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Integrated Approaches to Poverty Alleviation and Multidimesional Poverty: An Evaluation of the FXBVillage Model in Semuto, Uganda*

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Executive Summary

- The report assesses the success of the FXBVillage Model in poverty alleviation in Semuto, Uganda. The evaluation involves focusing on multidimensional poverty as measured by the Alkire Foster methodology. The methodology involves counting the poor by considering the number of indicators in which an individual is simultaneously deprived.

- The level of multidimensional poverty, as measured by headcount ratio as well as the average number of indicators in which people are deprived, was lower for FXB households in comparison to non-FXB households. The differences in the multidimensional measure of M0, as well as its components H and A, between FXB and non-FXB households are substantial and statistically significant using most poverty thresholds. The result is striking given that the FXB households were larger and a disproportionately larger proportion of them were headed by widow/widower , making them relatively more vulnerable than non-FXB households. Yet, the level of multidimensional poverty was lower among FXB households than non-FXB households

- Among those who lived in multidimensionally poor FXB households, ventilation in the kitchen was an important common deprivation – 34.4% people lived in MPI-poor households where there was no ventilation. This is the only indicator in which more people in MPI-poor FXB households were more deprived than non-FXB households. However, the difference was not statistically significant

- Two vital areas where MPI-poor FXB households were significantly better off are house ownership and land ownership. In the rural agrarian context of Semuto, Uganda, land ownership is an important asset. Only 3.8% and 9.1% people living in MPI-poor FXB households were deprived in house and land ownership respectively. A much larger proportion of people in non-FXB households were deprived in these indicators and the difference was statistically significant.

- The most striking difference in the weighted contribution of indicators to multidimensional poverty between FXB and non-FXB households are ventilation and savings. While people in MPI-poor FXB households were more deprived in ventilation, people in MPI-poor non-FXB households were more deprived in savings

1. Introduction

Francois-Xavier Bagnoud International (FXB) is an international non-governmental organisation focused on fighting poverty and supporting orphans and vulnerable children afflicted by AIDS. FXB's integrated approach towards poverty alleviation is rooted in the understanding that deprivations in different aspects of life are interconnected and cannot be addressed in isolation. FXB's work today involves over 100 programmes spanning across the continents of Africa, the Americas, Asia and Europe. In 2007, FXB programmes served more than 175, 000 children (FXBVillage Toolkit, 2009: 4)

The founding philosophy of FXB recognises that poverty is not unidimensional and not limited to income. Addressing the links between monetary poverty, health, human rights and human dignity, the organisation has been providing integrated support to address multiple causes of poverty since its inception in 1989. Building on lessons learnt from past experiences, FXB developed a holistic programme – FXBVillage Model (FXBV Model hereon) – to support households caring for children rendered vulnerable by AIDS. The model involved providing a list of services aimed at health, education, financial security, income generation and psychosocial support to members of the household. This low-cost and sustainable model aims to help destitute families meet their immediate needs and enable them to become self-sufficient in the long-term. Currently, a total of 49 FXBV villages operate in Burundi, China, Colombia, the DRC, India, Rwanda, Thailand and Uganda

The aim of this report is to assess the FXBV Model by measuring the level of multidimensional poverty in one of the work areas of the programme –Semuto, Uganda – after six years of its operation. A study called the Tracer Study commissioned by FXB in 2011 collected data on a number of indicators of human wellbeing for a random sample of FXBV households and neighbouring households in Semuto. The neighbouring households were intended to serve as a comparison group. Using data from the Tracer Study of 2011 and the Alkire Foster methodology of measuring multidimensional poverty, this report evaluates the efforts of FXBV Model towards poverty alleviation.

2. FXBVillage Model

The primary goal of the FXBV Model is to "reinforce the capacities of destitute families affected by and/or infected with HIV and AIDS to meet their own needs and those of the orphans and vulnerable children in their care"(FXBVillage Toolkit, 2009: 7). While the FXB programmes now focuses more widely on families burdened by extreme poverty, the basic objective is to restore the capabilities of those rendered vulnerable by various external factors. In line with this emphasis on self-sufficiency, the FXBV programme follows a strict three-year timeline, phasing out financial support as families gradually take charge of their own living costs. The main features of the programme include – helping develop income generating activities (IGA), including vocational training to adolescent adults; providing medical care and nutrition support; enabling children to pursue education or reintegrate with the schooling systems at the primary and secondary levels; conducting education sessions on HIV prevention for beneficiaries, school teachers, community leaders, and youth club leaders; providing psychosocial counselling of children to restore their self-worth and cope with vulnerabilities experienced by them; and raising awareness on child rights in the community as well as on AIDS to combat the stigma associated with the disease.

It is noteworthy that the financial assistance provided by the FXBV Model to households in order to facilitate the first leg of IGA is not in the form of a microfinance loan. FXBV Model has stayed away from microfinance as the first point of financial support since the inception of the Model. A seed grant of around USD 150 per household is provided to support livelihood from meaningful economic activities. The idea behind giving a seed fund instead of microfinance is to protect destitute families from further vulnerabilities that loans may give rise to. The focus on promoting gradual self-sufficiency keeps microfinance out of the FXBV Model in the initial years. In later stages, information on and access to microfinance is provided for further enhancement and diversification of IGA.

Support programmes within the FXBV Model follow different implementation patterns within the three-year timeline; for example, psychosocial counselling is started at the very inception of the model and is continued throughout until the end, while direct nutritional support is primarily provided in the first nine months and then monitored for the remaining time period. Assistance with education and medical care costs is practised in different ways across the three years – in the case of health care, for example, activities in the first year range from immediate registration of households in health care facilities to fully covering any medical costs incurred. Gradually, as households move towards self-sufficiency, FXBV activities wane and eventually only include assistance in maintaining a stable health status and footing half or less of all medical costs. Similarly, HIV prevention activities take different forms during the course of three years.

In Uganda, FXB began its work in 1991 to support AIDS orphans and vulnerable children in communities affected by the civil war. In 2005, FXB introduced its FXBV Model in the rural area of Semuto, Uganda, providing multidimensional and holistic group of services. The FXBV model provided a seed fund of USD 135 per household in Uganda included certain new features:

- Insecticide impregnated mosquito nets were distributed to all participating households
- Participants were introduced to microfinance institutions
- Households were encouraged to open savings accounts
- In addition to the review of IGA ideas by FXB staff and advisors, a peer review process was initiated to encourage participants to help each other develop their incomes
- 'Participant Groups' were strengthened with the addition of 'revolving funds' and group IGAs
- HIV-prevention training sessions were expanded to include all members of the surrounding community
- Materials for improved water quality were distributed to each household (for example water cans, saucepans, and washing bowls)
- Where possible, all households were encouraged to develop a kitchen garden to increase the proportion of household food that came from their own production

3. Why Multidimensional Poverty?

Poverty has many faces. How we measure poverty affects our understanding of the issue, how we analyse it and the policies we devise to tackle it.

