

## **Online Appendix**

### **Debt relief and slow recovery: A decade after Lehman**

Tomasz Piskorski and Amit Seru

## Appendix A1: Probability of delinquency for borrowers with a single home

This table reports the results from regressions of whether a borrower with a single home became delinquent on various borrower and ZIP code level variables. Delinquency is defined as 60 days or more past due on payment. Column (1) contains all borrower level variables, except vantage score. Column (2) adds individual vantage score. Column (3) contains all variables from column (2) and adds zip code fixed effects. Column (4) contains all borrower level variables from column (2) and adds zip code level controls. Controls include zip code house price levels and CLTV in 2007, median household income, unemployment rate, median age, percent married with children, percent with college education, percent with high school education, percent white, percent Hispanic or Latino, and percent Black. House price levels are taken as of 2007 and the remaining controls are averages of the years 2007 to 2011. Regression inputs are scaled to have a standard deviation of one. Standard errors are reported in parentheses. Data Sources: Individual delinquency status, income, age, and CLTV come from Equifax and house price data from Zillow. The remaining variables come from the U.S. Census Bureau American Community Survey five-year estimates.

	(1)	(2)	(3)	(4)
Individual Income	-0.181 (0.000)	-0.040 (0.000)	-0.032 (0.000)	-0.032 (0.000)
Individual Age	-0.029 (0.000)	-0.001 (0.000)	-0.004 (0.000)	-0.003 (0.000)
Combined Mortgage Balance	0.115 (0.001)	0.051 (0.000)	0.047 (0.000)	0.047 (0.000)
Credit Card Debt	0.368 (0.006)	-0.573 (0.005)	-0.573 (0.005)	-0.570 (0.005)
Auto Debt	0.032 (0.000)	0.007 (0.000)	0.007 (0.000)	0.006 (0.000)
Student Debt	0.006 (0.000)	-0.002 (0.000)	-0.001 (0.000)	-0.002 (0.000)
Vantage Score		-0.228 (0.000)	-0.224 (0.000)	-0.224 (0.000)
Zip Code Fixed Effects	No	No	Yes	No
Zip Code Controls	No	No	No	Yes
Observations	1,234,247	1,234,247	1,234,247	1,234,247
Adjusted R-squared	0.152	0.348	0.365	0.361

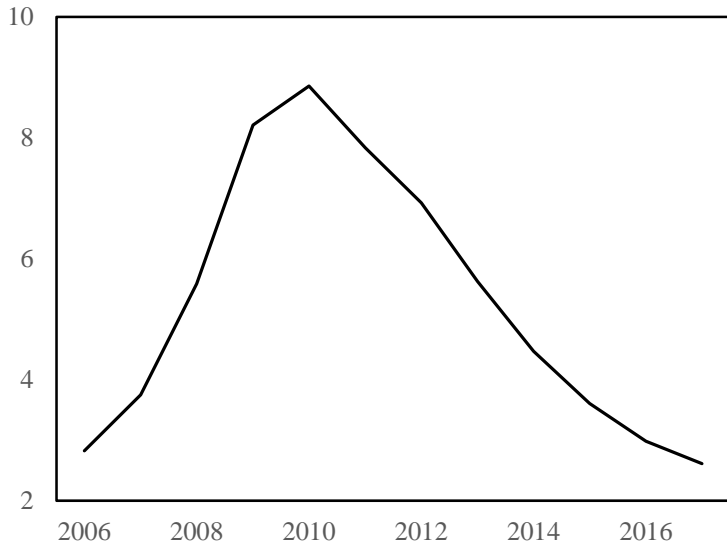
## Appendix A2: Probability of foreclosure for borrowers with a single home

This table reports the results from regressions of whether a borrower with a single home suffered foreclosure on various borrower and zip code level variables. Column (1) contains all borrower level variables, except vantage score. Column (2) adds individual vantage score. Column (3) contains all variables from column (2) and adds zip code fixed effects. Column (4) contains all borrower level variables from column (2) and adds zip code level controls. Controls include zip code house price levels and CLTV in 2007, median household income, unemployment rate, median age, percent married with children, percent with college education, percent with high school education, percent white, percent Hispanic or Latino, and percent Black. House price levels are taken as of 2007 and the remaining controls are averages of the years 2007 to 2011. Regression inputs are scaled to have a standard deviation of one. Standard errors are reported in parentheses. Data Sources: Individual foreclosure status, income, age, and zip code CLTV come from Equifax and house price data from Zillow. The remaining variables are from the U.S. Census Bureau American Community Survey five-year estimates.

