Mortgages and Disasters

A Ticking Bomb?

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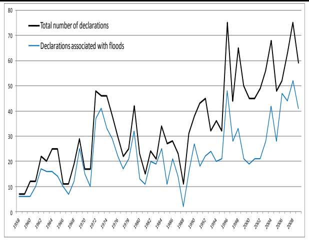
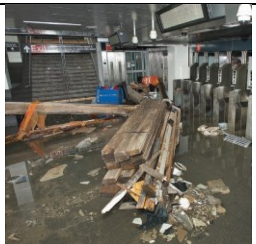




Outline

1. A dangerous spiral of ever-growing government disaster relief and related moral hazard

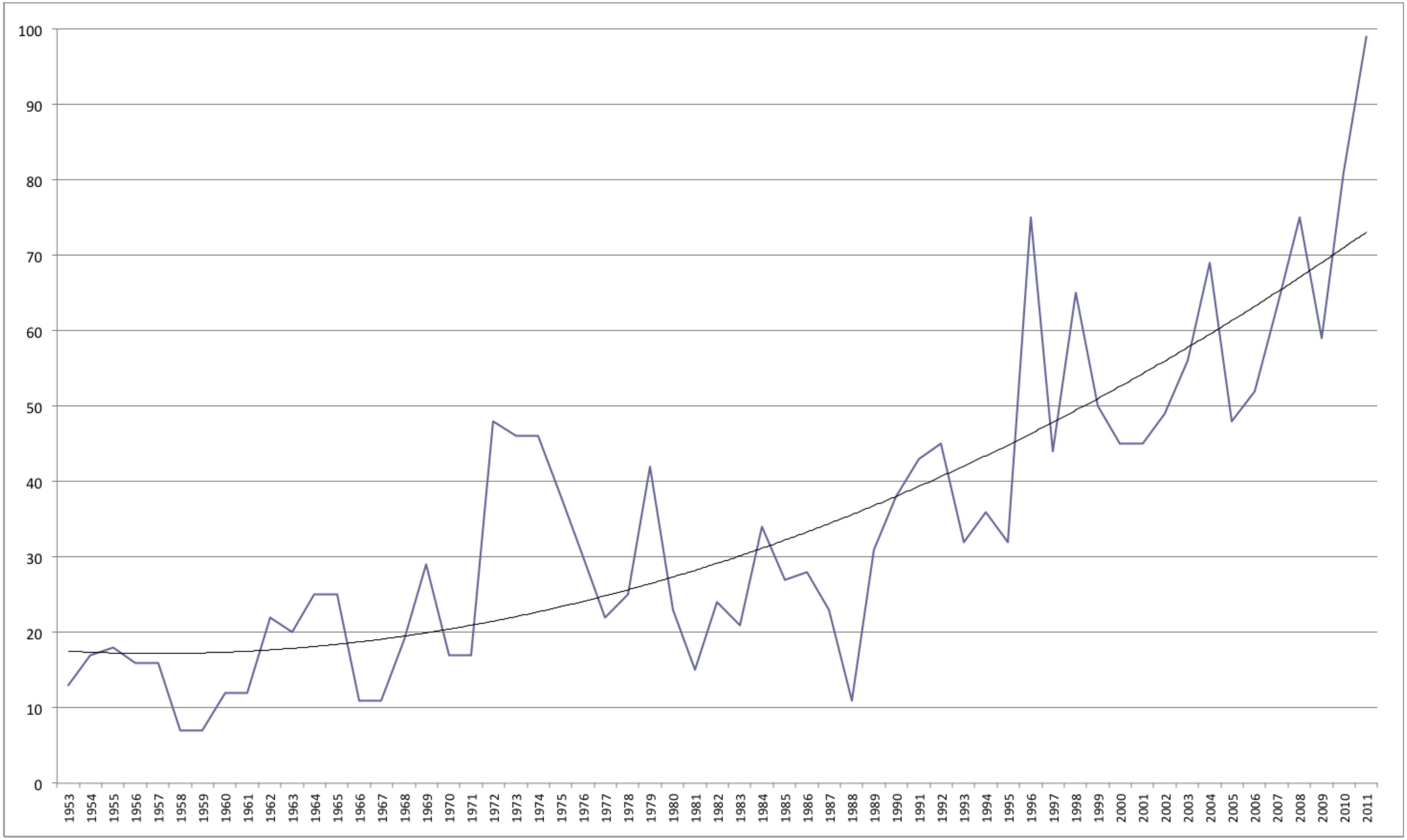
2. Mortgage requirement can help insurance coverage

3. Defaulting due to natural disasters?

12 of the 15 Most Costly Insured Catastrophes Worldwide between 1970–2012 (in 2012 prices), occurred since 2000, most in the U.S.

