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The Agricultural Insurance Market in the Caribbean

by Diego Arias Carballo and Laura dos Reis

Agricultural insurance is a tool to manage agricultural production risks and help producers reduce the effects of negative shocks and improve the allocation of resources. It provides a mechanism to transfer a variety of risks faced by crop, livestock, forestry, or aquaculture production.

Agricultural Insurance in the Caribbean

The small island nations of the Caribbean are highly exposed to tropical cyclones, hurricanes, and other weather hazards—and are particularly vulnerable to drastic losses from natural disasters. A single catastrophic event can affect a large proportion of clients, and this is often reflected in the insurance premiums charged by local insurance companies, especially if they only underwrite risk in one or a few neighboring islands (as is common in the Caribbean). To be able to pay many claims all at once, insurers must either purchase their own insurance (re-insurance), which is expensive, due to the high exposure to extreme weather events, or hold a large amount of cash reserves. As a consequence, crop insurance policies are relatively expensive and are generally offered as non-catastrophic policies—providing no coverage (stop-loss) in the case of extreme weather events.

The particular characteristics of the region's agricultural production structure and high exposure to extreme weather events have resulted in expensive re-insurance options, with only two agricultural insurance companies in operation. In the Eastern Caribbean, the Windward Island Crop Insurance Ltd. (WINCROP) provides insurance for banana growers. In the Dominican Republic, the *Aseguradora Agropecuaria Dominicana SA* (AGRODOSA) provides multi-peril insurance to 7 percent of the cultivated area. Apart from these two exceptions, agricultural insurance for individual farmers is non-existent.



The lack of agricultural insurance instruments in the Caribbean is the result of a number of factors. Government officials and members of the financial and agribusiness sectors are unaware of the potential benefits and limitations related to particular insurance instruments. Insufficient technical capacities in the public and financial sectors to design and administer agricultural insurance contracts further constrain the development of general insurance instruments. Additional challenges include:

- A multi-cropping structure (many different crops on a single plot) of smallholder farming (between one and two hectares), which complicates the evaluation of exposure of different crops to the various hazards;
- The lack of affordable delivery mechanisms or adequate infrastructure for banks and insurance companies to offer insurance to small individual farmers, some in hard-to-reach remote areas;
- The insufficient quality and quantity of agro-climatic data to undertake probabilistic analysis at a disaggregated level; and
- The provision of *ad hoc ex post* support emergency response programs, which reduces farmers' willingness to pay for insurance.

As a result, farmers rely on a combination of informal (crop diversification, off-farm income) and limited formal mechanisms (government and/or international support, mutual funds and other forms of risk-sharing through commodity boards) to deal with systemic and intense weather events.

Market-Based Agricultural Risk Management Options

The development of market-based agricultural insurance options in the Caribbean can range from regional and macro-level applications (sector, country, or groups of countries) to the micro-level (farmers). The inability of a large segment of small farmers to cover extreme agricultural losses (and pay insurance premiums) has been the driver for public interventions after past catastrophic weather events. While the Bank recognizes that these public interventions are crucial, there remains a need and ample opportunities to improve their efficiency and effectiveness. Possible options are:

Strengthen Public Delivery Mechanisms

The distribution of public sector assistance to farmers can be structured through clear ex-ante rules, which should include a clear process for registering and becoming eligible for such support. In Jamaica, for example, the Bank conducted an assessment of weather risks in two selected parishes and proposed the implementation of an income supplement scheme to replace existing *ex post ad hoc* assistance. In Grenada, the Bank proposed alternative delivery mechanisms (input and technology vouchers) for the government to address local farmers' needs in response to losses from financial and food crises.

Improve the Public Risk Financing Structure

A risk layering approach (figure 1) could improve the government's risk financing options by introducing new risk financing instruments that provide coverage for different levels and types of risks. Low cost (high frequency) risks could be financed with reserves and personal savings (risk retention), while more catastrophic (lower frequency) risks could be financed with, cooperatives and mutual insurance strategies (risk pooling) or re-insurance support strategies (risk transfer). Governments could act as reinsurers of last resort or provide post-disaster aid.

Access to good quality and quantity of weather data constitutes a very important tool for the development of crop and livestock insurance programs. An early-warning system based on good data can help prevent the effects of weather hazards. Increasing the density of weather stations in agricultural zones and in strategically located watersheds can help improve the availability of weather data and the research on weather variables.



Private-Public Partnership in the Dominican Republic

Support of private-public partnerships provides a valuable policy option to improve private sector participation in the medium-term through the development of new market-based instruments. In Jamaica, the Bank proposed a private-public partnership to provide insurance for intermediate risks and supplement the public disaster assistance program already in place. This could be done through the provision of new financial products (hurricane vouchers), in addition to the basic government coverage. This additional option would be developed and underwritten by the private insurance market.

An example of a successful public-private insurance scheme is Aseguradora Agropecuaria Dominicana SA (AGRODOSA), the only insurance company offering agricultural crop insurance to farmers in the Dominican Republic. The company is owned by private and public capital, but is managed on strictly commercial insurance principles and is subject to private insurance regulations. Under the current arrangement, the government has an active role in formulating the agricultural insurance law and supporting agricultural insurance through the provision of crop insurance subsidies. In 2009, government spending for crop insurance subsidies was around US\$1.25 million, ranging between 33 percent and 50 percent of crop insurance premiums.

