

Impact case study (REF3)

Institution: University of Greenwich		
Unit of Assessment: 17 - Business and Management Studies		
Title of case study: Improving food security, livelihood and wellbeing for smallholder farmer households in Kenya and Ethiopia through enabling insurance companies to successfully offer insurance/credit products to them		
Period when the underpinning research was undertaken: January 2014 – September 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Ana Marr	Professor of International Development Economics	14/10/2002 - present
Aburpa Shee	Associate Professor	21/08/2017 – present
Period when the claimed impact occurred: January 2014 – July 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Smallholder farms in Africa represent about 80% of all farms in the region but face high risk of crop loss due to drought. They do not tend to use or have access to <i>insurance</i>, which reduces food security but also hampers innovation, further perpetuating malnutrition and inequality. Similarly, insurance companies have difficulties in reaching these small farmers. Our research explored the effect of offering <i>insurance combined with credit and inputs</i> (seeds, fertiliser) to smallholder farmers and found that this led to greater use of these services. Two impact strands led from our research during the assessment period: (1) Insurance companies APA (Kenya) and Oromia (Ethiopia) implemented brand-new insurance/credit products (designed by our research) that led to increased client portfolio and business, in some cases near 100%, which continues to date; (2) Smallholder farmers, in Meru, Kenya and Rift Valley, Ethiopia, improved their production practices – due to reduced risk gained via insurance protection – which led to higher food security and wellbeing across their communities.</p>		
2. Underpinning research		
<p>The importance of undertaking research on insurance/credit for smallholder farmers in Africa lies in contributing towards the adoption of new agricultural technology geared to reduced poverty and vulnerability among some of the poorest segments of society, as well as in expanding the provision of financial institutions to these under-served populations.</p> <p>This research responded to such a need. It was carried out primarily between 2014 and 2020 by Professor Ana Marr (PI) in collaboration with the following Co-Is: Professor Erwin Bulte, Professor Robert Lensink, Dr Marcel van Asseldonk (all Wageningen University, The Netherlands); Prof Calum Turvey (Cornell University, USA); Paul Gamba (Egerton University, Kenya); and Temesgen Belissa (Haramaya University, Ethiopia). While research design was co-produced by PI and Co-Is, Marr, as PI, was in charge of leading all research activities, managing budget and personnel, dissemination of results, as well as impact generation. The role of the research partners was primarily to administer field surveys in Kenya and Ethiopia and to co-write journal papers together with Marr. ESRC-DFID funding was significant to this research, which built on Marr's previous Leverhulme Trust funded research from 2009 to 2014.</p> <p>Starting in 2014, the research set out to investigate the impact of index-based crop insurance (against risk of drought) on the use of improved agricultural inputs by smallholder farmers in Africa, and on the level of demand/uptake of insurance by farmers.</p> <p>The originality of the research lies in the fact that we combined index-based insurance with credit and agricultural inputs in order to help farmers <i>overcome several constraints simultaneously, viz. risk, liquidity and access to innovative production practices</i> – and, also, in that we employed the <i>gold method standard Randomised Control Trials (RCTs) to test empirical results</i>. To this end, Marr, critically, led the design of brand-new insurance products (also bundled with credit and inputs), which were adopted by insurance companies in Kenya and Ethiopia and offered to thousands of smallholder farmers.</p>		

Research activities involved **extensive fieldwork in some of the poorest farming areas in Kenya and Ethiopia**, whereby state-of-the-art randomised control trials were implemented to test the extent of impact of insurance on a variety of variables. The research produced the **following outputs**: large databases; econometric analyses of data; various workshops with key stakeholders (e.g. insurance companies, banks, universities, NGOs, farmers' organisations, international associations); large-scale surveys (e.g. about 1,000 farmers in Kenya and around 1,700 in Ethiopia); individual interviews; focus group discussion meetings; agreements with insurance companies and input providers to introduce insurance products for smallholder farmers; design of new insurance products; training of enumerators; journal papers; conference papers.

Key findings that emerged from the research include the following:

