Female-Headed Households and the Pre-Crisis Credit Expansion: Evidence from the Surveys of Consumer Finance

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Motivation

In the early 2000s, financial deregulation, the housing bubble, and new financial instruments led to dramatically increased lending. This expansion was accompanied by problems including

- systemic risk in financial markets,
- household-level financial fragility, and
- high indebtedness without sustained wealth creation (Baker 2014)

Motivation and Overview

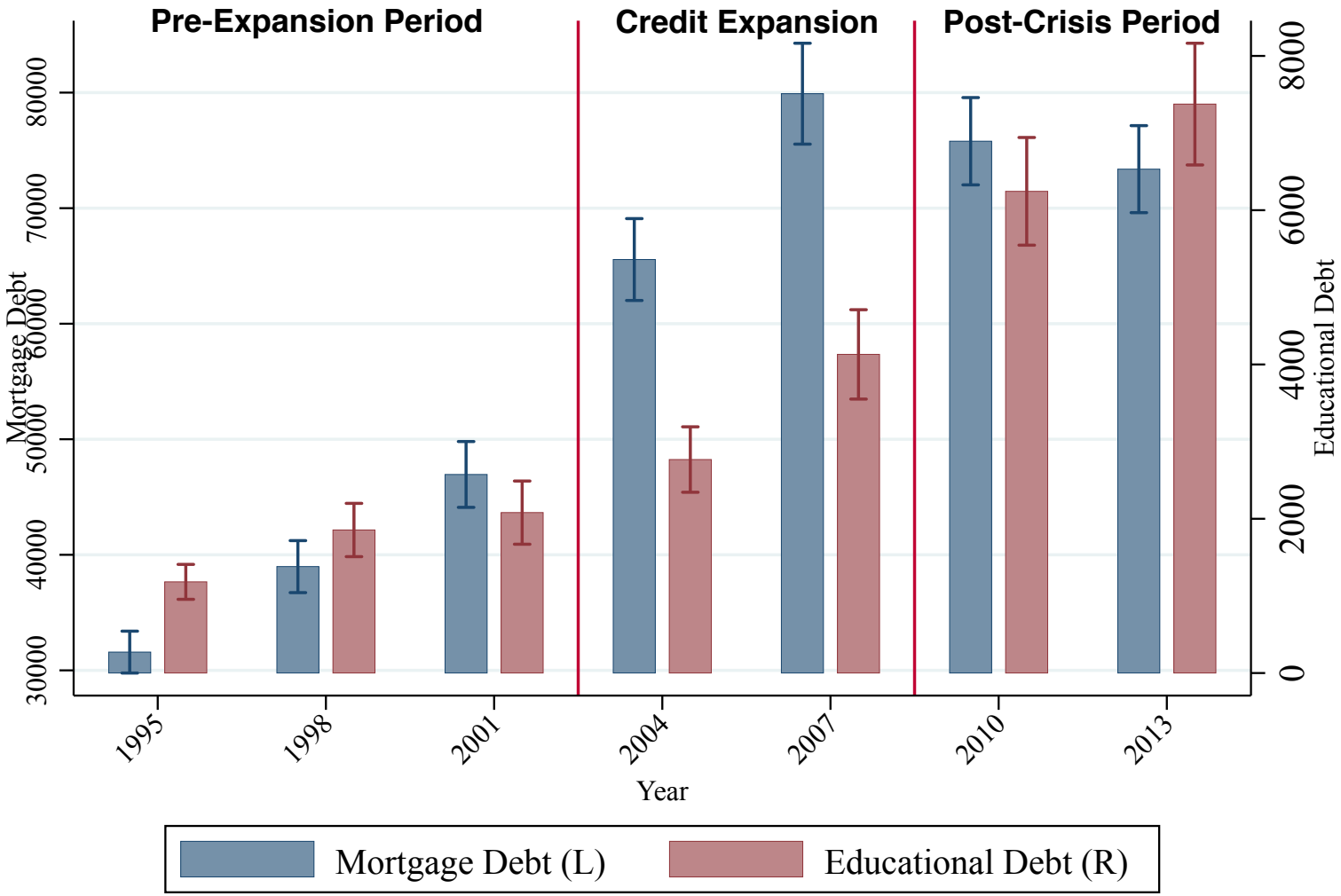
The credit expansion did not affect all borrowers to the same extent. Some female-headed households may have been part of a group of borrowers targeted by lenders as lending expanded to previously excluded markets.

