Testimony of

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on

Riskier Business: How Climate is Already Challenging Insurance Markets

Before the

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Good Morning Committee Chairman Whitehouse, Ranking Member Grassley, and Members of the Committee. Thank you for inviting me to speak today. I am Ishita Sen, Assistant Professor of Business Administration in the Finance Unit at Harvard Business School. My research studies the financial economics of property insurance markets and my recent work looks at the understudied intersection between insurance and mortgage markets. I speak only for myself today.

Access to reliable property insurance is key for the smooth functioning of real estate and mortgage markets, especially in view of the rapid rise of property damages from natural disasters. In recent work with coauthors at Columbia University and Federal Reserve Board, I examine how climate risk is creating taxpayer burden because of lax insurer screening standards in mortgage markets. Our findings speak to questions of interest to the committee. The paper shows that the Government Sponsored Enterprises' (GSEs') property insurance requirements are not sufficiently calibrated to insurer risk – that is the risk stemming from fragile insurers becoming insolvent. As a result, the GSEs, and thus taxpayers, bear large unpriced exposure to climate risk through insurance market fragility.[1]

My coauthors and I arrive at these conclusions in three steps using the state of Florida as a case study. We focus on Florida because granular insurance data are available making it possible to study the interactions between insurance and mortgage markets. First, we show that fragile insurers with inflated ratings now dominate insurance markets in Florida. Second, fragile insurers amplify mortgage delinquencies in the aftermath of natural disasters. Third, the GSEs end up having large exposure to mortgages backed by these fragile insurers, due to strategic securitization by lenders and lax lending in the conforming segment.

We consider several policy tools to address the risks posed by insurance market fragility to taxpayers and the financial system. The first is to explicitly price insurer fragility risk into the GSEs' guarantee fees. The second involves enhancing capital regulation to account for insurers' climate risk.

[1] See "When Insurers Exit: Climate Losses, Fragile Insurers and Mortgage Markets," with Parinitha Sastry (Columbia Business School) and Ana-Maria Tenekedjieva (Federal Reserve Board of Governors). Harvard Business School Working Paper, No. 24-051. The article can be accessed here.

1. Background

Mortgage markets bring a range of different financial institutions together in complex institutional arrangements. Households use mortgages to purchase homes. Banks and non-banks originate loans. The government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac directly own or guarantee a large portion of the $12 trillion US mortgage market.

Property insurers play a key role, especially in view of the rapid rise of climate-related property damages. Insurers help households rebuild in case of physical damages to the home, e.g., in response to natural disasters such as hurricanes and wildfires. Doing so preserves the value of the property (collateral to the bank), and lowers households' incentive to default on their mortgage.[2] In other words, insurance directly reduces risks for banks and the ultimate mortgage owners (e.g., GSEs) as both households and lenders are beneficiaries of the insurance policy. Unsurprisingly, banks require property insurance at mortgage origination, and the GSEs only purchase loans backed by good quality insurers.

1.1. GSE Insurance Requirements and Pricing

To be eligible to be sold to the GSEs, a mortgage must meet criteria that are set out in the GSE's origination guides. The most well-known criteria are the GSE's conforming loan limits, which limit mortgages based on the size of the loan balance at origination, and the FICO score criteria.[3] Less well known are the GSEs additional requirement that property insurers backing the mortgage meet a minimum financial strength rating.

(a) Financial Strength Ratings: The GSEs are exposed to the risk that households default due to the insurer becoming insolvent at the same time as there are claims to be paid for a natural disaster. The insurance is only as good as the ability of the insurance company to pay it in the event of a claim. To address this concern, the GSEs require that the property

[2] Several studies show that being uninsured or underinsured increases the propensity of household default after large climate events C. Kousky, H. Kunreuther, M. LaCour-Little, and S. Wachter, "Flood Risk and the U.S. Housing Market," *Journal of Housing Research* 29 (sup1), S3–S24. Publisher: Routledge eprint and P. Issler, R. H. Stanton, C. Vergara-Alert, and N. E. Wallace, "Mortgage Markets with Climate-Change Risk: Evidence from Wildfires in California," SSRN Working Paper No. 3511843.

