Macroeconomic effects from natural catastrophes:

New findings on the role of (re)insurance and its supervision

Asian Development Bank Seminar

"*In pursuit of a more resilient and inclusive insurance sector*"

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Outline

1. Strengthened countries via insurance?
   – A real life example from two islands

2. Natural catastrophes worldwide
   – What is the situation in Asia?

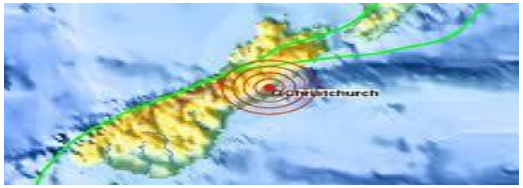
3. Economic growth and insurance
   – New findings on the GDP growth

4. The role of insurance regulation
   – IAIS support for national supervisors

Strengthened countries via insurance?

A real life example from two islands

New Zealand



Haiti

Similarities	New Zealand	Haiti
Earthquake 2010	Richter 7.0	Richter 7.0
City affected	Christchurch	Port-au-Prince
Direct losses	$6.5 bn	$8.0 bn

Strengthened countries via insurance?

New Zealand

Haiti

Differences	New Zealand	Haiti
Fatalities	0	220’000
Destruction / GDP (*stock*)	- 9%	- 121%
Growth impact (*flow*)	+ 0.2%	- 5.1%
Insurance coverage	81%	Less than 1%

Conclusions from the real life example

Two islands – a world apart?

Insurance coverage: significant differences

- Availability of insurance / reinsurance is essential
- Weight of additional factors

Regulation and supervision

- Importance of IAIS Insurance Core Principles (ICPs)
- Significance of international cooperation among supervisors and regulators, including recognition

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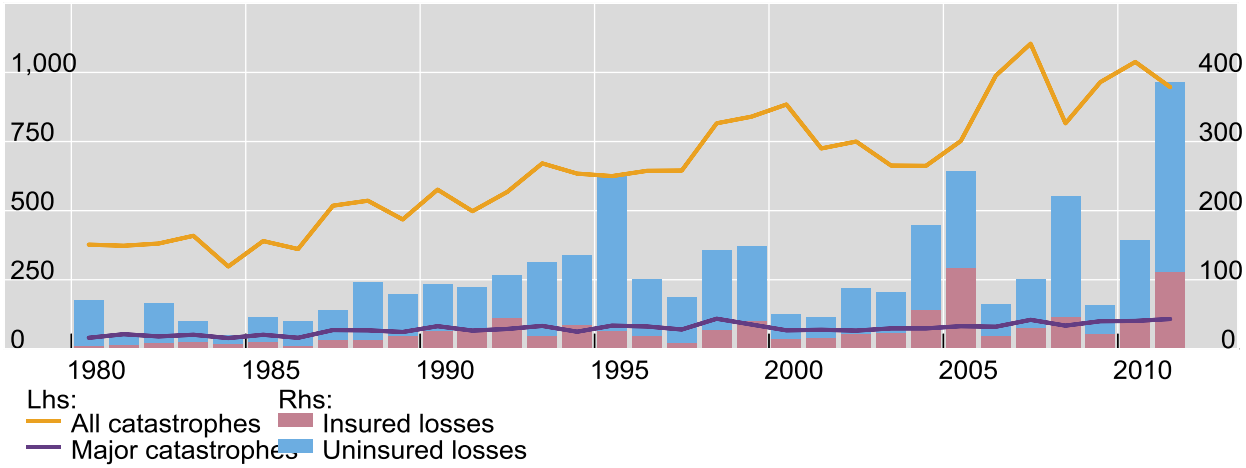
2. Natural catastrophes worldwide

Frequencies and losses

All natural catastrophes
Frequency

USD bn



Sources: Centre for Research on the Epidemiology of Disasters EM-DAT database; MunichRe NatCatSERVICE; authors' calculations.

