Role of reinsurance and risk sharing facilities in stimulating markets and innovation

Philippines Home Owners/SME Disaster Insurance Scheme
Climate

- high maximum and minimum temperatures
- heavy annual rainfall: 1000 mm to 5000 mm
- mean tropical cyclone occurrences: 20 per year

2012 World Risk Index

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vanuatu</td>
<td>36.31%</td>
</tr>
<tr>
<td>2</td>
<td>Tonga</td>
<td>28.62%</td>
</tr>
<tr>
<td>3</td>
<td>Philippines</td>
<td>27.98%</td>
</tr>
<tr>
<td>4</td>
<td>Guatemala</td>
<td>20.75%</td>
</tr>
<tr>
<td>5</td>
<td>Bangladesh</td>
<td>20.22%</td>
</tr>
<tr>
<td>6</td>
<td>Solomon Islands</td>
<td>18.15%</td>
</tr>
<tr>
<td>7</td>
<td>Costa Rica</td>
<td>17.38%</td>
</tr>
<tr>
<td>8</td>
<td>Cambodia</td>
<td>17.17%</td>
</tr>
<tr>
<td>9</td>
<td>Timor-Leste</td>
<td>17.13%</td>
</tr>
<tr>
<td>10</td>
<td>El Salvador</td>
<td>16.89%</td>
</tr>
</tbody>
</table>

Source: UNU-EHS
The Philippines is vulnerable to …

Typhoon Hazard

Earthquake Hazard

Estimated Economic Damage per year
US$ 239,263,000

Estimated Economic damage due to typhoon Yolanda is ~USD 13 billion

Cumulative output loss estimated between 1.25% and 4.03% of GDP

Source: PreventionWeb
Significant impact felt by the private sector...

- Share of private sector damage and losses is equivalent to 90 percent of the total
  - *Typhoon Yolanda (2013)*: 95% of the damage sustained by productive and social sectors (primarily housing)
  - *Typhoon Ondoy and Pepeng (2009)*: resulted in US$2.34 billion in damage and losses (>50 percent total losses) to the enterprise sector (industry, commerce, and tourism)

- Between 2000 and 2012, agriculture (including SMEs) was the most affected by natural disasters – 58% of the registered total damages (Source: National Disaster Risk Reduction and Management Council, Philippines)
Insured losses are insignificant compared to total losses incurred...

### Number of insurance policies

<table>
<thead>
<tr>
<th>Year</th>
<th>EARTHQUAKE</th>
<th>TYPHOON AND FLOOD</th>
<th>FIRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>167,000</td>
<td>158,000</td>
<td>930,000</td>
</tr>
<tr>
<td>2011</td>
<td>109,000</td>
<td>106,000</td>
<td>806,000</td>
</tr>
<tr>
<td>2010</td>
<td>136,455</td>
<td>228,043</td>
<td>856,599</td>
</tr>
<tr>
<td>2009</td>
<td>105,043</td>
<td>142,872</td>
<td>764,249</td>
</tr>
<tr>
<td>2008</td>
<td>104,182</td>
<td>144,545</td>
<td>733,177</td>
</tr>
</tbody>
</table>

Source: PhilNaRe

### Typhoon Yolanda (2013)

- Damaged more than 1.1 million homes (~25% of total housing stock in typhoon affected regions)
- 48% (528,000 homes) were totally damaged
- Insured losses estimated < US$1 billion, includes two large commercial risk (fertilizer plant and power generator/transmission...)

Global Index Insurance Facility

DAKAR 2017
Global Index Insurance Conference
Proposed Solution

Set-Up PHILIPPINES CATASTROPHE RISK INSURANCE POOL (PCRIP) FOR HOMEOWNERS & SMEs
POVERTY REDUCTION AGENDA: Phil Gov can speed recovery, transfer P2.5B of annual disaster rebuilding costs from voters to private sector

1. **Benefit:** Phil Gov can transfer P317m-P2.5b in post disaster homeowners and SME reconstruction costs to private sector. Voters can rebuild faster and better post-disaster.

2. **Features:** Indemnity contract with a quick pay parametric trigger. Governance via Trustees.

3. **Description:** nationwide, integrated mechanism to reduce post-disaster poverty for self-insured homeowners, SMEs through disaster risk financing and insurance.

