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# Improving livelihood using livestock: Impact evaluation of 'targeting ultra-poor' programme in Afghanistan

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October, 2013

## Abstract

There is hardly any argument over the necessity of targeting the ultra-poor in development interventions. However, identifying and scaling up effective strategies to improve livelihoods remains a challenge. A few recent pilots have found an approach that combines transfer of productive assets, and intensive supports and supervision with a set of coordinated interventions following a time-bound exit plan successful. This paper evaluates one such pilot, known as 'ultra-poor graduation pilot', implemented by BRAC in Afghanistan. We find that participating households have successfully utilised the livestock received from the programme to increase employment and income. This income growth has also allowed them to improve dietary diversity through consumption of more home-grown food items. Beneficiaries also increased their livestock holdings beyond what they received from the programme. We find relatively stronger impacts on investments compared to consumption indicating a shift towards longer-term planning among the beneficiaries. Given its effectiveness, this model should be strongly considered for scale-up in Afghanistan. We also suggest a couple of potential areas that need to be considered for improving the effectiveness of this model even further.

**Keywords:** Afghanistan, livestock transfer, ultra-poor;

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## 1. Introduction

Despite the recent progresses, improving livelihoods of the ultra-poor continues to be a major challenge for many developing countries. With very few physical and financial assets, a large majority of the ultra-poor rely either on manual labour or on subsistence farming for their livelihoods. With malnutrition and ill-health, they are highly vulnerable to frequent health and other shocks. Surviving on less than required calorie intake, they cannot smooth consumption to withstand such shocks and get caught into asset poverty traps (Carter and Lybbert, 2013). Consequently, we observe a big overlap between extreme and chronic poverty (Harper and Braunholtz-Speight, 2008).

In this paper, we evaluate a livelihood development programme in Afghanistan that intends to address multiple dimensions of disadvantages faced by the ultra-poor simultaneously with a set of coordinated interventions. Initiated in Bangladesh, this targeting ultra-poor (TUP) programme is being piloted in various settings including Afghanistan by BRAC.<sup>1</sup> Encouraged by the initial successes, the core model of TUP has been adopted and evaluated in several countries around the world.<sup>2</sup> The unique features of this approach are rigorous targeting, intensive supports and supervision ('hand holding'), and a time-bound exit strategy.

A number of impact evaluations have been conducted to assess the effectiveness of this model. Bandiera et al (2012) evaluate TUP in Bangladesh by randomizing interventions across BRAC branch offices in 2007. By 2011, two years after the end of the interventions, the evaluation observed transformation in the economic lives of the ultra-poor participating in the programme. The 'graduated ultra-poor' spend 92% more hours in self-employment activities and 26% fewer hours in insecure seasonal wage employments. This shift is associated with a 38% increase in their income. Evaluations of the earlier phase of this programme, using various quasi-experimental methods, have shown impacts on income ranging between 36% and 53% (e.g. Rabbani et al, 2006; Emran et al 2012). Banerjee et al (2011) evaluate the programme of Bandhan, an NGO operating in West Bengal, to find a 28% increase in labour supply for all their selected ultra-poor households even though only 52% of them actually participated. This programme increased average income by 21% and per capita expenditure by 17%. The evaluation by Morduch et al (2012) in Andhra Pradesh of India finds similar effects on occupational transformation. Despite greater self-employment opportunities created by this programme, their evaluation does not find any effect on income due to a large expansion of National Employment Guarantee Scheme that coincided with their interventions affecting their control group. Comparing a simpler cash and in-kind transfers, Fafchamps et al (2011) find that in-kind transfers are more effective in achieving impact on income of their women beneficiaries but there was no impact on per capital expenditure.

With the growing body of evidence of its effectiveness in relatively stable economies, testing this model in more in more challenging contexts is becoming critical. Using two separate comparison groups in a quasi-experimental evaluation, this paper finds that the programme has made substantial increases in employment of the ultra-poor by creating opportunities of engaging in livestock husbandry. Average time spent on income generating activities by adult female members,

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<sup>1</sup> BRAC is an NGO operating in various development sectors. For more information, visit [www.brac.net](http://www.brac.net). The TUP by BRAC in Afghanistan is known as 'ultra-poor graduation pilot'.

<sup>2</sup> CGAP and Ford Foundation are promoting the TUP model as their graduation programme. Starting in 2008, this programme has initiated 10 pilots in 8 countries by 2013. For details, see <http://graduation.cgap.org/>

who are the primary target group for the interventions, in beneficiary group is 2.4 to 3 times higher than the comparison groups. There is also 13%-19% increase in work hours by adult male members. One of the reasons for the stark difference between male and female participants on employment is the very low level of engagement of females in economic activities in the absence of the programme. Impact on income is in the range of 60%-70% while there are also substantial impacts on asset ownership beyond livestock. In terms of welfare, this increase in income is associated with increased dietary diversity. Although the impacts on food expenditure are inconclusive, there are large impacts on recurrent non-food expenditures and cash savings. There is, however, limited evidence of any impact on school enrolment, which is observed in other impact evaluations of TUP.

With this introduction, the next section gives a brief description of the interventions and beneficiary selection process. Section 3 describes the methodology used for this impact evaluation. Section 4 presents impact findings on employment, income, assets, welfare and investment in education. Section 5 discusses determinants of income among the beneficiary households to assess the correlation between size of asset transfer and income. Section 6 conducts a simple robustness check by controlling for several baseline characteristics. Section 7 concludes the paper.

## **2. Programme Description**

With financial supports from MAIL/IFAD, BRAC Afghanistan initiated a two-year pilot of the TUP programme in 2011 in three districts of Bamyan province. During this pilot phase, the programme reached 400 ultra-poor households. Bamyan is one of the poorest provinces in Afghanistan with a poverty rate of 56% compared to the national average of 36% (World Bank, 2010). This is primarily an agrarian economy with 79% of the population employed in the agriculture sector. With a quarter of its population engaged in unskilled day labour, and very limited off-farm economic activity, the wage rate is restricted to extremely low levels. Therefore, livestock rearing is one of the few livelihood options available for promoting among the ultra-poor.