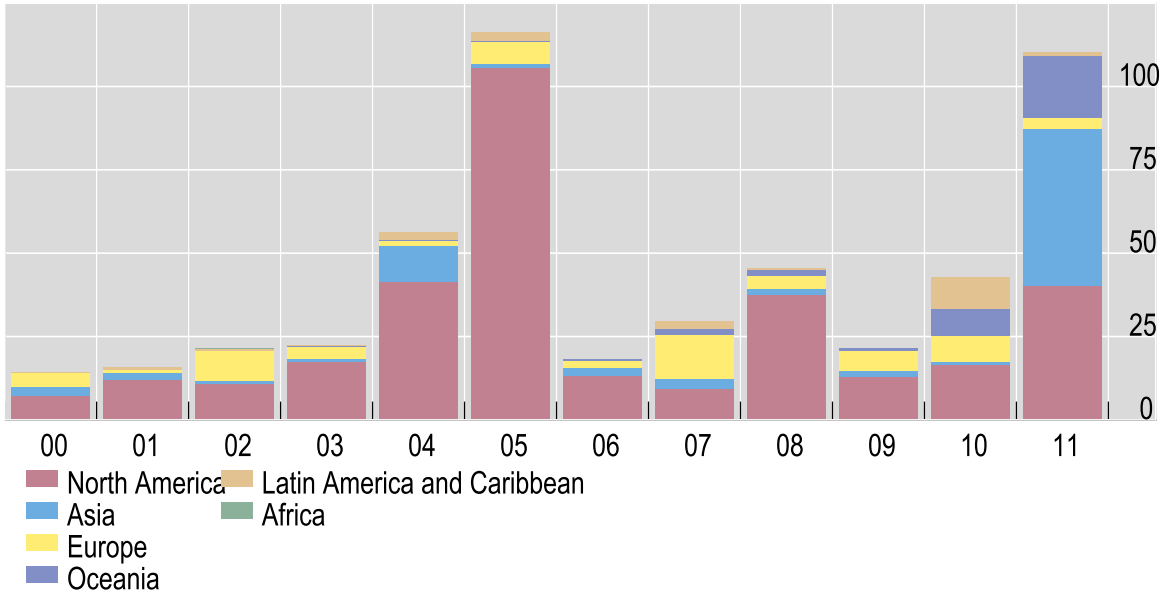
Compare also S. von Dahlen and G. von Peter under: http://www.bis.org/publ/qtrpdf/r_qt1212e.pdf

Natural catastrophes and insurance

What is the situation in Asia?

