years following the asset transfer is consistent with Bandiera et al. (2017), who find something similar in Bangladesh. However, the difference in livestock earnings between treated and control groups falls to \$17 by year 10 and the main source of earnings gains shifts away from livestock.

[8] Wages covers income from casual and agricultural labor as well as income from salaried employment, but casual employment represents by far the major part of wage income.

Second, treatment households relative to control households show increased diversification into non-farm micro-enterprises. Net earnings from these enterprises are constructed from reports of household members' microbusiness earnings in the household roster. Column 2 shows that by year 3 treated households earn \$25 more from non-farm micro-enterprises than their counterparts in control ($p < 0.01$). This effect is amplified by year 7, with treated households having \$68 greater business earnings than the control group ($p < 0.01$). Treated households' businesses earnings are 70% higher than the control group at this time and the treatment effect size is over twice that on livestock revenue, highlighting the importance of diversification in sustaining greater earnings for TUP households over time. However, this effect declines by year by year 10, paving way for a new occupational shift into wage income.

Columns 3 reports the total of individual members' earnings from various economic activities reported in the household roster (other than livestock and business, these include among others fishery and horticulture). Observed patterns are broadly consistent with the above-described trend, i.e. that the impact on self-employment earnings are initially low (at 18 months), grow to \$108 (including livestock, business) by year 7 ($p < 0.01$), and then fall marginally between years 7 and 10.

Third, the other main source of income diversification is wage employment. Columns 4 shows that households are diversifying away from activities that require asset ownership. The treatment effect on productive asset index, constructed using principal component analysis and then standardized to baseline, at first rise until year 7 and then fall between years 7 and 10.[9]

Columns 5-6 track treatment effects on wage income over time. Wages comprise the sum of household members' earnings from agricultural labor, casual labor, and salaried employment. They sum over individual members' locally earned monthly wages, and x times the remittances they send back as migrant workers. We ask the total annual remittance sent back and divide by twelve to get the monthly value. We report wage earnings assuming migrants remit 100% (Column 5). As an alternative we assume that they make the average amount they say they make in a typical month (Column 6), ignoring the fact that this combines months where they are in the village and months when they are not.

A consistent pattern emerges, robust across assumptions. Monthly wage income of treated households (including remittances) is at first no higher than that of the control group at 18 months or 3 years. By year 7, however, it grows to \$76-89 ($p < 0.01$), which is the same order of magnitude as non-farm micro-enterprise income. The magnitude of these gains remains high also in year 10.

[9]Productive assets include livestock, bicycle, sewing machines and such.

Column 7 shows that about a third of the effect over the long-run (year 10) is driven by remittances sent back by migrant workers from treated households. The finding of diversifying into higher-paying wage employment is distinct from Bandiera et al. (2017), who find in Bangladesh that the TUP program enables households to transition away from low-wage casual employment in the village to higher earning livestock activities. Similarly, Crépon et al. (2015) find that microcredit spurs substitution away from casual wage employment and into self-employment. One possible explanation is that in our context wage employment, especially among migrants, pays more than self-employment while casual wage employment in Bangladesh or Morocco does not. Indeed, while they still working as casual laborers (we see very few of them earning money from business or from salaried employment), the average migrant has twelve times the earnings of a non-migrant earning household member typically engaged in self-employment activities. Finally, Column 8 confirms that income increases among treated households are reflected in their own assessment of their economic situation: on a scale of 1-10, they rank themselves 1.6 (year 7) and 0.65 (year 10) points higher than the control group on economic satisfaction.

Taken together, earnings patterns reflect a changing composition of economic activities for the treated group. The program at first enables them to increase their incomes through the transferred assets. Over the long-run treated households are able to translate these early gains into greater income from more lucrative opportunities for micro-business and, especially, wage employment.

