

# **A Cautionary Tale of How the Presence and Type of Down Payment Assistance Affects the Performance of Affordable Mortgage Loans**

A Working Paper prepared for the Center for Household Financial Stability at the Federal Reserve Bank of St. Louis

By

\*Michael A. Stegman, Ph.D.

\*\*Sarah F. Riley, Ph.D.

\*\*\*Roberto G. Quercia, Ph.D.

October 2019

\*Senior Fellow in the Center for Household Financial Stability at the Federal Reserve Bank of St. Louis, Senior Fellow in the Center for Community Capital, University of North Carolina at Chapel Hill, and Senior Fellow at the Joint Center for Housing Studies at Harvard University

\*\*Senior Research Economist, Center for Community Capital, University of North Carolina at Chapel Hill

\*\*\*Harris Distinguished Professor, City and Regional Planning, and Director, Center for Community Capital, University of North Carolina at Chapel Hill

## Introduction

Despite technological advances, buying and financing a home remains a complicated process fraught with unknowns and uncertainties. This is especially true for inexperienced low- and moderate-income (LMI) renters. For example, a recent Fannie Mae ethnographic study of LMI aspiring homebuyers found that unstable income and insufficient credit history are among the barriers to a successful search. Fannie Mae found that these challenges were often compounded by research participants' inability to recognize "the importance of building credit and saving until they wanted to buy a home," which extended the length of the home purchase process (Palim 2018).

Even though Fannie Mae and Freddie Mac returned to very-low down payment lending following the financial crisis – with each offering new versions of their respective 3% down payment loan products – saving for a down payment remains one of the biggest barriers to obtaining a home mortgage (Gudell 2017). Although most research finds that higher leverage increases default risk, the post-financial crisis share of conventional 30-year purchase loans requiring 10% down or less rose from 5% in 2010 to 35% in 2018 (Barrett and Maloney 2018). What is most striking about this return to high-leverage home lending is the proliferation of both privately sponsored and government-funded down payment assistance (DPA) programs across the country. There are now more than 2,000 such programs, and these have the collective effect of reducing first-time home buyers' contributions from as little as 3% to something substantially less.<sup>1</sup> In the view of one group of researchers, this shift is "possibly fundamentally changing the economics of low-down-payment lending" (Goodman, et al. 2017).

The role of leverage in loan performance has a long and distinguished research record, which will not be repeated here (Deng, et al. 1996; Theodos, Stacy, and Monson 2015; LaCour-Little, 2008). One question that has yet to be answered is whether the addition and form of DPA in conjunction with low-down payment purchase loans has an independent effect on default risk. That is the focus of this article.

The data for the analysis that follows reflects administrative loan performance data provided by Self-Help and a panel survey overseen by the University of North Carolina at Chapel Hill's Center for Community Capital.<sup>2</sup> The survey was part of a long-term study of LMI and minority homeowners, undertaken to identify specific lending practices that enable or inhibit successful homeownership. The paper is structured as follows. We begin by describing the data and methods we use. Next, we describe the results of our analysis. We conclude with some thoughts about how policy makers should approach down payment assistance, with a particular focus on how race/ethnicity aligns with the form that DPA might take.

---

<sup>1</sup> Two data points provide a good sense of how embedded into the first-time homebuyer process down payment assistance has become. In 2016, across all 53 members of the National Council of State Housing Agencies, each HFA originated an average of more than 2,100 down-payment assisted purchase mortgages for low-income, first-time homebuyers, with DPA averaging more than \$5,500 (NCHSA 2018). For 18 of the 44 HFAs rated by Moody's, more than 90% of all production is now DPA-driven (Moody's Investors Service 2017). Turning to the Federal Housing Administration (FHA), more than 30% of all FHA purchase loans now carry some form of DPA, with HUD embroiled in ongoing controversy and litigation with DPA providers over the rules going forward because of concerns over loan performance (Guerin 2019).

<sup>2</sup> For examples of prior research using these data, see Freeman and Desmarais (2010); Freeman and Harden (2015); Quercia, Pennington-Cross, and Tian (2016); and Tian, Quercia, and Riley (2016).

## Data and Methods

### Community Advantage Program and Panel Survey

The Community Advantage Program (CAP) is a partnership among the Ford Foundation, Fannie Mae, and Self-Help, a non-profit lender with headquarters in Durham, NC, that began in 1998. CAP is a secondary mortgage market demonstration program of loans targeted to low-and moderate-income households. The Ford Foundation provided the underwriting capital for the program, enabling Self-Help to purchase qualifying loans from originating lenders throughout the country and resell them to Fannie Mae while retaining recourse for a pre-agreed period (usually 5-10 years).

Qualifying loans were those made to borrowers with household incomes less than 80% of the area median income, or to minority borrowers or those located in high-minority neighborhoods with household incomes less than 115% of the area median. CAP loans are primarily 30-year, fixed-rate mortgages originated with high loan-to-value ratios (median 97%) and near-prime interest rates<sup>3</sup>. The overall portfolio includes more than 46,000 loans, about 90% of which were originated between 1995 and 2005. The Self-Help administrative loan database contains details regarding loan and borrower characteristics at the time of loan origination, as well as monthly loan payment information, which enables us to examine the drivers of mortgage performance over time. As of the first quarter of 2018, about 16 percent of all CAP loans were still active; about 72 percent had prepaid, 7 percent had terminated in a foreclosure sale<sup>4</sup>, and 5 percent had been re-purchased by the originating lender.

Several years after the start of CAP, we decided to survey a sample of borrowers in an effort to evaluate aspects of their homeownership experiences that were not captured by Self-Help's administrative data. The Ford Foundation provided funding for this longitudinal data collection effort, which became known as the Community Advantage Panel Survey (CAPS)<sup>5</sup>. At the time CAPS began, Self-Help had purchased approximately 7,000 loans, all of which were put on a call list during the survey baseline. During the screening process, efforts were made to exclude full-time students and retirees from the sample, and to retain for surveying those borrowers who still owned the CAP property and for whom the original CAP mortgage was still active. About 3,700 borrowers completed the screening process and participated in the baseline survey that was completed in 2003. Many of these borrowers were re-interviewed annually through 2014, along with a companion panel of similar renters. As has been discussed elsewhere in detail, the homeowners that participated in CAPS have somewhat higher levels of labor force attachment and educational attainment, and are more likely to live in the South, than are other lower income households in the US; however, they are similar to this broader population with respect to distributions of race and income (Riley, Ru, and Quercia 2009).

A major goal of the survey was to collect detailed wealth and asset information so that the net worth of CAP borrowers could be tracked over time relative to that of the comparison group of renters. Existing research using CAPS wealth data indicates that those CAP home owners who sustained homeownership over time tended to accumulate more wealth than renters who continued to rent who were similar to

---

<sup>3</sup> In place of mortgage insurance, Self-Help charges a risk fee that is incorporated into the mortgage interest rate.

<sup>4</sup> Loss severities for foreclosed loans in our analytic sample do not differ significantly by down payment assistance receipt or type when loan characteristics are taken into consideration.

<sup>5</sup> We thank the Ford Foundation and Self-Help for generously providing the funding and administrative data, respectively, for this project.

the home owners with respect to observed characteristics.<sup>6</sup> Wealth differences reflect home equity accumulation resulting from mortgage pay-down, home price appreciation, and greater accumulation of non-housing assets on the part of the home owners compared to their renter counterparts (Grinstein-Weiss et al., 2013). Moreover, counterfactual simulations comparing the investment decisions of CAPS home owners who sustained homeownership with those of CAPS renters indicate that the home owners did not substantially reduce their portfolios of non-housing assets, or increase other borrowing as a result of gains in home equity, suggesting that leveraged homeownership may serve as a forced savings mechanism for low-income households (Freeman and Desmarais, 2010).

More generally, the survey topics covered by CAPS have varied from year to year. Along with information about household demographics, the baseline CAPS interview collected information regarding borrower experiences during the loan origination process, such as how much borrowers paid in down payment and fees at closing, whether they received financial assistance with these costs when purchasing their homes, and whether they had previously been rejected for a mortgage. We combine the baseline survey data with the administrative data from Self-Help's database to examine the relationship between down payment assistance (DPA) and subsequent mortgage performance. Our analytic sample consists of 3,089 CAP loans for which we have complete survey and administrative data for the analytic variables of interest<sup>7</sup>.

Our analysis complements and extends prior work by Freeman and Harden (2015), who use cross-sectional methods to examine the characteristics of CAP borrowers who received DPA, as well as the relationship between DPA and the worst degree of mortgage delinquency exhibited by CAP borrowers during the period of 2003-2011 (never delinquent, 30-90 days delinquent, more than 90 days delinquent or foreclosed). Controlling for socioeconomic, demographic, and underwriting characteristics, they find statistically significant differences in the use of DPA by race: specifically, while Whites and Blacks exhibit similar probabilities of receiving assistance overall, Blacks are less likely than Whites to receive DPA from family or friends and more likely to receive assistance in the form of a government or community grant. In addition, the authors find no evidence of an association between the receipt of DPA (defined as any kind of down payment assistance) and the likelihood of mortgage delinquency. In our analysis, we consider the relationship of DPA to both default and prepayment in a competing-risks framework, and we examine the potentially varied roles of the different types of DPA with respect to these mortgage performance outcomes.

## Empirical Methods

As a means of illustrating key patterns in the data, we first present a descriptive analysis of loan and borrower characteristics for our analytic sample. We then conduct tests of differences across those

---

<sup>6</sup> Because CAPS homeowners and renters also likely differ with respect to unobservable characteristics, these differences in wealth accumulation may reflect selection on unobservables rather than causal effects of homeownership.