Overview of results:

- The 2001 to 2007 period was characterized by a disproportionate increase in female-headed households' average indebtedness, mediated by variation in income and age.
- Female-headed households exhibited greater persistence in some types of debt post-crisis than male-headed households.

These gendered dynamics may be linked to institutional changes in markets for mortgage and educational loans.

Average Debt by Year and Debt Type



Source: Surveys of Consumer Finance. Sample is truncated by age (65 and under) and income, wealth, and debt. Means and standard errors are calculated using weights and without using multiple imputation inference.

Average Debt by Type and Gender

Female-Headed Households	Overall: 1995 - 2013	Period 1: 1995 - 2001	Period 2: 2004 - 2007	Percent Change: 1 to 2	Period 3: 2010 - 2013	Percent Change: 2 to 3
Total Debt	$36,704.24	$22,257.14	$45,134.92	102.79%	$47,172.68	4.51%
Mortgage	$27,167.93	$16,214.95	$34,233.46	111.12%	$34,437.89	0.60%
Education	$3,378.75	$1,459.75	$3,006.31	105.95%	$6,245.52	107.75%
n	*5,257*	*1,904*	*1,323*		*2,030*	
Male-Headed Households						
Total Debt	$36,715.72	$26,422.78	$45,186.05	71.01%	$41,254.98	-8.70%
Mortgage	$26,976.13	$18,491.27	$34,399.52	86.03%	$30,317.57	-11.87%
Education	$2,465.69	$1,365.74	$1,959.07	43.44%	$4,232.87	116.06%
n	*3,386*	*1,196*	*820*		*1,370*	

Source: Surveys of Consumer Finance, 1995 - 2013. Sample includes all single-headed households with household heads 65 and under. Households reporting wealth or income in the top 5% or debt in the top 1% of sample are dropped.

Mortgage Lending

Banks extended high cost mortgage loans to previously excluded groups during housing bubble as part of shift to short-term profitability, explaining early 2000s boom in female homeownership (Dymski, Hernandez, and Mohanty 2013, Baker 2014).

Predatory lending targeted "cash-poor and equity-rich" groups (Wyly and Ponder 2011).

Female-headed households increasingly relied on debt to fund care obligations and cope with financial insecurity (Baker 2014).

Mortgage Lending

Former financial manager's description of "perfect customer":

> *an uneducated widow who is on a fixed income–hopefully from her deceased husband's pension and Social Security, who has her house paid off, is living off credit cards, but having a difficult time keeping up with her payments, and who must make a car payment in addition to her credit-card payments.*
>
> *Wyly and Ponder 2011, p. 8*

Empirical evidence is mixed (Fishbein and Woodall 2006, Wyly and Ponder 2011, Sen 2012, Awoonor Williams 2004, Lindsey-Taliefero 2015). An important gap in this literature may be the mediating role of income.

Educational Lending

Women are a growing portion of college students (57% in 2014) and hold two-thirds of student debt. On average, they have lower ability to pay and attend more costly institutions (AAUW 2017, HSLS).

Private student loans were securitized and the volume of such loans grew dramatically (CFPB and ED 2012). Borrowers may have also relied on home equity loans to fund education pre-crisis (Amromin, Eberly, and Mondragon 2016).

Total enrollment of "non-traditional" female students increased by 12% during the crisis, about 2.5 times greater than growth among men.

▸ CPS Data

Data

Survey of Consumer Finance

- Seven triennial surveys used: 1995 - 2013
- Pooled cross-sectional surveys
- Original $n \approx 34{,}000$
- Representative sample and non-representative high-wealth sample

Truncated sample ($n = 8{,}643$) excludes

- Dual-headed households
- Household heads > 65 years old
- Households with wealth or income in top 5% or debt in top 1% of single-headed households

Identification strategy

Time-invariant heterogeneity between male- and female-headed households' borrowing behavior eliminated by DID.

- Time-variant heterogeneity and selection bias may violate parallel trends assumption.
- Regressions control for wealth, income, age, race, household structure and size, risk aversion, expected expenses, and employment status.

▸ Summary Statistics

A concern in the literature is lack of credit score information.

- Mixed evidence on gender differences in credit scores over time (e.g., Experian 2013, Phillips 2012).
- Credit scores may also be endogenous to outcome variables of interest.

