Climate Change & Financial Stability in Jamaica

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05 September 2019
Introduction

- Climate related risks have become more prominent in development planning and economic policy in Jamaica.
- Early stages of developing a framework to incorporate climate risks in financial stability assessments.
- The main transmission channel is physical risks
- The exact pathways of transmission of climate change are uncertain and analysis is constrained by data gaps.
Outline

1. Climate related risks to Jamaica: Stylized Facts.

2. The main transmission channels and exposure of financial system.

Outline

1. Climate related risks in Jamaica: Stylized Facts
There is a trend increase in the number and severity of environmental disasters in the region.

Hurricanes are among the most frequent disaster events and can create significant economic impact.

<table>
<thead>
<tr>
<th>EVENT</th>
<th>Year</th>
<th>Category</th>
<th>Cost ($JB)</th>
<th>Impact (% GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurricane Gilbert</td>
<td>1988</td>
<td>5</td>
<td>~8.3</td>
<td>65.0</td>
</tr>
<tr>
<td>Hurricane Michelle</td>
<td>2001</td>
<td>4</td>
<td>2.52</td>
<td>0.8</td>
</tr>
<tr>
<td>May/June Flood Rains</td>
<td>2002</td>
<td>-</td>
<td>2.47</td>
<td></td>
</tr>
<tr>
<td>Hurricane Charley</td>
<td>2004</td>
<td>4</td>
<td>0.44</td>
<td>0.02</td>
</tr>
<tr>
<td>Hurricane Ivan</td>
<td>2004</td>
<td>3</td>
<td>36.9</td>
<td>8.0</td>
</tr>
<tr>
<td>Hurricanes Dennis &amp; Emily</td>
<td>2005</td>
<td>4</td>
<td>5.98</td>
<td>1.2</td>
</tr>
<tr>
<td>Hurricane Wilma</td>
<td>2005</td>
<td>5</td>
<td>3.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Hurricane Dean</td>
<td>2007</td>
<td>4</td>
<td>23.8</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Source: Planning Institute of Jamaica
Caribbean islands can expect:
• greater variation in precipitation between 2010 and 2039; and
• increasing air temperatures of 0.48-1.06 degrees Celsius by 2039.
Climate change is expected to affect Jamaica mainly through more severe hurricanes, increases in heavy rainfall and longer periods of drought.

Average Annual Rainfall

Source: Planning Institute of Jamaica
The Intergovernmental Panel on Climate Change predicts increasing air temperatures of 0.48-1.06 degrees Celsius by 2039.

Source: PIOJ. Recordings from NMIA (Norman Manley International Airport) and SIA (Sangster International Airport)
Beaches eroded by an additional 0.3 per cent in 2018 compared to the previous year.
Outline

2. The main transmission channels and exposure of financial system
## Climate Risk Exposures to the Financial Sector in Jamaica

### Physical Risks

<table>
<thead>
<tr>
<th>Physical Risks</th>
<th>Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased frequency and severity of storms</td>
<td>Private and public sector costs to repair damage; lost revenue from decreased economic activity.</td>
</tr>
<tr>
<td>Rising temperatures</td>
<td>Reduced agriculture output, higher energy cost.</td>
</tr>
<tr>
<td>More frequent flood and drought</td>
<td>Volatility in agricultural output and prices, reduced tourism output</td>
</tr>
<tr>
<td>Rising Sea Levels</td>
<td>Reduced tourism income and economic activity from coast line activities, increased infrastructure and housing cost.</td>
</tr>
</tbody>
</table>

**Transition risks** are viewed to be low as we don’t expect immediate or sudden changes in asset values from a shifting of investor or consumer preferences.
Climate related risks can have broad-based impact on various economic assets and activity.
Banks’ asset exposure to climate risk sectors are not insignificant.

Composition of Non-personal Loans
Banks’ asset exposure to climate risk sectors are not insignificant.

Loan Profile of Deposit Taking Institutions

- Demand Loans: 30%
- Instalment Loans (excl. Mortgages): 20%
- Mortgage Loans: 20%
- Term Loans: 30%
- Other Loans: 10%
There is some exposure to sovereign risk.

Financial Sector Exposure to Government

- Banks: 0%
- Securities Dealers: 20%
- Insurance: 40%
- Private Pension: 60%
General insurers account for 2.0 percent of financial system assets
Outline

3. Framework for Assessing Risk to Financial Stability
Framework for Assessing Risk to Financial Stability

• Environmental risk assessment has been based on scenario analysis and the stress testing of financial institutions.

• The impact of a category 5 hurricane on GDP, consumer prices, equity prices, interest rates and deposit withdrawals are simulated and fed through the balance sheet of securities dealers and banks.

• The impact on government debt we assume will be moderate with the implementation of the government’s National Disaster Risk Finance programme. We also assume that monetary policy will not respond to the supply shock.
### Sample Stress Test Results from Environmental Scenario

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Pre-shock non-performing loans ($000's)</td>
<td>$363,054</td>
</tr>
<tr>
<td>Post-shock non-performing loans ($000's)</td>
<td>$381,612</td>
</tr>
<tr>
<td>Pre-shock CAR (%)</td>
<td>16.2</td>
</tr>
<tr>
<td>Post-shock CAR (%)</td>
<td>16.2</td>
</tr>
</tbody>
</table>
Environmental risk to the real economy

Assessment of insurance protection

Impact on the asset exposure of banks and securities dealers

Next steps.....
Next steps.....
Data Gaps

- Forward looking estimates of the valuation effects of climate change.
- Loans and investment data based on geographic location.
- More detailed information on insurance coverage by risk type and location.
Thank You
<table>
<thead>
<tr>
<th>Recommendations by the Network for Greening the Financial System</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Monitoring climate related risks</td>
<td>Understand and obtaining more precise projections and measurements of environmental risks to the various sectors through collaboration with University.</td>
</tr>
<tr>
<td>2. Developing taxonomies</td>
<td>Begin to identify financial exposures to climate risk related assets.</td>
</tr>
<tr>
<td>3. Promoting disclosures</td>
<td>Look to assess standards and rules for the development of financial instruments to encourage more investment in ‘green’ assets and other forms of environmentally sustainable economic activity.</td>
</tr>
<tr>
<td>4. Including climate related risk into prudential frameworks</td>
<td>Ensuring awareness by the financial industry of the implications of environmental risks and on the developments in global markets related to green finance. This could include providing information on the internationally established principles of responsible banking, investment and insurance.</td>
</tr>
</tbody>
</table>