Report on the Impact of JEEViKA:

Evidence from a Randomized Rollout 2011-2014[1]

Upamanyu Datta, World Bank

Vivian Hoffmann, IFPRI

Vijayendra Rao, World Bank

Vaishnavi Surendra, University of California-Berkeley

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Abstract

Few Community Driven Development (CDD) projects have been subjected to rigorous impact evaluation. The randomized rollout of JEEViKA, a large scale CDD project for marginalized communities in rural Bihar provides a rare opportunity to observe whether a complicated basket of interventions can engender socio-economic change. Funded jointly by the Bihar Rural Livelihoods Promotion Society and the World Bank, data collection for this evaluation was completed by GFK-MODE in 2011 and 2014, with technical assistance by the Social Observatory. Despite a shorter than expected post-intervention period of two years due to delayed rollout, we find that JEEViKA, in its early stages, has enabled marginalized households to reduce debt and build up their asset base. We note that the project's longer term impact is yet to be realized.

1. Executive Summary

This report looks at the results of a Randomized Control Trial to assess the impact of JEEViKA, a livelihoods CDD project in rural Bihar, on a variety of outcomes. In this section, we provide a short context to the project and relevant timelines, before discussing the key highlights of the results. In the later sections, we go into detail about the project, the evaluation and the results.

Bihar is India's 13th largest state by land area and 3rd largest by population. According to provisional results from Census 2011, Bihar had a population of almost 104 million, driven by a decadal growth rate of 25% (2001-2011). Although Bihar has witnessed sustained economic growth recently (state GDP grew at 9.56% as opposed to 8% for India in 2009-10), the poverty headcount ratio for Bihar was 53.5%, almost double that of India at 29.8% in 2009-10. The narrative is similar when we consider other indicators of human development. In 2007-08, Bihar ranked 21st among 23 Indian states with an HDI value of .367, significantly below the national value of 0.467. Clearly, the high average growth rate in Bihar and nationally over the last decade did not translate into substantial economic gains among poor rural residents. It was in this context that JEEViKA was designed as a key program to effect socio-economic change in rural Bihar.

JEEViKA is a large scale CDD project of the Government of Bihar, implemented by the autonomous Bihar Rural Livelihoods promotion Society and funded by the World Bank. JEEViKA began its operations in calendar year 2007, in 6 blocks of 6 districts (Gaya, Khagaria, Madhubani, Muzaffarpur, Nalanda and Purnea); as of today, JEEViKA is operational in all the 534 blocks of all 38 districts of Bihar. The modus operandi of JEEViKA is to mobilize women from impoverished households (especially from SC/ST households) into women's Self Help Groups (SHGs), which are in turn federated into Village Organizations (VOs) and Cluster Level Federations (CLFs). Once this pyramid of institutions is established in a village, the project delivers targeted funds for micro-credit, food security, insurance against health emergencies, and promotes livelihood opportunities in the community via the institutions. Additionally, the project supports these institutions to leverage other government programs, and to facilitate collective action to resolve social and service delivery problems at the village level. As of March 2014, about 2 million households were part of 1.57 lakh (157,000) JEEViKA SHGs, which were in turn federated into

approximately 7500 VOs. Foreseeing the incredible foot-print of the project, it was decided in 2010 to use the opportunity of JEEViKA's expansion to conduct a rigorous mixed methods impact evaluation of the program.

The **Mixed Methods Evaluation,** of which the quantitative impact evaluation described here is a part, combines quantitative, qualitative and experimental economic techniques to measure the impact of JEEViKA on the lives of its intended beneficiaries. In this quantitative IE, 90 randomly selected 'treatment' panchayats in 16 blocks of 8 districts (Gaya, Madhepura, Madhubani, Muzaffarpur, Nalanda, Saharsa and Supaul) were entered by JEEViKA during Phase II of its expansion, starting in April 2012, following a baseline survey fielded during July-September, 2011. The baseline survey also covered 90 'control' panchayats in the same geographic areas, which were kept outside the project's ambit until the completion of a follow-up "endline" survey, fielded during July-September, 2014. *Thus, the maximum duration of exposure to JEEViKA activities among treatment panchayats within the timeframe of the evaluation was 2.25 years.*

Results from the quantitative exercise – which is based on a pre-analysis plan filed with the AEA RCT registry – are mixed; this was to be expected, given the short evaluation horizon. We look at the differences between the treatment and control areas as of the time of the 2014 follow-up survey on a variety of indicators; all the results mentioned below are statistically significant at 95% or greater confidence levels (these terms are explained later).

Participation in SHGs, as well as savings behaviors facilitated and encouraged by these institutions have both increased dramatically in treatment panchayats:
- We find a participation rate (in SHGs) of 60% in treatment panchayats, compared to 10% in control panchayats.
- While 46% of the population practices regular savings in control panchayats, 74% of the population in treatment panchayats does so.

Debt portfolio of treatment households shows a small structural shift towards cheaper loans and borrowing for productive needs.
- Outstanding high cost debt, defined as loans on which the monthly interest rate is 4% or greater, has reduced appreciably in the treatment panchayats; control households

hold about Rs 19000 of such burden. The burden is less by Rs 2600 in treatment panchayats.

- Out of every Rs 100 borrowed, treatment households allocate Rs 3 less (than control households) to finance consumption needs. Treatment households direct a larger share of loans to productive purposes, along with reduction of higher-cost debt. However, consumption purposes are still the predominant reason to borrow (93% in control areas vs 90% in treatment areas).

- Average monthly interest rates, from all sources of credit in treatment areas are lower by almost 0.8%, and rates from informal sources (excluding through SHGs) are lower by 0.28%.

Livelihood activities of treatment households do not show a different pattern than those in control households.

- The number of earners in treatment households is no greater than that in control households.

- There is no evidence that treatment households opt for a more diverse basket of livelihood activities on average.

Access to entitlements, such as job cards and NREGS work, houses built under IAY, pensions for widows, aged and disabled is no better in treatment panchayats. We should note that JEEViKA did not provide these benefits directly at the time of survey; rather the project encouraged and facilitated Village Organizations to leverage these benefits. There is evidence that beneficiaries have acted (or consider themselves capable of acting) to improve the delivery of food from fair price shops, by acting collectively in conjunction with other women and community members.

Women's empowerment, as measured by a variety of indicators on mobility, decision making, collective action and social networks conveys a mixed story.

- 71% women in treatment panchayats say they would or have acted collectively if delivery of PDS rations are problematic, compared to 65% of women in control panchayats. However, they show no greater tendency to act when faced with cases of domestic abuse or village 'evils'.

- Beneficiaries have higher mobility to places which are important for the project, such as group meetings (48% greater in treatment areas) and banks (9% greater in control areas); however, we do not see higher mobility to other places such as kirana store, health center, friends/relatives or panchayat meetings. We should note that apart from the last of these, a high percentage women enjoy mobility to these destinations in both treatment and control areas.

- A similar percentage of women in treatment and control areas participate in decision making within their households. Both treatment and control areas are characterized by substantial participation of women in household decision making.

- A higher percentage of women in treatment areas felt that they could discuss problems and look for solutions regarding shortage of food (6.8% more) or health emergencies (9% more) with social contacts outside of their families.

Wealth effects are a mixed story once again. Consumption expenditure and patterns are no different in treatment or control areas. However treatment areas show a small widening of the asset base, compared to control areas. There is also a protective effect on landholdings.

