

Real and Personal: The Effect of Land in Manufactured Housing Loan Default Risk

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Abstract

Ownership of manufactured housing is complicated by the distinction between homeownership and landownership. Roughly two of five manufactured homeowners do not own the underlying land. Traditional mortgage financing is only available for manufactured homes owned with land as real estate. Personal loans are available for manufactured homes without land or owned as personal property but are often more expensive.

The Federal Housing Administration (FHA) provides loan insurance for the purchase or refinance of manufactured homes owned as either real or personal property. This paper provides an overview of the Title I loan insurance program and compares the default risk of FHA-insured personal property loans for the purchase of manufactured homes to similar mortgages for manufactured homes. Landownership, even when the home is titled as personal property, makes an important difference in risk.

Introduction

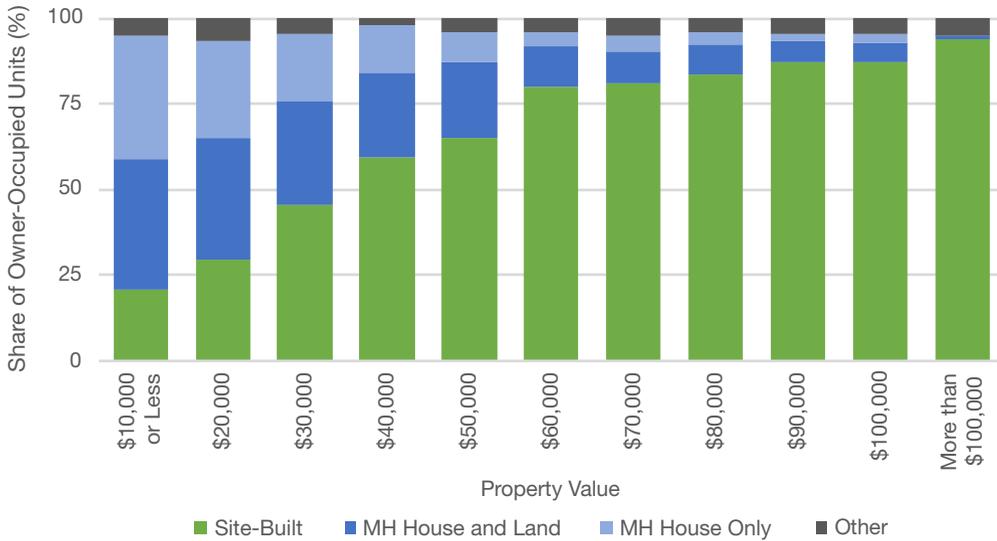
Manufactured homes provide an important source of affordable housing in the United States. The price per square foot of a typical new manufactured home is less than one-half that of a new, traditionally site-built home, excluding land value (\$52.80 vs. \$109.14).¹ Manufactured homes account for more than one-half of all owner-occupied housing units less than \$50,000 (exhibit

¹ Median values for 2019 from the Census Bureau's Survey of Construction and author tabulations of the Manufactured Housing Survey.

1). According to the 2019 American Housing Survey, nearly 6.4 million households in the United States (roughly one in 20 households) live in manufactured homes. Most of those households own their home.

Exhibit 1

Owner-Occupied Property Type by Value, 2019



MH = Manufactured Housing.

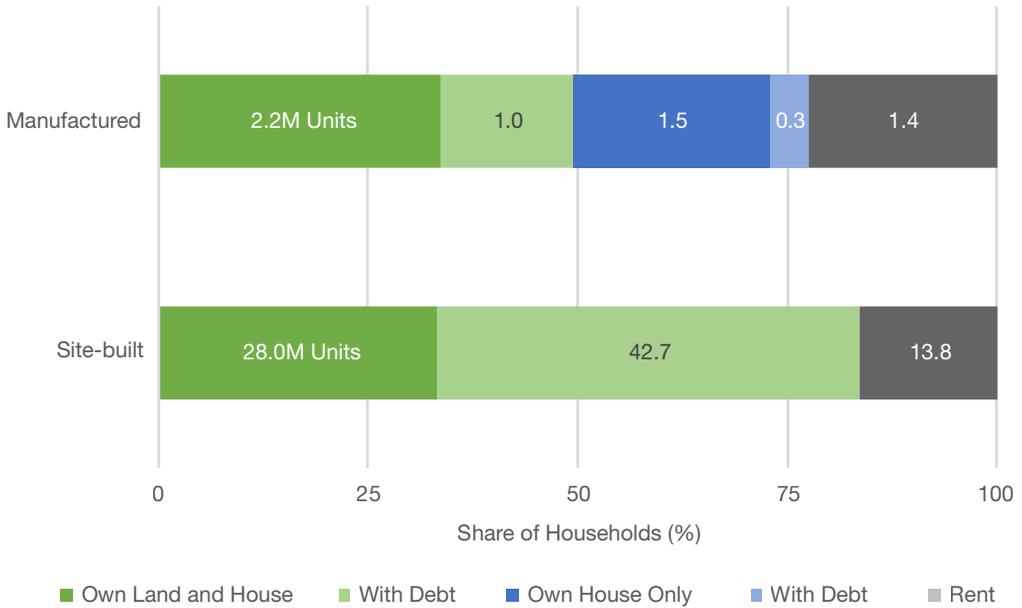
Note: Value of manufactured homes includes only the value of the housing unit, even if owned with land.

Source: American Housing Survey

However, ownership of manufactured housing is more complicated than ownership of site-built homes. Nearly one-half of households in manufactured homes own both the housing unit and the underlying land (exhibit 2). Another 28 percent own the housing unit only and not the lot. Traditional mortgage financing is only available for real property, meaning the homeowner must own the land and the home must be fixed to a permanent foundation. Personal loans are available for households who do not own, or who choose not to encumber, the land but are often more expensive with shorter terms. According to the 2019 American Housing Survey, only 16 percent of manufactured-home owners without land report having a loan on the unit, whereas nearly one-third of manufactured-home-and-landowners and more than 60 percent of site-built single-family-home owners have loans on their properties.

Exhibit 2

Site-Built and Manufactured Housing Tenure and Mortgage Status, 2019



Source: American Housing Survey

For more than five decades, the Federal Housing Administration (FHA) has provided loan insurance to facilitate the purchase of manufactured homes not only as real property through its flagship Section 203(b) program but also as personal property under Title I of the National Housing Act; however, the latter program has declined in recent decades. This paper provides an overview of FHA’s Title I manufactured housing loan program and analyzes the performance of these loans relative to FHA-insured mortgages for the purchase of manufactured homes held as real property. Land ownership, even when not used to secure a loan as collateral, substantially reduces the likelihood of default.

Manufactured Housing

Under the National Manufactured Housing Construction and Safety Standards Act of 1974 (Public Law 93-383), the U.S. Department of Housing and Urban Development (HUD) issues and enforces standards for the design, construction, and installation of manufactured housing, preempting state and local laws. Manufactured housing—as opposed to mobile homes, trailers, and modular homes—is defined as a prefabricated dwelling built on a permanent chassis after June 15, 1976, in compliance with this “HUD Code.”