Debt by Income Group and Debt Category

	Below Median Income		*Above Median Income*	
Dependent (dollars):	*Total Debt*	*Mortgage*	*Total Debt*	*Mortgage*
Female	612.7	699.9	239.1	1927.9
	(1518.5)	(1357.1)	(2358.4)	(2422.4)
Expansion	908.0	-986.6	18398.4***	18355.1***
	(1881.2)	(1729.1)	(3784.6)	(3945.3)
Expansion # Female	8620.3***	6335.7***	7439.7	4069.1
	(2320.9)	(2092.6)	(4872.3)	(4953.7)
Post-Crisis	5157.0**	-303.0	23283.6***	23928.0***
	(2028.5)	(1643.2)	(3290.4)	(3521.6)
Post-Crisis # Female	7493.8***	4585.4**	7954.6*	4599.3
	(2242.9)	(1853.9)	(4132.2)	(4346.5)
Observations	*4132*	*4132*	*4511*	*4511*
R-squared	*0.289*	*0.218*	*0.375*	*0.176*

Standard errors in parentheses. All regressions use sampling weights and robust standard errors. Stars indicate statistical significance at 1%, 5%, and 10% levels.

Debt by Age and Debt Category

	Respondents 18 to 65		*Respondents 25 to 65*	
Dependent (dollars):	*Total Debt*	*Education*	*Total Debt*	*Education*
Female	1492.1	911.0***	1558.2	954.0***
	(1538.8)	(291.3)	(1692.9)	(302.5)
Expansion	12406.5***	887.0**	13346.6***	1046.3**
	(2501.8)	(390.7)	(2820.8)	(428.3)
Expansion # Female	5457.9*	962.1*	5732.0*	557.5
	(2981.4)	(507.9)	(3327.9)	(526.0)
Post-Crisis	17097.3***	3189.5***	18722.6***	2805.7***
	(2098.6)	(560.4)	(2355.2)	(561.1)
Post-Crisis # Female	6025.7**	1823.3***	5959.8**	1979.6***
	(2499.2)	(690.5)	(2770.9)	(714.8)
Observations	*8643*	*8643*	*7781*	*7781*
R-squared	*0.409*	*0.053*	*0.401*	*0.056*

Standard errors in parentheses. All regressions use sampling weights and robust standard errors. Stars indicate statistical significance at 1%, 5%, and 10% levels.

Summary of Results

Female-headed households exhibited a greater average increase in mortgage debt than male-headed households.

- Among lower-income single-headed households, female borrowers account for all growth in average mortgage debt pre-crisis and persistence of that debt post-crisis.
- Among upper-income single-headed households, mortgage debt grew at similar rates for male and female borrowers.

Female household heads between 18 and 25 experienced a greater increase in average educational debt during the expansion. Older female household heads experienced greater increase post-crisis relative to pre-crisis than male household heads.

Intensive and Extensive Margins

Implicit in these interpretations is a distinction between

1. the extensive margin (the decision to take on debt), and
2. the intensive margin (the magnitude of debt)

Similar debt regressions are conducted with a binary indebtedness variable and with a continuous measure of indebtedness limited to debt holders.

Results are generally consistent with explanations proposed earlier:

- Gender differences in mortgage debt growth occur at extensive margin.
- Gender difference in educational debt growth occurs at the intensive margin pre-crisis and at the extensive margin post-crisis.

▸ Indebtedness Status Results ▸ Magnitude Results

Conclusions and Future Research

The estimation results suggest that disproportionate growth in mortgage and educational debt occurred among certain female-headed households during and after the credit expansion.

These findings point to the uneven effects of the Great Recession and their continued implications for the financial stability of female-headed households.

Avenues for additional research include

- investigating gendered differences in foreclosure and bankruptcy rates and deleveraging behavior.
- using nonparametric approaches

Questions or comments?

References

Awoonor-Williams, Princess Josephine. 2004. "Gender and Credit: An Analysis of Women's Experience in the Credit Market." Unpublished Dissertation. Howard University.

Baker, Amy Castro. 2014. "Eroding the Wealth of Women: Gender and the Subprime Foreclosure Crisis." *Social Science Review* 88(1): 59-91.

Calandra, Brian. 2008. "Sound and Fury, Accomplishing Nothing?: Why Haven't Empirical Data, Commentator Advocacy, and Sympathetic Media Coverage Helped Women in Bankruptcy?" *Women's Rts. L. Rep.* 30(1): 184-218.

Consumer Financial Protection Bureau and U.S. Department of Education. 2012. *Private Student Loans.* Washington, D.C.: CFPB and U.S. Department of Education.

