THE IMPACTS OF AFFORDABLE LENDING EFFORTS ON HOMEOWNERSHIP RATES**

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ABSTRACT

In this study, we develop and test a methodology to assess the impact of affordable lending efforts on homeownership rates. More narrowly, in this demand analysis, we examine the impact of using flexible underwriting guidelines, primarily changes in the downpayment and debt burden requirements, on the affordability and homeownership propensities of targeted populations and geographic areas. The impacts of changing these underwriting guidelines are compared with those resulting from lower borrowing costs (interest rates). A variation of the methodology first proposed by Wachter et al. (1995) is used in the analysis. We use the 1995 American Housing Survey (AHS) national core, which unlike other recent studies, allows us to consider all housing characteristics. Unlike prior work, the supply of housing is also examined to complement the demand analysis.

The findings indicate that affordable lending efforts are likely to increase homeownership opportunities for underserved populations, but that impacts may not be felt equally by all groups. Under most affordable products, the impacts on all households, recent movers and central city households are smaller than for other households. The recently introduced affordable products in which the required 3 percent downpayment can come from non-borrower sources, e.g., Freddie Mac's Alt 97, has the largest impact on the homeownership propensities of all underserved groups, including a 27.1 percent increase in the relative probability of homeownership for young households, a 21.0 percent increase for blacks, and a 15.0 percent increase for central city residents. In constrast, changes in underwriting guidelines are found to have greater impacts than changes in the costs of borrowing for all groups. Unfortunately, the analysis also suggests that unless the supply of appropriately priced housing is increased the full benefits of affordable lending efforts may not be realized.

INTRODUCTION

In recent years, there has been a push to increase home ownership opportunities for groups historically considered underserved. Participants in the mortgage lending industry, such as conventional lenders, government sponsored enterprises (GSEs), and private mortgage insurers (PMIs) have implemented numerous changes in their practices to make borrowing more accessible and affordable to lower income and minority populations than conventional loan products. Although variations abound, these initiatives can be characterized by targeting to specific populations/geographic areas, and the use of flexible underwriting guidelines and risk mitigating mechanisms, such as counseling. These efforts have been referred to as affordable lending. The GSEs' affordable lending efforts are of particular importance given the market share of the institutions involved.

The GSEs dominate the so called conventional market (nongovernment insured or guaranteed loans). A large portion of their loans are at or below the conforming loan limits (Cotterman and Pearce 1994)[1]. Conventional mortgages have accounted for approximately 80 percent of the total GSE mortgage purchase (CBO 1991). The GSEs control lending risks though underwriting guidelines that have become industry standards. These guidelines and federal law require private mortgage insurance if borrowers do not provide at least a 20 percent down payment. Also, at the time of loan origination, borrower's housing payments (mortgage principal and interest payments, property taxes and insurance) generally must not exceed 28 percent of their income. When combined with other obligations, such as credit card debt, these housing costs usually are not allowed to exceed 33 percent of income.

In contrast to conventional loan products, the affordable lending market is characterized by diversity. Affordable products may include an enhanced marketing strategy in place to attract loan applicants from targeted groups, or it may involve an automatic second review of some mortgage denials. Most include the use of flexible or nonconventional underwriting guidelines and a homeownership education or counseling requirement. Flexible underwriting guidelines may include elements such as allowing lower downpayments, and higher front-end and back-end ratios, and/or accepting alternative proofs of creditworthiness. For instance, Freddie Mac has three affordable loan products in its Affordable Gold initiative. The Affordable Gold 5 permits a downpayment as low as 5 percent with all

[1]This limit is the maximum original principal amount for a first lien conventional single-family dwelling. Higher limits are set for two-to-four family dwellings, for multifamily dwellings and for properties located outside the continental U.S. The benchmark used to adjust the limit is the national average one-family price as determined by the Federal Housing Income Board.

funds coming from a borrower's personal cash. The Affordable Gold 3/2 also permits a downpayment of 5 percent, but only 3 percent must come from a borrower's own resources. The remaining 2 percent can come from other sources, such as family gifts, government grant, unsecured personal loan and sweat equity. Finally, the Affordable Gold 97 program uses less stringent standards, requiring a 97 percent loan to value ratio. The entire 3 percent downpayment must come from the borrower's personal resources (Stamper 1997). Like Fannie Mae's Community Home Buyer's Program, borrowers must be income eligible for the Affordable Gold products. Typically, qualifying borrowers cannot have an income above 100 percent of area median income. Affordable Gold products have no maximum housing expense-to-income ratio (front end) but the monthly debt-to-income ratio (back end ratio) is 38 to 40 percent (Urban Institute 1998). A recently introduced product permits the required 3 percent downpayment to come from non-borrower sources. As with other affordable products, Freddie Mac's Alt 97 and Fannie Mae's Flex 97 are targeted to borrowers with little savings but good credit histories. Front end ratios in these products cannot exceed 33 percent.

There is some evidence that affordable lending initiatives may be having an impact. Home Mortgage Disclosure Act (HMDA) data show that loans to low income and minority households are growing at a much faster rate than loans to higher income and non-minority households. For instance, the number of loans going to families with less than median income increased by 27 percent between 1991 and 1994, compared with a 10 percent growth for loans to higher income families. Similar patterns are evident from GSE data on the share of their total business going to low and moderate income households (HUD 1996). All these data suggest that affordable home loan programs may be increasing the flow of funds to nontraditional borrowers and communities.

In spite of this suggestive evidence, the extent to which specific aspects of affordable lending efforts may be primarily responsible for such an increase is still unclear. This is not surprising given the diversity of factors that may define an affordable product. Moreover, during the 1991 to 1994 period, mortgage interest rates in conventional fixed rate mortgages declined significantly, from 9.38 to 7.27 percent. It is unclear whether a large portion of the reported increase in lending to nontraditional borrowers can be attributed to lower borrowing costs. This may be the case if changes in borrowing costs have a greater impact on marginal nontraditional borrowers than on conventional borrowers.

Moreover, the extent to which the benefits of affordable lending efforts can be maintained is unknown. This is because prior research on the topic has not incorporated supply side considerations. If appropriately priced housing is not available, even if borrowers have enough income and savings to purchase their ideal home, then the full benefits of affordable lending efforts may not be realized.

To address these questions, this study assesses the impacts of affordable lending efforts on the homeownership propensities of underserved populations. More narrowly, the study examines the impacts of changing specific underwriting guidelines on the homeownership rates of minority, low-moderate income, central city, recent movers, and young households (head of household 24 to 29 years of age). The study also assesses the impact of changes in borrowing costs relative to the impacts of

changing underwriting guidelines. Finally, the study provides a brief examination of the supply of appropriately priced houses to derive implications regarding whether the full benefits of affordable lending efforts may be realized. The remainder of the paper is divided into four sections. In the next section, the theoretical underpinnings are presented. Next, the data and methodology are described, including the way key variables were constructed. Next, the estimation and simulation results are presented. This is followed by an examination of supply side issues. In the final section, implications for policy and research are derived.

