



# Weather Risk Management for Malawi and Beyond

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**Weather Risk Management Association, European Meeting  
Berlin, 5-7 November 2008**



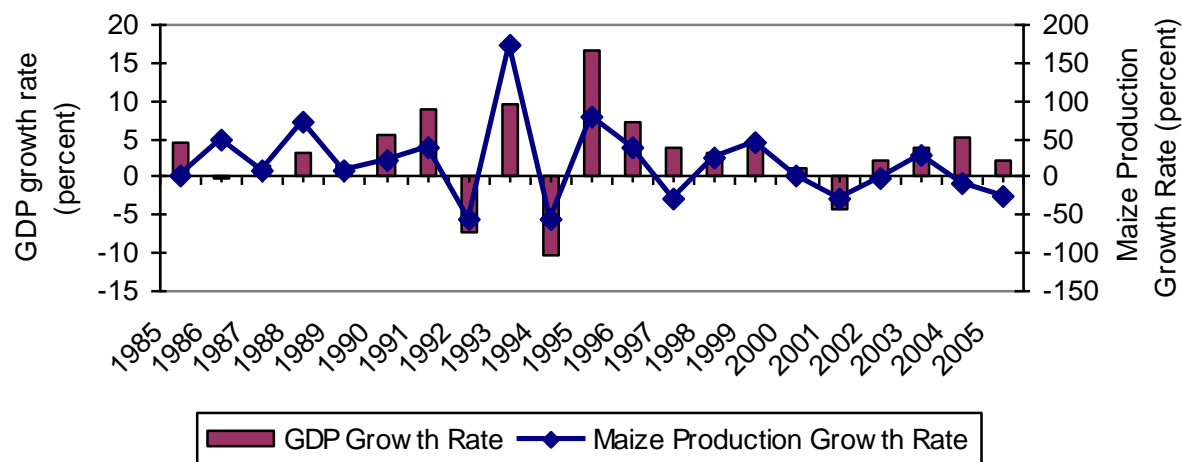
# **Drought in Malawi: Risk Management Framework**



# Malawi Background

- Low economic growth, with significant volatility
- Economy is highly vulnerable to adverse weather shocks
  - **High correlation between GDP growth and maize production**

