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Who Loses: An Examination of Losses in Housing Net Worth, Non Housing Assets, and Total Savings from 2007 to 2008 among American Families?

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Abstract

This study models the loss in non-housing assets, increase in non-housing liabilities, and net change in housing value across people by education, ethnic, and occupational categories in the 2007-2008 collapse of Wall Street financial markets. Hypotheses of plausible loci of loss include the usual social categories. Findings do not confirm all of the common presuppositions—managerial class workers have among the largest losses, retirees somewhat limited losses, and losses by educational group decline with advancing education, with the possible exception of Ph.D. holders. The group which had the most severe losses in all asset categories was the armed forces. The magnitude of the suggested effects would indicate that additional policy attention should be targeted on military family outcomes under economic stress.

Introduction

The financial picture of the American household has changed dramatically from the beginning of 2000 through the 2008 credit crisis. Notably, the amounts of debt carried by households has grown, and the cost of servicing it from 12.5% of household in 2000 to 15% in 2007. (Emmons, 2009) The St. Louis Federal Reserve Bank policy newsletter reports that: Huge increases in household 's wealth and borrowing in turn, supported robust consumer-spending growth and housing investment despite moderate growth of income for most." (Emmons, 2010) The increase in borrowing was at least in part fed by an indefensible optimism on the part of lenders and investors: Marginal borrowers appeared more financially attractive than they were, making it easier to justify providing more financing. (Rhodes, Stelte, Samumya, Kronimus, 2008) The availability of external credit has been seen as a driver of the behavior anticipated under permanent income models—the lower the interest rate, the greater the consumption. (Besley, Meads, Surico, 2008)

Should the growth of debt and consumption positions of households be unreasonably risky? We might argue yes, because much greater proportions of American family assets are held as housing stock than in financial market equities or bonds. If the population were a population of renters, drops of 25% or 50% in the value of housing would have no earth-shaking effect on the family asset position—except those portions that might be held in real estate organization equities. The main point of this counter-case is that a drop in real estate values would not necessarily empty the family pot. In the present circumstances, the drop of prices through collapse of local bubbles, walk-aways from underwater properties, and foreclosure sales has done just that.

This paper poses the question of just who took how much loss in the 2007-2008 market catastrophe: which kinds of households, which ethnic groups, what education levels, what socioeconomic status levels and industrial sector members took major losses and which took minor losses. To characterize loss, I have used reports of gains and losses to particular asset classes in the U.S. Consumer Expenditure survey for the period 2000-2007 and 2008. The asset classes selected were probed in detail on the CES survey, and appear as (a) increase in non-housing assets, (b) increase in non-housing liabilities, (c) net change in housing value, and (d) total savingsⁱ.

To start, I want to set out some plausible expectations of which groups in the society may have more or less resilience to shocks in the major credit markets. In describing the income and asset distribution in the United States and other industrialized countries, we can rank order income and assets in terms of common social status and social connection indicators: union membership, management rather than line job, higher rather than lower education, and so forth. We can also stipulate with some plausibility which groups have the best or most secure access to the benefits of the economy. For example, we expect union members in a given trade to earn more than non-union members, those occupying higher status jobs to earn more than those in lower status jobs, and current workers to take home more than those who have retired.

If our focus is income alone, a number of national surveys report income and some degree of variation in it—the Current Population Survey, the American Family Survey, the Survey of Income and Program Participation, among others. If our interest is in gains or losses in assets, the pool of prospective data samples is not so rich: The Census and its derivatives (American Family Survey), the Survey of Income and Program Participation, and the Current Population Survey do not in general ask asset questions. Retirement and income panel surveys may ask asset questions, but have smaller samples. The single large sample survey in the United States which probes for assets or changes in assets is the Bureau of Labor Statistics' Survey of Consumer Expenditures. (BLS, 2010)

The National Bureau of Economic Research archives a set of extracts from the Consumer Expenditure Review from 1980 through second quarter of 2003. (NBER, 2010) Details on the construction of the extracts are given by Harris and Sabelhaus (2005) By expanding the sample from 2003 to 2008, it became possible to chart changes in reported family expenditure patterns over the recent financial market crisis.ⁱⁱ The summary procedure reduced multiple thousands of item purchase amounts to 109

sums expended on item categories. Money expenditures were annualized in the summary files. For our purposes, these categories included income, tax payments, changes in assets, changes in liabilities, and changes in housing net worth. Demographic characteristics of persons in the interview survey were collected. Two quarters in 2004 in which the CES was rebased were omitted from the collection of summary files. Total saving was calculated by netting out the flows into assets and out of liabilities.ⁱⁱⁱ

What would we typically expect to be the effects of the 2007 to 2008 market implosion on various groups of citizens. We can cast a variety of hypotheses, not all of which are capable of ready analysis.

1. Retirees will see little decrease in their savings and asset indicators over the market effects of 2008. [Proposition based on assumption of drawing benefits from their owned accounts in the form of annuities.]
2. Persons holding management and other high level jobs will show little decrease in savings and asset indicators. [Proposition based on presumed skill and information access.]
3. Better education persons will see less decrease in their savings and asset indicators than less well educated persons. [Proposition based on presumed skill and information access.]
4. Members of racial minorities will see greater decrease in savings and asset indicators than members of majority groups. [Presumption is that minorities may have a collection of disadvantages that track to ethnicity or race in national surveys.]

Note that for every hypothesis, it is possible to construct a plausible counter hypotheses based on a reversal of the presumption given. Retirees may not be drawing on fixed payout annuities, persons in management and other high status jobs may manage their own pension funds, often with little real expertise, better educated persons have asset growth from “surplus” income, and throttle back on savings and investing when current income is short, and we presume enough union members can be identified and separated from those in similar jobs without union contract protection of pension benefits.

