

## Mobile Microinsurance: Increasing Uptake through Group Incentives

### Project Summary

Mobile microinsurance has the potential to protect millions of smallholder farmers worldwide from climate-related shocks, but uptake of this financial technology has remained low. A lack of liquidity and trust are high barriers that prevent farmers from purchasing microinsurance, but promoting group packages could help insurance providers surmount these challenges. We propose a study to test the mechanisms through which marketing insurance programs to groups in the Mount Kenya region may overcome trust and liquidity barriers. This project would be the first of its kind to incorporate real farmers' associations into a group incentive experiment, and our results would have great relevance to our partner organizations in Kenya both in the policy and academic communities.

### Problem Context

Smallholder farmers worldwide are experiencing economic hardships more frequently as unpredictable rainfall and rising temperatures contribute to crop failure. As the effects of climate change intensify, the frequency and prevalence of large-scale crop failure will exacerbate financial insecurity in developing countries, making it even harder for farmers to escape poverty. There is a growing need for innovative measures to mitigate climate risks for smallholder farmers. Mobile microinsurance is a financial instrument that has significant potential to protect farmers from large-scale climate shocks. It provides safety nets at a low premium for low income farmers by using weather indices and mobile money transfer services, eliminating the need for costly in-person crop assessments. Microinsurance compensates farmers in the face of climate shocks, helping them cope with income losses.<sup>1</sup> Despite its promise, uptake of microinsurance remains low. Offering lower group premiums to farmers involved in farming associations is one way to increase uptake of this product.

### Research Question

How might marketing agricultural microinsurance to groups lower the trust and liquidity barriers that have historically prevented smallholder farmers from accessing such financial services? Can existing social structures (e.g. farmers' associations) be leveraged to overcome barriers to financial inclusion?

### Research Plan

In May 2019, we surveyed smallholder farmers in the Mount Kenya region regarding their familiarity with agricultural microinsurance and the challenges they face related to climate change. Our surveys revealed the urgency for climate change risk mitigation in the region, as 79% of farmers interviewed linked decrease in crop yield to changing weather patterns.<sup>2</sup> Among our many findings, the insights

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<sup>1</sup> Beyond serving as a safety net, microinsurance encourages optimal risk-taking behavior, saving, and investment in new technologies and inputs (e.g. fertilizer) to increase crop yields.

<sup>2</sup> Crossman et al., p.23.

we gained regarding community capacity serve as the key motivation for our current proposal.

We found that community capacity is high amongst farmers in the region, with many active in farming self-help groups and co-ops. Within these groups, farmers share information, provide and receive support, and market crops. Operating in groups, individual farmers have increased political and economic bargaining power.<sup>3</sup> Although these social structures are strong, formal insurance mechanisms have yet to effectively engage these traditional risk-sharing mechanisms. By marketing insurance policies to groups, we aim to target the trust and liquidity barriers to microinsurance through offering a lower group premium and drawing on informal mechanisms for social protection that are already familiar to farmers.

There are several mechanisms through which microinsurance marketed in group packages could increase uptake. Group insurance plans allow for lower premiums, which targets the liquidity constraint for microinsurance uptake. Although mobile microinsurance is significantly less costly than conventional insurance that requires in-person crop assessment, many smallholder farmers still may not have sufficient funds to pay the premium. Discounted premiums in group packages may make the product more accessible and increase uptake as a result. Unfamiliarity and lack of trust are also barriers to microinsurance uptake. Group insurance allows farmers to engage with the product together, which can increase confidence and trust in its effectiveness: seeing a neighbor who is considered trustworthy buying microinsurance increases the likelihood that other farmers in the group buy in as well. While ample scholarly literature suggests group packages might increase uptake of microinsurance, few studies have tested the effect of group marketing on the demand for the service.

Building on theories of group cohesion and trust, our study aims to market microinsurance to groups with added financial incentives. As of now, there have only been studies aimed at gauging individuals' preferences for group insurance compared to individual insurance at the same price. These studies have also only tested preferences for groups that were created for experimentation. Our work will contribute to the literature on group insurance in two major ways. Our study will be the first to test demand for microinsurance that is marketed to groups at a lower premium than that of individual packages. Second, we will also be the first to test demand for group insurance among real farmers' associations, allowing for a more realistic estimate of demand for collective insurance products.