Manufactured homes can be owned as either real or personal property. Jointly holding land and a manufactured home affixed to a permanent foundation makes it nearly indistinguishable from site-built homes from a legal perspective. Personal or “chattel” property covers only the housing unit. Most owners of manufactured homes (64 percent) are also landowners. Only 19 percent of

new manufactured home shipments, however, were titled as real property in 2019, according to the Manufactured Housing Survey; by contrast, 76 percent were titled as personal property.

Ownership and title affect financing options. Traditional mortgage financing is available only for real property. Russell et al. (2021) found that almost one-half of borrowers using personal property loans to purchase a manufactured home leased the land. Another 24 percent lived rent free on land owned by others, possibly family members. However, more than one-fourth (27 percent) owned the land but still used personal property loans rather than mortgage financing.

Russell et al. (2021) also found that applications for personal property loans to purchase manufactured homes are more likely to be denied than manufactured home mortgage applications, which are more likely to be denied than mortgage applications for a site-built home, even controlling for credit score. Similarly, the average annual percentage rate (APR) on personal property manufactured housing loans is 3.6 percentage points higher than the APR for manufactured home mortgages, which is 1.2 percentage points higher than the APR for site-built home mortgages.² Chattel financing also is not covered by the same consumer protection laws, including the Real Estate Settlement Procedures Act (CFPB, 2014).

The Center for Community Capital (CCC, 2020) surveyed borrowers who financed the purchase of a manufactured home in Texas in 2018. They found that 61 percent of buyers of manufactured homes owned the underlying land. First-time homebuyers and lower-income, African-American, and urban homebuyers were less likely to be landowners. Among landowners, 59 percent titled their home as personal property. Some landowners preferred to avoid encumbering the land, even if personal loans were associated with higher interest rates. Using a personal property loan was associated with more knowledge of the loan process and less reliance on lenders and real estate agents for information but a greater likelihood of applying through or being referred by the seller. Borrowers using personal loans disproportionately preferred shorter loan terms, whereas borrowers using mortgage loans preferred lower closing costs and fixed interest rates.

Whether ownership of manufactured homes includes landownership is immensely consequential for evaluating its effects on wealth. Jewell (2003) and Boehm and Schlottmann (2008) found that ownership of a manufactured home with landownership is associated with similar average but more volatile price appreciation compared with site-built homes. Similarly, the Federal Housing Finance Agency (FHFA, 2018) constructed a repeat-sales index of only manufactured housing transactions and found price trends similar to those for other forms of housing. Manufactured housing prices rose 120 percent between 1995 and 2018, compared with 140 percent for other forms of housing, although manufactured housing prices fell more during the Great Recession. However, the FHFA index is based on mortgage acquisitions by Fannie Mae and Freddie Mac (i.e., manufactured homes owned with land as real property). By contrast, Jewell (2003) and Boehm and Schlottmann (2008) found that ownership of manufactured homes without landownership is associated with depreciation relative to house price changes among site-built homes. Manufactured housing “in which the household does not own the lot is not an investment in any sense. It should be thought of as a type of consumer durable” (Boehm and Schlottmann, 2008: 200).

² Russell et al. (2021) also found substantial bunching at APR spreads just below the thresholds under the Home Ownership and Equity Protection Act that would require additional disclosure requirements.

The effect of title and landownership is further complicated by the correlation with construction status. The Home Mortgage Disclosure Act does not identify new construction but, since 2018, has identified whether a manufactured housing loan is for the house and land or the house alone. Nearly 225,000 loans for the purchase of manufactured homes were reported in 2018 and 2019, of which the majority (55 percent) are for the housing unit and land. According to the Manufactured Housing Survey, this number of purchase loans for manufactured homes and land is several times the number of new manufactured home sales titled as real property, suggesting that most of those loans are for existing manufactured homes. For comparison, the number of purchase loans for manufactured homes without land is close to the number of new manufactured home sales titled as personal property, suggesting that most of those loans are for new housing units. A premium for new consumer durables has long been discussed in economic theory, particularly for automobiles (e.g., Akerlof, 1970; Bond, 1982; Cramer, 1958), and has been empirically extended to new homes (Coulson, Morris, and Neill, 2019). Any price premium for new durables is lost as soon as they are bought, appearing as excessive depreciation. Therefore, some of the depreciation associated with a lack of landownership may be the loss of the premium for new manufactured homes.

The difference in appreciation affects loan performance, given the importance of equity as a key determinant of default, which is well established in the economic literature on mortgages (e.g., LaCour-Little, 2008; Quercia and Stegman, 1992). There has been a paucity of research specifically on the loan performance of manufactured homes (Lawrence, Smith, and Rhoades, 1992). Myers and Forgy (1963) demonstrated the value of developing credit risk scoring systems using discriminant analysis of a sample of conditional sales contracts on mobile homes. Notable factors include whether the borrower has a bank account, unsatisfactory credit references, history of repossessions and bankruptcies, the unpaid balance and downpayment, other terms of the sales contract, the width of the mobile home, and whether it was new or used. Lawrence, Smith, and Rhoades (1992) used logistic regression to estimate the likelihood that a sample of loans active in 1988 would default the following year. Borrowers' current equity is estimated by assuming a depreciation rate of 10 percent in the first year and 5 percent in subsequent years. Lower equity, higher initial payment-to-income ratios, a history of missed payments, smaller loans, older borrowers, and higher statewide unemployment rates are associated with greater risk.

Loans for manufactured homes experienced a wave of reckless lending and subsequent defaults in the 1990s that presaged the subprime mortgage crisis. More than 75,000 owners had their homes repossessed in 2000. Manufactured housing lender Conseco, Inc., which accounted for most loan originations that year, filed for bankruptcy in 2002 (CFPB, 2014).³ Genz (2001) noted that loans for manufactured homes default at a rate four times higher than conventional loans, which would be “unthinkable in the world of ‘real housing’ finance, but somehow tacitly accepted for people who make their home in a factory-built unit” (Genz, 2001: 403). However, there has not been an explicit and rigorous comparison of loan performance for manufactured housing as real and personal property.

³ Conseco was also a major Title I lender in the early 1990s (see exhibit 3).