The underlying variables that tap concepts in these hypotheses are level of education, occupational category, and racial category. (We will defer for the moment work on the retirees and union members: Retirees tend to be small numbers in the survey, and union members are not positively identified.) We might expect all of these variables to interact with each other, education compounding the effect of job status, and so forth. A savings model can be expressed as:

$$\text{Savings} = \text{EducationLevel}^a \text{Occupational Status}^b \text{Race}^c \text{Year}^d e,$$

Where Education Level, Occupational Status and Race stand for several dummy levels of the variables, and e is an error term. Year is coded into two groups, 2000 through 2007 versus 2008. Demonstration of the hypotheses proceeds from the tests on the non-linear regression coefficients, and on the distribution of estimated means for the terms in the model. The hypothesized effect of the economic displacement on a savings category for some group is given in the two-way table of estimated means for

the year and the group variable. Specifically, we are asking whether for a subject group the 2008 saving value is significantly less than the 2000-2007 value.

Analysis Preparation

The original Consumer Expenditure Survey is a rotating sample applying a survey form and a diary of expenses covering households for five quarters. For statistical purposes, geographic areas are identifiable down to the regional level, and for very limited purposes, down to the state level. Since the basic data set consists of purchase records, the Harris and Sabelhaus (2005) summary aggregated the individual expenses into 109 broad categories, and developed person and household records for all respondents. The 109 expenditure categories were expressed as annual values. Thus each year of the survey treated by Harris and Sabelhaus stands alone as a cross-section of the summary expenditures of the US population. Although the original NBER collection begins with first quarter 1981, it is of more interest to track the period from 2000 through 2008. Thus, I used the 2000 through 2003, 2nd quarter NBER files, and 2003, 3rd quarter through 2008, 2nd quarter files obtained from Edward Harris. Two quarters in 2004 during which the CES was being rebased were omitted.

The Study Data

To address the questions set out above, we need to select variables that represent occupational status, educational completion, race, and survey year. Survey year is recoded into a two category variable, 2000-2007 and 2008. This break is about the best in the CES for identifying a dramatic drop in securities markets. Education is first filtered on the responses “Unknown” and “No Schooling” since these have an income profile inconsistent with the profile of the other education attainment categories.^{iv} The race variable in the survey was collected as five categories: white, black, American Indian or Aleut, Pacific Islander or Asian, other; the variable was complete for all respondents. Occupational status was presented initially as a ten category response. Because of the low representation in some of the categories, the variable was collapsed to nine categories, as shown in Figure 1 *Collapsed Occupational Categories*.

The asset and other monetary variables of interest are all distributed asymmetrically, with long right tails. These variables are Total Savings, Income, Taxes Paid, Increase in Non-Housing Assets, Increase in Non-Housing Liabilities, and Net Change in Housing Value. Clearly they fail the assumption of normality required in most linear models. As noted above, aggregate benefits in the society, such as savings, may be effectively modeled as non-linear relationships. More specifically, aggregate savings may be modeled as a generalized linear model, using a log link function, rather than a linear link function as in common GLM routines. The SAS routine GENMOD provides the ability to model generalized functions with a wide range of link functions, but using the syntax of the SAS GLM procedure. Most important, the GENMOD

procedure accounts for correlated measurements and permits presentation of the estimated cell means from cross tabulations of the independent variables that appear in the study Model statement. This means we can talk about estimated average savings of one group (in dollars) versus estimated average savings of another group (also in dollars).

Findings

First, I will present model fits and category averages for the most aggregate of the measures, Total Saving. Then I will introduce the models and category averages for the elemental components of Total Saving. Exclusions on the missing education variable produced 21,126 usable observations over the eight year window.^v

The single variable effects for mean total savings are given in Table 1. The most important feature of this table is the illustration that mean total savings in 2008 was typically 1/3 of mean total savings over the seven year period 2000-2007. There are no apparently stunning differences in the poorer savings ratios of education groups. Occupational groups vary dramatically, with retirees, precision production and not in labor force persons reporting the relatively best retention of prior savings, 45-54%. Members of the armed forces took the biggest hit, saving only 5.78% of their 2000 to 2007 average. By ethnic group, Asian and Pacific Islanders and "all other" races experienced the largest losses, 27% and 26.6% respectively, but whites retained 77% of their prior period average total savings.

It is important to note that these reported means do not partition out or control for other effects or for each other. For a consistent partition of the effects of the plausible social variables, we turn to the estimates of the GENMOD parameters for a complete model, again using the total savings as the dependent variable. The complete model is given by

$$\text{Log Savings} = \text{intercept} + a(\text{education}) + b(\text{occupation}) + c(\text{race}) + d(\text{year} * \text{education}) + e(\text{year} * \text{occupation}) + f(\text{year} * \text{race}) + \text{error}.$$

In the SAS GENMOD implementation of the model, all of the required dummy variables for the categories of independent variables. These are estimated in sequence, with earlier categories expressed with respect to the last, category, which is omitted. The parameter estimates are then expressed as the multiplier of the log associated with a unit of the independent variable. In the multiplicative version of model, the coefficients are exponents. For each of the categories of an independent variable, the coefficient estimates are written as the offset from the omitted category. Thus, for 2000-2007, the coefficient of savings is essentially .06 more than the value for 2008 (0.0). Education effects are .44 and .22 offsets from the omitted category (incomplete education or hs grad=0) for doctoral and associate through masters

categories. For occupations, coefficients are clear losses from the position of the omitted category (managers and professional specialties): operators and fabricators are -.83, and armed forces members are -1.56 below the level of the management group. The table also shows meaningful two way interactions, notably year with armed forces occupation (+1.89) and year and race[American Aleut or Indian], both exhibiting premiums for 2000-2007.

Estimates for the time and demographic effects on income earned and total tax paid are given in Table 3. These are much less robust than the estimates on total savings. Most of the category effects involve reductions of about 39% or less from the base categories. Coefficients for total tax paid show more variance: The not working group is -1.03 below the level of the base group (managers). With 40% drops for blacks and other ethnic groups.

