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Heterogenous implementation and the long-term diffusion of index-based livestock insurance

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Background

Index-based livestock insurance (IBLI), which is a commercial insurance product based on a remotely sensed indicator of forage availability within defined geographic insurance index units, was first developed in 2008 to help cushion pastoralists from the impacts of drought. IBLI was first sold in Marsabit County, Kenya, in 2010 and has been scaling ever since. As of writing, IBLI and IBLI-like products are being offered in Kenya, Ethiopia, Zambia, Somalia and Djibouti. In addition, feasibility studies for IBLI have been commissioned and completed across the Sahel, which, in some cases, have proven promising and have led stakeholders to take the preliminary steps for offering IBLI.

While there have been many studies on the factors that influence individuals' decisions to purchase insurance coverage, including several on IBLI, these studies have mostly relied on data from small pilot studies and are limited in scope by the variation within those pilots. It is common, for example, for studies to use household-level data to determine the role of premium rate, client knowledge and experience with the product, payouts and acute environmental conditions on uptake (e.g. Cole et al. 2014; Takahashi et al. 2016; Jensen et al. 2018). While studying these factors is important, we theorize that factors varying on larger scales, for instance the characteristics of the location (e.g. major livelihoods, remoteness and security), the characteristics of the firm offering

Key messages

- Marketing and distribution channels can explain more of the variation in IBLI's diffusion than can other, more commonly studied factors, such as premium rates, subsidies or payouts.
- The patterns of purchases suggest that the insurance agents themselves are important factors in determining insurance uptake.
- At the same time, insurance firms consistently point towards the cost of training and maintaining insurance agent networks as a key challenge for their business.
- These findings reflect a need for the development of lower-cost approaches to training and motivating insurance agents and low-cost approaches to outreach and extension services that complement expensive agent activities.

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the insurance product or the presence of potentially competing social programming, are at least as important. This research contributes to the existing literature by being the first to have sufficient spatial and temporal variation to assess the importance of these broader factors. Specifically, we ask the following research questions:

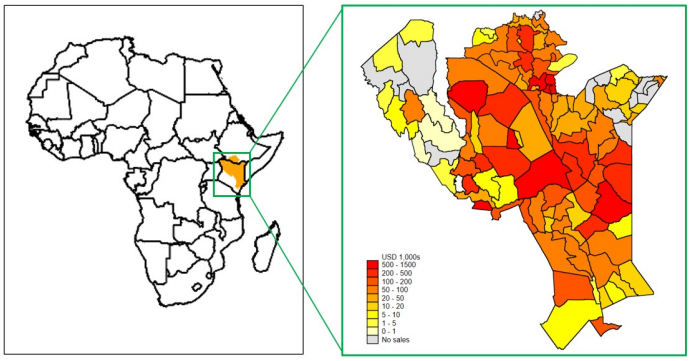
1. To what extent were the fixed characteristics of insurance index units associated with the consistency of IBLI adoption in them?

2. Which time varying factors were related to IBLI being adopted during those sales seasons when IBLI was available?

3. Which factors contributed to the amount of IBLI coverage in those insurance index units where adoption was recorded?

To study these questions, we examine the factors related to the diffusion of IBLI in the Horn of Africa, using administrative data from the firms that underwrote IBLI in Ethiopia and Kenya between 2010 and 2020. These administrative data include the number of insurance policies purchased and the total number of livestock insured in each insurance index unit in each sales season. They cover 20 sales seasons (2 per calendar year), 115 insurance index units and several insurance firms, resulting in 1,450 observations covering 406,000 km^2. Figure 1 illustrates the total IBLI purchases in each insurance index unit during this period (2010–2020).

Figure 1: The total sum insured (USD 1,000s) in each insurance index unit from 2010–2020 in Kenya and Ethiopia.



Note: The figure does not include coverage provided by the Kenya Livestock Insurance Program (KLIP) implanted by the Government of Kenya or the Satellite Index Insurance for Pastoralists in Ethiopia (SIIPE) pilot implemented by the World Food Program.
Source: Jensen et al. 2023.

