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Formally insuring the informally insured

Rainfall is critical for the livelihoods of millions of Indians – yet many have no formal insurance if the rains fail. This column looks at what happens when a new formal insurance policy based on the weather is offered at random to farmers and farm workers across several states in India.

Agriculture is risky business. Unpredictability stems from crop diseases, price volatility in markets, and natural disasters. In India, it is estimated that about 90% of variation in production levels is caused by fluctuations in rainfall levels and patterns. One mechanism for coping with this variability that is garnering increased attention is insurance against bad weather (known as index-based weather insurance), in which pay-outs are based on a publically observable measure or index, such as local rainfall. Tying pay-outs to rainfall implies that the insurance company is not affected by any particular farmer's actions or risk profile, and it also eliminates the need for in-the-field assessments, thereby lowering the cost of providing insurance.

Formal and informal insurance

While the market for such insurance products has not yet developed widely in rural India, this does not imply that poor farmers are currently uninsured. Rural populations have for centuries depended on their caste, or jati-based networks to manage risk. Jati members informally insure each other through gifts and loans to cope with both agricultural risks and household-specific risks such as death, illness or theft. Such pre-existing informal risk sharing may affect the market for formal index insurance. To understand these interactions, Mark Rosenzweig and I, together with colleagues from the Centre for Micro Finance at IFMR, and the Agricultural Insurance Company of India, conducted a field-based study in which we marketed a monsoon insurance product to around 5,000 farmers in the states of Tamil Nadu, Andhra Pradesh and Uttar Pradesh. The product was designed to be very simple, providing increasing pay-outs the longer the delay in the onset of the monsoon.

This research studies the demand for, and effects of, this formal index-based rainfall insurance in an environment of pre-existing informal insurance. While some farmers may be less likely to purchase formal insurance if they know they can depend on their jati members in the event of a crisis, risk-sharing within the jati may be incomplete, leaving farmers exposed. This is important from a development and policy perspective because farmers facing higher risk are more likely to invest in safer but

farmers facing higher risk are more likely to invest in safer but often less profitable production methods, asset portfolios, and crops, perpetuating poverty. Jati members who are partially liable if their risk sharing partner fails may actually prevent their partners from engaging in risky investments. Thus, understanding the interactions between formal and informal insurance can shed light on how to help farmers manage their risk and shift their resources towards more productive technologies. Moreover, introducing a formal insurance product may change the pre-existing informal risk sharing relationships.

There are two unique features of this study:

- First, offers of insurance were randomly assigned among groups of farmers for whom the nature and extent of their jati-based informal risk-sharing were carefully measured by the researchers. Therefore, it allows for a nuanced understanding of the relationship between informal and formal insurance mechanisms.
- Second, the weather insurance product was marketed to households that work in the agriculture sector (agricultural labourers), as well as to land-owning cultivators. This is important because the income of agricultural labour is just as dependent on seasonal weather patterns, but this group has traditionally been excluded from formal insurance marketing.

Untapped market

We find that in Andhra Pradesh and Uttar Pradesh there was almost equal demand for the insurance product amongst cultivators and agricultural labourers (43% and 40% respectively). This is in spite of the fact that farmer households typically have on average 25% higher incomes. The demand demonstrated reflects a largely untapped market of customers traditionally excluded from the formal insurance market. The livelihoods of landless labourers working in an agrarian economy are also subject to rainfall risk, and substitute instruments for risk management – assets, savings, credit – are arguably less available to this sub-group.

Getting the timing right

In response to a question on why the households that rejected our offer chose not to purchase the insurance product, the primary barrier cited was current liquidity constraints (in other words, insufficient current cash holdings). Other demand constraints included ‘not trusting insurance’ or having a premium price that is ‘too expensive’ – yet these two constraints comprised only 13% of responses.

These observations suggest that one way to combat the negative impact of household liquidity constraints on formal insurance take-up would be to market the insurance to farmers during seasonal periods when income is high, for example the end of the Rabi season. Marketing campaigns targeted during the Rabi season could significantly benefit farmers for two reasons: first, as the farmers would have ‘cash on hand’ from the sale of the Rabi crops their liquidity constraints would be reduced. Second, as this would also be the time when farmers are making planting decisions concerning the Kharif crops they could consider their insurance coverage while making their investment decisions. This is significant as knowledge of owning insurance

decisions. This is significant as knowledge of owning insurance can potentially alter their choices regarding which crops to cultivate.

More weather stations

The study also finds that farmers are less willing to purchase insurance when the automatic weather station measuring the rainfall to calculate pay-outs is farther away. With a greater distance between the weather stations and the farmer's own plot of land, the rainfall measured by the insurance company may not closely track the rainfall conditions in the farmer's village. This imperfection in the product is known as 'Basis Risk.' Basis risk lowers the demand for insurance, as farmers may not be able to collect pay-outs even in the event of serious crop losses. In our study, constructing new weather stations in the specific villages where the insurance product was marketed led to increased demand. This suggests that the value of index insurance products could be significantly improved by building more automatic weather stations where the index (rainfall, or the onset of monsoon) can be reliably measured.

Complements and substitutes

Finally, the study indicates that when particular jatis (or sub-castes) are already good at providing informal coverage against village-level rainfall shocks (e.g. because the jati is diversified, and many jati members are engaged in non-agricultural occupations), members of those jatis are less likely to purchase the rainfall insurance product. The informal network and the formal insurance product are substitutes in that case. On the other hand, when the jati network is less diversified and therefore better at providing support following household-specific losses (like death, illness, theft) than for losses that affect the whole community (such as a delayed monsoon), members of those jatis are more likely to purchase index insurance. Especially when the formal insurance product carries more basis risk (and can therefore fail farmers when they sometimes need help), informal risk sharing of a certain type can complement the market for index insurance as each type of insurance compensates for a different type of risk, and the jati network covers the imperfection in the index insurance contract.

Lessons and implications

We find strong evidence of demand for insurance among people who work on agricultural land but who are not farmers themselves, a group that has traditionally been excluded from the insurance market. This presents a clear opportunity for the insurance market.

Yet while index insurance can lower the costs of selling insurance and calculating pay-outs, it also introduces new challenges, such as basis risk. Our research shows that pre-existing informal risk sharing arrangements, such as jati networks in India, clearly affect the demand for such products – sometimes substituting for, and sometimes complementing, formal insurance. In providing insurance for India's uninsured, these informal insurance mechanisms should not be overlooked.

Watch a video of Mushfiq Mubarak presenting the underlying

Watch a video of Mushfiq Mubarak presenting the underlying research at the 2nd IGC South Asia Growth Conference (July 2013; New Delhi)



Further reading

- Mobarak, A M and M Rosenzweig (2012), 'Selling Formal Insurance to the Informally Insured', Yale University.