Dymski, Gary, Jesus Hernandez, and Lisa Mohanty. 2013. "Race, Gender, Power, and the US Subprime Mortgage and Foreclosure Crisis: A Meso Analysis." *Feminist Economics* 19(3): 124-151.

Experian. 2016. "Experian Gender Credit Analysis." Experian Information Solutions, Inc. Data available at http://www.experian.com/blogs/insights/2016/03/men-vs-women-credit-trends

Fishbein, Allen J. and Patrick Woodall. 2006. "Women are Prime Targets for Subprime Lending: Women are Disproportionately Represented in High-Cost Mortgage Market." Consumer Federation of America Working Paper.

References

Hartmann, Heidi, Ashley English, and Jeffrey Hayes. 2010. "Women and Men's Employment and Unemployment in the Great Recession." Institute for Women's Policy Research Working Paper. Publication C373.

Lindsey-Taliefero, Debby. 2015. "Gender Differences: Mortgage Credit Experience." *Modern Economy* 6: 977-989.

Phillips, Sandra. 2012. "The Subprime Mortgage Calamity and the African-American Woman." *Review of Black Political Economy* 39: 227-237.

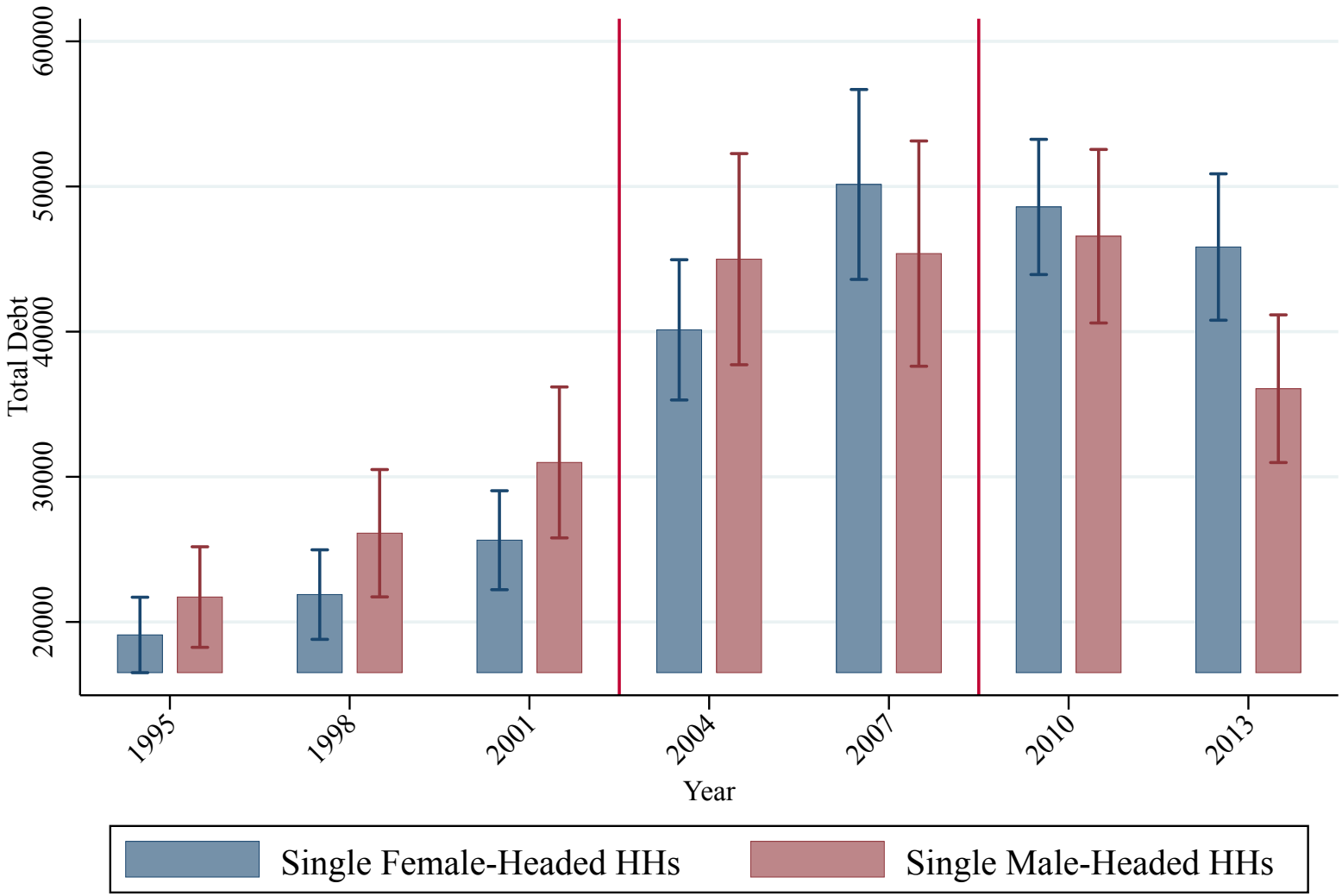
Sen, Maya. 2012. "Quantifying Discrimination: Exploring the Role of Race and Gender and the Awarding of Subprime Mortgage Loans." Harvard Kennedy School Working Paper.

