

Financial preparations in the Caribbean for the Hurricane season

An Application of IIASA's CATSIM model

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IIASA



*Sixth Annual IIASA-DPRI Forum
Integrated Disaster Risk Management
Risk and Challenges
for Business and Industry*



ISTANBUL
METROPOLITAN
MUNICIPALITY

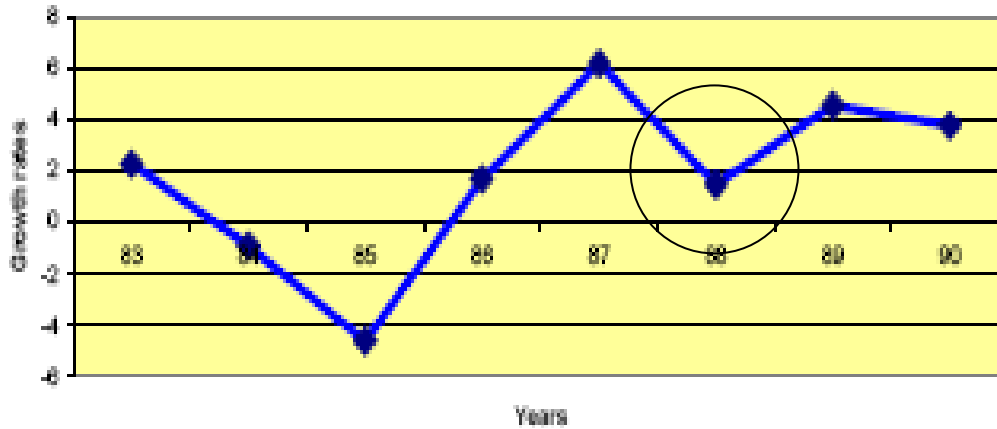


THE WORLD BANK

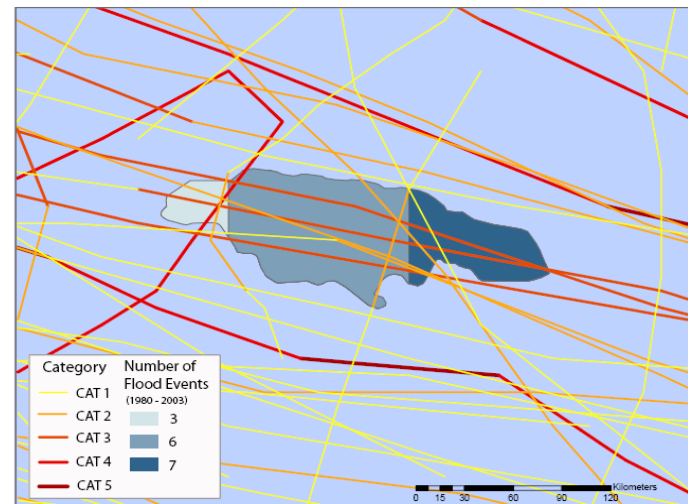
Concerns

- CDB/IDB workshop on “Management of Disaster Risk through Fiscal and Budget Planning”
- Objectives:
 - *discuss mainstreaming disaster risk management into fiscal and development planning*
 - *explore feasibility of using physical and financial disaster risk management options.*
- 18 Caribbean countries
- Involved one-day group exercise on stylized disaster-prone country cases facilitated by IIASA CATSIM model

