

## How Did the Great Recession Affect U.S. Household Financial Burdens?

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The recession that started in December 2007 was longer than any since the Great Depression of the 1930s. Household incomes dropped and unemployment rates increased to over 9%. We investigate the proportion of households having financial obligations over 40% of pretax income (having a high burden,) with financial obligations defined as debt payments, rent, vehicle leases, property taxes, and homeowners insurance. The proportion with high burdens increased for renters, from 35% in 2007 to 39% in 2010, but the proportion for homeowners decreased slightly, from 22% in 2007 to 21% in 2010. Multivariate analyses of the 2010 Survey of Consumer Finances (SCF) dataset show factors affecting the likelihood of having a high burden were generally similar to factors shown to be important in analyses of the 1992 to 2007 SCF datasets. The slight decrease in the proportion of homeowners with high burdens might be related to a shift of some households to renting. The increase in the proportion of renters with high burdens might reflect a continued deterioration of the economic conditions of renter households.

Keywords: Borrowing Decisions, Household Debt, Financial Obligations, Education, Expectations, Homeownership

### Introduction

The Great Recession that started in December 2007 was the longest since the Great Depression of the 1930s, and even though it officially ended in June 2009 (National Bureau of Economic Research Business Cycle Dating Committee, 2010), the unemployment rate remained high through 2011. Figure 1 shows the unemployment rate from 1992 through 2011, and the persistence of unemployment rates of 9% or more in 2010 and 2011. For renter households, median household income (in 2010 dollars) fell from \$29,100 in 2007 to \$26,100 in 2010, a decrease of 10.3% (Bricker, Kennickell, Moore, & Sabelhaus, 2012). For homeowner households, there was a decrease in median income from \$64,600 to \$59,600, a decrease of 7.7%. These substantial decreases at median levels do not give the full picture in terms of households where a head or partner experience long-term unemployment. Households who had substantial financial obligations before the recession started would presumably be in even worse shape after a few years of hard times, and some households who had more prudent levels of financial obligations before the recession may have had high levels after the recession started.

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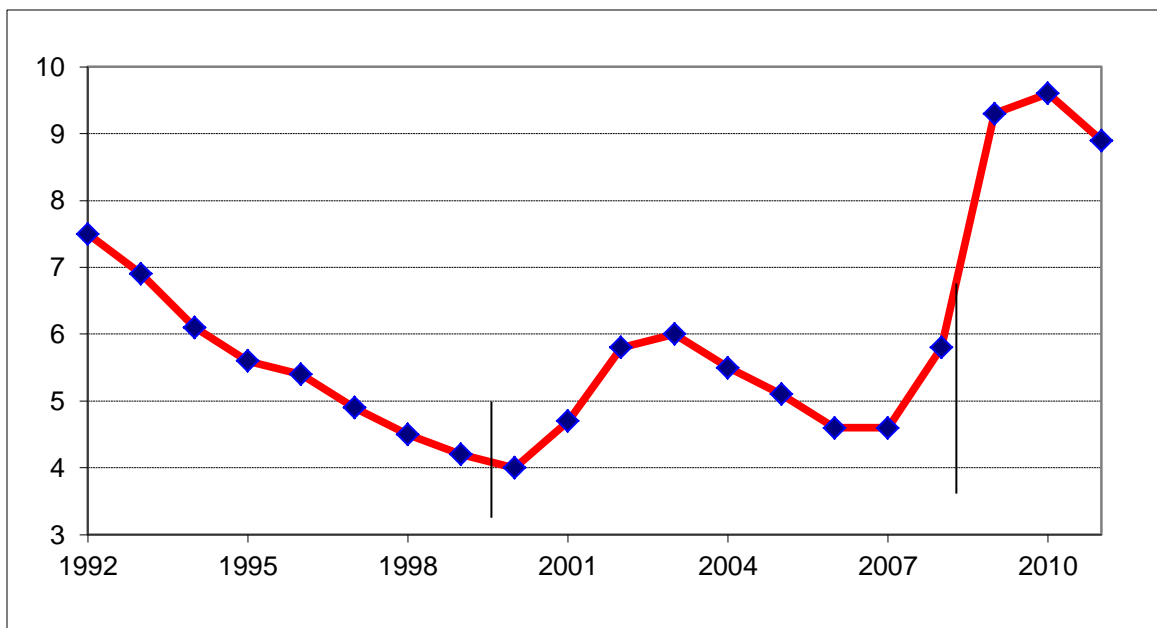