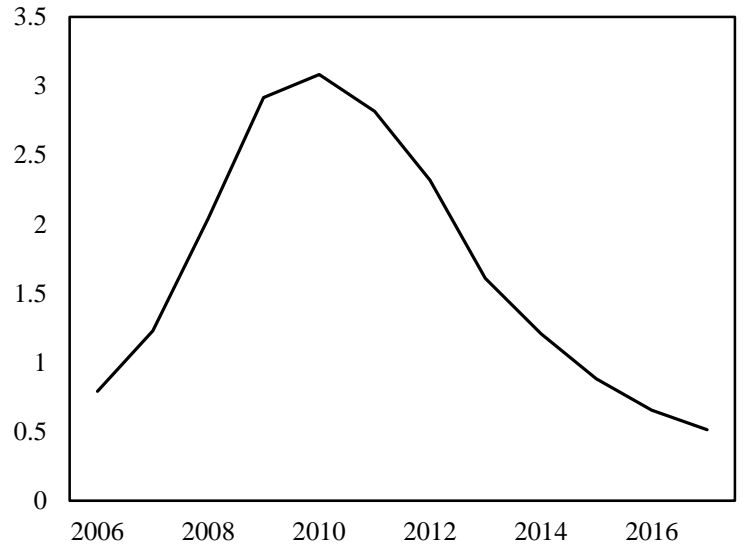
	(1)	(2)	(3)	(4)
Individual Income	-0.066 (0.000)	-0.025 (0.000)	-0.020 (0.000)	-0.020 (0.000)
Individual Age	-0.013 (0.000)	-0.005 (0.000)	-0.006 (0.000)	-0.0064 (0.000)
Combined Mortgage Balance	0.050 (0.000)	0.031 (0.000)	0.031 (0.000)	0.030 (0.000)
Credit Card Debt	0.386 (0.004)	0.111 (0.0043)	0.107 (0.004)	0.108 (0.004)
Auto Debt	0.019 (0.000)	0.012 (0.000)	0.011 (0.000)	0.011 (0.000)
Student Debt	0.005 (0.000)	0.0021 (0.000)	0.002 (0.000)	0.002 (0.000)
Vantage Score		-0.0668 (0.000)	-0.064 (0.000)	-0.065 (0.000)
CLTV				0.008 (0.000)
Zip Code Fixed Effects	No	No	Yes	No
Zip Code Controls	No	No	No	Yes
Observations	1,234,247	1,234,247	1,234,247	1,234,247
Adjusted R-squared	0.057	0.094	0.109	0.103

### Appendix A3: Delinquency and foreclosure rates

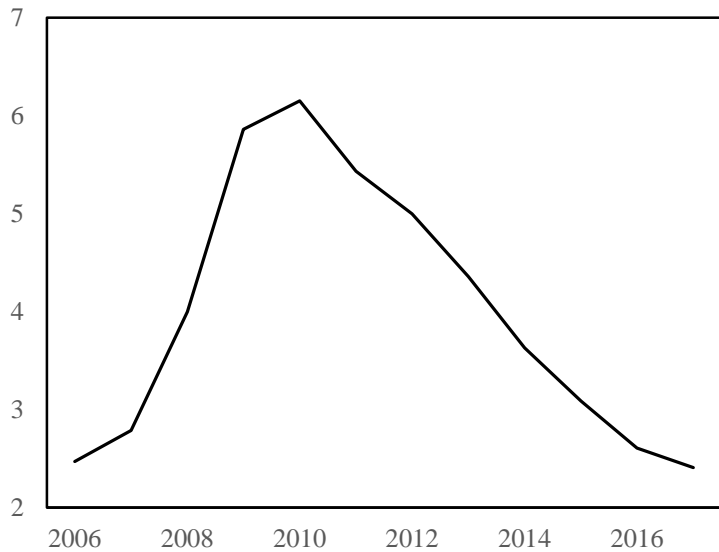
Panel (a) shows time-series of the mean of zip code serious delinquency rates from 2006 to 2017 across zip codes and panel (b) shows the mean of zip code foreclosure rates during the same years. Panel (c) shows the standard deviation of delinquency rates across zip codes and panel (d) shows the standard deviation of foreclosure rates. Panels (a) and (c) show a similar pattern of the zip code mean and standard deviation of the delinquency rate when compared to the county-level evidence presented in Piskorski and Seru (2018). Calculations are population weighted by zip code. Data Sources: Equifax 10% representative sample of the U.S. credit population and U.S. Census Bureau zip code population estimates.



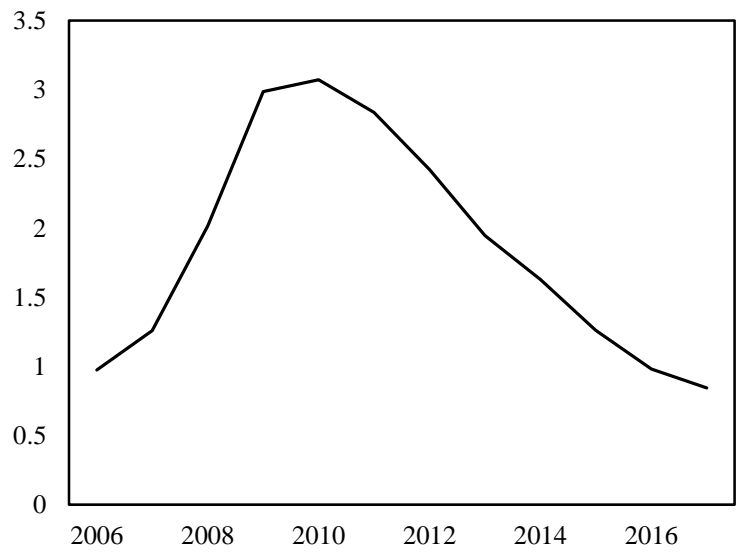
(a) Delinquency Rate (Mean)



(b) Foreclosure Rate (Mean)



