

Mortgage Forbearance and Financial Distress in the Long Run

Valerie Boctor

University of California, Berkeley

October 26, 2024

Motivation

- ▶ Housing costs make up two-thirds of American household debt, and 40% of households reported facing serious, debt-related financial difficulties during COVID
- ▶ Temporary mortgage payment relief may prevent households from falling into financial distress or losing their homes.
- ▶ **These temporary payment pauses or reductions are known as forbearance.**
- ▶ Mortgage forbearance as a countercyclical stabilization/ macroprudential policy tool.

Research Questions

- ▶ Did federally mandated forbearance improve financial outcomes for borrowers during the pandemic?
- ▶ What are longer term impacts of mortgage forbearance? Heterogeneity?
- ▶ How effective is mortgage forbearance as a countercyclical stabilization/ macroprudential policy tool? I.e., does forbearance prevent (or induce) waves of distress across households?

Forbearance During COVID: The CARES Act

- ▶ Introduced March 27, 2020, the CARES Act provided \$2.2 trillion of economic stimulus various forms
- ▶ Section 4022 allowed **borrowers on federally backed mortgage with a self-attested COVID-related financial hardship to receive mortgage forbearance for up to 18 months.**
- ▶ Eligible mortgages (75% of homeowners) were either:
 1. Purchased by Fannie Mae or Freddie Mac after origination.
 2. Insured by a government agency (Veterans Affairs, Federal Housing Authority).
- ▶ Forbearance exit plans varied by borrower and servicer, implying different levels of relief. E.g., reinstatement, repayment plan, deferral to maturity.

Related Literature

Mortgage Forbearance During COVID

- ▶ Kim, Lee, Scharlemann, and Vickery (2022), Cherry, Jiang, Matvos, Piskorski, and Seru (2021), An, Cordell, Geng, and Lee (2022), Albuquerque and Varadi (2022),

Sources and Remedies of Financial Distress

- ▶ Gerardi, Lambie-Hanson, Willen, et al. (2022), Dinerstein, Yannelis, and Chen (2023), Dobbie and Song (2015), Dobbie, Goldsmith-Pinkham, and Yang (2017), Dobbie and Song (2020), Keys, Mahoney, and Yang (2023), Ganong and Noel (2022)

Targeted Debt Relief as Countercyclical Stabilization Policy

- ▶ Lee and Maghzian (2023), Auclert, Dobbie, and Goldsmith-Pinkham (2019)

Optimal Mortgage Design and Housing Policy During Recession

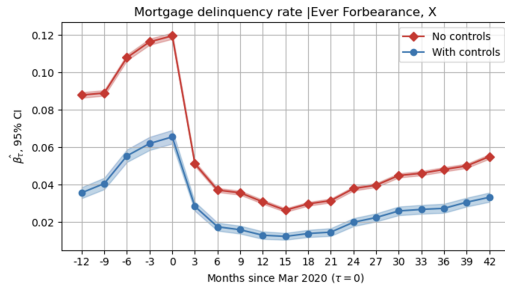
- ▶ Campbell, Clara, and Cocco (2021), Guren, Krishnamurthy, and McQuade (2021), Mian and Sufi (2010), Mian and Sufi (2014), Agarwal, Amromin, Chomsisengphet, Landvoigt, Piskorski, Seru, and Yao (2023), Altunok, Arslan, and Ongena (2023), Di Maggio, Kermani, and Palmer (2020), Ganong and Noel (2017)

Data Description

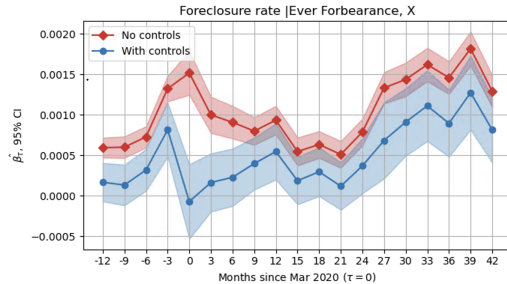
University of California - Consumer Credit Panel (UC-CCP)

- ▶ **Sample:** 2% nationally representative sample of U.S. borrowers with credit history
- ▶ **Source:** Provided by a major U.S. consumer credit reporting agency
- ▶ **Coverage:** 2004Q1 - 2023Q3 (analysis focuses on 2018Q1 onward)
- ▶ **Core Variables:**
 - ▶ Scheduled and actual payments (select loans), balances, amounts past due
 - ▶ Hard inquiries, account status, and condition (e.g., delinquency, forbearance, refinancing)
- ▶ **Demographics:** Credit scores, age, geography
- ▶ **Structure:** End-of-quarter panel of borrowers, tracking loan details over time