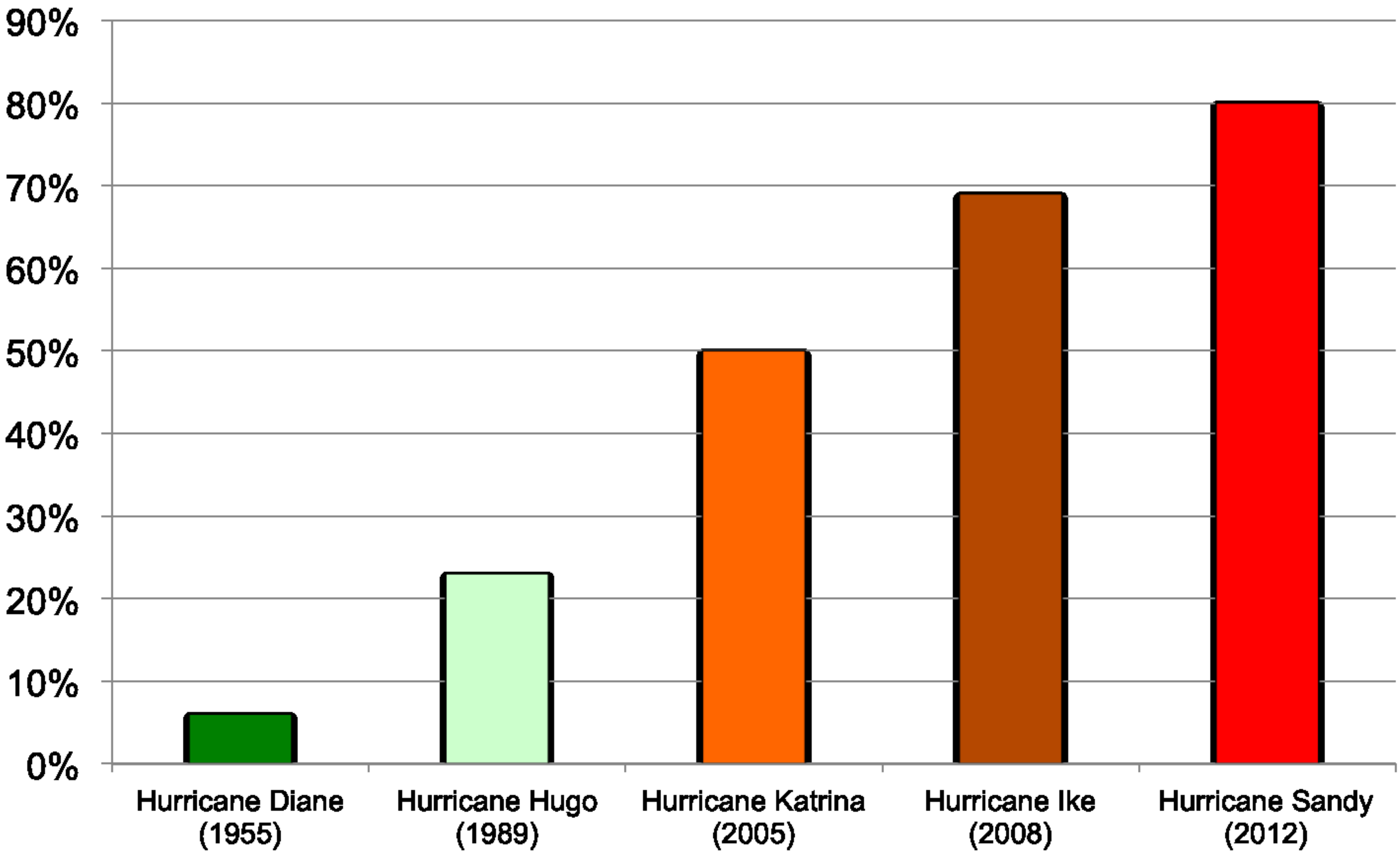
$ BILLION	EVENT	VICTIMS (dead and missing)	YEAR	AREA OF PRIMARY DAMAGE
78	Hurricane Katrina; floods	1,836	**2005**	**USA,** Gulf of Mexico
41	9/11 Attacks	3,025	**2001**	**USA**
37	Earthquake (M 9.0) and tsunami	19,135	**2011**	Japan
35	Hurricane Sandy; floods	237	**2012**	**USA**
26	Hurricane Andrew	43	1992	**USA**, Bahamas
22	Northridge Earthquake (M 6.6)	61	1994	**USA**
22	Hurricane Ike; floods	136	**2008**	**USA**, Caribbean
16	Hurricane Ivan	124	**2004**	**USA**, Caribbean
15	Floods; heavy monsoon rains	815	**2011**	Thailand
15	Earthquake (M 6.3); aftershocks	181	**2011**	New Zealand
15	Hurricane Wilma; floods	35	**2005**	**USA,** Gulf of Mexico
12	Hurricane Rita	34	**2005**	**USA,** Gulf of Mexico, et al.
11	Drought in the Corn Belt	123	**2012**	**USA**
10	Hurricane Charley	24	**2004**	**USA,** Caribbean, et al.
10	Typhoon Mireille	51	1991	Japan