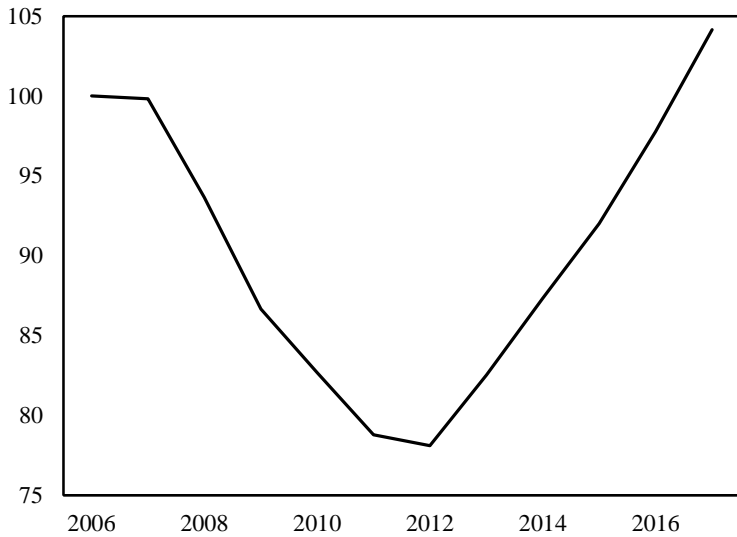
(c) Delinquency Rate (Standard Deviation)



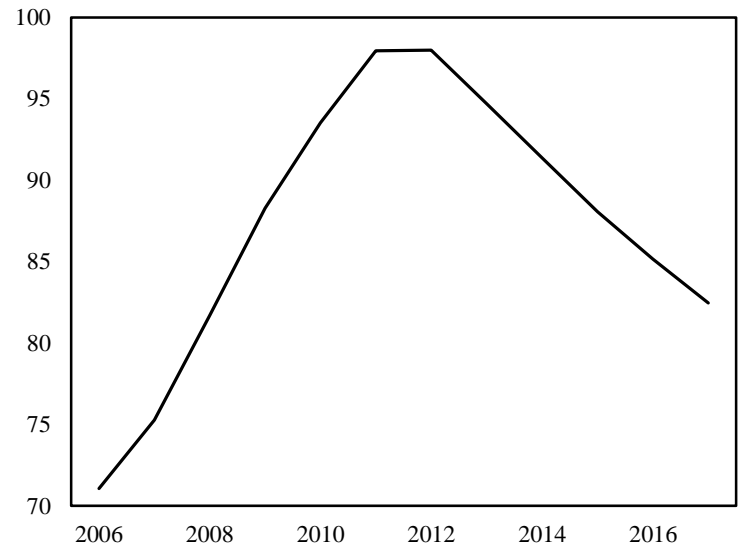
(d) Foreclosure Rate (Standard Deviation)

## Appendix A4: House prices and CLTV

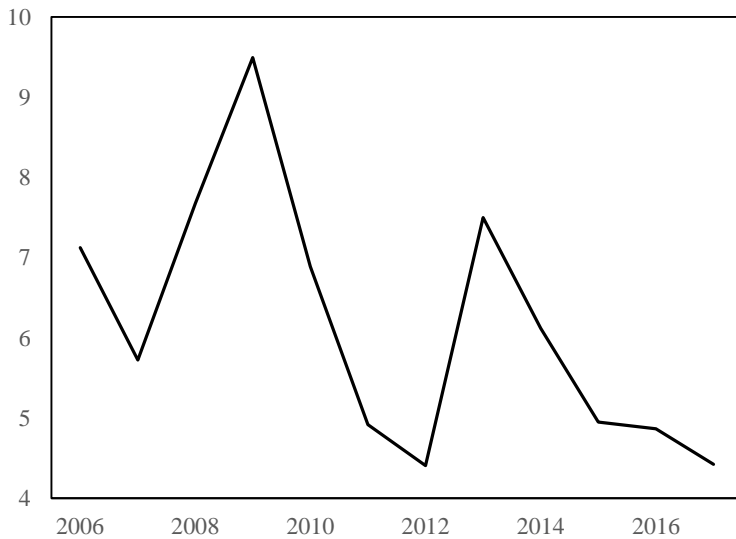
Panel (a) shows time-series of the mean of zip code house prices 2006 to 2017 across zip codes. Panel (b) shows the mean of CLTV during the same time period. Panel (c) shows the standard deviation of annual house price growth across zip codes from 2006 to 2017 and panel (d) shows the standard deviation of CLTV during the same time. Calculations are population weighted by zip code. The house price index in each zip code is normalized to 100 in the first time period. Panels (b) and (d) show a similar pattern of the zip code mean and standard deviation of the CLTV when compared to the county-level evidence presented in Piskorski and Seru (2018). Data Sources: House prices come from Zillow, CLTV is estimated from the Equifax 10% representative sample of the U.S. credit population, and ZIP code population data from the U.S. Census Bureau zip code population estimates.



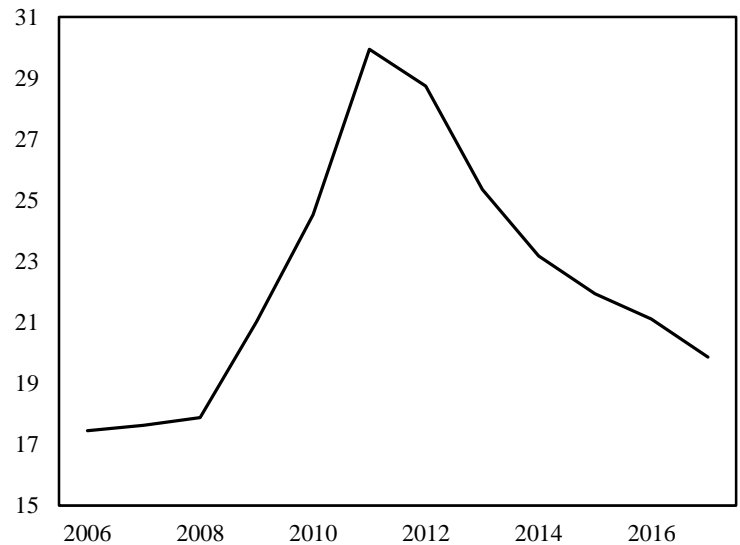
(a) House Price (Mean)



