Appendix A Description of the data

Variable name	Formula	PSID variables	PSID codes [year]code			
Bankrupcy indi- cator	gen bkrpt_indicator1 = (bkrpt_yr1 == year) if bkrpt_yr1 \neq . and year \leq 1996	Year of first most re- cent bankrupcy	[96]ER8917			
	gen bkrpt_indicator2 = (bkrpt_yr2 == year) if bkrpt_yr2 \neq . and year \leq 1996	Year of second most recent bankrupcy	[96]ER8943			
	gen bkrpt_indicator = bkrpt_indicator1 if year ≤ 1996					
	replace bkrpt_indicator = bkrpt_indicator2 if bkrpt_indicator2==1 and year \leq 1996					
Behind on mortgage indi- cator	gen bhnd_mtg = bhnd_mtg1	Whether behind on mortgage 1	[09]ER42052 [11]ER47359 [13]ER53059 [15]ER60060 [17]ER66062			
	replace bhnd_mtg = 1 if bhnd_mtg2 == 1	Whether behind on mortgage 2	[09]ER42071 [11]ER47380 [13]ER53080 [15]ER60081 [17]ER66083			
3 months or more behind on mortgage	gen mths_bhnd_mtg = mths_bhnd_mtg1	Months behind on mortgage 1	[09]ER42053 [11]ER47360 [13]ER53060 [15]ER60061 [17]ER66063			
	replace mths_bhnd_mtg = mths_bhnd_mtg1 + mths_bhnd_mtg2 if mths_bhnd_mtg1 \neq . and mths_bhnd_mtg2 \neq .	Months behind on mortgage 2	[09]ER42072 [11]ER47381 [13]ER53081 [15]ER60082 [17]ER66084			
	rgen npl_mtg = mths_bhnd_mtg ≥ 3 replace npl_mtg =. if mths_bhnd_mtg ==.					
Mortgage re- structuring	gen restruct = restruct1	Whether worked with lender to restructure mortgage/loan 1	[09]ER42057 [11]ER47364 [13]ER53064 [15]ER60065 [17]ER66067			
	replace restruct = 1 if restruct $2 = 1$	Whether worked with lender to restructure mortgage/loan 2	[09]ER42076 [11]ER47385 [13]ER53085 [15]ER60086 [17]ER66088			

Table A.I: Data description (beginning)

Variable name	Formula	PSID variables	PSID codes [year]code			
Employment status	gen employed = $(emp==1)$					
	replace emp = emp_first if year ≥ 1994	Employment status, head	[68]V196[69]V639[70]V1278[71]V1983[72]V2581[73]V3114[74]V3528[75]V3967[76]V4458[77]V5373[78]V5872[79]V6492[80]V7095[81]V7706[82]V8374[83]V9005[84]V10453[85]V11637[86]V13046[87]V14146[88]V15154[89]V16655[90]V18093[91]V19393[92]V20693[93]V22448			
		Employment status, head, first mention	[94]ER2069[95]ER5068[96]ER7164[97]ER10081[99]ER13205[01]ER17216[03]ER21123[05]ER25104[07]ER36109[09]ER42140[11]ER47448[13]ER53148[15]ER60163[17]ER66164			
Race	replace race = 3 if race>2	race≠.	[68]V181[69]V801[70]V1490[71]V2202[72]V2828[73]V3300[74]V3720[75]V4204[76]V5096[77]V5662[78]V6209[79]V6802[80]V7447[81]V8099[82]V8723[83]V9408[84]V11055[85]V11938[86]V13565[87]V14612[88]V16086[89]V17483[90]V18814[91]V20114[92]V21420[93]V23276[94]ER3944[95]ER6814[96]ER9060[97]ER11848[99]ER15928[01]ER19989[03]ER23426[05]ER27393[07]ER40565[09]ER46543[11]ER51904[13]ER57659[15]ER64810[17]ER70882			
	gen white $=$ race $==1$					
Home owner- ship status		Own / rent	[68]V103[69]V593[70]V1264[71]V1967[72]V2566[73]V3108[74]V3522[75]V3939[76]V4450[77]V5364[78]V5864[79]V6479[80]V7084[81]V7675[82]V8364[83]V8974[84]V10437[85]V11618[86]V13023[87]V14126[88]V15140[89]V16641[90]V18072[91]V19372[92]V20672[93]V22427[94]ER2032[95]ER5031[96]ER7031[97]ER10035[99]ER13040[01]ER17043[03]ER21042[05]ER25028[07]ER36028[09]ER42029[11]ER47329[13]ER53029[15]ER60030[17]ER66030			