- Consumption expenses are similar in treatment and control panchayats, whether they are measured in aggregate, per-capita or adult equivalent terms.

- On well-defined categories such as staples, pulses, meat and vegetables, expenditure patterns show no difference; neither are there any differences in expenditures on non-food items such as education, health or durables.

- However, a higher percentage of treatment households possess cows (3% more), electric fans (2.7% more), mobile phones (4% more), clocks (3% more) and bicycles (3.5% more) than control households. Additionally, while land holdings fell overall in the study sample, our results indicate that the average loss of land in the treatment group was 0.314 cottah less than that in control areas.

- There was no difference detected in the housing quality between treatment and control areas.

There has been a **deeper impact on SC/ST and landless households** when compared to the average household**.** In particular, we find this in outcomes relating to SHG participation, household debt and interest rates.

- The intervention increased SHG membership by 54% percent among both SC/ST and landless households compared to 43% among other households in the treatment group.

- The average number of high cost loans in a household was reduced by 0.37 for SC/ST households due to the intervention, compared to 0.11 for non-SC/ST households, and by 0.34 for landless households, while the treatment effect among the landed was 0.19.

- Average interest rates on debt held by households went down by 0.8% overall in treatment panchayats relative to control areas, SC/ST households saw a particularly strong impact of a decline of 0.95% and landless households saw a decline of 0.9% in rates relative to their counterparts in control areas.

Overall in Bihar, the survey data collected through this evaluation show that there has been considerable economic growth, across both treatment and control areas. Consumption in real terms has increased; so has the asset base. Quality of housing has improved. Access to entitlements (apart from NREGS) is better. Possibly in response to higher income levels (as suggested by higher consumption expenditures and a wider asset base), or greater returns to core activities, the number of livelihood activities that households participate in has reduced, with marked declines in both animal husbandry and casual labor. Women are more empowered, in terms of their mobility and involvement in household decision-making in 2014 than they were in 2011. However, debt is a concern. High cost debt, in real terms has burgeoned in both treatment and control areas; JEEViKA has provided a 'protective net' in this backdrop by providing cheaper and more accessible credit in treatment areas.
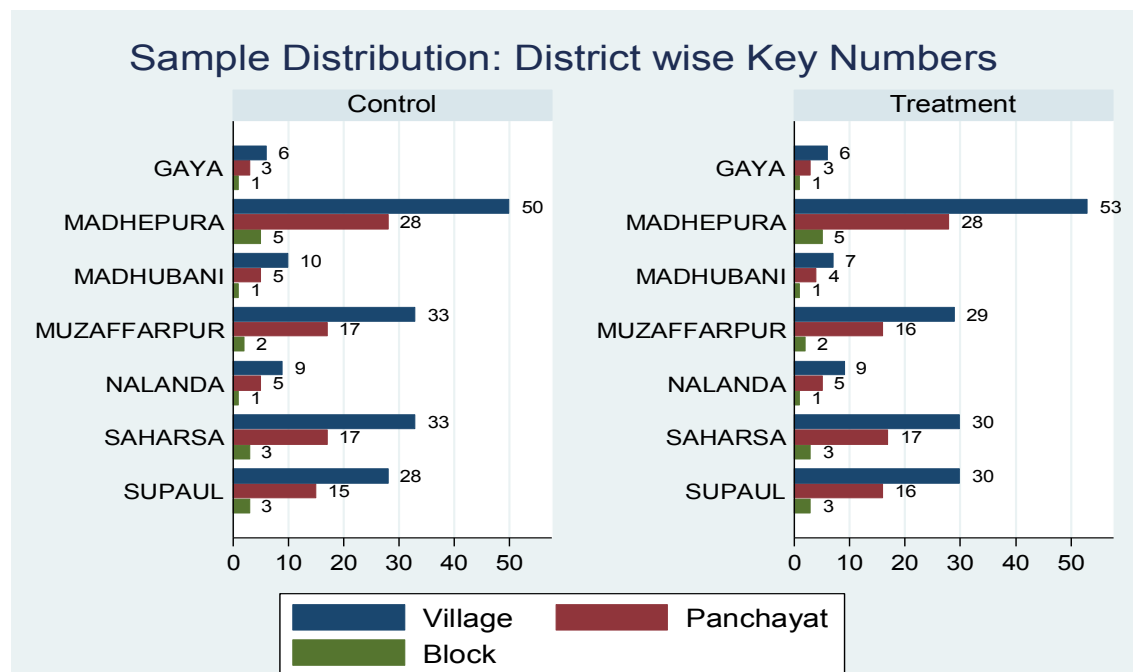
Compared to an earlier evaluation of JEEViKA's first phase conducted by the Social Observatory in early 2011 (Datta, 2015), the results from the randomized evaluation of Phase II show effects on fewer outcomes. For example, women's empowerment, as measured by a variety of indicators, is yet to improve significantly in the villages that have been exposed to JEEViKA from 2012 to 2014. The difference could reflect the shorter evaluation horizon of the RCT, which may not fully capture the project's longer-term impact. Differences in the intensity of JEEViKA's implementation in the two phases may also be at play. Indeed, compared to a participation rate of above 90% in 'JEEViKA villages' in the previous evaluation, this evaluation finds a participation rate of only 60%. To get a better

understanding of the full impact of Phase 2, we therefore recommend that another survey round be conducted in 2016 to allow the longer-term impacts of the intervention to be observed. In the following sections we look at the methodology of the evaluation and its results in greater detail.

2. Methodology of the Evaluation

In 2010, 24 additional blocks within the 6 existing project districts were identified for inclusion under JEEViKA and slated for expansion during Phase II of the project. Around the same time, 11blocks in 3 flood-affected 'Kosi' districts of Madhepura, Saharsa and Supaul were also earmarked for project expansion. In late 2010, key project stakeholders decided that the un-entered panchayats in all 11 Kosi blocks and 5 of the other new blocks could serve as a sample within which to evaluate the effects of JEEViKA. 180 panchayats were randomly selected from this area; from each panchayat, 1 to 2 villages were then randomly sampled for inclusion in the evaluation. In each study village, one or more hamlets in which the majority of the populated belonged to a scheduled caste or scheduled tribe was identified, and households were randomly selected within these.
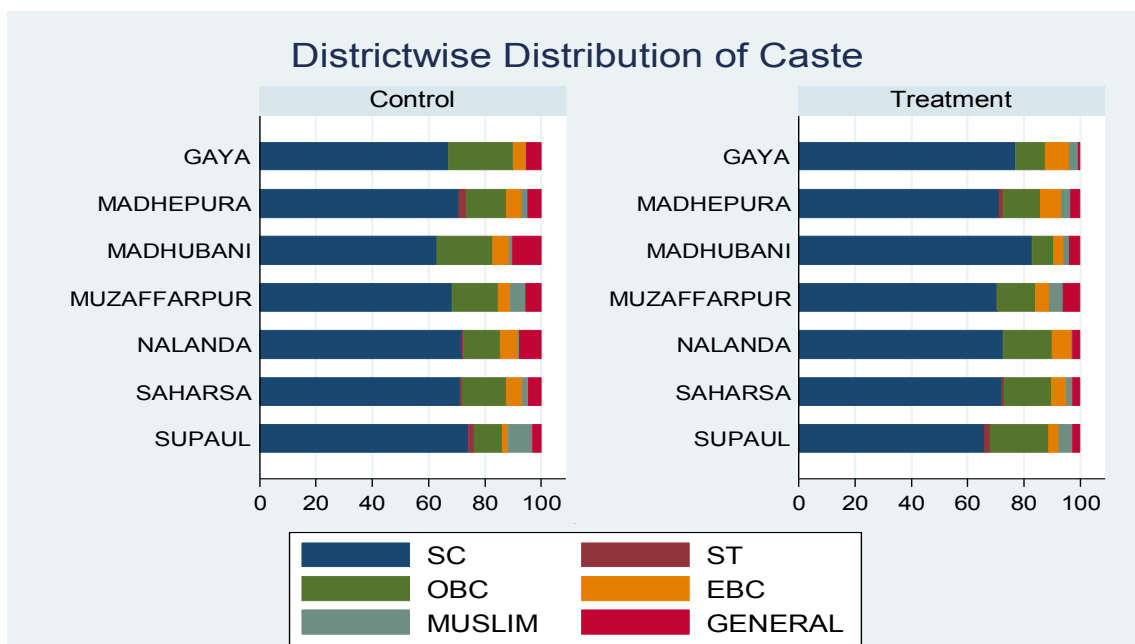
Figure 2.1: Distribution of Villages, Panchayats, Blocks in Surveyed Districts