(b) CLTV (Mean)



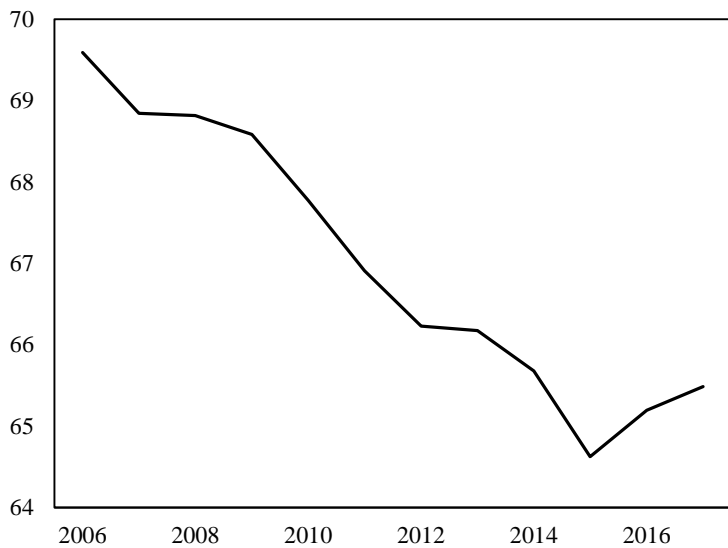
(c) House Price (Standard Deviation)



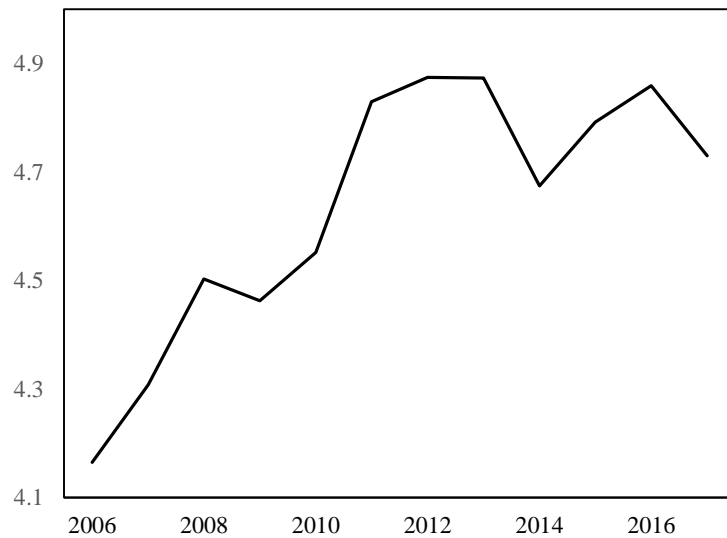
(d) CLTV (Standard Deviation)

## Appendix A5: Homeownership rate

Panel (a) shows the time-series of the mean of homeownership rates across states from 2006 to 2016 and panel (b) shows the standard deviation in each year. Calculations are population weighted by state. Data Sources: Homeownership statistics come from the U.S. Census Bureau population estimates.



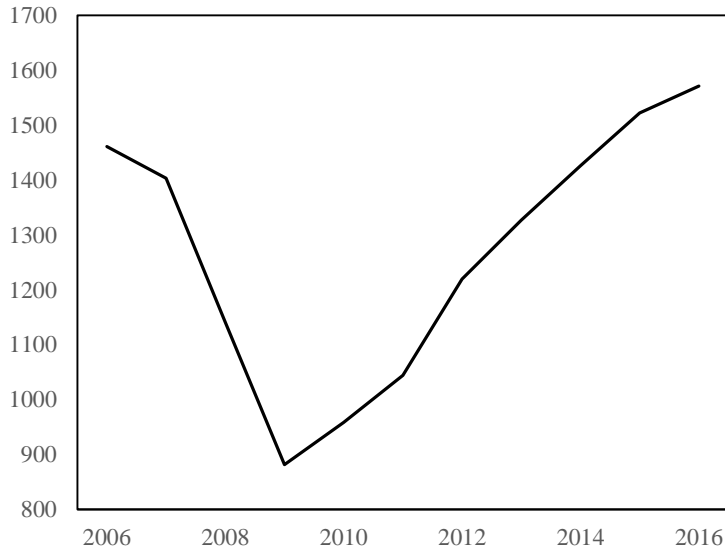
(a) Homeownership Rate (Mean)



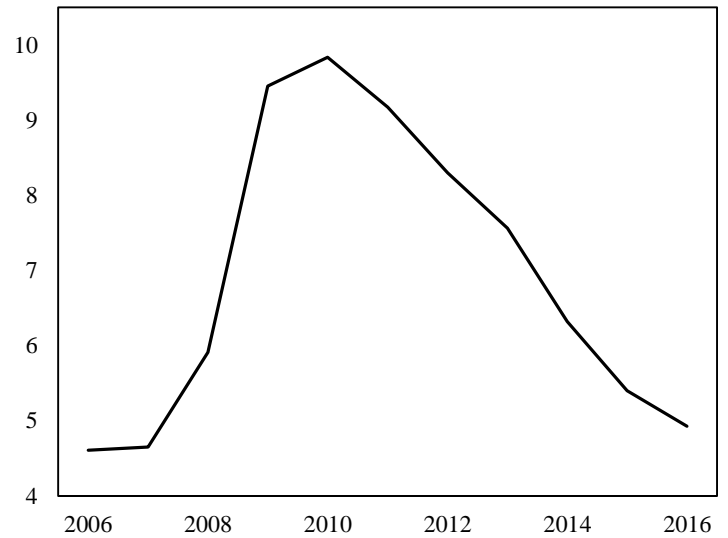
(b) Homeownership Rate (Standard Deviation)