Table 4 presents the estimates for non-housing liabilities, non-housing assets, and the net change in housing value. Looking at non-housing liabilities, it is clear that more of them are a bad, rather than a good thing. At the base, non-housing liabilities went up .0609 for 2008. For doctoral degree holders liabilities went up 4.61%, while for associate through MA holders, liabilities went down -.15. Members of the armed forces and self employed incurred greater non-housing liabilities (1.37 and .41, respectively). In the ethnic categories, liabilities for Asian and Pacific Islanders went down (-1.34), as did those of Blacks (-.78), while the "other" category increased .51.

For non-housing assets, the drop over the years was -.37. For all occupations except self-employed, with respect to managers the coefficient for loss of non-housing assets was positive, and for precision crafts (-2.51) and for farmers, forestry and fishing -3.55. Members of the armed forces showed loser assets (-.46) while incurring larger liabilities (1.37). The two-way coefficients generally show that the asset increases in 2000-2007 are highly positive. Only armed forces and self-employed persons show substantial losses of non-housing assets over the time period.

Housing value is probably the hardest element in the Consumer Expenditure Survey to estimate, principally because the large changes indexed by sales, purchases, new mortgages and repayment of mortgages occur relatively infrequently, or are executed as a matter of course (as each monthly mortgage payment is made, the liability on the mortgage goes down a little bit). Overall, there is a 14% drop in housing net value from 2000-2007 to 2008. Occupations taking a hit, *vis a vis* managers are the armed forces (-2.4) and self-employed (-.48). Across the ethnic categories, Blacks and others show dramatic loss coefficients (-1.25 and -1.81 respectively).

It is instructive to use the model coefficients to generate the least squares means for some of the principal interactive categories, particularly year by education and year by occupation. Table 5 illustrates the estimated mean values in dollars for net housing value change, non-housing assets and non-housing liabilities as they change over the two periods. Doctorate holders experienced a growth in housing assets of \$19,566 over the 2000-2007 period, but only \$4,011 in 2008.

This effect is illustrated more simply in Tables 6-8. Table 6 gives net mean housing value changes for 2000-2007 and for 2008. Housing gains for doctorate holders in 2008 are 21% of their value in 2000-2007. For associates through MA the ratio is 15% and for incomplete education and high school grads, 19%. Among occupation groups, armed forces members had in 2008 2% of the housing gains reported for 2000-2007, self-employed 15%, and farming-forestry 16%. Across racial groups, all categories showed 2008 as a tiny fraction of the 2000-2007 mean—except whites.

Table 7 shows the estimated means for non-housing assets over the study period. All education groups reported lower asset increases in 2008. Occupation groups were dramatically different--farmers and precision production crafts reported 2008 assets of only 5% and 11% over 2007. Armed forces, self-employed and managers all reported asset increases for 2008 of over 100% of 2007. Among ethnic groups, only Blacks reported increases from 2007 to 2008.

Finally, least squares means for 2007 and 2008 non-housing liabilities are given in Table 8. For all education groups, the 2008 increase in non-housing liabilities was under 15%. All occupation groups except armed forces and self-employed reported smaller increases in liabilities for 2008. Armed forces members non-housing liabilities increased by 120%, and self-employed liabilities increased by 145%.

Discussion

The pattern of losses over the 2007 to 2008 debacle is both complex and disheartening. The households experiencing the biggest drops in assets and increases in liabilities are in almost all fields military employees, farmers and related occupations, and self-employed. For military families two possibilities appear--the wage does not cover the cost of living and/or cover asset losses over 2007-2008, or military assignment and deployment patterns are a special burden that impair good budgeting, asset recovery on reassignment, and freeze in losses on owned housing. Losses by farmers can be blinked away--reasoning that they have never been all that asset rich. Bad investment experience by self-employed can be tied to self-management of

pension funds and other assets intended for security. Self-management is apparently subject to substantive errors of judgment.

Cynicism may help keep us in good cheer, but will likely do little to bring about more rational or fair economic policies. Surely no one would propose a positive policy that would make the losses of military families many times those of the average citizen in time of a failure in the financial markets. Nor would anyone propose that farmers in an economic crisis should be ready to reduce their acquisition of non-housing assets to zero. Farms are businesses and as such need to maintain a flow of machinery, tools and supplies required for planting, maintenance and harvesting. Finally, even the self-employed are subject to the vagaries of investment advice. In reality, the self-insured retirement package offers the self-employed no risk sharing and often inappropriate life stage goals.

The divergence of interests among those persons hardest hit points to more than one avenue of policy redress.

For military folks, surely some better protection against financial risk in time of rapid mobilization during distress in the housing markets should be created. Similarly, a collapse of credit markets may require some form of special financing for farmers and similar producers. Creating protective policy for the self-employed (and well off) is a problematic enterprise. Are we to protect against unshared risk, against bad advice, against greed or untenable expectations?

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ⁱ Savings was computed by summation of reported categories.

ⁱⁱ I am indebted to Edward Harris of the Congressional Budget Office for making the 2003-2008 summary files available.

ⁱⁱⁱ The summary procedure for total savings differs from that suggested by Harris and Sabelhaus () in that the reduction of mortgage debt associated with selling a house is tallied directly.

^{iv} It is not clear whether the missing and "no schooling" categories represent a group of brilliant autodidacts, a group for which educational attainment is not yet complete, or an unserious response to the survey. It is highly correlated with missing data in measured money variables. On these grounds only responses with valid educational attainment categories were kept. Because of small sample sizes, these were aggregated into three categories: a_doctoral degree, b_associate thru master degree, c_incomplete education or hs grad

^v With an effective sample size of over 20,000 many parameter estimates are statistically significant, but represent very small differences in respondents' quality of life. We will focus on the effects that are potentially large enough to be meaningful or present a clear comparison to another group.