### **2.1 Intervention Package**

The TUP programme is a package of interventions including basic training on livestock rearing, transfers of livestock, inputs for livestock (subsidy for vaccination and feed), a subsistence allowance, and primary healthcare for all the household members.<sup>3</sup> The interventions start with a 3-day classroom training (also known as orientation), which is quickly followed by a transfer of the assets. In this pilot project, 250 households received 3 sheep each, 100 households received a cow and a sheep, and 48 households received two cows each. Only two households were trained in commercial vegetable cultivation. Average value of the livestock transferred was about Average value of the livestock transferred was about Afn 21,000 (USD 488 as per the exchange rate at the time of transfer) per beneficiary household. Consumption allowance of Afn 27,500 was disbursed monthly for 18 months.<sup>4</sup> The total value of all cash and in-kind transfers per household was Afn 53,000 (1,232 dollars) over one and a half years. This is a substantial amount of transfer, and equivalent to the food poverty line for a household per annum. Official food poverty line in

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<sup>3</sup> Matin et al (2008) have a detail discussion of the components and the arguments behind the package.

<sup>4</sup> These costs include the first-round of support to all the 400 beneficiaries. There were also 39 household receiving a second-round support.

Afghanistan was Afn 690 per capita per month in 2010, which translates to Afn 52,164 per household<sup>5</sup> per year (CSO and World Bank, undated).

In addition to these direct transfers, each household received scheduled visit by BRAC staffs that provided supervision and technical supports. This 'hand-holding' element is considered to be one of the key factors for the successes of this approach. Three different cadres of staff conducted these visits to provide direct supports and guidance on livelihood, health awareness and social development trainings. The beneficiaries from each village also gathered weekly to conduct group meetings. Two rounds of refresher trainings were conducted (in six month intervals) on their enterprise management.

Finally, poverty reduction committees (PRCs) were formed in each village comprising of the elite members from the community to crowd-in greater social supports. In addition to the village elites (such as teachers, village/*sura* leader, imam), one BRAC staff and two TUP beneficiaries joined each PRC as members. These PRCs are mandated to support all the ultra-poor households in their respective villages including the TUP beneficiaries. Their typical activities include collecting winter clothes, ensuring schooling for kids, and mobilizing resources for helping the ultra-poor during health and other emergencies.

## **2.2 Beneficiary Selection**

Because of the relatively high costs of the intervention package, rigorous targeting is one of the key features of TUP. It combines geographical, participatory and proxy-means targeting to identify the ultra-poor. In geographical targeting, relatively poorer villages in the operating area of a branch are selected based on available official statistics and operational experience of other BRAC programmes. The second step of beneficiary selection involves a participatory rural appraisal (PRA) conducted over two days<sup>6</sup>. On the first day, the staffs move around the village to get a broad perspective of the households' locations, and to invite community members for the participatory exercise to a specified meeting place in the village. In the meeting on the following day, the participants list all the households in their community by doing a village mapping. A participatory wealth ranking is conducted of all the households identified through the village mapping. Usually the households are divided into four or five wealth groups, and the bottom one or two groups are identified as the 'community defined ultra-poor'.

The final stage of targeting is done through a survey conducted on all the ultra-poor identified by the communities. A set of inclusion and exclusion criteria are used in this selection. The inclusion criteria are mostly around the livelihood of the households, female headship, their assets and school going status of their children. The exclusion criteria, both of which are binding, are receiving supports from other social protection programmes and availability of at least one woman who can manage the enterprise. Households are primarily selected by the branch level staffs based on this survey information followed by the final selection done by the area/programme manager.

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<sup>5</sup> We assume average household size of 6.3 in 2011 from the World Bank database.

<sup>6</sup> Rahman and Ali (2004) gives a thorough description of the targeting processes in Bangladesh, which has been adopted in Afghanistan.

### 3. Evaluation Method

For this evaluation, two separate 'comparison groups' were used. The first group consisted of non-participants from the same villages where the programme was implemented. These were households identified as ultra-poor by the community but not finally selected for the interventions (we call them 'not-selected ultra-poor', NSUP). The second comparison group was selected from villages in the neighbourhood of the intervention villages. Both of these comparison groups have been used in this impact evaluation in light of their distinct methodological challenges and advantages. These are discussed later in this section.

Programme staff conducted PRAs and beneficiary selection in each village in order to reach a target of 400 beneficiaries. The staff were instructed by the programme to follow the same procedures of beneficiary selection in all the villages, including those in the neighbouring village comparison group.

A baseline survey was conducted during May-June of 2011 before the interventions started. The follow-up survey was done in May-June, 2013 after the interventions ended on the same households from the baseline. The number of villages covered by this panel survey includes 33 intervention villages and 9 comparison villages.<sup>7</sup> From the 400 beneficiaries, 385 households were surveyed in the baseline and 357 of them were also followed-up in the second survey. For comparison groups, there are 249 NSUP households and 195 finally selected households from comparison villages in this panel survey.<sup>8</sup>

There are two key concerns in using NSUP as the comparison group. Firstly, according to the beneficiary selection process, these households are expected to be better off than the beneficiaries. However, if the beneficiaries are found to have a better status than NSUP (instead of only narrowing the gaps) in the follow-up, such initial difference may not be such a major concern to understand broader effectiveness. From the data, we observe such a trend of beneficiaries overtaking the comparison groups in many of the outcome indicators. Despite such trends, it is plausible that the NSUP are on a different poverty trajectory compared to the beneficiaries. The second concern relates to possible spillovers of the interventions affecting the NSUP. Bandiera et al (2012) find evidence of such spillover effects through increased wage rates in Bangladesh. Replication of such effect may result in biasing impact estimates downwards.

The finally selected households from comparison villages limits both these concerns since they are selected in similar fashion, and spillover effects are expected to be smaller between villages than within a village. However, this second comparison group requires a strong assumption of comparability of the villages. Since the geographical targeting was used to prioritize the intervention villages, the comparison villages are likely to have better economic opportunities.

