NBER Household Finance Grant Application

Credit Supply and the Shift from Private to Public Mortgage Securitization

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Abstract

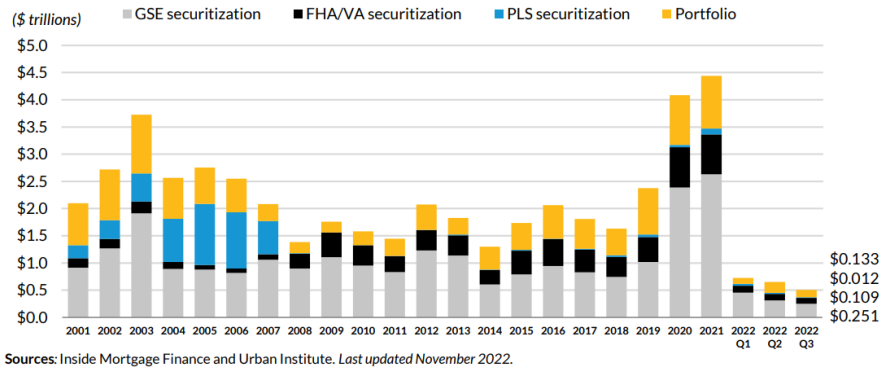
Following the 2007/08 financial crisis, the private-label securitization (PLS) market for subprime borrowers has effectively disappeared. As a result, such borrowers have likely either lost mortgage market access, or now depend on government-insured mortgages through entities like FHA or VA, which serve the riskiest and poorest borrower populations. In turn, these government-insured mortgages are securitized through Ginnie Mae, whose footprint has dramatically expanded as PLS has waned. We seek to study this shift from PLS to Ginnie Mae securitization, focusing on two questions of interest: 1) to what extent does Ginnie Mae expand credit access rather than merely crowding out the private sector, and 2) does public sector securitization have a comparative advantage in addressing correlated risks from climate change. To establish these results, we propose an empirical strategy that exploits exogenous changes in FHA eligibility criteria driven by flood zone re-mappings, elevation levels, minimum credit scores, and debt-to-income limits.

Project Description

What is the role of government insurance in the mortgage market? Given the outsized role of public entities in the US mortgage market, this is a first-order question for policy and market design. The literature has shown long-standing moral hazard issues and possibly distortionary effects such as crowding out of private actors. We hope to build on this extensive literature by studying this question in the context of insurance against systematic risks—in particular, climate risks—for the most vulnerable mortgage borrowers.

In the US, FHA- and VA-insured loans serve the riskiest and poorest borrower populations, and these loans are securitized by Ginnie Mae. Prior to the 2007/08 financial crisis, these borrowers were also served in the private-label securitization (PLS) market for subprime mortgage loans—however this channel has effectively disappeared in the post-crisis period. As a result, such borrowers have either lost access to the mortgage market, or the government has stepped in to pick up the slack via an increase in securitization via Ginnie Mae, whose footprint has dramatically increased in the post-crisis period (Figure 1).

Figure 1: First Lien Origination Volume (Source: Urban Institute)



While this shift from PLS to Ginnie Mae clearly exists in the aggregate, we seek to document it rigorously at a more granular (zip-code) level, with the larger goal of studying household and mortgage market outcomes under private and public provision of mortgage securitization.

In order to establish causal effects of public mortgage provision, we propose an instrument for Ginnie-Mae securitization, based on exogenous changes and discontinuities in FHA-insurance

eligibility criteria. Currently, properties located in high flood risk areas below a certain base-flood elevation are not eligible for FHA mortgage insurance—both the maps defining flood risk, and FHA's criteria have changed over time. In addition to these climate-related limitations, the FHA also has minimum credit score and debt-to-income requirements. We seek to exploit all these discontinuities in FHA eligibility to study effects on mortgage access, home ownership, house prices, and distributional effects across borrowers. The unique nature of the eligibility criteria allow us to focus in particular on how these outcomes vary with climate risks. For example, does FHA's refusal to back mortgages in high climate risk areas lead fewer subprime individuals to purchase property there?

As a first step, we've obtained access to public HMDA mortgage origination data, Corelogic deeds data on property transactions, and Corelogic mortgage performance data on delinquencies and securitization outcomes (all accessed via Wharton). We are working on merging these datasets to obtain a comprehensive picture of the borrower, property, and mortgage contract. Once this data is compiled, we seek to combine the mortgage data with information about climate risk to explore the FHA discontinuities. These empirical results will be used to estimate quantitative effects that can be used for policy and market design.

In the next stages of the project, we aim to study empirical patterns in mortgage securitization across differentially eligible mortgage borrowers and implement our research design. The key aspect to our analysis concerns FEMA flood zone status at the time the mortgage was originated, and comparing areas before and after remapping events. For this, we require extensive resources to digitize historical maps and making them usable for empirical analysis. This work has already been done for the state of Florida going back to 2010, but we wish to extend the efforts going far further back to the year 2000 and looking across all parts of the country. Flood zones are often nonconvex shapes, and currently there are limited processes to automate the tracing out of flood zone boundaries in an accurate fashion—this must be done carefully, and often is checked manually. GIS labs charge roughly $40 per hour for this service. For roughly 40,000 zip codes, processing at 120 zip codes per hour, this comes out to roughly $13,333.33 (=40000/120*$40), which we have rounded up to $13,500. After this dataset is digitized, we seek to post the data publicly so others can also utilize the changing map borders.

It is important to note that a number of recent papers have exploited FEMA remapping events, relying on digital snapshots of the flood maps that have been saved at different points in time – however, this record is incomplete, and is only reliable for a handful of states. Extensive digitization of historic FEMA maps will be required to draw accurate conclusions about FHA eligibility and to implement our research design. We seek to use the grant money to convert these paper maps into spatial datasets to by employing a specialized ArcGIS data analytics firm.

Itemized Budget

Item Number	Name	Description	Estimated Cost
1	Conference Travel	Grant money will support the presentation of this project at academic departments and government agencies	$1,500
2	Digitize historic FEMA flood maps	Grant money will be used to support conversion of historic FEMA flood maps across the U.S. (currently saved as PNG and PDF files) into spatial datasets (.gdb and .shp files)	$13,500 (=40,000 zipcodes, 120 zipcodes per hour, charging $40 / hour)