Figure 1. Collapsed Occupational Categories

a_not working retired, other including not reported
d_farming forestry and fishing occupations
e_precision production craft and repair occupations
f_operators fabricators and laborers
g_armed forces
h_technical sales and administrative support occupation service occupations
i_self employed
j_managerial and professional specialty occupations
Not in labor force

Table 1. Mean Total Savings for 2007 v. 2008 Time Blocks

	year		2008 as % 2007
	2000 to 2007	2008	
	Mean	Mean	
Education Category	\$ 40,619.13	\$ 14,208.89	34.98%
a_doctoral degree			
b_associate thru master degree	\$ 39,646.57	\$ 11,825.94	29.83%
c_incomplete education hs grad	\$ 28,085.74	\$ 9,465.27	33.70%

Occupation Category	year		2008 as % 2007
	2000 to 2007	2008	
	Mean	Mean	
a_not working retired c_other including not reported	\$ 30,098.16	\$ 15,071.20	50.07%
d_farming forestry and fishing occupations	\$ 18,709.93	\$ 6,578.68	35.16%
e_precision production craft and repair occupations	\$ 28,209.99	\$ 15,371.81	54.49%
f_operator fabricators and laborers	\$ 24,619.85	\$ 7,993.21	32.47%
g_armed forces	\$ 66,288.29	\$ 3,830.47	5.78%
h_technical sales and administrative support occupation service occupations	\$ 34,236.39	\$ 12,307.26	35.95%
i_self employed	\$ 47,464.38	\$ 18,109.76	38.15%
j_managerial and professional specialty occupation	\$ 47,774.49	\$ 18,394.60	38.50%
not in labor force	\$ 45,970.31	\$ 21,029.90	45.75%

Racial Group	year		2008 as % 2007
	2000 to 2007	2008	
	Mean	Mean	
Asian and Pacific Islanders	\$ 39,539.00	\$ 10,867.25	27.48%
Blacks	\$ 18,134.16	\$ 9,922.34	54.72%
Other	\$ 63,637.79	\$ 10,575.24	16.62%
Whites	\$ 33,673.08	\$ 26,202.89	77.82%

Table 2. Parameter Estimates, Confidence Intervals, and Significance Levels for Total Saving

Parameter	Parameter Categories		DF	Estimate	Standard Error	Wald 95% Confidence		Wald Chi-Square	Pr > Chi Sq
Intercept			1	10.4188	0.001	10.4168	10.4207	1.08E+08	<.0001
year	2000 to 2007		1	0.0611	0.001	0.059	0.0631	3436.16	<.0001
year	2008		0	0	0	0	0	.	.
education	a_doctoral degree		1	0.4062	0.003	0.4003	0.4122	17955.2	<.0001
education	b_associate thru master degree		1	0.2227	0.0008	0.221	0.2243	69142.7	<.0001
education	c_incomplete education hs grad		0	0	0	0	0	.	.
occupation	not in labor force		1	0.1339	0.0018	0.1303	0.1375	5320.28	<.0001
occupation	a_not working retired c_other including not reported		1	-0.1993	0.001	-0.2013	-0.1972	36038.5	<.0001
occupation	d_farming forestry and fishing occupations		1	-1.0282	0.0064	-1.0407	-1.0158	26198.2	<.0001
occupation	e_precision production craft and repair occupations		1	-0.1795	0.0024	-0.1843	-0.1747	5399.34	<.0001
occupation	f_operator fabricators and laborers		1	-0.8335	0.002	-0.8375	-0.8295	166711	<.0001
occupation	g_armed forces		1	-1.5691	0.0081	-1.5849	-1.5533	37953.9	<.0001
occupation	h_technical sales and administrative support occupation service occupations		1	-0.4019	0.0011	-0.4041	-0.3996	124906	<.0001
occupation	i_self employed		1	-0.0156	0.0019	-0.0194	-0.0118	64.41	<.0001
occupation	j_managerial and professional specialty occupation		0	0	0	0	0	.	.
race	american indian or aleu eskimo		1	-1.7398	0.009	-1.7574	-1.7222	37597.9	<.0001
race	asian or pacific islander		1	-0.4248	0.0018	-0.4282	-0.4213	58181.8	<.0001
race	black		1	-0.9711	0.0013	-0.9736	-0.9685	555139	<.0001
race	other		1	-0.9074	0.0048	-0.9168	-0.8979	35117.1	<.0001
race	white		0	0	0	0	0	.	.
year*education	2000 to 2007	a_doctoral degree	1	-0.0373	0.0032	-0.0435	-0.031	137.28	<.0001
year*education	2000 to 2007	b_associate thru master degree	1	0.1221	0.0009	0.1204	0.1238	19232.2	<.0001

year*education	2000 to 2007	c_incomplete education hs grad	0	0	0	0	0	0	.	.
year*education	2008	a_doctoral degree	0	0	0	0	0	0	.	.
year*education	2008	b_associate thru master degree	0	0	0	0	0	0	.	.
year*education	2008	c_incomplete education hs grad	0	0	0	0	0	0	.	.
year*occupation	2000 to 2007	not in labor force	1	-0.1724	0.0019	-0.1761	-0.1686	8146.66	<.0001	
year*occupation	2000 to 2007	a_not working retired c_other including not reported	1	-0.2628	0.0011	-0.2649	-0.2606	57707.3	<.0001	
year*occupation	2000 to 2007	d_farming forestry and fishing occupations	1	0.0908	0.0065	0.0779	0.1036	192.17	<.0001	
year*occupation	2000 to 2007	e_precision production craft and repair occupations	1	-0.3473	0.0025	-0.3523	-0.3423	18788.9	<.0001	
year*occupation	2000 to 2007	f_operator fabricators and laborers	1	0.1705	0.0021	0.1664	0.1746	6603.46	<.0001	
year*occupation	2000 to 2007	g_armed forces	1	1.8966	0.0084	1.8801	1.9131	50959	<.0001	
year*occupation	2000 to 2007	h_technical sales and administrative support occupation service occupations	1	0.0687	0.0012	0.0663	0.071	3376.28	<.0001	
year*occupation	2000 to 2007	i_self employed	1	0.0091	0.002	0.0052	0.013	20.46	<.0001	
year*occupation	2000 to 2007	j_managerial and professional specialty occupation	0	0	0	0	0	.	.	
year*occupation	2008	not in labor force	0	0	0	0	0	.	.	
year*occupation	2008	a_not working retired c_other including not reported	0	0	0	0	0	.	.	
year*occupation	2008	d_farming forestry and fishing occupations	0	0	0	0	0	.	.	