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<sup>7</sup> These villages are located in all three districts Bamyan (6 intervention and 3 comparison), Panjab (13 intervention and 3 comparison) and Yakawlang (14 intervention and 3 control) included in the pilot.

<sup>8</sup> The baseline survey also included households from other wealth ranks in order to be able to measure potential spillover effects. However, the follow-up survey did not include them due to resource constraints.

Table 1. Baseline characteristics of the participants and comparison groups

	Average for beneficiaries	Difference between participants and		Obs	R-sq
		Not-selected ultra-poor	Comparison village		
Female headed household [1=Yes; 0=No]	0.34 (0.025)***	-0.07 (0.039)*	-0.21 (0.036)***	749	0.034
Age of household head (in years)	40.06 (0.743)	-0.54 (1.30)	1.18 (1.366)	747	0.002
Household head can read and write [1=Yes; 0=No]	0.24 (0.023)***	0.06 (0.038)	-0.04 (0.038)	749	0.007
Number of IGAs household head was engaged in last year	0.55 (0.027)***	0.09 (0.047)**	0.19 (0.044)***	749	0.020
Household size	5.65 (0.108)***	-0.64 (0.188)***	-0.06 (0.201)	749	0.017
Household engaged in livestock rearing [1=Yes; 0=No]	0.04 (0.011)***	0.01 (0.018)	-0.03 (0.013)**	789	0.007
Whether own any sheep [1=Yes; 0=No]	0.02 (0.008)***	0.02 (0.015)	-0.01 (0.011)	789	0.005
Whether own any cow [1=Yes; 0=No]	0.03 (0.009)***	-0.02 (0.010)*	-0.03 (0.009)***	789	0.010
Whether own any goat [1=Yes; 0=No]	0.01 (0.006)**	-0.01 (0.007)	-0.01 (0.006)**	789	0.003
Whether own any chicken [1=Yes; 0=No]	0.00 (0.003)	0.01 (0.006)	-0.00 (0.003)	789	0.002
Per capita annual income (in Afn)	4,442.05 (298.622)***	2,876.89 (622.357)***	948.68 (530.219)*	749	0.035
Own the house living in [1=Yes; 0=No]	0.52 (0.026)***	0.05 (0.041)	-0.04 (0.046)	789	0.004
Material for house wall is mud [1=Yes; 0=No]	0.57 (0.026)***	-0.01 (0.041)	-0.07 (0.045)	789	0.003
Floor material is earth [1=Yes; 0=No]	0.78 (0.022)***	0.01 (0.034)	-0.11 (0.041)***	789	0.012
Have sanitary latrine [1=Yes; 0=No]	0.57 (0.026)***	0.11 (0.040)***	0.08 (0.044)*	789	0.011
Asset score [Scale -1 to 5]	-0.03 (0.052)	0.15 (0.084)*	-0.09 (0.088)	789	0.008
Ate meat in the last 3 days [1=Yes; 0=No]	0.04 (0.010)***	0.05 (0.021)**	0.05 (0.023)**	789	0.011
Ate fish in the last 3 days [1=Yes; 0=No]	0.00 (0.003)	0.00 (0.005)	0.00 (0.006)	789	0.000
Ate egg in the last 3 days [1=Yes; 0=No]	0.06 (0.012)***	0.02 (0.021)	-0.04 (0.015)**	789	0.010
Ate milk/milk products in the last 3 days [1=Yes; 0=No]	0.04 (0.011)***	0.04 (0.020)*	-0.02 (0.016)	789	0.008
Per capita daily food consumption (Afn)	25.44 (1.313)***	9.29 (4.556)**	-3.10 (2.029)	749	0.014

Note: Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 1 presents the descriptive statistics of these three groups of respondents from the baseline survey. The first column shows the average for the beneficiaries. The second and third columns show the differences of NSUP and comparison villages respectively from the beneficiaries. It is clear from this table that the beneficiaries were in a significantly disadvantaged situation compared to

both the comparison groups. While 34% of the beneficiary households were headed by a female in the baseline, this ratio was 27% for the NSUP and only 13% for the households from comparison villages.

Similar significant differences for the beneficiaries are observed in income generating activity (IGA) of the household heads, in housing status, and diversity in food consumption. As expected, the households from comparison villages are more comparable to the beneficiaries than the NSUP in most of the key outcome indicators (viz. per capita income and food consumption, and asset score) except engagement of household head in IGA. Although a very small fraction of the households were involved in livestock rearing (only 4%) or owned any livestock (between 0 and 3%), the ratio was significantly smaller in comparison villages. Besides these differences in the baseline, the descriptives give a good depiction of the ultra-poor in Bamyan. Average daily food consumption of the beneficiary households was Afn 25.44 per capita (60 cents in exchange rate), which is very close to the national food poverty line of Afn 23 per capita per day in 2010. They also had very poor housing conditions and a very low level of dietary diversity.

While the overall differences between the three groups demonstrate targeting effectiveness of the programme, they pose strong challenges in using difference-in-difference as the impact evaluation method. With these initial differences, such an approach for impact evaluation is likely to over-estimate the impacts. To address this concern, the impact estimates primarily relies on the follow-up data. Therefore, the estimates rely on the participants being better-off than the comparison groups in the follow-up for measuring any positive impact, and hence the findings can be interpreted as conservative estimates of the true impact of the programme.

#### **4. Impact of the Ultra-Poor Programme**

Impact estimates presented in this section use the follow-up data for simple mean comparisons of the beneficiaries with the NSUP and comparison villages. A robustness check has been done in Section 6 by controlling for baseline characteristics.