Many societies define poverty using income or consumption levels. However, lack of income, while an important deprivation, is often not sufficient in capturing human suffering (Sen 1984). Firstly, levels and trends of income poverty are not highly correlated with trends in other basic variables such as child

mortality, primary school completion rates, or undernourishment (Bourguignon et al 2010: 24, 27). Second, poor people go beyond income in defining their experience of poverty. They often include a lack of education, health, housing, empowerment, humiliation, employment, personal security and more. No one indicator, such as income or consumption, is uniquely able to capture the multiple aspects that contribute to poverty. A person or household can be income poor but multidimensionally non-poor, or income rich but poor in many other vital aspects of human development.

Recognising the multidimensional nature of deprivations the poor face, the FXBV model provides a comprehensive set of services to lift people out of poverty. In order to evaluate the effectiveness of a holistic framework such as the FXBV Model, a multidimensional measure of poverty is thus essential.

4. Methodology

4.1 Data Collection & Sample

The FXBV programme targeted the most destitute households in the community. Using participatory discussion with key members of the community, like village elders and leaders, local authorities and discussions with household members, households were deemed eligible based on the following criteria:

- Poverty level – households living under the extreme monetary poverty line
- Motivation – capacities and willingness to achieve programme objectives
- Honesty and reliability –the reputation of the head of household as advised by neighbours, friends and other community members
- Sedentary status – people who do not intend to migrate
- Number of orphans or vulnerable children in the household – targeted households often included children whose parents died or children who lived with poor or sick relatives and did not have the same life chances as the others in the community

Evaluation of households on criteria such as *motivation* and *honesty and reliability* were necessarily subjective but guided by trained and experienced field staff. The households selected were among the most deprived and vulnerable in the community.

As mentioned above, the FXBV Model was introduced in Semuto in 2005. Semuto was the first region in Uganda to have implemented the FXBV Model. The villages chosen for the Tracer Study from Semuto are thus the earliest beneficiaries of the model. A total of 150 potential beneficiaries were identified after conducting an assessment of eligibility. Finally, 80 households, identified as most deprived and vulnerable, were included in the programme. Of the 80 households, 24 were surveyed six years later in 2011 as part of the Tracer Study. This study uses data from the Tracer Study to assess the condition of multidimensional poverty in the FXBVillages.

4.2 FXB Households and Comparison Group

In order to understand how the FXBV households are faring in terms of deprivations, a relevant comparison group is necessary. In an experimental evaluation setting, such as the Randomised Control Trial, the "control" group for comparison would be comprised of households that were equally destitute

and vulnerable at the time of participant selection but did not receive either FXBV intervention or any other external support specific to them. A strict control group along these lines was not possible for the Tracer Study. The Tracer Study was not designed to be an experiment and *ex ante* selection of a pure control was not conducted. However, to understand the relative condition of the FXBV households, an equal number of neighbouring households who did not receive FXB support were selected to form a "comparison" group in 2011.

The "comparison" group in the Tracer Study is not a strict control. First, as mentioned before, the comparison households were not randomly selected from the same initial population of destitute households. Since FXBV households were purposively selected for being the most deprived and vulnerable in the community, the neighbouring households may not have been as deprived when the programme was started. Second, the FXBV model was strongly committed to engaging the community in implementing its activities. Community members at large were encouraged to participate in the FXBV training activities and FXBV households were encouraged to share their knowledge with others. Therefore, while the households in the comparison group were not direct recipients of the FXBV Model programmes, they were not completely insulated either.

Table 1 below shows the demographic profile of FXB households and households from the comparison group (non-FXB households hereon):

Table 1: Household Composition Comparison in 2011

Characteristic	Statistic	FXB	Non-FXB	Absolute Difference	Statistical Significance
Household Size	Median	8	6.5	1.5	
	Mean	7.7	5.9	1.8	***
Household Description	***Proportion of Households where:***				
	Mother and Father Living	37.5%	58.3%	-20.8%	*
	Single Mother Headed	25.0%	20.8%	4.2%	
	Single Father Headed	0.0%	4.2%	-4.2%	
	Grand-parent Headed	8.3%	4.2%	4.2%	
	Widow/Widower Headed	25.0%	4.2%	20.8%	***
	Child-Headed	0.0%	4.2%	-4.2%	
	Polygamous	0.0%	0.0%	0.0%	
	Other	4.2%	4.2%	0.0%	

As shown in the table, in terms of household composition, the two groups are not similar. On average, FXB households are larger – almost two more persons reside in FXB households. The difference is statistically significant. Furthermore, a significantly higher proportion of FXB households are widow/widower headed. The large difference of almost 21 percentage points is statistically significant[1].. While these households are situated in similar social and spatial setting, the FXB household composition makes them more vulnerable to destitution.

4.3 Multidimensional Poverty and the Alkire Foster Method

In this evaluation of multidimensional poverty in FXBV households, the Alkire-Foster Methodology of poverty measurement is used. In 2007, Sabina Alkire and Professor James Foster created a new method

[1] When standard errors are calculated using the bootstrap method (100 repetitions), the difference between mean household size, proportion of households where both mother and father are living, and proportion of widow/widower headed households remain statistically significant. The bootstrap method enables one to calculate more accurate standard errors for the small sub-samples of FXB and non-FXB households

for measuring multidimensional poverty (referred to as AF for Alkire Foster). It uses a counting approach to identifying 'who is poor' by considering the range of deprivations they suffer, and combines this with the Foster-Greer-Thorbecke (FGT) methodology that is the most widely used class of income poverty measures. The resulting measure aggregates information to reflect societal poverty in a way that is robust, can be broken down by regions and groups and, importantly, can be broken down by dimension and indicator to show how people are poor.

To identify the poor, the AF method counts the overlapping or simultaneous deprivations that a person or household experiences in different indicators. The indicators may be equally weighted or may take different weights. Weights are assigned to indicators to attribute a certain level of importance in relation to one another in poverty assessment. For example, one may want to include information on both higher education and immunization in the measure of multidimensional poverty However, one may also believe that not being immunized as a child is a more serious indication of poverty than not having a higher-secondary degree. Thus, one may want to increase the importance given to immunization over higher education by giving the former a higher weight in the poverty measure.

Once the indicators and weights have been determined, people are identified as multidimensionally poor in the AF method in two stages – first, an individual is identified as deprived in an indicator when her achievement in it falls below a threshold (or cut-off); in the second stage, a person is identified as 'poor' when her deprivations aggregated across indicators are below a second pre-determined cut-off. Thus, a person is identified as multidimensionally poor if the weighted sum of her deprivations is greater than or equal to a poverty cutoff, k – such as 20%, 30%, or 50% of all possible (weighted) deprivations. The poverty cut-off 'k' is akin to a poverty line used in monetary measures in that it determines the threshold for poverty. However, since the measure itself is defined in terms of deprivations, a person is identified as *poor* if her weighted sum of deprivations lies above the threshold. The number of people identified thus as multidimensionally poor using a specific k value is the **headcount ratio**, or ***H***, in this method.