<sup>7</sup> We omit 337 loans due to missing survey data concerning the amount paid at closing and whether any form of assistance was received; the survey instrument was structured such that respondents who either could not recall or refused to provide the amount paid at closing were not subsequently asked about what sources of funds were used as payment, so we are unable to establish which of these cases may have received some form of assistance. In addition, we omit 317 loans due to missing administrative data, of which about half represent missing credit score information. However, including cases with missing credit scores in our models via credit score buckets instead of a continuous credit score measure does not substantively change our results.

groups of borrowers who either did or did not receive assistance as a means of categorizing borrower types that exist in the data with respect to the receipt of assistance. Following this initial exploration, we estimate a multinomial logit model predicting mortgage default and prepayment. The multinomial logit model is widely used in the mortgage performance literature due to its simplicity, ability to capture the trade-offs inherent in competing risks, and tendency to produce results that are similar to more complicated hazard modeling frameworks (LaCour-Little 2008). Formally, suppose that the mortgage status  $Y_i$  of borrower  $i$  can take on a possible value of default (D), prepayment (P), or active (A) in each observation period. Then the log odds of default and prepayment are given by:

$$\ln\left(\frac{P(Y_i = D)}{P(Y_i = A)}\right) = \alpha_D + \sum_{n=1}^N \beta_{n,D} X_{n,D} + \epsilon_D$$

$$\ln\left(\frac{P(Y_i = P)}{P(Y_i = A)}\right) = \alpha_P + \sum_{n=1}^N \beta_{n,P} X_{n,P} + \epsilon_P$$

where the  $\alpha$  and  $\beta$  are the parameters to be estimated and  $N$  denotes the total number of covariates included in the model. As a robustness test, we also consider an extended version of the model in which we differentiate between possible types of prepayment, namely prepayment due to refinance and prepayment due to a move. In the extended framework, we consider these types of prepayment as competing risk categories in addition to default.

For estimation purposes, the data set is structured as an event history with multiple observations per loan, with censoring in the event of default or prepayment. Thus, the estimation sample for the multivariate model consists of 152,135 loan-month observations. Consistent with the existing loan performance literature, we define default as the first 90-day delinquency observed in the borrower's payment history.

In all of our specifications, we incorporate standard controls capturing loan and borrower origination characteristics and economic conditions. These controls have previously been found to be significant predictors of CAP mortgage performance (Quercia, Pennington-Cross, and Tian 2016; Tian, Quercia, and Riley 2016). Time-invariant controls include the borrower's original credit score, debt-to-income ratio<sup>8</sup>, household income as a fraction of the area median income, and fixed effects for the year and state of loan origination. Time-varying controls include the current loan-to-value ratio, an indicator for household-level unemployment shocks reported in the survey data, the county-level monthly unemployment rate, the value of the option to refinance to a 30-year fixed mortgage, and 8-quarter-forward volatilities for house prices and mortgage interest rates.

---

<sup>8</sup> We measure the debt-to-income ratio as the fraction of the borrower's monthly income that goes toward paying the mortgage.

We calculate the current loan-to-value ratio as the ratio of the unpaid principal balance on the mortgage to the original house value adjusted by the Federal Housing Finance Agency (FHFA) house price indices at the metro level; in the fraction of cases where metro-level index values are not available, we substitute state-level index values. In addition, we obtain local unemployment rates from the Bureau of Labor Statistics, and we derive the value of the refinance option using the interest rate on the CAP mortgage in combination with the average interest rate for the 30-year fixed mortgage reported in Freddie Mac's Primary Mortgage Market Survey (PMMS). Formally, the potential gain to the borrower from refinancing at time  $t$  can be expressed as the percentage reduction in the discounted present value of the stream of future mortgage payments that would be made if the current mortgage were held rather than refinanced at the current market rate<sup>9</sup>:

$$100 * \left[ \frac{PV_{ct} - PV_{rt}}{PV_{ct}} \right]$$

where  $PV_{ct}$  denotes the present value of the future stream of mortgage payments for the current mortgage and  $PV_{rt}$  denotes the present value of the future stream of mortgage payments for the refinanced mortgage. For each loan, the present value is calculated as follows:

$$PV_{jt} = \sum_{m=0}^{RMT} \frac{P_{jt}}{(1 + d_t)^m}, \quad \text{for } j = c, r$$

where the discount rate  $d_t$  is assumed to be the mortgage interest rate and the remaining loan term  $RMT$  varies with time  $t$ . Moreover, for current interest rate  $i_{ct}$ , alternative interest rate  $i_{rt}$ , and unpaid mortgage balance  $Q$ , the mortgage payment  $P_{jt}$  is given by

$$P_{jt} = i_{jt} Q \left[ \frac{(1 + i_{jt})^{RMT}}{(1 + i_{jt})^{RMT} - 1} \right], \quad \text{for } j = c, r$$

We include the refinance option value in predicting default as well as prepayment, given the theoretical potential for an increase in fixed-rate mortgage defaults to result from a falling interest rate environment (for discussion, see Shi and Riley 2014), such as that observed during the first few years

---

<sup>9</sup> The assumption is made that the two loans are comparable with respect to the remaining loan term, and that the average rate for a 30-year, fixed-rate mortgage is a reasonable approximation of the interest rate that the borrower would receive under a refinance.

following the loan originations of CAP survey participants. We expect the refinance option value to be positively associated with both default and prepayment risks during the time period considered.

Finally, we derive the house price and interest rate volatilities using the FHFA indices and PMMS interest rate values. These measures respectively represent the forward moving variances of house prices and interest rates and potentially capture borrower expectations regarding future values of these series<sup>10</sup>.

### Measures of Down Payment Assistance

After presenting the estimates from our benchmark specification, which consists of the above measures, we present additional specifications incorporating assistance-related control variables. In particular, the survey asks participants to report the combined amount of down payment and closing costs that they paid at closing, the portion of these costs that they paid out of personal savings, and the sources of funds that were used to cover any differences between the total and their personal contribution.

Possible sources of supplemental funds were (1) family and friends, (2) a second mortgage, (3) a grant from a government or community organization, and (4) the seller or agent<sup>11</sup>.

Using this information, we create a series of dichotomous measures for analytic purposes. Our first indicator captures whether assistance was received; this measure takes on a value of 1 if any funds other than the respondent's personal savings were used to cover down payment and closing costs, and is equal to 0 otherwise. In addition, we create similar indicators for each of the four possible kinds of assistance reported. Each of these indicators takes on a value of 1 if the respondent reported receiving the respective type of assistance, and is equal to 0 otherwise. We expect that the receipt of assistance will be associated with lower prepayment risk and possibly higher default risk, due to the possibility that some higher risk borrowers self-select into assistance programs and the tendency of assistance granting organizations to provide disincentives for prepayment.

As mentioned above and discussed in more detail below, the use of various forms of DPA varies across racial groups. Therefore, it is possible that the relationship of DPA to mortgage performance may vary when race is taken into consideration. For this reason, we consider several specifications incorporating racial controls.

Finally, to capture the potential impact of the personal savings contribution to down payment and closing costs, we also construct a ratio of this contribution to the house value at the time of purchase. For convenience, we will refer to this measure as the "personal savings contribution ratio" below. We expect that this metric will predict mortgage performance in addition to the loan-to-value ratio, because the receipt of assistance potentially weakens the correspondence between the borrower's contribution and original home equity.

---

<sup>10</sup> Given that the CAP loans in our sample were originated during a short window of years and are concentrated in southern states, there may be insufficient variation among survey respondents for these volatilities to reach statistical significance. However, omitting the volatility measures from our specifications does not change the other estimation results, so we include them for theoretical reasons.

<sup>11</sup> Note that the Housing and Economic Recovery Act (HERA) prohibited seller/agent assistance due to a history of poor performance.

## Results

### Descriptive Analysis

We summarize loan and borrower characteristics for our analytic sample in Table 1. At the time of loan origination, the average borrower in our sample had a relative income of 59% of the area median income (AMI), a debt-to-income ratio (DTI) of 27%, and a credit score of 673. Approximately 64% of the borrowers in the sample are White; an additional 19% are Black, and a further 14% are Hispanic. About one-in-five borrowers took out their CAP loans with a co-borrower, and about 30% had a prior banking relationship with the originating lender. About 20% of the sample submitted a mortgage application to at least one additional lender prior to taking out the CAP mortgage, and about 6% also had one or more applications rejected.

The CAP loans in our sample were originated during 1999-2003, with 25.8% originated in 2000, 30.2% originated in 2001, and 37.5% originated in 2002. While CAP originations were distributed throughout the US, the five states with the largest origination shares are North Carolina (27.9%), Ohio (12.4%), Oklahoma (11.2%), Illinois (5.2%), and California (3.8%). The average CAP loan was originated at an interest rate of 7.67% with a loan-to-value (LTV) ratio of 96% for the purchase of a property valued at about \$83,000. Since half of all CAP loans in the sample had an original LTV ratio of 97% or above, and only 10% had an original LTV ratio less than 91%, an important limitation of our analysis is that variation in the size of the down payment is limited in our data. Thus, while our results are relevant to low-down-payment mortgage lending, they may not be generalizable to mortgage lending involving larger down payments<sup>12</sup>.

We follow these CAP loans for a period of ten years, by the end of which about 17.5% had defaulted (ever experienced a 90-day delinquency or worse), about 66.4% had prepaid, and 16.1% remained active. As illustrated in Figure 1, which graphs the annual prepayment and default hazards against years of loan seasoning, the annual prepayment hazard rises sharply during the first few years of the loan, reaches a maximum of about 25% in the third year, and subsequently declines, eventually stabilizing at about 10% by year 10. On average, the loans in the sample were active for about 4.4 years<sup>13</sup> prior to default, prepayment, or censoring. The ten-year cumulative foreclosure sale rate for these CAP loans (data not shown) ranges between five and seven percent depending on the vintage, which indicates that the majority of CAP loans that reached 90-day delinquency did not end in a foreclosure sale during the observation period.

Figure 2 illustrates the three-year cumulative default rate for these CAP loans relative to that of other loan types originated during the period of 2000-2003. We use a thirty-six month window to compare loan performance because early defaults are more likely to be triggered by a combination of poor underwriting, putting borrowers into unaffordable mortgages, and poor servicing, rather than macroeconomic-related causes like job loss. The figure indicates that CAP loans are less likely than all

---

<sup>12</sup> Sample size limitations prevent us from testing whether our multivariate results concerning the relationship between down payment assistance and mortgage performance differ for those CAP borrowers with original LTV ratios below 90%.