It was necessary for the household sampling strategy to closely follow JEEViKA's mobilization strategy; otherwise, there would be a mismatch between sampled households

and targeted households. The high correlation between poverty and belonging to a disadvantaged caste is used by JEEViKA in identifying the poor in a village. The field teams for this survey would first identify the distribution of different castes in the village by hamlets; the hamlets with a majority/high percentage of SC/ST population would be preferentially surveyed, with the aim of a household sample that had approximately 70% representation from randomly selected SC/ST households.

Figure 2.2: Caste Distribution in Sample

The fieldwork for the baseline study was conducted during July-September 2011. In total, 8989 households across 179 panchayats were surveyed. A comprehensive questionnaire including modules on household membership, livelihoods activities, loans, and assets was administered to the head of each selected household or if the head was not available, to another adult member. A separate questionnaire focused on various aspects of women's empowerment (political awareness and participation, role in household decision-making, mobility, and social networks) and household consumption was administered to a married woman between the ages of 18 and 50 in each household.

After the data collection for the baseline survey was completed, panchayats were randomly assigned to either the treatment or control group after stratifying on block and mean value of

high-cost debt using a random number generator. At randomization, the groups were balanced on a subset of outcome variables.[2]

Although the identification of treatment panchayats was done in January 2012, JEEViKA had to wait 3 more months before rolling out to allow the completion of the baseline for qualitative study in April 2012. The follow-up survey was completed during July-September 2014, primarily among the same households visited at baseline. *Thus, the maximum duration of exposure to JEEViKA activities among treatment panchayats within the timeframe of the evaluation was 2.25 years.*

Due to a variety of reasons, approximately 3% of the original households could not be interviewed and were thus replaced with a household of the same caste (in the same tola, preferably). Using the two-round panel dataset, JEEViKA's impact on any outcome can be computed as the difference between the changes (in level from 2011 to 2014) in treatment areas versus the change in control areas (diff-in-diff), or as the difference in levels at follow-up, controlling for the baseline level (ANCOVA). Results using both of these methods are reported below, in line with the registered pre-analysis plan for the evaluation. In the next section, we describe some of the technical terms that we will encounter while discussing the results; an understanding of these terms will help us understand the results better. However, it may be skipped without affecting the take away points of the report.

3. Understanding the Technical Terms

Intention to Treat (ITT): Intention to treat is an approach to analysis in which the initial treatment assignment, and not on the treatment eventually received, is used to classify observations. For this evaluation, this means that all households in a village that was entered by JEEViKA are included in the treatment group, whether or not they are direct beneficiaries of the project. For example, the participation rate in SHGs in treatment villages is 60%; however the 40% households in treatment villages which are not SHG members in 2014 are considered part of the treatment group in the analysis. The treatment effect on SHG member

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[2] Subsequent analysis considering a broader set of outcome variables revealed lack of balance in some of these at baseline. As specified in the registered pre-analysis plan, all regressions reported below control for baseline values of the primary outcome variables of interest, as well as baseline values of other outcomes which were imbalanced across treatment and control groups prior to the intervention. The full set of balance tests is available from the authors upon request.

households is likely dampened under the ITT approach, but potential bias due to non-random participation in SHGs is avoided.

Average Treatment Effect (ATE): Average Treatment Effect is computed by comparing the mean outcomes among households in treated villages with mean outcomes in control villages, whether or not they are direct beneficiaries of the project. Because of the inclusion of households in which no one is an SHG member in this mean (according to the ITT approach), ATE should be amplified in the longer run by the flow of benefits to the currently left out as they progressively join the SHG movement. For both Diff-in-Diff and ANCOVA specifications, we estimate the ATE.

Significant/Statistically Significant: Used interchangeably, these terms indicate whether, based on the data collected, we can conclude that a particular outcome differs between the populations assigned to treatment and control, or whether the difference we observe between the (smaller) samples drawn from each of these groups could be due to random chance. In this report, we consider outcomes which we are at least 95% confident truly differ between treatment and control as "statistically significant" differences. Do note that statistical significance does not have anything to do with the size of the impact; that is measured by the difference between the changes in treatment versus control areas. A large ATE may not be significant, while a small ATE could be so.

Difference-in-Difference (Diff-in-Diff): This is a statistical method to estimate the ATE, given other variables that may influence it (such as caste, religion, geographical block, no. of members in household, etc). The Diff-in-Diff estimator computes the difference in changes over time (from 2011 to 2014) between treatment and control samples. Thus if $\bar{Y}_{T2011}$ & $\bar{Y}_{T2014,}$ and $\bar{Y}_{C2011}$ & $\bar{Y}_{C2014}$ denote the average levels of outcome Y in treatment and control samples in the two years, then the Diff-in-Diff ATE on outcome Y of JEEViKA is given by
$\beta_T = (\bar{Y}_{-T2014} - \bar{Y}_{T2011}) - (\bar{Y}_{C2014} \& \bar{Y}_{C2011})$.
This value can be conditioned on other influencing variables measured at baseline through use of a regression model that includes these variables.

ANCOVA: An alternative statistical method which, depending on the features of the data, may be more or less sensitive than Diff-in-Diff, ANCOVA compares outcomes in the

treatment and control groups at follow-up, conditional on the baseline level of the outcome itself. Thus if treatment status is denoted by T, which takes on value 1 for treatment panchayats and 0 for control panchayats, Y_{2011} and Y_{2014} denote the 2011 and 2014 values of outcome Y for those in either the treatment or control group, and X_{2011} and β_X are defined as above, then the ANCOVA ATE of JEEViKA on outcome Y is given by β_T in the equation

$$Y_{2014} = \beta_T T + \beta_{Y2011} Y_{2011} + \beta_X X_{2011},$$

where X_{2011} and β_X denote other influencing variables and their effect on the outcome Y respectively.