Sullivan, Teresa A. 2005. "Gender Differences in Accounts of Bankruptcy." *St. Louis U. Pub. L. Rev.* 24: 433-444.

Wyly, Elvin and C.S. Ponder. 2011. "Gender, Age, and Race in Subprime America." *Housing Policy Debate* 21(4): 529-564.

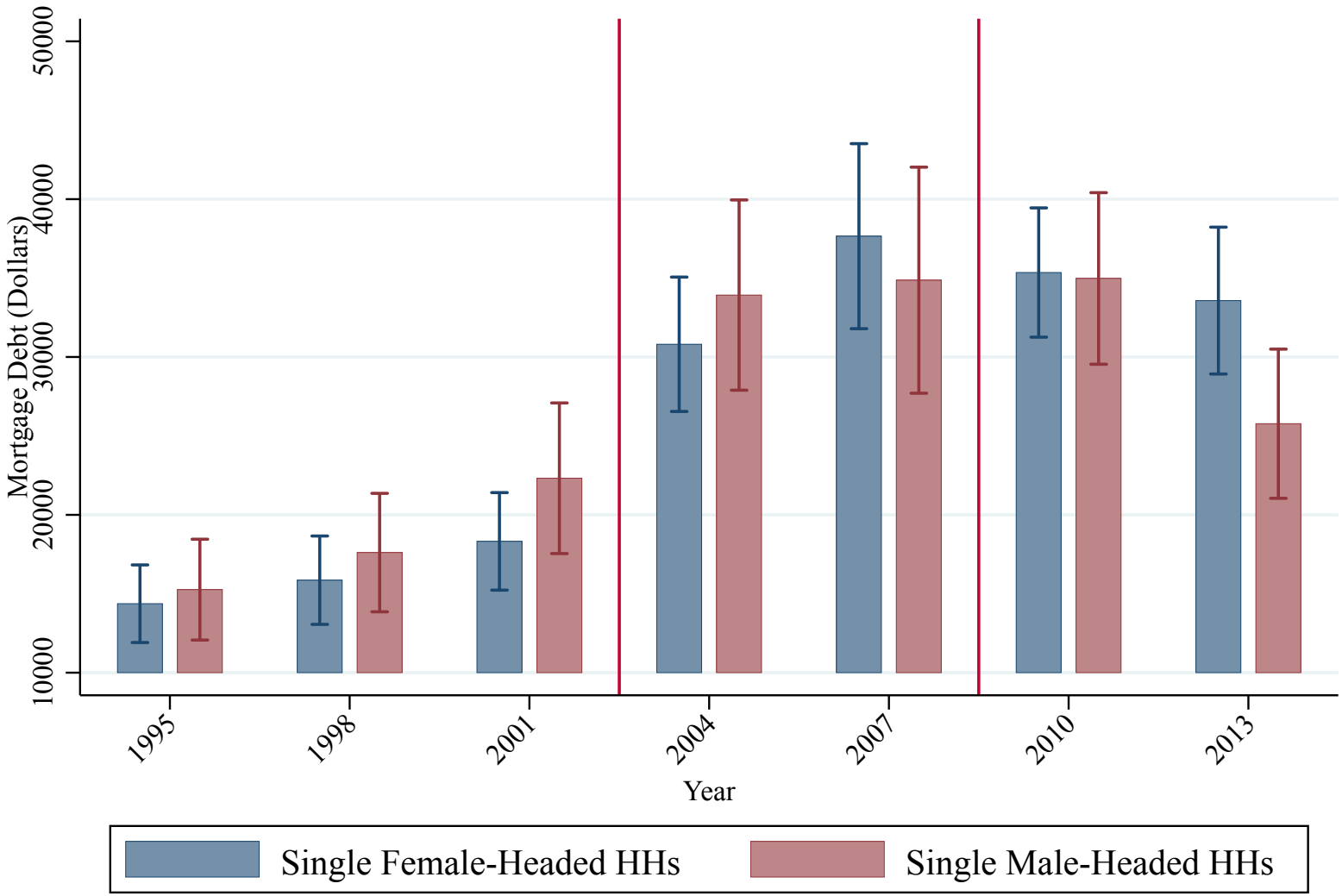
Appendix