##### **4.1 Employment and Income**

The primary objective of the TUP programme is to create greater and more rewarding economic opportunities for the ultra-poor. Table 2 presents the findings on employment and income of the beneficiaries where the averages for the three groups are presented (column 1 – 3) along with the estimated impact compared to the two comparison groups (column 4 and 5). The impacts are quite clear and conclusive. Impact on households' engagement in livestock husbandry, the only livelihood option directly supported during this pilot, is very clear. With 97% of the beneficiaries being engaged in livestock rearing, the estimated impacts are 75 and 82 percentage points compared to the NSUP and comparison villages respectively. Although agriculture was not directly supported by the programme, the significant impact on engagement in agriculture indicates that the beneficiaries are able to further diversify their income sources through programme supports. This suggests a faster growth trajectory for the beneficiaries. Although the estimates are insignificant, there is an indication that some households have shifted away from non-farm businesses.



Through the economic opportunities in livestock and agriculture, the programme has increased employment for these households. Average hours spent by the household heads in IGAs is substantially higher among the beneficiaries than the other two groups.<sup>9</sup> Similar effects are observed on all the male and female adult members. Average impact on employment of adult male members is about 250 hours (which is equivalent to over a months' of full-time employment) when compared to the NSUP, showing a 19% increase. This estimate is 13% taking comparison village as the benchmark. Impacts on employment of adult female members are staggeringly sharper (240% to almost 300%). It was found that women's engagement in IGAs is the primary driver of these large impact figures, as women who previously did not engage in earning activities took them up. Despite this large change in employment, the average number of hours worked is 50% lower for adult female than male members in the beneficiary households.

Livestock transfer programmes often increase the demand for child labour among the beneficiary households. We also find significant impact on children being engaged in earning activities. However, the largest average impact of 55 hours (for male children compared to NSUP) equates to about 10 minutes of work per day. These are usually limited to simpler activities such as taking livestock for grazing or gathering food/water.

Table 2. impact on employment

	TUP [A]	Not selected ultra-poor [B]	Comparison village [C]	Impact estimates	
				[A-B]	[A-C]
Household involved in livestock husbandry	0.97	0.22	0.16	0.75***	0.82***
Household involved in agriculture	0.27	0.19	0.07	0.08**	0.20***
Household involved in non-farm business	0.29	0.35	0.32	-0.06	-0.03
Number of IGAs by head	1.23	0.82	0.77	0.41***	0.45***
Hours worked by HH head	1648.80	1140.72	1325.03	508.08***	323.77***
Hours worked by adult male members	1556.16	1306.43	1376.57	249.73**	179.58
Hours worked by adult female members	1021.25	301.20	258.19	720.04***	763.06***
Hours worked by male children	58.32	3.49	9.63	54.83***	48.69**
Hours worked by female children	31.78	1.59	10.58	30.19***	21.19

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

These changes in employment correspond with similar levels of impact on household income (Table 3). Impact on income earned by the household heads is between Afn 14,000 and 15,400 (which is 63% higher compared to NSUP and 71% compared to comparison villages). The beneficiary households have earned Afn 28,000 more than the NSUP, which shows an impact of 87%. Taking comparison villages as the benchmark, the programme has managed to double the income of beneficiary households. Estimates of the impact on per capita income are 74% and 80% relative to NSUP and the comparison group respectively. The magnitudes of impact in per income are smaller than total household income since the beneficiaries have larger households. Using log of income, to account of the distribution of income, we find similarly large sized impacts.

<sup>9</sup> Information on hours spent in earning activity was calculated by one year recall where the respondents reported number of months that each person has worked in different activities, and average number of days worked per month and average hours spent per working day.

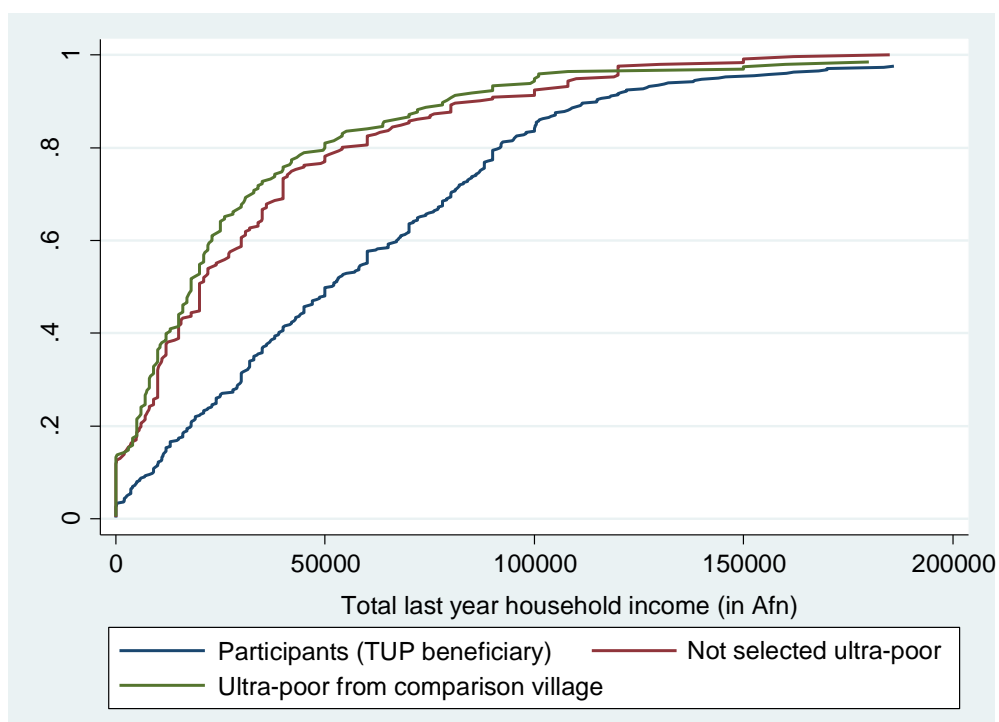
Table 3. Impact on income

	TUP [A]	Not selected ultra-poor [B]	Comparison village [C]	Impact estimates	
				[A-B]	[A-C]
Household head's income	37,111.9	22,820.6	21,707.0	14,291***	15,405***
Ln (household head's income)	9.1	7.4	7.4	1.68***	1.63***
Adult male members' income	35,462.3	25,765.4	20,939.7	9,697***	14,522***
Adult female members' income	24,318.2	6,492.3	9,384.0	17,826***	14,934***
Male children's income	766.9	177.4	261.5	589**	505.34*
Female children's income	524.3	127.0	105.1	397*	419*
Total HH last year income	61,927.5	33,531.9	31,418.6	28,396***	30,509***
Ln(Total HH last year income)	10.6	10.0	9.8	0.65***	0.78***
Per capita annual income	10,970.4	6,292.7	6,093.6	4,678***	4,877***
Ln(Per capita annual income)	8.7	7.4	7.2	1.25***	1.44***