Insured losses associated with natural catastrophes

USD bn



Sources: MunichRe NatCatSERVICE; SwissRe Sigma database; authors' calculations

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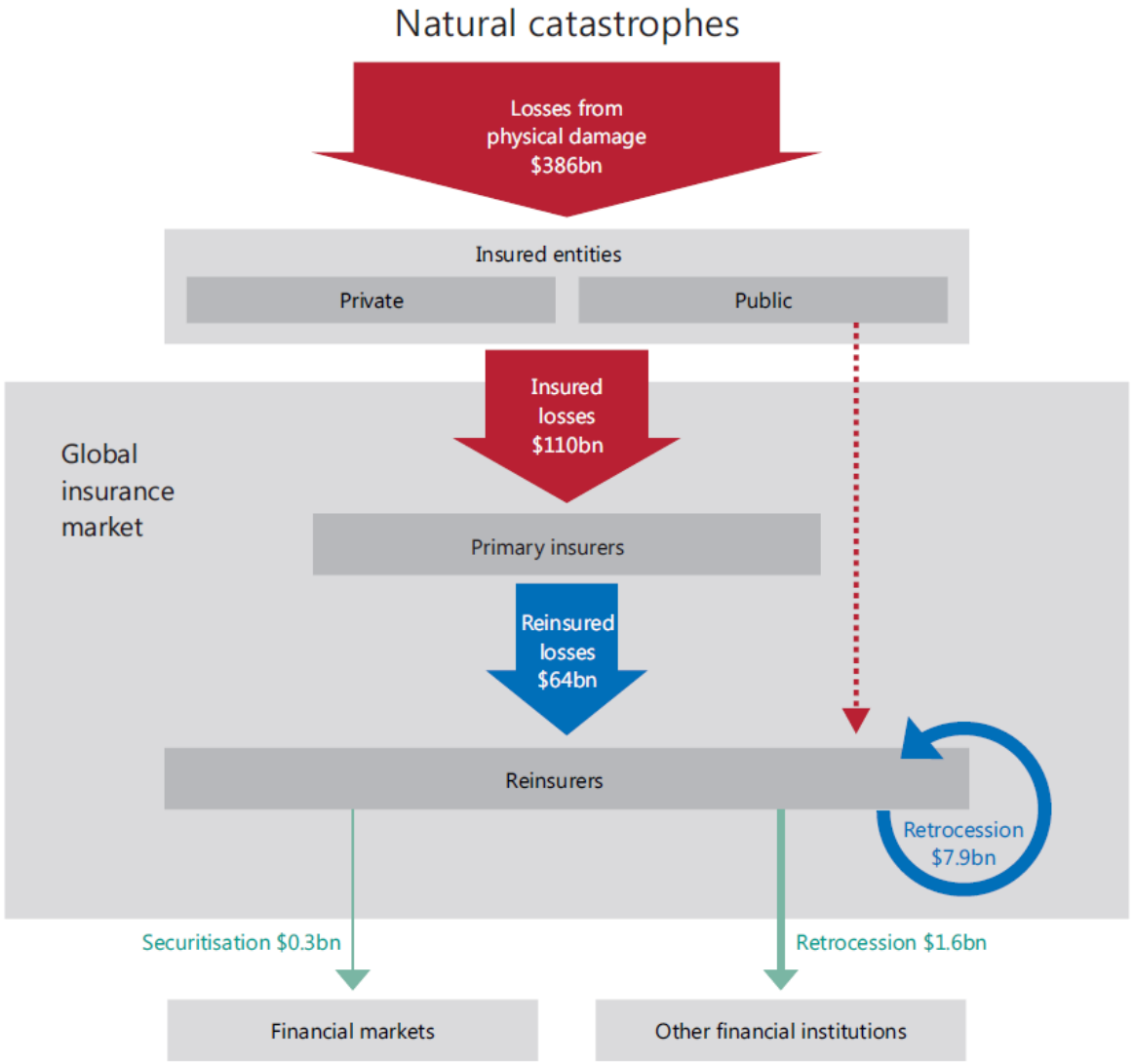
Catastrophe risk transfer

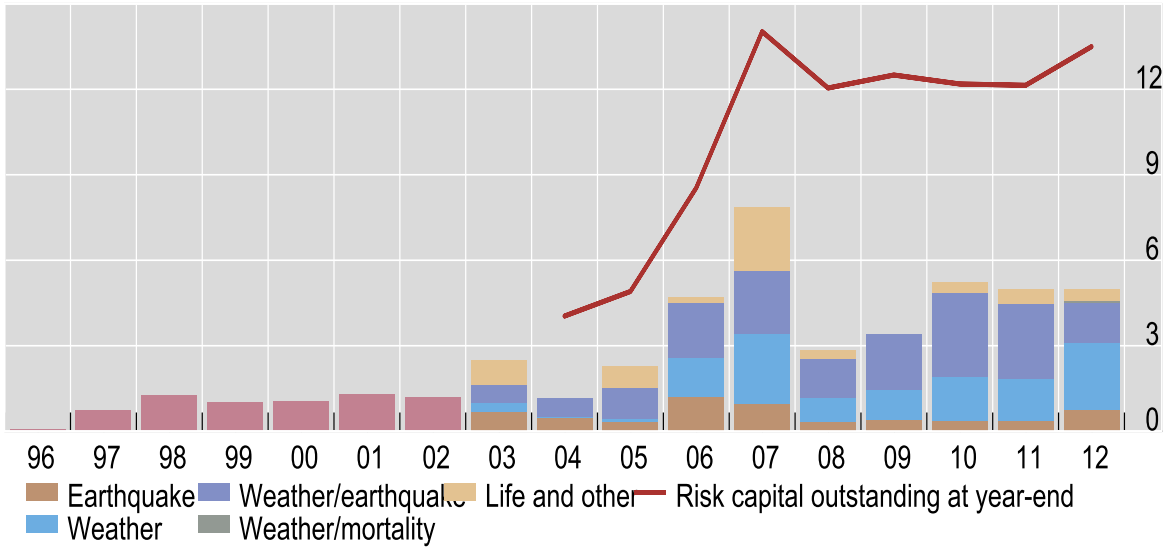


Sources: Company reports; authors' calculations and estimates; Compare also: http://www.bis.org/publ/qtrpdf/r_qt1212e.pdf

Catastrophe bond issuance

By type of risk

USD bn



Sources: Artemis; Guy Carpenter; authors' calculations.