Average Total Debt by Sex and Household Structure



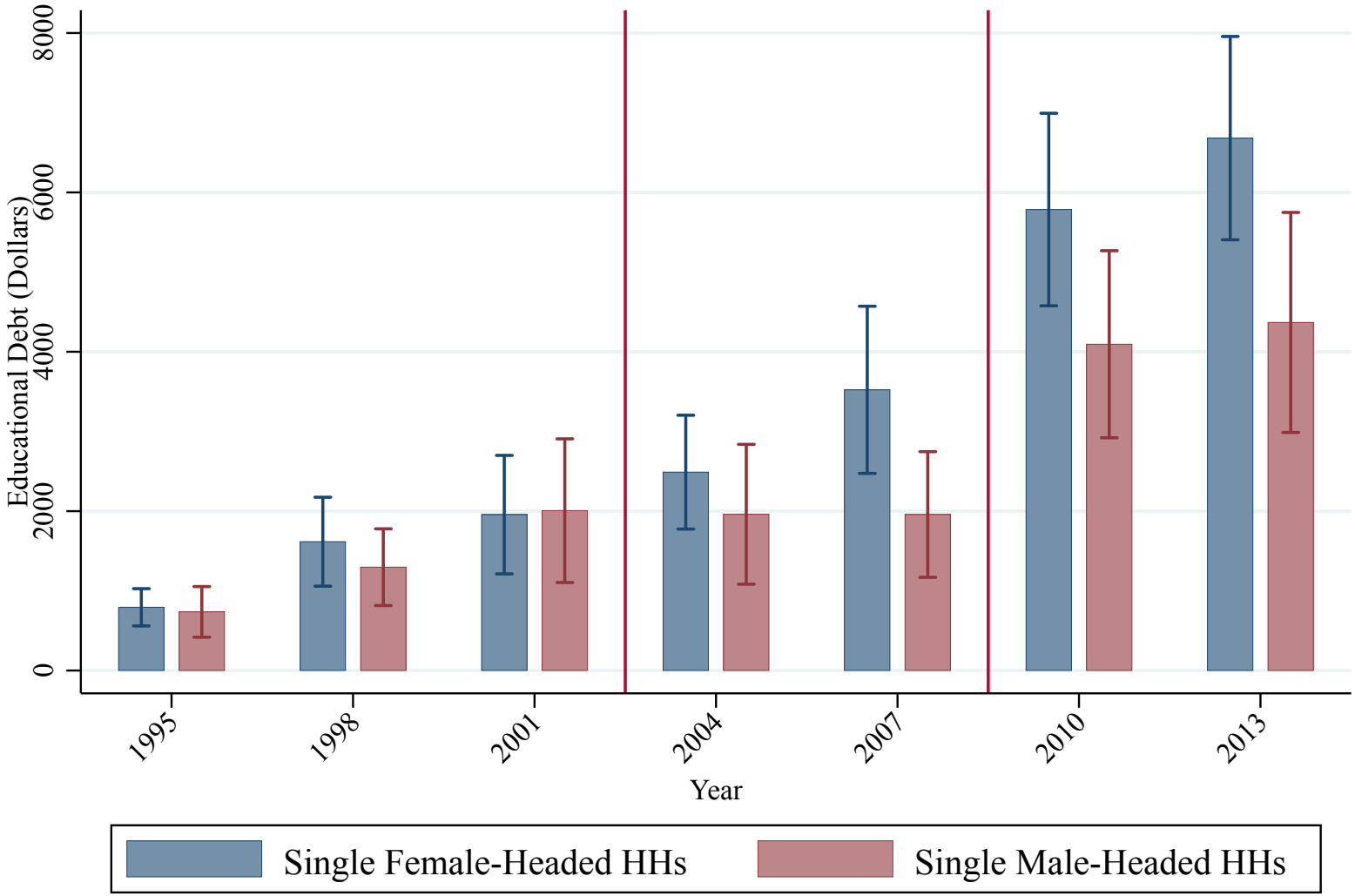
Source: Surveys of Consumer Finance. Sample is truncated by age (65 and under) and income, wealth, and debt. Means and standard errors are calculated using weights and without using multiple imputation inference.