THEORETICAL UNDERPINNING

Following, Linneman and Wachter (hereafter L-W) (1989), Wachter and Megbolugbe (1994) and others, the probability of owning a home [PROB(OWN)] can be expressed as a function of the relative cost of owning versus renting (OWN/RENT), household income (I), the presence of income (IC) and downpayment (DC) constraints, and a number of demographic variables that capture preferences (DEMO).

$$PROB(OWN) = f (OWN/RENT, I, IC, DC, DEMO)$$

Relative cost of owning versus renting. Several measures have been proposed to capture the relative cost of owning versus renting, including its consumption and investment aspects. These are observed rents, rent index (Sheldon 1978) and user cost (Hendershott and Shilling 1982). Recently, Goodman (1988) proposed two ratios: a house-specific ratio and a market-specific ratio. The ratio of house value to renter value is the house-specific measure (VALRENT) that indicates the relationship between consumption and investment characteristics and between renting and owning. With high expected housing price appreciation, which encourages owner-occupancy, the variable will take on high values. Thus, this variable is expected to be positively related to homeownership. The ratio of owner price to renter price (OWNRENT) is the market-specific measure that controls for the quality of houses across markets. This ratio is expected to have an inverse relationship to owner occupancy.

Household income and wealth. Household income and wealth play a key role in determining a household's ability to own a home. Both income and wealth are expected to be positively related to the propensity to own. The most desirable measure of income is considered to be the household's "permanent" income because it reflects longer term income capacity, including that from nonhuman capital. Permanent income, however, is not directly observed. Because a long time series on income for each household is typically not available, the "human capital" approach is typically used to construct a measure of permanent income (Goodman 1988).

Borrowing constraints. L-W are the first to quantify the importance of borrowing constraints on homeownership propensities. They focus on the income and wealth requirements for mortgages that

qualify for purchase by Fannie Mae and Freddie Mac. The authors use a four step approach: (1) they estimate the optimal house values for unconstrained households, those households who own homes with market values below what they can afford; (2) they predict the optimal house values for all households; (3) they determine several income and wealth constraint measures on the basis of the difference between the optimal house and the house that can be afforded; and (4) they estimate a logistic model of the probability of homeownership as a function of family income, the relative cost of ownership versus renting, a vector of control variables, and the borrowing constraints. Using data from the 1977 Survey of Consumer Credit and the 1983 Survey of Consumer Finances, the authors find that highly borrowing constrained households were less likely to choose homeownership. Of the two constraints, they find that the wealth constraint variables have larger impacts than the income variables. The authors also contend that the importance of borrowing constraints is likely to diminish with the increasing use of adjustable rate mortgages (ARMs).

A number of other researchers have examined the importance of borrowing constraints. First, Zorn (1989) models the mobility and tenure choice decision subject to income and wealth constraints and suggests that the traditional measure of relative owning/renting costs is not sufficient to describe the tenure choice process. He contends that the tenure decision is better understood as driven by a desire to maximize the level of utility from the overall consumption of housing and nonhousing goods under the two tenure regimes (own/rent).

Second, Haurin, Hendershott, and Wachter (1997) analyze the factors that affect the tenure choice of young adults, highlighting the impact of lender-imposed borrowing constraints. A unique contribution of this study is the use of longitudinal data from the National Longitudinal Survey of Youth (NLSY) for a panel of young households, heads ages 20 to 33 for the years 1985-90. The use of a longitudinal data set allows the authors to model household wealth as an endogenous factor, dependent on savings over time. The authors also check for selection bias when the sample is restricted to unconstrained owners. They apply Heckman's (cite) method and find no evidence of sample selection bias (the significance level of the inverse Mills ratio (lambda) is only 0.3). The authors find that homeownership tendencies are quite sensitive to potential earnings, the cost of owning relative to renting, and especially borrowing constraints. In their sample, 37 percent of households are constrained even after choosing their loan to value ratio to minimize the impact of the separate wealth and income constraints.

Finally, Linneman, Megbolugbe, Wachter, and Cho (1996) update L-W and estimate the effects of policy changes governing the borrowing constraints and changes in mortgage interest rates both on households' owning decisions and on the aggregate homeownership rate for the entire U.S. population. They consider 13 policy regimes determine by three levels of downpayment (80, 90 and 95 percent), two levels of front end ratios (28 and 33 percent), and 7 different mortgage interest environments (starting from 7 to 13 percent with incremental increases of 100 basis points). Using the 1989 Survey of Consumer Finance, the authors find that along with permanent income, marital status, and race of household head, borrowing constraints continue to play a significant factor in forming households' owning decisions. Consistent with L-W, a wealth constraint tends to have a larger and more significant effect

than the income constraint. The authors find the impact of wealth constraints to be nonlinear, i.e., measured in terms of both elasticity and percentage changes. Increasing the maximum allowable loan-to-value (LTV) ratio is shown to have a larger impact on homeownership rates with higher levels of initial LTV and income ratio.

Socio-demographic variables. The use of socio-demographic variables in household demand analysis is extensive and varied (Mayo 1981). These variables include age of head of household, race, and others. Consistent with Wachter and Megbolugbe (1992), socio-demographic factors are included in the present study to control for nonmonotonic effects of socio-demographic effects on permanent income.

METHODOLOGY AND DATA

The basic approach to assess the impacts of affordable lending efforts on homeownership rates is to compare homeownership rates under standard and alternative affordable lending scenarios. More narrowly, the paper offers an assessment of the impacts of changing underwriting guidelines on the homeownership propensity of specific socio-demographic groups while controlling for geographic locations. Of particular interest are the likely changes in homeownership propensities for low and moderate income households, African-American households, young households (head age less than 29 years of age), recent movers, and households living in central cities. A range of impacts due to changes in downpayment and front-end ratio requirements under different interest rate scenarios are estimated.

Three steps are taken to determine changes in homeownership propensities that may result from the use of flexible underwriting guidelines. First, key variables are constructed. These include the measures of relative housing prices, permanent income, household wealth, and income and downpayment constraint indicators, and the identification of populations of interest. Second, these variables are included in a logistic estimation of the tenure choice equations using different downpayment, front-end ratio and interest rate scenarios and for subpopulations of interest, i.e., full, young and tenure choice samples, and for African Americans, central city, and low and moderate income households. Third, the changes in the predicted probabilities of ownership under each of the affordable lending scenarios relative to a conventional baseline are calculated for each population of interest.

The data used in the analysis are taken from the 1995 National sample of the American Housing Survey (AHS). The AHS collects data every other year on the nation's people and their homes (around 42,000 homes). The 1995 sample was composed of 83 percent white households and 12 percent blacks, the remaining 5 percent is largely Asian households.