<sup>13</sup> Note that this is shorter than the actual average loan duration, because in reality loans that default can cure or take several years to go through foreclosure, and some loans remain active for more than 10 years. For the CAP portfolio as a whole, as of the end of 2018Q1, the average life of terminated loans was 5.9 years. If we assume a termination date of 2018Q1 for loans that were still active as of that date, this estimate rises to 7.5 years.



other loan types except Prime to default during the first three years following origination. In particular, the cumulative three-year default rate is approximately 7% for the CAP loans in our analytic sample, compared with about 2% for Prime loans, 9% for FHA loans, 10% for Low FICO loans (credit score < 620) and Sub Prime loans, and 11% for Alt-A loans. These differences in early loan performance may reflect underwriting and preventive servicing practices that are specific to Self-Help.<sup>14</sup>

As further indicated in Table 1, the CAP borrowers in our sample owed an average of \$4,323 at closing in the form of down payment and fees, and they contributed an average of \$2,857, or about 3.4% of the home purchase price, from personal savings toward this amount. Put differently, slightly more than half (56.7%) of CAP borrowers funded the down payment and fees at closing entirely out of personal savings, while the remainder received one or more forms of assistance in covering these costs. About 13.6% received assistance from family or friends; 2.2% took out a second mortgage; 8.8% received a grant from a government or community organization; and 22.6% received funds from the property seller or agent. About 7% of the sample reported receiving more than one type of assistance.

In Table 2, we summarize average borrower and loan characteristics by whether assistance was received, and by type of assistance if other sources of funds were used. We assess statistically significant differences between the means of each of the DPA groups and those borrowers who did not receive assistance via two-sample t-tests for the continuous measures. For the dichotomous measures, we assess differences in proportions between the assistance groups and the non-assistance group using Chi-square tests where feasible, and Fisher's exact test in the case of small cell sizes. On average, DPA recipients exhibit similar relative incomes at loan origination. In addition, assistance recipients owe significantly more on average in down payment and fees at closing than non-recipients (\$5,106 vs. \$3,724), and they pay less of the amount owed from personal savings, both in dollar terms (\$1,723 vs. \$3,724) and as a percentage of the house value (2.0% vs. 4.5%). DPA recipients are also more likely to be White (66.2% vs. 61.8%) and less likely to be Hispanic (10.8% vs. 16.7%).

Closer inspection reveals additional significant differences by type of DPA. Borrowers who received assistance from family or friends faced a 14 bp interest rate premium, are more likely to be White (74.7% vs. 61.8%), and are less likely to be Black (13.6% vs. 18.1%) or Hispanic (9.6% vs. 16.7%); otherwise, these assistance recipients look similar to non-recipients. In contrast, those borrowers who took out a second mortgage to cover part of their down payment and closing costs differ from non-recipients in that they have a lower relative income (54.7% vs. 59.5%), a higher DTI ratio (28.5% vs. 26.4%), a lower LTV ratio (93.7% vs. 96.3%), and a higher purchase price (\$101,295 vs. \$82,244). These borrowers also were significantly less likely than non-recipients to have a co-borrower (10% vs. 21%),

---

<sup>14</sup>CoreLogic, who ran the non-CAP loan vintage analysis for us, defines subprime loans in terms of the overall lender profile and not in term of either particular loan terms or borrower attributes: this definition makes the loans in this cohort more heterogeneous than the category might imply. The rationale for relying on lender profile is that there is no universally agreed upon definition of subprime. The particular type of subprime loans that CAP was designed to replace were largely 2-28 "exploding ARMs." In these loans, after 24 months a very low teaser rate rose to an unaffordable higher "market" rate, requiring the borrower to refinance into another subprime loan. When borrowers were flipped into another subprime loan, lenders and investors received new origination, single premium credit insurance, and prepayment penalty fees, and brokers received yield spread premiums. The average life of subprime loans was extremely short, with a refi not representing a success, but rather a process of serial equity stripping; in the worst cases, this resulted in the loss of the house to foreclosure. While not defined by lender type, the Alt-A cohort is similarly heterogeneous.

have a prior relationship with the originating lender (16% vs. 30%), or have any previous loan applications rejected (1.4% vs. 6%). Second mortgage recipients are also much more likely to be Black (43.5% vs. 18.1%) and less likely to be White (43.5% vs. 61.8%) or Hispanic (8.7% vs. 16.7%). Of all assistance groups, those who took out a second mortgage also owed the most at closing in down payment and fees (\$7,279) and contributed the least out of personal savings (\$1,383, or 1.5% of the purchase price), on average. The fact that second mortgage recipients were not only approved for subordinate funding (i.e., the second mortgage) but also significantly less likely to have had a previous loan application rejected by a different lender suggests that these borrowers may represent better credit risks.

On average, recipients of grant DPA from a government or community organization exhibit the lowest relative income (52%), lowest credit score (664), lowest LTV ratio (93%), and lowest purchase price (\$78,346) of any of the assistance groups, and in all of these respects they differ significantly from non-recipients. Like the other DPA groups, recipients of grant assistance owe significantly more than non-recipients at closing (\$6,373 vs. \$3,724) and contribute less from personal savings (\$1,456 vs. \$3,742, or 1.9% vs. 4.5% of the house value). Recipients of grant assistance are significantly less likely than non-recipients to be White (53.3% vs. 61.8%) and more likely to be Black (29.8% vs. 18.1%).

Table 3 provides additional frequencies summarizing the relationship of borrower race to the type of DPA. Borrowers who did not receive any form of DPA represent more than half of each racial group, accounting for 55.0% of Whites, 53.8% of Blacks, a significantly greater 66.8% of Hispanics, and 62.7% of those in other racial groups. Blacks are significantly less likely than Whites to have received assistance from family or friends (9.7% vs. 15.9%) but significantly more likely than Whites to have received assistance via a second mortgage (5.1% vs. 1.5%) or to have received a government or community grant (13.8% vs. 7.4%). Hispanics are significantly less likely to have received assistance from family or friends (9.2% vs. 15.9%) or from the property seller or agent (14% vs. 24%).

In addition, Table 4 summarizes mean interest rates for the CAP mortgages by race and type of DPA. As compared with those of Whites, the CAP mortgages of Blacks carry significantly higher interest rates among those who received no assistance (7.95% vs. 7.76%) and those who received assistance from the property seller or agent (7.75% vs. 7.57%). In contrast, the CAP mortgage interest rates of Hispanics are significantly lower than those of Whites among those who received no assistance (7.26% vs. 7.76%), among those who received assistance from family or friends (7.42% vs. 7.87%), and among those who took out a second mortgage (6.90% vs. 7.67%).

Table 5 summarizes the average active loan period and cumulative loan performance by type of assistance as of the end of the sample observation period (up to ten years). On average, the loans of borrowers who did not receive any form of assistance were active for 4.3 years prior to default, prepayment, or censoring, which is slightly lower than the average active loan period of 4.5 years for borrowers who received any type of DPA. Borrowers who received some form of assistance were only slightly less likely to have prepaid by the end of the observation period (64% of assistance recipients had prepaid, vs. 68% of non-recipients) and did not exhibit a significantly different cumulative rate of default overall during the period (18% vs. 16%). Closer examination by type of assistance reveals significantly higher average active loan periods, higher default rates, and lower prepayment rates among borrowers who received a grant from a government or community organization or who received assistance from the seller or agent, as compared with borrowers who did not receive any form of DPA. The differences

are most pronounced for recipients of government or community grant assistance, who have an average active loan period of 5.2 years, a cumulative default rate of 24%, and a cumulative prepayment rate of 53%. Thus, in the absence of controls for borrower and loan characteristics, which we consider in the next section, recipients of grant assistance appear more likely to default and less likely to prepay than borrowers who did not receive any assistance.

Finally, Tables 6-8 summarize the realized house price appreciation and equity accumulation of the CAP homeowners in the analytic sample. House price appreciation is measured from loan origination to the end of the active loan period. Equity is measured as of the end of the active loan period as the difference between the estimated house value<sup>15</sup> and the outstanding principal balance on the CAP mortgage<sup>16</sup>. We provide estimates of appreciation and equity both in total and relative to the original house value, as well as on an annualized basis. In addition, we provide both nominal and real estimates; the latter are measured in constant dollars for 2003<sup>17</sup>, the last year in which mortgages in our sample were originated. Moreover, we calculate a measure of net equity defined as the difference between the accumulated home equity and the personal savings contribution of the borrower.

Table 6 presents the distributions of appreciation and equity outcomes for the sample as a whole. In real terms, the CAP borrowers in the sample experienced total house price appreciation of \$6,074 on average, and \$3,323 at the median. These estimates represent approximately 6% and 4.5% of the original house value, respectively, and correspond to real annualized appreciation rates of 2.5% and 1.8%. Real home equity accumulated by the end of the active loan period was \$21,433 on average and \$15,193 at the median, which correspond to 24.2% and 20% of the original house value, respectively. Removing the personal savings contribution from home equity, we estimate net equity at \$18,478 on average and \$12,742 at the median, or 20.8% and 16.5% of the original house value, respectively.

Tables 7 and 8 provide mean and median estimates of the same measures broken down by whether and what type of DPA was received. Overall, those borrowers who received some form of DPA experienced similar rates of house price appreciation and accumulated similar amounts of home equity as those who did not receive assistance, and the estimates for these two groups are similar to those for the sample as a whole. Net equity is higher for DPA recipients by about \$2,000 because they contributed less out of pocket at the time of loan origination.

Among DPA recipients, total house price appreciation and equity accumulation are also roughly similar across assistance type groups, with the exception of second mortgage recipients, who experienced a higher real annualized rate of house price appreciation (5.9% on average, 3.1% at the median). The fact that second mortgages recipients experienced higher house price appreciation is consistent with the idea that lenders approved second mortgages in areas with high expected appreciation rates. Recipients of grant assistance experienced a lower rate of real annualized house price appreciation than the other

---

<sup>15</sup> We estimate the house value using the FHFA house price indices. Please refer to the “Empirical Methods” section for additional details.

<sup>16</sup> We do not remove the value of the second mortgage for those borrowers who received DPA in the form of a second mortgage, because many of these borrowers received more than one form of assistance, and the amount of the second mortgage is not clear. Thus, a limitation of our analysis is that the equity estimates for second mortgage recipients may be inflated.

<sup>17</sup> We adjust for inflation using the Consumer Price Index for All Urban Consumers (All items less shelter) obtained from the Bureau of Labor Statistics.

groups (2.3% on average, 1.1% at the median) but, as noted above, also tended to have a longer active loan period on average. The home equity of grant assistance recipients as a fraction of the original house value is also slightly higher than that of the other assistance groups (aside from second mortgage recipients) because grant recipients tended to buy less expensive houses<sup>18</sup>. Thus, CAP borrowers accumulated similar amounts of housing wealth by the end of the observation period regardless of whether they received DPA, and the minor differences that we observe across assistance groups appear primarily to reflect underlying differences in market conditions and property characteristics.