Maize production and GDP growth in Malawi, 1985-2005



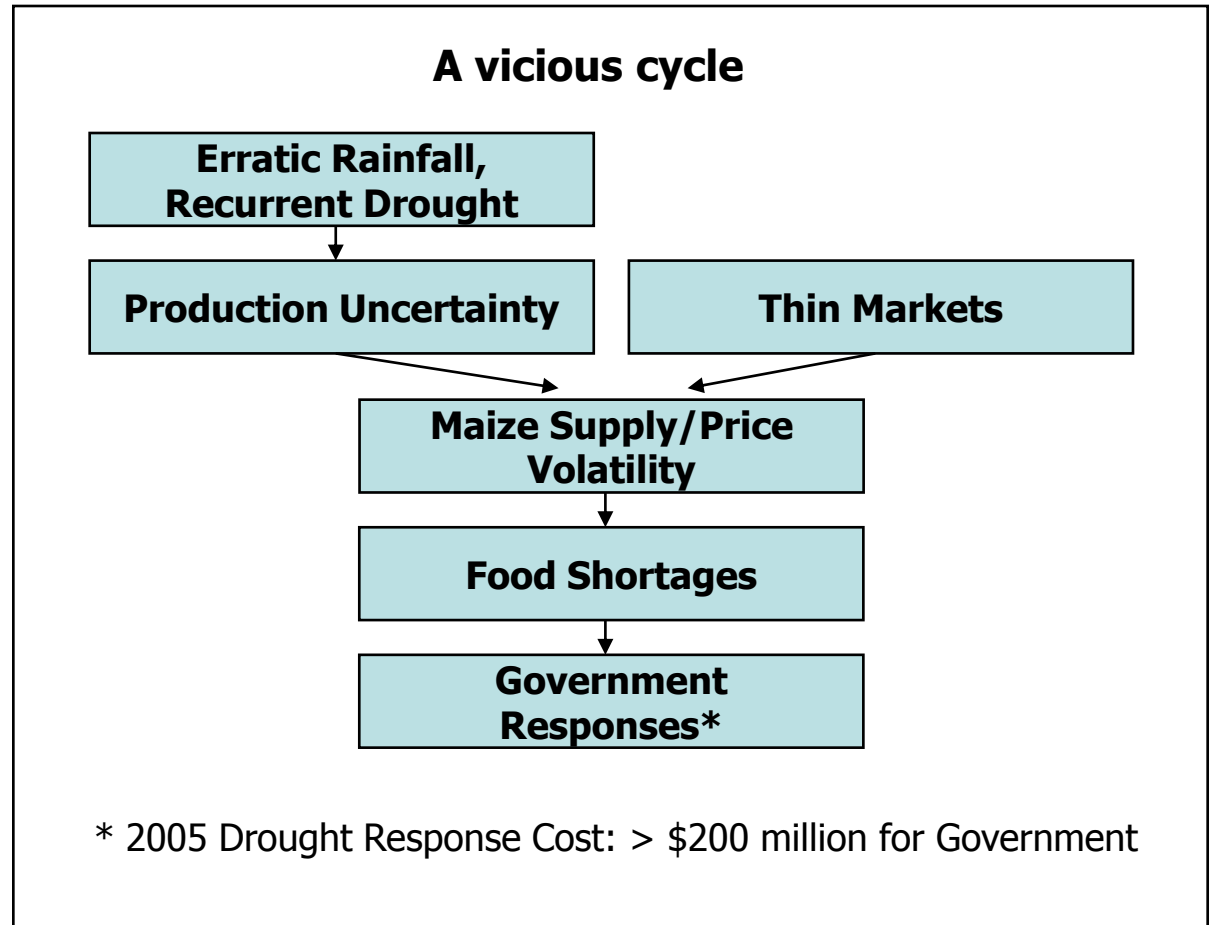
- Weather has:
  - **Direct impact on agricultural production and GDP**
  - **Indirect impact on government finances and BoP**
    - Exceptional food imports



# Malawi Context

- Malawi's maize marketing policy is dominated by concerns about food insecurity

- **Malawi needs an ex-ante risk management framework**





# Integrated Risk Management

**Market-based risk management instruments can help**

<b>Problems</b>	<b>Market Solutions</b>
Recurring drought	<b>Weather risk management</b>
Maize price supply & price volatility	<b>Contingent import/export arrangements based on option</b>
Thin markets & very low levels of private sector trade, finance, and storage	<b>Warehouse receipts-based lending</b>