Compare also S. von Dahlen and G. von Peter under: http://www.bis.org/publ/qtrpdf/r_qt1212e.pdf

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3. Economic growth and insurance

New findings on the GDP growth (our study)

(1) Natural catastrophes: negative effect *on economic growth* (country)

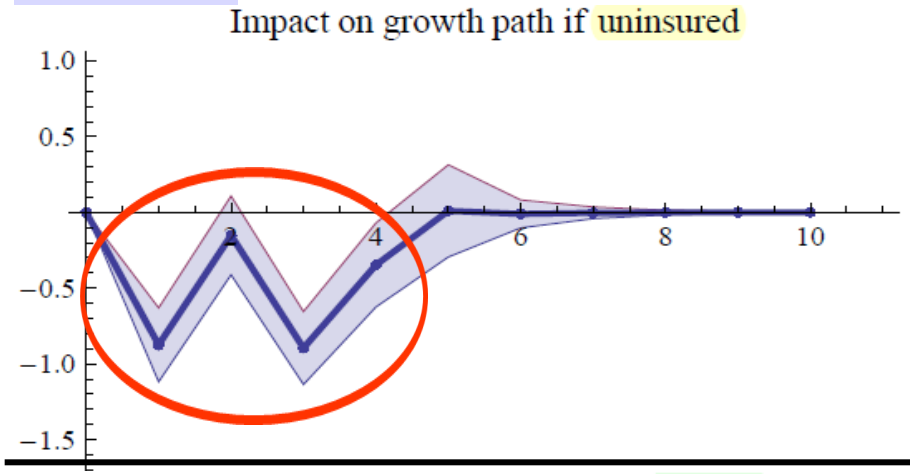
(2) Natural catastrophes *plus* sufficient (re)insurance coverage: positive effect – or reduced negative impact – *on economic growth* (country)

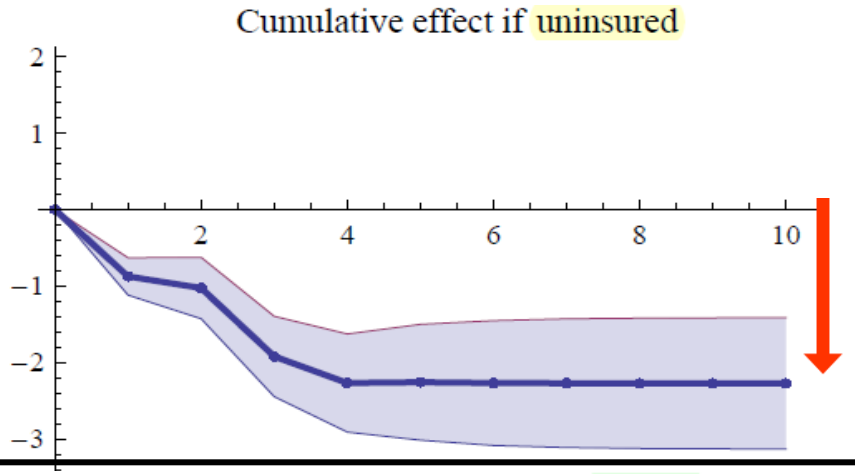
Compare also: http://www.bis.org/publ/work394.pdf