Concerns: e.g. Jamaica

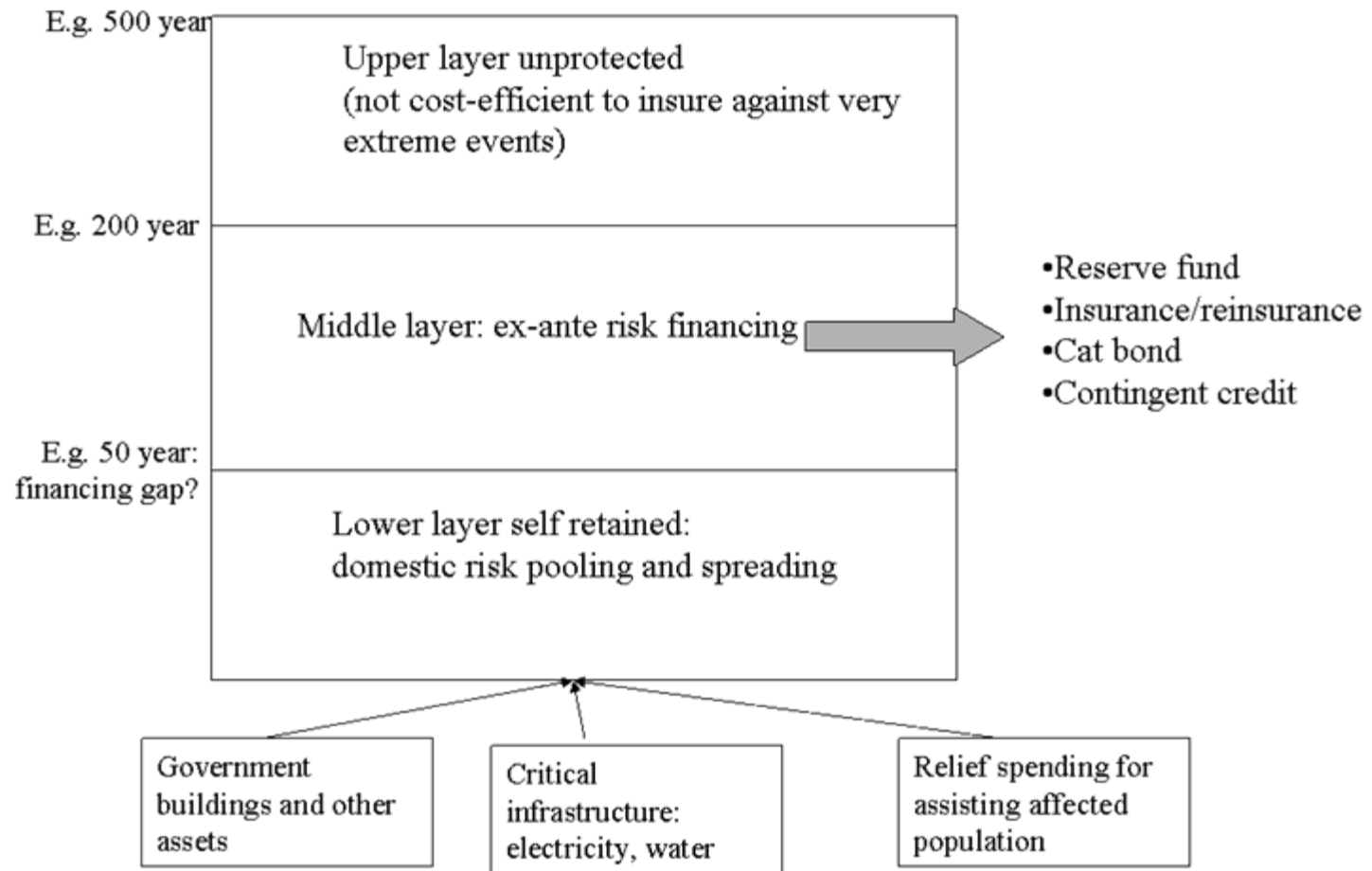


Impact of Hurricane Gilbert on growth
Source: ECLAC/UNDP/PIOJ, 2004



Storm Tracks from 1851 - 2004 and Flood Events
Source: Bach (2006) based on *Hotspots* data by Dilley et al. (2005)

"Insurance" decision problem



Hazard
Floods, earthquakes etc.