[3] See e.g., B. J. Keys, T. Mukherjee, A. Seru, and V. Vig, "Did Securitization Lead to Lax Screening? Evidence from Subprime Loans," *The Quarterly Journal of Economics* 125 (1), 307–362 and B. J. Keys, A. Seru, and V. Vig, "Lender Screening and the Role of Securitization: Evidence from Prime and Subprime Mortgage Markets," *The Review of Financial Studies* 25 (7), 2071–2108.

insurer backing the mortgage meets a minimum financial strength rating (FSR) threshold.[4] FSR measures an insurer's solvency and ability to make timely payments on its policyholder claims. It therefore serves as an indicator of the counterparty risk that an insurer poses to mortgage owners, lenders, and households. The GSEs do not accept mortgages backed by insurers they deem too risky, i.e. insurers whose FSRs are too low. To be eligible, insurers therefore seek FSRs from third party rating agencies, in exchange for paying them a fee. State-run insurance of last resort plans are exempt from the financial strength requirement, so mortgages backed by them meet GSE eligibility for property insurance.

The main rating agencies accepted by the GSEs include AM Best, S&P Global, and Demotech.[5] Table 1 shows some key facts on the three agencies and the minimum FSR thresholds. AM Best and S&P have longer histories, rate multi-state insurers all over the US, and both have been registered with the U.S. Securities & Exchange Commission as a Nationally Recognized Statistical Rating Organization (NRSRO) since 2007. Demotech is relatively new, largely rates small single-state insurers operating in coastal states, and became NRSRO in 2022. Notably, GSEs insurer FSR thresholds vary by the issuing rating agency. For example, Fannie Mae sets out that insurers with AM Best ratings of B+ or better meet their eligibility. For Demotech they accept ratings of A or better.[6]

(b) GSE's insurer risk pricing. When selling or securitizing a mortgage with the GSEs, lenders have to pay an upfront fee called a guarantee fee (or g-fee). Following the crisis, GSEs added additional charges based on borrowers' credit score and loan-to-value ratio at origination called the loan-level pricing adjustments (LLPA).[7] Importantly, these fees do not vary with other key features of risk, including local house price risk, as well as insurance counterparty risk.[8] In other words, despite the wide disparity in the ex-ante quality of property insurers, even among those that meet GSEs' FSR requirements, differences in

[4] Our study focuses on the exposure to the government-sponsored enterprises, Fannie Mae and Freddie Mac. We exclude mortgages insured by the Federal Housing Authority (FHA) or Veterans Affairs (VA), which are securitized by Ginnie Mae into mortgage-backed securities. We do so because (i) these FHA/VA loans are backed by the government even at origination; (ii) We focus on Demotech, and Ginnie Mae's guidelines imply that it does not accept property insurers rated solely by Demotech.

[5] Kroll Bond Rating Agency (KBRA) was also added to this list for Fannie Mae in 2018, and for Freddie Mac in 2023; . We focus on AM Best, S&P, and Demotech as they accounted for most of the market share during the time frame of our study (2009-2018).

[6] For more details see Fannie Mae's and Freddie Mac's origination and servicing guides.

[7] See e.g., Fannie Mae's Pricing Matrix.

[8] See e.g., E. Hurst, B. J. Keys, A. Seru, and J. Vavra, "Regional redistribution through the US mortgage market," *American Economic Review* 106 (10), 2982–3028.

insurers' risk are not priced into g-fees or LLPAs. That is, lenders are not charged additional fees to sell mortgages backed by properties insured by riskier property insurers.

1.2. Implications for Federal Government's Fiscal Exposures

The lack of insurer risk pricing makes it crucial that GSEs rating requirements are properly calibrated to insurer risk to ensure that GSEs are screening out low quality insurers. It is equally crucial that the requirements are consistent across rating agencies because inconsistencies in the requirements across rating agencies could encourage ratings shopping. As long as an insurer meets eligibility through any one of the rating agencies, it meets the GSEs' eligibility requirements.