2.3.2 Migration

As we saw, accounting for migration is important for the magnitude of treatment effects; absent this, the program's effect on wage income is underestimated by 30-50% (Columns 5-6, Table 3). Similarly, not accounting for migration underestimates treatment effects on per capita consumption by 10-30% (Columns 1-2, Table 2). Column 1 of Table 2 estimates the treatment effect on consumption excluding migrant members, while Column 2 assumes migrants consume the household average. The contribution of migrant workers to the treatment effect on consumption is thus likely an underestimate since migrants are traveling away from the village and probably consume more than those left behind.

Given its importance, we explore treatment effects on the nature of migration and migrant characteristics in Table 4. Columns 1 and 2 show that the TUP does not have a statistically significant effect on the share of households with migrants and the number of migrant workers. However, those who do migrate from treated households migrate for 25 days longer on average by year 10, which is 20% higher than the control group average (Column 3). They are also less likely to

migrate to Kolkata (14% points, Column 4) but no less likely to migrate to an urban area (Column 5), suggesting they travel farther away. While Kolkata is the largest city in West Bengal, Delhi is the most prominent destination for out-of-state migrants and among the two biggest economic powerhouses of India (along with Mumbai) (eci (2018)).

Migrating for longer and going to urban centers farther away than Kolkata translates into higher earnings for these migrant workers, as already indicated by higher remittances in Table 3.

Finally, we explore whether these earnings differences might be explained by the productivity of migrant workers or by what they do at their destinations. The evidence suggests that these differences in productivity are not driven by what migrants do as coded in our data: treated household migrants are no more likely to be working in business activities or formal work (Column 7). However even if they do the same thing, they do it in different locations as we saw, and this means that the average earnings of those who migrate in treatment households is higher than that of those in control households–they earn on average $89 more in a typical month in year 7, and $51 in year 10 (Column 6).

2.3.3 Treatment effects against the backdrop of macroeconomic changes

The 10 years of the study correspond with rapid growth in wages, income, and consumption in this context. This is best seen through the large improvements among control group households over this time period: by year 10 these households consume about twice as much as their baseline selves, and have higher food security, with 70% reporting having enough food for every household member compared with 10% at baseline (Figure 1 & Table 2). They also earn over 3 times as much at year 10 as their historical selves at 18 months following asset transfer (Figure 1 & Table 2). This appears predominantly driven by opportunities for migration and wage employment arising naturally over the course of the study. The former rises from 40 to 120 days on average (Table 4), and the latter by 3.7 times between month 18 and year 10 (Columns 5-6, Table 3).

Even so, treated households maintain higher income (and, consequently, consumption and health) compared with the control even 10 years after the TUP program. Young members of these households appear better able to take advantage of available opportunities. This is in contrast to Blattman et al. (2020), who find in the context of a cash transfer program for youth in Uganda that the comparison group is completely able to catch up with the treated group due to earnings opportunities generated outside the intervention. In contrast, our findings suggest that the multi-faceted TUP program might be a complement to macroeconomic changes inducing poverty alleviation rather than a substitute.

3 Conclusion

This study finds that the Targeting the Ultra Poor big push intervention has a positive impact on the wellbeing of the poorest households over the long-run, even 10 years after asset transfer. It improves their consumption, income, and health at a growing rate for the first seven years, and appears to durably lift them out of extreme poverty. The fact that the treatment effect on consumption and income grows until year 7 and then stays high is consistent with the alleviation of a poverty trap: households receiving the asset transfer and accompanying consumption and savings support are able to sustain and improve investments, earnings, consumption, and their health over time. Just as in common models of poverty traps, receiving the program enables households to diversify their sources of income. Initially higher earnings due to the asset enable investing in non-farm micro-businesses and pursuing opportunities for wage employment, both locally and in cities further away. TUP households take greater advantage of opportunities for income gains, such as migration, that arise naturally in the course of time, migrating further away, for longer, and earning more than other households. Of course, despite these gains, by year 10, treatment household have barely escaped poverty (their average daily consumption per capita rose from 1.35 dollars at baseline to 3.53 dollars at PPP, just above the World Bank moderate poverty line). Meanwhile, while control members are still poor, this is less true than when the program started. They may eventually catch up. Still, regardless of whether they have permanently escaped a poverty trap, at least in the Indian context, the TUP, for a one time intervention, had a remarkably durable impact.