Elements at risk
Capital stock, population

Physical Vulnerability
Susceptibility to physical damage

Direct Risk
Potential asset losses
STEP 1

Financial Resilience
STEP 2

**Financial vulnerability:
Potential financing gap**
STEP 3

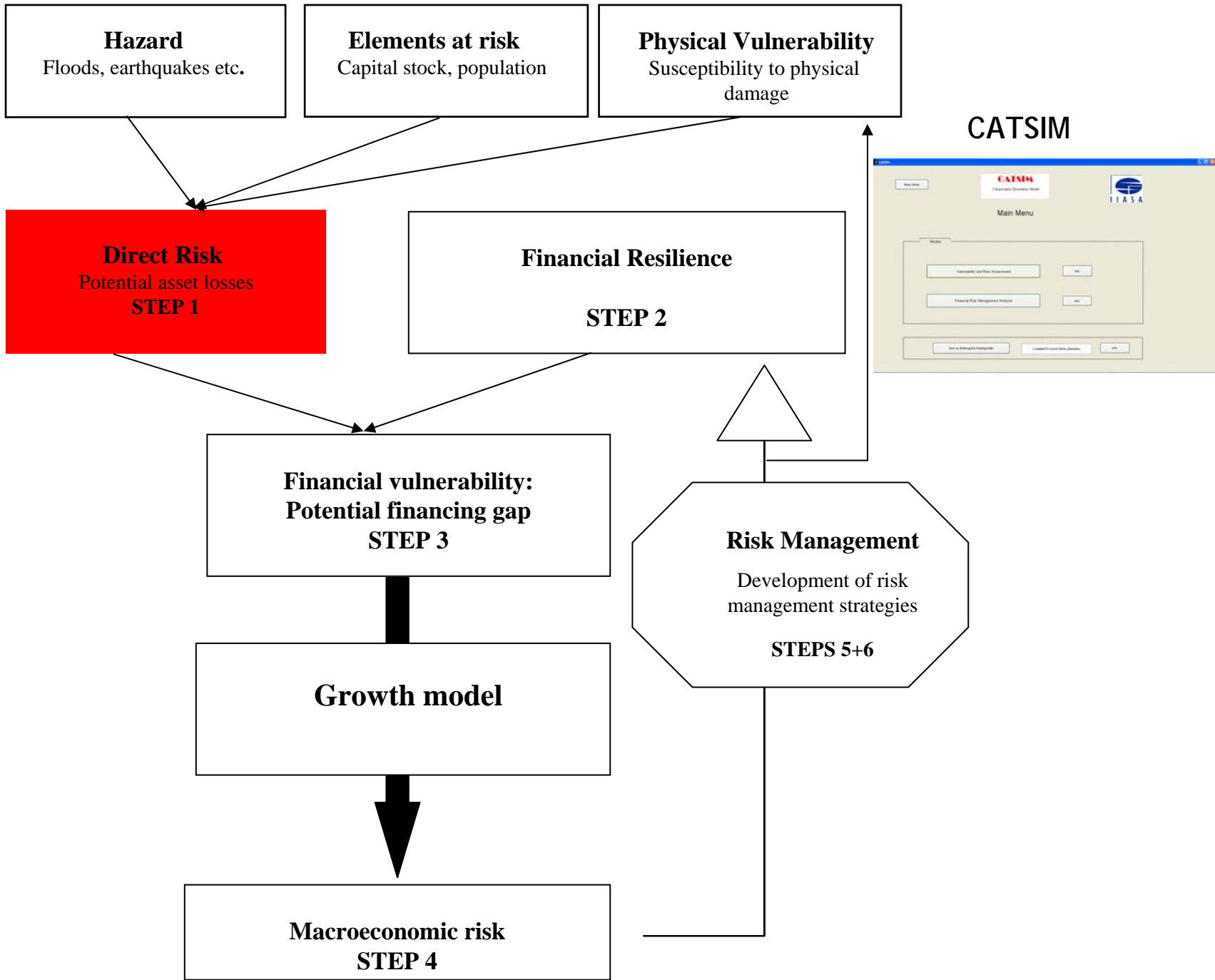
Growth model

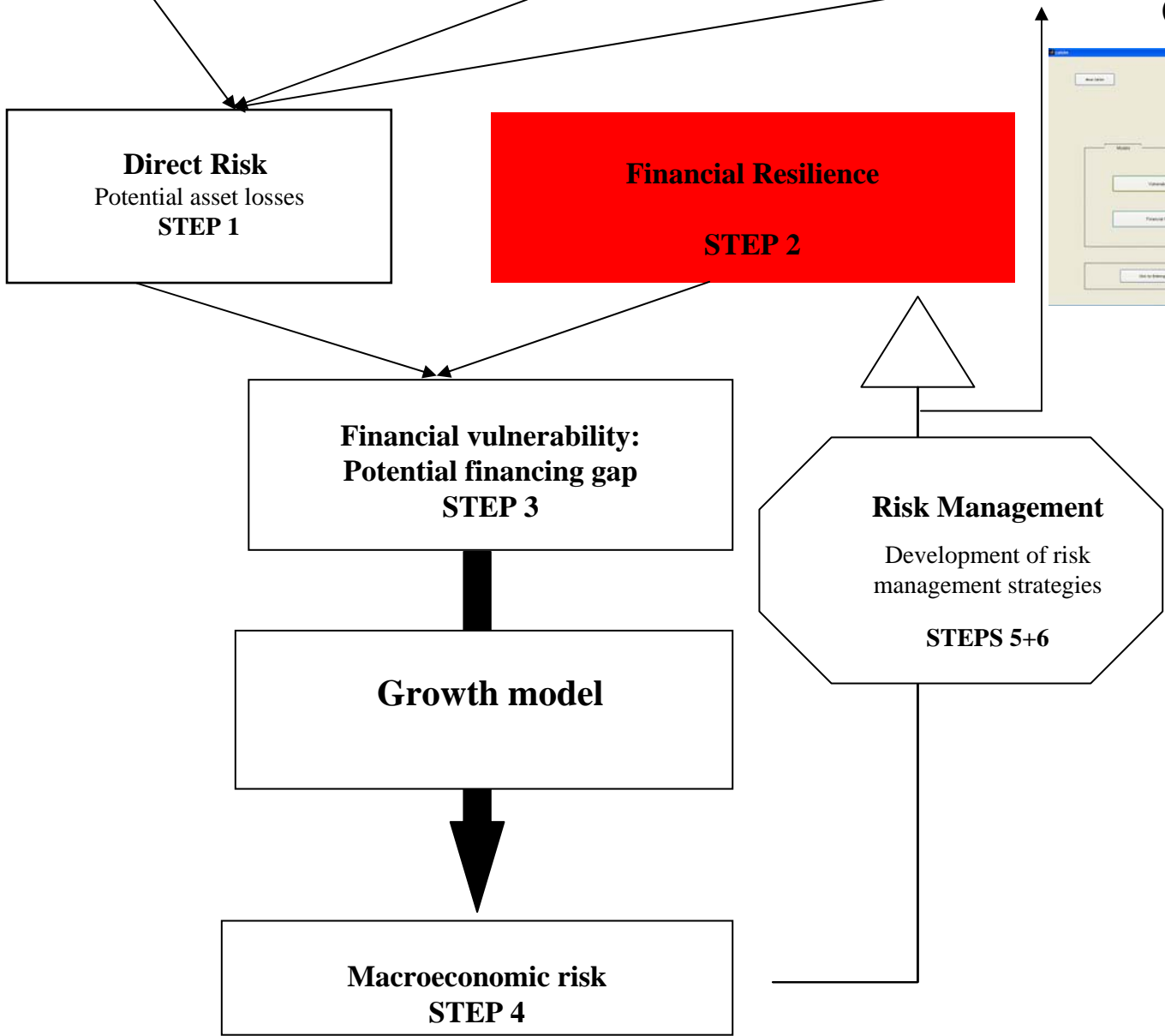
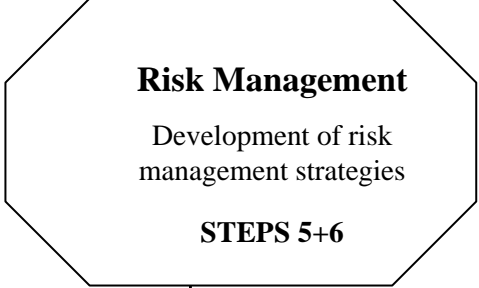
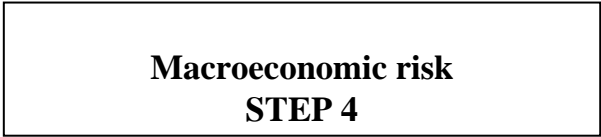
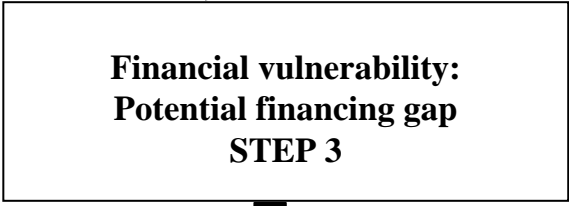
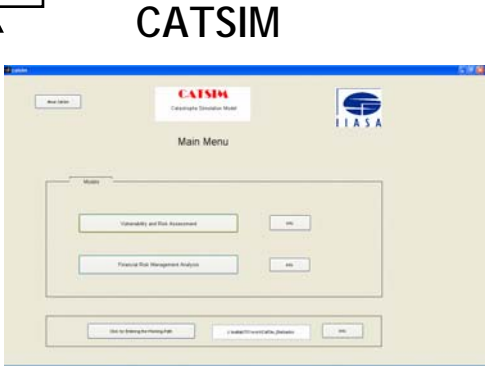
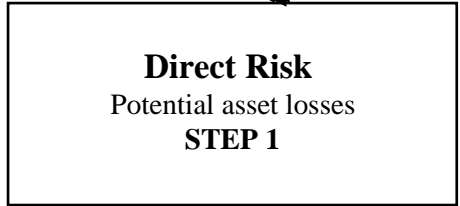
Macroeconomic risk
STEP 4