Heterogeneous Effects: The above estimation procedures to compute the ATE of JEEViKA on outcome Y consider at the impact of the program on the overall population where the program operated. We can use similar methods to estimate the impact of the program on particular sub-groups of interest. Comparing treatment effects among sub-groups is sometimes termed testing for "heterogeneous effects". For example, we can define a variable SC/ST, which takes a value 1 if a household is SC/ST, and 0 otherwise. Then the *additional* effect that JEEViKA had on outcome Y for SC/ST households (relative to non-SC/ST households) is given by $\beta_{T*SC/ST}$ in the following ANCOVA regression model,

$$Y_{T2014} = \beta_T T + \beta_{SC/ST} SC/ST + \beta_{T*SC/ST} (T*SC/ST) + \beta_{Y2011} Y_{T2011} + \beta_X X_{2011}$$

It should be noted here that with the inclusion of the interaction term (T*SC/ST), the variable β_T will usually take a different value than when the term is not included. β_T will now be an estimate of the impact of JEEViKA on non-SC/ST households; while the total impact of JEEViKA on SC/ST households will be given by $\beta_T + \beta_{T*SC/ST}$.

Percentage Change (PC): To put the magnitude of a particular impact in context, the ATE can be combined with information on the level of that outcome in control sample (after intervention). Thus, the percentage change in outcome Y due to JEEViKA is given by

$$Y_{PC} = 100* [\bar{Y}_{C2014} + ATE(Y)] / \bar{Y}_{C2014},$$

where $\bar{Y}C2014$ is defined as above.

We now consider an example to understand how to interpret the results, given the terms discussed above.

Table 3.1 An Example

	Diff-in-Diff	ANCOVA	Endline	Obs.	Heterogeneous Effects (ANCOVA)

		(With Baseline Controls)	Mean in Control Group	(ANCOVA)	SC/ST	Landless	Kosi
Basic SHG Participation[+]	0.4892***	0.5044***	0.100	8813	0.1100***	0.1142***	0.0370
β_T in 'Het. Effects' Regression					0.426***	0.423***	0.479***

+Balance check – means at baseline are statistically different at 95% confidence and higher in the treatment group
-Balance check – means at baseline are statistically different at 95% confidence and lower in the treatment group
*p<0.10 (90% confidence level) **p<0.05 (95% confidence level) ***p<0.01(99% confidence level)

The 2nd column of Table 3.1 tells us that SHG membership is 48.9 percentage points higher in treatment areas as a result of JEEViKA's activities, as per Diff-in-Diff estimation; by ANCOVA methods, the effect is 50.4 percentage points (3rd column). We are 99% confident that both the Diff-in-Diff and ANCOVA estimates of this average treatment effect are significantly different from zero. The 4th column tells us that only 10% of households in control areas are in SHGs as of 2014. Taken together with the ANCOVA estimate of ATE (50.4), we can calculate that approximately 60.4% households in treatment areas were part of SHGs in 2014.

The 6th column tells us that the increase the SHG participation rate due to JEEViKA is higher by 11 percentage points among SC/ST households than among non-SC/ST households. The impact of JEEViKA on non-SC/ST households' SHG membership (β_T in the Heterogeneous Effects regression) is given in the line below, and is estimated as 42.6 percentage points. Taken together with the additional impact on SC/ST households, we can calculate that JEEViKA increased SHG membership by 53.6 percentage points among SC/ST households in treatment areas.

We can similarly interpret the heterogeneous effect for landless households (7th column) and households in Kosi areas (8th column); taken together with their respective β_T, we have the total effect of JEEViKA on SHG participation for landless households and households in Kosi areas.

Relative Impact is usually not presented, but is easily calculated from the other results. Thus for the outcome Basic SHG participation in the sample, RI = 100*[.504+.100]/.100=604%. This implies that JEEViKA increased SHG participation more than six-fold.

Finally, the symbols defined in footnotes below the table indicate a) whether, and in what direction, the level of each outcome was statistically different between treatment and control groups before the intervention, and b) the level of significance of the ATEs presented. SHG membership, for example, was higher in treatment areas before JEEViKA rolled out.

4. Results

Inclusion: We find that Basic SHG participation, defined as whether a member of the household is a member of an SHG increased dramatically as a result of JEEViKA. Meaningful SHG participation, defined as whether a household has saved regularly in an SHG during the past year, has also increased - as have regular savings by a household in any savings instrument (within or outside of an SHG).

Table 4.1: Treatment Effects - SHG Participation and Literacy

	Diff-in-Diff	ANCOVA (With Baseline Controls)	Endline Mean in Control Group	Observations (ANCOVA specification)	Heterogeneous Effects (ANCOVA)		
					SC/ST	Landless	Kosi
Basic SHG Participation$^+$	0.4892***	0.5044***	0.1	8813	0.1100***	0.1142***	0.037
β_T in 'Het. Effects' Regression					0.426***	0.423***	0.479***
Meaningful SHG Participation	0.3186***	0.3190***	0.07	8958	0.0894***	0.1100***	0.0219
β_T in 'Het. Effects' Regression					0.255***	0.241***	0.304***
Savings	0.2566***	0.2767***	0.461	8958	0.0733**	0.1185***	0.0468
β_T in 'Het. Effects' Regression					0.225***	0.193***	0.245***
Signature Literacy	0.1313***	0.1349***	0.31	8815	0.0507**	0.0381**	0.0450**
β_T in 'Het. Effects' Regression					0.0985***	0.108***	0.105***
Basic Literacy	0.0194**	0.0257***	0.135	8815	0.0001	0.0176	-0.006
β_T in 'Het. Effects' Regression					0.0256	0.0133	0.0298*

+Balance check – means at baseline are statistically different at 1% or 5% and higher in the treatment group
-Balance check – means at baseline are statistically different at 1% or 5% and lower in the treatment group
*p<0.10   **p<0.05   ***p<0.01

Additionally, the percentage of women who are signature literate has increased in treatment areas. Basic literacy of the respondent, defined by whether she could read bus numbers, road signs, cash denominations, etc. has also increased by 1.94 percentage points, or 14% in the treatment areas. Finally, the above results are stronger for disadvantaged groups such as

SC/ST or landless households, implying that JEEViKA's targeting strategy for inclusion is working well.

Debt: Since a higher percentage of households in the treatment areas belong to SHGs, this gives them better access to cheaper micro-credit opportunities provided by JEEViKA, either via project funds or through linkages to formal institutions. Given the cost of informal credit in rural Bihar along with lack of access to formal credit and savings mechanisms, we expect to see outcomes in the debt portfolio of the sampled households.

Table 4.2: Treatment Effects - Debt and Interest Rates

	Diff-in-Diff	ANCOVA (With Baseline Controls)	Endline Mean in Control Group	Observations (ANCOVA specification)	Heterogeneous Effects		
					SC/ST	Landless	Kosi
No. of High Cost Loans	-0.306***	-0.297***	1.96	8958	-0.261***	-0.148*	0.049
β_T in 'Het. Effects' Regression					-0.108	-0.192**	-0.330***
No. of Loans from Informal Sources	-0.291***	-0.309***	1.8	8958	-0.0423	0.00322	0.139
β_T in 'Het. Effects' Regression					-0.280***	-0.311***	-0.404***
Does HH have any high cost loans?	-0.0678***	-0.0586***	0.783	8958	-0.0336	-0.0435*	0.0172
β_T in 'Het. Effects' Regression					-0.0338	-0.0278	-0.0703**
Total Outstanding High Cost Debt (Rs)	-2715.9***	-2596.2***	19269.6	8958	-1202.8	-724.2	-97.83
β_T in 'Het. Effects' Regression					-1754	-2080.3	-2529.9
Total Outstanding Debt (Rs)	-1049.80	-460.12	26645.90	8958	2586.27	2809.02	243.11
β_T in 'Het. Effects' Regression					-2379.31	-2449.79	-624.77
Total Amount borrowed in past 12 months (Rs)	-688.8	-536.1	19815.8	8958	2823.7	4496.0**	137.1
β_T in 'Het. Effects' Regression					-2609.2	-3722.8*	-628.9
Proportion of borrowing in past 12 months for Consumption[+]	-0.0310***	-0.0285***	0.927	5877	-0.012	-0.00524	-0.0194
β_T in 'Het. Effects' Regression					-0.0195	-0.0247	-0.0151
Proportion of borrowing in past 12 months for Debt servicing	0.00812***	0.00899***	0.00404	5877	0.000692	-0.00406	-0.00637
β_T in 'Het. Effects' Regression					0.00849*	0.0120**	0.0134**
Proportion of borrowing in past 12 months for Production	0.0224**	0.0181**	0.0668	5877	0.0141	0.00783	0.0275*
β_T in 'Het. Effects' Regression					0.00749	0.0123	-0.00087
Average Interest Rates[+]	-0.891***	-0.799***	5.009	7168	-0.561***	-0.358**	-0.294*

