

Sharing and Reducing The Financial Risks of Future “Mega-Catastrophes”

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Rising and Potential Costs of Natural Catastrophes

- 7 of the 12 costliest natural disasters in US history have occurred in the last 2 years (04-05)
- All 7 (hurricanes) hit somewhere in Florida
- A CAT 5 in:
 - Tampa would cost \$65B to residential/commercial alone
 - Miami would cost \$155B to residential/commercial alone
 - Estimates from AIR-Worldwide

What is a “Mega-CAT”

- A single natural disaster, or a combination of them over a year, which leads to *market failure*
- The insurance market fails when:
 - (1) insurers withdraw from selling insurance to individuals in particular regions in the future (through exclusions or refusals to sell entirely) because insurance is too risky to sell and/or regulation makes it unprofitable to sell; or
 - (2) risk-adjusted premiums become so high that significant numbers of otherwise eligible purchasers decide not to buy coverage

Limits of Private Insurance to Pay for Mega-CATs

- Private insurance (both primary and reinsurance) predicated on (1) “law of large numbers”; (2) independent risks; (3) absence of adverse selection
- As CATs grow in size/cost, insurers can’t take advantage of (1)
- With mega-CATs, claims aren’t independent; and risk-based pricing would imply extraordinary risk premiums to account for “timing risk” (arising from extraordinary uncertainty about when claims may be required). **See next slide for illustration**
- Insurers will not cross-subsidize (across geographic or product lines) going forward; not rational or fair for stockholders or policy holders
- Some degree of adverse selection with all CATs, but especially with flood (reason private insurers withdrew from the market after the 1927 Mississippi River flood and federal government stepped in in 1968)

Timing Risk Illustrated

- \$20B in annual insured hurricane losses over past 4 years
- An estimated \$10B in annual premiums for Coastal regions (44 million, or 15% of the population)
- Suppose \$3B of the \$10B is for CAT losses; implies that if the future is like the past, CAT premiums must increase by \$17 billion ($\$20B - \$3B$), bringing total premiums to \$27B
- This calculation should be low because it doesn't reflect timing risk

Government Responses to CAT/Mega-CAT Risks So Far

- After Andrew, Florida required insurers to continue writing to existing customers (but couldn't require to take on *new* customers)
- Led to residual market primary insurer, now Citizens (funded by insurers and their policy holders as a last resort)
- Led to Florida CAT reinsurance fund (subject to policyholder assessments), with a \$4.5B retention for the private market first to absorb
- In California, after Northridge, formation of CEA, which provides EQ coverage, alongside primary writers, all of whom must offer EQ coverage; but total CEA coverage capped at \$7B (policy holders on their own for mega-events above that)
- Federal response is disaster relief *after the fact*, some of which goes to uninsured individuals, rest to local/state governments for rebuilding infrastructure

Limits of the Responses As Applied to Mega-CATS

- Florida CAT reinsurance program limited to \$15 billion
- After-the-fact disaster relief (while humane) fails to promote mitigation (by individuals, state/local governments through building codes/zoning rules, especially with pressures to restore lost tax revenues)
- Indeed, the very opposite is occurring on the Florida coast [Federal urban renewal for resort areas.... WSJ quote]

Implications of the Limits

- Reduced private insurer availability, choice (insurer withdrawal or higher rates)
 - Low California EQ take-up rate (15%) extreme example
- Intensifies demands for disaster relief, which in turn reduces mitigation
- Higher risk loads on private rates (including more costly reinsurance) can lead to pressures for less-than-actuarial rates, which also reduce incentives for mitigation
- Higher social (and federal) losses than necessary

A Multi-Layered Approach Is The Only Solution

- Individuals
- Primary insurers
- Reinsurance/capital markets
- State plans
- Federal reinsurance
- Tax deductions for CAT reserves? (reserve buildup in state plans is tax-free)

Issues in Federal Reinsurance

- Attachment point
- Pre-funding or post-funding (recoupment), or both?
- If pre-funding, how would premiums be set and who would set them?
- Offered to state plans, primary insurers/reinsurers?
- Incentives for mitigation (for homeowners and state/local governments)
- Subsidies for low income households, and if so, how?