1. Variable construction

On the basis of the theoretical presentation above, four types of variables are included in the analysis: relative housing price variables, income and wealth variables, borrowing constraint indicators, and demographic variables. The way each type of variables was constructed is described below.

Relative housing price variables. Following Goodman (1988) and Wachter and Megbolugbe (1992), the value/rent and own/rent ratios are calculated for a national market, with regional variables for both owner and renter housing. This calculation is based on a hedonic price methodology. The dependent variable is the Box-Cox nonlinear transformation of the value or rent of the dwelling unit. The coefficients of the owner/renter hedonic price functions are used to compute marginal trait price schedules, which in turn are used to calculate the value/rent ratio. All relevant housing traits are included in this estimation. Following Goodman (1988), a Box-Cox parameter of 0.3 is used for owner housing and 0.6 is used for renter housing.

The AHS enforces top-coding for many of its variables to protect the identity of its respondents . Of particular importance for this study is the top-coding of house values. Any house value that exceeded $250,000 was coded at that value. Given that the house value is the dependent variable in a number of auxiliary regressions, ignoring the top-coding could introduce truncation bias. The values of top-coded houses were estimated from other data available in the survey.

The original sale price and time of sale is included in the AHS data for each house. Although sales prices are top-coded at $250,000, there is surprisingly little overlap between top-coded current prices and top-coded sales prices. Using the original sales price and the current house value, appreciation rates were computed for all houses in each census region. These were applied to the original sales price for top-coded houses to estimate their current value. Although there is some inaccuracy involved using this technique, the inaccuracy will be lower than it would be if we used more conventional techniques--either choosing a single value above the top-code for each house, or trying to complete the distribution of housing prices based on hedonic characteristics.

The estimated value/rent ratio is market specific. Thus, market baskets for a number of markets are calculated. For 22 markets, market basket houses are established by pooling renter and owner occupied samples. Each market basket is composed of the median of the traits. The average of marginal prices from the national sample is used to price each market basket to yield the owner price. Next, the average of marginal rents is applied to compute the rental equivalent to the same market basket to yield the rental price. Finally, the value/rent ratio is computed, which varies across markets but remains constant for houses in each local market.

Houses prices are deflated to allow for comparability of housing in different geographic areas. A deflator based on the median house price of the MSA as reported by the U.S. Census is selected. The median house price is further refined to create a constant-quality index by regressing the reported median housing price on reported characteristics of the median housing for each MSA. Using the estimated coefficients, a constant-quality MSA-specific housing price deflator is constructed. The deflator used for

those falling outside the MSAs is the 1995 regional constant-quality housing price index provided in the Statistical Abstract of the United States (1997).

The owner/rent ratio is estimated in a similar way. The own/rent ratio is dwelling specific. The owner hedonic price equations are used to compute the marginal trait price schedule and to evaluate the marginal trait price for the given quantity of that trait in each house to give the estimated value for that house. For the same house, the renter hedonic price function is used to compute the marginal rent schedule. We evaluate the marginal rental price for the same quantity of the trait in each house to derive the estimated rental value for the house. The ratio of these two calculations is the house specific own-rent ratio. (Refer to the appendix for details and tables.)

Household income. Consistent with the literature, permanent income is used in the analysis. The methodology used to estimate permanent income is adapted from the "human capital" approach used in labor economics (Goodman 1988, Wachter and Megbolugbe 1992). In the estimation of permanent income, the dependent variable is a Box-Cox transformation with lambda equal to 0.5, which represents a square root transformation. The independent variables in the permanent income equation include education of household head, age, marital status, whether spouse works, region of the country, ethnicity, whether owned home before, and number of cars owned. (Refer to the appendix for details and tables.)

Borrowing constraints. The identification of income and wealth constrained households under different scenarios was done following Wachter et al. (1995). This identification was done in several steps: (1) we estimated household wealth, (2) we estimated the maximum home purchase price for which households could qualify based on conventional income and downpayment requirements, (3) we estimated the level of housing services households desire to purchase, i.e., the optimal home purchase price, (4) we identified unconstrained homeowners as those that chose to own homes with values below the maximum house price these households could have purchased under conventional underwriting requirements, (5) we used the unconstrained sample of home owners to estimate the optimal house equation for the whole sample, and (6) we identified households in the whole sample that were income or downpayment constrained, or both.

Unfortunately, although AHS has a direct measure of household income, it lacks a direct measure of household wealth to identify downpayment (wealth) constrained households. However, three approaches can be used to estimate wealth from AHS data: (1) an estimate of wealth can be derived econometrically from other AHS information, (2) non-wage assets can be estimated as the difference between the reported total household income and total wage income, and (3) the value of home equity for homeowners can be computed.[2]

[2] It is important to note that retirement pensions, an important part of household assets, do not generate income. Our estimates of assets will not include pensions.

First, following Wachter et al. (1995), an estimate of household wealth is derived econometrically from other AHS information. The AHS includes the variable VOTHER. This variable measures income from sources other than wages and salary. Also included in the AHS is a set of five indicator variables denoting the sources of VOTHER income. The potential sources of VOTHER are: social security, alimony, welfare, rental income, and interest income. It should be noted that these are not the only sources of VOTHER as some individuals reported other income and none of these sources were designated. It was assumed that these other sources of VOTHER were asset generated income.

In order to determine asset-generated income, a linear regression was used to determine the average amount of income generated by each source for those who reported multiple sources of VOTHER. This was done by regressing VOTHER on the set of five indicator variables. For those reporting income from the three non-asset sources: social security, alimony, and welfare, the estimated amount of each income source was subtracted from reported VOTHER. The remainder was considered asset-generated income. For those reporting a single source of VOTHER, the entire amount of VOTHER was assumed to be derived from that source. Using asset specific rates of return, the estimated asset generated income was then capitalized to predict assets. (Refer to the appendix for details and tables.)

Second, business-generated income was estimated by determining the difference between total household income and total wages and salaries reported by all household members. The AHS reports these income flows separately. The difference between wages and salaries and household income is assumed to be business-generated. The estimated flow is capitalized using the average return on business equity using information provided in the Statistical Abstract of the United States (1997).

Finally, housing equity was estimated by subtracting the reported home price from the principal outstanding on the mortgage(s) held on the house.

The three measures of household wealth, as described above, were used to develop the downpayment (wealth) constraint variable. Housing equity and other wealth estimates were discounted for transaction costs to estimate "liquid" assets. For housing equity and business income, transaction costs of 7% of the house or business value were subtracted from the corresponding wealth estimates. For financial assets, a 3% transaction cost was imposed.