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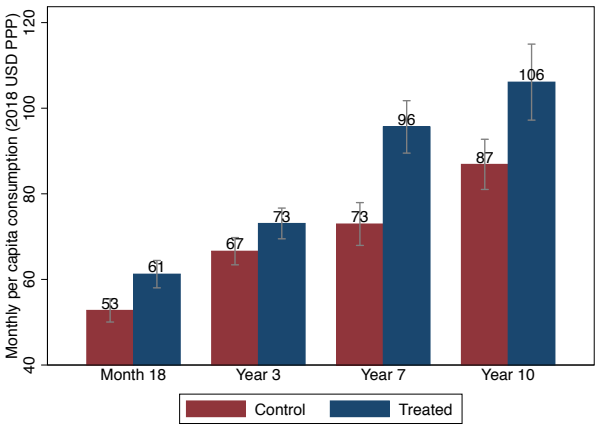
Table 1: Effect on household and adult outcomes

	Asset Index	Per capita Consumption	Food Security Index	Income and Revenues	Financial Inclusion Index	Physical Health Index	Mental Health Index	Productive time use
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				A: Endline 1 (18 months)				
Treatment	0.217	0.311	0.184	0.145	-0.004	0.061	0.115	0.285
	(0.111)	(0.076)	(0.048)	(0.075)	(0.042)	(0.028)	(0.029)	(0.049)
q-value	0.041	0.001	0.001	0.041	0.262	0.028	0.001	0.001
Control Mean	-0.20	0.35	0.35	0.00	0.14	0.12	0.32	0.23
Baseline Mean	-0.00	-0.00	-0.00		-0.00	-0.00	-0.00	-0.00
Observations	679	813	812	814	812	1,504	1,502	1,504
				B: Endline 2 (3 years)				
Treatment	0.389	0.292	0.251	0.172	0.192	0.027	0.012	0.102
	(0.103)	(0.079)	(0.059)	(0.071)	(0.062)	(0.027)	(0.037)	(0.044)
q-value	0.001	0.001	0.001	0.015	0.003	0.160	0.334	0.018
Control Mean	-0.25	0.85	0.94	-0.00	0.30	0.21	0.75	0.28
Baseline Mean	-0.00	-0.00	-0.00		-0.00	-0.00	-0.00	-0.00
Observations	875	875	875	875	875	1,757	1,757	1,756
				C: Endline 3 (7 years)				
Treatment	0.814	0.717	0.431	0.334	0.181	0.130	0.249	0.165
	(0.132)	(0.125)	(0.062)	(0.070)	(0.135)	(0.031)	(0.042)	(0.044)
q-value	0.001	0.001	0.001	0.001	0.047	0.001	0.001	0.001
Control Mean	-0.46	1.09	1.09	0.00	0.67	0.57	1.09	-0.04
Baseline Mean	-0.00	-0.00	-0.00		-0.00	-0.00	-0.00	-0.00
Observations	807	867	867	869	867	1,906	1,900	1,915
				D: Endline 4 (10 years)				
Treatment	0.346	0.579	0.127	0.264	0.121	0.187	0.203	0.148
	(0.121)	(0.175)	(0.063)	(0.080)	(0.152)	(0.040)	(0.044)	(0.052)
q-value	0.005	0.002	0.020	0.002	0.105	0.001	0.001	0.005
Control Mean	-0.26	1.61	1.21	0.00	1.08	0.12	0.76	-0.02
Baseline Mean	-0.00	-0.00	-0.00		-0.00	-0.00	-0.00	-0.00
Observations	885	880	885	885	885	1,229	1,229	1,229