Figure 1. US unemployment rate 1992-2011. Created by authors with information from bls.gov, "Employment status of the civilian noninstitutional population, 1941 to date, persons 16 and over."

#### *Guidelines for Financial Obligations*

What level of debt and other financial obligations is too risky for a household? Hanna et al. (2012a) discussed previous studies and guidelines, from early consumer expenditure studies to policies on housing cost burdens to personal finance guidelines. Dynan, Johnson and Pence (2003) and Johnson (2005) discussed a financial obligations ratio that is based on rent, auto leases, homeowners insurance and property taxes along with the traditional measures of debt service payments. This definition allows for appropriate comparisons of renters and owners. Hanna et al. (2012b) found that the proportion of renter households with financial obligations over 40% of pretax income increased from 20% in 1992 to 35% in 2007, and for homeowner households with proportion increased from about 15% in 1992 to 22% in 2007. They noted that the proportions increased during the time period except for 2001, when a recession might have led to reductions in burdens because of a shift from optimism to pessimism. They also found that controlling for other factors, such as income, more educated households were more likely than less educated households to have a burden over 40%. Dynan, et al. (2003) discussed the possibility that changes in the composition of homeowners and shift from renting to homeownership might have contributed to part of the changes in burdens, but Hanna et al. (2012b) did not discuss this issue.

#### **Methods**

Based on a life cycle model (c.f., Yuh & Hanna, 2010) and discussion in Hanna et al. (2012a), we select independent variables likely to be related to consumption. The independent variables used by Hanna et al. (2012a; 2012b) included demographic characteristics, income and wealth-related factors, and expectation/attitudinal factors, and we use those variables.

#### *Data and Sample Selection*

The dataset analyzed in this study is the 2010 SCF dataset, although for the descriptive time trend in Table 1 we also analyzed the 1992, 1995, 1998, 2001, 2004 and 2007 cross-sectional SCF datasets.

#### *Dependent Variable*

Our focus is on whether households have a high financial obligations ratio. Hanna et al. (2012a) discussed the issue of using an arbitrary cutoff point for the ratio, and noted that the Federal Reserve Board over the years (Bucks, Kennickell, Mach, & Moore, 2009) reported the proportion of households

with a debt payments to income ratio over 40%. The threshold may represent a danger point, because if income drops substantially, it may be very difficult to keep up with obligations such as debt payments and rent.

In order to have comparability between homeowners and renters in the fixed payments related to both debt payments and shelter payments, we follow Dynan *et al.* (2003) in defining financial obligations to include rent, vehicle leases, debt payments, real estate taxes on the household's residence, and homeowners insurance. Rent payments include the monthly rent on a home, site, or farm/ranch, and lease payments include all monthly lease payments on vehicle. Debt payments are the total of monthly payments on all types of loans including credit cards, mortgages, lines of credit, home improvement loans, land contracts, other residential property, vehicle loans, student loans, installment loans, margin loans, loans against insurance policies, pension loans, and other loans.

The dependent variable is a dichotomous variable for whether the household has a high financial obligations burden. We define a high burden as having a ratio of monthly financial obligations over 40% of pretax income and code the variable as 1 if the ratio is over 40% and 0 otherwise. In the 2010 SCF dataset, 82 households have zero income, and for those households, the ratio is computed as the monthly obligation amount divided by 1.