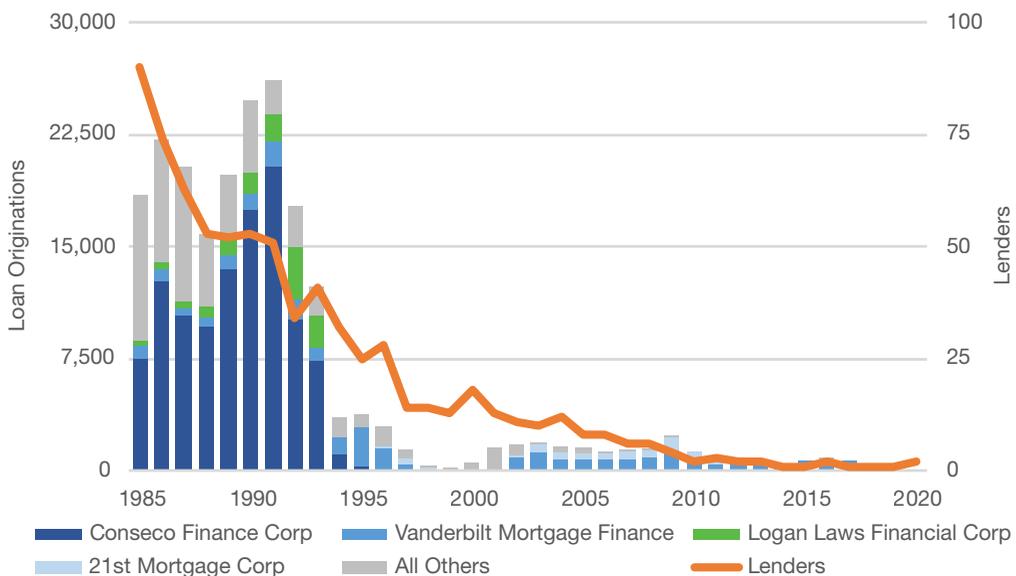
Title I

HUD plays an important role in manufactured housing in the United States. In addition to regulating the construction and safety standards of manufactured homes, HUD helps finance the purchase and refinance of manufactured homes through FHA. FHA has always insured loans on manufactured and mobile homes as real property if they meet its Minimum Property Standards and local building and land use regulations. However, the Housing and Urban Development Act of 1969 (Public Law 91-152) also authorizes FHA to insure personal property loans secured by manufactured housing. Borrowers are not required to own the land but must have a land lease that does not expire for at least 3 years after origination and afterward is renewable on an annual basis. Insurance is authorized under Title I of the National Housing Act rather than Section 203(b) and financed through the General Insurance Fund rather than the Mutual Mortgage Insurance Fund.

CCC (2020) reported that FHA accounted for 14 percent of buyers of manufactured homes in Texas in 2018 using chattel financing, compared with 22 percent using mortgages. However, Title I volume is a fraction of what it was three decades ago. FHA-insured chattel loan originations collapsed from more than 26,000 in 1991 to fewer than 225 in 1999 (exhibit 3). Originations rebounded to nearly 2,000 a year in the early 2000s. Nevertheless, FHA has insured nearly 30 times more loans for purchase or refinance of manufactured housing titled as real estate through its main 203(b) mortgage insurance program than titled as personal property through Title I since 1998. Two major reasons for the decline are a limited secondary market and low loan limits.

Exhibit 3

Title I Lenders and Loan Volume, 1985–2020

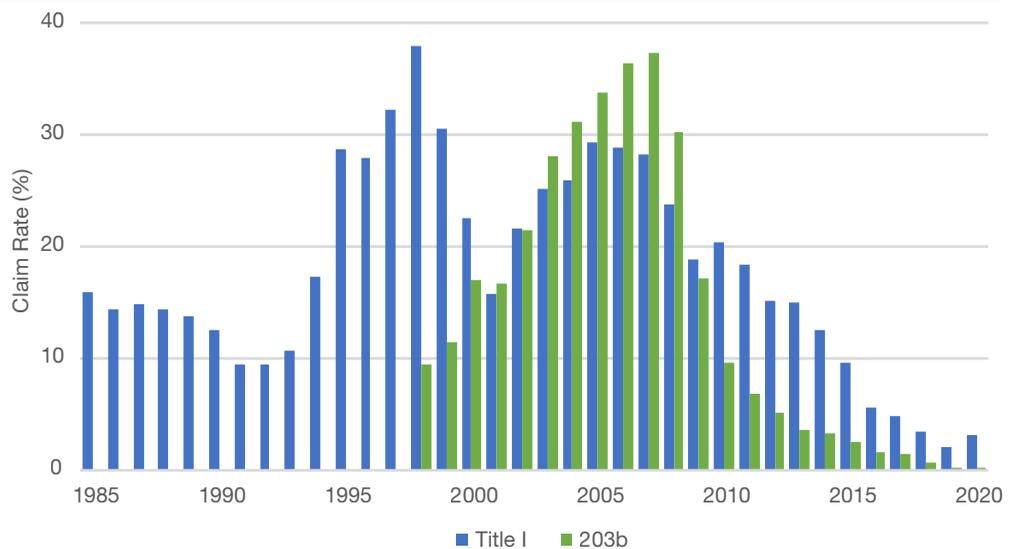


Source: Federal Housing Administration administrative data

Ginnie Mae has facilitated securitization of Title I loans since the 1970s but significantly curtailed operations after suffering losses. Title I insurance covers only 90 percent of the claim amount, compared with full coverage under 203(b). In addition, FHA's liability had been capped at 10 percent of a lender's aggregate disbursement, known as the reserve account. Those limits became binding when manufactured housing suffered waves of defaults in the 1980s and 1990s. Nearly 29 percent of Title I loans originated between 1995 and 2000 terminated with a claim (exhibit 4). Although co-insurance was meant to align incentives between FHA and lenders, it created a moral hazard problem: "[A]s lenders' portfolios experienced losses [beyond the 10-percent aggregate disbursement cap], they were incented to make more loans in order to increase the amount of claims payments for which they were eligible" (Frenz, 2006: n.d.).

Exhibit 4

FHA Manufactured Housing Claim Rate by Cohort, 1998–2020



Source: Federal Housing Administration administrative data

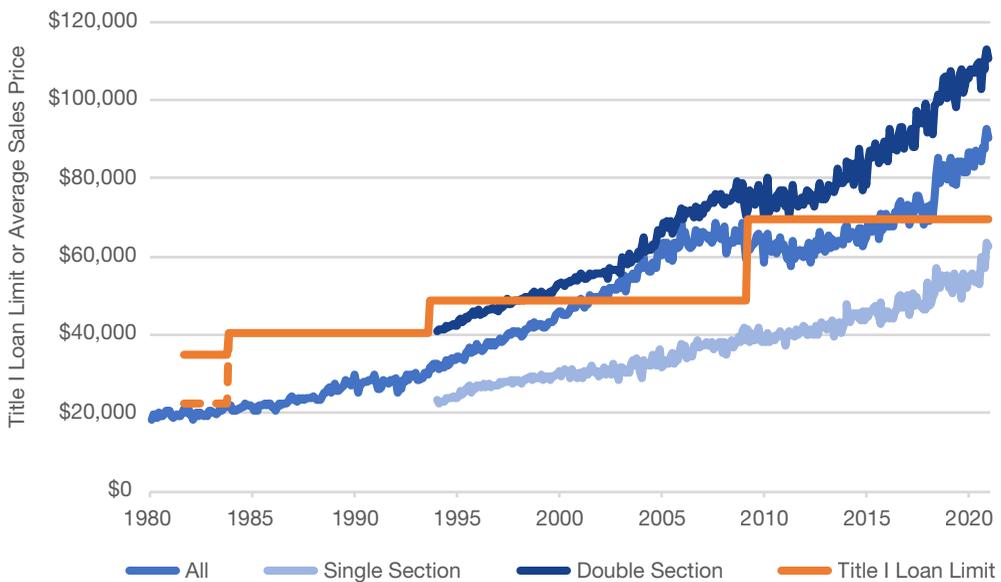
Those losses were pushed onto Ginnie Mae, which guarantees an issuer will make payments on securities backed by Title I loans. Ginnie Mae placed a moratorium on new manufactured housing securities issuers after 12 issuers defaulted between 1986 and 1988. Another 10 issuers defaulted in the 1990s, resulting in at least \$514 million in losses for Ginnie Mae (Government Accountability Office, 2007). The FHA Manufactured Housing Loan Modernization Act of 2008 removed the portfolio cap to provide loan-level insurance coverage similar to the 203(b) program. Nevertheless, Ginnie Mae requires issuers to have a minimum net worth of \$10 million plus 10 percent of outstanding obligations to participate in its Manufactured Home Program, compared with only \$2.5 million plus 0.2 percent of outstanding obligations for the Single-Family Program.