### Multivariate Analysis

In Tables 10 and 11, respectively, we present our primary mortgage performance results regarding the drivers of default and prepayment. For summary statistics for the variables used in these specifications, we refer the interested reader to Table 9. For ease of model interpretation, all continuous measures except loan age are normalized to have a mean of 0 and standard deviation of 1.

As indicated in our benchmark specification (Specification 1) in Tables 10 and 11, a higher origination credit score is associated with lower default risk, while the refinance option value and household unemployment shocks are associated with higher default risk. Moreover, we observe higher prepayment risk for borrowers with a higher relative income, higher credit score, lower current LTV ratio, higher purchase price, and higher refinance option value, as well as for those borrowers who did not become unemployed or were located in areas with lower rates of unemployment.

As indicated in Specifications 2-6, in contrast to the descriptive analysis, the receipt of DPA is not significantly associated with default risk; grant assistance from a government or community organization is marginally significant in Specification 3, but this effect disappears when racial controls are incorporated in the model. However, those borrowers who received DPA in the form of a grant from a government or community organization are significantly less likely to prepay and have about 26% lower odds of doing so, compared with borrowers who received no assistance<sup>19</sup>. In other respects, the receipt of DPA appears to be unrelated to mortgage performance<sup>20</sup>.

All else equal, Specifications 4-6 also indicate that default risk is significantly higher among Blacks than among Whites, whereas prepayment risk is lower among Blacks and Hispanics than among Whites. These results are consistent with previous literature suggesting that racial/ethnic minorities tend to default at higher rates and prepay more slowly than Whites (for example, see Kelly (1995) and Anderson and Vanderhoff (1999)). We also consider additional specifications that include the interaction of race with grant assistance (results not shown), but these interaction terms are not significant, and including them in the model does not meaningfully alter the other results. Thus, the relationship of down payment assistance to mortgage performance does not appear to vary with race.

In Specification 5, we also consider the possibility that the relationship of DPA to mortgage performance may vary with house price volatility. In particular, we include an interaction term for house price

---

<sup>18</sup> Please refer to Tables 2 and 4 for average purchase prices and active loan periods by DPA type.

<sup>19</sup> As indicated in the Appendix, this effect is most salient during the first two years following the origination of the mortgage.

<sup>20</sup> We also consider alternative specifications in which we include the calculated assistance amount in place of some or all of the assistance indicators, either in log form or as a fraction of the house value, and this amount does not significantly predict mortgage performance.

volatility and the receipt of grant assistance. Given that grant assistance programs often provide a disincentive for prepayment in the form of phased assistance forgiveness, it may be that the relationship of grant assistance to mortgage performance differs in the presence of high volatility, which will have been more common in markets that experienced high rates of appreciation prior to the housing downturn that began in 2007. In particular, Specification 5 indicates that the interaction of house price volatility does not impact the relationship of grant assistance to default risk but does mitigate the slower rate of prepayment observed among grant assistance recipients. This result is consistent with the idea that higher house price appreciation can offset the prepayment disincentives provided by government or community assistance organizations (Stegman 2019).

In Specification 6, we consider the relationship of the personal savings contribution ratio to mortgage performance.<sup>21</sup> Tables 10 and 11 indicate that those borrowers with a higher personal savings contribution ratio are significantly less likely to default, all else equal, and are also slightly less likely to prepay. In Table 12, we present additional estimates for Specification 6 derived from our extended model, which differentiates between the two possible types of prepayment: (1) prepayment due to a refinance and (2) prepayment due to a move. In this framework, we observe that a higher personal savings contribution ratio significantly reduces the risk of prepayment due to a refinance. Moreover, while the receipt of grant assistance continues to be associated with a reduced risk of prepayment, this effect is only statistically significant for prepayment due to a move<sup>22</sup>.

## Conclusion

Down-payment assistance has become an important component of mortgage finance for a growing segment of first-time homebuyers. Because of its explosive growth and the likelihood that it will become a fixture in mortgage finance going forward, policy makers and financial regulators are rushing to define the rules of DPA lending with little analytical evidence to guide them. Descriptive data from the Department of Housing and Urban Development indicate that serious delinquency rates are generally higher for FHA purchase loans with DPA than for loans without DPA; further, within the DPA pool, serious delinquency rates are disproportionately higher for mortgages where DPA came from governmental entities rather than from gifts from family or friends (HUD 2018). In the absence of controls for borrowers and loan characteristics, we also find that recipients of grant assistance from a governmental entity appear more likely to default than borrowers who did not receive any assistance.

In contrast to these descriptive analyses, our multivariate analysis indicates that the receipt of DPA is not significantly associated with default risk. In particular, while grant assistance from a government or community organization is marginally significant as a predictor of default risk in one of our model specifications, this effect disappears altogether when racial controls are incorporated in the model. Thus, the receipt of DPA appears to be unrelated to default risk.

This finding is important because of the importance of DPA to minority borrowers, especially assistance in the form of grants and loans from government programs, rather than from friends and family. Since

---

<sup>21</sup> Note that the personal savings contribution ratio has a correlation of about 0.20 with the indicator for any type of assistance. Considering these variables in separate models does not change the results.

<sup>22</sup> We also consider specifications controlling for housing turnover and median year of construction in the census tract where the CAP house is located, but these additional measures do not account for the relationship between grant assistance and prepayment risk.

we find that CAP households with DPA were as able to benefit financially from rising markets as those without DPA, in setting guidelines around down payment assistance, policy makers should take care not to close off opportunities to aspiring minority home buyers.

In closing, the results summarized above reflect the default experiences of LMI borrowers during the unique time period leading up to the financial crisis, and its aftermath. Future research should replicate this analysis using data from a different period. Ideally, such a data set should include all the predictors needed to capture the experience of a different sample of LMI borrowers with and without DPA while taking into consideration loan and borrower characteristics.

## References

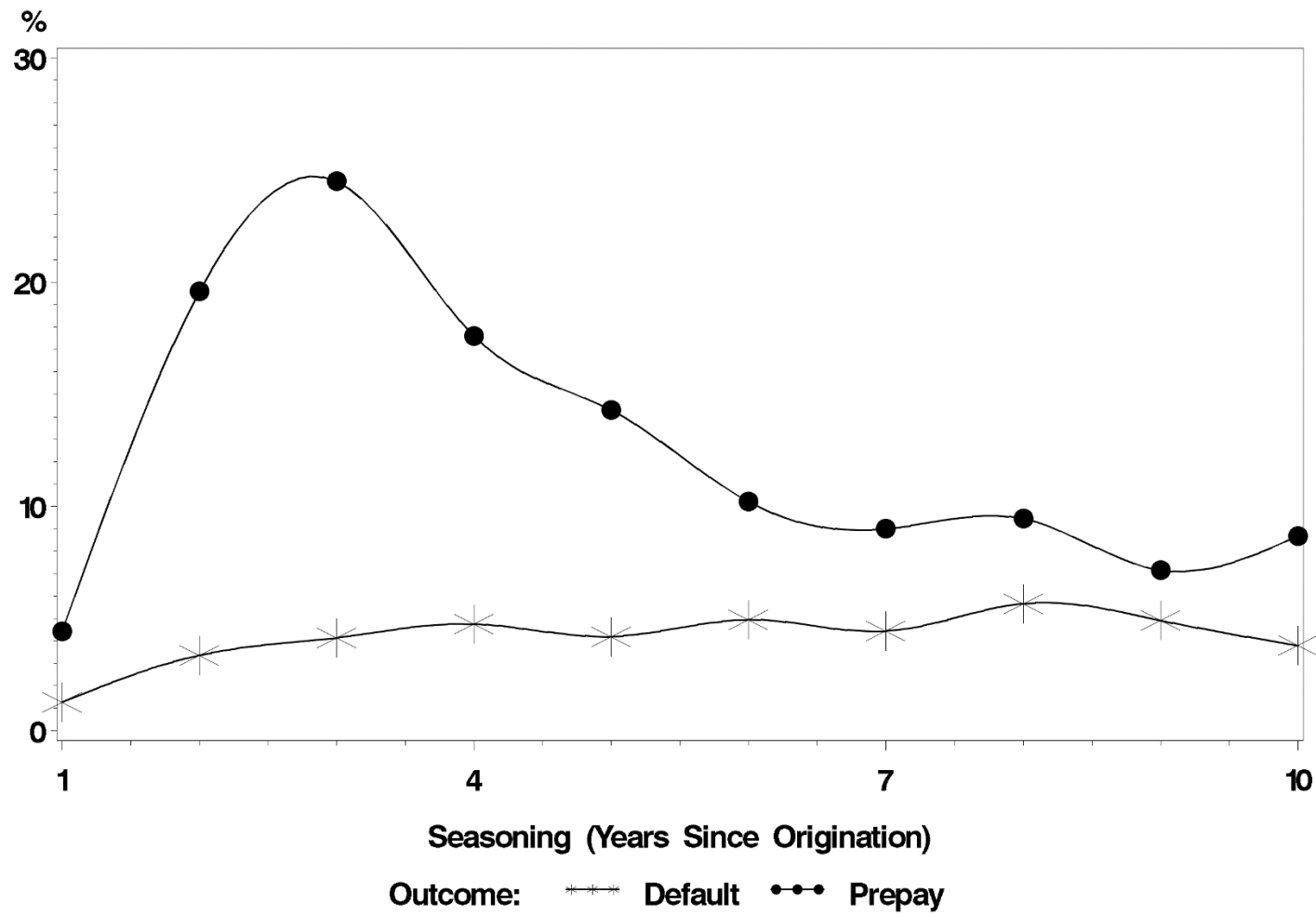
- Anderson, Richard and James Vanderhoff. 1999. Mortgage default rates and borrower race. *Journal of Real Estate Research* 18(2):279-289.
- Barrett, Emily and Christopher Maloney. 2018. The Mortgage Market is Back a Decade after the Credit Crisis—With New Risks. *MBA Newslink*, September 14, <https://www.mba.org/mba-newslinks/2018/september/mba-newslink-friday-9-14-18/national/the-mortgage-market-is-back-a-decade-after-the-credit-crisis-with-new-risks>.
- Deng, Yongheng, John M. Quigley, Robert Van Order, and Freddie Mac. Mortgage default and low downpayment loans: the costs of public subsidy. *Regional science and urban economics* 26, no. 3-4 (1996): 263-285.
- Freeman, Allison and Bruce A. Desmarais. 2010. Portfolio adjustment to home equity accumulation among CRA borrowers. *Journal of Housing Research* 20(2):141-161.
- Freeman, Allison and Jeffrey J. Harden. 2015. Affordable homeownership: The incidence and effect of down payment assistance. *Housing Policy Debate* 25(2):308-319.
- Goodman, Laurie L., Alanna McCargo, Edward Golding, Bing Bai, Bhargavi Ganesh, and Sarah Stochak. 2017. Barriers to Accessing Home Ownership, Down Payment, Credit and Affordability, Urban Institute, Washington, DC, <https://www.urban.org/research/publication/barriers-accessing-homeownership>.
- Grinstein-Weiss, Michal, Clinton Key, Shenyang Guo, Yeong Hun Yeo, and Krista Holub. 2013. Homeownership and wealth among low- and moderate-income households. *Housing Policy Debate* 23 (2):259-279.
- Gudell, Svenja. 2017. *Down Payment the Top Hurdle Holding Back Would-Be Home Buyers*. Zillow, April 12, <https://www.zillow.com/research/down-payment-hurdle-zhar-14790/>.
- Guerin, Jessica. 2019. HUD suspends down payment assistance rule change "until further notice." *HousingWire*, July 24, <https://www.housingwire.com/articles/49622-hud-suspends-down-payment-assistance-rule-change-until-further-notice>
- Kelly, Austin. 1995. Racial and ethnic disparities in mortgage prepayment. *Journal of Housing Economics* 4: 350-372.
- LaCour-Little, Michael. 2008. Mortgage termination risk: A review of the recent literature. *Journal of Real Estate Literature* 16(3): 297-326.
- Palim, Mark. 2018. *Lack of Mortgage Focus Complicates Home Purchase: An Ethnographic Study Among Low- and Moderate-Income Households*, Fannie Mae, Washington, DC, <https://www.fanniemae.com/portal/research-insights/perspectives/mortgage-focus-home-purchase-palim-052418.html>