## Appendix A6: Auto sales and unemployment rate

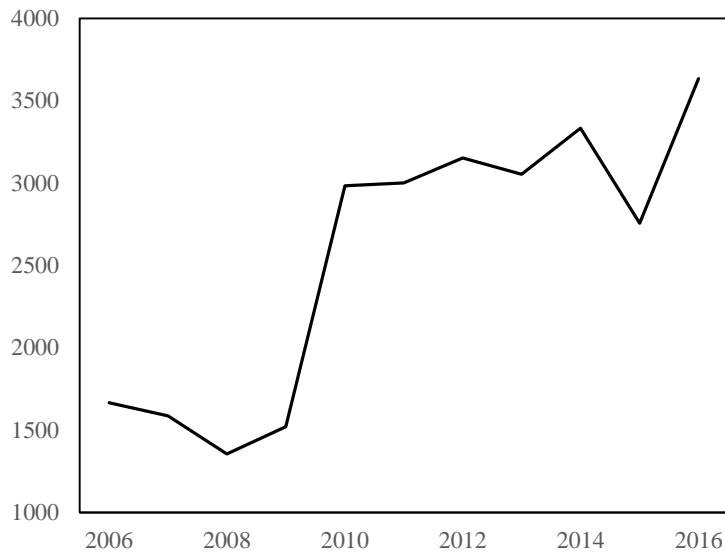
Panel (a) shows a time-series of the mean of zip code auto sales from 2006 to 2016 across zip codes. Panel (b) shows mean county unemployment rate during the same time period. Panel (c) shows the standard deviation of auto sales across zip codes and panel (d) shows the standard deviation of unemployment rates across counties. Panels (b) and (d) replicate the county-level mean and standard deviation of the unemployment rate as in Piskorski and Seru (2018), produced only for our sample period. Calculations are population weighted by region. Data Sources: The unemployment rate comes from the U.S. Census Bureau Small Area Income and Poverty Estimates, auto sales from R. L. Polk & Company, population data from the U.S. Census Bureau zip code and county population estimates.



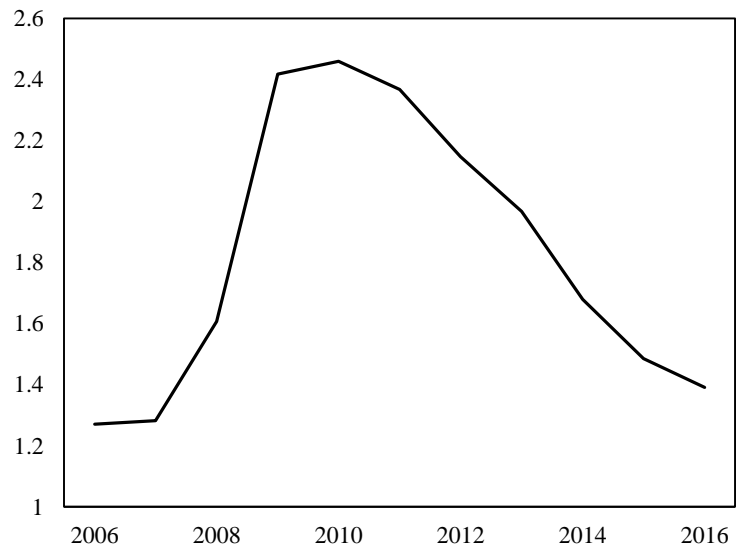
(a) Auto Sales (Mean)



(b) Unemployment Rate (Mean)



(c) Auto Sales (Standard Deviation)



(d) Unemployment Rate (Standard Deviation)

### Appendix A7: Regional summary statistics

This table provides summary statistics at the zip code level. Columns (1) to (3) provide summary statistics for all available zip codes in the U.S. Census Bureau American Community Survey five-year estimates. Columns (4) to (6) are restricted to the zip codes used in our regional regressions.

	All Zip Codes			Zip Codes Used in Regressions		
	(1) Mean	(2) SD	(3) # of Zip Codes	(4) Mean	(5) SD	(6) # of Zip Codes
Median Income (\$)	51,277	21,996	33,120	59,547	22,955	2,883
Unemployment Rate	8.34	7.15	33,120	8.72	3.85	2,883
% Married with Children	37.01	15.14	33,120	39.65	9.06	2,883
% High School Educated	84.80	11.38	33,120	88.11	6.85	2,883
% College Educated	21.57	16.05	33,120	31.05	16.12	2,883
% White	75.77	19.80	33,120	77.00	20.54	2,883
% Black	7.61	16.05	33,120	15.54	19.19	2,883
% Hispanic or Latino	8.50	16.30	33,120	8.73	12.61	2,883