year*occupation	2008	e_precision production craft and repair occupations	0	0	0	0	0	.	.
year*occupation	2008	f_operator fabricators and laborers	0	0	0	0	0	.	.
year*occupation	2008	g_armed forces	0	0	0	0	0	.	.
year*occupation	2008	h_technical sales and administrative support occupation service occupations	0	0	0	0	0	.	.
year*occupation	2008	i_self employed	0	0	0	0	0	.	.
year*occupation	2008	j_managerial and professional specialty occupation	0	0	0	0	0	.	.
year*race	2000 to 2007	american indian or aleut eskimo	1	1.6335	0.0091	1.6158	1.6513	32565.3	<.0001
year*race	2000 to 2007	asian or pacific islander	1	0.7958	0.0018	0.7922	0.7994	188297	<.0001
year*race	2000 to 2007	black	1	0.3522	0.0014	0.3495	0.3548	67575.9	<.0001
year*race	2000 to 2007	other	1	1.5439	0.0049	1.5342	1.5535	98166.7	<.0001
year*race	2000 to 2007	white	0	0	0	0	0	.	.
year*race	2008	american indian or aleut eskimo	0	0	0	0	0	.	.
year*race	2008	asian or pacific islander	0	0	0	0	0	.	.
year*race	2008	black	0	0	0	0	0	.	.
year*race	2008	other	0	0	0	0	0	.	.
year*race	2008	white	0	0	0	0	0	.	.
Dispersion			0	1	0	1	1		

Note: Estimates based on log link function

Note: The scale parameter was held fixed.

Table 3. Parameter Estimates for Income and Total Tax Paid

Parameter	Parameter Category		DF	Income			Total Tax Paid		
				Estimate	Standard Error	Pr > Chi Sq	Estimate	Standard Error	Pr > Chi Sq
Intercept			1	10.9879	0.0008	<.0001	10.0641	0.001	<.0001
year	2000 to 2007		1	-0.1358	0.0009	<.0001	-0.2091	0.001	<.0001
year	2008		0	0	0	.	0	0	.
education	a_doctoral degree		1	0.5484	0.0027	<.0001	0.5995	0.003	<.0001
education	b_associate thru master degree		1	0.2498	0.0007	<.0001	0.2078	0.0008	<.0001
education	c_incomplete education hs grad		0	0	0	.	0	0	.
occupation	not in labor force		1	-0.2358	0.0016	<.0001	-0.5107	0.0019	<.0001
occupation	a_not working retired c_other including not reported		1	-0.3917	0.0009	<.0001	-1.0378	0.001	<.0001
occupation	d_farming forestry and fishing occupations		1	-0.3429	0.0047	<.0001	-0.3215	0.0055	<.0001
occupation	e_precision production craft and repair occupations		1	-0.3101	0.002	<.0001	-0.4205	0.0024	<.0001
occupation	f_operator fabricators and laborers		1	-0.2987	0.0015	<.0001	-0.5054	0.0018	<.0001
occupation	g_armed forces		1	-0.2611	0.0055	<.0001	-0.2001	0.0062	<.0001
occupation	h_technical sales and administrative support occupation service occupations		1	-0.2612	0.001	<.0001	-0.4268	0.0011	<.0001
occupation	i_self employed		1	-0.0368	0.0016	<.0001	-0.1101	0.0018	<.0001
occupation	j_managerial and professional specialty occupation		0	0	0	.	0	0	.
race	american indian or aleu eskimo		1	-0.2971	0.0047	<.0001	-0.1914	0.0058	<.0001
race	asian or pacific islander		1	-0.1699	0.0015	<.0001	-0.1269	0.0019	<.0001
race	black		1	-0.3852	0.001	<.0001	-0.4075	0.0013	<.0001
race	other		1	-0.0719	0.0031	<.0001	-0.0935	0.0038	<.0001
race	white		0	0	0	.	0	0	.
year*education	2000 to 2007	a_doctoral degree	1	-0.1392	0.0028	<.0001	-0.209	0.0031	<.0001
year*education	2000 to 2007	b_associate thru master degree	1	-0.0475	0.0007	<.0001	0.0014	0.0009	0.1163
year*education	2000 to 2007	c_incomplete education hs grad	0	0	0	.	0	0	.
year*education	2008	a_doctoral degree	0	0	0	.	0	0	.

year*education	2008	b_associate thru master degree	0	0	0	.	0	0	.
year*education	2008	c_incomplete education hs grad	0	0	0	.	0	0	.
year*occupation	2000 to 2007	not in labor force	1	0.081	0.0016	<.0001	0.1783	0.002	<.0001
year*occupation	2000 to 2007	a_not working retired c_other including not reported	1	-0.0321	0.0009	<.0001	-0.0291	0.0011	<.0001
year*occupation	2000 to 2007	d_farming forestry and fishing occupations	1	0.0446	0.0049	<.0001	-0.1154	0.0057	<.0001
year*occupation	2000 to 2007	e_precision production craft and repair occupations	1	0.0728	0.0021	<.0001	0.0924	0.0025	<.0001
year*occupation	2000 to 2007	f_operator fabricators and laborers	1	0.0069	0.0015	<.0001	0.0339	0.0019	<.0001
year*occupation	2000 to 2007	g_armed forces	1	0.1584	0.0058	<.0001	-0.0082	0.0066	0.2123
year*occupation	2000 to 2007	h_technical sales and administrative support occupation service occupations	1	0.051	0.001	<.0001	0.0889	0.0011	<.0001
year*occupation	2000 to 2007	i_self employed	1	0.0209	0.0017	<.0001	-0.0176	0.0018	<.0001
year*occupation	2000 to 2007	j_managerial and professional specialty occupation	0	0	0	.	0	0	.
year*occupation	2008	not in labor force	0	0	0	.	0	0	.
year*occupation	2008	a_not working retired c_other including not reported	0	0	0	.	0	0	.
year*occupation	2008	d_farming forestry and fishing occupations	0	0	0	.	0	0	.
year*occupation	2008	e_precision production craft and repair occupations	0	0	0	.	0	0	.