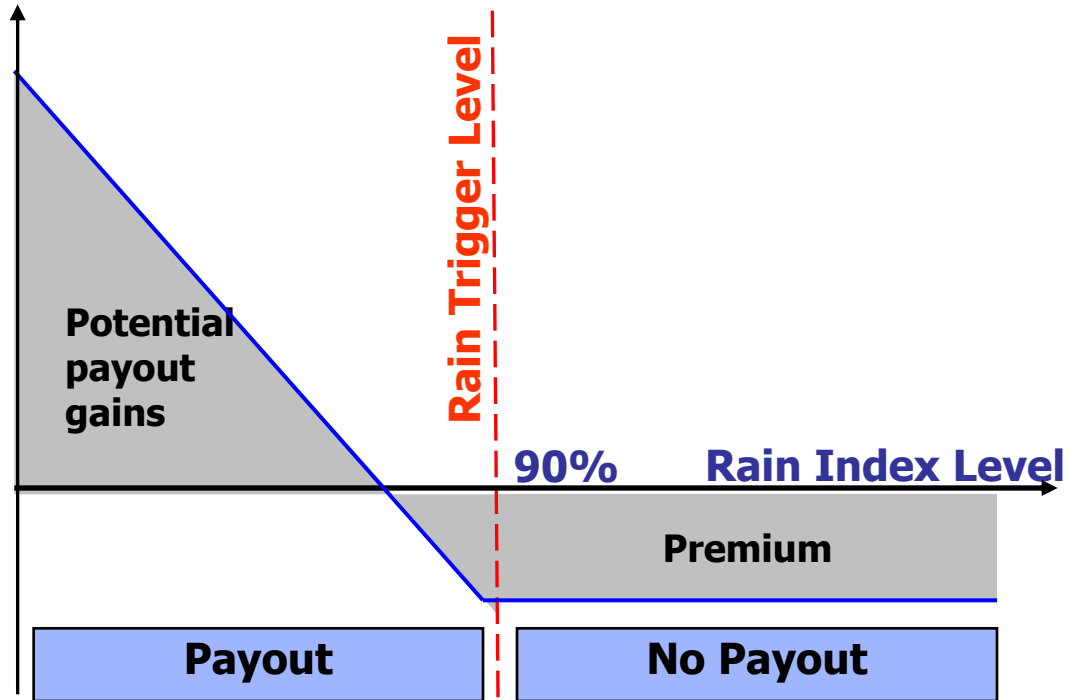


# The Transaction



# Malawi Contract Structure

<b>Type of Contract</b>	Put Option
<b>Maximum payout</b>	\$US 5 Million
<b>Start Date</b>	October 2008
<b>Final Date</b>	April 2009
<b>Strike</b>	10% below historical average index value