Challenge to Identification



(a) Delinquency and Borrower Selection



(b) Foreclosure and Borrower Selection

Summary Statistics

	Full Sample			Forbearance Users		
	Mean	Std Dev	Median	Mean	Std Dev	Median
<i>Pre-COVID</i>						
Credit score	760.07	78.18	785.00	770.91	72.38	796.00
Credit card balance	5,115.98	8,975.83	1,569.00	5,086.11	9,112.79	1,475.00
RC utilization rate	0.26	0.75	0.10	0.24	0.79	0.08
Credit limit (all accounts)	22,736.61	21,634.73	16,750.00	24,699.62	22,964.56	18,524.00
Original mortgage bal.	219,138.30	120,345.94	194,660.00	223,750.28	125,948.09	196,886.00
<i>Post-COVID</i>						
Credit score	688.45	94.20	693.00	702.67	91.85	707.00
Credit card balance	7,013.30	10,800.56	3,264.00	7,086.45	10,775.47	3,151.00
RC utilization rate	0.46	0.88	0.37	0.42	1.10	0.30
Credit limit (all accounts)	19,298.15	20,876.76	12,501.00	21,482.07	22,661.10	14,450.00
Original mortgage bal.	223,750.28	125,948.09	196,886.00	232,963.83	122,078.27	208,000.00
FHA/VA status	0.31			0.52		
Female	0.47			0.46		
Self employed	0.00			0.00		

Research Design

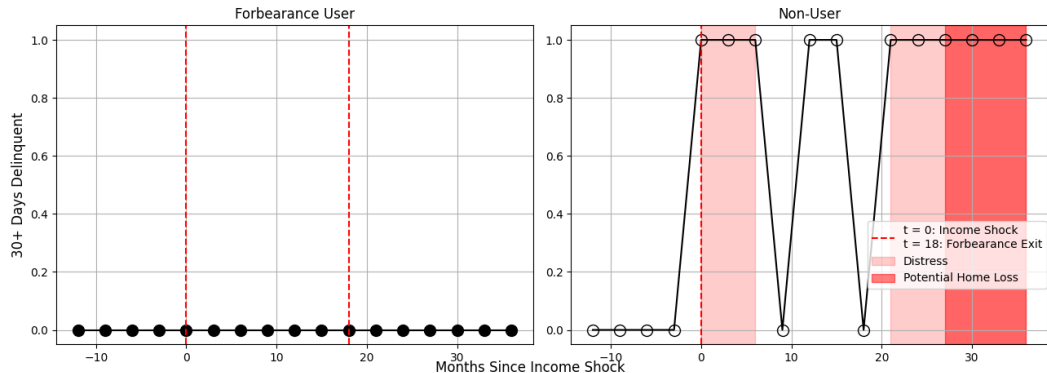
- ▶ Goal: Estimate the causal impact of forbearance on financial stability outcomes
- ▶ Omitted variable bias: financial literacy, income shocks
- ▶ 2SLS using **mortgage servicer generosity** as instrument for forbearance provision.

Research Design Motivation: Ideal Experiment

- ▶ Consider a pool of households experiencing identically distributed negative income shocks.
- ▶ At onset of income shock, randomly assign forbearance to some households and not others.
- ▶ Observe causal effect of forbearance on longer term borrower outcomes, e.g., delinquency, credit utilization, foreclosure risk.

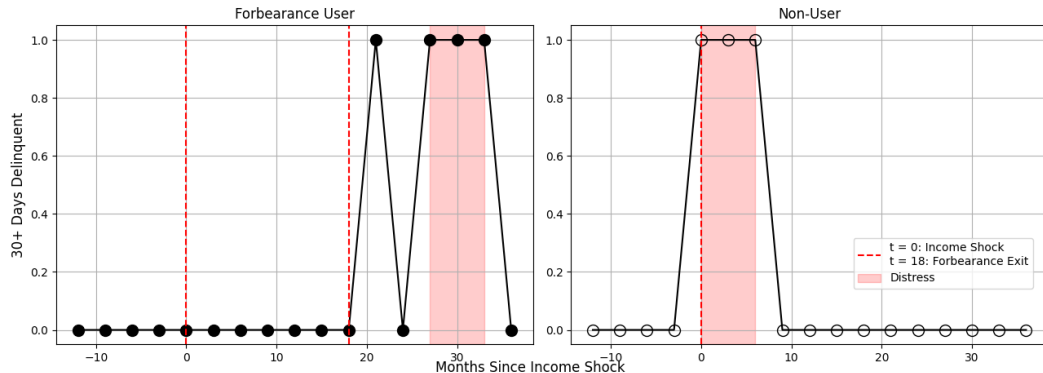
Hypothesis 1: Forbearance \rightarrow Financial Stability

Scenario 1: "Mortgage Forbearance Leads to More Financial Stability"



Hypothesis 2: Forbearance \rightarrow Financial Instability

Scenario 2: "Mortgage Forbearance Leads to Less Financial Stability"



Instrument Justification

The instrument is constructed using servicer fixed effects σ_s :

$$EverForbearance_i = \phi_z + X_i' \Gamma + \sigma_s + \epsilon_i, \quad (1)$$

where ϕ_z is a zipcode fixed effect, X_i is a vector of borrower controls and σ_s is the systematic component of the servicer's impact on forbearance probability.