The second major reason for declining Title I origination volume is that loan limits failed to keep pace with the rising costs of manufactured homes (exhibit 5). Before 1983, there were separate loan limits for one- and two-section manufactured homes. Congress then raised the limit to

\$40,500 but removed the distinction by number of sections. The Housing and Community Development Act of 1992 again increased the loan limit for a manufactured home to \$48,600, above the average sales price of two-section homes at the time. However, by 2001 the average sales price of all new units exceeded the loan limit. The FHA Manufactured Housing Loan Modernization Act increased the limit to \$69,678, roughly the average price of a new unit. The 2008 Act also mandated annual indexing of loan limits. However, the average sales price of new units fell in the years shortly following the Great Recession. Rather than lower the loan limit in proportion to the decline in price, FHA kept them unchanged. By 2016, the average sales price had again risen above the Title I loan limit, but limits were not increased to keep pace.

Exhibit 5

Title I Loan Limit and Manufactured Housing Sales Prices, 1980–2020



Note: Manufactured housing unit only.

Sources: Public Law 98-181; FHA Title I Letters 424, 480; Manufactured Housing Survey

Title I requires an upfront mortgage insurance premium of 2.25 percent, higher than the 1.75 percent in the 203(b) program, and an annual insurance premium of 1 percent, also generally higher than the 203(b) program. The maximum loan term for a loan on a manufactured home is 20 years and 32 days, less than the 30 years common in the 203(b) program. The housing payment, which includes taxes and lot rent, cannot exceed 33 percent of effective borrower income, and total debt payments cannot exceed 45 percent.

There is no minimum credit score, but the lender must pull a score if available and examine the borrower’s overall pattern of credit behavior. In addition, the maximum loan-to-value (LTV) ratio is lower (90 percent) if the borrower has a credit score lower than 500. Otherwise, the maximum LTV ratio is 95 percent, less than the 96.5-percent maximum in the 203(b) program. However, the comparison is not apples to apples. The Title I denominator “value” is the sum of 130 percent of

the wholesale price plus eligible itemized options, sales tax, transportation cost, cost of installing appurtenance and air conditioning or heat pump, and financeable fees and charges. The upfront mortgage insurance premium can be financed but counts toward the loan limit, whereas it does not count in the 203(b) program. Secondary financing is not permitted in Title I.

The Title I program has gradually suffocated from the lack of a secondary market, failure to increase loan limits with the rising cost of manufactured homes, and antiquated paper-based program procedures. Fewer than 35 loans were originated under the program in 2020, and roughly 8,000 loans were still active at the end of 2021.

Data

This study used administrative data from FHA's 203(b) and Title I loan insurance programs to analyze the performance of personal property loans relative to comparable mortgages for the purchase of manufactured homes originated between 2012 and 2018. Roughly 2.5 percent of observations were dropped due to incomplete information, mostly credit score. The resulting sampling frame consists of nearly 127,000 observations, of which roughly 3,900 (3 percent) are Title I loans. Exhibit 6 provides descriptive statistics of the data.

Exhibit 6

Descriptive Statistics (1 of 2)

	Title I	203(b)	
		Matched	All
Observations	3,944	9,190	122,831
Weighted	3,944	3,944	
Estimated Title I Probability (%)	18.4	15.4	2.6
Loan Status (%)			
Active	83.9	77.8	74.6
Default-Claim	7.8	4.6	2.1
Prepaid	8.3	17.7	23.3
Sales Price (\$2021)	57,910 (14,139)	144,756 (44,291)	151,129 (96,124)
New Construction (%)	91.9	91.9	12.6
Loan Amount (\$2021)	55,725 (13,698)	133,647 (41,291)	144,938 (69,797)
LTV Ratio (%)	96.8 (9.2)	92.7 (7.7)	96.5 (5.2)
Loan Term (Months)	239 (6)	359 (11)	357 (21)
Interest Rate (%)	7.3 (0.5)	4.5 (0.5)	4.5 (0.6)
Rate Spread	3.3 (0.5)	0.5 (0.5)	0.3 (0.5)
Credit Score	660 (55)	654 (42)	683 (48)
Income (\$2021)	3,547 (1,568)	4,255 (1,823)	4,915 (2,442)

Exhibit 6**Descriptive Statistics (2 of 2)**

	Title I	203(b)	
		Matched	All
Housing Ratio (%)	21.7 (8.6)	25.4 (8.0)	24.0 (8.8)
Debt Ratio (%)	38.3 (14.1)	40.5 (8.7)	39.0 (9.4)
Coborrower (%)	25.2	31.7	34.0
Age	42.9 (17.3)	43.5 (14.0)	39.9 (13.8)
First-Time Buyer (%)	60.3	51.6	79.3
Race			
White	72.5	67.1	76.9
African-American	9.7	13.3	3.3
Hispanic	4.3	3.4	11.2
Other	2.4	2.8	1.6
Not Available	11.0	13.4	6.9
Rural-Urban (%)			
Urban Center	32.5	26.4	33.5
Urban Commuting	28.8	29.3	31.1
Micropolitan Area	19.7	21.5	19.6
Small Town	12.0	14.5	9.1
Rural	7.1	8.2	6.7
Year (%)			
2012	14.4	14.4	9.7
2013	11.7	11.7	9.7
2014	10.4	10.4	11.1
2015	16.0	16.0	14.9
2016	20.6	20.6	16.5
2017	16.8	16.8	18.2
2018	10.1	10.1	19.9
State (%)			
Other	12.9	12.9	65.6
Alabama	9.2	9.2	1.2
Arkansas	4.4	4.4	0.8
Kentucky	7.2	7.2	2.6
Louisiana	9.9	9.9	2.6
Mississippi	3.7	3.7	0.4
North Carolina	9.7	9.7	6.7
Oklahoma	3.3	3.3	1.6
South Carolina	6.0	6.0	2.6
Tennessee	7.1	7.1	3.6
Texas	17.8	17.8	8.5
Virginia	4.6	4.6	2.7
West Virginia	4.2	4.2	0.9

LTV = loan-to-value.

Note: Standard deviations shown in parentheses.

Source: Federal Housing Administration administrative data

Selection

Before comparing loan performance, this study analyzed differences between manufactured home mortgages and personal property loans. The results of this analysis were used to reduce differences that might confound estimating the relative risk of Title I loans.