Having identified who is poor, the AF method then summarizes information to show the deprivations experienced by the poor as a proportion of all possible deprivations in society. This is important as it represents the intensity of suffering among the poor – in other words, it answers the question "how poor are the poor?" Thus it can distinguish between, for example, a group of poor people who suffer only two deprivations on average, and a group of poor people who suffer four deprivations on average at the same time. This focus on the **intensity** of poverty, or ***A***, is missing in many counting approaches, which simply look at if a person is poor.

The AF measure appropriate for this study is the **adjusted headcount ratio**, or M_0, which is the product of **H × A**: the headcount ratio or percentage of people who are identified as poor (H) multiplied by the average share of weighted deprivations that poor people experience (A). The M_0 is used in the construction of the global Multidimensional Poverty Index that OPHI publishes for 100+ countries every year and is termed the MPI value. This measure has been found to be rigorous, easy to 'unpack' and to use for policy, and flexible, which makes it adaptable to different contexts.

One important methodological contribution of this measurement technique is that it allows one to understand the *simultaneous deprivations* among individuals. It is instructive to learn if an individual is deprived in income alone or income, health *and* education. In order to target resources better and to assess the impact of programmes that aim to tackle poverty holistically, there is value in being able to what

indicators a person is simultaneously deprived in, i.e. who does not have proper sanitation in the household versus who does not have proper sanitation and is food insecure.

The AF methodology can be employed flexibly in a variety of situations by using different dimensions (e.g. education), indicators (e.g. how many years of education a person has), deprivation cutoffs (e.g. a person with fewer than five years of education is considered deprived), weights (e.g. education and health dimensions are equally weighted), and poverty cutoffs (e.g. a person who is deprived in one-third or more of the weighted indicators is poor). For the analysis of multidimensional poverty in the FXBVillages in Semuto, Uganda, a measure specific to the context is developed.

5. Multidimensional Poverty Index for the FXB Model

5.1 Indicators and Weights

The Multidimensional Poverty Index (MPI hereon) for the FXB study is based on the AF methodology briefly discussed above. It is designed to capture the essence of the FXB-study: "..[FXB model] addresses the root causes of human insecurity by providing education, health, nutrition, clean water, sanitation, voluntary family planning, training in income generation, psychological well-being and awareness of human rights…"

The multidimensional measure for Uganda focuses on issues the programme specifically addressed: health, nutrition, education, income generation and financial security. Ten indicators capturing deprivations in eight of these domains were thus selected for the measure. Table 2a lists the dimensions, indicators and the deprivation cut-offs for the indicators chosen for the measure.

Table 2a: List of Indicators and Deprivation Cut-offs

Domain	Indicator	Cutoff --Deprived if:
Food Security	*Diversity in Food Basket*	Eat v egentables once a week or less AND eat any of the following proteins 1-4 times a month or less: eggs OR meat OR fish
Health	*1. Child Health*	Immunisation not up to date for ANY child under 5
	2. Mortality	Any death in the household in the past 5 years
Education	*Child School Attendance*	ANY child of school-going age not not attending school
Housing	*House Ownership*	Not own house/current dwelling
Healthier Environment	*Indoor Air Quality*	Cooking indoors without ventilation OR cook on veranda
Financial Security	*1. Savings*	No savings
	2. Borrowing	Had to EVER borrow AND still had debt outstanding
Assets	*Land Ownership*	Household does not own land
Safe Water	*Improved Water*	Source of drinking water not as per MDG guidelines

The FXBV Model engaged in rigorous interventions in each of these domains. An important thrust of the programme was enhancing financial security of the households. Training in skills development for IGA was an important intervention of the FXBV model, which is most directly measured by income. While income could not be included in the measure due to data limitations, other important elements of financial security, like savings generation and loan repayment are represented in the MPI.

The above indicators were chosen not only because the FXBV model focuses on these aspects of human development but because they are normatively important in determining quality of life. Deprivations in these facets batter lives in the rural context of Semuto, Uganda and are thus essential indicators of poverty.

Each of these domains was normatively considered to be equally important for the expansion of human capabilities and was thus weighted equally. Furthermore, in cases where more than one indicator represents deprivations in a domain – health and financial security – the indicators were weighted equally. Thus, diversity in food basket, school attendance, house ownership, indoor air quality, land ownership and child labour have weights of 1/8; child health, mortality, savings and borrowings are weighted 1/16 (1/8*1/2). Table 2b below lists the weights associated with each indicator

Table 2b. Indicators and Weights

Domain	Indicator	Weight
Food Security	Diversity in Food Basket	1/8
Health	Child Health	1/16 (1/8*1/2)
	Mortality	1/16 (1/8*1/2)
Education	Child School Attendance	1/8
Housing	House Ownership	1/8
Safe Water	Improved Water	1/8
Healthier Environment	Indoor Air Quality	1/8
Financial Security	Savings	1/16 (1/8*1/2)
	Borrowing	1/16 (1/8*1/2)
Assets	Land Ownership	1/8

Using these indicators, the FXBV MPI was constructed to measure the level of poverty among FXB and non-FXB households

5.2 Construction of the MPI for FXBVillage-Uganda

Data on the above indicators for Semuto, Uganda were derived from the household questionnaire and semi-qualitative interviews from the Tracer Study 2011. While a few indicators like source of water, house ownership, savings and borrowing are information collected at the household-level, child school attendance and immunisation pertain to a single individual. In these cases, although the deprivation pertains to an individual, it is extended to the entire household. As a result deprivations in all indicators are identical for all members of a household — while individual deprivation is taken into account, the MPI value reflects poverty of the household as a whole. The following example is used as an illustration:

Household No.	Individual	Age	Improved Water	Child Attends School	Household Deprived in Water	Household Deprived in Child Attendance
1	Marc	45	No	-	1	1
1	Sarah	40	No	-	1	1
1	Jack	10	No	No	1	1
1	Jill	7	No	Yes	1	1
1	Anna	2	No	No	1	1

In this household we see that in the case of the household-level indicator, water source, the entire household is collectively deprived. The achievement status of the household for water source is mapped on every individual. For the indicator child attendance, the information is at the individual level. Jack, who is of school-going age, does not attend school. Jill, also of school-going age, attends school. Anna does not attend school but is not eligible to attend as yet. Since the deprivation cut-off for the indicator child school

attendance is defined to mark the entire household as deprived if *any one* child of school-going age is not attending, the household is considered deprived in the indicator. Deprivations at the household-level were marked in a similar fashion for all indicators as a first-step in identification of the poor in Uganda.