Mortgage market participants may not closely monitor the risks in insurance markets. Homeowners may lack the ability to distinguish between a good and a bad insurer. Lenders may have less incentives to screen for counterparty quality when they themselves do not directly bear the risks. As a result, they may originate mortgages backed by low quality insurers and offload such mortgages to the GSEs. As GSEs' pricing are not sensitive to insurer risk, lenders do not bear the costs associated with doing so. Indeed, these arguments have parallels in the 2008 financial crisis when lenders neglected borrower risks and originated too many risky mortgages, the risks of which eventually were borne by the GSEs (thus taxpayers) and the financial system more broadly.[9]

2. Assessing Federal Fiscal Exposures to Fragile Property Insurers

To study these interactions and the risks they pose to households and taxpayers, we construct a novel database linking insurance underwriting information with data on mortgage origination and performnace for the state of Florida. We focus on Florida because of the availability of granular insurance underwriting data and institutional features that allow us to examine the effect of insurer quality on lenders' actions in a causal way.

[9] See for example, C. Downing, D. Jaffee, and N. Wallace. "Is the Market for Mortgage-Backed Securities a Market for Lemons?", *The Review of Financial Studies* 22(7):2457–249; A. Purnanandam, "Originate-to-distribute Model and the Subprime Mortgage Crisis", *The Review of Financial Studies*, 24(6):1881–19; and B. Keys, T. Mukherjee, A. Seru, and V. Vig. "Did Securitization Lead to Lax Screening? Evidence from Subprime Loans." *The Quarterly Journal of Economics*, 125(1):307–362.

2.1. Growth of Fragile Property Insurers

Our first result concerns the rise of fragile insurers in Florida. We show that well-established traditional insurers (those rated by AM Best and S&P) are cancelling policies and exiting the state of Florida, in particular the high climate risk areas (Figure 1). The gap is largely being filled by insurers rated by Demotech (henceforth, Demotech insurers) and the state-run insurer-of-last resort known as Citizens Property Insurance Corporation. In particular, there is a dramatic increase in the market share of Demotech insurers. From having a negligible presence in the 1990s, when Demotech entered the market, their market share rose to over 50% in 2018. We show that this is not unique to Florida and part of a broader country-wide trend, especially in states more prone to weather- and climate-related disasters.

Demotech insurers are also of significantly lower quality than traditional insurers across a range of financial and operational metrics: they underwrite in high risk areas, are less diversified, are less capitalized relative to underlying risks, and their liabilities are backed by lower quality reinsurers. The higher ex-ante riskiness of Demotech insurers also translates to higher rates of insolvencies. We track all insurer insolvencies in Florida between 2009 and 2022 and find that 19% of Demotech insurers became insolvent during the time frame of our analysis, while none of the traditional insurers did. In other words, all the insolvencies during this time frame are among insurers rated by Demotech (Figure 2). The quality gap between Demotech insurers and traditional insurers are widespread, extending beyond Florida. Looking at the top ten climate risk states,[10] we find similar trends in ex-ante financial and operational metrics and in ex-post insurer insolvencies for Demotech insurers.

2.2. Financial Strength Ratings and GSE Eligibility

Despite their risk, insurers rated by Demotech secure high enough financial strength ratings to meet the minimum rating requirements set by the GSEs for a mortgage to be eligible for purchase and securitization. We develop a framework to estimate a counterfactual AM Best rating for the insurers rated by Demotech. This framework builds off a robust academic and industry literature and consider key financial ratios and operational metrics that are widely used as indicators of solvency risk. Our analysis shows that a vast majority of the

[10] Defined as states with the highest property damage per capita as reported in Spatial Hazard Events and Losses Database for the United States from the Arizona State University.