Average Mortgage Debt by Sex and Household Structure



Source: Surveys of Consumer Finance. Sample is truncated by age (65 and under) and income, wealth, and debt. Means and standard errors are calculated using weights and without using multiple imputation inference.

Average Educational Debt by Sex and Household Structure



Source: Surveys of Consumer Finance. Sample is truncated by age (65 and under) and income, wealth, and debt. Means and standard errors are calculated using weights and without using multiple imputation inference.

Enrollment Trends

	Period 1: 1995 - 2001		Period 2: 2002 - 2007			Period 3: 2008 - 2013		
Female Students (by age)	*Average Enrollment (thousands)*	*Average Proportion*	*Average Enrollment (thousands)*	*Average Proportion*	***Percent Change: 1 to 2***	*Average Enrollment (thousands)*	*Average Proportion*	***Percent Change: 2 to 3***
Total	8504		9696		**14.01%**	11039		**13.86%**
18 to 24	5978	70.29%	7033	72.54%	**17.66%**	8059	73.00%	**14.58%**
25 and up	2432	28.60%	2548	26.28%	**4.75%**	2855	25.86%	**12.06%**
Male Students (by age)								
Total	6826		7501		**9.88%**	8705		**16.06%**
18 to 24	5282	77.38%	5858	78.10%	**10.89%**	6940	79.73%	**18.48%**
25 and up	1477	21.63%	1570	20.93%	**6.31%**	1647	18.92%	**4.90%**

Source: CPS Historical Tables, Table A-6. Age Distribution of College Students 14 Years Old and Over, by Sex: October 1947 to 2016

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Summary Statistics

Women	Overall: 1995 - 2013	Period 1: 1995 - 2001	Period 2: 2004 - 2007	Percent Change: 1 to 2	Period 3: 2010 - 2013	Percent Change: 2 to 3
wealth	$96,849.07	$76,697.77	$116,324.50	51.67%	$103,817.70	-10.75%
income	$30,157.85	$24,637.41	$33,091.98	34.32%	$34,442.23	4.08%
age	42.84	41.66	43.68	4.85%	43.55	-0.31%
nonwhite	39.83%	38.02%	37.38%	-1.68%	44.60%	19.32%
nvrmarried	40.40%	39.70%	37.70%	-5.05%	44.00%	16.71%
separated	9.95%	10.50%	9.24%	-11.98%	9.94%	7.52%
divorced	39.59%	39.66%	42.33%	6.71%	36.79%	-13.08%
widowed	10.06%	10.14%	10.74%	5.91%	9.28%	-13.57%
riskaverse	51.79%	48.34%	52.15%	7.88%	55.93%	7.24%
hhsize	1.90	1.89	1.87	-1.07%	1.96	4.48%
majorexp	57.31%	57.19%	55.78%	-2.47%	58.99%	5.76%
unemployed*	17.59%	14.86%	16.76%	12.81%	21.97%	31.09%
n	*5,257*	*1,904*	*1,323*		*2,030*	
Men						
wealth	$126,176.40	$107,199.10	$160,981.00	50.17%	$117,120.60	-27.25%
income	$37,516.57	$33,212.47	$42,182.50	27.01%	$38,394.01	-8.98%
age	40.77	39.54	41.14	4.06%	41.90	1.86%
nonwhite	27.58%	23.10%	28.87%	24.97%	31.74%	9.95%
nvrmarried	54.64%	52.79%	54.32%	2.90%	57.13%	5.17%
separated	8.01%	9.85%	7.04%	-28.48%	6.70%	-4.91%
divorced	33.49%	32.70%	35.07%	7.27%	32.99%	-5.95%
widowed	3.86%	4.66%	3.56%	-23.69%	3.18%	-10.52%
riskaverse	34.93%	29.85%	34.32%	14.96%	41.53%	21.01%
hhsize	1.24	1.23	1.27	3.09%	1.23	-3.49%
majorexp	55.83%	56.40%	55.33%	-1.90%	55.60%	0.48%
unemployed*	18.09%	12.13%	19.32%	59.36%	24.07%	24.53%
n	*3,386*	*1,196*	*820*		*1,370*	

Source: Surveys of Consumer Finance, 1995 - 2013. Sample includes all single-headed households with household heads 65 and under. Households reporting wealth or income in the top 5% or debt in the top 1% of sample are dropped. *Except for 1995, defined as not working and "looking for work in past 12 months."