β_T in 'Het. Effects' Regression					-0.385***	-0.538***	-0.600***
Average Interest rates for Loans from Informal Sources [+]	-0.373**	-0.277**	5.205	5366	-0.196	-0.117	-0.173
β_T in 'Het. Effects' Regression					-0.123	-0.192	-0.157

+Balance check – means are statistically different at 1% or 5% and higher in the treatment group
-Balance check – means are statistically different at 1% or 5% and lower in the treatment group
*p<0.10   **p<0.05   ***p<0.01
Note: All values are in current rupees for the year in which data were collected; these can be deflated to real 2010 values using the Rural Bihar Consumer Price Index values of 110.7 for 2011 and 148.5 for 2014.

Before the intervention, the average household in either treatment or control areas had 1.68 separate high cost loans, where high cost loan is defined by a monthly interest rate greater than or equal to 4%. In 2014, control households held on an average 1.96 distinct high cost loans, whereas treatment areas held 1.66 separate loans. Thus, JEEViKA reduced the number of high cost loans by 0.3 units in treatment areas relative to control areas. Since informal sources of credit, such as moneylenders or shopkeepers, tend to charge the highest rates, we see effects of similar magnitudes when we consider the number of loans taken from informal sources. As of 2014, 78% of households in control areas shouldered some high cost debt, compared to 72% of households in treatment areas. The total outstanding amount of high cost debt was approximately Rs 8480 in 2011, across both treatment and control samples. The total outstanding amount of high cost debt increased 2.27 (1.95) times (in nominal terms) in control (treatment) areas in 3 years to Rs 19270 (Rs 16514). In real terms, this constituted an increase in high cost debt of 69% in control areas, and by 51% in treatment areas. Thus, JEEViKA reduced high cost debt burden by approximately 13.5%, after controlling for baseline variables. While other factors are pushing up high cost debt in rural Bihar, JEEViKA is counter-acting their effect to a substantial extent.

When we look at heterogeneous effects, we find that in 2014, SC/ST households in the treatment (control) group had an average of 1.76 (2.13) high cost loans, and landless households in the treatment group had an average of 1.74 (2.15) high cost loans. Thus, despite that fact that these groups had a higher than average number of high cost loans, the treatment effect has been greater than for the average household indicating that the effect of JEEViKA was more pronounced for these disadvantaged groups.

In real terms (expressed in 2010 Rupees), total outstanding debt was Rs 10245 (Rs 9932) in control (treatment) areas at 2011. In 2014, the debt burden had increased to Rs 17943 (Rs 17003), an increase of 75% (72%) in control (treatment areas). We find no impact of

JEEViKA on the overall level of debt held by households, nor on the amount borrowed during the 12 months prior to the follow-up survey round. We do, however see a statistically significant impact of JEEViKA on recent borrowing among landed versus landless households. Landed households in treatment areas had borrowed Rs 3723 *less* in current terms than their counterparts in control areas (p<0.1) over the past 12 months, whereas landless households in treatment areas had borrowed Rs 4496 *more* than their landed neighbors (p<0.05). This finding suggests that the program expanded access to credit for landless households in particular.

We next examine the proportion of new debt accumulated by households over the past 12 months that was used for consumption, debt reduction and productive investments. For every Rs 100 borrowed by a household in the previous 12 months, borrowing to finance consumption needs decreased from Rs 95.5 in 2011 to Rs 92.7 in 2014 in control areas, and from Rs 96.5 to Rs 90.5 in treatment areas; thus, those in treatment areas borrowed Rs 3 less than their control counterparts for consumption needs, for every Rs 100 borrowed. This debt was reallocated to productive investments (Rs 2.25 more) and to reduce high cost debt (Rs 0.8 more). Although these magnitudes may seem small, we note that the average control household used only 6.7% of total debt for productive purposes and 0.4% to reduce high cost debt, implying that the program tripled the proportion of debt allocated to reduce higher-cost debt, and led to a 35% increase in the proportion of debt used for productive investments.

Finally, monthly interest rates in control (treatment) areas increased (decreased) from 4.63% to 5.01% (4.85% to 4.34%) in the 3 years from 2011 to 2014; thus we estimate that JEEViKA reduced monthly interest rates by approximately 0.8%, equivalent to a 10% reduction in the annualized rate. Furthermore, while all groups examined benefited from this reduction in the average interest rate, SC/ST households, landless households and households in Kosi districts (in treatment areas) saw their rates fall even more than those in their respective comparison groups. For SC/ST households, the average interest rate in the treatment group was 4.65% compared to 5.49% in the control group; and for landless households, the average interest rate in the treatment group was 4.6% compared to 5.41% in the control group. So, while SC/ST households in the control group saw interest rates increase 0.59%, SC/ST households in the treatment areas saw interest rates *fall* 0.51%. Similarly, landless households in the control group saw interest rates increase by 0.51%, while landless households in the treatment group saw interest rates *fall* by 0.54%.

While this average reduction in rates includes the lower rates offered through JEEViKA-formed SHGs, we also see a decrease in the average rates charged by informal lenders (defined as moneylenders, friends, relatives, neighbors and shopkeepers). The average interest rate paid on loans from these sources was lower by 0.277% monthly (3.4% annually) in treatment areas after the intervention, despite starting off even higher in control areas in 2011 (4.74% versus 4.94% monthly at baseline). For SC/ST households, while the control group saw an increase of 0.65% in the average interest rate for loans from informal sources, the treatment group saw an increase of only 0.17%. Similarly, for landless households, while the control group saw an increase of 0.64% in the average interest rate for loans from informal sources, the treatment group saw an increase of only 0.15%.

To summarize, total average debt burden increased by approximately 73% in real terms, for both treatment and control areas during the evaluation period. Controlling for baseline variables, we estimate that JEEViKA reduced average household high cost debt by 13.5%, and has reduced by 9.25% the proportion of households burdened by any amount of high cost debt.

We also see that the percentage of loans taken for consumption smoothing has declined slightly more in the treatment than in the control groups, while the percentage of loans taken for investment/productive purposes has gone up in both groups, but by a larger extent in the treatment group. We also see a larger increase in the proportion of loans taken to repay old debt in the treatment group; this indicates that households with access to cheaper credit use this credit to pay off their more expensive existing loans. The advent of SHGs as a new credit institution affects the cost of credit in the treatment panchayats, even though only 60% of the population in treatment panchayats is part of the institution. Average interest rates moved in opposite directions in treatment and control areas over the last 3 years, and the annual interest rates in treatment areas are lower by 10 percentage points; the impact of JEEViKA on the cost of borrowing is even more pronounced for the more disadvantaged sub-groups.