Table A.I: Data description (continuing)

Variable name	Formula	PSID variables	PSID codes			
Education	gen highschool = educ≤ 12	Education (years of completed schooling)	[68]ER30010 [70]ER30052 [71]ER30076 [72]ER30100 [73]ER30126 [74]ER30147 [75]ER30169 [76]ER30197 [77]ER30226 [78]ER30255 [79]ER30296 [80]ER30326 [81]ER30356 [82]ER30384 [83]ER30413 [84]ER30443 [85]ER30478 [86]ER30513 [87]ER30549 [88]ER30584 [89]ER30620 [90]ER30657 [91]ER30703 [92]ER30748 [93]ER30820 [94]ER33115 [95]ER33215 [96]ER33315 [97]ER33415 [99]ER33516 [01]ER33616 [03]ER33716 [05]ER33817 [07]ER33917 09]ER34020 [11]ER34119 [13]ER34230 [15]ER34349 [17]ER34548			
	gen somecollege = educ <i>geq</i> 13	educ<16				
House value conditional on being home owner	gen college = educ≥16 gen real_house_value = house_value/CPI*100	СРІ	State-level CPI, see state-level data descrip- tion			
	gen real_owner_house_value = own_or_rent * log(real_house_value)	House value	[68]V5[69]V449[70]V1122[71]V1823[72]V2423[73]V3021[74]V3417[75]V3817[76]V4318[77]V5217[78]V5717[79]V6319[80]V6917[81]V7517[82]V8217[83]V8817[84]V10018[85]V11125[86]V12524[87]V13724[88]V14824[89]V16324[90]V17724[91]V19024[92]V20324[93]V21610[94]ER2033[95]ER5032[96]ER7032[97]ER10036[99]ER13041[01]ER17044[03]ER21043[05]ER25029[07]ER36029[09]ER42030[11]ER47330[13]ER53030[15]ER60031[17]ER66031			
Debt to income	gen mortgage_debt = rem_principal_mtg1	Remaining prin- cipal, mortgage 1	[69]V451[70]V1124[71]V1825[72]V2425[76]V4320[77]V5219[78]V5719[79]V6321[80]V6919[81]V7519[83]V8819[84]V10020[85]V11127[86]V12526[87]V13726[88]V14826[89]V16326[90]V17726[91]V19026[92]V20326[93]V21612[94]ER2037[95]ER5036[96]ER7042[97]ER10044[99]ER13047[01]ER17052[03]ER21051[05]ER25042[07]ER36042[09]ER42043[11]ER47348[13]ER53048[15]ER60049[17]ER66051			