#### *Independent Variables*

For the multivariate analysis we use the independent variables used by Hanna, et al. (2012b): racial/ethnic identification of the respondent, marital status (married couple, unmarried couple, single male, single female), whether current income is higher or lower than normal income, highest education level of the head, age of the head, whether the home is owned, whether there is a dependent child under the age of 19, whether the head is self-employed, retired, or works for a salary, health status, income growth expectations, expectations for the economy, household income, net worth, and whether everybody in the household is covered by health insurance.

#### *Statistical Methods and Research Model*

For descriptive and multivariable analyses reporting statistical tests, we use "repeated-imputation inference" (RII) techniques (Kennickell & Woodburn, 1999; Lindamood *et al.*, 2007; Montalto & Sung, 1996). We do not weight the regression analysis, as weighting regression procedures using endogenous weights is not recommended for hypothesis testing.

We use a logistic regression (logit) with the dichotomous dependent variable having a financial obligations ratio over 40%. As Hanna, et al. (2012a; 2012b) discussed, the extremely high value of the ratio for a small number of households results in very high values of the mean of the ratio, and therefore limits the usefulness of a regression on the ratio itself.

## **Results**

#### *Descriptive Analyses*

Table 1 shows the proportion of homeowners, and the proportion of all, renter, and homeowner households with financial obligations ratios over 40%, by survey year. The proportion of homeowners increased from 64% in 1992 to 69% in 2004, and remained at almost 69% in 2007, but then dropped to 67% in 2010. Figure 2 shows the patterns between 1992 and 2010 in proportions of households with a high burden. The proportion of renter households with financial obligations ratios over 40% increased from 20% in 1992 to 29% in 1998, remained at about 29% in 2001, then increased in 2004, 2007, and 2010, reaching almost 39%. The proportion of homeowner households with financial obligations ratios over 40% increased from 15% in 1992 to 18% in 1998, dropped to 15% in 2001, then increased in 2004, and also in 2007, reaching 22% in 2007, but then dropped to 21% in 2010.

Table 1.

Proportions of Households with Financial Obligations Ratio Over 40% by Survey Year, 1992-2010

Year	% Homeowners	Percent of Households with Ratio>40%		
		All households	Renters	Homeowners
1992	63.93%	16.52%	19.99%	14.56%
1995	64.66%	19.50%	25.26%	16.35%
1998	66.26%	21.81%	28.73%	18.28%
2001	67.69%	19.67%	28.60%	15.41%
2004	69.05%	20.99%	30.29%	16.83%
2007	68.64%	26.01%	35.36%	21.73%
2010	67.29%	27.08%	38.98%	21.29%

Note. Analyses are weighted, averaged over five implicates.