## Appendix A8: Variation in regional recovery patterns accounted by debt relief factors

This table shows the *R*-squares of the regressions capturing the association of debt relief factors with regional outcome variables from Table 5. Column (1) shows the results for the delinquency rate, Column (2) for the foreclosure rate, Column (3) for the house price growth, Column (4) for the durable (auto sales) consumption growth, and Column (5) for the unemployment rate. The first row shows the *R*-square from the specifications in which we include all controls from Table 5 except the debt relief factors. These zip code controls include median income, percent with college education, percent with high school education, percent white, percent Black, percent Hispanic or Latino, percent married with children, average precrisis house price level, house price growth, leverage (CLTV), leverage growth, subprime share, subprime share growth, mortgage credit growth, vantage credit score, net gain in population, and net gain in population associated with foreclosure. The second row adds the zip code ARM share as an additional control. The third row adds HARP Eligible share as an additional control. Finally, the last row includes all controls from Table 5 by adding the High Capacity share. Data Sources: The zip code variables come from the U.S. Census Bureau American Community Survey, Zillow, Equifax, and R. L. Polk & Company. ARM shares are from Di Maggio, Kermani, Keys, Piskorski, Ramcharan, Seru, and Yao (2017), HARP eligible shares from Agarwal, Amromin, Chomsisengphet, Landoigt, Piskorski, Seru, and Yao (2017), and High Capacity shares from Agarwal, Amromin, Ben-David, Chomsisengphet, Piskorski, and Seru (2017).

	Delinquency Rate (1)	Foreclosure Rate (2)	House Price Growth (3)	Consumption Growth (4)	Unemployment Rate (5)
All Other Controls	74.6%	73.6%	62.9%	30.3%	9.6%
+ ARM Share	79.2%	77.5%	73.2%	31.7%	12.6%
+ HARP Eligible Share	79.9%	77.7%	77.9%	31.9%	14.8%
+ High Capacity Share	80.6%	79.0%	78.3%	31.9%	14.8%

## Appendix A9: Delinquency rate change and debt relief factors over time

This table reports the results from regressions of the form  $Y_{i,t} - Y_{i,crisis} = \alpha_t + \beta_t F_i + \mu_t X_i + \epsilon_{i,t}$ , where  $Y_{i,crisis}$  is the average annual change in quarterly delinquency rates in zip code  $i$  during the crisis (2007–2009) and  $Y_{i,t}$  is the average annual change in quarterly delinquency rates  $t$  years after 2009 (2010 to 2016). The vector  $F_i$  includes measures of debt relief factors (ARM share, HARP share, and High Capacity share) at zip code  $i$ , and  $X_i$  includes several zip code level controls.  $\beta_t$  captures the effect of debt relief frictions  $t$  years after the crisis. Zip code controls include average precrisis zip code house price level, house price growth from 2003 to 2007, subprime share, subprime growth, mortgage credit, mortgage credit growth, vantage credit score, leverage (CLTV), leverage growth, income, percent with college education, percent with high school education, percent Hispanic or Latino, percent white, percent Black, and percent married with children, net gain in population, net gain in population associated with foreclosures. Standard errors are reported in parentheses. Data Sources: Delinquency rates, vantage, CLTV, subprime share, and mortgage credit, and mobility measures are from Equifax and house price growths from Zillow. ARM shares come from Di Maggio, Kermani, Keys, Piskorski, Ramcharan, Seru, and Yao (2017), HARP eligible shares from Agarwal, Amromin, Chomsisengphet, Landvoigt, Piskorski, Seru, and Yao (2020), and High Capacity shares from Agarwal, Amromin, Ben-David, Chomsisengphet, Piskorski, and Seru (2017). The remaining controls come from the U.S. Census Bureau American Community Survey.

Panel (a): Delinquency rate change and ARM share over time

	2010	2011	2012	2013	2014	2015	2016
ARM Share	-0.084 (0.029)	-0.186 (0.039)	-0.190 (0.050)	-0.219 (0.058)	-0.216 (0.066)	-0.182 (0.059)	-0.158 (0.046)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.141	0.354	0.357	0.372	0.326	0.313	0.319

Panel (b): Delinquency rate change and HARP share over time

	2010	2011	2012	2013	2014	2015	2016
HARP Eligible Share	-0.042 (0.026)	-0.093 (0.041)	-0.091 (0.049)	-0.105 (0.063)	-0.097 (0.071)	-0.081 (0.061)	-0.070 (0.051)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.063	0.156	0.146	0.149	0.117	0.109	0.111

Panel (c): Delinquency rate change and high capacity share over time

	2010	2011	2012	2013	2014	2015	2016
High Capacity Share	-0.069 (0.039)	-0.163 (0.094)	-0.184 (0.102)	-0.216 (0.116)	-0.215 (0.126)	-0.188 (0.107)	-0.153 (0.088)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.035	0.101	0.124	0.135	0.121	0.125	0.112

Panel (d): Delinquency rate change and ARM, HARP, and high capacity shares over time

	2010	2011	2012	2013	2014	2015	2016
ARM Share	-0.030 (0.020)	-0.095 (0.025)	-0.099 (0.025)	-0.097 (0.021)	-0.066 (0.023)	-0.062 (0.025)	-0.063 (0.021)
HARP Eligible Share	-0.009 (0.006)	-0.029 (0.006)	-0.025 (0.007)	-0.029 (0.008)	-0.036 (0.011)	-0.022 (0.007)	-0.020 (0.008)
High Capacity Share	-0.021 (0.013)	-0.034 (0.016)	-0.054 (0.018)	-0.057 (0.024)	-0.058 (0.029)	-0.051 (0.023)	-0.036 (0.020)
Other Zip Code Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.313	0.633	0.669	0.731	0.735	0.745	0.716