Table A.I: Data description (continuing	I: Data description (continuing)
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Variable name	Formula	PSID variables	PSID codes [year]code
	replace mortgage_debt = rem_principal_mtg1 + rem_principal_mtg2 if rem_principal_mtg1 \neq . and rem_principal_mtg2 \neq .	Remaining prin- cipal, mortgage 2	[94]ER2038[95]ER5037[96]ER7043[97]ER10045[99]ER13056[01]ER17063[03]ER21062[05]ER25053[07]ER36054[09]ER42062[11]ER47369[13]ER53069[15]ER60070[17]ER66072
	gen mort- gage_to_income = mort- gage_debt/total_income if total_income>0	Total income	[68]V81[69]V529[70]V1514[71]V2226[72]V2852[73]V3256[74]V3676[75]V4154[76]V5029[77]V5626[78]V6173[79]V6766[80]V7412[81]V8065[82]V8689[83]V9375[84]V11022[85]V12371[86]V13623[87]V14670[88]V16144[89]V17533[90]V18875[91]V20175[92]V21481[93]V23322[94]ER4153[95]ER6993[96]ER9244[97]ER12079[99]ER16462[01]ER20456[03]ER24099[05]ER28037[07]ER41027[09]ER46935[11]ER52343[13]ER58152[15]ER65349[17]ER71426
Industry classi- fication of main job	tabulate ind14, gener- ate(ind14_)		
Age	replace age_fam = age_ind if age_fam==.	Age of head, family file	[68]V117[69]V1008[70]V1239[71]V1942[72]V2542[73]V3095[74]V3508[75]V3921[76]V4436[77]V5350[78]V5850[79]V6462[80]V7067[81]V7658[82]V8352[83]V8961[84]V10419[85]V11606[86]V13011[87]V14114[88]V15130[89]V16631[90]V18049[91]V19349[92]V20651[93]V22406[94]ER2007[95]ER5006[96]ER7006[97]ER10009[99]ER13010[01]ER17013[03]ER21017[05]ER25017[07]ER36017[09]ER42017[11]ER47317[13]ER53017[15]ER60017[17]ER66017
		Age of individ- ual, individual file	[68]ER30004[69]ER30023[70]ER30046[71]ER30070[72]ER30094[73]ER30120[74]ER30141[75]ER30163[76]ER30191[77]ER30220[78]ER30249[79]ER30286[80]ER30316[81]ER30346[82]ER30376[83]ER30402[84]ER30432[85]ER30466[86]ER30501[87]ER30538[88]ER30573[89]ER30609[90]ER30645[91]ER30692[92]ER30736[93]ER30809[94]ER33104[95]ER33204[96]ER33304[97]ER33404[99]ER33504[01]ER33604[03]ER33704[05]ER33804[07]ER33904[09]ER34004[11]ER34104[13]ER34204[15]ER34305[17]ER34504

Variable name	Formula	PSID variables	PSID codes [year]code
Sex	gen aged1 = age_corr<30. gen aged2 = age_corr \geq 30 and age_corr<45 gen aged3 = age_corr \geq 45 and age_corr<60 gen aged4 = age_corr \geq 60 gen male = gender==1	Gender	[68]ER32000
Family status	gen married = (mari- tal==1)	Marital status	[68]V239[69]V607[70]V1365[71]V2072[72]V2670[73]V3181[74]V3598[75]V4053[76]V4603[77]V5650[78]V6197[79]V6790[80]V7435[81]V8087[82]V8711[83]V9419[84]V11065[85]V12426[86]V13665[87]V14712[88]V16187[89]V17565[90]V18916[91]V20216[92]V21522[93]V23336[94]ER4159A[95]ER6999A[96]ER9250A[97]ER12223A[99]ER16423[01]ER20369[03]ER24150[05]ER28049[07]ER41039[09]ER46983[11]ER52407[13]ER58225[15]ER65461[17]ER71540





Note: This graph presents mortgage delinquency rates according to different data sources. FRED is the actual St. Louis FED data on delinquency rate on single-family residential mortgages, booked in domestic offices, all commercial banks, indicator's code: DRSFRMACBS. PSID stands for the frequency of positive responses to the question whether a household is behind on mortgage payments in the PSID database. The CEX denotes our estimate of mortgage delinquency rate in the CEX database according to the information on either zero principal payments or stable mortgage balance in any month of a year.

Figure A.I: Mortgage delinquency rate, %

Appendix B State-level credit supply shocks: additional results



Note: Each row represents responses of the five variable to one shock identified with sign restrictions (see Table 1): AS is aggregate supply, AD is aggregate demand, MP is monetary policy, CS is credit supply. Y is logarithm of real GDP index, CPI is logarithm of consumer price index, IR is short-term interest rate, LR is lending rate, and *Loans* is logarithm of nominal loans issued by commercial banks in a particular state. All variables in logarithms are additionally multiplied by 100, i.e. their impulse responses are in percentages. The SVAR model is estimated on the panel data on 51 US states over 1977–2017 using Gambetti and Musso (2017) sign restrictions with Minnesota prior on VAR coefficients.

