Strengthening the Measurement Tools and Evidence Base for Collective Approaches to Smallholder Livelihoods: The Impact of Coffee Collectives on Women’s Empowerment in Mexico

Study Protocol

Root Capital

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# Project Motivation and Objectives

Agricultural-based collectives are a critical solution to closing agricultural gender gaps and empowering women across value chains.[[1]](#footnote-1) A recent impact evaluation Root Capital conducted in the coffee value chain in the Democratic Republic of the Congo found that our agribusiness clients helped level the playing field for women members: compared to women not affiliated with our client, women members had equal access to extension services as men and reported increased household decision-making power. Recognizing the potential agricultural collectives hold in improving livelihoods of smallholder farmers, including empowering women up and down value chains, Root Capital invests in their growth through an integrated credit-plus-capacity model. We believe that the most effective way to support smallholder farmers is to invest in agricultural-based collectives that work at the very start of supply chains, buying crops directly from smallholders. These collectives generate higher and more reliable income and market access for smallholders, and provide critical access to farm inputs and training to improve their production. With improved production and income, farmers and their families can make the decisions and purchases necessary to improve their quality of life with greater freedom and dignity.

The IFPRI ANEW project is focused on piloting and validating indicators focused on marketable agricultural products and agriculture-based collectives (e.g., farmer producer organizations) for the project-level Women’s Empowerment in Agriculture Index for market inclusion (pro-WEAI+MI), an index developed to measure women’s empowerment in market-oriented agricultural projects using collective-based approaches. This index incorporates (i) indicators specific to marketable agricultural products, and (ii) measures of collective empowerment for FPOs, such as how FPOs interact with other market actors and dynamics between FPO members. The ANEW portfolio targets existing grantees of the Walmart Foundation. As an IFPRI ANEW grantee, Root Capital will conduct an impact evaluation to better understand whether and to what extent the collective model, including the provision of market access, financial services, digital tools, agronomic extension, and other services strengthen women’s empowerment among smallholder communities in Chiapas, Mexico. Root Capital will also help develop an abbreviated M&E version of the pro-WEAI+MI index to track the progress of women's empowerment interventions at frequent intervals. To that purpose we will provide feedback on the M&E pro-WEAI+MI tools and use our monitoring data to inform those indicators.

Our primary objective is to explore how affiliation with a Root Capital client cooperative can affect the production, income, and general well-being of smallholder coffee farmers. We will also assess if Root Capital’s interventions improve gender equality encouraging women’s empowerment.

Given that this study evaluates the effects of Root Capital services, it is worth noting our intervention is taking place at the business (cooperative) level. No direct intervention is being done by Root Capital at the household level.

# study duration

The study will take place through 2023, and if additional funding is obtained, it is foreseeable to collect follow-up data in 2024 or 2025. If follow-up data were to be collected, the main purpose would be to estimate if effects persist in the long run and to have the possibility of using an alternative and more robust research design.

Specifically the evaluation will begin with piloting of the instruments and data collection in Q1 2023 continuing until Q2 2023. The piloting of the tool should happen at the end of the first month of the project implementation (February 2023) and data collection should begin at the end of Q1 or beginning of Q2. The exact date for the beginning of the field work will depend on the production and harvest cycles of coffee producers in the area. Preliminary data analysis will take place in Q2 & Q3 of 2023 and Q4 of 2023 will be devoted to report writing, peer feedback, and socialization of the results.

# Methodological Overview and Data Collection Strategy

## Research Questions

Among others, this study intends to answer the following research questions and associated sub-questions regarding the effect Root Capital’s affiliation has:

1. Does affiliation to a Root Capital client strengthen women’s empowerment among smallholder communities in Chiapas, Mexico?
2. Is affiliation with Root Capital associated with changes in household decision-making or livelihood activities?
3. Is affiliation with Root Capital associated with access to information related to agricultural cultivation, processing, trade, or marketing?
4. Is affiliation with Root Capital associated with significant differences on how households (and in particular women within those households) access markets or interact with other actors in their supply chain?
5. Is affiliation with Root Capital associated with significant differences on how households (and in particular women within those households) access financial markets or use financial services?
6. Is affiliation with Root Capital associated with significant differences on how households (and in particular women within those households) allocate their time in the household, participate in other groups or associations, or exercise collective agency?
7. Is affiliation with a Root Capital client associated with significant differences in perception about the role of women in the coffee value chain and associated agricultural activities?
8. Are there significant differences in the way in which producers interact with farmer producers’ association, when the FPO is a Root Capital client?