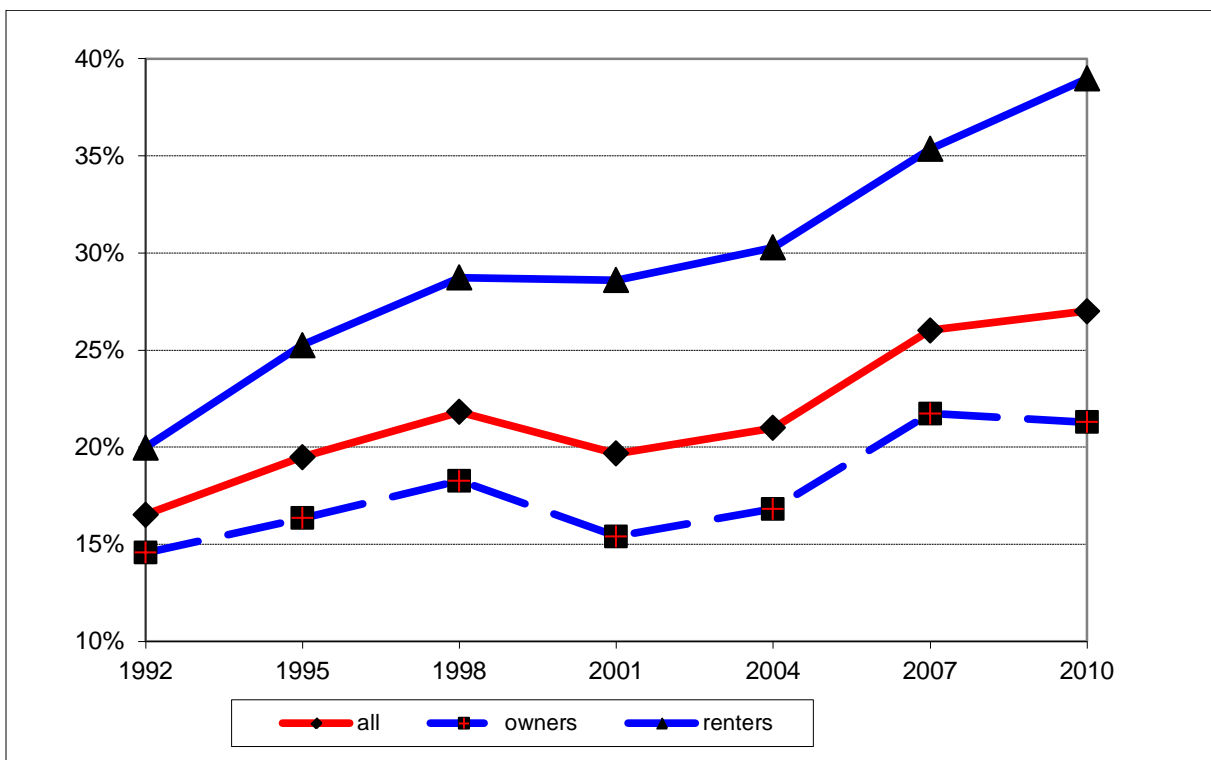


Figure 2. Rates of Having a Financial Obligations Ratio Over 40%, for all Households, Renter Households, and Homeowner Households, by Survey Year.

Notes: Created by authors. Weighted rates of having financial obligations over 40% of pretax income, based on analyses of 1992, 1995, 1998, 2001, 2004, 2007, and 2010 Surveys of Consumer Finances (Table 1)

Table 2 shows the cumulative distribution of selected levels of the financial obligations ratio in 2010 for all, renter, and homeowner households. Even though the median level of the ratio for renter households is only 34%, the 75<sup>th</sup> percentile is 52%. The median level for homeowner households is 23%, but the 75<sup>th</sup> percentile is 37%.

Table 2

*Distribution of Financial Obligations Ratio, 2010*

Level	Cumulative Distribution of Financial Obligations Ratio		
	All households	Renters	Homeowners
Median	0.27	0.34	0.23
75 <sup>th</sup> %tile	0.42	0.52	0.37
90 <sup>th</sup> %tile	0.65	0.80	0.55
95 <sup>th</sup> %tile	0.89	1.10	0.74
Maximum	207,756	2,529	207,756

*Note.* Analyses are weighted, averaged over five implicates.

*Descriptive Patterns of Having a High Burden by Selected Independent Variables*

Table 3 shows the proportions in 2010 of households with high burdens for renters and for homeowners. For both groups, those with post-bachelor degrees had the lowest proportions with high burdens, but for renter households, those with bachelor degrees had the highest level, just slightly more likely than those with just a high school diploma to have a high burden. Both renter and homeowner households which were unsure about future income had the highest levels of having a high burden. For renter households the frequency of having a high burden did not vary significantly with expectations about the economy, but for homeowners, those who expected the economy to remain the same had lower rates of having a high burden than those who expected it to get better or to get worse. Homeowner households with a dependent child under 19 were more likely to have a high burden than those without a dependent child. For both renters and homeowners, the rate of having a high burden was lower for those in better health, and for both groups, Hispanics were the most likely to have a high burden. Self-employed in both groups were more likely to have a high burden than households without a self-employed head. Retired homeowner households were less likely to have a high burden than non-retired homeowner households. Households in both groups with lower than normal income were the most likely, and those with higher than normal income were the least likely to have a high burden. Married households in both groups were less likely than single head households to have a high burden, and single female households were the most likely to have a high burden.