An attempt was made to cross-validate the asset estimates.[3] Although a similar national sample for 1995 (such as the Survey of Consumer Finances) was not available, we used information on the

[3]An approach similar to the one described was used by Wachter et al. (1995) to estimate household wealth with AHS data. In their work, Wachter et al. cross-validate their 1989 wealth estimates with data from the 1989 Survey of Consumer Finances.

distribution of household assets provided by the Board of Governors of the Federal Reserve. The Fed estimates include pensions in their measure of household assets and do not discount assets for transaction costs. Our estimates of assets were, on average, around two-thirds of the Fed estimates. This is consistent with the Fed's estimates that pensions account for about one third of average household portfolios. Further, when we compare our estimates of assets by age groups with those of the Fed, the differences increase with age. In other words, our estimates lag the Fed's estimates more as household age increases. This is consistent with the our failure to account for pensions which would increase as a family ages.

Following L-W, families were considered unconstrained if they choose to own homes with values below the maximum house prices these families could have purchased under GSEs' conventional income and downpayment requirements. The unconstrained sample of home owners was then used to estimate the optimal home purchase equation.

To obtain the predicted optimal home purchase price for all households, the product of the covariate vector for each household and the vector of estimated parameters from the equation above was calculated. If the predicted optimal home purchase price was less than the maximum house price families can afford based on conventional guidelines, families were considered eligible under the income, downpayment, or both requirements. Otherwise, they were considered constrained by one or both requirements.

Measures of constraints were estimated using different downpayment and front-end requirements and for different interest rate scenarios.

Populations of interest. The primary goal of the study is to assess the impact of changing borrowing constraints on homeownership rates. The identification of impacts on certain populations is of particular interest. These populations include minority households, low income households, central city residents, recent movers, and young households (with heads 24 to 29 years of age). These are the populations most likely to be targeted for participation in affordable lending programs.

2. Tenure choice estimation

The above variables are included in the estimation of tenure choice equations for all households, recent movers, and young households. More narrowly, we modeled the tenure decision (Prob(own) using a logit estimation, so that

Prob(own)= permanent income - transitory income - own/rent + value rent + age - household size + married - male + black + Hispanic - income constrained - wealth constrained.

The plus and minus signs in front of the variables represent the expected effect of the variable on the probability of owning a home. These expected signs are derived from the theoretical discussion above.

The results of the estimation are presented as mean partial derivatives for the full, young, and recent mover samples. The results of estimating the tenure choice equation for other sub-populations such as African-American, central city, and low and moderate income households are also presented for the different downpayment, front-end ratio and interest rate scenarios.

3. Changes in homeownership propensities

Different underwriting scenarios were modeled to capture the impacts of affordable lending efforts on the homeownership propensities of underserved populations. The baseline and affordable scenarios are presented in Table 1. Two of the alternative scenarios include changes in interest rate regimes. These were included to assess the impacts of changes in the cost of borrowing relative to changes in the underwriting guidelines. Assessment of these relative impacts will be used to assess the accuracy of attributing observed homeownership propensities wholy to the latter when in fact changes in interest rate may be partially responsible.

The baseline scenario is defined as a 30 year fixed rate mortgage at the prevailing market rate of 8 percent (1995). A 20 percent downpayment and a 28 percent front-end payment to income ratio are assumed[4]. Alternative affordable scenarios include a 5 percent downpayment (e.g., Freddie Mac's Affordable Gold 95), 3 percent downpayment from borrower's asset with a 95 LTV (e.g., Freddie Mac's Affordable Gold 3/2), and a 0 percent downpayment scenario, where the required 3 percent downpayment is assumed to come from nonborrower sources with a 97 LTV (e.g. Freddie Mac's Alt 97). Also, alternative scenarios include 33 and 38 percent front-end ratios. To capture the impacts of lowering borrowing costs, a 200 basis point reduction in the prevailing rate is considered. The impacts on these affordable lending scenarios on the homeownership propensities of underserved populations are presented below. These include changes in the probability of homeownership for young households, minority, low-moderate income, recent movers, and central city households.

The basic approach is to estimate baseline models for all households and for each targeted population. The coefficients from these models are applied to the individual characteristics of households

[4] The average interest rate on conventional mortgages in 1995 was 8.09% as reported in the Statistical Abstract. The downpayment and PITI criteria were chosen to conform with conventional mortgages not requiring PMI

to estimate the household level homeownership propensity. Group homeownership propensities are calculated by summing up corresponding household level propensities. The affordable scenarios are modeled by applying the coefficients from the baseline models to individual level characteristics, including the now less restrictive income and asset constraint measures. As before, the resulting household level homeownership propensities are summed up to estimate group propensities.

Descriptive statistics for the sample are presented in Table 2. In 1995, 65.7 percent of households owned their homes. The average value of their homes was about $105,000, or about 250% of family income. The better part (91.5 percent) of household income is estimated to be "permanent" or consistent with the productivity characteristics of the head of household, while 8.5 percent of income is considered "transitory." In 1995, the average household head was about 49 years old, lived in a household with 2.64 people, was married or had been married, was male (63 percent), and did not live in a central city (66.6 percent). It is estimated that the average household had assets of about $126,000.

Table 3 reports the percentages of households that are income or wealth constrained under the baseline and affordable underwriting scenarios. In the full sample, about one-eight of households in the sample had inadequate income to afford a mortgage to purchase their optimal house. About one-third of households had insufficient assets to purchase the same house with a 20% downpayment. As expected, under the affordable scenarios, the percentages of constrained households decreases. For example, a 2% reduction in the mortgage interest rate loosens the income constraint for 4.6% of households (scenario 1). As a rule, Increasing the allowable front-end ratio decreases the percentage of income constrained households (scenarios 2-6). However, the positive impact of increasing allowable front-end ratios is counteracted when downpayments are lowered beyond a certain point. When downpayments are reduced from 5 to 3 percent (scenarios 3 and 4 respectively) , the percentage of income constrained *increases* even when holding constant front end ratios requirements. This is because households have to get a larger loan to purchase their optimal house than under the larger downpayment scenario.

Consistent with the literature, the downpayment requirement is a greater detriment to home purchase than the income requirement. Thus, lowering the cost of borrowing does not necessarily allow more people to purchase once the downpayment requirement becomes binding. For instance, although the percentage of income constrained households decreased as a result of a 200 basis point drop from 8 percent (scenario 5) to 6 percent (scenario 6) in the interest rate, the percent of people that could actually buy a house remained the same because the percentage of downpayment constrained households remained unchanged.

ECONOMETRIC RESULTS

Table 4 presents the model used to estimate the probability of homeownership for all households.

Generally, the results conform to those found in other studies of tenure choice (e.g., Wachter and Megbolugbe 1992; Linneman and Wachter 1989). The permanent income component is strongly positively associated with homeownership propensity. The coefficient on transitory income is smaller, negative and significant. The relative cost of ownership is also a strong, negative determinant of ownership, while anticipated capital gains, as captured by the value-to-rent ratio, are positively associated with ownership. Homeownership is significantly associated with age and marital status. Consistent with the findings of other recent studies, homeownership rates fall with the number of dependents in the household. Controlling for borrowing constraints, females, blacks and Hispanics exhibit higher rates of home ownership than whites and males.