Figure B.I: Impulse response functions on identified macroeconomic shocks, panel of all states



Note: This graph explains our choice of the years of "systemic" credit supply shocks (CSS) – i.e. positive or negative shocks that hit most of the states in particular years (1984, 1989, 2004, 2009) – in our differencein-differences analysis. Green bars denote the years of "systemic" positive CSS, red bars denote the years of "systemic" negative CSS. We focus on the 1980s and 2000s in this analysis because first, there is no complete credit cycle in the 1990s (see Figure 1), and second, we do not have continuous micro-level data for the 1990s. We choose 1984 instead of 1981 as the year of "systemic" positive CSS in the 1980s because 1982 is a recession year, and we want to focus on positive credit supply shocks corresponding to the expansionary phase of both credit and business cycles. We choose 1989 as the year of "systemic" negative CSS instead of 1991 because Mian et al. (2020) sets the expansionary phase to end in 1989 (and start in 1982), and the contraction to span over 1989–1992. We choose 2004 instead of 2005 as the year of "systemic" positive CSS in 2000s.

Figure B.II: Share of states with positive and negative credit supply shocks, and the dates of U.S. recessions



(a) (baseline) GM2017, Minnesota priors

(b) EN2015, Minnesota priors



Note: GM2017 denotes the approach of Gambetti and Musso (2017), EN2015 stands for Eickmeier and Ng (2015). See the main text for details (Section 2.1).

Figure B.III: Alternative identifications of credit supply shocks within a SVAR-framework

Appendix C State-level data analysis: household outcomes in the treated and control groups of states



Figure C.I: Time evolution of selected outcome variables in the states with stronger (treated) and less strong (control) CS shocks

Appendix D Validation of the 1984 CS shock with credit market reforms



Note: The figure reports the results from estimating equation (2) for a set of nine outcomes measured at the household level in the 1980s and the Mian et al. (2020) early vs. late deregulated states. The pre-shock year is 1983, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure D.I: The effects of the positive CS shock of 1984 on household outcomes: cross-validation



Note: The figure reports the results from estimating equation (6) for a set of nine outcomes measured at the household level in the 1980s and our SVAR-based measure of CS shocks. The pre-shock year is 1983, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure E.I: The effects of the positive CS shock of 1984 on household outcomes: Jorda's local projection estimation results



Note: The figure reports the results from estimating equation (6) for a set of nine outcomes measured at the household level in the 2000s and our SVAR-based measure of CS shocks. The pre-shock year is 2003, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure E.II: The effects of the positive CS shock of 2004 on household outcomes: Jorda's local projection estimation results



Note: The figure reports the results from estimating equation (6) for a set of nine outcomes measured at the household level in the 1980s and 1990s and our SVAR-based measure of CS shocks. The pre-shock year is 1988, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure E.III: The effects of the negative CS shock of 1989 on household outcomes: Jorda's local projection estimation results



Note: The figure reports the results from estimating equation (6) for a set of nine outcomes measured at the household level in the 2000s and 2010s and our SVAR-based measure of CS shocks. The pre-shock year is 2007, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure E.IV: The effects of the negative CS shock of 2009 on household outcomes: Jorda's local projection estimation results

Appendix F Difference-in-differences: state-level estimation results



Note: The figure reports the results from estimating equation (2) for a set of nine outcomes measured at the state level in the 1980s and our SVAR-based measure of CS shocks. The pre-shock year is 1983, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure F.I: The effects of the positive CS shock of 1984 on state-level outcomes



Note: The figure reports the results from estimating equation (2) for a set of nine outcomes measured at the state level in the 2000s and our SVAR-based measure of CS shocks. The pre-shock year is 2003, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure F.II: The effects of the positive CS shock of 2004 on state-level outcomes



Note: The figure reports the results from estimating equation (2) for a set of nine outcomes measured at the state level in the 1980s and 1990s and our SVAR-based measure of CS shocks. The pre-shock year is 1988, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure F.III: The effects of the negative CS shock of 1989 on state-level outcomes



Note: The figure reports the results from estimating equation (2) for a set of nine outcomes measured at the state level in the 2000s and 2010s and our SVAR-based measure of CS shocks. The pre-shock year is 2007, and we normalize the effect in this year to be equal to zero so that all the coefficients in the years prior or after reflect changes with respect to the pre-shock year.