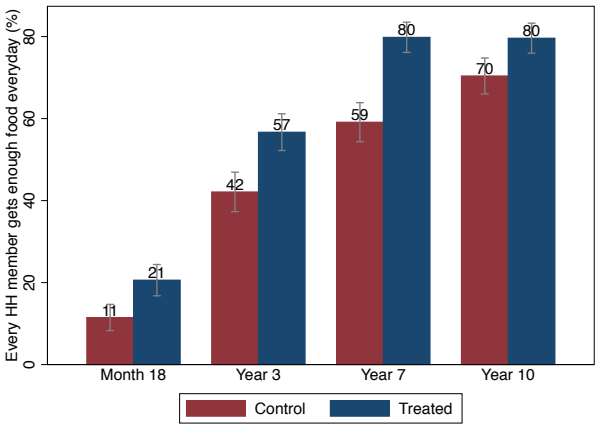
Notes: Robust standard errors are shown in parentheses. They are clustered by household for adult outcomes. The components of indices are described in detail in section 3.1. Columns 1-5 refer to household level outcomes and 6-8 refer to adult-level outcomes. The asset index is constructed by first performing principal component analysis on the constituent components, and then creating a z-score with respect to the baseline value of the index (i.e., subtracting the baseline mean of the index and dividing by its baseline standard deviation). The per capita consumption, food security, financial inclusion, physical health, mental health, productive time, and political involvement indices are constructed by first constructing component-wise z-scores (i.e., subtracting the baseline mean and dividing by the baseline standard deviation), averaging the z-scores, and then standardizing by the baseline value of the index (i.e., subtracting the baseline mean of the index and dividing by its baseline standard deviation). Thus, all coefficients are reported in units of baseline standard deviation of the index. The income and revenues index does the analog by standardizing to the control group, i.e. coefficients are reported in units of endline standard deviations of the control group (since not all components were measured at baseline). Time use is reported in minutes. To correct for multiple hypothesis testing we calculate q-values per the Benjamini-Hochberg step-up method; reported q-values indicate the smallest false discovery rate at which the null hypothesis of zero effect is rejected.The political involvement index is not reported here due to column restrictions, but is included in the appendix. It is included for calculating adjusted q-values. All specifications include baseline controls, and hamlet-level fixed effects.

Figure 1: **Consumption and income over time**

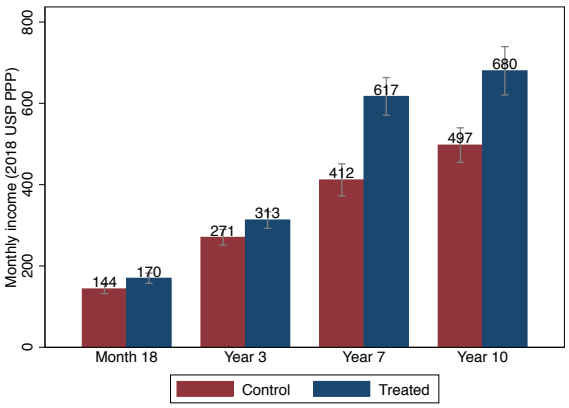
(a) Per-capita consumption (2018 USD PPP)



(b) Every household member gets enough to eat everyday (%)



(c) Income (2018 USD PPP)



Notes: Monthly per capita consumption and monthly household income are reported in 2018 USD corrected for purchasing power parity. Food security is reported in terms of the share of households reporting that every household member gets enough food everyday. Per capita consumption is constructed using a detailed consumption module asking about households' food, non-food and durable purchases. Income sums over income earned by each individual member from various activities in a typical month, as reported in the household roster, and remittances received by the household. 95% confidence intervals are reported.