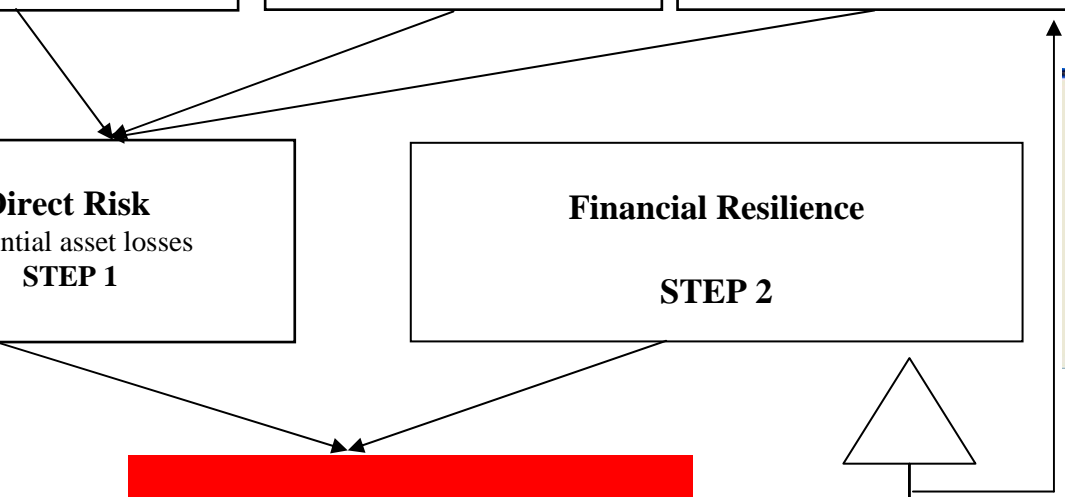
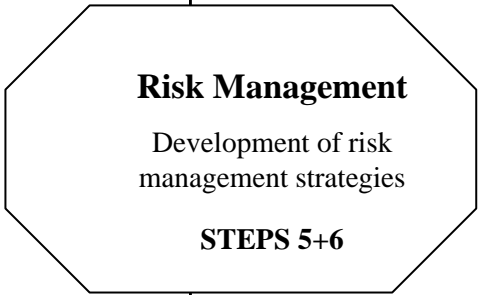
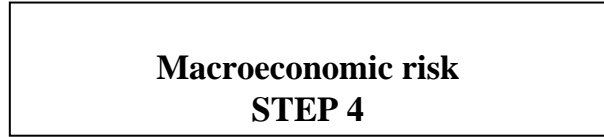
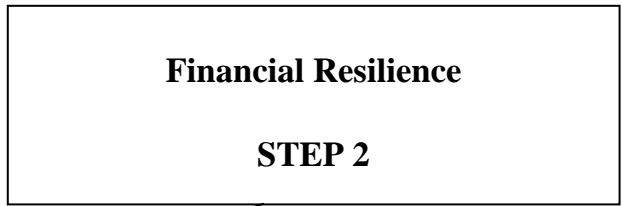
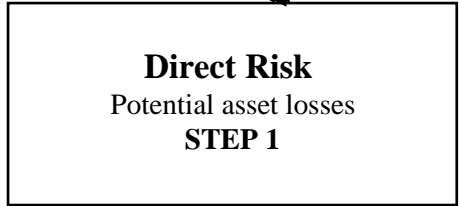
Risk Management
Development of risk management strategies
STEPS 5+6