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Another way of investigating whether a few very successful beneficiary households drive the impact on income is to look at the cumulative distribution functions (CDF) (Figure 1). If the impact estimates are skewed by a fraction of the households, the CDF curves for the groups will cross over at a higher level of income. As Figure 1 demonstrates, the impacts have been achieved through a broad-based increase in income of the beneficiaries. For example, if we consider Afn 5,000 as a poverty line, about 48% of the beneficiaries are categorized as poor compared to over 80% for the other two groups. According to the CDF of the three groups, poverty rate among the beneficiaries is lower than both the comparison groups irrespective of the income poverty line.

Figure 1. Cumulative distribution of household by income



## 4.2 Assets and Welfare

Since the programme directly targets employment and provides consumption supports during the intervention period, it is important to assess the extent to which the households have been able to strengthen their asset base and maintain consumption after the end of intervention period. Table 4 shows the impacts on physical and financial assets accumulated by households from their increased income. An important aspect to notice is that the average impact on ownership of sheep is over 6 although each household was provided with a maximum of 3 sheep. The beneficiaries have not only been able to maintain their assets but also double the livestock. They have also diversified their livestock by adding more goats and chickens, which were not part of the transfer package. Impact on other productive assets (that includes cultivable land, ploughs, shed for livestock, shop premises, rug weaving loom and carts) is over Afn 25,000. These are extremely high rate of growth in wealth given that an average household was provided with an asset worth Afn 21,000.

The beneficiaries have also increased their financial assets with substantial amount of savings. The average impact is over Afn 11,000 if all the observations are included in the mean comparison. However, there are a few outlier cases that are driving the averages very high. If we drop the top 5% of the observations, the average impact is around Afn 4,000. It is expected that with such cash savings, the beneficiaries are better able to cope with shocks without having to rely on distress sales of their assets.

Table 4. Impact on physical and financial assets

	TUP [A]	Not selected ultra-poor [B]	Comparison village [C]	Impact estimates	
				[A-B]	[A-C]
Number of sheep owned	6.88	0.61	0.65	6.27***	6.23***
Number of cows owned	0.92	0.19	0.03	0.73***	0.89***
Number of goats owned	0.98	0.13	0.15	0.85***	0.82***
Number of chickens owned	1.43	0.39	0.34	1.04***	1.09***
Other productive assets	37,552.86	11,782.14	11,477.44	25,771***	26,075***
Ln(productive asset)	6.73	2.32	2.28	4.42***	4.46***
Total cash savings	13,060.39	1,267.94	1,226.05	11,793***	11,834***
Ln (cash savings)	6.66	0.95	1.55	5.71***	5.11***
Cash savings <sup>a</sup>	4,346.88	278.08	542.08	4,069***	3,805***

p<0.01, \*\* p<0.05, \* p<0.1;

<sup>a</sup> This estimate dropped the top 5% observations who are predominantly the beneficiaries

One key element of the ‘hand-holding’ is working with the beneficiaries to make future plans. Changing their aspirations is often cited by the implementers as the most important challenge in successful implementation of TUP. The most common way of influencing aspiration adopted by the staff is ‘nudging’ the households to invest more in productive assets rather than consumption. For this reason, it is expected to have smaller magnitudes of impact on consumption indicators. As Table 5 shows, there is no significant impact on the quality of housing of the beneficiaries. This indicates that the households are working toward more sustainable livelihoods rather than meeting their immediate housing needs. The 11-percentage point increase in the use of a sanitary latrine is most likely due to the direct transfers. On average, the programme gave out cash or materials worth Afn 990 per beneficiary household for improving or installing sanitary latrines.

The beneficiaries, however, have increased their food consumption and recurrent non-food expenditures. The beneficiaries are 11-12 percentage points more likely to have eaten meat the last three days preceding the survey. Impact on egg consumption is 19-24 percentage points, and on milk (or milk product) consumption is 60-61 percentage points. Despite these impacts, there is significant room for increasing meat or egg consumption to achieve further improvements their dietary diversity. Corresponding to the improvements in dietary diversity, we find significant impact on per capita daily food consumption (20-31%) if the outlier cases are not considered. It is important to note here that food consumption estimates include imputed value for consumption items that were produced by the households themselves. In fact, much of the improvement in food consumption took place through increased consumption of self-produced food items. While the share of consumed food items that are home-grown is about 3% for the comparison groups, the main source for 18% of food consumption by the beneficiaries is own production. The most common home-grown food items are eggs, vegetables and milk. This clearly demonstrates the possibility of improving food security and dietary diversity through supporting agriculture and livestock in Afghanistan.