Methodology

This study used a binomial logistic regression to estimate the likelihood of using Title I as opposed to 203(b) insurance.⁴

$$\log\left(\frac{P(\text{Title I})}{P(203b)}\right) = \beta X + \gamma Z + \theta + \varphi$$

Borrower level covariates X used to predict program and property type include:

Credit Score	The decision credit score of the borrower (i.e., the median of the scores from the three credit bureaus, or minimum if fewer than three are available). If multiple borrowers are present, then the lowest decision score is used.
Income	The natural logarithm of the inflation-adjusted monthly income (with Winsorization ⁵ to limit the influence of outliers) used in underwriting.
Co-Borrower	A binary indicator of whether more than one borrower is on the loan.
Age	The age of the primary borrower.
Race	Categorical variables reflecting the race and ethnicity of the primary borrower.
First-Time Buyer	A binary indicator of whether the borrowers are first-time homebuyers.

Housing market conditions Z at the time of closing include the following:

Unemployment	The monthly county unemployment rate reported by the U.S. Bureau of Labor Statistics.
MH Share	The number of manufactured housing units as a share of the total housing stock estimated in the most recent 5-year American Community Survey before loan origination.
RUCA	The rural-urban commuting area (RUCA) 2010 classification of the property ZIP Code developed by the U.S. Department of Agriculture. The classification is condensed into five categories: Urban Center (RUCA code 1), Urban Commuting Area (2–3), Micropolitan Area (4–6), Small Town (7–9), and Rural (10).

⁴ Logistic regression estimated using the *logit* command in Stata/SE 15.0.

⁵ Winsorization refers to top- and bottom-coding values at given percentiles. In this case, the top and bottom one percent of income values are replaced with 99th and 1st percentiles, respectively.

Fixed effects are included for the year the loan was closed θ and the 12 states with the most Title I manufactured housing loans φ . All other states are grouped in the reference category.

Findings

The first column of exhibit 7 presents the results of the logistic regression estimating the likelihood of using a Title I personal property loan for the purchase of a manufactured home relative to a 203(b) mortgage. Borrowers with lower income and lower credit scores were more likely to use Title I. Older homebuyers were also more likely to use Title I, whereas Hispanic and first-time buyers were less likely. Buyers in the most urbanized areas were more likely to use Title I, and 203(b) mortgages were more common within micropolitan areas and commuting zones of metropolitan areas.

Exhibit 7

Selection Model (1 of 2)			
	(1)	(2)	(3)
New Construction		66.390*** (4.5420)	76.810*** (7.3890)
Credit Score	0.988*** (0.0005)	0.993*** (0.0005)	0.993*** (0.0007)
Income (Log)	0.145*** (0.0073)	0.082*** (0.0049)	0.089*** (0.0074)
Co-Borrower	1.017 (0.0458)	0.749*** (0.0361)	0.791*** (0.0527)
Age	1.012*** (0.0013)	1.007*** (0.0015)	1.008*** (0.0021)
Race			
African-American	1.395*** (0.0900)	0.750*** (0.0557)	0.699** (0.0766)
Hispanic	0.560*** (0.0470)	0.608*** (0.0557)	0.612*** (0.0720)
Other	2.022*** (0.2440)	1.539** (0.2260)	1.021 (0.2490)
Not Available	1.810*** (0.1060)	1.324*** (0.0893)	1.649*** (0.1430)
First-Time Buyer	0.342*** (0.0130)	0.511*** (0.0236)	0.461*** (0.0294)
Housing Market			
Unemployment Rate	1.071*** (0.0104)	1.087*** (0.0130)	1.019 (0.0213)

Exhibit 7

Selection Model (2 of 2)

	(1)	(2)	(3)
MH Share of Stock	1.019*** (0.0024)	1.006* (0.0027)	0.999 (0.0054)
Land Value (Log)			76.810*** (7.3890)
Land Share of Value			1.610*** (0.2320)
Home Sales Rate			0.019*** (0.0174)
Change in House Prices			0.985*** (0.0022)
Mortgage Delinquency Rate			0.989 (0.0097)
RUCA			
Urban Commuting	0.592*** (0.0285)	0.549*** (0.0305)	0.548*** (0.0375)
Micropolitan Area	0.824*** (0.0444)	0.692*** (0.0431)	0.651*** (0.0594)
Small Town	0.918 (0.0602)	0.714*** (0.0562)	0.650* (0.1140)
Rural	0.992 (0.0781)	0.708*** (0.0659)	0.586* (0.1250)
Observations	126,775	126,775	82,399
χ^2	6793***	8103***	4543***
AIC	25,423	17,260	9,136

AIC = Akaike information criterion. MH = manufactured housing. RUCA = rural-urban commuting area codes.

Notes: State and year fixed effects not shown. Statistically significant at the * 0.050 ** 0.010 *** 0.001 level. Robust standard errors shown in parentheses.

Source: Federal Housing Administration administrative data

The second column in exhibit 7 includes a binary indicator of construction status. Most (88 percent) Title I loans were for the purchase of new manufactured homes, whereas most (81 percent) 203(b) mortgages for manufactured homes were for the purchase of existing homes (exhibit 8). Even controlling for other characteristics, purchasing a new rather than existing manufactured home increased the odds of using Title I by a factor of 66.

Exhibit 8

FHA Manufactured Housing Lending by Construction Status, 1998–2020



Source: Federal Housing Administration administrative data

The unemployment rate and manufactured share of the housing stock were correlated with increased use of Title I. However, the third column of exhibit 7 adds additional housing market conditions, which causes both of those variables to lose statistical significance. The additional factors were not available for more than one-third of observations, reflecting the general lack of data in many rural areas. For those observations with complete information, higher land values were associated with increased use of Title I, whereas hot housing markets (home sales and house price appreciation) were associated with more 203(b) mortgages.

Propensity Score Matching

This study used propensity score matching to control for observable differences in homebuyers titling their manufactured homes as personal and real property. The propensity score is the log odds of using a Title I derived from the first logistic regression specification shown in exhibit 7.

This paper stratified the matching process by year, state, and construction status. The analysis matched each Title I loan for a new manufactured home to five 203(b) mortgages for new manufactured homes in the same state and year using nearest-neighbor matching with replacement.⁶ In addition, the study matched Title I loans for existing manufactured homes to 10 203(b) mortgages for existing manufactured homes.

Matching reduced the sample size to 13,134 loans but substantially improved the overlap in borrower characteristics. Exhibit 6 shows how matching and weighting observations reduced differences in borrower characteristics and location, which allowed any differences in default risk

⁶ Propensity score matching executed using the *psmatch2* command in Stata from Leuven and Sianesi (2003).

to be more specifically associated with the type of loan. However, differences remain that may affect relative loan performance. For example, Title I borrowers continued to be lower income than 203(b) borrowers. Matching did not meaningfully change the higher interest rate associated with Title I loans: the raw difference of 2.83 percentage points narrows slightly to 2.76 percentage points after matching but remains statistically significant.

Default

Default in this analysis is defined as an insurance claim dated to the start of the delinquency episode. This outcome definition addresses differences in the claim and property disposition processes between the two programs. Nearly 8 percent of Title I loans originating in the study period have terminated in a claim, compared with roughly 2 percent of 203(b) manufactured home mortgages. After propensity score matching, the claim rate of 203(b) mortgages increases to nearly 5 percent, still below the Title I default-claim rate.