Finally, and importantly for present purposes, the constraint variables have the expected negative signs and are significant. The income constraint term, though statistically significant, tends to have low magnitude effects; but the downpayment constraint indicator is significant, statistically and substantively. The wealth constraint has about three times the impact of the income constraint.

The results of estimating the tenure choice equation for black, central city, recent movers, and low-moderate income households are not presented here (available from the authors). Likelihood ratio tests indicate that these bifurcations of the model significantly improve the fit of the data. As a rule, the findings are similar to those discussed above.

The homeownership propensities for all households and for targeted groups are presented in Tables 5 for the baseline and affordable scenarios. The impacts of affordable lending efforts on homeownership rates are presented in Table 6. These impacts are captured with the relative changes in homeownership propensities due to shifting from the baseline scenarios to the alternative affordable scenarios presented in Table 6. The relative changes are calculated using the mean baseline probability for each targeted group.

As expected, ownership rates are higher for all groups under all affordable scenarios than under the baseline scenario. Overall, the impacts of changing borrowing costs (changes in interest rate) are smaller than those resulting from changing underwriting guidelines. These can be seen in the relative changes from the baseline to Scenario 1.

Interestingly, the impacts of changing underwriting guidelines is not uniform across affordable products. As expected, relative changes in ownership rates are smaller for all households. However, except for the Alt97/Flex 97 scenario, Table 6 suggests that these relative changes may be also smaller for recent movers and central city households than for other households. For instance, under scenarios 2 to 5, these relative changes range from 0.8 to 10.1 for recent movers, and 0.6 to 9.0 for central city households compared with relative changes that range from 0.4 to 12.3 for blacks, and from 2.7 to 14.4 for low and moderate income households. These figures suggest that a product such as Freddie Mac's Affordable Gold 5 is likely to have a greater impact on the homeownership propensities of blacks that it would have on central city households.

Compared with other affordable products, the recently introduced Alt 97 and Flex 97, in which the required 3 percent downpayment can come from non-borrower sources, result in the highest predicted ownership rates for all groups. However, such products also result in smaller relative changes in homeownership propensities for all and for low and moderate income households. Such products have the greatest impact on the homeownership propensities of young households (27.1 percent increase in homeownership propensity), black households (21.0 percent increase), and recent movers (19.0 percent increase). This suggest that products like Alt97 and Flex97 may be most appropriate to households with income growth potential (e.g., recent university graduates) but not for all low-moderate income households.

WILL AFFORDABLE LENDING EFFORTS SUFFICE?

The demand analysis above suggests that relying on affordable lending products is likely to increase homeownership propensities for traditionally underserved populations. Unfortunately, the full impact of these affordable products may not be realized unless there is an adequate supply of housing at prices potential homeowners are able and willing to pay. This implies that research work that focuses only on the demand side analysis may overestimate the potential impacts of affordable products, if there is a mismatch between the demand and supply of appropriately priced housing. A brief examination of this issue is presented in this section.

Up to this point, our analysis has focused almost solely on the demand side of the housing market. Implicit in the predicted homeownership propensities is the assumption that *should the household decide to purchase their optimal home they will find that house available in their market*. In the optimal house estimation, both supply and demand aspects of the market are incorporated. The hedonic regression for unconstrained households yields the estimated parameters used to predict optimum house values for all households. The estimates are based on actual house values and take into account some geographical variation in prices. However, there is no guarantee that the existing stock of available houses corresponds with the needs of potential new owners.

In order to illustrate this point, Table 7 shows the relative price distribution of existing and new housing, and the distribution of housing needs of our sample, as reflected in the price of optimal housing, under the baseline and the Alt97/Flex97 scenarios. The distribution of existing homes (column 2) and optimal homes for all unconstrained households (column 3) for the sample is fairly similar. There are more homes in the under $80,000 range than are currently needed, fewer in the $80-120,000 and $121-150,000 ranges than needed, and more than needed in the above $150,000 ranges. This would suggests that there is a slight mismatch between the current housing stock and the population needs with many households over-housed ($150,000+) and many under-housed (<$80,000).

Table 7 also shows the situation is much different for unconstrained renters, those who do not

own a home. Under the baseline scenario, 20% down, 28% front-end ratio, nearly 80% of the unconstrained renters need housing priced below $80,000. This compares with the 63% of housing that exists in that range. Making matters worse, new construction of homes does not seem to correspond at all with the housing needs of unconstrained renters. Only 7.7% of new homes constructed in 1996 were priced below $80,000. In the absence of significant filtering, this would indicate that the full benefits of affordable lending efforts may not be realized unless the mismatch between the housing needs of unconstrained households and the supply of housing is addressed.

IMPLICATIONS FOR POLICY AND RESEARCH

The analysis presented in this study indicates that affordable lending efforts have the potential to increase homeownership opportunities for underserved populations. In particular, the most promising efforts are those that address the lack of adequate savings to make necessary downpayments. The products likely to have the greatest impacts are the recently introduced Alt 97 (Freddie Mac) and Flex 97 (Fannie Mae), which allow the required three percent downpayment to come from non-borrower sources, including unsecured debt. Overall, the impacts of reducing borrowing costs are significantly smaller than those that result from using affordable underwriting guidelines.

The findings also suggest that affordable products are not likely to impact equally all targeted populations. For instance, a product that requires borrowers to make a 3 percent downpayment from their own savings and allows for a 33 percent front end ratio is likely to increase the relative probability of owning by 4.1 percent among low-moderate income households, but 12.5 percent among young households. Thus, narrowly tailored products may be needed to reach specific populations effectively.

Moreover, even if products are appropriately designed to reach specific populations, the full benefits of these affordable lending efforts may not be fully realized because of supply considerations. Although brief, the supply analysis above suggests that even if households have enough income and wealth to purchase their optimal house, such homes may not be available in the market. The supply analysis suggests that there may be a mismatch between the households people desire for ownership (and can afford) and those available in the market.

The importance of supply considerations also suggests directions for future research efforts. Studies examining the impacts of changing underwriting guidelines in general, and of affordable lending efforts in particular, need to incorporate supply considerations. One such effort is already underway. The authors are currently examining both supply and demand considerations in the Washington, DC metropolitan area resulting from the use of affordable underwriting guidelines. This type of demand/supply analysis needs to be expanded to other metropolitan areas. If supply considerations are omitted, the potential impacts of affordable lending efforts are likely to be over-estimated. Moreover, the predicted behavior of households is likely to be mis-specified because it would ignore likely household behavior in response to a lack of appropriately priced housing.

In addition to a fuller treatment of supply considerations, the methodology used in the analysis could be improved in a number of ways. These include the incorporation of credit history information. Most affordable lending efforts, including the Alt97 and Flex97 products, require borrowers to have good credit histories to qualify. In the absence of such information, the reported changes in homeownership propensities overstate the likely impact of affordable lending efforts because not all members of targeted groups have good credit histories.