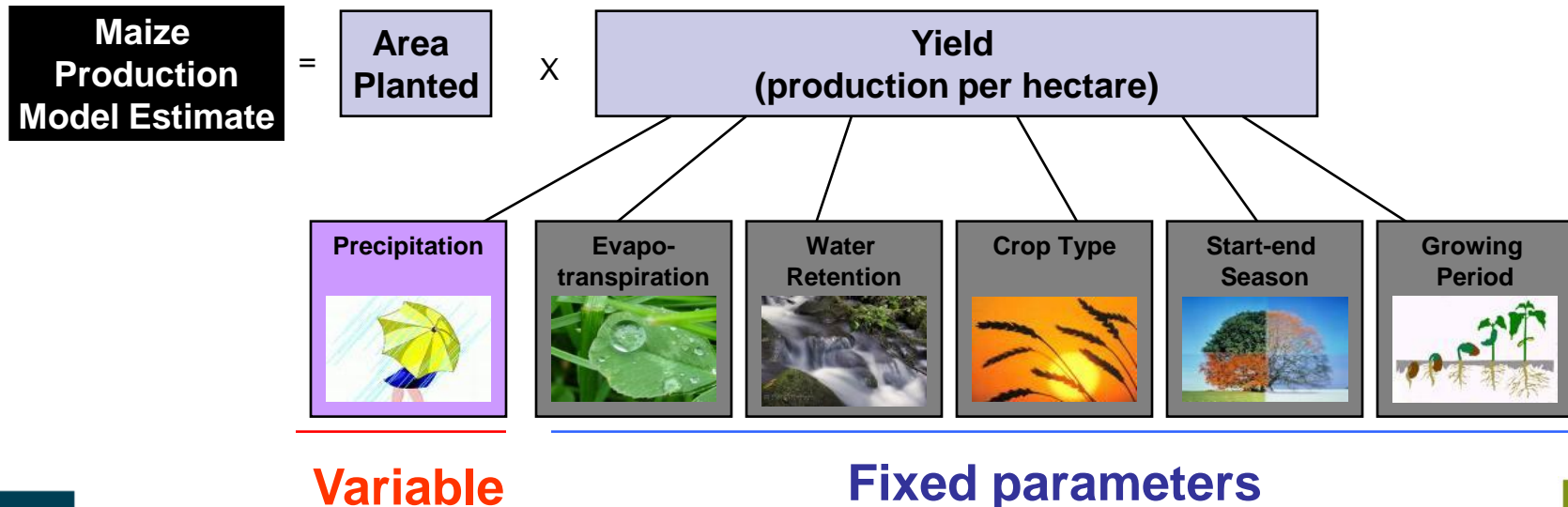
Premium

- DFID supported initial premium cost in piloting phase starting 2008
- EU and USAID interested for 2009+



# Prerequisites for a Program in Malawi

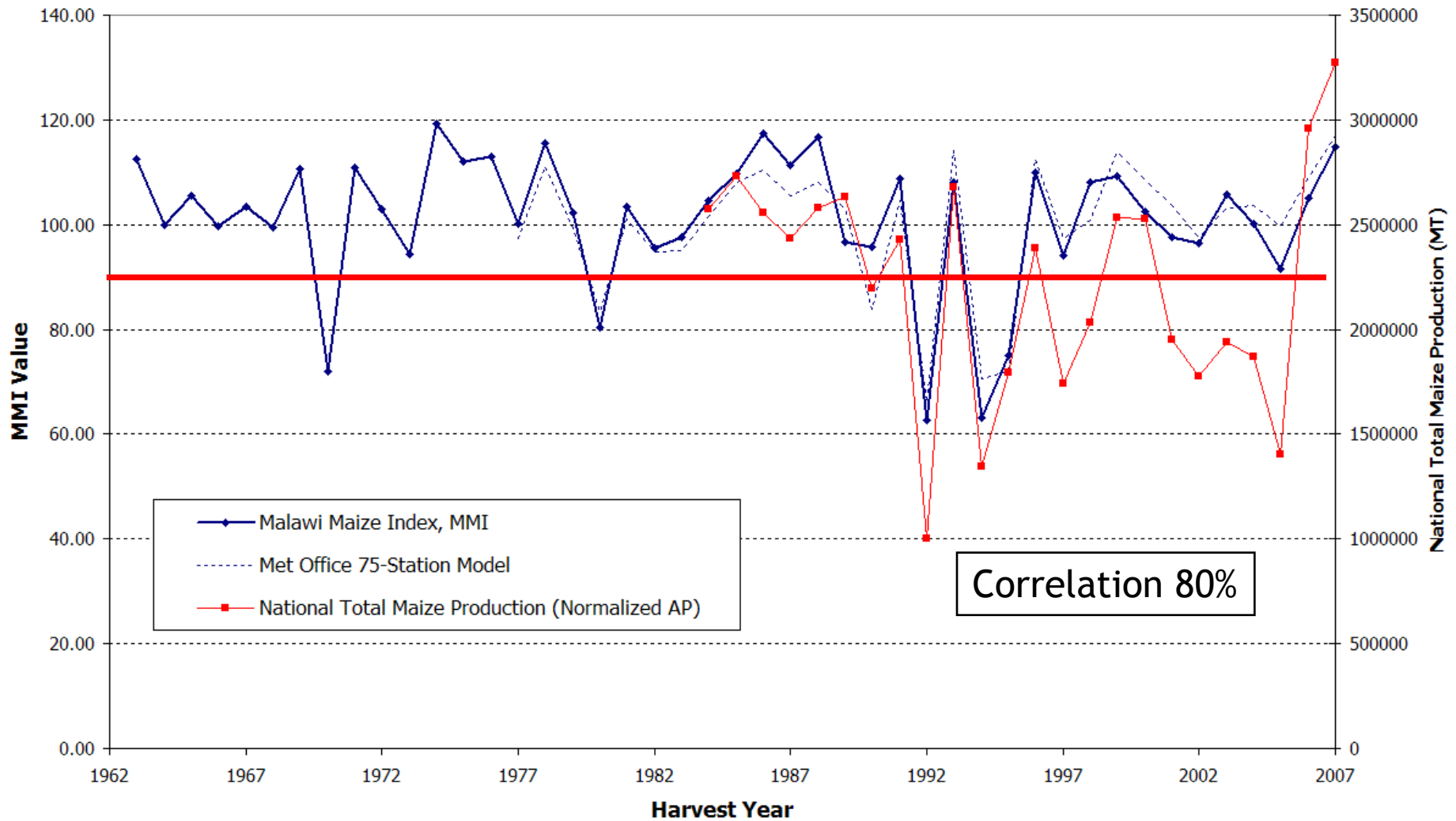
- *Indexability*
  - The **Malawi Maize Index** is designed as a proxy of maize production
    - Based on FAO model used by Malawi government since 1992
    - ` Rainfall is the only variable in the index
- Index must be a good proxy for actual production