Methodology

A Cox proportional hazard model estimates the additional default risk associated with Title I loans as

$$\lambda(t) = \lambda_0(t)e^{\delta T + \beta X + \gamma Z + \theta + \varphi}$$

where λ_0 indicates an unspecified baseline hazard.⁷ Loan performance is censored at the end of 2019 to avoid problems arising from the COVID-19 pandemic.⁸ Exhibit 9 shows the cumulative hazard of default by loan type before and after propensity score matching. The results show that the matching reduces the higher default hazard associated with Title I loans.

The coefficient of interest δ captures the difference in default risk associated with Title I loans relative to 203(b) mortgages. Borrower covariates X and housing market conditions Z are the same first specification of the selection model. The study analyzes the effects associated with the following additional risk factors:

Housing Ratio	Total housing payments, including the amount of lot rent for Title I borrowers, relative to borrower income. Often referred to as the “front-end” debt-to-income (DTI) ratio.
Debt Ratio	Total fixed payments, including housing and all other debt, relative to borrower income. Often referred to as the “back-end” DTI ratio.
New Construction	A binary indicator of whether the housing unit is new construction.
Rent Lot	A binary indicator of whether a Title I borrower pays lot rent.

⁷ Cox hazard is estimated using the *stcox* command in Stata/SE 15.0.

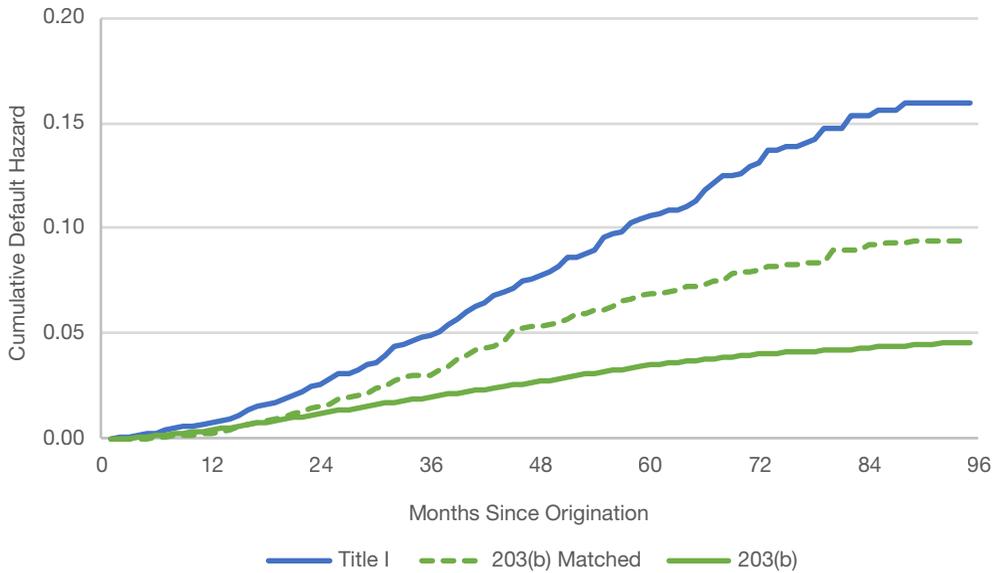
⁸ Wong (2021) reports that owners of manufactured homes were more likely to be behind in their housing payments during the COVID-19 pandemic. Most personal property loans for manufactured homes were not covered by CARES Act relief provisions.

Land Tenure A categorical variable indicating the type of land tenure, including (1) ownership, (2) leased private property, (3) leased park community, or (4) other.

Housing and debt ratios are also Winsorized to limit the influence of outliers.

Exhibit 9

Cumulative Default Hazard



Source: Federal Housing Administration administrative data

Findings

Exhibit 10 presents the results of the Cox proportional hazard model. The first specification shows that the baseline difference is default risk before propensity score matching and with no covariates. Title I loans are associated with a risk of claim-default nearly three times higher than 203(b) mortgages. That difference narrows after propensity score matching. The second column of exhibit 10 shows that Title I loans are associated with a 56-percent increase in the risk of default relative to 203(b) mortgages with similar borrower characteristics.

Exhibit 10

Default Hazard Ratios

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Title I	2.995*** (0.179)	1.557*** (0.161)	1.430*** (0.146)	1.671*** (0.205)	1.687*** (0.212)	1.465** (0.203)	1.172 (0.213)
Credit Score			0.995*** (0.001)	0.996*** (0.001)	0.996*** (0.001)	0.996*** (0.001)	0.996*** (0.001)
Income (Log)			0.772* (0.085)	1.199 (0.213)	1.232 (0.227)	1.090 (0.204)	1.187 (0.224)
Co-Borrower			0.762* (0.101)	0.680* (0.113)	0.682* (0.113)	0.689* (0.114)	0.692* (0.114)
Age			1.016*** (0.004)	1.016*** (0.004)	1.016*** (0.004)	1.016*** (0.004)	1.017*** (0.004)
Race							
African-American			0.683* (0.108)	0.653** (0.105)	0.654** (0.105)	0.662** (0.106)	0.666* (0.107)
Hispanic			0.482** (0.133)	0.462** (0.129)	0.462** (0.129)	0.457** (0.128)	0.472** (0.132)
Other			0.444* (0.166)	0.422* (0.158)	0.423* (0.158)	0.438* (0.163)	0.429* (0.160)
Not Available			0.785 (0.189)	0.782 (0.192)	0.784 (0.192)	0.780 (0.191)	0.786 (0.193)
First-Time Buyer			1.536*** (0.183)	1.524*** (0.182)	1.521*** (0.182)	1.491*** (0.178)	1.456** (0.174)
Housing Ratio				1.024** (0.009)	1.026** (0.009)	1.020* (0.009)	1.023* (0.009)
Debt Ratio				1.005 (0.005)	1.005 (0.005)	1.005 (0.005)	1.004 (0.005)
New Construction					0.864 (0.127)	0.879 (0.130)	0.860 (0.128)
Rent Lot						1.309* (0.162)	
Land Tenure							
Leased Park Community							1.794** (0.336)
Leased Private Property							1.458* (0.237)
Other							1.586 (0.916)
Observations	126,775	13,134	13,134	13,134	13,134	13,134	13,134
χ^2	338***	18***	190***	204***	204***	212***	228***
AIC	64,812	8,173	8,120	8,113	8,114	8,112	8,110

AIC = Akaike information criterion.