- Moody's Investors Service. 2017. *State Housing Finance Agencies – US: Down Payment Assistance Supports Growth, but Action Needed to Support Sustainability*. Industry Research, Sector In-Depth, State Government. July 27, 2017.
- National Council of State Housing Agencies (NCHSA). 2018. *State HFA Factbook: 2016 NCHSA Annual Survey Results*, National Council of State Housing Agencies, Washington, DC.
- Quercia, Roberto, Anthony Pennington-Cross, and Chao Yue Tian. 2016. Differential impacts of structural and cyclical unemployment on mortgage default and prepayment. *Journal of Real Estate Finance and Economics* 53: 346-367.
- Riley, Sarah, HongYu Ru, and Roberto Quercia. 2009. The Community Advantage Program Database: Overview and comparison with the Current Population Survey. *Cityscape* (Data Shop) 11: 247-255.
- Shi, Xinyan and Sarah Riley. 2014. Mortgage choice, house price externalities, and the default rate. *Journal of Housing Economics* 26:139-150.
- Stegman, Michael A. 2019. The policy challenges and securitization implications of down payment assistance. *Journal of Structured Finance* (Winter).
- Theodos, Brett, Christina Plerhoples Stacy, and William Monson. 2015. *A new model for the provision of affordable homeownership*, Urban Institute, Washington, DC, <https://www.urban.org/sites/default/files/publication/43281/2000130-A-New-Model-for-the-Provision-of-Affordable-Homeownership.pdf>.
- Tian, Chao Yue, Roberto Quercia, and Sarah Riley. 2016. Unemployment as an adverse trigger for mortgage default. *Journal of Real Estate Finance and Economics* 52: 28-49.
- US Department of Housing and Urban Development (HUD). 2018. *FHA Single-Family Mutual Mortgage Insurance Fund Programs Quarterly Report to Congress FY 2018 Q3*, HUD, Washington, DC, <https://www.hud.gov/sites/dfiles/Housing/documents/MMIQtrlyQ32018.pdf>



Figure 1

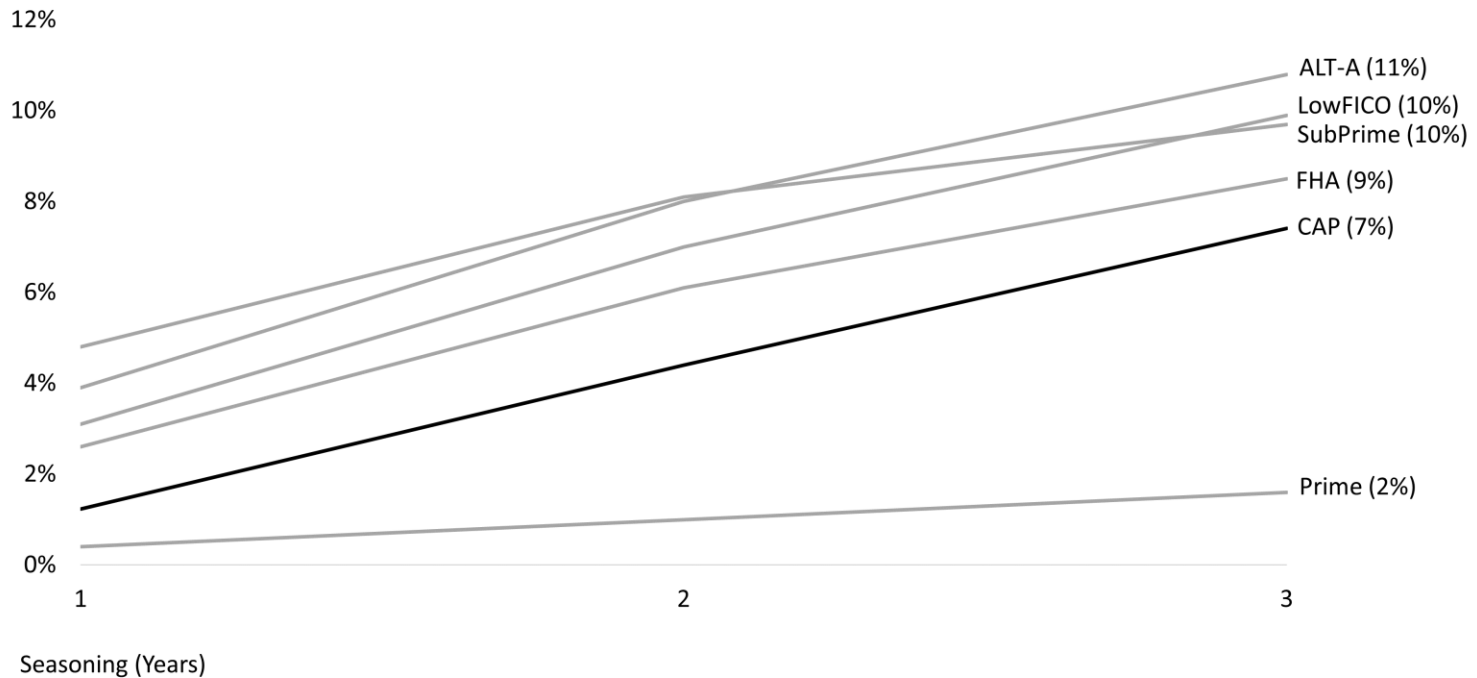
### CAP Annual Hazard Rates of Default and Prepayment



Data source: CAP analytic sample,  $N = 3,089$  CAP mortgages.

Figure 2

### Three-Year Cumulative Default Rates (Ever 90+ Days Delinquent) by Loan Type



*Data sources:*

- (1) CAP mortgages: Analytic sample,  $N=3,089$  CAP mortgages originated 1999-2003.
- (2) All other loan products: We thank CoreLogic for providing comparison cumulative default rate curves by loan type for vintages 2000-2003.
  - FHA: 1st lien, purchase-only, owner-occupied FHA loans.
  - Alt-A: 1st lien, purchase-only, owner-occupied, conventional with ALT-A flag.
  - SubPrime: 1st lien, purchase-only, owner-occupied, conventional loans from SubPrime Source (but not Alt-A)
  - Prime: 1st lien, purchase-only, owner-occupied, conventional loans from Prime Source (but not Alt-A)
  - LowFICO: 1st lien, purchase-only, owner-occupied, conventional loans with FICO less than 620 (but not Alt-A)

**Table 1: Cross-Sectional Loan and Borrower Characteristics for Analytic Sample (N = 3,089 Loans)**

	Min	Mean	Median	Max	Std
Borrower relative income (% of area median income)	17	59	58	115	16
Borrower debt-to-income ratio (%)	7	27	26	49	7
Borrower origination credit score	300	673	672	841	60
Interest rate (%)	5.38	7.67	7.50	10.63	1.00
Loan term (months)	180	359	360	360	12
Loan-to-value ratio at origination (%)	13	96	97	104	8
Purchase price (\$)	12,000	82,616	78,000	329,000	33,736
Amount (down payment + fees) paid at closing (\$)	0	4,323	3,000	95,000	5,368
From personal savings (\$)	0	2,857	1,800	95,000	4,602
From personal savings (% of original house value)	0	3.42	2.43	61.63	4.52
			%		
Had coborrower			20.5		
Had prior relationship with originating lender			29.7		
Also applied to other lender(s)			19.5		
Had application(s) to other lender(s) rejected			6.1		
Source of funds paid at closing:					
Personal savings only (no assistance reported)			56.7		
Family or friends			13.6		
Second mortgage			2.2		
Grant from gov't or community org			8.8		
Seller or agent			22.6		
Origination year:					
1999			3.0		
2000			25.8		
2001			30.2		
2002			37.5		
2003			3.4		
State (top 5):					
North Carolina			27.9		
Ohio			12.4		
Oklahoma			11.2		
Illinois			5.2		
California			3.8		
Race					
White			63.7		
Black			19.1		
Hispanic			14.2		
Other race			3.0		

Note: Sources of funds paid at closing are not mutually exclusive: 216 borrowers (7% of the sample) reported using more than one source of funds other than personal savings.