year*occupation	2008	f_operator fabricators and laborers	0	0	0	.	0	0	.
year*occupation	2008	g_armed forces	0	0	0	.	0	0	.
year*occupation	2008	h_technical sales and administrative support occupation service occupations	0	0	0	.	0	0	.
year*occupation	2008	i_self employed	0	0	0	.	0	0	.
year*occupation	2008	j_managerial and professional specialty occupation	0	0	0	.	0	0	.
year*race	2000 to 2007	american indian or aleu eskimo	1	0.0882	0.0048	<.0001	-0.1041	0.006	<.0001
year*race	2000 to 2007	asian or pacific islander	1	0.2878	0.0016	<.0001	0.4582	0.0019	<.0001
year*race	2000 to 2007	black	1	0.0616	0.001	<.0001	-0.0018	0.0013	0.1824
year*race	2000 to 2007	other	1	0.0205	0.0032	<.0001	0.0796	0.0039	<.0001
year*race	2000 to 2007	white	0	0	0	.	0	0	.
year*race	2008	american indian or aleu eskimo	0	0	0	.	0	0	.
year*race	2008	asian or pacific islander	0	0	0	.	0	0	.
year*race	2008	black	0	0	0	.	0	0	.
year*race	2008	other	0	0	0	.	0	0	.
year*race	2008	white	0	0	0	.	0	0	.
Dispersion			0	1	0		1	0	

Note: The scale parameter was held fixed.

Table 4. Parameter Estimates for Non-Housing Assets and Liabilities, and Net Change in Housing Value

Parameter	Parameter Categories		DF	Non-Housing Liabilities a			Non-Housing Assets			Net Change in Housing Value		
				Estimate	Standard Error	Pr > ChiSq	Estimate	Standard Error	Pr > ChiSq	Estimate	Standard Error	Pr > ChiSq
Intercept			1	8.7334	0.0021	<.0001	8.8852	0.0013	<.0001	9.8544	0.001	<.0001
year	2000 to 2007		1	-0.0609	0.0021	<.0001	-0.372	0.0014	<.0001	0.141	0.001	<.0001
year	2008		0	0	0	.	0	0	.	0	0	.
education	a_doctoral degree		1	0.0461	0.0062	<.0001	1.0499	0.0036	<.0001	0.1415	0.0035	<.0001
education	b_associate thru master degree		1	-0.1521	0.0017	<.0001	0.6553	0.0012	<.0001	0.1328	0.0008	<.0001
education	c_incomplete education hs grad		0	0	0	.	0	0	.	0	0	.
occupation	not in labor force		1	-0.0665	0.0037	<.0001	-0.8729	0.0031	<.0001	0.1528	0.0018	<.0001
occupation	a_not working retired c_other including not reported		1	-0.6297	0.0022	<.0001	-0.8304	0.0014	<.0001	-0.0762	0.001	<.0001
occupation	d_farming forestry and fishing occupations		1	-17.0768	53.6816	0.7504	-3.5573	0.0347	<.0001	-1.4575	0.0093	<.0001
occupation	e_precision production craft and repair occupations		1	-0.3228	0.0053	<.0001	-2.5183	0.0078	<.0001	-0.249	0.0025	<.0001
occupation	f_operator fabricators and laborers		1	-0.3686	0.0037	<.0001	-1.2681	0.0035	<.0001	-0.8678	0.002	<.0001
occupation	g_armed forces		1	1.3787	0.0117	<.0001	-0.4669	0.0079	<.0001	-2.4142	0.0142	<.0001
occupation	h_technical sales and administrative support occupation service occupations		1	-0.3694	0.0024	<.0001	-0.8831	0.0017	<.0001	-0.2795	0.0011	<.0001
occupation	i_self employed		1	0.4079	0.0032	<.0001	0.5821	0.0022	<.0001	-0.4973	0.002	<.0001
occupation	j_managerial and professional specialty occupation		0	0	0	.	0	0	.	0	0	.
race	american indian or aleut eskimo		1	0.5289	0.0107	<.0001	-2.0331	0.023	<.0001	-2.1852	0.0111	<.0001
race	asian or pacific islander		1	-1.3457	0.0054	<.0001	-0.7252	0.0031	<.0001	-0.0825	0.0018	<.0001
race	black		1	-0.7802	0.0028	<.0001	-0.6402	0.0021	<.0001	-1.2526	0.0015	<.0001
race	other		1	0.509	0.0051	<.0001	-0.2291	0.0061	<.0001	-1.8138	0.0055	<.0001
race	white		0	0	0	.	0	0	.	0	0	.
year*education	2000 to 2007	a_doctoral degree	1	0.1206	0.0064	<.0001	0.4762	0.0037	<.0001	-0.087	0.0036	<.0001
year*education	2000 to 2007	b_associate thru master degree	1	0.3561	0.0018	<.0001	-0.0677	0.0012	<.0001	0.1939	0.0009	<.0001