Table 2: Monthly Consumption and Food Security

	Per capita consumption, excl. migrant	Per capita consumption, hh avg. c for migrant	Per capita food consumption	Per capita non-food consumption	Per capita durable goods consumption	Everyone in HH gets enough food everyday	No one in the HH went a whole day without food	No children skipped meals
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				A: Endline 1 (18 months)				
Treatment	7.554	8.196	5.362	2.133	-0.356	0.074	0.128	0.032
	(1.837)	(2.255)	(1.195)	(1.082)	(0.374)	(0.025)	(0.030)	(0.034)
Control Mean	49.25	52.77	33.28	15.97	2.28	0.11	0.68	0.75
Baseline Mean	40.74		26.76	14.00	0.97	0.11	0.28	0.51
Observations	813	813	813	813	813	812	811	613
				B: Endline 2 (3 years)				
Treatment	7.080	7.429	3.021	4.010	0.881	0.141	0.038	0.085
	(1.913)	(2.441)	(1.151)	(1.139)	(0.385)	(0.034)	(0.023)	(0.025)
Control Mean	61.37	66.59	37.54	23.83	1.93	0.42	0.85	0.86
Baseline Mean	40.74		26.76	14.00	0.97	0.11	0.28	0.51
Observations	875	875	875	875	875	875	875	636
				C: Endline 3 (7 years)				
Treatment	17.385	21.252	9.778	7.542	2.471	0.205	0.095	0.045
	(3.030)	(3.916)	(1.731)	(1.681)	(0.507)	(0.032)	(0.022)	(0.026)
Control Mean	67.15	72.95	37.76	29.40	2.27	0.59	0.83	0.87
Baseline Mean	40.74		26.76	14.00	0.97	0.11	0.28	0.51
Observations	867	867	867	867	867	867	867	546
				D: Endline 4 (10 years)				
Treatment	14.037	18.454	7.354	6.700	4.204	0.075	0.029	-0.031
	(4.242)	(5.390)	(1.595)	(3.438)	(1.845)	(0.029)	(0.026)	(0.036)
Control Mean	79.88	86.88	39.09	40.85	5.75	0.70	0.78	0.84
Baseline Mean	40.74		26.76	14.00	0.97	0.11	0.28	0.51
Observations	880	880	880	880	880	885	884	451

Notes: Robust standard errors are shown in parentheses. Columns 1-5 report monthly consumption. Column 1 does not include migrant workers in the calculation. Column 2 assumes migrant workers consume the household average. Columns 3-5 do not include migrant workers. All values are in 2018 USD adjusted for purchasing power parity. All specifications include baseline controls, and hamlet-level fixed effects.

Table 3: Monthly Income and Revenue

	Livestock revenue	Nonfarm microen-terprise income	Self-employment (typ month)	Productive Asset Index	Wages: migrants remit 100% of wage	Wages: impute typical migrant earnings	Remittances	Self-Reported Economic Status (1-10)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				A: Endline 1 (18 months)				
Treatment	10.258	7.927	18.665	0.444	3.902	5.083	0.000	0.204
	(2.342)	(4.538)	(5.796)	(0.086)	(6.685)	(8.485)	(.)	(0.071)
Control Mean	3.33	36.24	46.09	-0.23	96.06	106.45	0.00	2.77
Baseline Mean	0.00	13.24	16.30	-0.00			.	1.97
Observations	814	814	814	681	814	814	814	811
				B: Endline 2 (3 years)				
Treatment	7.683	25.116	31.057	0.571	6.112	4.628	3.696	0.297
	(2.652)	(6.257)	(6.897)	(0.072)	(11.663)	(13.674)	(2.369)	(0.080)
Control Mean	7.99	49.47	60.50	-0.30	201.07	217.89	12.88	3.36
Baseline Mean	0.00	13.24	16.30	-0.00			.	1.97
Observations	875	875	875	875	875	875	875	875
				C: Endline 3 (7 years)				
Treatment	27.262	67.592	108.360	0.795	75.675	89.024	8.871	1.575
	(5.158)	(14.264)	(15.149)	(0.083)	(22.299)	(25.730)	(6.455)	(0.141)
Control Mean	9.70	90.49	103.15	-0.40	279.06	301.31	34.87	4.73
Baseline Mean	0.00	13.24	16.30	-0.00			.	1.97
Observations	869	869	869	807	869	869	869	867
				D: Endline 4 (10 years)				
Treatment	16.710	36.816	93.872	0.197	38.238	52.291	19.057	0.642
	(8.756)	(14.259)	(20.803)	(0.105)	(24.526)	(30.057)	(7.440)	(0.129)
Control Mean	17.80	98.49	144.27	-0.10	325.04	354.93	36.81	4.03
Baseline Mean	0.00	13.24	16.30	-0.00			.	1.97
Observations	885	885	885	885	885	885	885	885