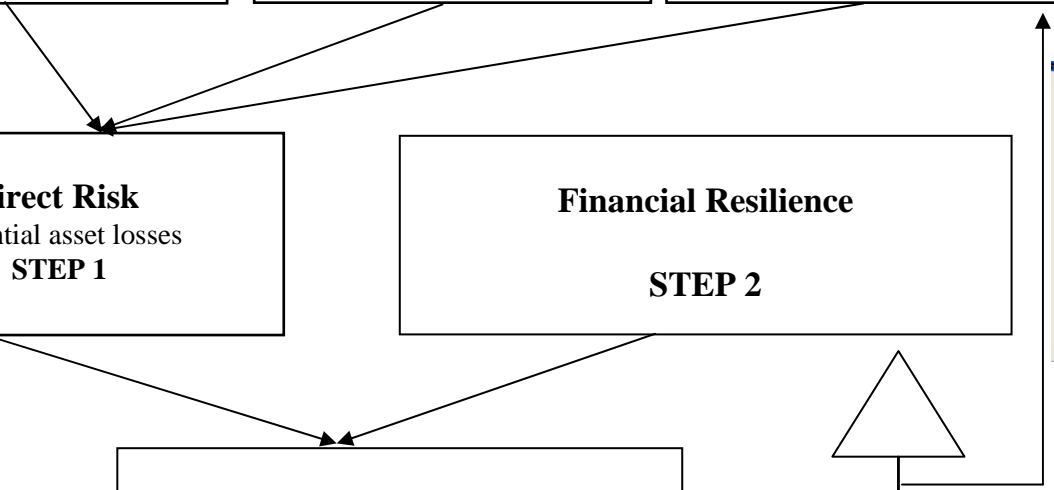
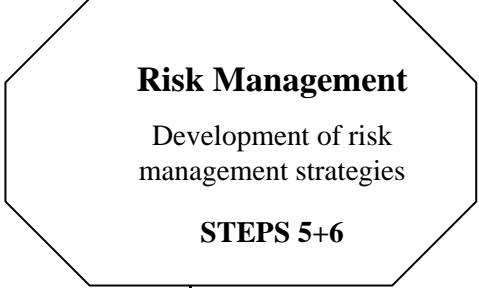
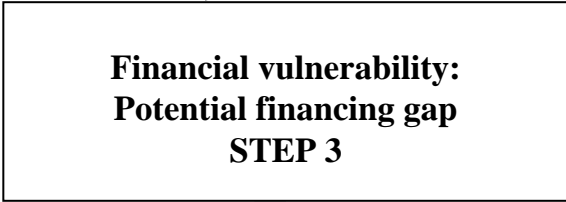
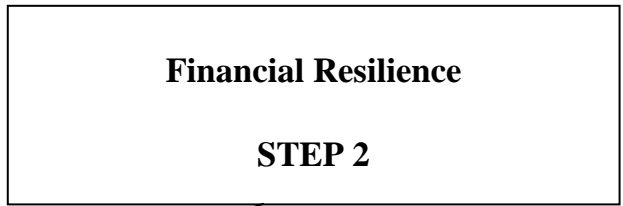
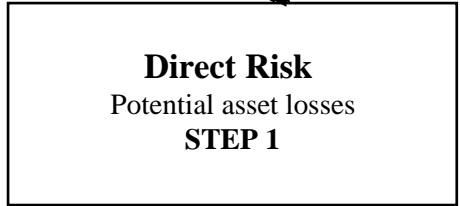


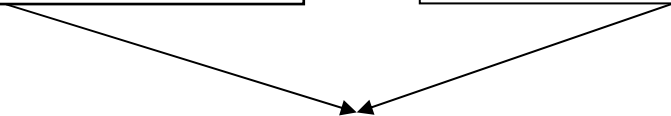
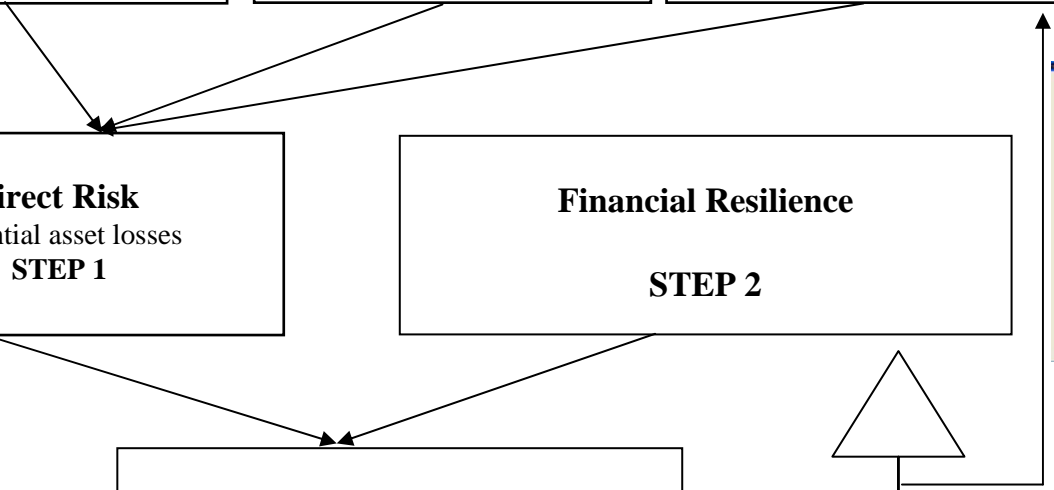
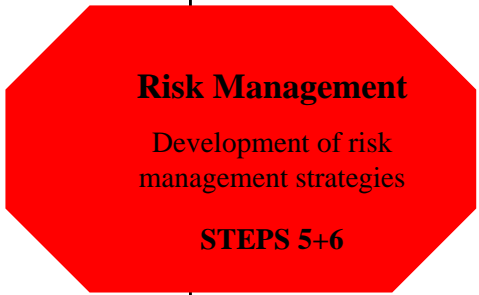
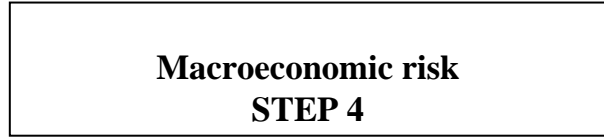
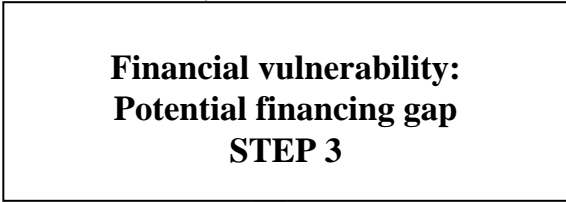
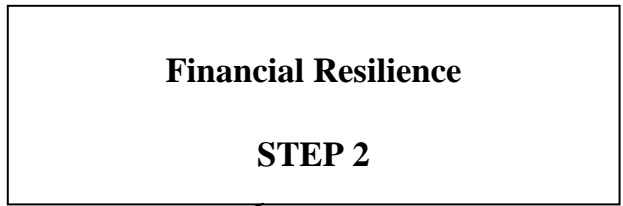
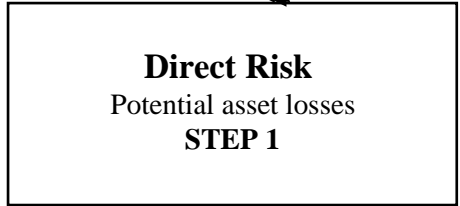
CATSIM