Table 5. Impact on housing and welfare

	TUP [A]	Not selected ultra-poor [B]	Comparison village [C]	Impact estimates	
				[A-B]	[A-C]
Own house	0.7	0.7	0.7	-0.01	0.00
House wall is made of mud	0.5	0.4	0.5	0.05	-0.02
House floor is earth	0.9	0.9	0.9	0.03	0.05*
Use sanitary latrine	0.9	0.7	0.7	0.11***	0.12***
Ate meat in last 3 days	0.2	0.1	0.1	0.12***	0.11***
Ate fish in last 3 days	0.0	0.0	0.0	-0.00	0.00
Ate egg in last 3 days	0.3	0.1	0.1	0.24***	0.19***
Ate milk (products) in last 3 days	0.7	0.1	0.1	0.60***	0.61***
Food consumed in 3 days (in Afn)	759.2	514.3	844.4	244.90***	-85.24
Ln(food consumed in 3 days)	6.3	5.8	6.0	0.44***	0.31***
Per capita daily food consumption	45.3	35.1	60.5	10.15**	-15.20
Per capita daily food consumption <sup>a</sup>	36.2	27.7	30.2	8.51***	6.00***
Monthly non-food expenditure (Afn)	4,231.6	2,626.1	2,477.2	1,605***	1,754***
Ln(Monthly non-food expenditure)	7.9	7.4	7.3	0.47***	0.60***
Per capita monthly non-food	736.7	543.9	459.6	192.75***	277.08***
Per capita monthly non-food <sup>a</sup>	515.2	413.6	398.5	101.63***	116.74***
Adult morbidity in last 4 weeks	0.33	0.38	0.39	0.05*	0.07**
Child morbidity in last 4 weeks	0.20	0.29	0.35	0.09***	0.15***

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1; <sup>a</sup> Estimates dropped the top 5% observations

The estimated impact on recurrent non-food expenditures is 25-29%. Overall, it appears that the households have used a smaller portion of their increased income for food and non-food consumption, and very little or none for improving housing. The bulk of the increased income has been utilised in accumulating more productive assets, increasing flock size of livestock and as cash savings. Quantile regressions of the impact on per capita food consumption and non-food expenditure (Annex 1) show that the impacts are observed across the full distribution, and the precision of the measure is higher at lower consumption levels.

Finally, there is over 5 percentage point reduction in any sickness or injury among the adults in TUP households compared to the comparison groups. Similar estimates of impact on morbidity among the children (15 years or below) is much higher, 9 to 15 percentage points.

### 4.3 School Enrolment and Expenses

As noted earlier, some increase in demand for child labour is expected from this programme. However, from the perspective of inter-generational poverty trap, investment in children's schooling and human capital accumulation is critical.

Table 6. Impact on enrolment of primary school aged children

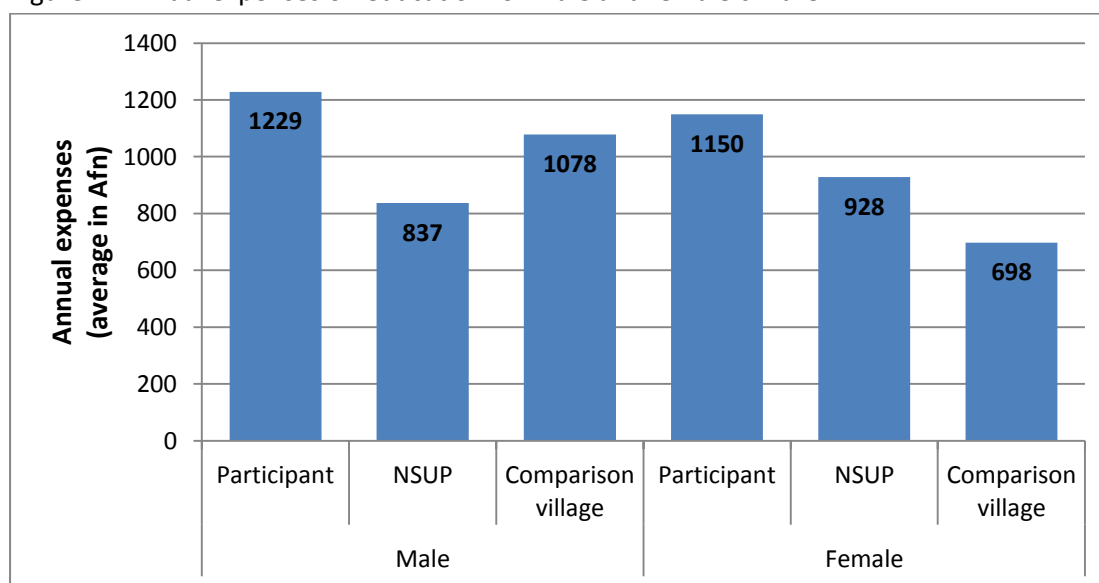
	Compared to not-selected ultra-poor			Compared to comparison village		
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: Boys</b>						
<b>TUP beneficiary</b>	<b>0.06</b>	<b>0.26</b>	<b>-0.30</b>	<b>0.14</b>	<b>0.11</b>	<b>0.14</b>
<b>[1=Yes, 0=No]</b>	<b>(0.043)</b>	<b>(0.215)</b>	<b>(0.300)</b>	<b>(0.052)***</b>	<b>(0.249)</b>	<b>(0.351)</b>
Age of child		0.22 (0.112)**	0.16 (0.144)		-0.06 (0.119)	0.04 (0.151)
Age-square of child		-0.01 (0.005)	-0.01 (0.007)		0.00 (0.006)	-0.00 (0.007)
Age X TUP beneficiary		-0.02 (0.020)	0.03 (0.028)		0.00 (0.024)	-0.00 (0.034)
Household head can read [1=Yes, 0=No]		0.13 (0.040)***	0.11 (0.049)**		0.11 (0.044)**	0.09 (0.055)
Female headed households [1=Yes, 0=No]		0.12 (0.047)**	0.17 (0.048)***		0.05 (0.056)	0.15 (0.059)***
Was enrolled in baseline [1=Yes, 0=No]			0.13 (0.055)**			0.04 (0.056)
Constant	0.72 (0.036)***	-0.71 (0.566)	-0.06 (0.750)	0.64 (0.046)***	0.70 (0.598)	0.24 (0.793)
Observations	459	459	270	413	413	244
R-squared	0.004	0.088	0.097	0.020	0.066	0.088
<b>Panel B: Girls</b>						
<b>TUP beneficiary</b>	<b>0.06</b>	<b>0.20</b>	<b>0.34</b>	<b>0.19</b>	<b>0.23</b>	<b>0.14</b>
<b>[1=Yes, 0=No]</b>	<b>(0.048)</b>	<b>(0.243)</b>	<b>(0.353)</b>	<b>(0.052)***</b>	<b>(0.256)</b>	<b>(0.380)</b>
Age of child	-	0.19 (0.132)	0.45 (0.177)**	-	0.18 (0.136)	0.35 (0.184)*
Age-square of child	-	-0.01 (0.007)	-0.02 (0.009)**	-	-0.01 (0.007)	-0.02 (0.009)*
Age X TUP beneficiary	-	-0.02 (0.024)	-0.03 (0.033)	-	-0.00 (0.025)	0.00 (0.036)
Household head can read [1=Yes, 0=No]	-	-0.01 (0.048)	-0.05 (0.059)	-	-0.03 (0.050)	-0.10 (0.065)
Female headed households [1=Yes, 0=No]	-	-0.01 (0.056)	-0.08 (0.065)	-	-0.08 (0.057)	-0.15 (0.068)**
Was enrolled in baseline [1=Yes, 0=No]	-	-	0.27 (0.063)***	-	-	0.23 (0.066)***
Constant	0.64 (0.040)***	-0.44 (0.643)	-1.93 (0.888)**	0.51 (0.044)***	-0.48 (0.671)	-1.36 (0.936)
Observations	437	437	234	420	420	222
R-squared	0.003	0.026	0.151	0.033	0.056	0.135