Once deprivations were marked for each indicator, a summation score was calculated for each household. Since there are 10 indicators, the sum score ranges between 0-10, with 0 implying that the household is deprived in no indicator and 10 meaning that the household is deprived in every indicator. The next important step was to determine the poverty cut-off or *k*.

6. Multidimensional Poverty in 2011

Exploring Poverty and Different Values of '*k*'

An important consideration in the AF methodology is the poverty cut-off or *k* value – the minimum proportion of weighted domains in which a person has to be deprived in to be identified as multidimensionally poor. This is important because identification of a person as 'poor' and the measurement of poverty in society is sensitive to the value of *k*. In assessing the state of poverty in FXBV working area in Semuto, it is insightful to look at the difference in multidimensional poverty between FXB and non-FXB households at every level of *k*. In discussing multidimensional poverty, generally the MPI value, i.e. the adjusted headcount ratio 'M0', is referred to. Table 3.1 below shows the MPI value, the headcount ratio (H) and the average intensity (A) for different levels of *k*.

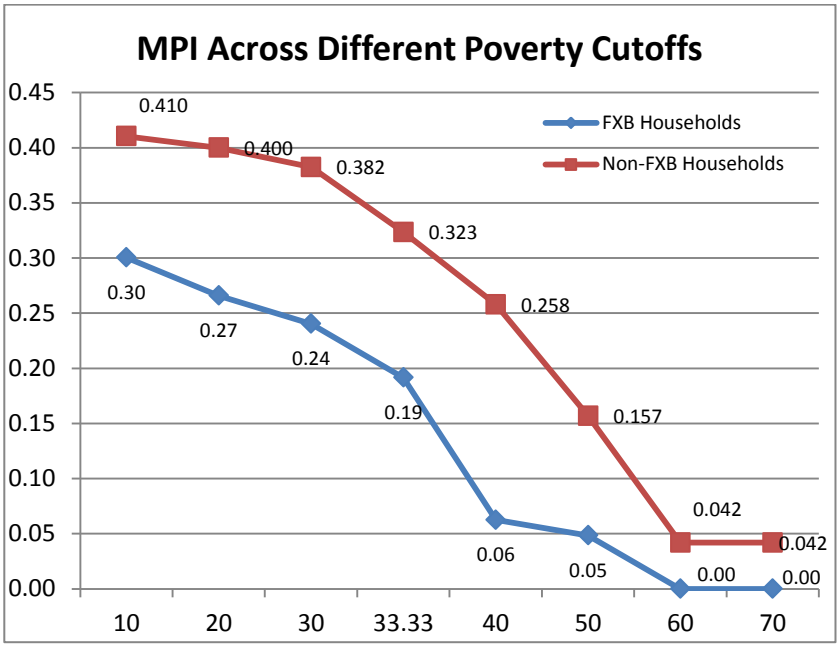
Table 3.1 H, A, M_0 for Different Levels of k

	FXB			Non-FXB		
k=	Headcount	Intensity	MPI	Headcount	Intensity	MPI
10	97.3%	30.9%	0.30	100.0%	41.0%	0.410
20	73.1%	36.4%	0.27	94.4%	42.4%	0.400
30	62.9%	38.2%	0.24	87.4%	43.8%	0.382
33.33	47.3%	40.5%	0.19	68.5%	47.2%	0.323
40	12.9%	48.4%	0.06	51.0%	50.5%	0.258
50	9.7%	50.0%	0.05	28.0%	56.1%	0.157
60	0.0%	-	0.00	5.6%	75.0%	0.042
70	0.0%	-	0.00	5.6%	75.0%	0.042
80	0.0%	-	0.00	0.0%	-	0.000
90	0.0%	-	0.00	0.0%	-	0.000
100	0.0%	-	0.00	0.0%	-	0.000
Number of Households (N)	24			24		

The different values of *k* represent different poverty cut-offs or poverty line. For example, if one is deprived in food security (weight=1/8), child health (weight=1/16) and mortality (weight=1/16), then one is deprived in 25 percent of the weighted domains. In this case, if one uses a cut-off of *k*=20%, a person with these deprivations would be multidimensionally poor. However, at *k*=30%, the person would be identified as non-poor. Following Sen, we view the choice of the poverty cut-off to be a normative decision.

In 2011, for every level of *k*, FXB households ***experienced a lower level of multidimensional poverty***. For every *k* value, the MPI value (or M_0) is lower for FXB households in comparison to non-FXB households. The result holds true for the MPI value and its components – the headcount ratio and average intensity. For example, at *k*=33.33%, among FXB households, 47.3 percent of people lived in households that were multidimensionally poor while 68.5% of people in non-FXB households lived in multidimensional poverty. At the same *k* value, of the people who lived in multidimensional poverty, the FXB cohort were on average deprived in 40.5 percent of the weighted domains, while the non-FXB group experienced deprivations in 47.2 percent of the weighted domains. Thus, fewer people lived in multidimensional poverty in the FXB group and their suffering was lower in comparison to the poor individuals in non-FXB households. This is a very strong result, and reassures us that whatever poverty cut-off *k* we choose, our results will give a similar overall message.

Graph 1 below indicates the difference between the *mean* MPI values (or the adjusted headcount ratio M0) for FXB and non-FXB households for every value of *k*.



As seen in the graph, for each value of k, people living in FXB households were significantly less poor than non-FXB households – the mean MPI value among FXB households is lower than that of non-FXB households. The difference is steepest at *k*=40%. At *k*=60%, no FXB household is identified as multidimensionally poor. In other words, nobody in FXB households was simultaneously deprived in 60% or more of the weighted domains. However, among people living in non-FXB households, approximately 6% were multidimensionally poor at *k*=60% and these people were deprived in 75 percent of the weighted domains.

The level of multidimensional poverty as represented by the MPI value was not only considerably lower among people in FXB households compared to non-FXB households, but the difference was statistically significant for most levels of *k* cut-offs, despite the very small sample size. Table 3.2 shows the difference in the levels of MPI between FXB and non-FXB households and indicates if they were statistically significant.

Table 3.2 Difference in MPI among FXB and Non-FXB Households

	MPI			
k=	FXB	Non-FXB	Absolute Difference	
10	0.30	0.41	-0.11	***
20	0.27	0.40	-0.13	***
30	0.24	0.38	-0.14	***
33.33	0.19	0.32	-0.13	**
40	0.06	0.26	-0.20	***
50	0.05	0.16	-0.11	**
60	0.00	0.04	-0.04	
70	0.00	0.04	-0.04	
80	0.00	0.00	0.00	
90	0.00	0.00	0.00	
100	0.00	0.00	0.00	

***-Statistically significant at $\alpha = 1\%$, **-Statistically significant at $\alpha = 5\%$, and *-Statistically significant at $\alpha = 10\%$.