- **Increased adoption of insurance enables farmers to make decisions favouring greater productivity (e.g. buying improved/certified seeds):** Marr and her team conducted Randomised Control Trials (RCTs) with about 1,000 smallholder farmers in Kenya (twice during 2015-2017), the results of which demonstrate that adoption of insurance leads to *higher purchase of improved crop seeds and hence to increased productivity*. It also shows that farmers change their risk behaviour and begin to *use certified seeds instead of the poor-quality ones traditionally used*. More precisely, our research findings show that farmers purchase *15% more certified seeds* of the four crops under study (maize, sorghum, soya and sunflower) as a result of insurance cover protection, given that the risk of crop failure due to drought was reduced [**3.5; 3.3 p.12**].
- **Increased insurance/credit for smallholder farmers leads to increased demand for products:** The research team conducted RCTs with 1,661 smallholder farmers in Ethiopia (baseline and endline surveys during 2016-2018) whereby three distinct groups were analysed: (1) farmers that received only insurance; (2) those that received insurance plus credit; and (3) those that received insurance plus credit plus agricultural inputs. Our research findings, as shown in Output 3.4, are: *the uptake of the standalone insurance is low, amounting to only 8.8% of the total demand; while bundling insurance and credit increases the uptake by 24.5%, and when we combine insurance, credit and agricultural inputs, the uptake increases by 32.2%* [**3.4 p.18**].
- **Farmers respond to the presence of the insurance by increasing their farming efforts.** The portion of land devoted to farming the 4 types of crops under study (maize, sorghum, soya, sun-flower) increases with greater access to insurance. *This inverted common, but misplaced, beliefs - these farmers had never before used insurance, and the common belief prior to the research was that if insurance was adopted, farmers would reduce farming efforts (moral hazard)* [**3.1, 3.2, 3.3, 3.4**].

3. References to the research

1. **Shee, Apurba**, Turvey, Calum G., **Marr, Ana** (2020), Heterogeneous demand and supply for an insurance-linked credit product in Kenya: A stated choice experiment approach. *Journal of Agricultural Economics*, 72 (1) . pp. 244-267 ISSN: 0021-857X (Print), 1477-9552. <https://doi.org/10.1111/1477-9552.12401> [**REF2 Submission - Identifier 29186**]
2. Turvey, Calum G., **Shee, Apurba** and **Marr, Ana** (2019) Addressing fractional dimensionality in the application of weather index insurance and climate risk financing in agricultural development: A dynamic triggering approach. *Weather, Climate and Society* 11 (4): 901-915. <https://doi.org/10.1175/WCAS-D-19-0014.1>
3. Bulte, Erwin, Cecchi, Francesco, Lensink, Robert, **Marr, Ana** and Van Asseldonk, Marcel (2019) Does bundling crop insurance with certified seeds crowd-in investments? Experimental evidence from Kenya. *Journal of Economic Behavior and Organization*. ISSN 0167-2681. <https://doi.org/10.1016/j.jebo.2019.07.006> [**REF2 Submission - Identifier 23788**]
4. **Marr, Ana**, Belissa, Temesgen and Lensink, Robert (2019) Uptake and impact of interlinked index-based insurance with credit and agricultural inputs: experimental evidence from Ethiopia. *American Economic Journal: Applied Economics*. ISSN 1945-7782 (Print), 1945-7790 (Online) <https://gala.gre.ac.uk/id/eprint/23810/>

5. **Marr, Ana**, Winkel, Anne, van Asseldonk, Marcel, Lensink, Robert and Bulte, Erwin (2016) Adoption and Impact of Index-Insurance and Credit for Smallholder Farmers in Developing Countries: A systematic review. *Agricultural Finance Review*, 76 (1). pp. 94-118. ISSN 0002-1466 <https://doi.org/10.1108/AFR-11-2015-0050>
6. **Marr, Ana** (2015) Tensions between financial and organisational sustainability: The problematic case of group-based microfinance and possible ways forward. In: Sorell, Tom and Cabrera, Luis, (eds.) *Microfinance, Rights and Global Justice*. Cambridge University Press, Cambridge, UK, pp. 145-162. ISBN 9781107110977. [Available on request]

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4. Details of the impact

Crop failure due to drought is a regular occurrence in smallholder farms across Africa. This leads to loss of livelihoods and food security for millions of families. Insurance has the potential to protect crops and income. However, prior evidence shows that adoption of insurance by smallholder farmers has been very low. Our research applied an innovative approach: **it created a product comprised of three elements (index-based insurance, credit and agricultural inputs) and offered it to smallholder farmers**. The results, as shown by our initial research, were higher uptake of insurance and adoption of better agricultural practices. The research also led to long-lasting impact on livelihoods, wellbeing and service providers' ability to engage with smallholder farmers beyond the lifetime of the project. **Two main impact strands resulted between 2014 and 2018, some continuing to date: (1) Enablement of insurance companies to provide key services to farmers in a commercially successful way, and (2) Improved livelihoods, wellbeing and food security amongst communities making use of these services.**

1. Enablement of insurance companies, APA (Kenya) and Oromia (Ethiopia), to provide new risk mitigation services to smallholder farmers in a commercially successful way