## Econometric Impact Evaluation Methodology

Given project execution timelines we propose that this first stage of the study follows a propensity score matching approach. We will match households on observable time-invariant characteristics that cannot be affected by Root Capital’s intervention.

Accurate impact estimation relies on the assumption the comparison group offers an accurate counterfactual for households in the treatment group. The propensity score matching approach allows to try to estimate an isolated treatment effect (ATT) for Root Capital’s intervention when dealing with only one round of data collection. We will generate propensity scores for all study participants, reflecting the likelihood of treatment assignment conditional on retrospective data and permanent characteristics collected in our survey.

Rather than relying on a randomization for the creation of an adequate counterfactual, we match households with similar observed characteristics, assuming there is no selection bias based on unobserved characteristics. Therefore, the identification strategy relies on the idea there is a selection on observables and a common support, making it theoretically possible that individuals with the same matching score have positive probability of being both participant and no-participants, meaning, there is no perfect predictability of participation given that participation is independent of outcomes once we control for observable characteristics. If the conditional independence assumption and the common support assumption hold then it is possible to estimate the average treatment effect on the treated.

If we secure funding for future rounds of data collection, we will consider using an alternative method that is more robust in isolating the treatment effect (potentially diff-diff with some additional intervention variation).

## Study Population and Recruitment Strategy

We have worked with Root Capital’s Mexico team to identify (using a set of preestablished criteria) potential Root Capital clients who are well placed to participate of the study. After validating alternatives and different locations through Mexico, we have identified three cooperatives located in the state of Chiapas}. Among other criteria for client selection, we validated to make sure that services are consistent, clearly documented, adequately provided, and include “gender equity” advisory elements that are comparable across clients. The selection of these three clients allows us to believe that we have a similar intervention in all cooperatives which is a key assumption our study relies upon given that we are evaluating “the Root Capital effect”. Our clients receive a package of interventions that are tailored to their needs. If we were to select clients randomly (which would be ideal) we might end up with clients who receive interventions that are not comparable.

After identifying comparable clients, we proceed to estimate an adequate sample size. To assess the sample size we run power calculations based on our previous studies and similar effects we have seen for our key dependent variables. We decided to sample 500 households within the total population of producers of these 3 cooperatives (~2000 households in total). The data collection firm will randomly select these 500 households stratifying by client (given different number of producers per client). In each of the households we will interview both the male and female household leaders, for a total of ~1000 surveys in the treatment group.

For our control group selection, we asked the data collection firm to identify 500 comparable households keeping in mind three key criteria: i) Households must be in the same municipality as the treatment groups, and the rate of households per municipality must be comparable to the proportions of the treatment group; ii) households belong to a farmers cooperative that is not affiliated with Root Capital, and iii) households’ farm size is comparable to average farm size of our clients. The data generation firm will also interview both male and female household leaders, for a total of ~1000 surveys in the control group.

Households in the treatment group will be randomly selected from the population of producers of our clients (~2000 households). The selection of the three clients is necessary to assure consistent intervention across agribusinesses.

Selection for the control group also relies on random selection, from farmers affiliated to a cooperative or an FPO that have not worked with Root Capital.

## Major Data Collection Activities

### Pilot and Preparation of Enumerator and Translator Trainer Materials

In Q1 2023 we will run a pilot of the instrument visiting 10 households in similar communities to those where we will do our field data collection. During the pilot workshop we will introduce the Pro-WEAI+MI tool to supervisors and the field team of the data collection agency and verify that it is possible to implement the tool with the direct translation.