The difference in the MPI value, M0, for FXB and non-FXB households is statistically significant at all levels of *k* ranging 10-50 percent. At *k*=33.3% and *k*=50%, difference in MPI is statistically significant at the 95% level of confidence. For all other values, the difference is significant at the 99% level of statistical confidence[2].

At this point it is important to note again that the MPI value is comprised of two partial measures – **H** (headcount ratio) and **A** (average intensity among the poor). One way to understand the relationship between MPI and its components is as follows: if the mean MPI values for the FXB and non-FXB households were the same (for some value of *k*), then it does not necessarily imply that the two cohorts have identical **H** and **A** values. Suppose at some value of *k*, headcount and average intensity among FXB households were 0.4 (40 percent) and 0.5 (50 percent) respectively. The mean MPI for FXB households would be 0.4*0.5=0.2. Now suppose, for the same level of *k*, among non-FXB households a lot more people are poor, i.e. headcount ratio is 0.6 (60 percent), but the average intensity of suffering is lower, i.e. 0.33 (0.33% of the weighted domains). The mean MPI value for non-FXB cohort in this case might be 0.6*0.33=0.2. Thus for the same level of MPI, the two cohorts could have two different poverty profiles – one with higher suffering among the multidimensionally poor and the other with a higher proportion of people who are poor. Thus, it is instructive to look at not just MPI but also how the FXB and non-FXB households compare in H and A for these *k* values.

Tables 3.3 a and b, show the mean H and A respectively for FXB and non-FXB households at every *k* cut-off level.

[2] Confidence level of 95% (or conversely statistical significance at 5% level) implies that if we took random samples of FXB and non-FXB households repeatedly, 95% of the time the M0 values would be different between FXB and non-FXB households

Table 3.3 a Difference in Headcount Ratio (H) among FXB and Non-FXB Households

	Headcount			
k=	FXB	Non-FXB	Absolute Difference	
10	97.3%	100.0%	-2.7%	
20	73.1%	94.4%	-21.3%	**
30	62.9%	87.4%	-24.5%	**
33.33	47.3%	68.5%	-21.2%	**
40	12.9%	51.0%	-38.1%	***
50	9.7%	28.0%	-18.3%	*
60	0.0%	5.6%	-5.6%	
70	0.0%	5.6%	-5.6%	
80	0.0%	0.0%	0.0%	
90	0.0%	0.0%	0.0%	
100	0.0%	0.0%	0.0%	

***-Statistically significant at α = 1%, **-Statistically significant at α = 5%, and *-Statistically significant at α = 10%.

Table 3.3 b Difference in the Average Intensity (A) among FXB and Non-FXB Households

	Intensity			
k=	FXB	Non-FXB	Absolute Difference	
10	30.9%	41.0%	-10.2%	***
20	36.4%	42.4%	-6.0%	**
30	38.2%	43.8%	-5.6%	**
33.33	40.5%	47.2%	-6.7%	**
40	48.4%	50.5%	-2.1%	
50	50.0%	56.1%	-6.1%	*
60	0.0%	75.0%	-75.0%	***
70	0.0%	75.0%	-75.0%	***
80	0.0%	-		
90	0.0%	-		
100	0.0%	-		

***-Statistically significant at α = 1%, **-Statistically significant at α = 5%, and *-Statistically significant at α = 10%.

The tables above demonstrate an important finding: at every level of *k*, FXB households fared better than non-FXB households, both in terms of the number of people who were poor and their average level of suffering. In Table 3.3 a, at every level of *k*, a lower proportion of people in FXB households are in multidimensional poverty in comparison to non-FXB households. The difference between FXB and non-FXB headcount ratio is as large as -38 percentage points in the case of *k*=40% and is statistically significant at the 99% confidence level. At k=33.33%, the difference is still large and statistically significant at the 95% confidence level.

A similar trend is observed for average intensity, A. For all values of *k*, the average intensity of suffering of MPI-poor people is lower among FXB households than the neighbouring non-FXB households. The difference is statistically significant for all values *k* except when *k*=50. *Thus, the level of MPI, H and A was lower for FXB households in comparison to non-FXB households; the differences are substantial and statistically significant using most poverty thresholds.*

Thus far we have observed that in 2011, the level of multidimensional poverty, as represented by MPI value and its components, was lower among FXB households than neighbouring households. At this point, it is interesting to recall the statistics on household composition of FXB and the comparison group of households. In 2011, the FXB households were larger and a disproportionately larger proportion of them were headed by widow/widower or single parent, making them relatively more vulnerable than non-FXB households. Yet, the level of multidimensional poverty was lower among FXB households than non-FXB households.

In order to understand the nature of multidimensional poverty among FXB households and compare it to that of non-FXB households, it is helpful to focus on one particular poverty cut-off. The poverty cut-off of k=33.33% or one-third or more of the weighted domains is used in the analysis that follows on the nature of multidimensional poverty. This cut-off is chosen for several various reasons. At lower cut-off values, a majority of the sample appears to be multidimensionally poor because of large-scale deprivation endemic to the context. For cut-off values higher than 40 percent of weighted dimensions, poverty headcount among FXB and non-FXB households falls dramatically. Analysis on what indicators individuals continue to be deprived in and where improvements can take place are less meaningful, particularly given our small sample size, at higher cut-off levels. Therefore, *k*=33.33% is an appropriate cut-off for analysing multidimensional poverty in the context.

At *k*=33.33, 47 percent people live in multidimensional poverty among the FXB cohort while almost 68 percent people are multidimensionally poor among the non-FXB households. Among the people who belong to multidimensionally poor FXB households, the average proportion of weighted domains in which they are deprived is 40.5 percent. People living in multidimensionally poor non-FXB households are deprived in a larger proportion of indicators at this *k* value – 47 percent of the weighted domains.