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Indebtedness Status by Income

Dependent = Pr(Holds debt)	Below Median Income				Above Median Income			
	Total Debt	*Mortgage*	*Education*	*Credit Card*	*Total Debt*	*Mortgage*	*Education*	*Credit Card*
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Female	0.171	-0.120	0.380**	0.261*	-0.0720	0.105	0.468***	0.413***
	(0.143)	(0.226)	(0.189)	(0.148)	(0.161)	(0.123)	(0.178)	(0.117)
Expansion	-0.206	-0.588*	0.514**	-0.414**	-0.0573	0.291**	0.317	0.0125
	(0.180)	(0.317)	(0.236)	(0.194)	(0.188)	(0.146)	(0.211)	(0.137)
Expansion # Female	-0.0209	0.696**	-0.275	0.130	0.313	-0.0841	0.228	0.204
	(0.204)	(0.345)	(0.274)	(0.220)	(0.247)	(0.182)	(0.250)	(0.173)
Post-Crisis	-0.379**	-0.678**	0.601***	-0.722***	-0.480***	0.218*	0.679***	-0.205*
	(0.155)	(0.286)	(0.196)	(0.168)	(0.157)	(0.132)	(0.182)	(0.123)
Post-Crisis # Female	0.263	0.659**	0.180	-0.0166	0.494**	0.0422	0.383*	-0.220
	(0.177)	(0.314)	(0.231)	(0.198)	(0.204)	(0.163)	(0.217)	(0.155)
Observations	4132	4132	4132	4132	4511	4511	4511	4511
Pseudo R-squared	0.111	0.193	0.143	0.124	0.106	0.107	0.119	0.044
Treatment effect of being female (percentage points/100)								
Expansion	-0.00340	0.0631**	-0.0237	0.0195	0.0326	-0.0168	0.0448	0.0479
	(0.0421)	(0.0298)	(0.0298)	(0.0385)	(0.0275)	(0.0392)	(0.0275)	(0.0408)
Post-Crisis	0.0560*	0.0483*	0.0492	-0.0232	0.0651**	0.00953	0.0853***	-0.0532
	(0.0364)	(0.0267)	(0.0264)	(0.0321)	(0.0255)	(0.0348)	(0.0253)	(0.0366)
Observations	4132	4132	4132	4132	4511	4511	4511	4511

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Magnitude of Nonzero Debt by Income

	Below Median Income				Above Median Income			
Dependent (dollars of debt among debt holders):	*Total Debt* b/se	*Mortgage* b/se	*Education* b/se	*Credit Card* b/se	*Total Debt* b/se	*Mortgage* b/se	*Education* b/se	*Credit Card* b/se
Female	51.69	8246.8	2372.2	192.9	1821.9	2829.3	2172.6	-667.3
	(2165.3)	(6993.9)	(2335.3)	(375.9)	(2573.1)	(3674.4)	(2813.5)	(448.3)
Expansion	2289.3	8474.3	5269.9*	1257.4*	22510.3***	31557.0***	1728.4	1987.9***
	(2775.9)	(9660.7)	(2745.3)	(696.7)	(4120.9)	(5704.2)	(3794.1)	(688.8)
Expansion # Female	12037.3***	10548.0	7586.2**	84.87	4969.5	5111.8	902.4	-352.5
	(3403.9)	(11322.7)	(3832.3)	(830.6)	(5298.5)	(7108.4)	(4292.3)	(836.3)
Post-Crisis	11018.3***	19690.2*	16228.8***	668.6	31761.5***	47591.9***	11171.9***	399.4
	(3144.6)	(10158.7)	(4921.5)	(541.1)	(3746.5)	(5243.7)	(3291.3)	(602.5)
Post-Crisis # Female	8139.4**	4433.8	2413.9	431.0	3709.7	174.3	989.3	1325.1*
	(3476.0)	(11304.2)	(4738.9)	(675.1)	(4628.5)	(6435.3)	(4292.2)	(713.8)
Observations	2466	502	750	1110	3728	1911	766	2112
R-squared	0.343	0.290	0.110	0.128	0.405	0.251	0.082	0.054

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