At the same time, free U.S. Federal Disaster Relief Has Been Increasing Dangerously Over Time



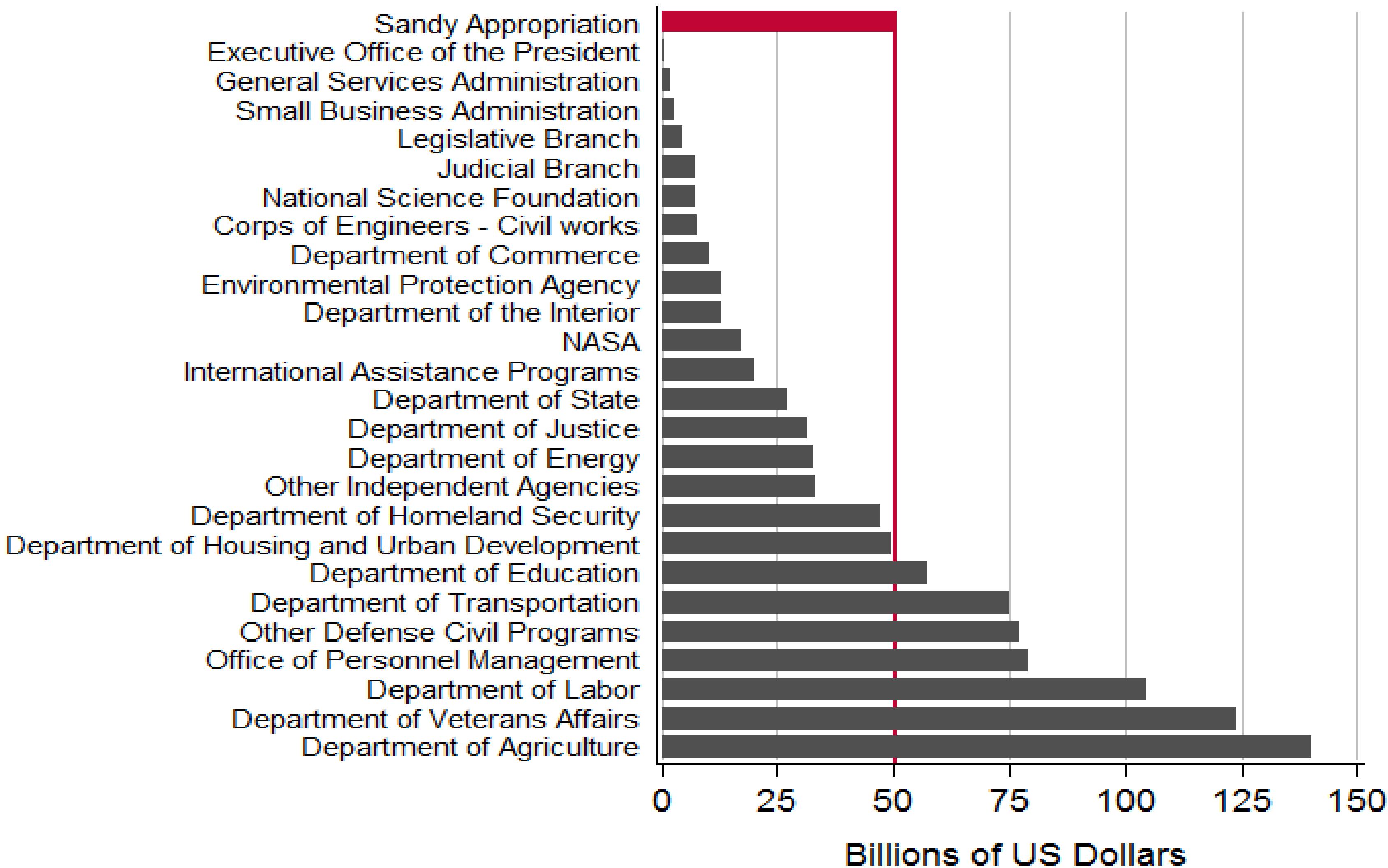
Number of U.S. Presidential Disaster Declarations – 1953-2011