**Table 2: Borrower and Loan Characteristics by Sources of Funds Paid at Closing (N = 3,089 Loans)**

	No Assistance	Received Assistance				
	Personal Savings Only	Any Type	Family/Friends	Second Mortgage	Gov't or Community Grant	Seller/Agent
Borrower relative income (% of area median income)	59.46	58.12**	59.06	54.71**	51.86***	60.21
Borrower debt-to-income ratio (%)	26.44	26.59	26.87	28.54**	26.46	26.41
Borrower origination credit score	674.93	671.59	672.75	664.22	663.64***	671.30
Interest rate (%)	7.70	7.63**	7.84**	7.51	7.50***	7.57***
Loan term (months)	359.04	359.46	359.57	360.00***	358.68	359.74*
Loan-to-value ratio at origination (%)	96.34	96.32	95.76	93.68**	92.97***	97.46***
Purchase price (\$)	82,244	83,102	85,553	101,295***	78,346*	83,859
<b>Amount (down payment + fees) paid at closing (\$)</b>	3,724	5,106***	5,626***	7,279***	6,373***	4,634***
From personal savings (\$)	3,724	1,723***	1,748***	1,383***	1,456***	1,829***
From personal savings (% of house value)	4.47	2.06***	1.99***	1.45***	1.89***	2.16***
Had coborrower (%)	20.8	20.0	20.8	10.1**	19.5	20.5
Had prior relationship with originating lender (%)	29.9	29.4	28.6	15.9**	25.7	31.8
Also applied to other lender(s) (%)	18.5	20.9	21.2	13.0	22.4	20.7
Had application(s) to other lender(s) rejected (%)	5.9	6.2	5.7	1.4*	7.0	6.7
<b>Race</b>						
White (%)	61.8	66.2**	74.7***	43.5***	53.3***	67.7***
Black (%)	18.1	20.3	13.6**	43.5***	29.8***	21.5*
Hispanic (%)	16.7	10.8***	9.6***	8.7**	13.6	8.7***
Other race (%)	3.4	2.6	2.2	4.4	03.3	2.2*
<b>N</b>	1,751	1,338	419	69	272	699

Note: Estimates presented are means or percentages. For continuous measures, we conduct t-tests to assess differences in means between each group of assistance recipients and those borrowers who did not receive assistance. For categorical measures, we similarly conduct Chi-square tests to assess differences in proportions, with Fisher's exact test used in the case of small cell sizes. Stars indicate a significant difference between those borrowers who received assistance and those who used only personal savings to pay funds due at closing. Specifically, \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level. Sources of funds paid at closing are not mutually exclusive: 216 borrowers (7% of the sample) reported using more than one source of funds other than personal savings.

**Table 3: Sources of Funds Paid at Closing by Borrower Race (N = 3,089 Loans)**

Source of funds paid at closing (%):	Borrower Race			
	White	Black	Hispanic	Other Race
Personal savings only (no assistance reported)	55.0	53.8	66.8***	62.7
Family or friends	15.9	9.7***	9.2***	9.6*
Second mortgage	1.5	5.1***	1.4	3.2
Grant from gov't or community org	7.4	13.8***	8.5	9.6
Seller or agent	24.0	25.5	14.0***	16.0*
<i>N</i>	1,969	589	437	94

Note: Estimates presented are percentages. We conduct Chi-square tests to assess differences in proportions, with Fisher's exact test used in the case of small cell sizes. Stars indicate a significant difference between White borrowers and those of other racial groups. Specifically, \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level. Sources of funds paid at closing are not mutually exclusive: 216 borrowers (7% of the sample) reported using more than one source of funds other than personal savings.

**Table 4: Mean Interest Rate by Sources of Funds Paid at Closing and Borrower Race (N = 3,089 Loans)**

Source of funds paid at closing:	Mean Interest Rate (%) by Borrower Race			
	White	Black	Hispanic	Other
Personal savings only (no assistance reported)	7.76	7.97***	7.26***	7.42**
Family or friends	7.87	8.03	7.42**	7.31
Second mortgage	7.67	7.52	6.90*	6.92
Grant from gov't or community org	7.53	7.54	7.43	6.98
Seller or agent	7.57	7.75**	7.29**	6.98**
<i>N</i>	1,969	589	437	94

Note: Estimates presented are means. We conduct t-tests to assess differences in means. Stars indicate a significant difference between White borrowers and those of other racial groups. Specifically, \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level. Sources of funds paid at closing are not mutually exclusive: 216 borrowers (7% of the sample) reported using more than one source of funds other than personal savings.

**Table 5: Cross-Sectional Outcomes for Analytic Sample as of Loan Termination or Censoring, Overall and by Source of Funds Paid at Closing (N = 3,089 Loans)**

	All Borrowers	No Assistance	Received Assistance				
		<i>Personal Savings Only</i>	<i>Any Type</i>	<i>Family/Friends</i>	<i>Second Mortgage</i>	<i>Gov't or Community Grant</i>	<i>Seller/Agent</i>
Active loan period (up to 10 years)	4.4	4.3	4.5*	4.1	4.1	5.2***	4.6*
<b>Mortgage status at end of active loan period:</b>							
Active (%)	16.1	15.4	17.0	15.0	18.8	22.4***	16.0
Default (first 90+ delinquency, %)	17.5	16.6	18.6	17.4	18.8	24.3***	19.9*
Prepaid (%)	66.4	68.0	64.3**	67.5	62.3	53.3***	64.1*
<i>N</i>	3,089	1,751	1,338	419	69	272	699

Note: Estimates presented are means or percentages. For continuous measures, we conduct t-tests to assess differences in means between each group of assistance recipients and those borrowers who did not receive assistance. For categorical measures, we similarly conduct Chi-square tests to assess differences in proportions, with Fisher's exact test used in the case of small cell sizes. Stars indicate a significant difference between those borrowers who received assistance and those who used only personal savings to pay funds due at closing. Specifically, \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level. Sources of funds paid at closing are not mutually exclusive: 216 borrowers (7% of the sample) reported using more than one source of funds other than personal savings.

**Table 6: Cross-Sectional Appreciation and Equity for Analytic Sample as of Loan Termination or Censoring (N = 3,089 Loans)**

	Min	Mean	Median	Max	Std
<b>Nominal house price appreciation during active loan period:</b>					
Total (\$)	27,809	15,182	9,926	171,616	17,784
Total (% of original house value)	-20.6	17.7	13.1	145.4	16.3
Annualized (%)	-2.6	4.7	3.7	25.4	3.7
<b>Real house price appreciation during active loan period:</b>					
Total (\$)	-73,911	6,074	3,323	138,863	15,634
Total (% of original house value)	-38.7	6.0	4.5	114.3	14.5
Annualized (%)	-11.1	2.5	1.8	22.3	3.7
<b>Nominal home equity at end of active loan period:</b>					
Total (\$)	-5,319	23,488	16,462	188,786	23,079
Total (% of original house value)	-7.9	27.5	22.0	154.2	20.9
Net of personal savings contribution (\$)	-7,472	20,631	13,945	186,186	22,036
Net of personal savings contribution (% of original house value)	-21.3	24.1	18.4	146.4	20.6
<b>Real home equity at end of active loan period:</b>					
Total (\$)	-4,554	21,433	15,193	187,589	20,853
Total (% of original house value)	-6.5	24.2	20.0	134.6	17.6
Net of personal savings contribution (\$)	-8,838	18,478	12,742	181,427	19,761
Net of personal savings contribution (% of original house value)	-24.4	20.8	16.5	126.8	17.4

Note: Real estimates are provided in 2003 dollars.

**Table 7: Mean Cross-Sectional Appreciation and Equity for Analytic Sample as of Loan Termination or Censoring by Source of Funds Paid at Closing (N = 3,089 Loans)**

	No Assistance	Received Assistance				
	<i>Personal Savings Only</i>	<i>Any Type</i>	<i>Family/Friends</i>	<i>Second Mortgage</i>	<i>Gov't or Community Grant</i>	<i>Seller/Agent</i>
<b>Nominal house price appreciation during active loan period:</b>						
Total (\$)	15,120	15,263	14,598	30,800	16,411	15,009
Total (% of original house value)	17.6	17.7	16.4	28.1	19.6	17.6
Annualized (%)	4.7	4.7	4.9	8.3	4.7	4.5
<b>Real house price appreciation during active loan period:</b>						
Total (\$)	6,258	5,833	6,115	19,674	5,914	5,398
Total (% of original house value)	6.3	5.8	5.9	15.9	5.7	5.6
Annualized (%)	2.5	2.4	2.7	5.9	2.3	2.3
<b>Nominal home equity at end of active loan period:</b>						
Total (\$)	23,576	23,372	23,375	41,510	27,287	22,102
Total (% of original house value)	27.6	27.5	26.1	39.7	34.0	26.1
Net of personal savings contribution (\$)	19,852	21,649	21,628	40,127	25,830	20,273
Net of personal savings contribution (% of original house value)	23.1	25.4	24.1	38.3	32.2	23.9
<b>Real home equity at end of active loan period:</b>						
Total (\$)	21,571	21,253	21,536	37,918	24,440	20,081
Total (% of original house value)	24.3	24.1	23.2	35.0	29.5	22.8
Net of personal savings contribution (\$)	17,717	19,473	19,728	36,502	22,943	18,189
Net of personal savings contribution (% of original house value)	19.8	22.0	21.2	33.6	27.6	20.7
<i>N</i>	1,751	1,338	419	69	272	699

Note: Estimates presented are means. Sources of funds paid at closing are not mutually exclusive: 216 borrowers (7% of the sample) reported using more than one source of funds other than personal savings. Real estimates are provided in 2003 dollars.