We aim to conduct a field lab experiment in the Mount Kenya region where we conducted our exploratory study in 2019. Our experiment is a game in which farmers have two choices: purchasing insurance at cost  $C_i$  or denying insurance at a cost of zero. However, if a certain amount of farmers ( $N$ ) within the group purchase insurance, they activate a reduced premium for individual farmers at a cost  $C_g$ . In other words, if  $N$  or more farmers in a group purchase insurance, each farmer who purchases insurance will face a cost of  $C_g$ , where  $C_g < C_i$ .

We plan to test this game across one control and two test groups. The first test group will consist of a representative sample of six farmers from an existing farming group. Thus, each participant in this version of the game will already be familiar with the other participants. This design attempts to

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<sup>3</sup> The Kenyan Ministry of Agriculture supports these farming groups, and provides farming advice, assistance services, and weather reports.

implicitly leverage existing social networks. The second test group of the game will consist of a group of six randomly selected farmers who are not from the same group. With both test groups, we will offer farmers insurance at an individual price of  $C_i$ . We will then explain that if four of the six of them (when  $N=4$ ) purchase insurance, each individual farmer's premium will fall to a price of  $C_i$ . This will allow us to measure how trust in a group affects uptake of microinsurance. Based on theories of group cohesion and trust, we would expect higher uptake of microinsurance among the self-selected groups than the randomly organized ones. We plan to test this across 20 groups of 6 farmers for both the self-selecting and the randomly selected groups.

The control group for the game will consist of six individuals. We will only offer farmers insurance at a price of  $C_i$ . We will not offer them group insurance with the reduced premium at  $N = 4$ . This control group will allow us to compare how insurance is normally marketed to how we attempt to leverage group dynamics to increase uptake. For the individual version of the game, we will run ten games with six individuals per game. In total for all groups, our experiment requires 300 participants.

The second layer to the experiment involves testing the game across the three groups with normal liquidity constraints versus additional. In the normal version of the game, we will simply market insurance to farmers as described above. However, in the additional liquidity version, we will start the games by giving each farmer an extra \$5. Thus, we will see whether the additional disposable income affects whether they decide to invest it in microinsurance.

If our budget permits experimentation with liquidity constraints, we envision half of the groups in game version to face normal liquidity constraints and the other half to face reduced liquidity constraints. For instance, for the first version of the game we would have twenty groups of farmers in existing groups. Ten of those groups would have the normal liquidity constraint conditions while the other ten groups would have the reduced liquidity constraint conditions.<sup>4</sup>

## Research Outputs

After completing this experiment, we will analyze the results and draft an academic paper highlighting our full findings to share with those interested in the project's implications. To ensure that our project's findings are accessible and readable, we also hope to condense our key insights into farmers' preferences for microinsurance policy options into a shorter memo. Overall, these deliverables provide the first analysis of the impact of group financial incentives and group trust dynamics on the adoption of microinsurance among real farmers' associations.

## Outreach

This research had real and immediate policy implications. Our analysis would give policymakers and insurance providers in Kenya a better understanding of the key characteristics that make microinsurance accessible to smallholder farmers. We will share our summarized findings with policy practitioners in a brief memo. Kenya's Ministry of Agriculture provides benefits to farmers' groups and is developing government crop insurance packages for maize. Our research would be of particular interest to them and we plan to provide them with a full report of our findings.

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<sup>4</sup> With these reduced group numbers, we will analyze how this impacts our experiment's power.



Following our exploratory study in 2019, we formed a partnership with the Agriculture and Climate Risk Enterprise (ACRE), the lead insurance provider in East Africa. ACRE has expressed interest in our research and learning how they could leverage group structures to promote financial inclusion.

This experiment would also create new knowledge about the feasibility and potential success of marketing group policies to small farmers' cooperatives, as a means of overcoming traditional constraints to microinsurance uptake. We intend to collaborate with Chuka University, a world leader in agricultural studies located in the Mount Kenya region, with whom we have a research partnership. This research will provide Chuka University with invaluable insights into farmers' preferences for mobile microinsurance and broader investment decisions. We ultimately aim to publish our paper in an academic journal with the support of Dr. Phil Roessler and contribute to the broader literature on microinsurance and financial inclusion.