year*education	2000 to 2007	c_incomplete education hs grad	0	0	0	.	0	0	.	0	0	.
year*education	2008	a_doctoral degree	0	0	0	.	0	0	.	0	0	.
year*education	2008	b_associate thru master degree	0	0	0	.	0	0	.	0	0	.
year*education	2008	c_incomplete education hs grad	0	0	0	.	0	0	.	0	0	.
year*occupation	2000 to 2007	not in labor force	1	0.0412	0.0038	<.0001	0.8292	0.0032	<.0001	-0.1973	0.0019	<.0001
year*occupation	2000 to 2007	a_not working retired c_other including not reported	1	-0.242	0.0023	<.0001	0.7743	0.0015	<.0001	-0.461	0.0011	<.0001
year*occupation	2000 to 2007	d_farming forestry and fishing occupations	1	16.9129	53.6816	0.7527	3.0758	0.0348	<.0001	0.4131	0.0095	<.0001
year*occupation	2000 to 2007	e_precision production craft and repair occupations	1	0.0797	0.0055	<.0001	2.3046	0.0079	<.0001	-0.4606	0.0026	<.0001
year*occupation	2000 to 2007	f_operator fabricators and laborers	1	0.1571	0.0038	<.0001	0.4631	0.0036	<.0001	0.1691	0.0021	<.0001
year*occupation	2000 to 2007	g_armed forces	1	-0.5474	0.0122	<.0001	-0.1597	0.009	<.0001	2.6423	0.0143	<.0001
year*occupation	2000 to 2007	h_technical sales and administrative support occupation service occupations	1	0.2368	0.0025	<.0001	0.6332	0.0017	<.0001	-0.109	0.0012	<.0001
year*occupation	2000 to 2007	i_self employed	1	-0.7398	0.0033	<.0001	-0.2515	0.0023	<.0001	0.4429	0.0021	<.0001
year*occupation	2000 to 2007	j_managerial and professional specialty occupation	0	0	0	.	0	0	.	0	0	.
year*occupation	2008	not in labor force	0	0	0	.	0	0	.	0	0	.
year*occupation	2008	a_not working retired c_other including not reported	0	0	0	.	0	0	.	0	0	.
year*occupation	2008	d_farming forestry and fishing occupations	0	0	0	.	0	0	.	0	0	.
year*occupation	2008	e_precision production craft and repair occupations	0	0	0	.	0	0	.	0	0	.
year*occupation	2008	f_operator fabricators and laborers	0	0	0	.	0	0	.	0	0	.

year*occupation	2008	g_armed forces	0	0	0	.	0	0	.	0	0	.
year*occupation	2008	h_technical sales and administrative support occupation service occupations	0	0	0	.	0	0	.	0	0	.
year*occupation	2008	i_self employed	0	0	0	.	0	0	.	0	0	.
year*occupation	2008	j_managerial and professional specialty occupation	0	0	0	.	0	0	.	0	0	.
year*race	2000 to 2007	american indian or aleu eskimo	1	-0.2936	0.0109	<.0001	0.9942	0.0231	<.0001	2.3089	0.0111	<.0001
year*race	2000 to 2007	asian or pacific islander	1	1.2739	0.0055	<.0001	0.3225	0.0032	<.0001	0.6602	0.0018	<.0001
year*race	2000 to 2007	black	1	-0.7133	0.0029	<.0001	-0.9091	0.0022	<.0001	0.7213	0.0015	<.0001
year*race	2000 to 2007	other	1	-0.3472	0.0053	<.0001	0.2107	0.0063	<.0001	2.6072	0.0056	<.0001
year*race	2000 to 2007	white	0	0	0	.	0	0	.	0	0	.
year*race	2008	american indian or aleu eskimo	0	0	0	.	0	0	.	0	0	.
year*race	2008	asian or pacific islander	0	0	0	.	0	0	.	0	0	.
year*race	2008	black	0	0	0	.	0	0	.	0	0	.
year*race	2008	other	0	0	0	.	0	0	.	0	0	.
year*race	2008	white	0	0	0	.	0	0	.	0	0	.
Dispersion			0	1	0		1	0		1	0	

Note: The scale parameter was held fixed.

Table 5 Least Squares Means for Net Housing Value Change, Increase in Non-Housing Assets, Increase in Non-Housing Liabilities

Effect	Least Squares Means				Net Housing Change	Non Housing Assets Increase	Non Housing Increase in liabilities
	year	education	occupation	race	Mean	Mean	Mean
year*education	2000 to 2007	a doctoral degree			19566.7	9887.881	6394.621
year*education	2000 to 2007	b_associate thru master degree			25688.29	3868.084	6637.124
year*education	2000 to 2007	c_incomplete education hs grad			18529.64	2149.407	5412.612
year*education	2008	a doctoral degree			4011.976	3357.789	786.6235
year*education	2008	b_associate thru master degree			3977.309	2263.027	645.1389
year*education	2008	c_incomplete education hs grad			3482.666	1175.14	751.1561
year*occupation	2000 to 2007		0		28873.47	5282.792	6784.616
year*occupation	2000 to 2007		a_not working retired c_other including not reported		17640.09	5217.936	2910.158
year*occupation	2000 to 2007		d_farming forestry and fishing occupations		10623.42	3409.862	5906.52
year*occupation	2000 to 2007		e_precision production craft and repair occupations		14847.51	4457.219	5456.707
year*occupation	2000 to 2007		f_operator fabricators and laborers		15010.12	2467.411	5631.772
year*occupation	2000 to 2007		g_armed forces		37925.14	2949.358	15976.91
year*occupation	2000 to 2007		h_technical sales and administrative support occupation service occupations		20469.2	4298.608	6093.893
year*occupation	2000 to 2007		i self employed		28588.98	7681.336	4993.05
year*occupation	2000 to 2007		j_managerial and professional specialty occupation		30187.74	5518.956	6958.281
year*occupation	2008		0		8365.215	2579.01	4509.414
year*occupation	2008		a_not working retired c_other including not reported		6653.005	2691.16	2567.608
year*occupation	2008		d_farming forestry and fishing occupations		1671.706	176.0488	0.0002
year*occupation	2008		e_precision production craft and repair occupations		5597.569	497.6	3489.74
year*occupation	2008		f_operator fabricators and laborers		3014.71	1737.104	3333.697
year*occupation	2008		g_armed forces		642.2058	3870.828	19131.26
year*occupation	2008		h_technical sales and administrative support occupation service occupations		5429.054	2552.917	3330.842
year*occupation	2008		i self employed		4366.696	11049.84	7246.642
year*occupation	2008		j_managerial and professional specialty occupation		7180.045	6174.047	4819.47
year*race	2000 to 2007			american indian or aleut eskimo	19637.57	2808.641	7358.581
year*race	2000 to 2007			asian or pacific islander	30921.9	5306.326	5413.159
year*race	2000 to 2007			black	10199.61	1685.92	5439.671
year*race	2000 to 2007			other	38362.87	7792.991	6837.516
year*race	2000 to 2007			white	17352.06	7937.77	5815.943
year*race	2008			american indian or aleut eskimo	1247.182	561.1431	1529.563
year*race	2008			asian or pacific islander	10211.97	2075.296	234.6756
year*race	2008			black	3168.966	2259.348	413.0939
year*race	2008			other	1808.044	3408.386	1489.503
year*race	2008			white	11090.04	4285.837	901.334