AGRODOSA currently offers a multiple-peril crop insurance (MPCI) loss-yield policy for rice and other crops, and named-peril insurance for banana producers. MPCI yield-shortfall covers drought, floods, excess rain, hail, wind and cyclone (tropical storms and hurricanes), and unknown pests and diseases. The coverage is triggered when the actual yield obtained by the insured on its insured unit falls below the guaranteed yield determined for each county and crop season. Named-peril crop insurance covers flood and wind perils due to tropical storms and hurricanes. The coverage is based on damage to the banana

plants (snapping, toppling, and uprooting) caused by wind, and rotting of the plant caused by flooding. The insured receives an indemnity proportional to the percentage damage to the plant population on the insured unit, times the sum insured.

Risk Pooling

Wind Insurance in the Windward Islands and Jamaica

Since the 1950s the governments of the Windward Islands and the banana growers' associations had attempted to operate mutual insurance schemes against windstorm damage. However, most of these early attempts failed due to the lack of a diversification strategy, as most islands were insuring individually instead of pooling their risks. In 1987 the Windward Island Crop Insurance Ltd. (WINCROP) was established in Dominica to provide insurance against wind damage. It was expanded to St. Vincent and the Grenadines in 1996 and Grenada in 2000. Established as a mutual insurance company owned by the banana growers' associations WINCROP is currently the only insurance company in the Windward Islands offering crop insurance. Government participation was limited to the enabling legislation and provision of the paid-up share capital. By 2007, WINCROP had 2,767 insured growers, representing about 63 percent of all banana growers for export and 62 percent of the cultivated area. Part of WINCROP's success is explained by the use of On-Call Assessors to carry out assessments. Current challenges are related to a reduction in premium income, which has to do with a decline in the grower population, and to losses experienced in the banana sector.

In Jamaica, the Coffee Industry Board (CIB) operated a coffee insurance scheme until 2006; since then, Jamaican coffee farms have not had access to insurance. Based on a Bank-sponsored feasibility study, the CIB is now exploring implementation of wind index-based insurance. Because coffee farms in the Blue

Mountain region are subject to damage from high winds and heavy rains associated with hurricanes and tropical storms, payouts would be based on a model that simulates the winds associated with cyclones that occur during the hurricane season. The model includes the spatial distribution of winds from past storm events and considers storm characteristics and physical features, such as topography. Farms are grouped into 16 zones, according to districts and altitude bands. Vulnerability functions based on the stage of growth, exposure patterns, and expected harvests are used to correlate, as closely as possible, the payout levels against the expected losses.

Country Risk Pooling across the Caribbean

The Caribbean Catastrophic Risk Insurance Facility (CCrif) was created in 2007 to finance early rehabilitation activities and public sector costs following catastrophic weather events (hurricanes and earthquakes). Sixteen countries are currently participating in this catastrophe insurance program: Anguilla, Antigua and Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos, and Haiti.

CCrif constitutes a macro-level approach with the objective of providing budget support following a specified catastrophic weather event. It allows participating countries to pool their country-specific risks into a single, better-diversified portfolio. This diversification results in a substantial reduction (between 45 and 50 percent) in premium costs. Although this type of instrument has been helpful in financing early rehabilitation activities and in filling the public financing gap when governments are raising additional funding for reconstruction purposes, it provides limited coverage for agricultural losses. Agriculture risks could also be pooled within and across countries.

A number of governments have expressed interest in CCRif's comprehensive risk management approach and in applying a risk layering structure to manage agricultural risks. However their ability to use additional financing through credit lines is limited by high debt levels. Moreover, additional analysis should focus on the development of instruments to cover intermediate and more frequent events (rainfall and droughts). CCRif's recent announcement of a new excess rainfall product to supplement its earthquake and hurricane policies is a step in the right direction.

The excess rainfall product (developed by CCRif and Swiss Re) is based on available NASA-processed satellite data. It constitutes a first iteration and improvements are expected. Once rainfall risk profiles have been developed, CCRif will discuss coverage options with each country individually and policies will be offered once coverage levels have been agreed. The program will extend coverage to Guyana and Suriname and other Caribbean countries not currently members of CCRif.



Conclusion

Agriculture is an important sector in many Caribbean countries, from both an economic and a social point of view. Agricultural production faces a myriad of risks in the region. Owing to the occurrence of weather events, pests, and diseases, agricultural producers cannot predict with any certainty the amount of output that the production process will yield. Thus, agricultural insurance is just one risk management financial tool that is used by agricultural producers in the region to transfer the risks they face. Farmers and governments have devised risk management strategies to deal with agricultural production risks. The management of agricultural production risks in the region relies on a combination of technical and, when they are available, financial tools.

Overall, agricultural insurance in the Caribbean has not yet reached the levels of development of other countries in the Latin American and Caribbean region. Although governments in developing countries are already playing an important role in supporting agricultural insurance, in the Caribbean, there are still large gaps in the provision of agricultural insurance. Despite the advances already made in the development of agricultural insurance, the region still has a long way to go to develop fully its agricultural insurance market, in particular for applications at the macro and meso level. The development of agricultural insurance will require governments and the insurance industry to overcome institutional, operational, technical, and financial challenges, including the development of long-term public-private partnerships.

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