Role of Federal Government in Covering Disaster Losses (proportion of total loss paid by government)



Sources: E. Michel-Kerjan. *Have We Entered an Ever-Growing Cycle on Government Disaster Relief?* - Testimony before the U.S. Senate (2013).

To Put Things in Perspective



Sources: Kousky and Shabman (2013)

What is the incentive for those in high risk areas to purchase disaster insurance if they are always bailed out by the rest of the country?

They *might reduce* their insurance after receiving aid, which creates a negative spiral, since more aid will be needed next time…

Is There Empirical Evidence that They Do?

Does Federal Assistance Crowd Out Private Demand for Insurance?

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- YES!!!
- First empirical study ever undertaken
- We find that a **$1,000** increase in the federal government's average individual assistance grant **decreases** average flood insurance coverage by about **$6,350.**

But the Era of Free Relief Might Be Reaching a Breaking Point

Comparing Katrina and Sandy in getting Congressional approval for aid:

- ***Katrina:*** 3 days to provide $10.5 billion relief package; one week later Congress appropriated an additional $51.8 billion (including $10bn for the Road Home program)
- ***Sandy:*** 3 months to provide $50.5 billion, and most of the money has not come in yet

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Challenge:

How can we make sure more residents in hazard prone areas are properly insured?

Mortgages can be a powerful tool to do so by requiring minimum financial protection and enforcing such requirement over time.

- Most US banks and GSEs do require homeowners' coverage as a condition for a mortgage and, working with insurers, make sure residents keep their coverage over time

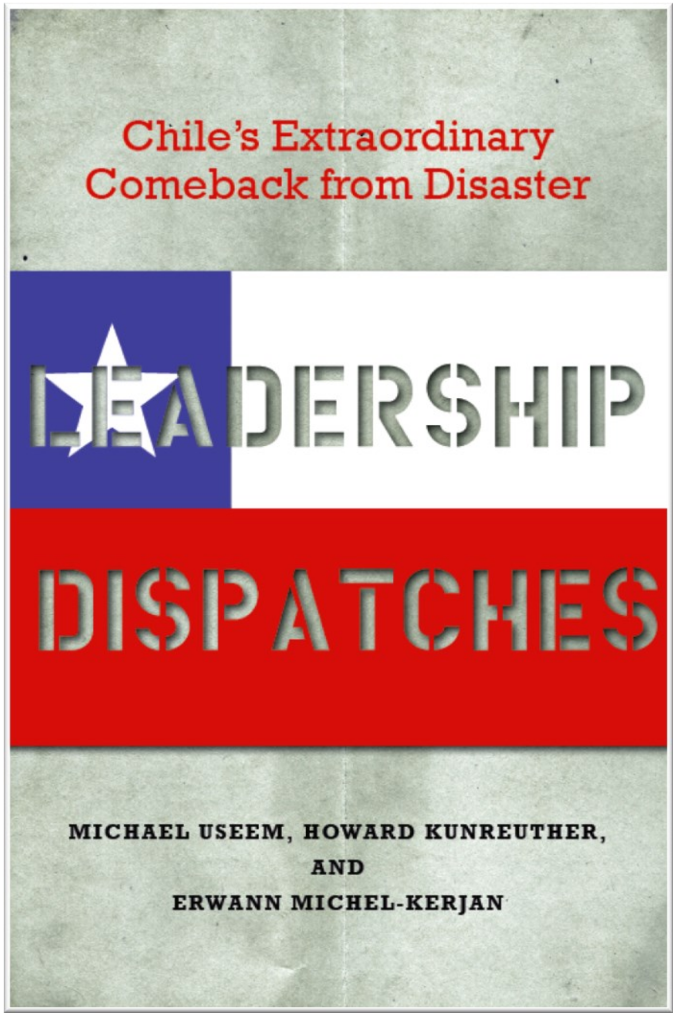
- In contrast, many do not require insurance for earthquake and if they do, they do not always track the enforcement of such a requirement for the full length of the mortgage