We have opted for direct translation, given that some of the indigenous languages present in the area do not have written forms. Therefore, it is not possible to translate surveys into local languages, but both local experts as our team in the field informed that it is usual for the communities to use Spanish as their written language. All surveys and questionnaires will be available in Spanish.

### Field Data Collection Activities

Household surveys will be conducted in-person with enumerators visiting the pre-selected households who were chosen through the stratified random sample. In each household interviewers will interview one male and one female household member.

We have validated with the data generation firm and our Mexico team, and they assured us that household participation in the survey will not be an issue as long as the data collection process happens outside of peak farming seasons.

The data collection firm has estimated that the total time frame for field data collection is not more than six weeks. The firm is convinced that the process could be done in less amount of time but has given this generous timeframe in consideration of particularities of the region (related to infrastructure and some limitations of access to communities) and potential issues related to mobility restrictions associated to COVID.

Training of data collection teams will take approximately five days to complete and will include in-depth training on gender and value chain concepts for enumerators, adaptation of the data collection instruments and survey questionnaires. During these preparatory sessions training will also be given to make sure that the interaction with translators that will accompany the team is fluent and does not interfere with the data generation process or introduce bias. The survey covers the following topics:

1. Agricultural production of households
2. Household composition and characteristics
3. Roles in household decision making
4. Access to information and to markets
5. Access and usage to productive capital and financial services
6. Time allocation
7. Group membership and collective action
8. Gender relevant topics related to freedom of movement, autonomy in decision-making, entrepreneurial attitudes, safe and healthy environments, and attitudes and perceptions about sexual hostility and violence against women.

To assure data quality during the data collection process the data firm will provide daily report during the first week of data collection, and biweekly reports in the additional weeks needed to complete the process.

### Data Analysis and Report Activities

The data collection firm will proceed to clean data and produce reports with descriptive statistics that allows verifying that the sample collected for the treatment group is representative of Root Capital’s client producers. It will also verify that the control group is a valid comparison group based on the parameters provided by Root Capital.

After performing these statistical analyses and transferring all data and instruments to Root Capital, the data collection firm will proceed to eliminate all data from its hardware and all cloud base data storage services.

Root capital will proceed to review and validate data upon receiving it, and then the research team will anonymize data and replace household identifiers with anonymized UIDs. The file containing PII will be stored in a secure cloud-based password encrypted location and will only be accessible by research team members in line with procedures stated in this protocol.

Root Capital’s Impact Studies team will be responsible for performing all statistical analyses under the supervision of Co-PI Juan Taborda.

## Data Storage, Security, and Confidentiality

### Confidentiality

During data collection, enumerators and their supervisors will be trained to maintain the confidentiality of the data they collect. The training will include interview techniques to ensure privacy and who they discuss survey responses with. During the weeks of field work survey data will be kept in encrypted folders under the responsibility of the data collection firm. The firm contracted to implement the data collection has also signed an NDA and Root Capital’s contract includes provisions to assure that all collected data is transferred to Root Capital and deleted from any tablet, computer, or cloud-based service held by the data collection firm.

Once the data is transferred to Root Capital, participant names, institutional affiliation, and contact information will be recorded in a separate file from that of the anonymized survey answers database, alongside their identifiers for the purpose of the research. This information will be directly stored in encrypted cloud locations that will only be accessible by the research team. No other sensitive information will be collected at any time.

In lieu of these data, a unique identifying number will be assigned for households and respondents within households. Databases used in the analyses or publication will use these unique identifiers and reviewed to assure no individual or households can be identified by other variables in the dataset.

### Storage and Access to PII

Only Juan Taborda (Co-PI) and Pablo Busto (Sub-I) will have access to both PII and the research data. Other researchers within the research team and colleagues from Root Capital, will have access to deidentified data stored in Root Capital’s cloud repository.