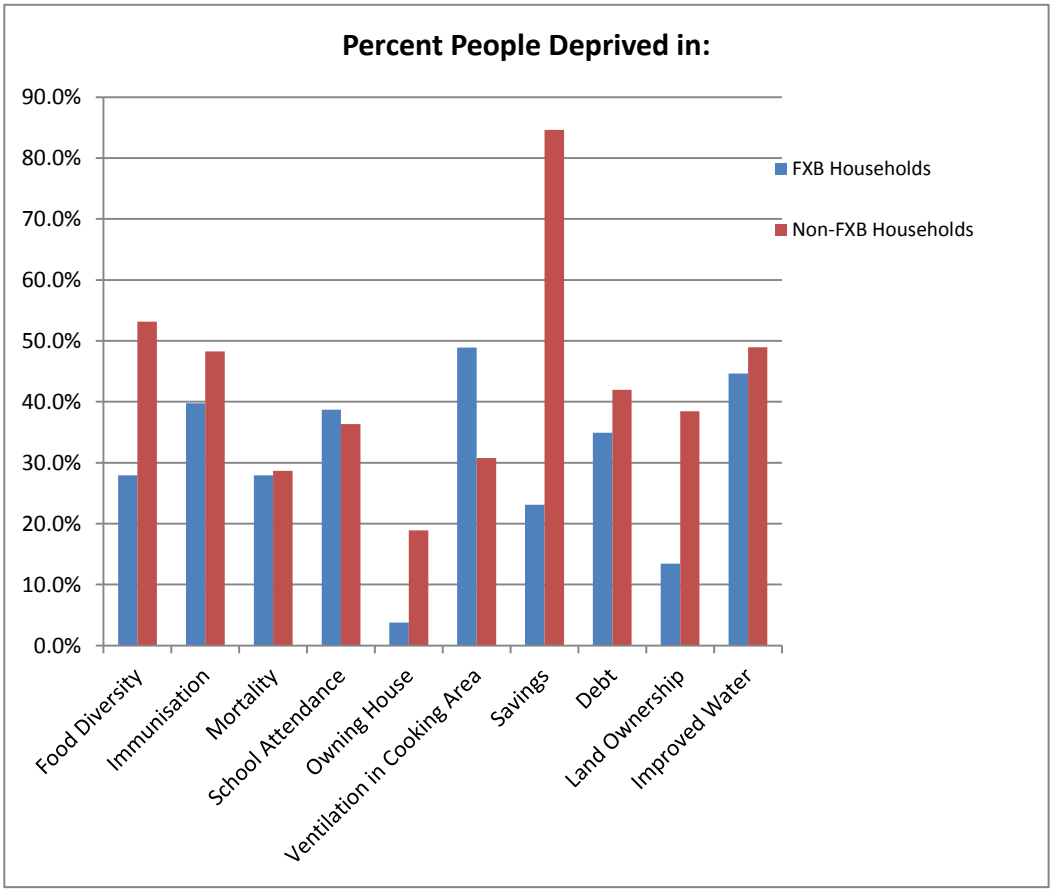
7. Nature of Poverty Among the Multidimensionally Poor- Dimensional Decomposition

In this section, an analysis of the nature of poverty among FXB and non-FXB households by decomposing the MPI value by indicator is presented. In which indicators are FXB households most deprived in? Which indicators contribute most to multidimensional poverty among those that are MPI poor? Is this different for FXB and non-FXB households? This section will shed light on these questions for multidimensional poverty at the k=33.33% cut-off level.

7.1 Deprivation Headcounts for Indicators

Graph 4.1 below shows the proportion of individuals who were deprived in each of the indicators for both FXB and non-FXB households, irrespective of whether they were MPI- poor.

Graph 4.1: Raw Headcount of Deprivations



The graph above looks at every person surveyed among both FXB households and non-FXB households and not just those who lived in multidimensionally poor households (as per the k=33.33% cut-off). Of the 10 indicators, poor indoor air quality due to improper ventilation in cooking areas was the biggest challenge faced by the FXB household members. Deprivation in ventilation was disproportionately higher among FXB households compared to non-FXB households. In terms of achievements, almost all FXB households owned a house or place of dwelling. While almost 20 percent of non-FXB households were deprived in this area, almost no FXB household faced this problem. Similarly, the level of savings was an area where the FXB households fared well. While over 80 percent of non-FXB households did not have savings, only 23 percent of FXB households were deprived in the indicator.

The discussion so far has comprised all FXB and non-FXB households. Graph 4.2 focuses on deprivations experienced by only those who were MPI-poor at k=33.33%. It is interesting to compare areas of deprivation faced by everybody in the sample with those among individuals belonging to multidimensionally poor households only. It allows one to understand if the MPI-poor are differently deprived. In the context of Semuto, Uganda, results are similar between deprivations among everybody and MPI-poor households, with some important distinctions.

Graph 4.2 Censored Headcount of Dimensional

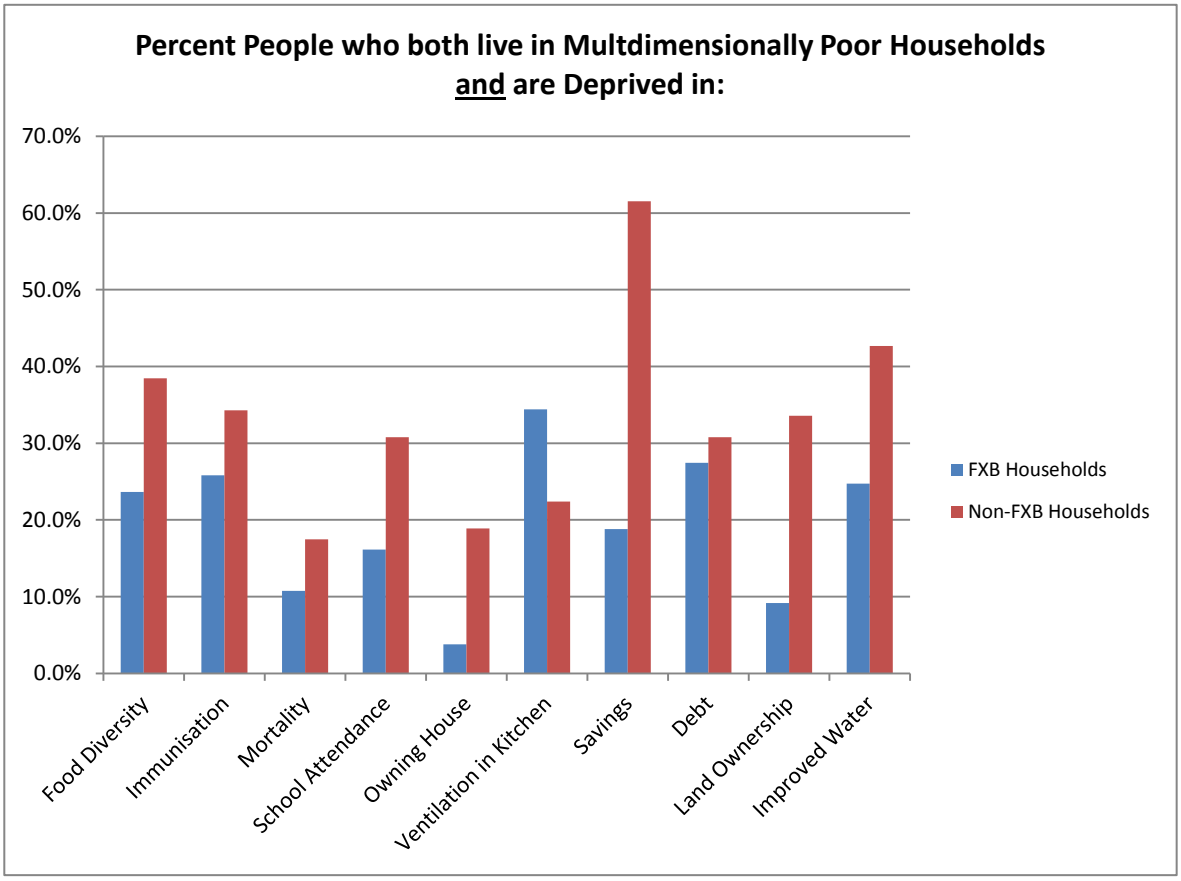


Table 4.1 Proportion of People Living in Multidimensionally Poor Households who are also Deprived in the following Indicators