Table 6. Least Squares means for Net Housing Value Change over 2007-2008 Divide by Education, Occupation, and Race

a: Education Grouping

	Year		2008 as % of 2007
	2000 to 2007	2008	
	Net Housing Change	Net Housing Change	
a_doctoral degree	\$ 19,566.70	\$ 4,011.98	21%
b_associate thru master degree	\$ 25,688.29	\$ 3,977.31	15%
c_incomplete education hs grad	\$ 18,529.64	\$ 3,482.67	19%

b: Occupation Grouping

	Year		2008 as % of 2007
	2000 to 2007	2008	
	Net Housing Change	Net Housing Change	
k_not in labor force	\$ 28,873.47	\$ 8,365.22	29%
a_not working retired c_other including not reported	\$ 17,640.09	\$ 6,653.01	38%
d_farming forestry and fishing occupations	\$ 10,623.42	\$ 1,671.71	16%
e_precision production craft and repair occupations	\$ 14,847.51	\$ 5,597.57	38%
f_operator fabricators and laborers	\$ 15,010.12	\$ 3,014.71	20%
g_armed forces	\$ 37,925.14	\$ 642.21	2%
h_technical sales and administrative support occupation service occupations	\$ 20,469.20	\$ 5,429.05	27%
i_self employed	\$ 28,588.98	\$ 4,366.70	15%
j_managerial and professional specialty occupation	\$ 30,187.74	\$ 7,180.05	24%

c: Racial Grouping

	Year		2008 as % of 2007
	2000 to 2007	2,008.00	
	Net Housing Change	Net Housing Change	
Asian	\$ 25,279.74	\$ 5,729.58	23%
Black	\$ 10,199.61	\$ 3,168.97	31%
Other	\$ 38,362.87	\$ 1,808.04	5%
White	\$ 17,352.06	\$ 11,090.04	64%

Table 7. Least Squares Means for Increase in Non-Housing Assets by Education, Occupation and Racial Groups over 2007-2008 Time Gap

Education Grouping	Year		2008 as % of 2007
	2000 to 2007 Non_Housing_Assets_Increase Mean	2008 Non_Housing_Assets_Increase Mean	
a_doctoral degree	\$ 9,887.88	\$ 3,357.79	34%
b_associate thru master degree	\$ 3,868.08	\$ 2,263.03	59%
c_incomplete education hs grad	\$ 2,149.41	\$ 1,175.14	55%

Occupation Grouping	Year		2008 as % of 2007
	2000 to 2007 Non_Housing_Assets_Increase Mean	2008 Non_Housing_Assets_Increase Mean	
k-not in labor force	\$ 5,282.79	\$ 2,579.01	49%
a_not working retired c_other including not reported	\$ 5,217.94	\$ 2,691.16	52%
d_farming forestry and fishing occupations	\$ 3,409.86	\$ 176.05	5%
e_precision production craft and repair occupations	\$ 4,457.22	\$ 497.60	11%
f_operator fabricators and laborers	\$ 2,467.41	\$ 1,737.10	70%
g_armed forces	\$ 2,949.36	\$ 3,870.83	131%
h_technical sales and administrative support occupation service occupations	\$ 4,298.61	\$ 2,552.92	59%
i_self employed	\$ 7,681.34	\$ 11,049.84	144%
j_managerial and professional specialty occupation	\$ 5,518.96	\$ 6,174.05	112%

Racial Grouping	Year		2008 as % of 2007
	2000 to 2007 Non_Housing_Assets_Increase Mean	2008 Non_Housing_Assets_Increase Mean	
Asian	\$ 4,057.48	\$ 1,318.22	32%
Black	\$ 1,685.92	\$ 2,259.35	134%
Other	\$ 7,792.99	\$ 3,408.39	44%
White	\$ 7,937.77	\$ 4,285.84	54%

Table 8. Least Squares Means for Increases in Non-Housing Liabilities over 2007-2008 Divide by Education, Occupation and Race

Education Grouping	Year		2008 as % of 2007
	2000 to 2007 Non_Housing_Increase_in_liabilities	2008 Non_Housing_Increase_in_liabilites	
a_doctoral degree	\$ 6,394.62	\$ 786.62	12%
b_associate thru master degree	\$ 6,637.12	\$ 645.14	10%
c_incomplete education hs grad	\$ 5,412.61	\$ 751.16	14%

Occupation Grouping	Year		2008 as % of 2007
	2000 to 2007 Non_Housing_Increase_in_liabilities	2008 Non_Housing_Increase_in_liabilities	
k_not in labor force	\$ 6,784.62	\$ 4,509.41	66%
a_not working retired c_other including not reported	\$ 2,910.16	\$ 2,567.61	88%
d_farming forestry and fishing occupations	\$ 5,906.52	\$ -	0%
e_precision production craft and repair occupations	\$ 5,456.71	\$ 3,489.74	64%
f_operator fabricators and laborers	\$ 5,631.77	\$ 3,333.70	59%
g_armed forces	\$ 15,976.91	\$ 19,131.26	120%
h_technical sales and administrative support occupation service occupations	\$ 6,093.89	\$ 3,330.84	55%
i_self employed	\$ 4,993.05	\$ 7,246.64	145%
j_managerial and professional specialty occupation	\$ 6,958.28	\$ 4,819.47	69%

Racial Grouping	Year		2008 as % of 2007
	2000 to 2007 Non_Housing_Increase_in_liabilites	2008 Non_Housing_Increase_in_liabilites	
Asian	\$ 6,385.87	\$ 882.12	14%
Black	\$ 5,439.67	\$ 413.09	8%
Other	\$ 6,837.52	\$ 1,499.50	22%
White	\$ 5,815.94	\$ 901.33	15%