Prior to our research, insurance companies in rural areas in Kenya and Ethiopia were *providing insurance to large-scale farmers, but not to low-income smallholder farmers*. Banks, too, *very rarely extended credit to small-scale farms*. Farmers, in turn, used to adopt traditional farming practices, e.g. generally poor-quality seeds, with no use of fertiliser. In November 2014, during our research, we reached collaborative agreements with 2 countrywide insurance companies, **APA Insurance Limited in Kenya and Oromia Insurance Company SC in Ethiopia**. APA is the 3rd largest non-life insurance company of 37 in Kenya (<https://www.atlas-mag.net/en/article/kenya-insurance-market-2017-2018>). Oromia, meanwhile, is the 6th most important in Ethiopia (see: <https://addisbiz.com/blog/1559-bestprivate-insurance-companies-in-ethiopia-for-2019-2018-f-y/>).

During 2014-2015, we **raised awareness within the insurance companies of the benefits of offering insurance to small-scale farmers and designed brand-new insurance products to be offered to these farmers (applying the principles of Outputs 3.3, 3.4, 3.5)**. The insurance companies **adopted our designed insurance products and extended them to smallholder farmers from 2015 onwards**. The impact of our research on these service providers is as follows:

- From 2015 and onwards beyond the project's lifetime, these financial institutions have continued to sell these new products, enabling them to **grow their business and excel at microfinance provision to benefit smallholder farmers**. APA Insurance, Kenya, states "[the innovative insurance product for smallholder farmers] has raised trust and credibility in APA as a company, which has installed confidence in the farmers on the insurance product. All of which has **increased our prospects for increased APA business in future too, creating a brand name for APA**. In fact, new farmers have approached APA to purchase this insurance product..." [5.1 par 2]. The **awareness raising of insurance benefits more widely** is also demonstrated in the following statement from KEMU University, Meru County "We have also been able to realise that the supply of insurance policy can be increased if new product designs are offered to insurance companies such as those designed by **Professor Marr's research**." [5.6 par 3] This has contributed towards

APA being awarded the prestigious European Microfinance Award in Nov 2019 for its provision of index-based insurance to smallholder farmers [5.7].

- The insurance companies have **acquired a new set of clientele, i.e. smallholder farmers**, for a **brand new product** leading to **increased portfolio and business** beyond the project's lifespan, and **expanding their business to new geographical areas in the country**. APA Insurance states: "...APA enjoyed a great improvement in its micro-insurance portfolio, reaching out to a new niche in the market to provide a product that never existed, which was designed by **Prof Marr** and her team... The number of new clients, among smallholders, has also **increased significantly over time to 100% during 2015-17...** As a result of the research, APA has also expanded their business reach to other geographical areas **beyond Meru county, i.e. Migory county**." This has paved the way for **a new business strategy**: "This research has been very influential in our APA company because **one of our main strategic objectives is to provide innovative insurance aimed at insuring the assets of smallholder farmers**." [5.1 par 3], the successful implementation of which led to the *European Microfinance Award in Nov 2019* mentioned above.
- Due to the workings of the new insurance products, *insurance companies made payouts to smallholder farmers when hit by drought*. Accordingly, **Oromia Insurance Company SC in Ethiopia** stated that *payouts of ETB3,000 on average per farmer were extended* [5.3 par 2]. While **APA Insurance Limited** made payouts of about *KES2,152,804 in total* [5.1 par 4]. This helped **increased trust in the insurance companies by farmers, which enhanced future business beyond the project end date**. Also, **Oromia** offered **loans to farmers previously excluded from credit markets, expanding their business into a new market for these new clients**, as explained here: "[the] innovative interlinked insurance-credit-input arrangement that can allow farmers to access agricultural loans with which they can acquire insurance and inputs." [5.5par 2]
- These service providers also benefited from **international exposure to professional experts by their staff, with long-lasting impact in the development of their internal operations beyond the project's lifetime**. As put by **Oromia Insurance Company's** testimonial: "OIC staff has also got opportunities to participate in different workshops abroad, which helped him [sic] interact with a number of international professionals who normally work along these lines. In general, the research has **helped OIC in increasing its sales volume as well as gaining international exposure...**" [5.2 par 4]. The demonstration effect of our research is also reflected in the fact that **new projects have been put in place based on the research idea of bundling index-based insurance with credit and inputs** [5.8].