Censored Headcount: Proportion of People Living in Multidimensionally Poor Households and Deprived in---	FXB %Deprived	Non-FXB %Deprived	Absolute Difference in pp	
Food Diversity	23.7%	38.5%	-0.15	
Immunisation	25.8%	34.3%	-0.08	
Mortality	10.8%	17.5%	-0.07	
School Attendance	16.1%	30.8%	-0.15	
Owning House	3.8%	18.9%	-0.15	**
Ventilation in Kitchen	34.4%	22.4%	0.12	
Savings	18.8%	61.5%	-0.43	***
Debt	27.4%	30.8%	-0.03	
Land Ownership	9.1%	33.6%	-0.24	**
Improved Water	24.7%	42.7%	-0.18	*

Among those who lived in multidimensionally poor FXB households, fewer were deprived in most indicators, including food diversity, immunization, child mortality, school attendance, home ownership, savings, debt, land ownership, and water. Ventilation in the kitchen, however, remained an important common deprivation among FXB households – 34.4 percent people lived in poor households where there

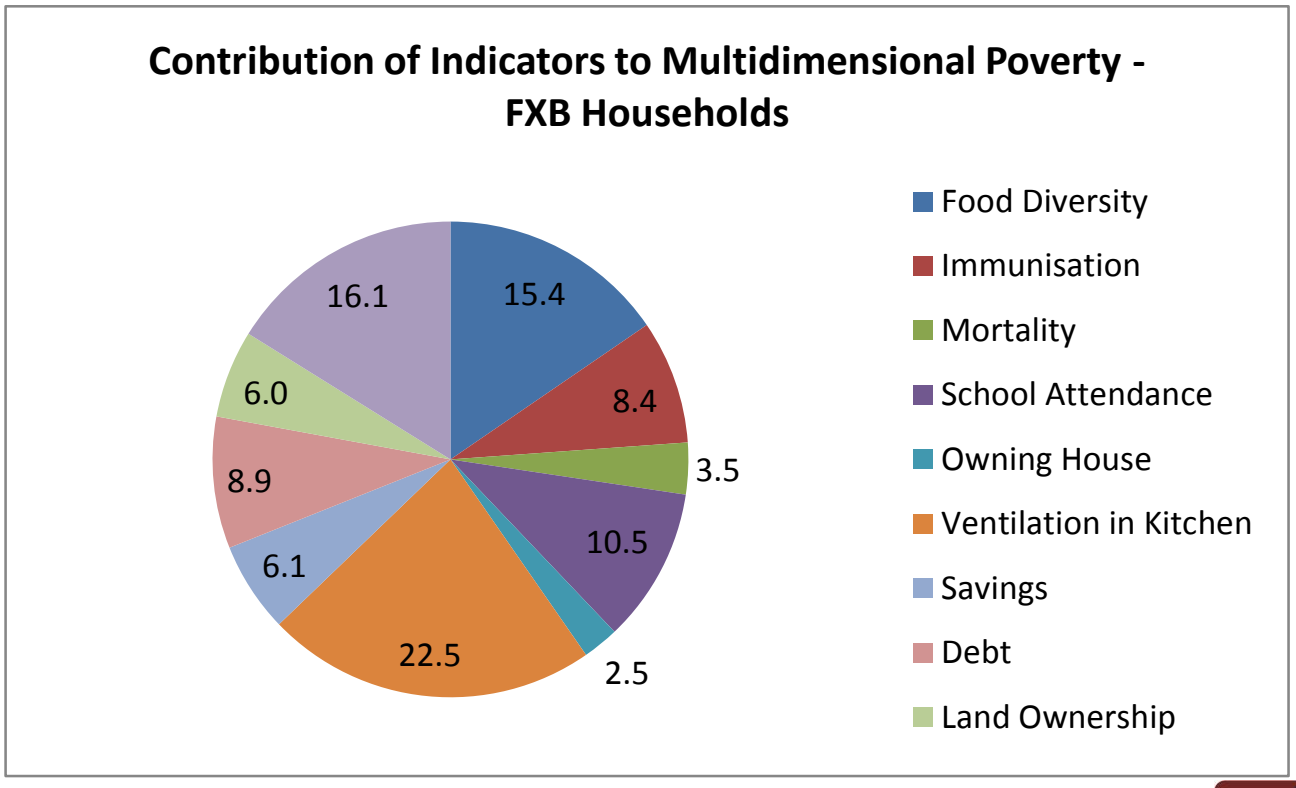
was no ventilation. This is also the only indicator in which more people in MPI-poor FXB households were deprived compared to non-FXB households. However, the difference is not statistically significant. Another important factor among the FXB cohort of households was debt – 27.4 percent of people living in MPI-poor FXB households had outstanding debt. However, this result is partly offset by the presence of savings among FXB households – a significantly lower proportion of people lived in MPI-poor FXB households with no savings. Also, debt may signify some level of entrepreneurship in taking loans – more information is required to assess this possibility. Deprivation in savings was rampant among poor people in non-FXB households – 61.5% people lived in MPI-poor households with no savings. The difference in deprivation in savings between FXB and non-FXB households is statistically significant.

Two vital areas where MPI-poor FXB households were significantly better off are house ownership and land ownership. In the rural agrarian context of Semuto, Uganda, owning land is an important asset. Only 3.8 percent and 9.1 percent people living in MPI-poor FXB households were deprived in house and land ownership respectively. A much larger proportion of people in non-FXB households were deprived in these indicators and the difference is statistically significant.

In domains of health, education and food security, while people in MPI-poor FXB households were much less deprived than those in non-FXB households, the differences are not statistically significant.

7.2: Contribution of Indicators to Multidimensional Poverty

Thus far the nature of poverty has been discussed by looking at how many people were deprived in the various indicators among FXB and non-FXB households. Another way of analysing the composition of multidimensional poverty is to look at the *contribution* of indicators to MPI. This is where the weights assigned to indicators become important. Following figures will demonstrate the composition of poverty among people who lived in multidimensionally poor FXB and non-FXB households.