## Appendix A10: Foreclosure rate change and debt relief factors over time

This table reports the results from regressions of the form  $Y_{i,t} - Y_{i,crisis} = \alpha_t + \beta_t F_i + \mu_t X_i + \epsilon_{i,t}$ , where  $Y_{i,crisis}$  is the average annual change in quarterly foreclosure rates in zip code  $i$  during the crisis (2007–2009) and  $Y_{i,t}$  is the average annual change in quarterly foreclosure rates  $t$  years after 2009 (2010 to 2016). The vector  $F_i$  includes measures of debt relief factors (ARM share, HARP share, and High Capacity share) at zip code  $i$ , and  $X_i$  includes several zip code level controls.  $\beta_t$  captures the effect of debt relief frictions  $t$  years after the crisis. Zip code controls include average precrisis zip code house price level, house price growth from 2003 to 2007, subprime share, subprime growth, mortgage credit, mortgage credit growth, vantage credit score, leverage (CLTV), leverage growth, income, percent with college education, percent with high school education, percent Hispanic or Latino, percent white, percent Black, percent married with children, net gain in population, and net gain in population associated with foreclosures. Standard errors are reported in parentheses. Data Sources: Foreclosure rates, vantage scores, CLTV, subprime share, and mortgage credit, and mobility measures are from Equifax and house price growths from Zillow. ARM shares come from Di Maggio, Kermani, Keys, Piskorski, Ramcharan, Seru, and Yao (2017), HARP eligible shares from Agarwal, Amromin, Chomsisengphet, Landvoigt, Piskorski, Seru, and Yao (2020), and High Capacity shares from Agarwal, Amromin, Ben-David, Chomsisengphet, Piskorski, and Seru (2017). The remaining controls come from the U.S. Census Bureau American Community Survey.

Panel (a): Foreclosure rate change and ARM share over time

	2010	2011	2012	2013	2014	2015	2016
ARM Share	-0.045 (0.018)	-0.115 (0.042)	-0.118 (0.045)	-0.134 (0.047)	-0.120 (0.046)	-0.113 (0.048)	-0.0910 (0.038)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.094	0.304	0.298	0.327	0.291	0.292	0.291

Panel (b): Foreclosure rate change and HARP share over time

	2010	2011	2012	2013	2014	2015	2016
HARP Eligible Share	-0.020 (0.017)	-0.052 (0.032)	-0.050 (0.034)	-0.063 (0.041)	-0.055 (0.041)	-0.050 (0.041)	-0.039 (0.033)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.033	0.110	0.097	0.129	0.110	0.101	0.096

Panel (c): Foreclosure rate change and high capacity share over time

	2010	2011	2012	2013	2014	2015	2016
High Capacity Share	-0.034 (0.028)	-0.114 (0.073)	-0.127 (0.078)	-0.145 (0.081)	-0.134 (0.078)	-0.126 (0.076)	-0.093 (0.061)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.020	0.110	0.128	0.143	0.135	0.134	0.113

Panel (d): Foreclosure rate change and ARM, HARP, and high capacity shares over time

	2010	2011	2012	2013	2014	2015	2016
ARM Share	-0.016 (0.013)	-0.061 (0.022)	-0.059 (0.022)	-0.061 (0.015)	-0.048 (0.015)	-0.048 (0.018)	-0.036 (0.015)
HARP Eligible Share	-0.001 (0.004)	-0.008 (0.005)	-0.007 (0.004)	-0.013 (0.005)	-0.011 (0.006)	-0.006 (0.005)	-0.006 (0.004)
High Capacity Share	-0.011 (0.008)	-0.043 (0.014)	-0.048 (0.012)	-0.050 (0.017)	-0.050 (0.018)	-0.047 (0.016)	-0.031 (0.012)
Other Zip Code Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.256	0.621	0.660	0.703	0.698	0.736	0.725

## Appendix A11: House price growth and debt relief factors over time

This table reports the results from regressions of the form  $Y_{i,t} - Y_{i,crisis} = \alpha_t + \beta_t F_i + \mu_t X_i + \epsilon_{i,t}$ , where  $Y_{i,crisis}$  is the average change in annual house price growth rates in zip code  $i$  during the crisis (2007–2009) and  $Y_{i,t}$  is the average change in annual house price growth rates  $t$  years after 2009 (2010 to 2016). The vector  $F_i$  includes measures of debt relief factors (ARM share, HARP share, and High Capacity share) at zip code  $i$ , and  $X_i$  includes several zip code level controls.  $\beta_t$  captures the effect of debt relief frictions  $t$  years after the crisis. Zip code controls include average precrisis zip code house price level, house price growth from 2003 to 2007, subprime share, subprime growth, mortgage credit, mortgage credit growth, vantage credit score, leverage (CLTV), leverage growth, income, percent with college education, percent with high school education, percent Hispanic or Latino, percent white, percent Black, percent married with children, net gain in population, and net gain in population associated with foreclosures. Standard errors are reported in parentheses. Data Sources: Vantage scores, CLTV, subprime share, mortgage credit, and mobility measures are from Equifax and house price growths from Zillow. ARM shares come from Di Maggio, Kermani, Keys, Piskorski, Ramcharan, Seru, and Yao (2017), HARP eligible shares from Agarwal, Amromin, Chomsisengphet, Landoigt, Piskorski, Seru, and Yao (2020), and High Capacity shares from Agarwal, Amromin, Ben-David, Chomsisengphet, Piskorski, and Seru (2017). The remaining controls come from the U.S. Census Bureau American Community Survey.