Note: Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1;

Therefore, it is important to investigate impact on school enrolment and expenses in education. Table 6 presents impact estimates on enrolment for boys (Panel A) and girls (Panel B) who are of primary school going age (7-13 years old). Column 1-3 measures the impact using the NSUP and Column 4-6 use comparison villages. After the base estimate of column 1 and 4, control variables are added to assess stability of the impact measures. Although some positive impacts of relatively large magnitude (over 10 percentage points) for both boys and girls relative to the comparison villages, the estimates are not consistently significant. Despite statistical insignificance, the positive estimates are encouraging given the impact of TUP programmes on school enrolment in other contexts.

Figure 2 indicates positive impacts on the average amount spent by the beneficiary households for schooling. Average amount spent per school going aged boys is Afn 1,229, which is the highest among the three groups. Average amount spent for girls' education is also encouragingly higher for the beneficiaries than the other two groups. Although the programme did not affect the enrolment rates, the households seem to be spending more on the children who are already in schools. Nevertheless, school enrolment remains to be an area requiring more targeted approach in TUP programmes for making longer-term impacts on poverty.

Figure 2. Annual expenses on education for male and female children



## 5 Determinants of Income

This section looks at the correlation between income and the value of livestock received by the beneficiaries. Although the beneficiaries received livestock based on a pre-set menu of only a few asset options, there were some variations in the asset value. A quarter of the beneficiaries received livestock worth Afn 18,300, and about 20% of them received asset worth Afn 22,200 or more.<sup>10</sup> Part of this variation is due to the different mix of assets and mostly related to the size (or quality) of livestock. We utilise this variation in asset transfer to assess whether more investment in assets could generate higher income or a relatively smaller investment is adequate to achieve similar levels of impact. It is important to note here that this variation is not experimental, and could be related to

<sup>10</sup> Average value of livestock received by the beneficiaries was 22,240 with a standard deviation of 6,900.

various programmatic decision making processes or household characteristics. Therefore, the findings are mere associations, and a proxy estimate of return to capital.

The first column in Table 7 shows the correlation without controlling for any other variable. It shows that an additional Afn of asset transfer is associated with almost one Afn increase in income. Controlling for other characteristics reduces this estimate of 'return to asset size'. However, even the lowest estimate of 0.62 indicates a relatively high return to more assets being transferred.<sup>11</sup> This estimate especially high since it does not consider impacts on value of the livestock increases. To derive higher return to all the investments in TUP beneficiaries, it will be critical to assess the relative importance of asset and subsistence allowance in scaling up this programme. It might be possible to increase effectiveness of TUP further by investing relatively more in assets transferred than cash grants for consumption.

Among the other determinants considered in the regressions, diversification of income sources is positively associated with the levels of income. Since TUP programme relies on the opportunities available at the existing markets (and does not necessarily create new markets/demand), scaling up of this programme beyond a level can be challenging in a given market. Although diversification of income sources is an important means for the poor households to mitigate risks, it will be important to consider options for scaling up the supported business. Finally, female headed households are clearly in a more disadvantaged position. On average, these households earn Afn 12,000 to 15,000 compared to male headed households. This clearly indicates special challenges faced by the female headed households.

Table 7. Determinants of income for the beneficiaries

	(1)	(2)	(3)	(4)
<b>Value of assets transferred (in Afn)</b>	<b>0.96</b> <b>(0.382)**</b>	<b>0.62</b> <b>(0.364)*</b>	<b>0.77</b> <b>(0.376)**</b>	<b>0.74</b> <b>(0.323)**</b>
Household size	-	3,913.31 (1,083.519)***	3,648.18 (1,127.727)***	3,967.02 (1,121.538)***
Female headed household	-	-15,368.78 (4,835.727)***	-15,588.53 (5,327.096)***	-12,233.59 (5,662.795)**
Number of IGA the head is engaged in	-	10,878.23 (3,507.970)***	10,981.22 (3,641.087)***	11,859.93 (3,308.882)***
Total household income from baseline	-	-	-0.11 (0.104)	-0.09 (0.111)
Village fixed effects	No	No	No	Yes
Constant	37,605.47 (8,448.9)***	12,383.27 (10,965.1)	11,936.83 (11,430.1)	8,208.41 (10,985.2)
Observations	376	376	340	340
R-squared	0.022	0.125	0.143	0.172

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1;

<sup>11</sup> Several non-linear relationships between asset transfer and income were explored. However, the results indicated the linear correlation being the best fit.