Notes: Robust standard errors are shown in parentheses. All values are in 2018 USD PPP. Column 1 reports revenue from the sale of livestock or livestock products in an avg. month. Column 2 reports the sum of household members' earnings from microenterprise in a typical month, as reported in the household roster. Column 3 reports self-employment income from a typical month, calculated as the sum of income earned by each individual member from various self-employment activities, as reported in the household roster. Column 4 reports an index of productive assets, constructed by first performing principal component analysis on the constituent components, and then creating a z-score with respect to the baseline value of the index (i.e., subtracting the baseline mean of the index and dividing by its baseline standard deviation). The components of this index are described in detail in section 3.1 Columns 5-6 sum over income earned by each individual member from various activities in a typical month, as reported in the household roster. Wages comprise the sum of household members' earnings from agricultural labor, casual labor, and salaried employment. We sum over locally earned wage income as reported in the household roster, and x times the remittances sent back as a migrant worker. We vary x to reflect different assumptions about the share of a migrant's earnings that are remitted back to a household: 100% remitted (Column 5), or earning as much as they would in the village over a typical month (Column 6). Column 7 reports the monthly avg. of remittances sent back by migrant members of a household. We do not collect data on remittances at the 18 month survey. Column 8 reports a measure of economic satisfaction on a scale of 1-10. All specifications include baseline controls, and hamlet-level fixed effects.

Table 4: Migration

	Migration	No. of migrants	Duration	Migrates to Kolkata	Migrates to urban area	Earnings of migrant worker, typical month	Working in business or formal work
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				A: Endline 1 (18 months)			
Treatment	-0.016	0.000	11.767	-0.004	0.002	26.326	0.042
	(0.034)	(0.042)	(6.798)	(0.066)	(0.055)	(19.011)	(0.046)
Control Mean	0.35	0.39	37.08	0.36	0.83	139.89	0.10
Observations	812	812	285	285	285	285	285
				B: Endline 2 (3 years)			
Treatment	0.028	0.031	14.776	-0.095	-0.039	30.574	0.032
	(0.032)	(0.041)	(15.332)	(0.069)	(0.059)	(29.920)	(0.042)
Control Mean	0.29	0.33	125.09	0.38	0.83	231.18	0.15
Observations	838	838	256	256	256	256	256
				C: Endline 3 (7 years)			
Treatment	0.042	0.042	-11.078	0.067	0.012	89.788	0.017
	(0.034)	(0.047)	(12.466)	(0.058)	(0.047)	(33.619)	(0.037)
Control Mean	0.37	0.46	123.26	0.30	0.78	361.21	0.11
Observations	842	842	332	332	332	332	332
				D: Endline 4 (10 years)			
Treatment	0.017	0.024	25.167	-0.138	0.033	51.238	-0.029
	(0.032)	(0.046)	(12.753)	(0.059)	(0.053)	(31.240)	(0.042)
Control Mean	0.34	0.44	124.24	0.35	0.80	362.12	0.13
Observations	859	859	307	308	308	308	308

Notes: Robust standard errors are shown in parentheses. Columns 3-7 restrict the sample to households with a migrant worker and average outcomes over migrant workers in the household. Column 6 is reported in 2018 USD PPP. All specifications include baseline controls, and hamlet-level fixed effects.