**Table 8: Median Cross-Sectional Appreciation and Equity for Analytic Sample as of Loan Termination or Censoring by Source of Funds Paid at Closing (N = 3,089 Loans)**

	No Assistance	Received Assistance				
	<i>Personal Savings Only</i>	<i>Any Type</i>	<i>Family/Friends</i>	<i>Second Mortgage</i>	<i>Gov't or Community Grant</i>	<i>Seller/Agent</i>
<b>Nominal house price appreciation during active loan period:</b>						
Total (\$)	9,621	10,204	9,581	16,051	9,536	10,851
Total (% of original house value)	12.8	13.8	12.9	20.1	14.2	14.1
Annualized (%)	3.8	3.6	3.8	5.3	3.3	3.6
<b>Real house price appreciation during active loan period:</b>						
Total (\$)	3,293	3,327	3,661	6,849	2,209	3,391
Total (% of original house value)	4.6	4.5	4.7	8.5	3.4	4.5
Annualized (%)	1.8	1.7	2.0	3.1	1.1	1.6
<b>Nominal home equity at end of active loan period:</b>						
Total (\$)	15,988	17,105	15,702	30,664	18,240	17,507
Total (% of original house value)	21.2	22.8	21.4	31.2	28.7	21.6
Net of personal savings contribution (\$)	12,978	15,275	14,294	28,454	17,678	15,413
Net of personal savings contribution (% of original house value)	17.0	20.7	19.2	30.3	26.9	18.7
<b>Real home equity at end of active loan period:</b>						
Total (\$)	14,867	15,541	14,676	26,819	16,579	15,899
Total (% of original house value)	19.5	20.6	19.9	29.5	24.1	19.8
Net of personal savings contribution (\$)	11,805	13,949	13,640	25,802	15,588	13,942
Net of personal savings contribution (% of original house value)	15.2	18.4	17.5	29.2	22.8	16.7
<i>N</i>	1,751	1,338	419	69	272	699

Note: Estimates presented are medians. Sources of funds paid at closing are not mutually exclusive: 216 borrowers (7% of the sample) reported using more than one source of funds other than personal savings. Real estimates are provided in 2003 dollars.

**Table 9: Panel Summary Statistics for Analytic Sample (N = 152,135 Loan-Month Observations)**

	Min	Mean	Median	Max	Std
Borrower relative income	-2.48	0.00	-0.06	3.45	1.00
Borrower debt-to-income ratio	-2.83	0.00	-0.03	3.26	1.00
Borrower credit score at origination	-6.25	0.00	-0.06	2.81	1.00
Current loan-to-value ratio	-5.78	0.00	0.23	2.85	1.00
Purchase price	-2.19	0.00	-0.12	8.14	1.00
Refinance option value	-3.97	0.00	-0.05	3.55	1.00
Respondent or spouse unemployed	0.00	0.12	0.00	1.00	0.32
Unemployment rate	-2.13	0.00	-0.18	9.09	1.00
House price volatility	-0.62	0.00	-0.34	12.17	1.00
Interest rate volatility	-1.06	0.00	-0.25	5.45	1.00
Loan age	0.00	43.38	35.00	120.00	31.49
Personal savings contribution ratio	-0.71	0.00	-0.26	12.41	1.00
<b>Received assistance:</b>					
Any type	0.00	0.45	0.00	1.00	0.50
Family or friends	0.00	0.13	0.00	1.00	0.33
Second mortgage	0.00	0.02	0.00	1.00	0.15
Grant from gov't or community org	0.00	0.11	0.00	1.00	0.31
Seller or agent	0.00	0.23	0.00	1.00	0.42
<b>Race</b>					
White	0.00	0.61	1.00	1.00	0.49
Black	0.00	0.22	0.00	1.00	0.41
Hispanic	0.00	0.14	0.00	1.00	0.35
Other race	0.00	0.03	0.00	1.00	0.18

Note: All continuous variables except loan age are normalized to have a mean of zero and a standard deviation of 1.

**Table 10A: Multinomial Logit Model of Mortgage Performance -- Default Estimates**

	Specification 1		Specification 2		Specification 3	
	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio
Intercept	-5.834 (0.323)***	.	-5.874 (0.326)***	.	-5.923 (0.326)***	.
Borrower relative income	-0.097 (0.076)	0.907	-0.096 (0.076)	0.908	-0.086 (0.078)	0.918
Borrower debt-to-income ratio	0.062 (0.076)	1.063	0.063 (0.076)	1.065	0.073 (0.077)	1.076
Borrower credit score at origination	-0.574 (0.044)***	0.564	-0.575 (0.044)***	0.563	-0.576 (0.044)***	0.562
Current loan-to-value ratio	0.131 (0.072)*	1.14	0.129 (0.072)*	1.138	0.134 (0.073)*	1.144
Purchase price	-0.030 (0.089)	0.97	-0.032 (0.089)	0.968	-0.044 (0.090)	0.957
Refinance option value	0.127 (0.067)*	1.135	0.126 (0.067)*	1.135	0.126 (0.067)*	1.135
Respondent or spouse unemployed	0.598 (0.120)***	1.819	0.602 (0.120)***	1.826	0.626 (0.121)***	1.871
Unemployment rate	0.062 (0.053)	1.064	0.064 (0.053)	1.066	0.064 (0.053)	1.066
House price volatility	-0.004 (0.054)	0.996	-0.003 (0.054)	0.997	-0.002 (0.055)	0.998
Interest rate volatility	0.020 (0.043)	1.02	0.020 (0.043)	1.02	0.020 (0.043)	1.02
Loan age	0.005 (0.002)*	1.005	0.004 (0.002)*	1.004	0.005 (0.002)*	1.005
<b>Received assistance:</b>						
Any type	.	.	0.080 (0.088)	1.083	.	.
Family or friends	.	.	.	.	0.063 (0.129)	1.065
Second mortgage	.	.	.	.	-0.286 (0.295)	0.751
Grant from gov't or community org	.	.	.	.	0.259 (0.139)*	1.296
Seller or agent	.	.	.	.	0.140 (0.101)	1.151
Origination year fixed effects	Yes***	.	Yes***	.	Yes***	.
State fixed effects	Yes***	.	Yes***	.	Yes***	.
<i>N</i>	152,135		152,135		152,135	
<i>-2LogL</i>	27,570		27,568		27,550	

Note: The estimates presented are obtained from a competing-risks multinomial logit model predicting default (first 90+ delinquency) and prepayment. All continuous covariates except loan age are normalized to have a mean of zero and a standard deviation of 1. Statistical significance is denoted with stars: \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level.

Table 10B: Multinomial Logit Model of Mortgage Performance -- Default Estimates

	Specification 4		Specification 5		Specification 6	
	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio
Intercept	-5.818 (0.329)***	.	-5.818 (0.329)***	.	-5.771 (0.330)***	.
Borrower relative income	-0.045 (0.078)	0.956	-0.046 (0.078)	0.955	-0.045 (0.078)	0.956
Borrower debt-to-income ratio	0.103 (0.077)	1.109	0.103 (0.077)	1.108	0.104 (0.078)	1.109
Borrower credit score at origination	-0.560 (0.045)***	0.571	-0.561 (0.045)***	0.570	-0.578 (0.046)***	0.561
Current loan-to-value ratio	0.121 (0.074)*	1.129	0.122 (0.074)*	1.130	0.081 (0.074)	1.084
Purchase price	-0.086 (0.090)	0.917	-0.085 (0.091)	0.919	-0.092 (0.091)	0.912
Refinance option value	0.130 (0.067)*	1.139	0.130 (0.067)*	1.139	0.134 (0.067)**	1.144
Respondent or spouse unemployed	0.657 (0.121)***	1.929	0.656 (0.121)***	1.927	0.653 (0.121)***	1.922
Unemployment rate	0.049 (0.054)	1.050	0.049 (0.054)	1.050	0.055 (0.054)	1.057
House price volatility	0.002 (0.056)	1.002	-0.003 (0.057)	0.997	-0.002 (0.057)	0.998
Interest rate volatility	0.018 (0.043)	1.018	0.018 (0.043)	1.018	0.018 (0.043)	1.019
Loan age	0.004 (0.003)	1.004	0.004 (0.003)*	1.004	0.003 (0.003)	1.003
<b>Received assistance:</b>						
Family or friends	0.070 (0.129)	1.073	0.069 (0.129)	1.072	0.009 (0.131)	1.009
Second mortgage	-0.331 (0.296)	0.718	-0.328 (0.296)	0.720	-0.372 (0.297)	0.689
Grant from gov't or community org	0.212 (0.141)	1.236	0.218 (0.141)	1.244	0.150 (0.143)	1.162
Seller or agent	0.135 (0.101)	1.144	0.136 (0.101)	1.145	0.107 (0.102)	1.113
<b>Race:</b>						
White (omitted)						
Black	0.394 (0.112)***	1.483	0.393 (0.112)***	1.481	0.371 (0.112)***	1.449
Hispanic	-0.298 (0.181)	0.743	-0.297 (0.181)	0.743	-0.290 (0.181)	0.748
Other race	0.042 (0.264)	1.043	0.043 (0.264)	1.044	0.023 (0.264)	1.023
House price volatility X grant assistance	.	.	0.083 (0.185)	1.086	0.071 (0.186)	1.074
Personal savings contribution ratio	.	.	.	.	-0.192 (0.075)**	0.825
Origination year fixed effects	Yes***	.	Yes***	.	Yes***	.
State fixed effects	Yes***	.	Yes***	.	Yes***	.
<i>N</i>	152,135		152,135		152,135	
<i>-2LogL</i>	27,465		27,452		27,441	

Note: The estimates presented are obtained from a competing-risks multinomial logit model predicting default (first 90+ delinquency) and prepayment. All continuous covariates except loan age are normalized to have a mean of zero and a standard deviation of 1. Statistical significance is denoted with stars: \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level.