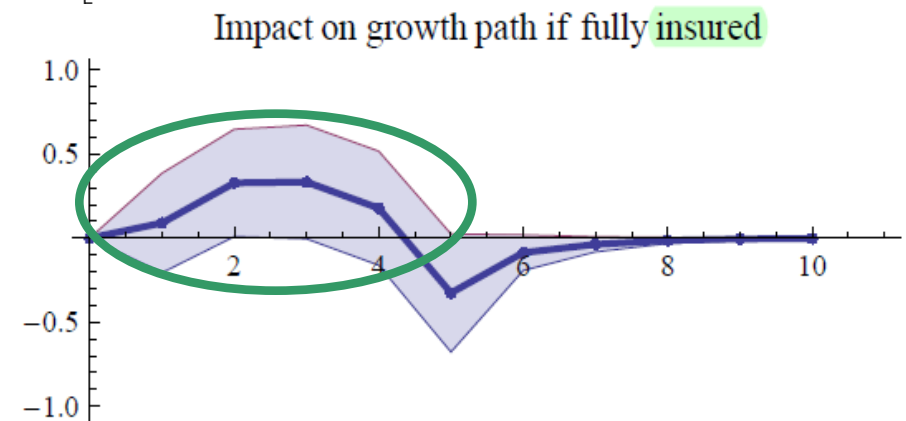
Risk transfer …

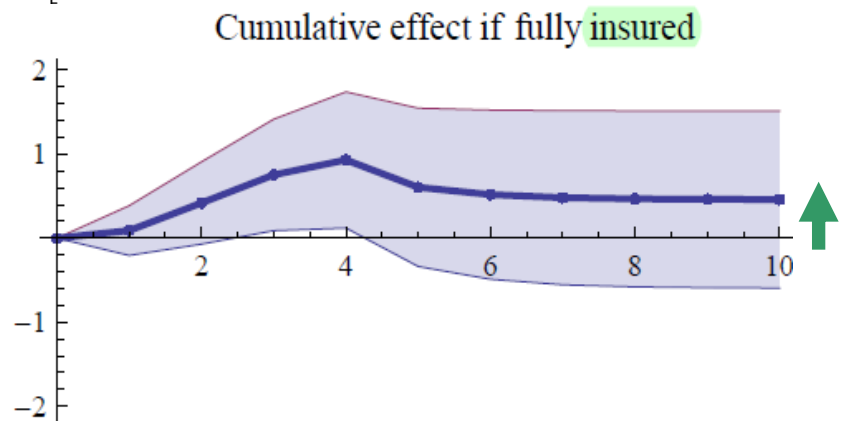
… and macroeconomic implications?

- Deviation from average growth rate (y-axis)
- Development over time, 0-10 years (x-axis)