Improvements to the methodology also include a more precise estimation of households wealth/assets and incorporating the way changing underwriting guidelines change the cost of owning relative to renting.

Table 1. Simulation Scenarios

Scenario	PITI	Interest Rate	Downpayment
Baseline	28%	8%	20%
1	28%	6%	20%
2	33%	8%	5%
3	38%	8%	5%
4	33%	8%	3% (95% loan/value)
5	38%	6%	3%
6	33%	8%	0% (97% loan/value)

Table 2. Mean and Standard Deviation of Model Variables

Variable	Mean	St. Dev
Own home	0.6526	0.4761
House Value	104,480.70	57,351.16
Household Income	42,341.29	35,233.77
Permanent Income	38,748.26	21,988.82
Transitory Income	3,592.96	32,383.80
Age of Head of HH	48.89	17.193
Own/Rent Ratio	1.4051	0.1214
Valrent Ratio	1.3881	0.0312
Family size	2.64	1.479
Ever Married	0.8377	0.3687
Male Head of HH	0.6353	0.4813
Black Head of HH	0.1162	0.3204
Hispanic Head of HH	0.0874	0.2825
In Central city	0.3336	0.4715
Recent movers	0.3509	0.4749
Assets	125,711.69	231,941.13

Table 3. Borrowing Constraint Variables

Variable	Baseline Scenario	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Full Sample							
Income Constrained	12.3	7.9	12.4	9.1	12.4	6.1	12.9
Wealth Constrained	34.4	34.4	17.7	17.7	15.2	15.2	0
Black Head of Household							
Income Constrained	10.4	7.3	10.6	8.1	10.5	5.9	11.0
Wealth Constrained	44.8	44.8	20.6	20.6	17.0	17.0	0
Recent Movers							
Income Constrained	11.6	7.7	11.7	8.9	11.7	6.0	12.1
Wealth Constrained	55.8	55.8	29.4	29.4	25.3	25.3	0
Low to Moderate Income							
Income Constrained	35.1	24.3	35.5	27.5	35.5	19.3	36.6
Wealth Constrained	38.8	38.8	17.5	17.5	14.1	14.1	0
In Central City							
Income Constrained	12.5	8.4	12.6	9.7	12.6	6.8	13.0
Wealth Constrained	40.6	40.6	19.3	19.3	16.5	16.5	0
Young Households							
Income Constrained	8.4	5.4	8.5	6.5	8.5	4.5	8.9
Wealth Constrained	63.8	63.8	30.1	30.1	25.8	25.8	0

Table 4. Logistic Estimation of Probability of Ownership (Baseline model, all households)

Variable	Coeff.	St. Err.	Prob-val
Intercept	2.1581	0.2700	0.0001
Permanent Income	0.000108	1.62E-6	0.0001
Transitory Income	-0.0001	7.60E-7	0.0001
Own/Rent	-5.2742	0.1514	0.0001
Val/Rent	8.4359	3.7081	0.0229
Age of HH Head	0.0585	0.00119	0.0001
Family size	-0.0249	0.0127	0.0494
Ever married	0.4372	0.0465	0.0001
Male head of HH	-0.4671	0.0350	0.0001
Black head of HH	0.1419	0.0478	0.0030
Hispanic head of HH	0.2812	0.0578	0.0001
Income constrained	-0.5650	0.0504	0.0001
Wealth Constrained	-1.7008	0.0367	0.0001
Number of Observations	40027		
-2 log L	Intcpt Only	Int. & cov	Chi-sq pval
	51455	25941	0.0001

Table 5. Impact of Changing Underwriting Criteria (Homeownership Propensities)

Variable	Baseline Scenario	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Full Sample	65.7	66.1	68.9	69.1	69.9	69.8	73.4
Black Head of HH	43.8	43.9	48.2	48.4	49.0	49.2	53.1
Recent Movers	38.1	38.4	41.1	41.3	41.7	42.1	45.5
Lowmod Income	47.2	48.4	51.3	52.6	51.8	53.7	55.7
In Central City	50.5	50.7	54.0	54.6	54.5	54.7	57.7
Young HH	32.4	32.5	36.4	36.5	37.0	37.1	41.0

Table 6. Impact of Changing Underwriting Criteria (Relative Percent Change in Probability of Owning)

Variable	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Full Sample	0.5	4.8	5.2	5.6	6.3	10.9
Black Head of HH	0.3	10.0	10.2	11.9	12.3	21.1
Recent Movers	0.7	7.9	8.4	9.4	10.2	19.4
Lowmod Income	2.5	8.1	10.0	9.7	13.8	18.0
In Central City	0.5	6.7	7.1	7.8	8.5	14.4
Young HHs	0.2	11.7	12.5	14.0	14.4	26.6

Table 7. Distributions of House Prices vs. Distribution of Optimal House Prices for Unconstrained Households

Price ranges	Percentage of existing homes in price range*	Percentage of new homes in price range**	Percentage of unconstrained households with optimal house price within range, using baseline scenario	Percentage of unconstrained renters with optimal house price within range, using baseline scenario	Percentage of unconstrained households with optimal house price within range, using Alt97/ Flex97	Percentage of unconstrained renters with optimal house price within range, using Alt97/ Flex97
< $80,000	62.9	7.7	52.4	79.6	53.9	76.2
$80-120,000	15.7	26.7	25.2	12.2	25.7	16.3
$121-150,000	7.9	20.7	13.8	5.0	12.6	5.0
$151-200,000	8.5	20.8	8.1	3.0	7.3	2.3
> $200,000	4.9	24.1	0.4	0.1	0.3	0.1

* Based on the national AHS sample for 1995

** From *Characteristics of New Housing* US Census, as reported in *The Statistical Abstract of the United States 1997* Table 1188., p. 719.

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Appendix. Hedonic Regressions

The SAS System 19:45 Friday, April 3, 1998 33

Model: MODEL1
Dependent Variable: TVALUE [House value]

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	27	548202160162	20303783710	593.503	0.0001
Error	24846	849982885749	34210049.334		
C Total	24873	1.398185E12			