## Project Timeline

*Preparation: February 2020 - May 2020*

- Recruit underclassmen research assistants at W&M
- Continue our research into opportunities for group incentives in microinsurance
- Complete experimental procedures and prepare for Swahili translation by our local partners
- Continue to pursue external funding opportunities
- Organize travel plans in collaboration with ACRE and our existing contacts in Kenya

*Travel: May 2020 - July 2020*

- Travel to Kenya for three weeks to carry out our experiment with the aid of local partners

*Analysis and Outreach: August 2020 - December 2020*

- Complete data entry and preliminary analysis upon return from travel
- Conduct full analysis of results by the end of August
- Draft and disseminate a memo summarizing findings for local partners by the end of autumn
- Draft a full length academic paper by December 2020 with the intent to pursue publication

## Project Budget

We are seeking \$25,000 for the implementation of this experiment in full, however, we have included a smaller budget ask that would allow us to implement a less comprehensive field experiment.

<i>Expense Category</i>	<i>Only measuring effects of normal liquidity on microinsurance demand</i>	<i>Measuring effects of both normal and additional liquidity on microinsurance demand</i>
<b>Travel Expenses<sup>5</sup></b>	\$7000	\$10,000

<sup>5</sup> This includes airfare, taxis to and from the airport, van rental and a salary for our driver while in Kenya, visa costs, and lodging for three weeks in-country. The figure on the right allocates funding for Dr. Phil Roessler to accompany us.





<b>Participation Incentives<sup>6</sup></b>	\$3000	\$7000
<b>Local Research Assistants<sup>7</sup></b>	\$2500	\$5000
<b>Researcher Wages<sup>8</sup></b>	\$3000	\$3000
<b>Total</b>	<b>\$15,500</b>	<b>\$25,000</b>

## STUDENTS

**Laura Schwartz** is a senior majoring in International Relations and minoring in Economics. She served as a research assistant on last year's Mobile Microinsurance team, surveying farmers in the Mount Kenya region regarding their familiarity with microinsurance and challenges they face related to climate change. As a research fellow with Medical Aid Nicaragua Outreach: Scholarship (MANOS), she has spent the past three years studying community health and capacity in the rural community of Chagüite, Nicaragua, where she conducted household health surveys and worked with the community on the implementation of water catchment project.

**Elizabeth Sutterlin** is a senior majoring in International Relations. She served as a research assistant on last year's Mobile Microinsurance team, traveling with the group to implement surveys about mobile microinsurance knowledge and trust in the Mt. Kenya region. Her research at W&M has primarily focused on the relationship between technology and conflict. As a research fellow for the Project on International Peace and Security last year, she conducted a year long self-directed project on the influence of mobile phones on occurrences of ethnic violence.

**Maisie Sapnar** is a senior majoring in Economics and minoring in Hispanic Studies. She joined the Mobile Microinsurance team this fall. This past summer she worked for Blue Marble Microinsurance, a startup with the mission of providing socially impactful, commercially viable insurance protection to underserved populations. Her role with focused on market research for health microinsurance for women of child-bearing age in Mexico as well as the benefits of bundling life insurance with loans given by microfinance institutions.

## MENTOR

**Dr. Phil Roessler's** research and teaching offer new perspectives on conflict, state-building, and development, with a focus on the region of sub-Saharan Africa, where he has conducted extensive

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<sup>6</sup> This provides each participant with 500 Ksh for their time. We plan to have three hundred participants in our experiment. The figure in the left column provides us with the funds to give all 300 farmers 500 Ksh, simulating normal liquidity constraints. The figure in the right column provides us with the funds to give all participants 1000 Ksh to simulate differences in microinsurance uptake under normal as well as increased liquidity (i.e., where farmers have more disposable income to spend on insurance.) The figure on the right allows us to reach 150 more farmers.

<sup>7</sup> Last year, one week of translators from a local university cost \$500. This new figure reflects the greater duration of this project phase. It includes the cost of a research permit for foreigners in Kenya, the costs of renting space, and facilitation fees for local partners who can recruit farmers for our experiment.

<sup>8</sup> Covers wages and expenses incurred related to research and implementation for three researchers traveling to Kenya.



field research. His research has been funded by the National Science Foundation, the British Academy, the Harry Frank Guggenheim Foundation, the Institute of International Education and USAID and has been published in *World Politics*, *Journal of Politics*, the *American Journal of Political Science*, *Comparative Politics* and other outlets

## LETTER OF SUPPORT

Phil Roessler, Professor of Government

### **How does this project fit with your research interests?**

Over the last five years I have been leading a research program funded by the Bill & Melinda Gates Foundation on the impact of mobile technology on development in Africa. This Shark Tank project is thus directly connected to my research interests. It builds off a previous Shark Tank project undertaken by Henry Crossman, Darrien Spitz, and Kayla Temple in 2018/2019. Henry worked with me in Tanzania on my field experiment on the impact of mobile phone ownership on poverty reduction—which gave inspiration to studying mobile microinsurance. Laura and Elizabeth worked as research assistants on the project.