# Malawi Maize Index vs. National Production

The Malawi Maize Index, 1963-2007

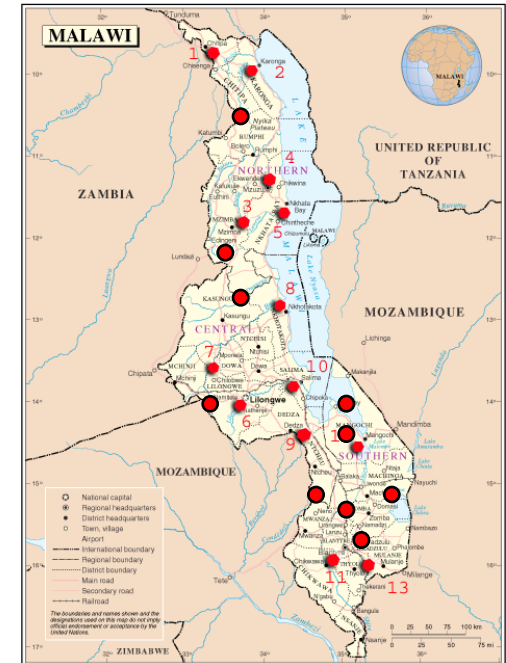




# Prerequisites for a Program in Malawi

High quality historical weather data and reliable real-time communication

- **Malawi Met Office data** excellent:
- Measured by 23 weather stations around the country
- Data verified by independent third party
  - *Can provide real-time data*
  - *Historical data*
  - \$200k invested by DFID Jan 2008 to support the pilot transaction





# How Could a Payout be Used?

## Leveraging a Payout Example: 2005

What  
was/could  
have  
been saved

- Government purchased between 200,000-300,000 MT maize in October/November 2005 on the South African spot market.
- In September 2005, Government piloted the use of a SAFEX call option on 60,000 MT of maize
  - It saved the Government **\$80/ MT**
  - In June they could have saved approximately **\$110/MT**, (\$22-33 million)

Value of the  
strategy

- Leveraging effect
- Value of contract to Government > premium charged by insurer



# Limitations of Approach

Partly addressed  
by ADP Support  
Project

- Only covers **national** severe drought, not localized events
- **Only covers risks that can be indexed**
- **Basis Risk:** The potential mismatch between actual losses and payouts, can be managed by:
  - More secure stations
  - Better crop modelling
  - A comprehensive approach to minimize undue pressure on one instrument to manage production risk



# Next Steps in Malawi: 2009 Onwards

A large white arrow pointing to the right, with the word "Investments" written inside in green text.