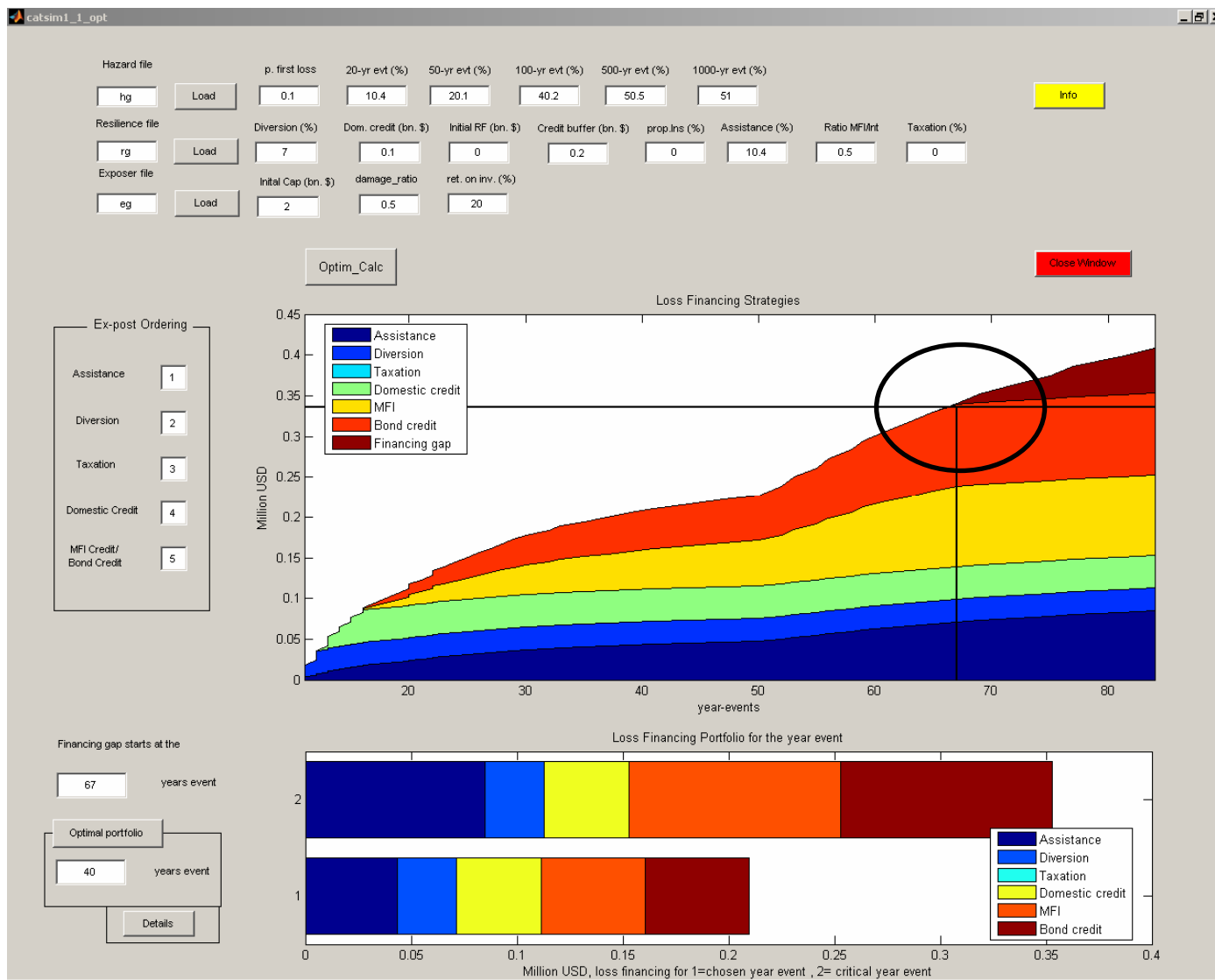








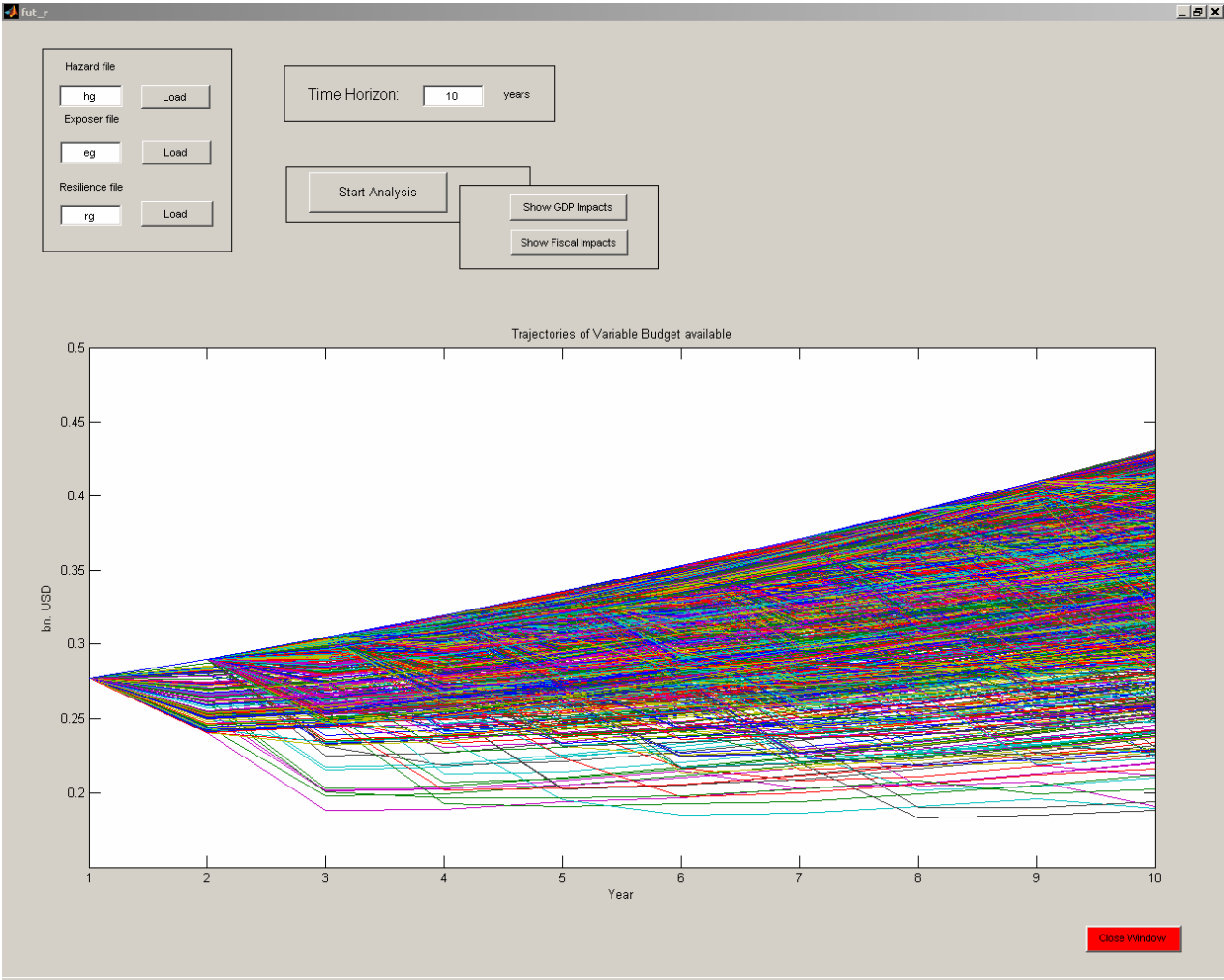
Assess vulnerability



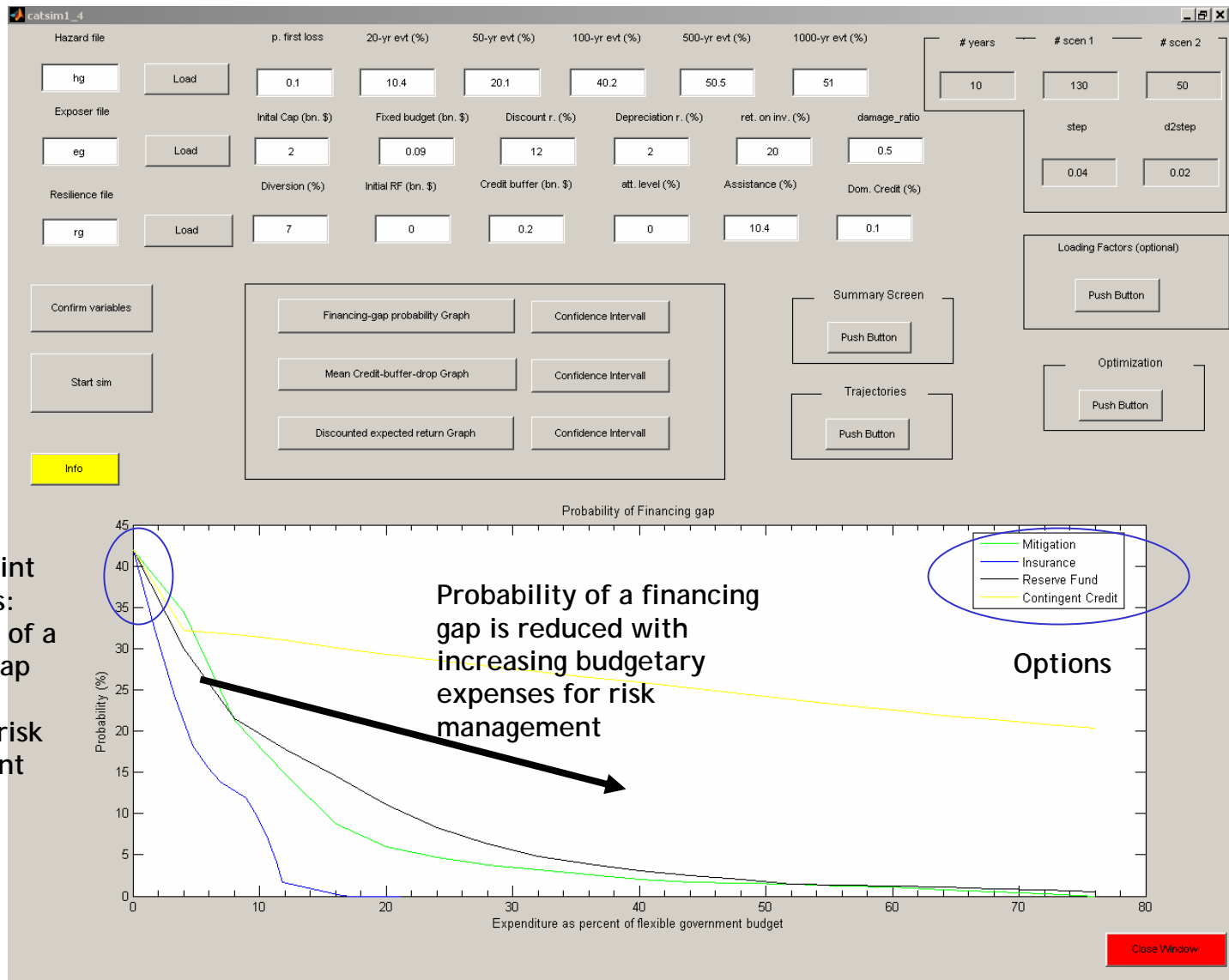
Financing gap starts

Compare event with financing gap to selected event (such as 200 year)

Assess macro risk: stochastic fiscal impacts