Demotech insurers would not meet GSE eligibility if subjected to traditional rating agencies' methodologies (see Figure 3). A comparison of historical US wide insolvency rates for the different rating agencies also corroborates this conclusion. The 10-year insolvency for insurers in the GSE eligible segment (i.e. insurers that meet the FSR threshold) is at 9% for Demotech and is 0.4% for AM Best as per NRSRO filings.[11]

2.3. The Amplifying Effect of Fragile Insurers on Mortgage Delinquencies

We next show that fragile insurers pose risks for households and mortgage owners. We study serious mortgage delinquencies[12] in the aftermath of Hurricane Irma, a Category 3 storm that caused over $50 billion in damages and several insurer insolvencies. Using an event study empirical design, we show that counties with more exposure to insolvent insurers have far worse delinquency outcomes; this result holds even after controlling for the direct effect of the storm on delinquencies. Indeed, we find that having large damage to the property causes homeowners to default on their mortgages particularly when the home is insured by an insurer on the verge of being insolvent. This is because insurers that are in financial trouble are slower to pay claims or may not pay the full amounts.[13] This result clearly highlights fragility of property insurers as an important channel through which climate risk might threaten the stability of mortgage markets, and possibly the financial system.

2.4. Who Bears Risks and Why?

A key question is who bears the risks of insurance market fragility? We find that the GSEs are particularly exposed to low quality Demotech insurers. This fact can be seen in two ways. (i) The fraction of mortgages that are sold to the GSEs is significantly higher in counties that also have a high market share of Demotech insurers. (ii) We can assess the market share of Demotech insurers for loans that are under the conforming loan limit because a vast majority of such loans are ultimately sold to the GSEs. Examining the average coverage amount sold by Demotech and traditional insurers provides a sense of their market shares for different loan

[11] See AM Best's and Demotech's NRSRO filings. AM Best (here) and Demotech (here).
[12] Serious delinquency is defined as whether the mortgage is more than 90-days delinquent, in pre-sale or post-sale foreclosure, or in REO.
[13] Brianna Sacks, 'How Florida let a top insurer abandon homeowners in their time of greatest need," *The Washington Post*, August 6, 2023, https://https://www.washingtonpost.com/climate-environment/2023/08/04/how-florida-let-top-insurer-abandon-homeowners-their-time-greatest-need.

types. Demotech insurers have a dominant presence, accounting for over 95% of the market share, in homes having lower coverage particularly those below $400,000 which are very likely conforming loans (Figure 4).[14] This strongly suggests that a vast majority of the GSE loans are being backed by Demotech insurers. Demotech insurers also have a substantive, though relatively smaller, market share in what is likely the non-conforming segment. This suggests that banks may also carry some exposure to poor quality insurers.

We find that the dominance of Demotech insurers in the GSE segment is driven by mortgage lenders' strategic securitization behavior to offload insurance counterparty risk as well as their lax origination standards in the conforming segment of the market. We also show that these patterns are not simply due to higher default risk borrowers being more likely to obtain insurance from Demotech insurers.

We arrive at this conclusion in two steps. First, we show that banks are more likely to sell loans to the GSEs that they had previously retained after the insurance policy switches from Citizens (state-run insurer of last resort) to one of the Demotech insurers. This plausibly exogenous variation in quality of insurance is delivered by Citizens' Depopulation Policy, a periodic program where Demotech insurers assume some policies from Citizen's balance sheet. We show lenders are more likely to sell mortgages following a Depopulation, indicating a desire to limit counterparty risk exposure to such insurers.

Second, we show that lenders' origination decision– whether to approve or deny a loan– is sensitive to insurance counterparty risk for jumbo loans (loans above the conforming limit) but not for conforming loans. The fact that origination decisions are sensitive to insurer risk in the jumbo segment, loans lenders have to retain on balance sheet, indicates lenders' desire to limit counterparty risk exposure to such insurers when lenders bear the risks. At the same time, their unwillingness to consider these risks in the conforming segment indicates lax screening standards for loans that can be offloaded to the GSEs at a low cost. This result also indicates that there are more conforming mortgages being originated relative to jumbo loans, suggesting that GSE policy is not just a transfer of risks from the state of Florida to the rest of the country, but creates a distortion in credit allocation from a benchmark where insurer risk is more likely to be appropriately priced.

[14] The base conforming loan limit for single-family homes was below $500,000 throughout our sample period.