Files containing keys to match PII to the anonymized data will be stored in encrypted cloud locations that will only be accessible by Juan Taborda (Co-PI) and Pablo Busto (Sub-I). PII data will be stored in the cloud-based password encrypted location for 3-years after study completion. If no additional funding has been secured to perform a second round of data collection or if there is no reasonable possibility that the research team is required to defend against an allegation of scientific misconduct the PII data file will be destroyed. In case of publication, data will be made public following open access and replication standards in a publicly available data repository.

### Security

Given the deidentification process detailed previously, and the fact that data will be stored in secure password encrypted cloud locations we are confident that confidential or personal information will not be available to others not involved with this research project.

The only additional risk in the data generation process is related to the data collection firm and their handling of the data. To address this risk, we have included clauses in the contract that require them to eliminate all project files and data once the data collection process concludes, and we have also signed an NDA that details legal actions to happen in case the data collection firm breached the confidentiality agreement.

## Informed Consent

The consent process will take place prior to the interview, in the household. The consent process will clearly note that participation in the research is optional and that as voluntary participants they are allowed to request confidentiality about any information they wish to disclose. Enumerators will begin by explaining the objectives of the study, the organizations involved with the research project, the contacts to reach out in case questions emerge related to the study, and the confidentiality around identifiable information. All this information will be read by the enumerator and translated by the official translator from Spanish to the native language (if necessary).[[2]](#footnote-2) Enumerators will stress that participation is voluntary and that subjects may decline to answer any of the questions or stop the survey at any time.

Oral consent will be obtained before the interviews proceed.

# communication of research findings

We will produce different communication pieces to present our findings to study participants, Root Capital clients, internal Root Capital Client-facing teams, donors, and relevant academic or practitioner audiences.

As members of the ANEW project we will also share our findings at ANEW-specific workshops and with the ANEW community of practice.

Our final reports and findings will also be communicated through different types of communication pieces such as blogs, podcasts, communication videos, research briefs, working or discussion papers, or peer-reviewed publications.

# covid-19 considerations

In preparation for the research study the research team reviewed national statistics from CONACYT and discussed with Berumen (data collection firm) if especial protocols or provisions were required or necessary to mitigate the risk of contagion or spread of COVID-19 due to the implementation of the study.

At this moment, national provisions do not require the use of masks unless symptoms are confirmed or one is present in a healthcare setting. CONACYT data[[3]](#footnote-3) ranks the state of Chiapas as the lowest in both number of confirmed cases (56,137) and number of confirmed cases per 100,000 habitants (979.64). The graph below presents the evolution of COVID cases both in Mexico and the State of Chiapas showing the plateauing of the number of confirmed cases.

Chart, line chart

Description automatically generated

Graph 1- Confirmed Cases per 100K Habitants (Conacyt, 2023)

It is also worth mentioning, that Berumen´s personal and contractors are all vaccinated by company’s internal policies. Furthermore, since the country was reopened team supervisors have been using internal protocols to flag cases and outbreaks to decide if data collection processes needed to be paused or stopped if risk increased for members of the data collection team or study participants. All these protocols were confirmed both in conversation with the central office of Berumen in Mexico D.F. as with the Study Coordinator who will be overseeing data collection in Chiapas.

# research team

The IFPRI and Root Capital Research Team consists of the following individuals in their listed roles:

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| Jessica Heckert | Co-Principal Investigator (Co-PI IFPRI) |
| Juan Taborda | Co-Principal Investigator (Co-PI Root Capital) |
| Pablo Busto | Researcher (Sub-I Root Capital) |

1. Schincariol McMurtry, L. & McMurtry JJ. (2015). *Advancing Gender Equality: The Co-operative Way.* International Labour Organization. <http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---coop/documents/publication/wcms_379095.pdf> [↑](#footnote-ref-1)
2. It is important to note that some of the native indigenous languages present in the area do not have written forms and therefore it is not possible to translate surveys into local languages. All surveys and questionnaires will be available both in English and Spanish, but if needed translation to local language will happen during the interview. [↑](#footnote-ref-2)
3. Data can be reviewed at https://datos.covid-19.conacyt.mx/ [↑](#footnote-ref-3)