Results

To what extent were the fixed characteristics of insurance index units associated with the consistency of IBLI adoption in them?
We find that none of the observed fixed characteristics of index units, including principal livelihood zone, long-run average normalized difference vegetation index (NDVI), animal and human populations, distance to markets and large towns and indicators of insecurity, are statistically significant in relation to the ratio of seasons in which insurance agents made sales in an insurance index unit.

Which time varying factors were related to IBLI being adopted during those sales seasons when IBLI was available?
In agreement with other studies, we find that subsidies, payouts and environmental conditions during the sales period are correlated with the likelihood of insurance being sold. We also find that marketing and distribution channels—which in this analysis are captured through indicators of which insurance firm is selling the insurance, if the International Livestock Research Institute (ILRI) performed additional marketing support, and if firms responded to community calls for an audit resulting in an ex-gratia payment—are strongly related to whether any insurance was sold in an index unit. Which firm is selling insurance seems to have the largest impact on whether any insurance is sold. The likelihood of any insurance sales increases by more than 40% from the lowest to the highest performing firm. Furthermore, a decomposition of the model's fit shows that household-level factors examined by earlier studies are of much less importance on the likelihood of purchasing insurance than these factors related to marketing and distribution channels.

Which factors contributed to the amount of IBLI coverage in those insurance index units where adoption was recorded?
The amount of coverage sold, conditional on any sales, in an insurance index unit is relatively less sensitive to marketing and distribution channels and much more dependent on the characteristics of the index unit itself. Some of these characteristics can be observed and appear to be important, such as livelihood zone and whether KLIP was being offered, but most of the explanatory power of the insurance index unit is unrelated to observable features.

Policy implications

Our findings across the three research questions reveal two important dynamics in the diffusion of IBLI. Firstly, there is considerable variation in the diffusion of IBLI between nearby index insurance units that cannot be explained by a large set of observed index-unit characteristics. Second, marketing and distribution channels can explain more of the variation in IBLI's diffusion than can factors that are commonly studied in relation to insurance purchase, such as premium rates, subsidies, contact parameters and payouts.

In combination, these findings point towards the importance of marketing and distribution—the so called last-mile of service delivery—and that there remains an unobserved difference between index units that is responsible for much of the variation in diffusion. We hypothesize that sales agents' quality and activities, another factor related to marketing and distribution, are the main drivers of that unexplained variation. Insurance firms report that training and maintaining networks of high-quality insurance agents is a main barrier to developing a sustainable insurance market. Individuals that meet the requirements for being an agent—speak the local language, can grasp the mathematical concepts underpinning insurance, and are not already committed—are few in pastoral communities and they are expensive to train and maintain. The result is that underperforming agents are not easily replaced. Indeed, we are aware of several cases in which insurance agents sold no insurance for several seasons, a situation that we believe indicates that they were not actually an active agent, continued to attend insurance training sessions, presumably for social reasons and to collect per diems. Their continued involvement was not only expensive for the firm, it also meant that the individuals in those agents' catchment areas did not have access to an agent that was actively trying to sell insurance. Each insurance firm had their own policies on agent training, management and support, which is a likely mechanism for the observed variation in IBLI sales between insurance firms.

Developing low-cost approaches to high-quality outreach and distribution channels is therefore critical to encouraging a more sustainable IBLI market. Recent advances in digital communication

and training tools, which could be adopted either by insurance companies or by other entities that can provide last-mile services on behalf of insurance firms, is one clear opportunity to improve the training and monitoring of agents, while reducing costs. Furthermore, bundling the dissemination of livestock insurance with various other livestock services and inputs, each of which could contribute to the operating costs of and renumeration received by the agent, would create economies of scale (e.g., combined trainings and field trips) and increase the attractiveness of becoming a local agent. We believe that public funds that are supporting the existing IBLI market should be directed towards improving efficiency in these two areas. Public-private partnerships, such as the massive De-risking, Inclusion and Value Enhancement of Pastoral Economies in the Horn of Africa (DRIVE) project, are well placed to make such investments, which could sustainably improve the long-term value proposition of selling and buying IBLI across the drylands.

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