2. Improved livelihoods, wellbeing and food security for smallholder farmers and their wider communities in Meru County, Kenya and the Rift Valley, Ethiopia

Low-income communities in rural Africa, particularly those dependent on smallholding farms, lead vulnerable and fragile lives due to *unprotected risks of drought and other climate change shocks*. As a result of our research, **enduring impact on farm income, food security, livelihood and general wellbeing has surpassed the life of the research project within both Meru County, Kenya and Rift Valley, Ethiopia**. The pathways of impact are through knowledge enhancement, technology innovation, and stakeholder engagement, as follows:

- **Increased awareness by smallholder farmers of the workings of insurance/credit**. Several workshops and focus group discussions were held with about 2,700 smallholder farmers (2015-2018), in which **smallholder farmers acquired thorough knowledge of how insurance/credit products work and what the benefits are in protecting farmland from drought**. As most farmers are members of large farmers' organisations, the knowledge was disseminated organically throughout the association and to neighbours and family members, beyond the duration of the research (2018 to date). As farmer representatives of the South East Shoa Zone, Oromia State, Ethiopia state: "We testify that **before this research project, we have [sic] no idea about how insurance helps the poor like us. But now, most of us have acquired very good knowledge of insurance and the workings of weather index-based insurance, thanks to the research**." [5.3 par 2]. Farmer Association Leaders from the same region explain how the

awareness raising spread: “Then, this understanding was disseminated to our iddir [farmers’ association] members (a total of about 9,000...)” [5.4 par 2]. Since then, more farmers have approached insurance companies to acquire insurance and bundled products [5.3 par 2].

• **Engagement between the insurance companies and smallholder farmers was established as an ongoing mechanism for successful insurance cover:** Through various meetings during 2015-2018, we acted as the liaison between the insurance companies and the smallholder farmers, which led to them continuing engaging in the business of providing insurance/credit to small-scale farmers after the end of the project. As of November 2019, **APA currently covers more than 350,000 farm families [5.1 par 2,3]** compared to very little at the beginning of the project. Equally, farmers have carried on demanding these financial products into the future: “So, now we **trust the insurance products and the company**, and we have **increased interest to buy crop insurance** to protect our farm from the risks of climate change in the future.” [5.3par 2]

• **Crowding-in effects of insurance protection mean that farmers have voluntarily decided to invest in technology innovation, due to the insurance cover leading from the research.** As a result of greater protection from risk, farmers have been ‘freed up’ to **buy higher amounts of what we’ve named ‘unconditional inputs’ such as fertiliser, labour and agricultural machinery.** We found that the overall impact of insurance on unconditional input costs over the 3 years 2015-2018 is *almost KES1700 (circa USD18), more than twice the average insurance price waived.* Such inputs generally lead to increased productivity - as expected, over the same period we found **positive and significant impact on total land farmed (26% increment)** and the **increased likelihood of farmers to obtain credit from banks, ie. 8% increment [3.3 p14-15].**

• **Improvement to livelihoods, food security and wellbeing for smallholder farmers and their households:** As described, the direct impacts of the research show higher demand for insurance and increased use of better production practices. In addition, the success of insurance provision for the farmers has been demonstrated in situations where the insurance companies made the requisite payouts to farmers when crops failed. This has in turn led to greater trust in, and use of, the insurance companies by farmers, underpinning their ongoing success. **The combined impact of these means greater food security, improved livelihoods and wellbeing for these smallholder farmers in Kenya and Ethiopia, beyond the project’s lifetime (2018 to date).** As payouts were used to recover losses caused by drought (otherwise leading to deeper poverty and possibly bankruptcy), and as investment in technology innovation led to higher land productivity, the livelihoods of the farmers previously engaged in ineffective agricultural practices has been transformed for generations. “We bought insurance and benefited in earning an average of payout of Birr 3,000 per farmer [about 10% of their annual income] which is a very significant amount of money for us. This money helped us for consumption as well as for purchase of improved seeds and fertilizer. Thus, due to the research, most farmers in our area have obtained higher crop productivity and higher yields...without the research we never knew this was possible.” [5.3par 2]

5. Sources to corroborate the impact

1. Testimonial: APA Insurance Limited, Kenya.
2. Testimonial: Oromia Insurance Company S C, Ethiopia.
3. Testimonial: 1,963 farmers from SE Shoa Zone, Ethiopia (Statement page provided; other pages, which are the signatures of all 1963 individual farmers, available on request).
4. Testimonial: 150 Farmer Association (Iddir) leaders from SE Shoa Zone, Ethiopia.
5. Testimonial: Haramaya University, Dire Dawa, Ethiopia.
6. Testimonial: KeMU University, Meru, Kenya.
7. Award to APA Insurance Ltd, Kenya for its work on index-based insurance for smallholder farmers (22 Nov 2019): <https://www.capitalfm.co.ke/business/2019/11/apa-insurance-awarded-for-innovative-indexbased-agriculture-cover/>
8. The Ethiopian Press Agency article showing new projects building on our research design: <https://www.press.et/english/?p=4872#> Also: <https://www.jica.go.jp/ethiopia/english/office/topics/190419.html>