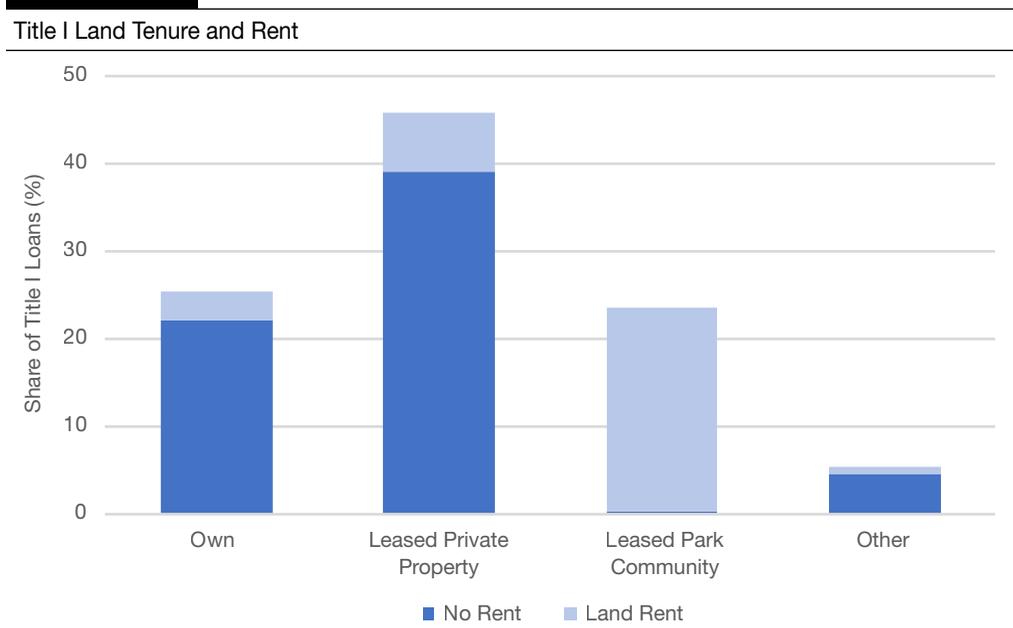
Note: Unemployment rate, manufactured share of housing stock, and state and year fixed effects not shown.

Source: FHA administrative data

The third column further includes the borrower characteristics used in the selection model as covariates. Higher credit scores, higher income, and co-borrowers are associated with a lower risk of default. Minority borrowers are associated with a lower risk of default, whereas older and first-time homebuyers are associated with higher risk. Including those characteristics reduces the hazard ratio associated with Title I to 43 percent; that is, approximately two-thirds of the baseline risk associated with Title I loans (first column) can be explained by the characteristics of the borrowers that program serves. Exhibit 9 illustrates how the cumulative default hazard of 203(b) mortgages increases after matching to Title I borrowers. The fourth column of exhibit 10 introduces new risk factors not included in the selection model. The ratio of required housing payments to income is associated with an increase in the risk of default, but the overall debt-to-income ratio is not statistically significant. The indicator of new construction (fifth column of exhibit 10) is also not significant. Including those risk factors increases the risk associated with Title I.

The sixth column shows the results of including the indicator of paying rent. Roughly one-fourth of Title I borrowers own their land, 46 percent are on leased private property, and only 23 percent are in a mobile home park (exhibit 11). Overall, nearly two-thirds do not pay a lot rent. Title I borrowers without a lot rent payment are associated with a 46-percent increase in the likelihood of default relative to a 203(b) mortgage borrower. Title I borrowers who pay a lot rent are associated with an additional 31-percent increase in default risk, which is statistically significant at the 5-percent level, or 92 percent higher than the risk associated with 203(b) mortgage borrowers. Notably, that estimated effect exists while controlling for the amount of the lot rent, which is incorporated into the housing payment ratio.⁹

Exhibit 11



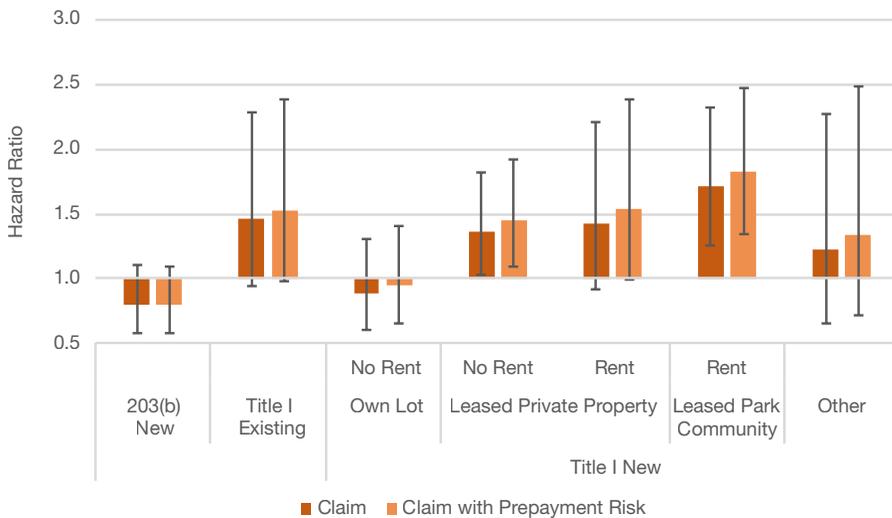
Source: FHA administrative data

⁹ The lot rent is the amount at time of underwriting. It does not reflect subsequent changes in lot rent.

The final column of exhibit 10 replaces the lot rent indicator with the land tenure classification. The reference group in the typology is Title I borrowers who own the underlying land. Those borrowers are associated with a 17-percent increase in the likelihood of claim-default relative to 203(b) mortgage borrowers; however, the analysis cannot reject the null hypothesis that the default risk is equivalent to a manufactured home purchase mortgage. Title I borrowers who are on leased private property are associated with a 46-percent increase in the default risk relative to Title I landowners (71 percent relative to 203(b) mortgages), which is significant at the 5-percent level. Title I borrowers in leased park communities are associated with a 79-percent increase in default risk (more than twice the risk of 203(b) mortgages). Exhibit 12 shows the results of an additional specification with select combinations of construction status, lot rent payment, and land tenure type. The results illustrate that Title I landowners are not significantly higher risk than similar homebuyers using 203(b) mortgages, whereas Title I borrowers renting lots in mobile home parks are substantially higher risk.¹⁰

Exhibit 12

Claim Hazard Ratios



Note: Error bars indicate 95-percent confidence interval.
Source: FHA administrative data

The study used a Cox proportional hazard model to understand the causal effect of property and program type on loan performance (Allison, 2018; Austin, Lee, and Fine, 2016). However, exhibit 13 shows the results of comparable Fine-Gray subhazard models that treat prepayment (i.e., termination without insurance claim) as a competing risk.¹¹ Title I loans are substantially less likely to prepay, possibly reflecting the difficulty in refinancing personal property loans on manufactured homes (Goodman and Neal, 2021; Russell et al., 2021)—a circumstance that prolongs the exposure of Title I loans to the risk of default. Therefore, the estimated risk associated with Title I loans in the Fine-Gray models shown in exhibit 13 is higher than the comparable estimates

¹⁰ FHA requires a lease of at least 3 years for Title I loans in leased park communities. However, an additional specification (not shown) did not find a statistically significant difference in hazard ratios for such loans before and after 3 years.

¹¹ Fine-Gray model estimated using the *stcrreg* command in Stata/SE 15.0.

in the Cox models shown in exhibit 10. Nevertheless, the final specification of exhibit 13 and the additional specification in exhibit 12 confirm that Title I landowners are not associated with significantly higher risk than 203(b) mortgage borrowers.