Attachment Point

- Get it too low and it crowds out private reinsurance, capital markets
- Get it too high and there is a risk that insurers/reinsurers, once hit, won't come back – or if they, do only at very high rates to account for timing risk
- Wherever it is set, any attachment point shift timing risk onto the government at some point, which can best bear it – thus making insurance more affordable and more available
- But government involvement is subject to pressure for subsidized rates, which defeats mitigation (and exposes taxpayers and/or insurers and their policy holders if there is recoupment, to greater risk over the longer run)
- FYI: Pre-Katrina reinsurance rates reported at 5-7 times expected loss

Attachment Point: II

- In any event, attachment point probably should be based on *annual* claims, not event-specific claims (2004-05 hurricane seasons support that)
- A single dollar figure, or even percentage of premiums (TRIA), although administratively simpler, would not account for differing risk exposures of different insurers/state plans (though it may be the only way to set an attachment point on policies sold to private insurers)
- Probability-based attachment points (such as 1/50 or 1/100 year claims events), perhaps determined on a state basis, would reflect different risks, though more administratively complex (and would require independent actuarial assessments)

Pre-Funding vs. Ex-Post Funding

- TRIA is ex post (most likely because no actuarial basis for pre-funding)
- Pre-funding better for mitigation; less likely to result in subsidies (since recoupment may be limited, though so may premiums)
- Suggestion: pre-funding, with recoupment for extraordinary losses (which require federal borrowing)
- If recoupment, should be targeted to maximum extent on affected areas, though this may be politically difficult (especially if amounts are large, though this could be addressed by stretching out recoupment period, but if too long then risk of subsidy)

Setting Premiums

- XOL-type auctions would be ideal, but Cat losses (by state or insurer) are heterogeneous and thus the contracts not readily traded
- Premium-setting by independent/quasi-independent agency (perhaps belonging to Treasury, not just an office)
- Size of staff depends on who can buy the reinsurance (states, private insurers/reinsurers; next slide)
- Florida CAT fund demonstrates this can be done with relatively few people
- Services of independent modeling firms can/should be used; it is difficult to know in advance whether auctions of XOL-type contracts would attract sufficient bidders (and insurer-specific attachment points would prevent a “market” in the contracts, which would not be standardized)

Who Can Buy The Reinsurance?

- Advantage of state plans: administratively easier, reduces complexity of attachment points and premiums; also likely greater tie to mitigation (through premium credits)
- Feds should encourage multi-state plans (would enhance diversification, though legal and political complications)
- Offering reinsurance to private insurers/reinsurers would fill gaps where no state plans exist, though it would add to complexity

Building In Incentives for Mitigation

- This is critical, especially post-2005 hurricane season
- Reinsurance premiums should reflect state/local mitigation efforts (building codes and their enforcement; zoning rules): easier to do for policies sold to state plans than for sales to private insurers/reinsurers
- Create secondary market long-term mitigation loans

What About Insurance Subsidies?

- An equity case for low-income homeowners
- Should not be granted to higher-income residents in high-risk areas
- Florida (and other states with residual market plans) subsidizes through less-than-actuarially appropriate rates
- Leads to deficits, which in Florida are financed by insurers (and eventually their policy holders, regardless of income);
- If lower income residents are to be subsidized, better to do so directly through state budgets (which are transparent, though more politically difficult) than through rates of the residual plans

Advantages of Federal Reinsurance

- Would help ensure the availability of private insurance, at actuarially appropriate rates that do not reflect unduly high costs of timing risk
- More insurance would reduce the need for federal disaster relief
- Actuarially appropriate rates, reflecting mitigation, would lower the costs of future mega-disasters
- Florida CAT demonstrates that administrative complexities can be resolved without a huge bureaucracy
- If structured correctly, a federal reinsurance program should be free of subsidy (unlike TRIA, which limits recoupment)

Tax Deductions/Expenses for CAT Reserves

- Advantage of state plans is tax-free buildup of reserves
- Neither FASB, state regulators nor the IRS permit insurers to deduct additions to reserves for CATS (because not yet claims)
- In principle, this is short-sighted; also less helpful to insurers than current loss carrybacks and carryforwards
- In practice, given large federal budget deficits, gaining tax deductions for CAT reserves likely to be even more difficult than federal reinsurance (especially if the latter is free of subsidy)
- Insurers still have a timing risk even with CAT reserves