In an environment of increasing demand for debt, JEEViKA has reduced the cost of credit, even in the informal market – either through competitive effects or because SHG participation lowers perceived risk. On further analysis (not reported in the table above), we

find that interest rates for informal loans were not significantly different for those who were members of SHGs. Thus, it is likely that the effect we see is due to competitive pressure.

Livelihood Activities: Given that JEEViKA offered opportunities for engagement in a variety of livelihood activities, we next consider whether households diversified into new income generating activities through the project. Although the main thrust of the livelihood interventions by JEEViKA is now via the 'Producer Group' approach, where households are federated into common livelihood groups based on their interest and experience, at the time of this evaluation the 'Producer Group' approach did not exist. Instead, the project played a facilitating role for interested members in the form of training for crop intensification practices, over and above encouraging members to utilize credit for productive investment.

Table 4.3: Treatment Effects – Livelihood Activities

	Diff-in-Diff	ANCOVA (With Baseline Controls)	Endline Mean in Control Group	Observations (ANCOVA specification)	Heterogeneous Effects		
					SC/ST	Landless	Kosi
Participate in Agriculture	0.0214	0.0154	0.364	8958	0.0126	-0.00171	-0.0273
β_T in 'Het. Effects' Regression					0.00536	0.0166	0.0339
Participate in Agricultural Labor	-0.0167	-0.0172	0.539	8958	-0.0292	-0.0225	0.0127
β_T in 'Het. Effects' Regression					0.00591	-0.00134	-0.0258
Participate in Animal Husbandry	-0.00339	-0.00797	0.0204	8958	0.0061	0.0112	-0.0222*
β_T in 'Het. Effects' Regression					-0.0124	-0.0159*	0.00709
Participate in Casual Labor	-0.00501	-0.000132	0.489	8958	0.0126	0.0125	0.0145
β_T in 'Het. Effects' Regression					-0.00836	-0.00923	-0.00997
Participate in Non-Farm Activities	0.0439	0.0191	0.222	8958	-0.00995	0.0354	-0.0384
β_T in 'Het. Effects' Regression					0.0257	-0.006	0.0451

+Balance check – means are statistically different at 1% or 5% and higher in the treatment group
-Balance check – means are statistically different at 1% or 5% and lower in the treatment group
*p<0.10   **p<0.05   ***p<0.01

Prior to the rollout of JEEViKA, 40% (37.5%) control (treatment) households had at least 1 member who was engaged in cultivation on own/leased land; in 2014, 36.4% (36.1%) control (treatment) households were still in this activity. Although a higher number of households exited agriculture in control areas, the difference between treatment and control areas was not

significant. The percentage of households engaged in agricultural labor as an income generation activity reduced from 74.9% to 53.9% (75.8% to 53.2%) in control (treatment) areas; once again, there was no significant difference in the extent of this reduction. Non-agricultural casual labor supply also fell over time across the sampled households, from 65% in 2011 to 49% in 2014. Participation in non-farm activities such as salaried jobs, petty business or self-employment fell from 26% to 22 % in control areas; treatment areas, however, witnessed a very marginal increase from 24% to 24.4% in the past 3 years. There were similar marginal reductions in the percentage of adults and the percentage of adult women who were engaged in any livelihood activity, across the sample from 2011 to 2014. The table above shows that there is no statistical difference between treatment and control areas in the participation rate of any livelihood activity at follow-up; furthermore, there are no heterogeneous effects in the 3 sub-groups. This indicates that JEEViKA's 'encouragement' approach to diversify livelihood interventions had little effect on the ground. Rather, beneficiary households probably intensified their investments within existing activities, as indicated by the results from the debt section. Across treatment and control areas, the results indicate that sampled households 'consolidated' into fewer livelihood activities over the past 3 years. Since the questionnaires did not gather information on wages and man-days, we cannot say whether the income flow to the household increased or fell due to this consolidation. However, as we see below in our analysis of household assets, it appears that participation in fewer activities was associated with an increase rather than a decrease in household wealth.

We now consider whether JEEViKA had an impact on women's empowerment. Various indicators, such as mobility, decision-making, collective action, social networks, and aspirations were used to understand changes in empowerment.

Table 4.4: Treatment Effects – Women's Empowerment

	Diff-in-Diff	ANCOVA (With Baseline Controls)	Endline Mean in Control Group	Observations (ANCOVA specification)	Heterogeneous Effects		
					SC/ST	Landless	Kosi
Act for entitlements	0.0613*	0.0329	0.650	8813	0.0263	0.0522*	-0.0235
β_T in 'Het. Effects' Regression					0.0143	-0.00413	0.0488
Act against domestic abuse	0.0359	0.0216	0.703	8813	0.0321	0.0146	0.037
β_T in 'Het. Effects' Regression					-0.0012	0.0112	-0.00339
Visit group meetings	0.484***	0.490***	0.105	8815	0.105***	0.120***	0.0389
β_T in 'Het. Effects' Regression					0.415***	0.404***	0.463***
Visit panchayat meetings	0.00995	0.0101	0.0275	8815	0.00626	0.00562	0.00355
β_T in 'Het. Effects' Regression					0.00563	0.00607	0.00768
Visit bank	0.0895***	0.0949***	0.225	8815	0.00712	0.0198	0.0109
β_T in 'Het. Effects' Regression					0.0901***	0.0809***	0.0876***
Decide on borrowing	0.00249	0.00168	0.920	8815	-0.0207	0.0104	0.0138
β_T in 'Het. Effects' Regression					-0.0172	-0.0142	-0.0112
Decide on politics	-0.0182	0.00944	0.759	8815	-0.0213	-0.0115	0.00616
β_T in 'Het. Effects' Regression					-0.0318	-0.0533	-0.0586
Decide on education	-0.0279	-0.0103	0.881	8815	-0.00632	0.00177	0.034
β_T in 'Het. Effects' Regression					-0.0267	-0.033	-0.0427
Network: Food shortage	0.0358	0.0679**	0.518	8958	0.023	0.026	0.0539
β_T in 'Het. Effects' Regression					0.0515	0.0494	0.0314
Network: Health Emergencies	0.0179	0.0905***	0.467	8958	0.00595	0.0216	-0.00151
β_T in 'Het. Effects' Regression					0.0863**	0.0752*	0.0915*
Felt Sad	-0.0277	0.0191	0.518	8815	-0.0589*	0.00336	0.0691
β_T in 'Het. Effects' Regression					0.0612*	0.0167	-0.0276
Felt Angry	0.0197	0.0481*	0.582	8815	-0.0299	-0.0439	-0.0692
β_T in 'Het. Effects' Regression					0.0696**	0.0792**	0.0949*
Felt happy	0.0437	0.00466	0.549	8815	-0.00386	-0.0406	-0.00561
β_T in 'Het. Effects' Regression					0.00748	0.0334	0.00845
Quality of life	0.114	-0.0519	3.177	8958	0.158	-0.0607	-0.121
β_T in 'Het. Effects' Regression					-0.165	-0.00889	0.0301
Take husband's name	-0.00184	-0.00102	0.943	8813	0.0193	0.0321*	0.00334
β_T in 'Het. Effects' Regression					-0.0147	-0.0239*	-0.00328

+Balance check – means are statistically different at 1% or 5% and higher in the treatment group
-Balance check – means are statistically different at 1% or 5% and lower in the treatment group
*p<0.10   **p<0.05   ***p<0.01

If we consider the capability of women to engage in collective action, to address problems regarding PDS, domestic abuse or liquor related hooliganism in the village, a substantial improvement occurred across the entire sample between 2011 and 2014. The percentage of women who would be willing to act when faced with problems related to the PDS increased from 49.4% at baseline to 66.9% by the time of the follow-up survey; the percentage willing to act in response to domestic abuse of a woman in the village increased from 67% to 71.7%, and those who said they would take action in response to alcohol-related social problems increased from 65.1% to 80.5%. These changes could not generally be traced to JEEViKA: while women in treatment areas were 6% more likely than women from control areas to act in response to problems with the PDS, this difference is only statistically significant at the 90% confidence level, and only in one of the two specifications. There are no differences between the treatment and control when we look at women's responses to the other problems.