## Investments

- **Funded as part of World Bank 5-yr ADP Support Project:**
  - Further investment in Met Office network
  - Improve Government's Maize Yield Assessment Model
  - Link with national early warning system to strengthen drought preparedness and planning
  - Understand the role of weather insurance in Government's suite of risk management tools



# The Role of the World Bank



# A Pilot Transaction

- The GoM will receive a payout from the World Bank if the index hits a pre-determined
  - **The trigger was selected by the GoM, based on coverage and cost considerations**
- The World Bank entered into a mirroring agreement with a market counterpart that will “compensate” the World Bank in case the trigger is hit



**Intermediation services available to medium and low-income clients**



# Why Does the World Bank Intermediate?

## Building Capacity

- Building capacity to facilitate future direct transactions
  - **Legal**
  - **Transaction structuring**
  - **Bidding process, execution, valuation, accounting**

## Attracting Market Players

- Reduces start-up costs for private sector market players
- Facilitates competition by organizing bidding process among market counterparts

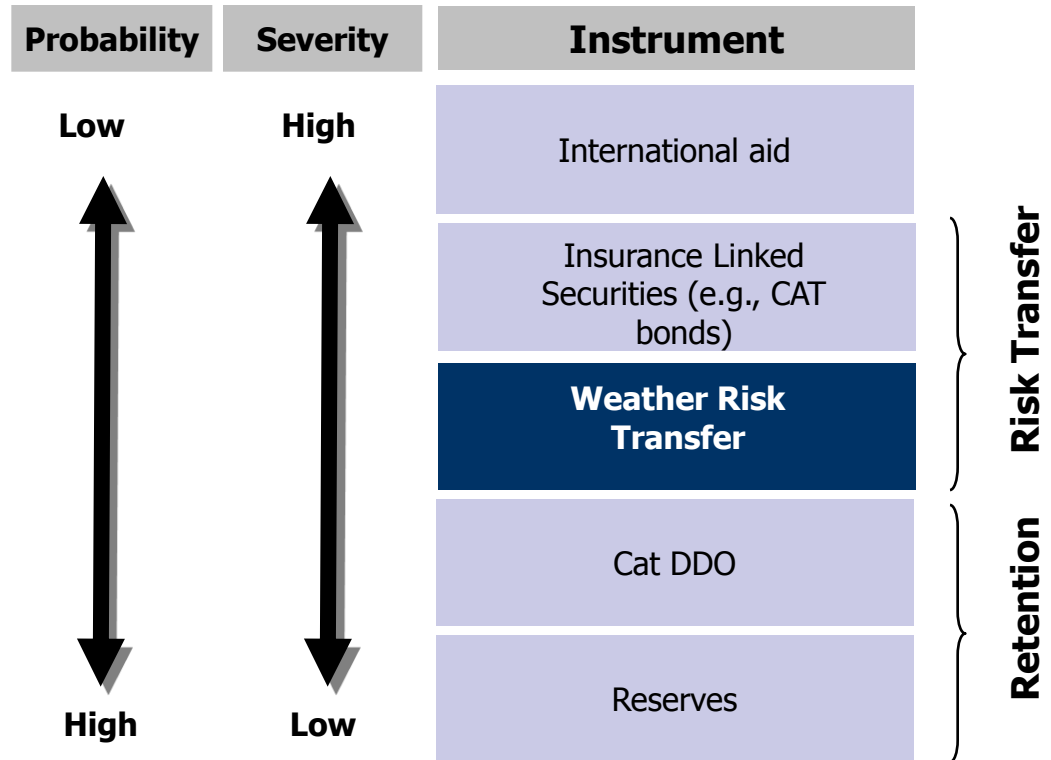
## Mitigating Moral Hazard Concerns

- Providing visibility
- Long-term relationship



# Catastrophe Risk Financing Framework

- The World Bank is now working with countries to develop **ex-ante risk financing and reinsurance** for natural disasters
- Each tool would be part of a **wider menu** of disaster risk financing products
- We will be working with Governments to determine the **mix of risk financing instruments**



Source: *Financial and Private Sector Development/ Financial Markets Networks (FPDSN), 2008*



# Lessons Learned

**Weather derivatives can work for developing countries**

**Local ownership is key**

**Capacity building can take time**