Panel (a): House Price Growth and ARM Share over Time

	2010	2011	2012	2013	2014	2015	2016
ARM Share	0.159 (0.063)	0.328 (0.087)	0.590 (0.110)	0.844 (0.101)	0.804 (0.091)	0.709 (0.107)	0.629 (0.098)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.054	0.207	0.399	0.478	0.451	0.420	0.365

Panel (b): House Price Growth and HARP Share

	2010	2011	2012	2013	2014	2015	2016
HARP Eligible Share	0.076 (0.029)	0.202 (0.053)	0.403 (0.093)	0.576 (0.124)	0.563 (0.119)	0.465 (0.121)	0.432 (0.124)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.022	0.137	0.327	0.391	0.389	0.316	0.302

Panel (c): House Price Growth and High Capacity Share over Time

	2010	2011	2012	2013	2014	2015	2016
High Capacity Share	0.0313 (0.099)	0.219 (0.132)	0.388 (0.194)	0.536 (0.274)	0.592 (0.277)	0.563 (0.256)	0.512 (0.209)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.001	0.034	0.064	0.072	0.091	0.098	0.090

Panel (d): House Price Growth and ARM, HARP, and High Capacity Shares over Time

	2010	2011	2012	2013	2014	2015	2016
ARM Share	0.0243 (0.053)	0.204 (0.039)	0.292 (0.067)	0.360 (0.073)	0.295 (0.070)	0.322 (0.067)	0.266 (0.069)
HARP Eligible Share	-0.0241 (0.021)	0.048 (0.031)	0.215 (0.042)	0.346 (0.054)	0.358 (0.046)	0.236 (0.029)	0.223 (0.040)
High Capacity Share	0.0623 (0.039)	0.149 (0.035)	0.107 (0.040)	0.084 (0.053)	0.139 (0.064)	0.126 (0.077)	0.0614 (0.072)
Other Zip Code Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.337	0.562	0.723	0.754	0.738	0.694	0.662

## Appendix A12: Durable (auto) consumption growth and debt relief factors over time

This table reports the results from regressions of the form  $Y_{i,t} - Y_{i,crisis} = \alpha_t + \beta_t F_i + \mu_t X_i + \epsilon_{i,t}$ , where  $Y_{i,crisis}$  is the average change in annual zip code durable consumption (auto sales) growth rates in zip code  $i$  during the crisis (2007–2009) and  $Y_{i,t}$  is the average change in annual zip code durable consumption growth rates  $t$  years after 2009 (2010 to 2016). The vector  $F_i$  includes measures of debt relief factors (ARM share, HARP share, and High Capacity share) at zip code  $i$ , and  $X_i$  includes several zip code level controls.  $\beta_t$  captures the effect of debt relief frictions  $t$  years after the crisis. Zip code controls include average precrisis zip code house price level, house price growth from 2003 to 2007, subprime share, subprime growth, mortgage credit, mortgage credit growth, vantage credit score, leverage (CLTV), leverage growth, income, percent with college education, percent with high school education, percent Hispanic or Latino, percent white, percent Black, percent married with children, net gain in population, and net gain in population associated with foreclosures. Standard errors are reported in parentheses. Data Sources: Vantage scores, CLTV, subprime share, mortgage credit, and mobility measures are from Equifax, auto sales from R. L. Polk & Company, and house price growths from Zillow. ARM shares come from Di Maggio, Kermani, Keys, Piskorski, Ramcharan, Seru, and Yao (2017), HARP eligible shares from Agarwal, Amromin, Chomsisengphet, Landvoigt, Piskorski, Seru, and Yao (2020), and High Capacity shares from Agarwal, Amromin, Ben-David, Chomsisengphet, Piskorski, and Seru (2017). The remaining controls come from the U.S. Census Bureau.

Panel (a): Durable consumption growth and ARM share over time

	2010	2011	2012	2013	2014	2015	2016
ARM Share	0.571 (0.148)	0.200 (0.085)	0.420 (0.148)	0.550 (0.107)	0.498 (0.081)	0.381 (0.110)	0.308 (0.105)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.064	0.013	0.030	0.094	0.071	0.059	0.051

Panel (b): Durable consumption growth and HARP share over time

	2010	2011	2012	2013	2014	2015	2016
HARP Eligible Share	0.180 (0.237)	0.151 (0.135)	0.127 (0.215)	0.353 (0.108)	0.382 (0.087)	0.160 (0.172)	0.242 (0.085)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.011	0.013	0.005	0.067	0.073	0.018	0.055

Panel (c): Durable consumption growth and high capacity share over time

	2010	2011	2012	2013	2014	2015	2016
High Capacity Share	0.451 (0.213)	0.305 (0.144)	0.256 (0.209)	0.542 (0.122)	0.535 (0.110)	0.479 (0.104)	0.365 (0.112)
Other Zip Code Controls	No	No	No	No	No	No	No
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.015	0.012	0.004	0.034	0.030	0.035	0.026

Panel (d): Durable consumption growth and ARM, HARP, and high capacity shares over time

	2010	2011	2012	2013	2014	2015	2016
ARM Share	0.288 (0.150)	0.156 (0.088)	0.153 (0.147)	0.304 (0.082)	0.233 (0.064)	0.032 (0.066)	0.042 (0.046)
HARP Eligible Share	-0.015 (0.082)	0.042 (0.069)	0.050 (0.078)	0.19 (0.040)	0.260 (0.048)	0.068 (0.036)	0.204 (0.067)
High Capacity Share	0.040 (0.130)	0.037 (0.146)	-0.080 (0.097)	0.072 (0.102)	-0.035 (0.066)	0.060 (0.084)	0.054 (0.080)
Other Zip Code Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,883	2,883	2,883	2,883	2,883	2,883	2,883
R-squared	0.144	0.133	0.117	0.189	0.202	0.299	0.171