Already in 2011, women were generally very likely to go to health centers (93%), visit a friend/relative's house (97.5%) or go to kirana shops (75%) if needed; JEEViKA had no impact on likelihood of going to these places. We see a substantial increase in the percentage of women who go to group meetings (from 10% to 60%) and banks (from 20.6% to 32.5%) in the treatment areas, both necessary destinations for participation in the program. On the other hand, JEEViKA was not able to increase women's participation in panchayat meetings. Indeed, participation of women in such meetings fell from 4.5% across the sample to 2.7% in control areas and 3.7% in treatment areas.

Participation of women in decision making was generally high prior to the intervention, across different dimensions such as self-employment (80%), migration (82%), borrowing (92%) and education (87%); participation in decisions regarding politics was relatively lower at 78.6%. Although the percentage of women who participated in such decision-making generally increased across the sample between 2011 and 2014, participation in decisions regarding political participation decreased slightly to 74.1% overall. None of these differences were statistically significantly different between treatment and control.

Social networks of a woman, defined by whether she reaches out to non-household members regarding shortage of food, health emergencies or personal problems, expanded significantly in treatment areas, especially for the first two issues. Compared to control areas, 9% more women in treatment areas said they would discuss health emergencies with someone onside

her household, while 6.8% more women in JEEViKA areas said they would bring up problems regarding shortage of food with these contacts.

When we consider a variety of emotions that a woman went through on the day prior to her being surveyed, we see that 4.8% more women in treatment areas felt angry (p<0.1); interestingly, anger was felt more often by the less disadvantaged subset, that is, women from non-SC/ST households, landed households, and households in non-Kosi districts. There was no difference in the percentage of women who felt sad overall, nor was there a difference in the percentage of women who felt happy. Finally, we see no difference when we consider the quality of life of women (which they rated on a scale of 1 to 5, with 1 being very dissatisfied and 5 being very satisfied) or whether a respondent took the name of her husband when she was asked during the survey (traditionally considered taboo).

Across Bihar, empowerment levels of women have generally risen over the 3 years from 2011 to 2014, whether we look at mobility, decision making, or collective action. Additionally access to SHGs are beginning to impact women's mobility in places that they did not often go to earlier, such as banks and group meetings; however the percentage of women who go to panchayat meetings remains low. The expansion in women's social networks due to participation in weekly SHG meetings is reflected in a higher likelihood of reaching out to social contacts when faced with personal problems, including food insecurity and health problems. Basic decision making, approximated by whether a woman provides any input into a variety of decisions has been high across the sample since 2011, and has increased over time. However, women's input in political decisions has reduced marginally. Women from treatment areas were more likely to act when faced with problems regarding access to entitlements, probably due to the encouragement effect provided by JEEViKA. Women in treatment areas felt angry more often; this was particularly true among the less marginalized sub populations in treatment areas, when compared to their counterparts in controls. Finally, there has been next to no change in the satisfaction levels of the average woman across the sample.

The probability of experiencing economic progress, in terms of asset ownership and consumption patterns, should increase due to participation the SHG movement. We now consider the results on asset ownership.

Table 4.5: Treatment Effects – Assets

	Diff-in-Diff	ANCOVA (With Baseline Controls)	Endline Mean in Control Group	Observations (ANCOVA specification)	Heterogeneous Effects		
					SC/ST	Landless	Kosi
Asset Index	0.0936	0.0805	0.12	8958	0.2302**	0.3394***	-0.1669
β_T in 'Het. Effects' Regression					-0.0882	-0.1600	0.1936*
Land owned by HH	0.5095**	0.3139**	2.958	8736	0.0083	-0.3900	-0.4394
β_T in 'Het. Effects' Regression					0.2981	0.5894	0.6102**
Ownership of Cows	0.0326**	0.0222**	0.363	8958	-0.0124	-0.0123	-0.0073
β_T in 'Het. Effects' Regression					0.0310*	0.0310*	0.0272*
Ownership of Fans	0.0172	0.0274**	0.145	8958	0.0147	0.0498***	-0.0342
β_T in 'Het. Effects' Regression					0.0163	-0.0079	0.0505**
Ownership of Chairs	0.0098	0.0182	0.507	8958	0.0824***	0.0439*	-0.0473
β_T in 'Het. Effects' Regression					-0.0416*	-0.0129	0.0502**
Ownership of TVs	0.0021	0.0004	0.0458	8958	-0.004	0.0356***	-0.0143
β_T in 'Het. Effects' Regression					0.0034	-0.0248**	0.0101
Ownership of Mobile Phones	0.0441***	0.0185*	0.692	8958	0.0328	0.007	-0.0272
β_T in 'Het. Effects' Regression					-0.0056	0.0136	0.0369**
Ownership of kerosene lamps (+)	-0.0697***	-0.0068	0.98	8958	-0.0012	0.004	-0.008
β_T in 'Het. Effects' Regression					-0.0059	-0.0096*	-0.0014
Ownership of Clocks	0.0335*	0.0304**	0.174	8958	0.0214	0.0524**	-0.0224
β_T in 'Het. Effects' Regression					0.0146	-0.0068	0.0455
Ownership of sewing machines	0.0036	0.0036	0.0352	8958	-0.0246**	-0.0123	-0.0062
β_T in 'Het. Effects' Regression					0.0211**	0.0123	0.0078
Ownership of Almirahs	-0.043	-0.0307	0.174	8958	0.0386*	0.0211	-0.008
β_T in 'Het. Effects' Regression					-0.0585*	-0.0457	-0.0253
Ownership of Bicycles	0.0360*	0.0358**	0.533	8958	0.0557**	0.0404*	-0.042
β_T in 'Het. Effects' Regression					-0.0048	0.0071	0.0642***
Ownership of Two-wheelers	0.0008	-0.0023	0.0385	8958	0.0203*	0.0222**	-0.0027
β_T in 'Het. Effects' Regression					-0.0168	-0.0180*	-0.0005
Ownership of Jewelry	-0.0637*	-0.0191	0.662	8958	-0.0238	-0.0359	-0.0325
β_T in 'Het. Effects' Regression					-0.0024	0.0064	0.0029

+Balance check – means are statistically different at 1% or 5% and higher in the treatment group
-Balance check – means are statistically different at 1% or 5% and lower in the treatment group
*p<0.10   **p<0.05   ***p<0.01

Households across the sample have reduced their holdings of livestock such as bullocks (12.5% to 7.4%), goats (46.6% to 41%), poultry (4% to 3.7%); and farm instruments such as ploughs (8% to 3.26%). However, when we consider cows (32.7% to 37.1%) or assets that have consumption and productive uses such as mobiles (53.4% to 70.1%), bicycles (47.2% to 54.8%) and 2-wheelers (2.4% to 3.7%), a higher number of households across the sample possess such assets as of 2014. Ownership of consumer durables such as electric fans (6.7% to 16.3%), chairs (44% to 51.5%), beds (75.7% to 85.5%), TVs (3.8% to 4.7%), radios (6.7% to 21.5%), kerosene stoves (2.1% to 4.5%) and kerosene lamps (86.7% to 97.6%) increased across the sample in the 3 years. Interestingly, jewelry, which has historically served as a savings instrument witnessed a drop in ownership from 75.8% to 65.3%.