Exhibit 13

Default Hazard with Prepayment Risk							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Title I	3.387*** (0.202)	1.701*** (0.176)	1.561*** (0.161)	1.805*** (0.226)	1.821*** (0.233)	1.571** (0.222)	1.264 (0.233)
Credit Score			0.995*** (0.001)	0.996*** (0.001)	0.996*** (0.001)	0.995*** (0.001)	0.996*** (0.001)
Income (Log)			0.746** (0.082)	1.106 (0.195)	1.134 (0.208)	1.001 (0.187)	1.090 (0.205)
Co-Borrower			0.746* (0.100)	0.667* (0.111)	0.668* (0.111)	0.675* (0.112)	0.679* (0.112)
Age			1.016*** (0.004)	1.016*** (0.004)	1.016*** (0.004)	1.015*** (0.004)	1.017*** (0.004)
Race							
African-American			0.708* (0.112)	0.680* (0.109)	0.681* (0.109)	0.689* (0.110)	0.694* (0.111)
Hispanic			0.495* (0.137)	0.478** (0.133)	0.478** (0.133)	0.472** (0.132)	0.489* (0.137)
Other			0.457* (0.170)	0.439* (0.163)	0.439* (0.163)	0.456* (0.169)	0.445* (0.166)
Not Available			0.796 (0.194)	0.791 (0.196)	0.794 (0.196)	0.789 (0.195)	0.792 (0.196)
First-Time Buyer			1.535*** (0.184)	1.526*** (0.183)	1.523*** (0.183)	1.494*** (0.180)	1.459** (0.176)
Housing Ratio				1.021* (0.009)	1.022* (0.009)	1.016 (0.009)	1.020* (0.009)
Debt Ratio				1.005 (0.005)	1.005 (0.005)	1.005 (0.005)	1.005 (0.005)
New Construction					0.873 (0.129)	0.888 (0.132)	0.869 (0.130)
Rent Lot						1.323* (0.164)	
Land Tenure							
Leased Park Community							1.799** (0.336)
Leased Private Property							1.449* (0.235)
Other							1.662 (0.962)
Observations	126,775	13,134	13,134	13,134	13,134	13,134	13,134
χ^2	419***	26***	221***	233***	233***	242***	258***
AIC	65,634	14,574	14,429	14,416	14,417	14,412	14,406

AIC = Akaike information criterion.

Notes: Unemployment rate, manufactured share of housing stock and state and year fixed effects not shown. Statistically significant at the * 0.050 ** 0.010 *** 0.001 level. Robust standard errors shown in parentheses.

Source: Federal Housing Administration administrative data

Conclusion

Manufactured housing is often seen as a technological solution to the affordable housing problem. The Manufactured Housing Improvement Act of 2000 (Public Law 106-569) states, “[M]anufactured housing plays a vital role in meeting the housing needs of the Nation, and manufactured homes provide a significant resource for affordable homeownership and rental housing accessible to all Americans.”¹² FHA is specifically noted as an instrument for improving access to manufactured housing. The 2000 Act calls for a review of FHA’s manufactured housing programs and “developing any changes to such programs to promote the affordability of manufactured homes, includes changes in loan terms, amortization periods, regulations and procedures.”¹³ Eight years later, the FHA Manufactured Housing Loan Modernization Act aimed to “modernize the FHA title I insurance program for manufactured housing loans to enhance participation by Ginnie Mae and the private lending markets.” However, a Government Accountability Office (GAO) review in 2014 found that “HUD has not yet examined or researched the effectiveness of these loan programs because its research has focused on other priorities” (GAO, 2014: 29).

This paper compares the performance of personal property insured under Title I with similar mortgages for the purchase of manufactured homes insured under FHA’s flagship 203(b) mortgage insurance program. Title I loans are more than three times more likely to default than 203(b) mortgages. However, two-thirds of that difference is because Title I disproportionately serves older, lower-income borrowers with lower credit scores.

The remaining difference is mostly due to land tenure. One-fourth of Title I borrowers own the land on which their manufactured home rests. Those borrowers have approximately the same default risk as 203(b) mortgagors. A plurality of Title I borrowers are on leased private property, and most of them do not pay land rent. Less than one-fourth rent a lot in a mobile home park. FHA requires land leases in park communities to have initial terms of at least 3 years, annually renewable, with 180 days written notice before expiration if the borrower is required to move. Nevertheless, renting land is associated with an increase in the likelihood of default, particularly if in a mobile home park.

There are many challenges to reinvigorating FHA’s 50-year-old program of personal property loan insurance for manufactured homes. The maximum loan amount of \$69,678 in the Title I program is less than the average cost of a new manufactured home (\$81,900 in 2019), not including the costs of transportation and installation. Ginnie Mae places additional requirements for Title I securities issuers compared with issues of securities based on mortgages on single-family homes, limiting the secondary market. Title I continues to rely on manual underwriting and processing of paper case binders.

Title I loans carry a significantly higher interest rate, roughly 2.76 percentage points above the average rate on FHA-insured manufactured home mortgages for otherwise similar borrowers. Higher rates may be expected given the higher risk associated with personal property loans not secured by land. However, FHA provides nearly the same loan-level insurance coverage to Title I

¹² 42 USC § 5401(a).

¹³ 42 USC § 5407(a).

loans as to 203(b) mortgages. Investors are reimbursed for 90 percent of losses, and the portfolio limit on claims was removed by the FHA Manufactured Housing Loan Modernization Act of 2008. Therefore, the difference may reflect a more limited secondary market for these loans.

The Manufactured Housing Improvement Act of 2000 encourages the government-sponsored enterprises “to actively develop and implement secondary market securitization programs for the FHA manufactured home loans and those of other loan programs, as appropriate, thereby promoting the availability of affordable manufactured homes to increase homeownership for all people in the United States.” The policy goal was reiterated in the Housing and Economic Recovery Act of 2008 (Public Law 110-289), which states that Fannie Mae and Freddie Mac have a “duty to serve” manufactured housing, including developing “loan products and flexible underwriting guidelines to facilitate a secondary market for mortgages on manufactured homes for very low-, low- and moderate-income families.” The Act also singles out rural housing markets, where manufactured homes are a greater share of the housing stock. Fannie Mae and Freddie Mac have proposed pilot programs to securitize personal property loans on manufactured homes (Fannie Mae, 2021; Freddie Mac, 2020). However, they currently levy higher fees on manufactured home mortgages; for example, Fannie Mae charges a 50-basis-point upfront charge to purchase mortgages on manufactured homes. Private mortgage insurance can add another 18 to 60 basis points to the monthly cost.

Homeownership without landownership is akin to buying down rent. The upfront cost of buying the housing unit may lower subsequent housing expenses. The potential benefits of this buydown, however, depend on the terms used to finance the purchase and the stability of tenure after purchase. FHA was instrumental in increasing homeownership by popularizing the long-term amortizing mortgage that dominates the American housing finance system. It has an opportunity to play a similar role increasing access to affordable housing by increasing the availability of personal property loans with appropriate risk management and consumer protections.

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