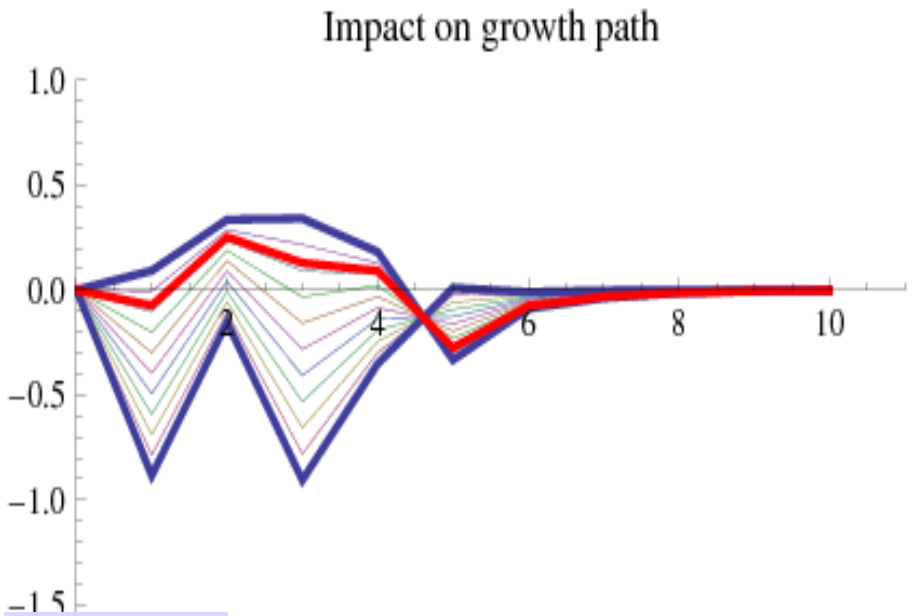


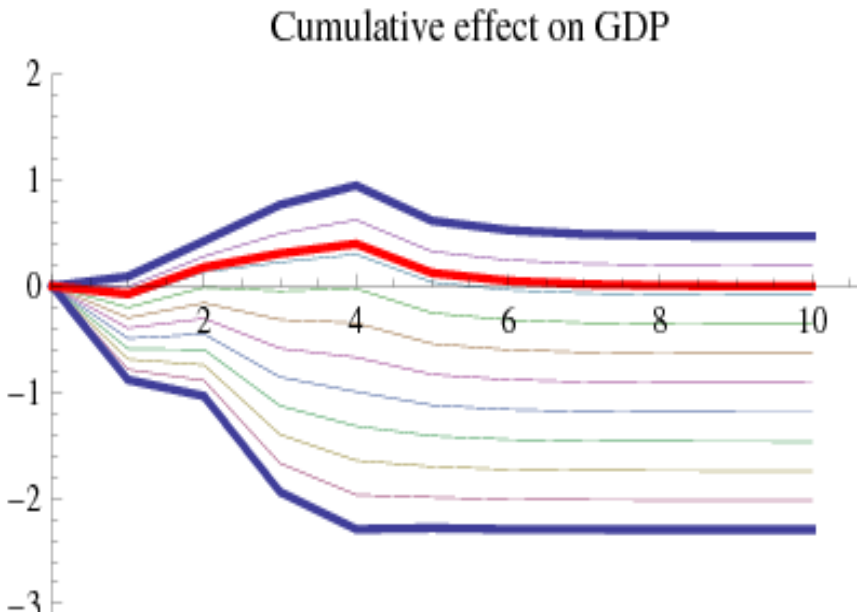




Post catastrophe growth (GDP) …

… at different levels of insurance:





Compare also G. von Peter, S. von Dahlen and S. Saxena under: http://www.bis.org/publ/work394.pdf

Some statistics

	Estimated coefficients	All countries	Small countries	Log Lossland
	AR(2) coefficients	(not reported)		
Uninsured natural catastrophes²	Impact (μ0)	-0.874***	-1.421***	-1.263***
		(-3.63)	(-2.94)	(-3.94)
	Lag 1 (μ1)	0.098	-0.307	-0.018
		(0.39)	(-0.43)	(-0.05)
	Lag 2 (μ2)	-0.819***	-0.848	-1.032***
		(-3.59)	(-1.27)	(-2.94)
	Lag 3 (μ3)	-0.086	0.080	-0.143
		(-0.32)	(0.12)	(-0.37)
	Lag 4 (μ4)	0.143	-0.274	0.050
		(0.49)	(-0.53)	(0.13)
	Severity (mean)	$2'198 m	$822m	$45'285
	Impulse (log of mean)	9.34	8.91	4.66
	Cumul. effect in %	-2.27	-3.70	-3.55
Insured natural catastrophes²	Impact (τ0)	0.090	0.916	0.313
		(0.31)	(1.42)	(0.66)
	Lag 1 (τ1)	0.303	1.441*	0.581
		(0.98)	(1.76)	(1.20)
	Lag 2 (τ2)	0.237	0.238	0.317
		(0.72)	(0.33)	(0.63)
	Lag 3 (τ3)	0.070	0.525	0.173
		(0.21)	(0.62)	(0.32)
	Lag 4 (τ4)	-0.390	-0.937	-0.891*
		(-1.16)	(-1.25)	(-1.77)
	Severity (mean)	$1'831 m	$503 m	$63'790
	Impulse (log of mean)	9.26	8.70	4.80
	Cumul. effect in %	+0.46	+2.92	+0.73

Insured vs uninsured losses

- Uninsured losses cause significant macroeconomic cost
- Insured losses are inconsequential or positive for growth
- Economically sizeable, statistically insignificant
- Both effects more pronounced for:
  - Smaller countries
  - Concentrated losses (loss/km²)