Table 3

*Means Test of Financial Obligations Ratio Over 40% of Income by Selected Variables*

Variable	Renters (38.98%)		Homeowners (21.29%)	
	Mean	Sig. level	Mean	Sig. level
Highest education level of head				
<b>&lt; High school</b>	42.23		21.01	
Some college	42.27	0.9784	24.81	0.0026
Bachelor's degree	37.67	0.0074	23.34	0.0561
Post-bachelor degree	27.44	<.0001	13.05	<.0001
Expectations for household income				
<b>Sure grow</b>	38.90		18.46	
Sure same	32.96	0.0004	16.41	0.0144
Sure less	34.23	0.0124	18.06	0.6614
Not sure	44.10	0.0015	30.81	<.0001
Expectations for the economy				
<b>Same</b>	39.50		18.96	
Better	38.69	0.4671	22.54	<.0001
Worse	39.50	0.7413	21.55	0.0012
Presences of a dependent child under age 19				
Yes	39.10	0.7203	24.71	<.0001
<b>No</b>	38.75		19.73	
Health status				
<b>Excellent</b>	32.83		20.35	
Good	37.98	<.0001	20.75	0.5133
Fair	45.09	<.0001	22.23	0.0322
Poor	44.68	<.0001	29.24	<.0001
Racial/ethnic group				
<b>White</b>	37.17		19.88	
Black	39.00	0.1209	21.33	0.1725
Hispanic	45.81	<.0001	31.53	<.0001
Asian/other	35.50	0.4048	29.56	<.0001
Self-employed				
Yes	46.10	<.0001	35.02	<.0001
<b>No</b>	38.48		19.80	
Retired				
Yes	41.81	0.0758	12.79	<.0001
<b>No</b>	38.66		23.75	
Current income relative to normal income				
<b>Same</b>	32.20		16.90	
Higher	23.89	<.0001	10.60	<.0001
Lower	55.78	<.0001	37.99	<.0001

Variable	Renters (38.98%)		Homeowners (21.29%)	
	Mean	Sig. level	Mean	Sig. level
Marital status				
<b>Married</b>	31.49		17.81	
Partner	30.09	0.3564	22.31	0.0004
Single head male	38.99	<.0001	24.81	<.0001
Single head female	47.43	<.0001	28.87	<.0001

Note: Analyses are weighted, based on 2010 SCF dataset, N=6,482. Reference categories for significance tests are in bold. Tests of significant difference between the level for each independent variable's reference category and other levels are performed based on RII procedures.

*Multivariate Analyses*

The logistic regressions for renters and for homeowners show the effects of independent variables on the likelihood of having a high burden (Table 4). For both renter and for homeowner households, compared to households with educational attainment of less than high school, households a high school degree and those with college education are more likely to have financial obligations over 40% of income than those with less than a high school degree, though those with a post-bachelor degree have about the same likelihood as those with some college. For both renter and homeowner households, the likelihood of having a high burden decreases with income and net worth, and was higher for households with lower than normal income and for self-employed households.

Hispanic renter households were more likely than similar white renter households to have a high burden. Black and Asian/other renter households were not significantly different from otherwise similar white households in the likelihood of having a high burden. For renter households, expectation of future income growth and for the economy, health status, having a dependent child, marital status, and retirement status did not have significant effects. Neither age nor age squared had a significant effect on the likelihood of having a high burden, but when the same logistic regression was run with only age of the head, it had a significant negative effect on the likelihood.