3. Final Remarks

What can we do today to address the federal government's ongoing exposure to insurance market risks and the distortion in credit supply resulting from the mis-calibrated insurance market requirements? My coauthors and I consider several policy tools in our ongoing work to address the build up of risks in the financial system due to insurance market fragility.

1. **Insurer risk in loan-level price adjustments.** The most direct policy tool is to incorporate insurer risk in the GSEs loan level price adjustment (LLPA) matrix. Following the 2008 crisis, GSEs added LLPA for borrowers' credit score and loan-to-value ratio to account for the higher expected default risks of such borrowers and create the right incentives in the lending market. Having an LLPA for insurer risk will similarly compensate the GSEs for the higher expected default risk and losses given default because of exposure to low quality insurers.

   It will also provide households and lenders the right signals of insurance market risks, which would help address the distortions in lending markets. If GSE pricing were sufficiently sensitive to insurance counterparty risk, we would expect lenders to internalize the additional costs of having a low quality insurer when selling loans to the GSEs. Mortgages backed by low quality insurers will become more expensive than similar mortgages backed by high quality insurers. These price signals will help households distinguish between good and bad insurers (a job FSRs would have accomplished if they were sufficiently sensitive to insurer risks) and provide them incentives to shop for better quality insurers. Furthermore, households' would be able to be more confident that their insurance premiums would bring real coverage after natural disasters.

   A key challenge in implementing this policy is that the GSEs would need to continuously monitor the quality of insurers backing the mortgages they own. Because property insurance is typically a 1-year contract, the insurer may change over the life of the loan; GSE pricing would need to account for the possibility of these issues upfront.

2. **New Risk Based Capital regulation to address climate risk.** Our paper also highlights deficiencies in insurance solvency regulation and supervision. Higher capital is a measure of the likelihood that insurers remain solvent after experiencing a given shock. Even though a large number of Demotech insurers became insolvent, they continued to

satisfy the regulatory risk based capital (RBC) requirements. This suggests that the RBC requirements may not be sensitive to underlying risks. In particular, we find substantial differences between Demotech and traditional insurers in liability-side risks and in diversification across geographies, products, and group structure, while the composition of assets being relatively similar. This suggests that the regulatory capital charges associated with insurers' climate risk exposures may be too low, particularly for small and single-state insurers that tend to be less diversified.

Data challenges. We cannot make progress on our quantification of fiscal exposures or the trade-offs of different policy recommendations without access to granular data on insurers' liabilities. Currently, this data is severely limited, often even to regulators themselves. Access to detailed data on the number of policies, coverage sold, premiums charged, product features (e.g., wind or fire riders), and losses incurred is a necessary starting point to quantify each insurer's climate risk exposure. The data collection efforts need to focus on a geographically granular level (e.g., ZIP code or census tract) because the risks themselves can be very different across closely situated regions. This is also crucial from the standpoint of being able to connect insurance data with data on other markets (e.g., mortgage markets), which are typically at an individual level. The proposed joint FIO/ NAIC data call is a good first step. However, I would strongly urge regulators to make the data collection efforts as wide as possible, and to make the data available for research by the wider community of academics, policymakers, and industry practitioners.

I appreciate your timely efforts on this important topic, and I will be delighted to answer any questions.

