

www.pwc.com

Earthquakes, catastrophes and the RBNZ solvency standards

June 2013
Paul Rhodes

Catastrophes

Insurance is there in the event of a catastrophe

Catastrophes include;

- Storms
- Hurricanes
- Floods
- Earthquakes
- Tsunamis
- Epidemic

The risk has to be reinsured globally as it is too big

- Reinsurance is not unlimited it will have a “cap” e.g. \$500million

Regulation

The Reserve Bank now regulate insurers

The Reserve Bank does not want an insurance company to fail

- Capital requirements - enough money at 99.5% confidence
- Specific requirements for;
 - Catastrophes at 1 in 250 year event
 - Earthquakes at 1 in 1000 year event
- The actuary has to certify that the catastrophe capital is adequate
- Firstly assess if there is enough reinsurance
- Secondly, if there is not then the dollar value of shortfall from the cost of the event breaching the cap

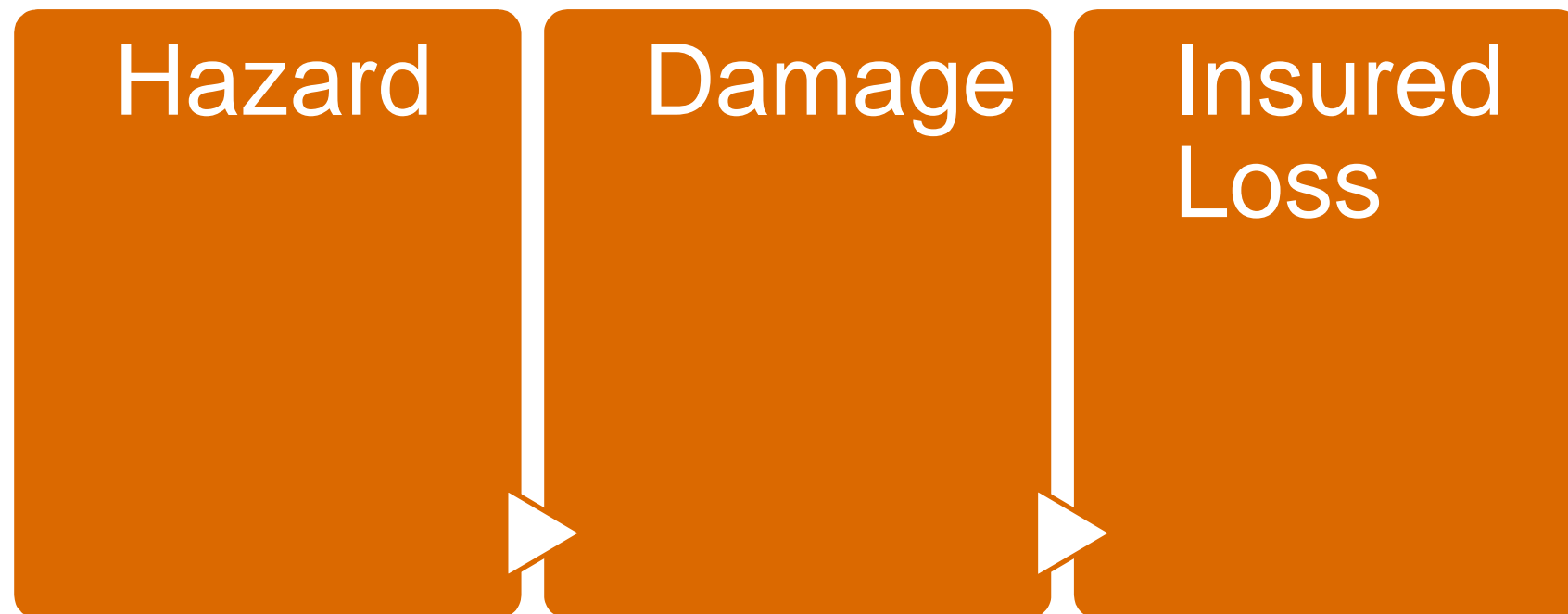
The cost of a catastrophe

The dilemma for actuaries

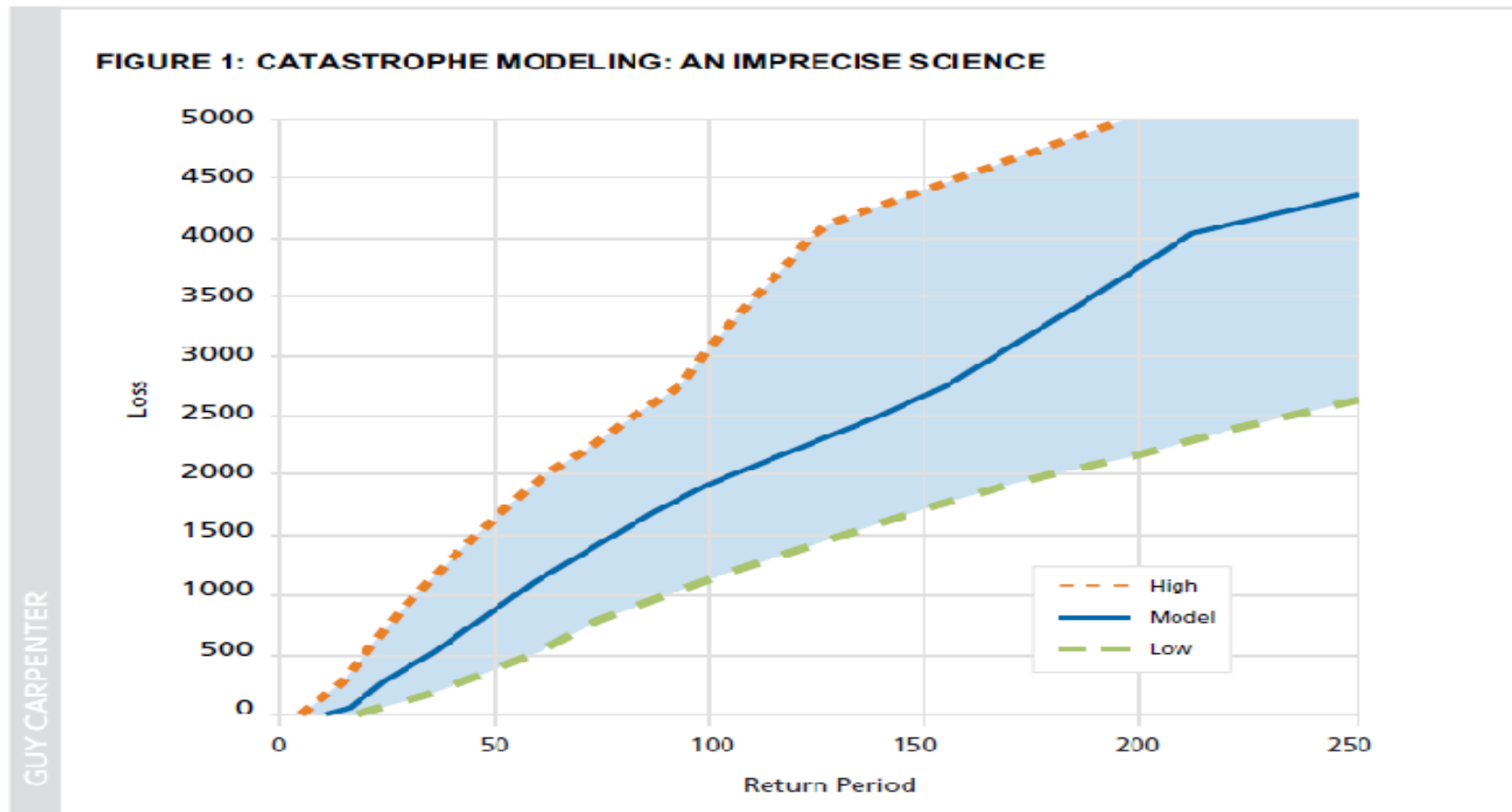
Need a single answer to a hugely uncertain statistical outcome;

- Relies on expertise of others: scientists and engineers
- Insurers rely on global catastrophe models from 3 providers
- Big differences between models
- No way of ensuring consistency between different companies

Components of a Catastrophe Model



Uncertainty in a Catastrophe Model



Source:- Guy Carpenter

The opportunity

Desired outcome

A better and more transparent methodology to work out the likely cost of a 1 in 1000 earthquake;

- Does not rely on black box global models
- Is transparent
- Meets the needs of NZ as a whole, e.g. another ChCh, a big one in Wellington etc.
- Is acceptable to all stakeholders
 - Regulator
 - Insurance Companies
 - Actuaries