4. **Process:** create a Philippine mutual insurance co (PCIP) to write EQ, Typhoon insurance. Trustors led by Phil Gov entrust capital to PCIP (trustee). Trustors’ establish governance mechanisms (Board of Trustees), and appoint a management company to operate the mutual insurance co. PCIP policyholders to be trust beneficiaries. Phil Gov implements measures to make 10m (NSO 2010) currently self insured homes under 1m value purchase EQ and WS insurance from PCIP. PCIP operates to meet all government regulations, particularly in respect of solvency. PCIP distribution and claims handling via 67 local insurers. PCIP risk transfer via gross excess of loss reinsurance bought on free market from local and foreign reinsurers.

5. **Startup Cost:** $50-$60mn enables annual claims payments of over $5m in year 1, increasing to over $50m starting year 5, with a solvency probability of 99.5% in year 3.
Homeowners, SMEs receive funds to rebuild: P317m in year 1 and over P2.5b from year 5

- Prepared a 5-Year business plan
- Business Plan incorporates the costing for reinsurance, commissions, operational & start-up expenses
- Start-up costs aside, average net profit driven by build-up margin within proposed 0.27% premium rate
  - Combined ratio in earlier years affected by start-up expenses but thereafter stabilizes at 88%
  - Expected net profit PHP 12.7m in Year 1, increasing to PHP 503.8m in Year 5 reflecting growth in penetration
Feature: Quick Pay Trigger

- Consumer buys policy from an insurance company at a fixed annual premium
- A defined Cat event (see following slide) will trigger an initial automatic immediate partial payment of 20% of policy limit to all policyholders in the designated area. 'Positive' basis risk exists for policyholders who get a partial payment but no actual loss.
- The partial payment is an efficient way to alleviate suffering by providing immediate aid to the recovery process, without waiting for the adjustment process.
- Thereafter, insurance company loss adjusters provide on-site assessment of actual damage to each property. Policyholders impacted by the loss but not covered under the parametric trigger would receive payment post adjustment.
- Any remaining payment is then made on an indemnity basis, capped at the policy limit.
- In summary:
  1. Trigger Event occurs
  2. Partial payment made by Insurance company on behalf of the Pool
  3. Loss adjustors appointed to make on-site assessment
  4. Any remaining valid claim settled on an Indemnity basis on behalf of the Pool
  5. Disputes regulated and assessed by Pool
Feature: Trustee structure builds trust

- **Reinsurance Capacity**
  - TRUST
    - Held on behalf of PCIP Policyholders (Board of Trustees appointed by Trustors)
  - MUTUAL INSURANCE COMPANY
    - (Virtual Company owned by CAT Insurance Policyholders)
  - Insurers / Agents

- **Service Company**
  - • Premium processing
  - • Claims processing
  - • Data collation

- ** Fee**
  - • Administration
  - • Modelling

- **Capital**
  - • Donors/Funders
  - • Government/IC?

- **Process/Structure**
  - • Premiums
  - • Claims

- **Description**
  - • Start-up Capital

- **Benefits**
  - • Administration
  - • Modelling

- **Features**

- **Process/Structure**

- **Start-up Capital**

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**Global Index Insurance Facility**

**World Bank Group**

**DAKAR 2017 Global Index Insurance Conference**
Why? Post - EQ and - Typhoon finance/insurance requires nationwide integrated structure and process

- Natural Disaster self-insured
  Losses \( \downarrow \) GDP between 1.25% and 4.03%

- Impact of catastrophes is highest on homeowners and SMEs, WHERE insurance penetration is lower than 0.53% national average.

- Solution:
  ✓ Active National Compulsory Catastrophe Insurance Pool.
Process: Scheme Overview

- **Operational Structure**
  - PCIP operates as a Trust on behalf of policyholders under a Trust Agreement with operational management outsourced to a service company.

- **Loss Assessment and Claims Protocol**
  - PCIP operates as a compulsory scheme to avoid anti selection and promote sustainability.
  - To ensure maximum speed and ease of claims payment, PCIP’s policy coverage be based on a simple Parametric Trigger for initial pay-out followed by adjustment on an indemnity basis.
  - Adjustment of original policies on First Loss (or Proportional basis?)

- **Premium Rating & Rate Relativity**
  - To ensure long term sustainability a dynamic build up of reinsurance protection based on an original policy rate of 0.27% (on Proportional basis) or 0.36% (on First Loss basis) of Policy Limit.

- **Initial Capitalisation & Reserve build up**
  - An initial capitalisation of PHP 2bn – PHP 2.85bn, which modelling assumptions will build up to PHP 3bn – PHP 4bn after 5 years.