Assess costs and benefits of risk financing options: Analysis of probability of financing gap



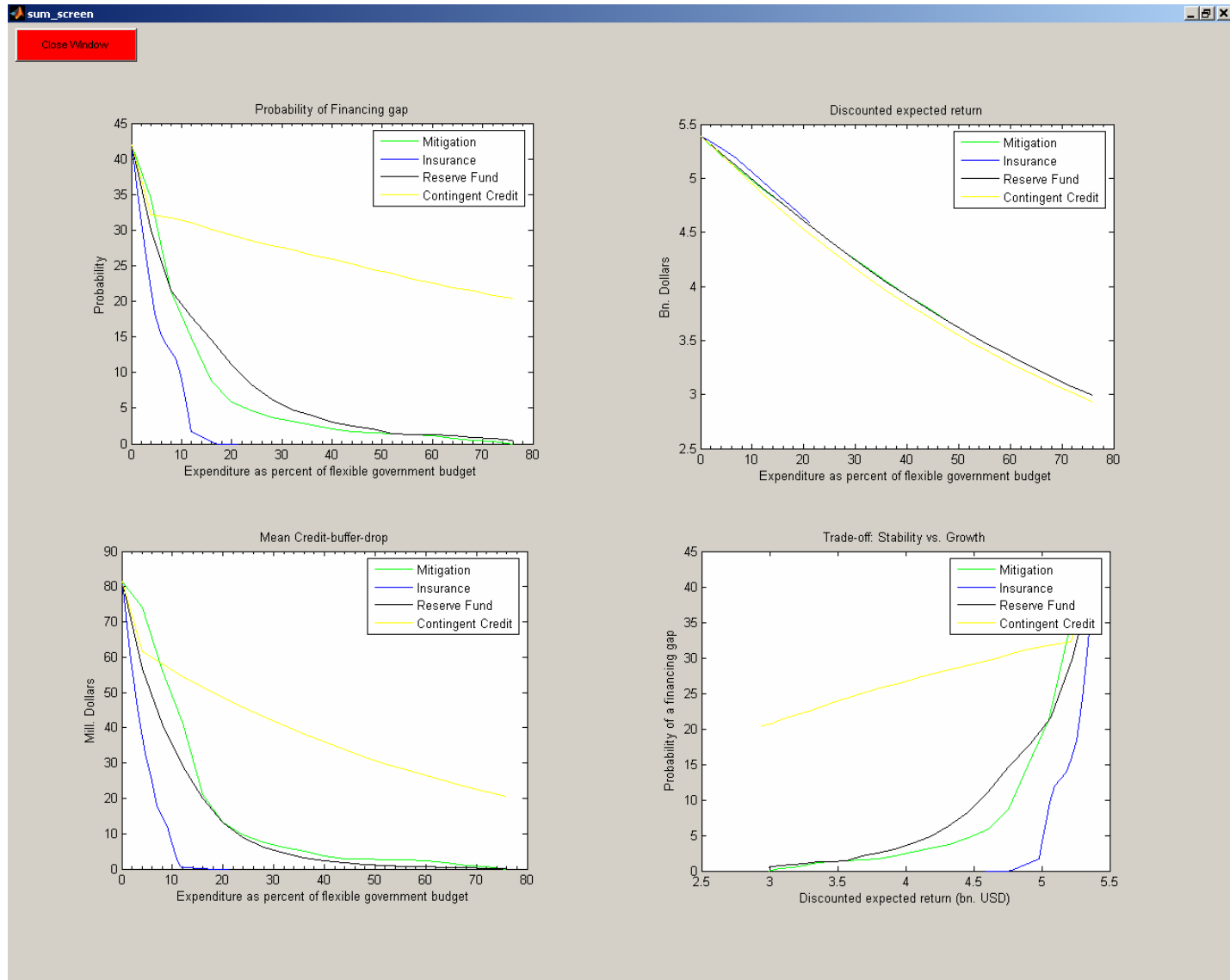
Starting point for analysis: Probability of a financing gap without additional risk management

Probability of a financing gap is reduced with increasing budgetary expenses for risk management

Options

Cost of risk management

Summary screen of response variables



Workshop



Outcomes

- Model considered useful for planning purposes
- Model will be used by countries
- More detailed national analyses
- Assists in informing process on Caribbean Catastrophe Insurance Pool