Figure F.IV: The effects of the negative CS shock of 2009 on state-level outcomes

Appendix G Different measures of household mortgage delinquencies

Depvar: 1-month (basel		onth delinq. 3-months delinq. (baseline)		Restructuring		# months behind		
Posit. / Negat. CS shock:	$\varepsilon_{s,t}^{CS} > 0$	$\varepsilon^{CS}_{s,t} < 0$	$\overline{\varepsilon_{s,t}^{CS}>0}$	$\varepsilon_{s,t}^{CS} < 0$	$\overline{\varepsilon_{s,t}^{CS} > 0}$	$\varepsilon^{CS}_{s,t} < 0$	$\overline{\varepsilon_{s,t}^{CS}>0}$	$\varepsilon^{CS}_{s,t} < 0$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged depvar 2.88*** (0.24)		3.27^{***} (0.48)		$2.20^{***} \\ (0.14)$		$^{-0.28^{stst}}_{(0.11)}$		
Lagged state freq. of depvar	-6.08^{**} (2.56)		$-3.53 \\ (3.95)$		0.33 (2.08)		$0.33 \\ (0.61)$	
Positive vs. negative credit suppl	y shocks							
Lag = 0 year	$\begin{array}{c}-0.36\\(0.57)\end{array}$	$0.59 \\ (0.49)$	$\begin{array}{c} -1.00 \\ (0.98) \end{array}$	$0.59 \\ (0.72)$	-0.59^{*} (0.33)	$0.03 \\ (0.15)$	$\begin{array}{c}-0.03\\(0.14)\end{array}$	$\begin{array}{c}-0.04\\(0.06)\end{array}$
Lag = 2 year	1.44^{**} (0.65)	-0.95^{**} (0.38)	0.06 (1.50)	-1.23^{**} (0.58)	-0.11 (0.47)	-0.04 (0.11)	-0.12 (0.19)	-0.05 (0.03)
Lag = 4 year	$-0.25 \ (0.41)$	-0.70^{**} (0.34)	$\begin{array}{c}-0.97\\(0.78)\end{array}$	$-0.99^{st} \ (0.54)$	$0.07 \\ (0.26)$	0.31^{*} (0.17)	$0.11 \\ (0.16)$	$\begin{array}{c} -0.02 \\ (0.04) \end{array}$
Sum of 2–4 lags	$\begin{array}{c} 1.18 \\ (0.83) \end{array}$	$egin{array}{c} -1.65^{**} \ (0.68) \end{array}$	$-0.91 \\ (1.96)$	$egin{array}{c} -2.21^{**}\ (1.06) \end{array}$	$\begin{array}{c} -0.04 \\ (0.54) \end{array}$	$\begin{array}{c} 0.28 \\ (0.21) \end{array}$	$\begin{array}{c} -0.01 \\ (0.30) \end{array}$	$\begin{array}{c} -0.06 \\ (0.06) \end{array}$
Demography controls Household, job, state & Year FEs	Yes Yes		Yes Yes		Yes Yes		Yes Yes	
No. obs. $5,396$ No. households $2,251$ $log Likelihood$ -771.7		4,850 2,033 -380.0		5,486 2,291 -1,643.7		5,558 2,323		

Table G.I: Estimation results: the direct effects of CS shocks on household defaults

Note: The table reports robust panel logit estimates of the direct CS effects on different measures of household mortgage delinquencies, as implied by equation (7).

***, **, * indicate that a coefficient is significant at the 1%, 5%, 10% level, respectively. Standard errors are clustered at the household level and appear in the brackets under the estimated coefficients.