Root MSE	5848.93574	R-square	0.3921
Dep Mean	87.76534	Adj R-sq	0.3914
C.V.	6664.28848		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	52.055490	0.68154993	76.378	0.0001
BTYEAR	1	-0.116431	0.00422598	-27.551	0.0001
NUNIT	1	-0.040798	0.01248600	-3.268	0.0011
CELLAR	1	2.056882	0.19707379	10.437	0.0001
GARAGE	1	4.249943	0.20540293	20.691	0.0001
ROOMS	1	2.074180	0.07593443	27.315	0.0001
BDRMS	1	-0.296514	0.13902337	-2.133	0.0329
BATHS	1	4.565992	0.15616792	29.238	0.0001
AIRSYS	1	2.352428	0.19653386	11.970	0.0001
SNONE	1	-1.528429	0.17455817	-8.756	0.0001
CRACKHOL	1	-2.520960	0.48320975	-5.217	0.0001
PAINT	1	-1.288700	0.52919291	-2.435	0.0149
IFBLOW	1	0.353416	0.24226615	1.459	0.1446
IFSEW	1	-0.266672	0.71620328	-0.372	0.7096
IFDRY	1	-0.203381	0.48221065	-0.422	0.6732
RATS	1	-1.127035	0.63217234	-1.783	0.0746
HOWN	1	0.589608	0.04639363	12.709	0.0001
HOWH	1	0.771403	0.06224360	12.393	0.0001
NEAST	1	8.818692	0.27877567	31.634	0.0001
MWEST	1	1.331769	0.23690448	5.622	0.0001
WEST	1	8.519408	0.28938514	29.440	0.0001
CCITY	1	-1.769567	0.19395296	-9.124	0.0001
NYC	1	10.686391	0.72347781	14.771	0.0001
DC	1	17.081803	0.80357348	21.257	0.0001
MACA	1	12.210959	0.41530104	29.403	0.0001
MAFL	1	3.949704	0.45904560	8.604	0.0001
CHI	1	12.858277	0.57574275	22.333	0.0001
BOST	1	12.018206	0.92073180	13.053	0.0001

Model: MODEL1
Dependent Variable: TGRENT [Monthly rent]

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	27	256082209754	9484526287.2	222.191	0.0001
Error	14231	607470224586	42686404.651		
C Total	14258	863552434341			

Root MSE	6533.48335	R-square	0.2965
Dep Mean	54.36510	Adj R-sq	0.2952
C.V.	12017.78862		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	27.912962	0.91516830	30.500	0.0001
BTYEAR	1	-0.047990	0.00647160	-7.415	0.0001
NUNIT	1	-0.028143	0.00683525	-4.117	0.0001
CELLAR	1	2.163207	0.49186794	4.398	0.0001
GARAGE	1	5.099900	0.30145463	16.918	0.0001
ROOMS	1	2.869400	0.16864908	17.014	0.0001
BDRMS	1	-1.252239	0.25305813	-4.948	0.0001
BATHS	1	7.715609	0.31002971	24.887	0.0001
AIRSYS	1	6.027931	0.31092354	19.387	0.0001
SNONE	1	-1.175966	0.35489473	-3.314	0.0009
CRACKHOL	1	-1.836763	0.49389000	-3.719	0.0002
PAINT	1	-0.247650	0.55478541	-0.446	0.6553
IFBLOW	1	1.303750	0.37874398	3.442	0.0006
IFSEW	1	-2.200769	0.83137559	-2.647	0.0081
IFDRY	1	0.123353	0.54698267	0.226	0.8216
RATS	1	-2.995878	0.62880399	-4.764	0.0001
HOWN	1	0.562001	0.05860795	9.589	0.0001
HOWH	1	-0.424495	0.07348155	-5.777	0.0001
NEAST	1	8.089033	0.43186555	18.730	0.0001
MWEST	1	0.907860	0.38281277	2.372	0.0177
WEST	1	4.723897	0.43932741	10.753	0.0001
CCITY	1	-0.203647	0.25647513	-0.794	0.4272
NYC	1	9.075298	0.61061615	14.863	0.0001
DC	1	15.541091	1.01115635	15.370	0.0001
MACA	1	8.783371	0.49208144	17.849	0.0001
MAFL	1	7.134414	0.69083841	10.327	0.0001
CHI	1	12.446241	0.78742795	15.806	0.0001
BOST	1	9.082301	1.04537887	8.688	0.0001

Appendix. Optimum House Regression

The SAS System 11:16 Sunday, April 19, 1998 5
Model: MODEL1
Dependent Variable: VALUE95 PROPERTY VALUE (SAMPLE UNIT)- 1995

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	26	5.3063275E18	2.0408952E17	662.468	0.0001
Error	18487	5.6953702E18	3.0807433E14		
C Total	18513	1.1001698E19			

Root MSE	17552046.3550	R-square	0.4823
Dep Mean	96095.61577	Adj R-sq	0.4816
C.V.	18265.18953		

CONST=0

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	30652	5875.7971336	5.217	0.0001
AGE	1	387.782583	124.59452043	3.112	0.0019
AGESQ	1	-2.442312	1.16073350	-2.104	0.0354
ZINC	1	1.473279	0.02646531	55.668	0.0001
ZINCSQ	1	-0.000004580	0.00000014	-31.594	0.0001
VALRENT	1	-890920	131435.41296	-6.778	0.0001
EVMARR	1	3507.470766	1117.7839100	3.138	0.0017
CHILD	1	2217.184754	287.08598273	7.723	0.0001
MALE	1	-286.741637	659.42523010	-0.435	0.6637
BLACK	1	-11594	1060.7195683	-10.931	0.0001
HISPANIC	1	-6484.982809	1356.2262507	-4.782	0.0001
OTHER	1	-4584.522179	3094.5884890	-1.481	0.1385
EDUC1	1	2646.161031	1585.7059898	1.669	0.0952
EDUC2	1	5502.351639	1394.8302688	3.945	0.0001
EDUC3	1	11408	1436.2157847	7.943	0.0001
EDUC4	1	19928	1514.3886106	13.159	0.0001
EDUC5	1	23444	1620.8639792	14.464	0.0001
NEAST	1	14830	888.83664042	16.685	0.0001
MWEST	1	1311.920646	779.61025228	1.683	0.0924
WEST	1	19577	1071.9953844	18.262	0.0001
CCITY	1	-4588.281859	854.98554357	-5.367	0.0001
NYC	1	12734	2528.5859641	5.036	0.0001
DC	1	34351	3368.0871219	10.199	0.0001
BOST	1	25154	3468.6367411	7.252	0.0001
CHI	1	18186	2491.1898435	7.300	0.0001
MACA	1	29481	1602.4809252	18.397	0.0001
MAFL	1	9568.656277	1555.0235200	6.153	0.0001

Appendix. Human Capital Regressions

The SAS System 20:53 Monday, April 6, 1998 308

Model: ALL
Dependent Variable: VINC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	23	1.0265885E14	4.4634281E12	1587.647	0.0001
Error	41158	1.1570944E14	2811347499.2		
C Total	41181	2.1836829E14			