Table and Figures

Table 1: Minimum Required Insurance Financial Strength Ratings for Mortgages

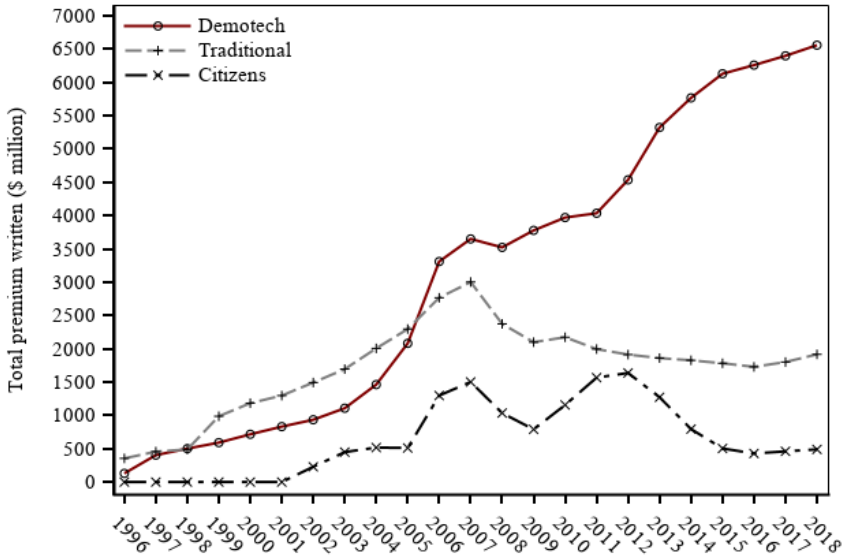
The table reports the minimum financial strength rating required of property insurance companies for the mortgage to be eligible for purchase or securitization by Fannie Mae or Freddie Mac. Source: Sastry, Sen, and Tenekedjieva (2023).

Rating Agency	Began	Regulated	Fannie Mae	Freddie Mac
AM Best	1899	2007	"B" or better	"B+" or better
S&P Global	1971	2007	"BBB" or better	"BBB" or better
Demotech	1990s	2022	"A" or better	"A" or better

Figure 1: Evolution of Homeowners' Insurance Market in Florida

Panel A shows the evolution of homeowners' insurance premiums over time for the different private insurer types Demotech, Traditional (rated by AM Best and S&P), and for Citizens. Total premiums are in thousands of dollars. Data are taken from insurers' statutory filings. Start and end dates are dictated by data availability of the QUASAR database. Panel B shows the percent of in force policies that are cancelled or not renewed by traditional insurers by FEMA's climate risk index in 2015. Source: Sastry, Sen, and Tenekedjieva (2023).

(a) Market Shares by Insurer Types



(b) Cancellations and Non-renewals of Insurance Policies by Traditional Insurers

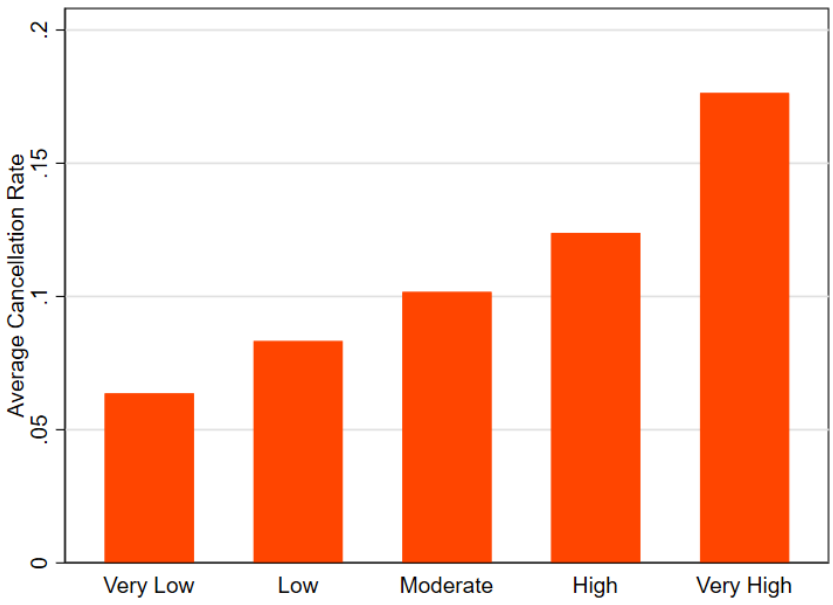


Figure 2: Insurer Insolvencies by Rating Agencies

The first column shows the share of insurer insolvencies by rating agencies, focusing on insurers operating in Florida that become insolvent between 2009 and 2022. Source: Sastry, Sen, and Tenekedjieva (2023) taken from NAIC GRID database. The second column shows these shares, as reported in the rating agencies' NRSRO filings, for the GSE-eligible segment.