## **6 Robustness of Results**

To check the robustness of the main impact results from the mean comparisons, Table 8 presents the regression results by controlling for a few baseline characteristics including female headship, literacy of household head, income generating activities of the head, asset ownership, per capita income and district dummies. It is clear that adding these control variables does not change the direction and significance of impact results. Surprisingly the values of the impact estimates are also found to be quite stable. This builds confidence in the impact results.

It is possible to argue that there could be other unobservable differences that are driving the impact estimates. Although it seems unlikely to be the case that all the estimates are driven by such unobservable differences between the beneficiaries and both the comparison groups, such possibility cannot be fully ruled out in this evaluation.

## **7 Conclusion**

Encouraged by its effectiveness in creating a stronger livelihood for the ultra-poor in Bangladesh, the approach of TUP programme is being tested in several countries around the world. Some of the early results from these evaluations have reinforced the possibility of this approach becoming one of the key social safety nets for the ultra-poor in many more countries. This paper used retrospective methods to evaluate the impacts of such a pilot of TUP in Afghanistan. In the absence of an ideal control group, this evaluation has used two different comparison groups for this impact estimates.

This evaluation finds that the beneficiary ultra-poor have been able to utilise the livestock and other supports received from the programme to improve their livelihood by substantial margins. Employment of the adult male members has increased by 13-19%, and the increase for the female is extremely high (240-300%). The primary reason for this gender difference in employment related impact is the very low level of direct engagement of female in earning activities. Greater employment has produced a 75% impact on per capita annual household income.

We also find that the impact on livestock ownership (number of sheep owned) is twice the size of the actual transfer indicating very fast accumulation of assets. The households have also accumulated relatively large amount of productive assets beyond livestock, and have significantly more cash savings. However, there has been no change in the housing condition. In terms of welfare, the beneficiaries are consuming meat, egg and milk more frequently. This improvement in dietary diversity and the impact on per capita food consumption (20-31%) have taken place primarily through consumption of food items produced by the households themselves. These results correspond with the programmatic focus of influencing the ultra-poor to aspire more and to plan with a longer time horizon. However, the impacts on school enrolment of the children is not clear although the beneficiaries spend more in education for the children who are already in schools. Although increased demand for child labour has not resulted in a negative impact on enrolment, there is need for packaging the interventions targeting school enrolment. The results also find a positive (and linear) correlation between the value of livestock transfers and income. Scaling up of TUP should assess return to investments more closely to improve its effectiveness.



Table 8. Impact estimates controlling for baseline variables

VARIABLES	Impact compared to NSUP	Impact compared to comparison villages
Household involved in livestock husbandry	0.72 (0.030)***	0.80 (0.029)***
Household involved in agriculture	0.08 (0.037)**	0.22 (0.031)***
Household involved in non-farm business	-0.05 (0.037)	-0.01 (0.036)
Number of IGAs by head	0.43 (0.049)***	0.51 (0.055)***
Hours worked by HH head	550.07 (84.637)***	520.47 (101.179)***
Hours worked by adult male members	304.26 (105.040)***	398.61 (129.726)***
Hours worked by adult female members	667.80 (70.243)***	690.05 (73.016)***
Hours worked by male children	57.63 (18.792)***	45.96 (22.862)**
Hours worked by female children	23.08 (8.870)***	11.72 (12.098)
Household head's income	13693.49 (3,358.85)***	19683.16 (3,859.44)***
Ln (household head's income)	1.80 (0.329)***	1.88 (0.357)***
Adult male members' income	9542.22 (3,575.515)***	20975 (3,586.582)***
Adult female members' income	15567.69 (1,533.080)***	12164.78 (2,887.639)***
Male children's income	622.91 (297.973)**	350.78 (303.931)
Female children's income	428.09 (228.217)*	252.85 (176.734)
Total HH last year income	26029.13 (3,953.534)***	33713.79 (4,519.980)***
Ln(Total HH last year income)	0.58 (0.118)***	0.81 (0.133)***
Per capita annual income	4269.16 (750.022)***	5598.30 (857.404)***
Ln(Per capita annual income)	1.17 (0.209)***	1.41 (0.238)***
Number of sheep owned	6.05 (0.348)***	5.73 (0.357)***
Number of cows owned	0.73 (0.111)***	0.88 (0.086)***
Number of goats owned	0.88 (0.164)***	0.71 (0.168)***
Number of chickens owned	0.96 (0.172)***	0.87 (0.181)***
Value of other productive assets	24071.55 (5,463.907)***	30204.44 (5,396.682)***
Ln(productive asset)	4.42 (0.381)***	4.75 (0.381)***
Cash savings at different sources	12045.05 (2,274.299)***	10693.61 (1,822.173)***
Ln (cash savings)	5.56 (0.260)***	5.15 (0.297)***
Cash savings <sup>a</sup>	3921.07 (371.776)***	3526.86 (352.808)***
Use sanitary latrine	0.12 (0.035)***	0.14 (0.038)***
Ate meat in last 3 days	0.11 (0.026)***	0.11 (0.028)***
Ate fish in last 3 days	0.00 (0.005)	0.00 (0.004)
Ate egg in last 3 days	0.24 (0.031)***	0.20 (0.035)***
Ate milk (products) in last 3 days	0.59 (0.034)***	0.63 (0.034)***
Food consumed in 3 days (in Afn)	216.39 (78.764)***	81.13 (130.385)
Ln(food consumed in 3 days)	0.37 (0.069)***	0.41 (0.098)***
Per capita daily food consumption	9.11 (4.783)*	-2.36 (8.822)
Per capita daily food consumption <sup>a</sup>	7.40 (1.762)***	7.75 (1.981)***
Monthly non-food expenditure (Afn)	1547.72 (330.097)***	1520.49 (365.472)***
Ln(Monthly non-food expenditure)	0.39 (0.064)***	0.54 (0.073)***
Per capita monthly non-food	201.57 (68.226)***	274.47 (55.099)***
Per capita monthly non-food <sup>a</sup>	87.92 (26.490)***	127.28 (26.865)***

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1;

<sup>a</sup> Estimates dropped the top 5% observations

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Annex 1. Quantile regression of food consumption and non-food expenditures