Root MSE	53022.14159	R-square	0.4701
Dep Mean	375.48723	Adj R-sq	0.4698
C.V.	14120.89081		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	189.400782	2.89600544	65.401	0.0001
EDUC1	1	12.453436	2.76785659	4.499	0.0001
EDUC2	1	40.753866	2.46465227	16.535	0.0001
EDUC3	1	67.529748	2.54360822	26.549	0.0001
EDUC4	1	114.359941	2.72773096	41.925	0.0001
EDUC5	1	154.712924	3.00279306	51.523	0.0001
AGE1424	1	-57.902500	3.29597060	-17.568	0.0001
AGE2529	1	-4.414786	2.85937749	-1.544	0.1226
AGE3034	1	33.762438	2.65250156	12.729	0.0001
AGE3544	1	48.195163	2.37051959	20.331	0.0001
AGE4554	1	59.760590	2.44669396	24.425	0.0001
AGE5564	1	45.384528	2.55160257	17.787	0.0001
AGE6574	1	8.917171	2.50530093	3.559	0.0004
MALE	1	21.866744	1.36818055	15.982	0.0001
MARRIED	1	64.215091	1.43494940	44.751	0.0001
SWORK	1	81.382668	1.37625936	59.133	0.0001
WEST	1	-8.115279	1.79407046	-4.523	0.0001
SOUTH	1	-18.437868	1.60807091	-11.466	0.0001
MWEST	1	-16.692127	1.70868924	-9.769	0.0001
CARS	1	22.538237	0.71865388	31.362	0.0001
BLACK	1	-33.596156	1.84377715	-18.221	0.0001
HISPANIC	1	-32.736502	2.28496656	-14.327	0.0001
ASIAN	1	-7.868006	3.63365619	-2.165	0.0304
OTHER	1	-23.406597	4.33355467	-5.401	0.0001

Model: OWNER
Dependent Variable: VINC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	23	6.4202142E13	2.7913975E12	915.206	0.0001
Error	26846	8.1880863E13	3050020962.6		
C Total	26869	1.46083E14			

Root MSE	55226.99487	R-square	0.4395
Dep Mean	417.20591	Adj R-sq	0.4390
C.V.	13237.34711		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	203.831046	3.77668696	53.971	0.0001
EDUC1	1	14.748057	3.73287935	3.951	0.0001
EDUC2	1	38.923493	3.24063833	12.011	0.0001
EDUC3	1	67.814170	3.34931618	20.247	0.0001
EDUC4	1	113.088777	3.54410258	31.909	0.0001
EDUC5	1	154.416658	3.79456728	40.694	0.0001
AGE1424	1	-13.631581	7.95408714	-1.714	0.0866
AGE2529	1	21.210371	4.40950604	4.810	0.0001
AGE3034	1	56.920237	3.49232510	16.299	0.0001
AGE3544	1	64.541012	2.96772936	21.748	0.0001
AGE4554	1	68.745641	2.99664393	22.941	0.0001
AGE5564	1	51.984564	3.04470517	17.074	0.0001
AGE6574	1	12.075680	2.95036252	4.093	0.0001
MALE	1	17.982088	1.89804177	9.474	0.0001
MARRIED	1	52.490596	1.95649477	26.829	0.0001
SWORK	1	90.448373	1.76277543	51.310	0.0001
WEST	1	-1.858947	2.39252655	-0.777	0.4372
SOUTH	1	-23.480364	2.08716683	-11.250	0.0001
MWEST	1	-19.874398	2.17969667	-9.118	0.0001
CARS	1	19.975109	0.89014064	22.440	0.0001
BLACK	1	-28.276880	2.77837357	-10.177	0.0001
HISPANIC	1	-25.859238	3.46791783	-7.457	0.0001
ASIAN	1	13.299338	5.10379446	2.606	0.0092
OTHER	1	-32.966298	7.78012540	-4.237	0.0001

Model: RENTER
Dependent Variable: VINC

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	23	1.5809186E13	687355908201	358.688	0.0001
Error	14288	2.7380204E13	1916307643.9		
C Total	14311	4.318939E13			

Root MSE	43775.65127	R-square	0.3660
Dep Mean	295.20653	Adj R-sq	0.3650
C.V.	14828.82205		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	184.258328	4.15769235	44.317	0.0001
EDUC1	1	9.537990	3.62518706	2.631	0.0085
EDUC2	1	36.043372	3.35670204	10.738	0.0001
EDUC3	1	56.519314	3.45597368	16.354	0.0001
EDUC4	1	97.663354	3.82288150	25.547	0.0001
EDUC5	1	129.969101	4.60461297	28.226	0.0001
AGE1424	1	-32.142762	4.10025003	-7.839	0.0001
AGE2529	1	14.205618	3.95178536	3.595	0.0003
AGE3034	1	33.351103	3.95462196	8.433	0.0001
AGE3544	1	38.599508	3.74729115	10.301	0.0001
AGE4554	1	46.447508	4.00975337	11.584	0.0001
AGE5564	1	31.083427	4.43550863	7.008	0.0001
AGE6574	1	2.044488	4.50586533	0.454	0.6500
MALE	1	26.503365	1.73362822	15.288	0.0001
MARRIED	1	48.296499	2.02349900	23.868	0.0001
SWORK	1	51.732257	2.00262897	25.832	0.0001
WEST	1	-11.825672	2.40277710	-4.922	0.0001
SOUTH	1	-15.109994	2.27324662	-6.647	0.0001
MWEST	1	-20.435812	2.48618246	-8.220	0.0001
CARS	1	16.403562	1.16064076	14.133	0.0001
BLACK	1	-22.791315	2.17668178	-10.471	0.0001
HISPANIC	1	-21.739704	2.66332895	-8.163	0.0001
ASIAN	1	-14.204999	4.51057436	-3.149	0.0016
OTHER	1	-4.869679	4.43927651	-1.097	0.2727

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Variable	Label	N	Mean	Std Dev
ASSETS		42424	123314.06	104951883
HOMEQUIT		42424	19499.60	16163940.84
VOTHER	NON-WAGE INCOME 704	42424	9715.15	7856998.10

Univariate Procedure

Variable=ASSETS
Weight= WEIGHT FINAL WEIGHT

Moments

N	42424	Sum Wgts	8.9524E9
Mean	123314.1	Sum	1.104E15
Std Dev	1.0495E8	Variance	1.101E16
Skewness	.	Kurtosis	.
USS	6.034E20	CSS	4.673E20
CV	85109.42	Std Mean	1109.228
T:Mean=0	111.1711	Pr>|T|	0.0001
Num ^= 0	42424	Num > 0	42424
M(Sign)	21212	Pr>=|M|	0.0001
Sgn Rank	4.4996E8	Pr>=|S|	0.0001

Quantiles(Def=5)

100% Max	2559246	99%	1115153
75% Q3	145057.2	95%	506974.3
50% Med	35596.23	90%	326451.5
25% Q1	2964.927	10%	949.9489
0% Min	9.499489	5%	949.9489
		1%	949.9489
Range	2559236		
Q3-Q1	142092.2		
Mode	949.9489		

Extremes

Lowest	Obs	Highest	Obs
9.499489(	2057)	2489593(	14683)
10.49949(	35171)	2490583(	17247)
10.49949(	33196)	2495243(	5376)
10.49949(	23163)	2528630(	365)
10.49949(	19426)	2559246(	36887)