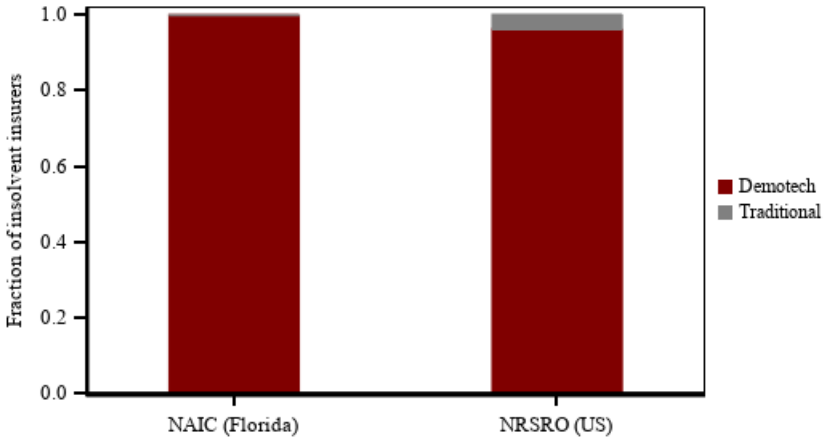


Figure 3: Counterfactual AM Best Ratings of Demotech Insurers

The figure shows our estimated counterfactual AM Best financial stability ratings of Demotech insurers. The red line shows the GSE eligibility cutoff for Freddie Mac and the blue line shows the GSE eligibility cutoff for Fannie Mae. Source: Sastry, Sen, and Tenekedjieva (2023).

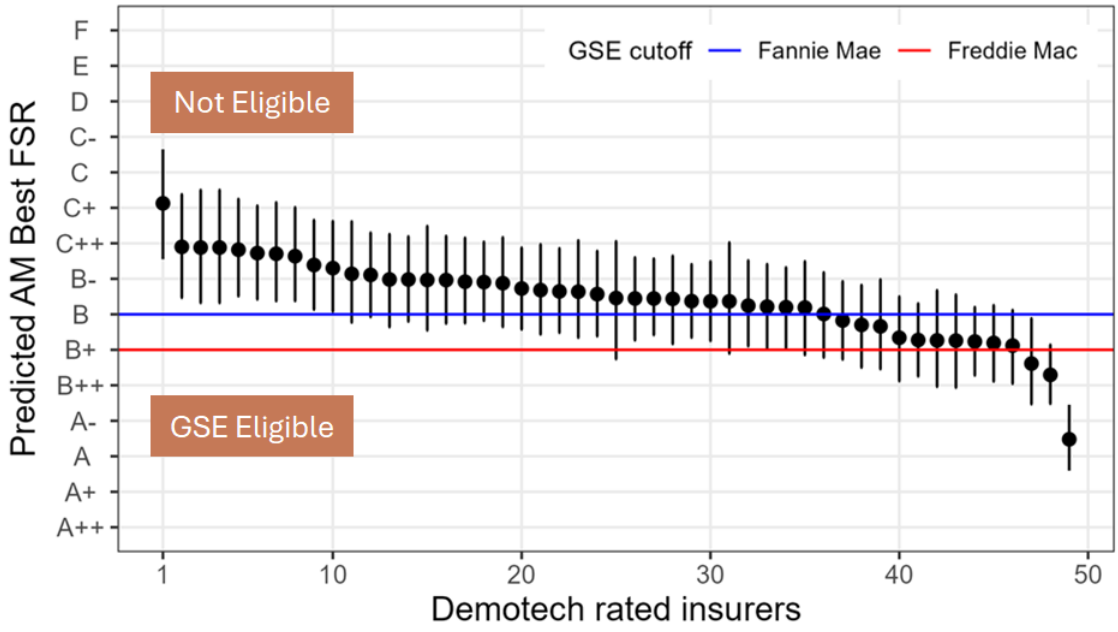


Figure 4: Demotech Market Shares By Coverage Per Policy

The figure shows the market share by number of policies for Demotech insurers in each coverage-per-policy category. Source: Sastry, Sen, and Tenekedjieva (2023).