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TECHNICAL REPORT

Earthquake Insurance and Disaster Assistance

The Effect of Catastrophe Obligation Guarantees on Federal Disaster-Assistance Expenditures in California

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Sponsored by the California Earthquake Authority



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Summary

Only about 12 percent of insured homeowners in California have earthquake insurance, which gives rise to concern about the large proportion of losses that will go uninsured in a large earthquake. Large uninsured disaster losses have significant negative impacts, not only on individuals and communities directly affected by the disaster but also on the nation as a whole in the form of postdisaster assistance from the federal government. Federal disaster-assistance spending between 1989 and 2008 exceeded 30 percent of the disaster losses, and this ratio has been increasing over time (Cummins, Suher, and Zanjani, 2010).

In an effort to increase the availability and affordability of catastrophe insurance for homeowners, newly proposed federal legislation includes a provision for committing federal guarantees for loans to qualified state disaster-insurance programs. These catastrophe obligation guarantees would support state disaster-insurance programs when they go to the private capital markets to borrow funds for claim payments following extraordinarily large disasters.

The CEA is a state-managed, largely privately funded entity that provides residential earthquake insurance that would qualify for loan guarantees under the proposed legislation. The CEA anticipates that committed federal guarantees would reduce its need for reinsurance, which would lower its expenses and allow it to charge consumers less. This would stimulate increased earthquake-insurance coverage, resulting in lower uninsured loss in an earthquake and, ultimately, reducing demand for federal disaster assistance. Thus, providing catastrophe obligation guarantees could result in a net savings to the federal government.

This analysis uses empirical and theoretical arguments to estimate the magnitude of this potential savings. Key elements of the analysis include a cross-sectional analysis to estimate the sensitivity of consumer demand for earthquake insurance to price (the price elasticity of demand); using earthquake loss-modeling simulations to estimate the relationship between residential earthquake-insurance coverage and uninsured loss in an earthquake; and performing an empirical examination of the sensitivity of demand for federal disaster assistance to uninsured residential loss. Our analysis examines two sources of disaster assistance that would be reduced by increased residential earthquake-insurance coverage: federal subsidies on low-interest disaster home loans from the Small Business Administration (SBA) and the federal individual income tax deduction for uninsured disaster losses.

Our analysis indicates that catastrophe obligation guarantees would reduce federal disaster-assistance costs by \$3 million to \$7 million for every \$10 billion in total earthquake loss. For a simulated magnitude-7.2 earthquake on the San Francisco peninsula segment of the San Andreas Fault, the estimated federal savings would be \$88 million. Although the guarantees are expected to increase consumer demand for earthquake insurance from the CEA by about 13 percent, this ultimately translates to a much smaller effect on disaster assistance. The

reason that the federal savings is not more substantial is that earthquake-insurance pricing ultimately has a modest influence on the uninsured loss in an earthquake. This occurs because only a small portion of residential earthquake losses are insured to begin with (11 percent), the increase in demand for earthquake insurance in response to a price decrease is modest (price elasticity of demand = -0.44) and applies only to the CEA share of the market (61 percent), and a given increase in take-up leads to a lesser decrease in uninsured losses, because individual losses often occur in ranges that fall below deductibles.

While our analysis indicates that the federal savings under catastrophe obligation guarantees would be modest, the Congressional Budget Office (2010) estimates that the cost to the federal government of providing catastrophe obligation guarantees would also be small. A quantitative comparison of annualized costs and benefits is not possible with available data, but we estimate that benefits would exceed costs if the annual expected total loss from earthquakes in California was \$7 billion or greater.

Our findings show that changes in insurance coverage would have to be dramatic to have an appreciable impact on uninsured loss and disaster assistance. This suggests that other avenues for increasing earthquake-insurance coverage, such as increased public education and marketing and offering new earthquake-insurance products that provide more-attractive options for consumers, might warrant consideration. Increasing earthquake insurance may have benefits beyond reducing federal disaster-assistance expenditures. Uncompensated disaster losses might have far-reaching and sustained economic impacts on families and communities. Examples of such indirect losses include depletion of individual savings, losses to lenders from widespread defaulting of home mortgages, local decreases in property values and property tax revenue, increased unemployment, decreased income tax revenue, and lower business investment and entrepreneurship. Few of these impacts would be compensated by disaster-assistance programs, so they would be reduced only by increased insurance coverage.