→ Geographic concentration

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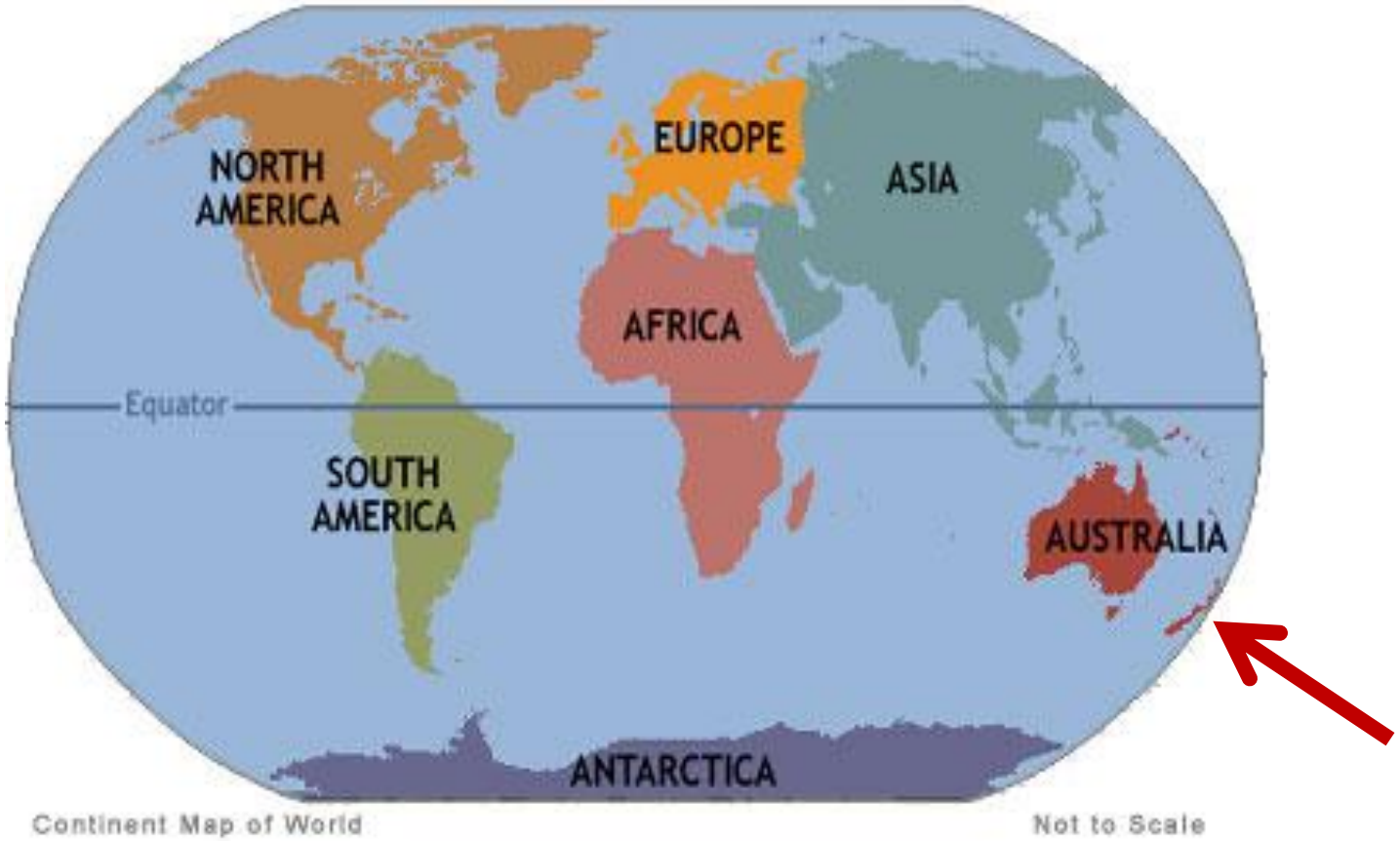
Catastrophe risk diversification



New Zealand

– how and why did the rest of the world «help»?

Insurance Core Principles (ICPs)

ICP 13

"Reinsurance and Other Forms of Risk Transfer"

Standard 13.3

"The supervisor takes into account the nature of supervision of reinsurers and other counterparties, including any supervisory recognition arrangements in place."

Insurance Core Principles (ICPs)

ICP 24

"Macroprudential Surveillance and Insurance Supervision "

Standard 24.5

"The supervisor assesses the extent to which macro-economic vulnerabilities and financial market risks impinge on prudential safeguards or the financial stability of the insurance sector."

Catastrophes, macroeconomy, and insurance supervision

Further readings:

A. «Unmitigated disasters? New evidence on the macroeconomic cost of natural catastrophes»
   – *joint work by BIS, IAIS, and IMF economists*
   Link: http://www.bis.org/publ/work394.pdf

B. «Natural catastrophes and global reinsurance – exploring the linkages»
   – *joint work by IAIS and BIS economists*
   Links: http://www.bis.org/publ/qtrpdf/r_qt1212e.pdf

Thank you!

Questions?

Follow-up:
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