In this backdrop of change in asset ownership, JEEViKA increased the ownership of cows, mobiles and bicycles in treatment areas by 9%, 6% and 7% respectively in the overall treatment sample. This indicates that access to credit/savings mechanisms aids buying a device such as a mobile phone, which helps connect groups and conduct livelihood affairs better. Owning bicycles and cows could similarly aid both consumption and investment/production activities. While JEEViKA had no overall impact on the asset position of households based on the Filmer-Pritchet Index of asset ownership (a Principal Components Analysis based measure), we see that it has allowed SC/ST households and landless households in treatment areas to accumulate assets at a faster rate than those in other castes and the landed, as measured through this index. The impacts on these two groups are predominantly driven by a widening of their consumption asset base (fans, chairs, televisions, clocks) as well as bicycles and 2-wheelers. Finally, households in treatment panchayats in non-Kosi districts have also expanded their asset base, compared to similar households in the control panchayats (of non-Kosi districts) ($p<0.1$). This is probably due to the annual floods of Kosi; owning a variety of assets is problematic especially when households are seasonally displaced due to floods.

In looking at land owned by households, we encounter certain issues with the data where some households in the baseline are recorded as having very large land holdings. Since these land holdings are up to 7 times as large as the largest land holding in the endline, we drop observations where land owned in the baseline was more than the largest landholding in the endline in order to eliminate extreme values that might be driving our results. This means we lose 233 observations (left with 8736 observations) in our sample, and we need to keep this in

mind while evaluating outcomes. In this reduced sample, we find that the percentage of households that owned land reduced from 26.91% to 24.61 % between 2011 and 2014 in the overall sample, while the percentage of households that leased in land during the past 12 months went up marginally from 25.51% to 26.3%. It is probable that given the high demand for credit, the reduction in land ownership is an outcome of providing land as collateral. Given a background of falling land holdings, JEEViKA appears to have had a protective effect – from 2011 to 2013, the land holdings of treatment households fell by 0.314 cottahs less than those households in the control group in the ANCOVA specification.

We now consider arguably the most important measure of poverty reduction, consumption expenditure patterns, to understand the changes brought in by JEEViKA in rural Bihar from 2011 to 2014. We use the measure of consumption value per adult equivalent as it accounts for differences in the age and gender composition of households, instead of per-capita, which assigns the same weight to an adult or a child, a male or a female.

Real monthly consumption (in 2010 Rs) of food per adult equivalent increased from Rs 618 to Rs 826 across the sample, from 2011 to 2014; real monthly consumption of non-food items per adult equivalent increased to Rs 319, from Rs 195. Thus, aggregate monthly consumption per adult equivalent increased from Rs 813 in 2011 to Rs 1145, an increase of 41%. However, there is no statistical difference between treatment and control areas for food, non-food or total consumption. Indeed there is no difference in consumption expenditure within broad sub-categories of food, such as staples, cereals, vegetables or meat, between treatment and control areas. Indeed, the only significant difference is in the consumption of 'sin' goods, such as alcohol or tobacco; treatment households consume Rs 6.35 less than control households, while landless households in treatment areas consume Rs 15.6 less than landless households in control areas, in real adult equivalent terms. Due to the lack of any differences between treatment and control households in the consumption patterns, further tables have not been provided.

Conclusion

Between 2011 and 2014, Bihar saw economic growth, with real GDP per capita increasing by 19% - while the rural cost of living went up 34% (using the Rural Bihar CPI) over the same

period. Given this, we expect consumption expenditures to have gone up, and in our study we do find a 41% increase in monthly real consumption per adult equivalent from 2011 to 2104. However, the Gini coefficient, measuring inequality in consumption, increased from 0.191 to 0.266 (which is still considerably lower than the Indian average of 0.336). Households have diversified their portfolio of assets, but the diversification has come primarily in the ownership of consumer assets. Additionally, households have specialized into fewer income generating activities in these 3 years. In the same period though, a household's exposure to debt has increased by 73% in real terms. Although households have shifted towards borrowing for productive purposes, more than Rs 90 (out of every Rs 100 credit) is still utilized to finance the consumption needs of a rural household. Thus it is possible that a large part of the growth in consumption is fueled by credit.

Economic Growth, Debt, Consumption

	2011	2014	% Change
Bihar			
GDP per capita (Constant 2004-05 prices)[1]	14574 (2011-12)	17294 (2013-14)	19%
CPI (Rural)[2] (Base, 2010 = 100)	110.7	148.5	34%
Sample			
Monthly Real Consumption per Adult Equivalent (in Rs.)	813.4	1144.7	41%
Real Debt per Household (in Rs.)	10089.0	17475.7	73%
Gini Index	0.191	0.266	39%

[1] Bihar Economic Survey (finance.bih.nic.in/Documents/Reports/Economic-Survey-2015-EN.pdf)

[2] MOSPI (mospi.nic.in)

We find that JEEViKA has helped women and their households in rural Bihar to save more and access relatively low-cost credit –by providing access to a new source of credit, facilitating linkages with existing formal sources, and reducing the increase in interest rates among informal sources. This has provided a protective effect by improving access to lower priced credit. Indications of increased literacy, greater propensity to reach out to social networks, and greater likelihood of engaging in collective action indicate that the program is beginning to have discernable impacts on women's empowerment beyond the household sphere. We see impacts on household ownership of key productive assets, including land and cattle, as well as an acceleration in the diffusion of mobile phones and bicycle ownership.

Impacts on asset ownership are particularly pronounced among landless and SC/ST households. Given that this evaluation covers only the 24-28 months of JEEViKA's rollout, the program's longer term impacts are perhaps yet to be seen.

Compared to an earlier evaluation of JEEViKA's first phase conducted by the Social Observatory in early 2011 (Datta 2015), the results from the randomized evaluation of Phase II show effects on fewer outcomes. For example, women's empowerment, as measured by a variety of indicators, is yet to improve significantly in the villages that have been exposed to JEEViKA from 2012 to 2014. The difference could reflect the shorter evaluation horizon of the RCT, which may not fully capture the project's longer-term impact. Differences in the intensity of JEEViKA's implementation in the two phases may also be at play. Indeed, compared to a participation rate of above 90% in 'JEEViKA villages' in the previous evaluation, this evaluation finds a participation rate of only 60%. Also, the difference in results may have been caused in the differences in the evaluation design – the Phase 1 evaluation used Propensity Score Matching methods while this evaluation is a randomized control trial. To get a better understanding of the full impact of Phase 2, we therefore recommend that another survey round be conducted in 2016 to allow the longer-term impact of the intervention to be observed.

References:

Datta, Upamanyu, "Socio-Economics Impacts of Jeevika: A Large-Scale Self-Help Group Project in Bihar, India," *World Development*, Volume 68, Pages 1-18, April 2015).