**Table 11A: Multinomial Logit Model of Mortgage Performance -- Prepayment Estimates**

	Specification 1		Specification 2		Specification 3	
	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio
Intercept	-4.034 (0.175)***	.	-4.009 (0.177)***	.	-3.980 (0.177)***	.
Borrower relative income	0.130 (0.035)***	1.138	0.128 (0.035)***	1.136	0.117 (0.035)***	1.124
Borrower debt-to-income ratio	0.045 (0.036)	1.046	0.044 (0.036)	1.045	0.040 (0.036)	1.041
Borrower credit score at origination	0.213 (0.024)***	1.237	0.212 (0.025)***	1.236	0.207 (0.025)***	1.230
Current loan-to-value ratio	-0.248 (0.028)***	0.780	-0.246 (0.028)***	0.782	-0.253 (0.028)***	0.777
Purchase price	0.159 (0.034)***	1.172	0.160 (0.034)***	1.173	0.161 (0.034)***	1.175
Refinance option value	0.576 (0.034)***	1.779	0.576 (0.034)***	1.779	0.575 (0.034)***	1.777
Respondent or spouse unemployed	-0.251 (0.091)***	0.778	-0.253 (0.091)***	0.777	-0.255 (0.091)***	0.775
Unemployment rate	-0.221 (0.033)***	0.801	-0.222 (0.033)***	0.801	-0.220 (0.033)***	0.802
House price volatility	0.029 (0.024)	1.029	0.028 (0.024)	1.029	0.026 (0.024)	1.026
Interest rate volatility	0.001 (0.027)	1.001	0.000 (0.027)	1.000	0.000 (0.027)	1.000
Loan age	-0.012 (0.001)***	0.988	-0.012 (0.001)***	0.988	-0.012 (0.001)***	0.988
<b>Received assistance:</b>						
Any type	.	.	-0.046 (0.046)	0.955	.	.
Family or friends	.	.	.	.	-0.035 (0.066)	0.965
Second mortgage	.	.	.	.	0.022 (0.169)	1.022
Grant from gov't or community org	.	.	.	.	-0.310 (0.090)***	0.734
Seller or agent	.	.	.	.	0.026 (0.055)	1.026
Origination year fixed effects	Yes***	.	Yes***	.	Yes***	.
State fixed effects	Yes***	.	Yes***	.	Yes***	.
<i>N</i>	152,135		152,135		152,135	
<i>-2LogL</i>	27,570		27,568		27,550	

Note: The estimates presented are obtained from a competing-risks multinomial logit model predicting default (first 90+ delinquency) and prepayment. All continuous covariates except loan age are normalized to have a mean of zero and a standard deviation of 1. Statistical significance is denoted with stars: \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level.

**Table 11B: Multinomial Logit Model of Mortgage Performance -- Prepayment Estimates**

	Specification 4		Specification 5		Specification 6	
	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio
Intercept	-3.950 (0.178)***	.	-3.950 (0.178)***	.	-3.932 (0.178)***	.
Borrower relative income	0.109 (0.035)***	1.115	0.106 (0.035)***	1.111	0.099 (0.036)***	1.104
Borrower debt-to-income ratio	0.037 (0.036)	1.037	0.035 (0.036)	1.036	0.031 (0.036)	1.032
Borrower credit score at origination	0.172 (0.025)***	1.188	0.172 (0.025)***	1.188	0.173 (0.025)***	1.189
Current loan-to-value ratio	-0.259 (0.029)***	0.772	-0.257 (0.029)***	0.773	-0.269 (0.029)***	0.765
Purchase price	0.176 (0.033)***	1.192	0.178 (0.033)***	1.195	0.181 (0.033)***	1.198
Refinance option value	0.574 (0.034)***	1.775	0.573 (0.034)***	1.774	0.572 (0.034)***	1.771
Respondent or spouse unemployed	-0.280 (0.091)***	0.756	-0.285 (0.091)***	0.752	-0.286 (0.091)***	0.751
Unemployment rate	-0.204 (0.033)***	0.815	-0.206 (0.033)***	0.814	-0.201 (0.033)***	0.818
House price volatility	0.028 (0.024)	1.029	0.014 (0.025)	1.014	0.013 (0.025)	1.013
Interest rate volatility	0.000 (0.027)	1.000	0.000 (0.027)	1.000	0.000 (0.027)	1.000
Loan age	-0.012 (0.001)***	0.988	-0.012 (0.001)***	0.988	-0.012 (0.001)***	0.988
<b>Received assistance:</b>						
Family or friends	-0.078 (0.066)	0.925	-0.083 (0.066)	0.92	-0.101 (0.067)	0.904
Second mortgage	0.026 (0.170)	1.027	0.036 (0.170)	1.037	0.015 (0.171)	1.015
Grant from gov't or community org	-0.242 (0.090)***	0.785	-0.278 (0.092)***	0.757	-0.296 (0.093)***	0.744
Seller or agent	0.013 (0.056)	1.013	0.010 (0.056)	1.010	-0.001 (0.056)	0.999
<b>Race</b>						
White (omitted)						
Black	-0.579 (0.075)***	0.561	-0.578 (0.075)***	0.561	-0.587 (0.075)***	0.556
Hispanic	-0.162 (0.077)**	0.851	-0.161 (0.076)**	0.851	-0.170 (0.077)**	0.844
Other race	-0.066 (0.132)	0.936	-0.057 (0.132)	0.944	-0.054 (0.132)	0.947
House price volatility X grant assistance	.	.	0.284 (0.071)***	1.329	0.283 (0.071)***	1.328
Personal savings contribution ratio	.	.	.	.	-0.037 (0.022)*	0.964
Origination year fixed effects	Yes***	.	Yes***	.	Yes***	.
State fixed effects	Yes***	.	Yes***	.	Yes***	.
<i>N</i>	152,135		152,135		152,135	
<i>-2LogL</i>	27,465		27,452		27,441	

Note: The estimates presented are obtained from a competing-risks multinomial logit model predicting default (first 90+ delinquency) and prepayment. All continuous covariates except loan age are normalized to have a mean of zero and a standard deviation of 1. Statistical significance is denoted with stars: \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level.

**Table 12: Extended Model -- Prepayment Estimates by Type of Prepayment**

	Stay and Prepay (Refinance)		Move and Prepay	
	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio
Intercept	-4.912 (0.311)***	.	-4.403 (0.217)***	.
Borrower relative income	0.176 (0.063)***	1.193	0.064 (0.043)	1.066
Borrower debt-to-income ratio	0.085 (0.065)	1.088	0.007 (0.044)	1.007
Borrower credit score at origination	0.223 (0.043)***	1.250	0.147 (0.030)***	1.158
Current loan-to-value ratio	-0.230 (0.055)***	0.795	-0.285 (0.034)***	0.752
Purchase price	0.121 (0.059)**	1.129	0.209 (0.040)***	1.233
Refinance option value	0.584 (0.060)***	1.793	0.565 (0.042)***	1.760
Respondent or spouse unemployed	0.055 (0.152)	1.057	-0.450 (0.113)***	0.638
Unemployment rate	-0.355 (0.063)***	0.701	-0.138 (0.039)***	0.871
House price volatility	0.014 (0.044)	1.014	0.012 (0.029)	1.012
Interest rate volatility	-0.020 (0.049)	0.980	0.010 (0.032)	1.010
Loan age	-0.016 (0.002)***	0.984	-0.011 (0.001)***	0.990
<b>Received assistance:</b>				
Family or friends	-0.114 (0.113)	0.892	-0.098 (0.083)	0.907
Second mortgage	-0.083 (0.304)	0.92	0.053 (0.205)	1.055
Grant from gov't or community org	-0.230 (0.161)	0.795	-0.327 (0.113)***	0.721
Seller or agent	0.066 (0.093)	1.069	-0.041 (0.070)	0.960
<b>Race</b>				
White (omitted)				
Black	-1.036 (0.149)***	0.355	-0.401 (0.087)***	0.669
Hispanic	-0.517 (0.144)***	0.596	-0.015 (0.091)	0.985
Other race	-0.638 (0.284)**	0.528	0.179 (0.149)	1.197
House price volatility X grant assistance	0.398 (0.105)***	1.488	0.214 (0.095)**	1.239
Personal savings contribution ratio	-0.103 (0.047)**	0.902	-0.012 (0.025)	0.988
Origination year fixed effects	Yes***	.	Yes***	.
State fixed effects	Yes***	.	Yes***	.
<i>N</i>		152,135		
<i>-2LogL</i>		29,938		

Note: The estimates presented are obtained from a competing-risks multinomial logit model predicting default (first 90+ delinquency), prepayment due to a refinance, and prepayment due to a move. All continuous covariates except loan age are normalized to have a mean of zero and a standard deviation of 1. Statistical significance is denoted with stars: \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level.

## Appendix

Prepayment Estimates (Specification 6) by Loan Seasoning

	0-24 Months		25-120 Months	
	Coeff. (Std. Err.)	Odds Ratio	Coeff. (Std. Err.)	Odds Ratio
Intercept	-5.799 (0.355)***	.	-3.259 (0.223)***	.
Borrower relative income	0.048 (0.064)	1.049	0.075 (0.044)*	1.077
Borrower debt-to-income ratio	0.014 (0.065)	1.014	0.009 (0.046)	1.009
Borrower credit score at origination	0.217 (0.043)***	1.242	0.157 (0.031)***	1.170
Current loan-to-value ratio	-0.140 (0.073)*	0.870	-0.137 (0.039)***	0.872
Purchase price	0.264 (0.056)***	1.302	0.209 (0.044)***	1.232
Refinance option value	0.819 (0.074)***	2.267	0.394 (0.043)***	1.482
Respondent or spouse unemployed	-0.208 (0.345)	0.812	-0.262 (0.094)***	0.770
Unemployment rate	-0.181 (0.069)***	0.834	-0.096 (0.041)**	0.909
House price volatility	-0.037 (0.049)	0.964	0.006 (0.032)	1.006
Interest rate volatility	-0.001 (0.066)	0.999	0.017 (0.030)	1.017
Loan age	0.092 (0.008)***	1.096	-0.020 (0.002)***	0.980
<b>Received assistance:</b>				
Any type	.	.	.	.
Family or friends	-0.007 (0.108)	0.993	-0.149 (0.087)*	0.861
Second mortgage	0.036 (0.270)	1.037	0.092 (0.220)	1.097
Grant from gov't or community org	-0.488 (0.172)***	0.614	-0.193 (0.111)*	0.824
Seller or agent	-0.205 (0.102)**	0.815	0.050 (0.068)	1.051
<b>Race</b>				
White (omitted)				
Black	-0.548 (0.137)***	0.578	-0.606 (0.090)***	0.546
Hispanic	-0.322 (0.138)**	0.725	-0.101 (0.094)	0.904
Other race	0.032 (0.235)	1.032	-0.087 (0.161)	0.916
House price volatility X grant assistance	0.169 (0.155)	1.184	0.323 (0.084)***	1.381
Personal savings contribution ratio	-0.056 (0.043)	0.946	-0.008 (0.027)	0.992
Origination year fixed effects	Yes***	.	Yes***	.
State fixed effects	Yes***	.	Yes***	.
<i>N</i>	56,040		96,095	
<i>-2LogL</i>	8,376		18,406	

Note: The estimates presented are obtained from a competing-risks multinomial logit model predicting default (first 90+ delinquency) and prepayment. All continuous covariates except loan age are normalized to have a mean of zero and a standard deviation of 1. Statistical significance is denoted with stars: \*\*\* indicates significance at the 10% level; \*\* indicates significance at the 5% level; and \* indicates significance at the 1% level.