In building on a previous Shark Tank project, in many ways Laura, Elizabeth and Maisie face an even higher bar than other teams to win. They need to distinguish themselves from the mobile microinsurance 2019 project; otherwise many will ask haven't we seen this before. Well, they have done it. Building on what they learned in summer 2019 in Kenya—through a climate change, farming and insurance workshop held at Chuka University with stakeholders from around Mount Kenya, in fielding about 10 different focus group sessions with farmers and farmer cooperatives, and conducting multiple qualitative interviews to better understand farmers perceived barriers to use of agricultural insurance products—they have come up with an excellent idea with a brilliant way to test it: leveraging social networks to scale microinsurance enrollment.

One of the key findings the team made from their research in summer 2019 was community capacity is high amongst farmers in the region, with many active in farming self-help groups and co-ops. Within these groups, farmers share information, provide and receive support, and market crops. Despite the strength of these existing social structures in the Mount Kenya region, formal insurance mechanisms fail to engage with them—and in many ways work at cross-purposes with these powerful traditional mechanisms. The team proposes to change this. Building on theories of group cohesion and trust, they aim to market microinsurance to groups providing added financial incentives to catalyze a critical mass of group members to sign up.

### **Please assess the student(s) ability to complete this project if they receive funding.**

Laura, Elizabeth and Maisie are some of the best students we have at W&M. Laura and Elizabeth were both in my course, *Mixed Methods for the Study of Conflict and Development*, in spring 2019.



Mixed Methods is a demanding class but the two excelled in the course, writing two excellent research design papers. They are two of the most conscientious students I have worked with. Laura has been a research fellow with MANOS for three years, and interned at the US Embassy in Paraguay in summer 2019; Elizabeth did PIPS and was a GRI Summer Fellow in summer 2019. I have not had Maisie in class but in the interactions we have had I have been impressed. Their Shark Tank pitch builds on the project undertaken by Henry Crossman, Darrien Spitz, and Kayla Temple in 2018/2019. Laura and Elizabeth worked as research assistants on the project. This entailed contributing to desk research in spring 2019, including writing an experimental research design as part of my Mixed Methods course. They then travelled to Kenya with Henry, Darrien and Kayla and myself to implement the project in collaboration with Chuka University. I was very impressed with Laura and Elizabeth in Kenya. They demonstrated strong inter-cultural skills, professionalism, and research acumen. Even before departing for Kenya, they made a major contribution to the project when Laura developed a connection with Agriculture and Climate Risk Enterprise (ACRE), one of East Africa's leading insurance providers—and then through repeated conference calls forged a full collaboration with ACRE. We are thrilled for the opportunity to work with ACRE over the next year to pilot test the efficacy of marketing ACRE's agricultural insurance product to groups. Maisie was not part of the summer 2019 research trip but during this time she worked for Blue Marble Microinsurance in New York. Blue Marble aims to “provide socially impactful, commercially viable insurance protection to the underserved.” Part of her portfolio included building a method for measuring social impact and wellbeing of farmers enrolled in the insurance solution, and drafting a business plan for implementing insurance solution for smallholder farmers in Mozambique. So you could not ask for a person with better experience to join the team.

### **If the project is funded, how will you support the students?**

To test this fantastic idea, they plan to set up a lab-in-the-field at Chuka University in Mount Kenya. They will bring farmers into the lab—both members of groups and individual farmers—and then offer them existing individual agricultural insurance products or a group product at a discounted premium. They will then explain to participants that each farmer has an option of either denying crop insurance, or purchasing individual insurance. However, if  $N$  of them opt into purchasing insurance, this will activate the benefits of collective group insurance. During the game, farmers will have the opportunity to coordinate with each other regarding their preferences, as realistically, they regularly work together and coordinate within their groups. After five minutes of discussion, each of the participants will individually indicate in a survey whether he or she wishes to purchase insurance or opt out. They can then see collective decision-making among those part of existing groups versus individuals randomly grouped together. They also plan a version in which they play over multiple rounds and expose farmers to different simulated shocks to see how this affects their behavior in the games.

This is cutting-edge and innovative stuff. It builds directly on the first generation SharkTank project and takes it to the next level. I am very proud to mentor them.

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As I have done from the beginning of this project in 2018, I will meet regularly with the research team to advise them on research design, implementation and analysis. Also like in summer 2019, I hope to be able to travel with the team to work with Chuka University to implement the project.