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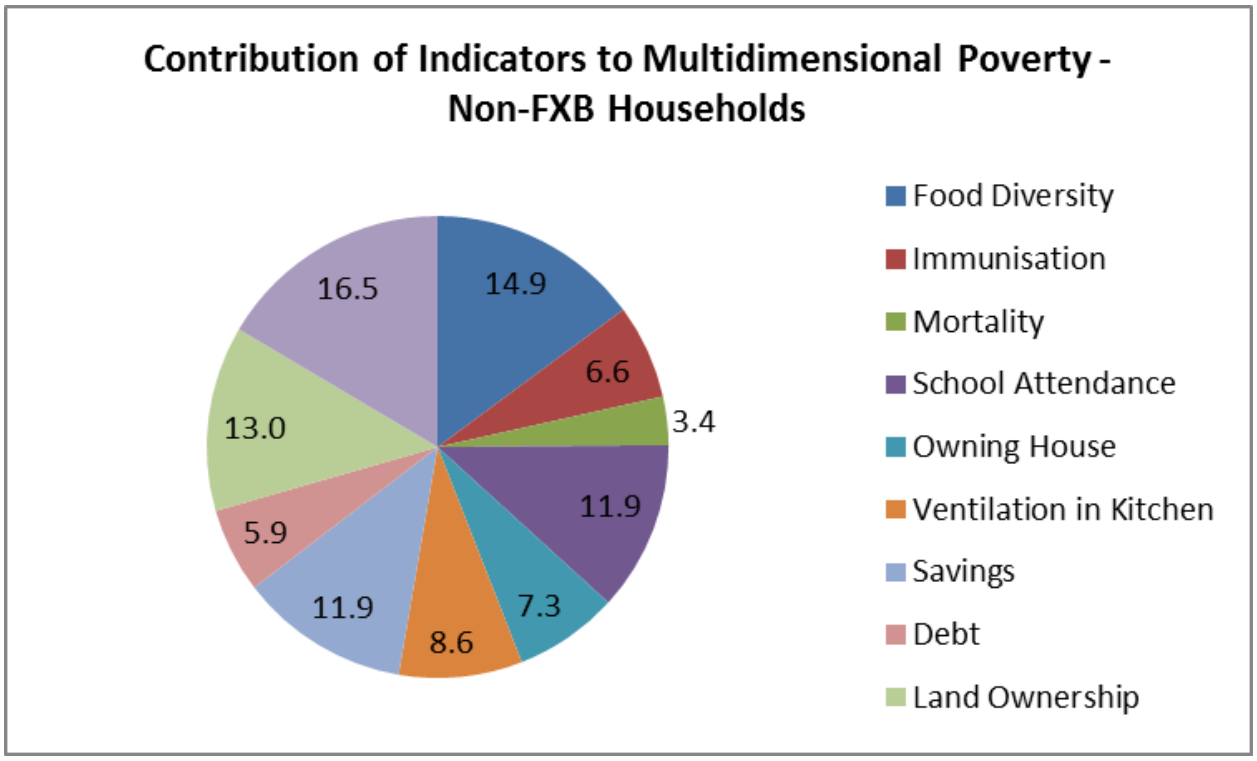

An important note here is that while more people were deprived in ventilation, the extent to which contribution of ventilation has emerged as significant is partly affected by the weight given to it 1/8, which is the same as food diversity and house ownership. One can argue here that ventilation in cooking area per se is not normatively as important as house ownership or child education. However, ventilation is a proxy for the domain 'healthier environment', which normatively was given the same importance as child education.

While debt and immunisation were indicators in which larger proportion of people in MPI-poor FXB households were deprived in, they are significantly less important as drivers of poverty when their weighted contribution is assessed. Since both these indicators have lower weights (1/16 instead of 1/8), their contribution to multidimensional poverty among FXB households was much lower. In contrast, deprivation in food diversity and school attendance were larger contributors to multidimensional poverty in the case of FXB households.

The most striking difference in the contribution to multidimensional poverty between FXB and non-FXB households are ventilation and savings. While people in MPI-poor FXB households were disproportionately deprived in ventilation, people in MPI-poor non-FXB households were unequally deprived in savings. The strong focus on financial security in the FXBV Model clearly made a big difference in the lives of the people in participating households.

8. Conclusion

Analysis on the state of multidimensional poverty among people living in FXB and neighbouring households in 2011 shows that multidimensional poverty was significantly lower among FXB households. This result is strikingly robust across all levels of the poverty cut-offs. Furthermore, is the difference in levels of poverty between the FXB and non-FXB households are statistically significant, despite the small samples. Multidimensional poverty as represented by MPI as well as its components headcount ratio and average intensity was lower among people in FXB households than in non-FXB household. The most important factor contributing to multidimensional poverty in FXB households was poor ventilation in cooking areas, while the area in which FXB households fared particularly well was savings.

The findings are remarkably positive. However, it must be borne in mind that the non-FXB households were not selected as a strict control group and cannot be interpreted as such. Also, 'contamination' and sharing innovation and new learning was actively encouraged. This complicates the interpretation of results. If, for example, the FXB households and non-FXB households here considered were at a relatively similar situation of poverty in 2005, or if FXB household were indeed poorer, and if the main incremental influence on FXB households in the intervening period was from FXB alone and not from other agencies or causes, then this divergence in poverty outcomes by 2011 would suggest that FXB has indeed had a striking and very targeted impact on poverty in the intervening years. However, this conclusion cannot be drawn unproblemtically in the absence of pre-programme baseline data for a group of FXB and a strictly comparison control households. Further data constraints make it difficult to attribute the results to the FXBVillage programme controlling for other factors. Yet results of this study raise incredibly interesting questions for further research and highlight the value of conducting a rigorous evaluation exercise.

There are multiple questions for further inquiry. For example, one of the distinctive features of the FXB approach is to select *for* motivation and honesty and reliability. It could be that the FXB intervention has a catalytic effect in the presence of such personal characteristics, and it would be fascinating to understand that further. A second distinctive feature of FXB is that it focuses on individual households, and as we have seen, does not affect neighbouring households. This strongly individual focus complements many development interventions that focus on structural changes and universal service provision. How can the synergy between such interventions be maximized? Obviously one has further questions about destitute households that lack motivation and honesty, and risk being left further and further behind: are interventions feasible that would unleash motivation where it is lacking? This is another fascinating issue for research, and leads into the final distinctive feature of FXB interventions, which was the investment in psycho-social training and life-skills support throughout the three years of the programme. These have very rarely been implemented with the poorest and most destitute. The FXB approach may, however, be pioneering a high impact line of support, which not only prepares individuals better to weather economic shocks, such as inflation or natural disaster, but also leads to constructive empowerment of poor people, as masters of their own destiny (Sen 1999), and as productive entrepreneurs and citizens. This, too, warrants further investigation.

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