For homeowner households, both age and age squared had a significant effect on the likelihood of having a high burden, with the combined effect implying that the likelihood of having a high burden increases to age 46, then decreases. For homeowner households, the likelihood of having a high burden was higher for Black households than for similar white households. Households that had higher than normal income were less likely to have a high burden than those with normal income. Hispanic and Asian/other homeowner households were not significantly different from otherwise similar white households in the likelihood of having a high burden. Homeowner households expecting the economy to improve were more likely to have a high burden than those expecting the economy to stay the same. Expectation of future income growth, health status, having a dependent child, marital status, and retirement status did not have significant effects for homeowner households.

Table 4

*Logistic Regression on Likelihood Ratio Is Over 40%, for Renters and for Homeowners*

Variable	Renters		Homeowners	
	Coefficient	p-value	coefficient	p-value
Highest education level of head [< high school]				
High school	0.21	0.181	0.32	0.112
Some college	0.59	0.001	0.66	0.001
Bachelor's degree	0.93	<.001	0.93	<.001
Post-bachelor degree	0.65	0.025	0.70	0.003
Expectations for household income [sure income will grow faster than prices]				
Sure same	-0.22	0.298	-0.11	0.533
Sure less	-0.36	0.135	0.01	0.957
Not sure	-0.23	0.234	0.18	0.289
Expectations for the economy [stay the same]				
Better	-0.02	0.890	0.29	0.011
Worse	0.01	0.939	0.14	0.304
Age of head	-0.01	0.526	0.08	0.001
Age of head squared/10000	2.23	0.306	-8.59	<.001
Presence of a dependent child under age 19	0.28	0.069	0.19	0.117
Health status [Excellent]				
Good	0.14	0.445	0.04	0.777
Fair	0.25	0.193	-0.00	0.996
Poor	0.09	0.676	0.22	0.254
Log of income	-1.29	<.001	-0.89	<.001
Log of net worth	-0.03	0.001	-0.07	<.001
Racial/ethnic group [White]				
Black	0.03	0.834	-0.46	0.007
Hispanic	0.52	0.001	0.25	0.148
Asian/other	0.23	0.341	0.37	0.095
Self-employed	0.48	0.027	0.87	<.001
Retired	-0.24	0.410	-0.22	0.258



Variable	Renters		Homeowners	
	Coefficient	p-value	coefficient	p-value
Current income relative to normal income [Same]				
Higher	-0.15	0.600	-0.49	0.042
Lower	0.71	<.001	0.66	<.001
Marital status [Married couple]				
Partner	-0.24	0.244	-0.04	0.881
Single head male	-0.18	0.305	-0.08	0.615
Single head female	-0.01	0.953	0.20	0.163
Intercept	12.06	<.001	6.44	<.001
F	11.80	<.001	17.08	<.001

Note. Analysis of 2010 SCF dataset. Unweighted RII analyses.

### Discussion

The drop in the proportion of homeowner households having a high burden and the increase in the proportion of renter households having a high burden might be partly due to some households switching from owning to renting. Hispanic renter households are more likely than white renter households to have a high burden, and Black homeowner households are more likely than white homeowner households to have a high burden. These differences in behavior by two racial/ethnic groups are similar to the conclusion by Lee and Hanna (2012) that it may be a mistake to assume that these two groups are similar. It is unclear what the cause of the differences is, although the location patterns of Hispanic households are somewhat different from Black households (c.f., discussion in Hanna, et al., 2012a).

### Conclusion

The descriptive pattern (Table 1; Figure 2) provides some support for the Dynan, et al. (2003) conclusion that changes in the composition of homeowner households versus renter households contributed to changes in the proportions of households with high financial obligations ratios. The fact that the proportion of renter households with high financial obligations ratios increased from 2007 to 2010, but the proportion of homeowner households with high ratios decreased slightly, support the changing composition explanation. Renter households had a bigger decrease in median real household income (10.3%) than did homeowner households (7.7%). The multivariate analyses show the strong effect of income and of having lower than normal household income on the likelihood of having a high financial obligations ratio. Analysis of panel data, such as the 2007-2009 SCF Panel Dataset, will be needed to obtain additional insights into our results from analyses of cross-sectional data.

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