- People don't think it will happen to them (behavioral barrier); or, they think they will be bailed out; or, that it is too expensive for the type of coverage offered

<u>Result</u>: Residential market penetration is extremely low—more than 90% of residents in California do not have earthquake insurance

And this is not just happening in the US…
Illustration with stronger enforcement practices in Chile

New book to be released Spring 2015



In 2010, the 7.9 Maule Earthquake destroyed 20% of the country's GDP (equivalent to a $3 trillion disaster in the U.S., or 20 times the cost of Hurricane Katrina.)

1/3 was insured, and 95% of this was reinsured through international markets, providing quick liquidity in a matter of weeks

Chile's residential mortgage holders—about a quarter of all of Chile's homes—are strongly advised to purchase earthquake insurance and banks are serious about it.

96 percent of the mortgaged residential properties in Chile were insured to some extent against earthquakes in 2010.

Among homeowners *without* a mortgage, by contrast, the take-up rate for fire insurance in 2010 was estimated to be 17 percent.

Low insurance penetration is true for flood in the US, too

In a recent Wharton-VU Amsterdam survey of 1,600 residents in New York City, approximately 2/3 of those with flood insurance had it because it was required by their bank at the signature of the loan.

Sources: Botzen, Kunreuther and Michel-Kerjan (2014). http://opim.wharton.upenn.edu/risk/library/WRCib2014b_UnderstandingFloodRiskPerceptions.pdf

The Ongoing, Yearly Enforcement is Lacking

In a previous analysis of the entire NFIP portfolio, we found that the average flood insurance tenure across the nation for NFIP policies was only …. 3 to 4 years

Independent of whether the home was in a high risk SFHA zone or not (which defines the flood insurance requirements for federally-backed mortgages…)

Sources: Michel-Kerjan et al. Policy Tenure under the NFIP. Risk Analysis, 32(4): 644-658 (2012)
http://opim.wharton.upenn.edu/risk/library/J2012RA_PolicyTenureNFIP_EMK.pdf

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Why Is This Very Worrisome?

- According to a recent analysis by CoreLogic, the real estate exposure to natural hazards is approximately $9 trillion nationwide —a little less than half the currently estimated $23 trillion in total residential value of real estate.

- The four states with the highest exposure are California ($3 trillion), Florida ($828 billion), Texas ($498 billion), New York ($444 billion) and Massachusetts ($425 billion), accounting collectively for more than half of the total national exposure. Those are also some the disaster peak zones…

Sources: Mark Fleming and Kathryn Dobbin (2014). CoreLogic Research

So why aren't banks more aggressive in requiring disaster insurance?

1. In many disaster peak zones, the (high) price of the land would cover part of the nominal, so some might argue that the differential of exposure on a mortgage is rather limited.

2. One has yet to see massive mortgage defaults after a US disaster -- I *hypothesize* that a large portion of the individual disaster relief (e.g., Road Home program) has actually gone back to banks and GSEs so people pay their mortgage.

3. Private mortgages are sliced and sold on the secondary market quickly after signature; measuring the new mortgage portfolio requires exposure micro-tagging (no publically available stress-tests of such portfolios).

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KNOWLEDGE FOR ACTION

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