<table>
<thead>
<tr>
<th>Option</th>
<th>Proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Re)insurance</td>
<td>Insurance</td>
</tr>
<tr>
<td>Outsourced</td>
<td>Service Company</td>
</tr>
<tr>
<td>Structure</td>
<td>Trust</td>
</tr>
<tr>
<td>Obligation</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Coverage</td>
<td>Proportional</td>
</tr>
<tr>
<td>Policy Limit</td>
<td>PHP 1m</td>
</tr>
<tr>
<td>Perils</td>
<td>EQ / Typhoon / + Flood caused by Typhoon</td>
</tr>
<tr>
<td>Partial Payment</td>
<td>Parametric Trigger</td>
</tr>
<tr>
<td>Final Adjustment</td>
<td>Indemnity</td>
</tr>
<tr>
<td>Rate</td>
<td>0.27% of Policy Limit</td>
</tr>
</tbody>
</table>
Capital: with zero startup capital, you have 99.5% chance to be -2b in debt by year 3

- Charts illustrate the modelled cumulative net distribution, without initial capital outlay
- Pool sustainability objectives dictate the level of initial capital outlay required
  - A longer time horizon entails greater potential downside due to cumulative loss experience over time
  - A medium term of 3 years is not an unreasonable horizon for setting initial capitalisation
  - Adequacy to 1 in 200 year over 3 year time horizon suggests initial capital of circa PHP 2bn
Capital: if you start with >P2b capital, you have 99.5% chance to be solvent in year 3

- We tested the sensitivity of results to varying original rates against the Year 3 capital position
- Based on current assumptions and modelling, and initial capital of PHP 2bn the proposed rate of 0.27% best meets:
  - Probability of ruin in Year 3 circa 1 in 200 years
  - Running combined ratio within 90%
- Lower/higher rates would lead to:
  - Higher/lower ruin probability
  - Lower/higher combined ratio and resulting capital build-up

### Modelled Capital - Year 3

<table>
<thead>
<tr>
<th>Probability of Capital Ruin in Year 3</th>
<th>Rate</th>
<th>0.230%</th>
<th>0.250%</th>
<th>0.270%</th>
<th>0.290%</th>
<th>0.310%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0%</td>
<td>519,418,178</td>
<td>760,218,178</td>
<td>1,001,018,178</td>
<td>1,241,818,178</td>
<td>1,482,618,178</td>
<td></td>
</tr>
<tr>
<td>4.0%</td>
<td>409,099,294</td>
<td>649,899,294</td>
<td>890,699,294</td>
<td>1,131,499,294</td>
<td>1,372,299,294</td>
<td></td>
</tr>
<tr>
<td>2.0%</td>
<td>86,188,590</td>
<td>326,988,590</td>
<td>567,788,590</td>
<td>808,588,590</td>
<td>1,049,388,590</td>
<td></td>
</tr>
<tr>
<td>1.0%</td>
<td>(250,353,129)</td>
<td>(9,553,129)</td>
<td>231,246,871</td>
<td>472,046,871</td>
<td>712,846,871</td>
<td></td>
</tr>
<tr>
<td>0.5%</td>
<td>(491,168,147)</td>
<td>(250,368,147)</td>
<td>(9,568,147)</td>
<td>231,231,853</td>
<td>472,031,853</td>
<td></td>
</tr>
<tr>
<td>0.4%</td>
<td>(544,463,266)</td>
<td>(303,663,266)</td>
<td>(62,863,266)</td>
<td>177,936,734</td>
<td>418,736,734</td>
<td></td>
</tr>
<tr>
<td>0.2%</td>
<td>(802,835,796)</td>
<td>(562,035,796)</td>
<td>(321,235,796)</td>
<td>(80,435,796)</td>
<td>160,364,204</td>
<td></td>
</tr>
<tr>
<td>0.1%</td>
<td>(912,082,178)</td>
<td>(671,282,178)</td>
<td>(430,482,178)</td>
<td>(189,682,178)</td>
<td>51,117,822</td>
<td></td>
</tr>
</tbody>
</table>

| Average                              | 1,887,393,257 | 2,128,193,257 | 2,368,993,257 | 2,609,793,257 | 2,850,593,257 |
| Comb Ratio                           | 101.6% | 94.6% | 88.6% | 83.5% | 79.0% |
Thank You

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