Specification

The first-stage estimating equation is:

$$EverForbearance_i = \delta_z + X_i' \Delta + \gamma \hat{\sigma}_s + \eta_i \quad (2)$$

- ▶ X_i includes time-invariant borrower i characteristics, such as credit score, mortgage type (GSE, FHA/VA), original loan volume, gender, self-employed status, revolving credit utilization, and credit card limits.

Specification

The second-stage equation is a cross-sectional local projection of forbearance on τ th horizon outcomes:

$$y_{i,\tau} = \alpha_{z,\tau} + X_i' \Gamma_\tau + \beta_\tau \widehat{EverForbearance}_i + \epsilon_{i,\tau} \quad (3)$$

- ▶ β_τ is the causal effect of mortgage forbearance
- ▶ $\alpha_{z,\tau}$ is a zipcode fixed effect, measured separately for each τ
- ▶ X_i includes time-invariant borrower i characteristics, such as credit score, mortgage type (GSE, FHA/VA, Other/Non-Conforming), original loan volume, gender, self-employed status, revolving credit utilization, and credit card limits. item $y_{i,t}$ denotes an outcome variable, such as mortgage delinquency, credit utilization rate, forbearance start rates.

Identifying Assumption

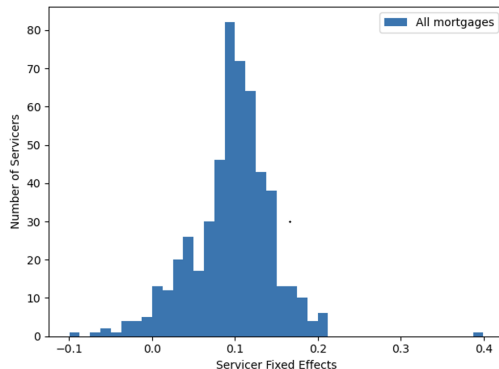
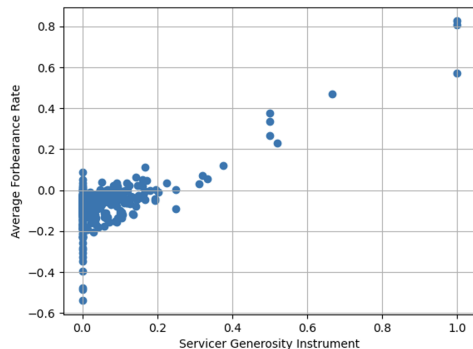
- ▶ While servicer assignment may be correlated with borrower and mortgage characteristics, these factors are directly observed in the credit report.
- ▶ **After controlling for credit profiles, the servicer's propensity to provide forbearance is quasi-random.**
- ▶ Differences in outcomes driven by servicer propensity have causal interpretation.

Servicer FE Instrument Validity

The servicer propensity instrument is valid if:

1. Servicer propensity is relevant to forbearance decisions
2. Servicer propensity affects household financial stability only through the probability of providing forbearance
3. The impact of servicer propensity on the probability of receiving forbearance is mononotic across borrowers.

Instrument Relevance



Following Kim et al, servicer fixed effects during COVID are driven by exogenous **liquidity constraints, risk-shifting, technology, size and scale.**

Test of Randomness

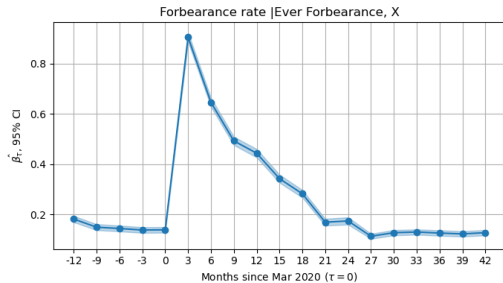
$$\sigma_i^s = X_i' \Omega + mu_z + \varepsilon_i$$

	(1)
FHA/VA mortgage	-0.009*** (0.000)
Number of accounts past due	0.003** (0.000)
RC balance 2018	0.003*** (0.000)
Borrower age	0.001*** (0.000)
Female	0.000 (0.001)
Self employed	-0.001 (0.001)
Mortgage age	-0.001* (0.001)
Original mort. balance	-0.016*** (0.000)
Vantage score	0.000*** (0.000)
Credit limit	-0.000*** (0.000)
Average Scheduled Mort. Pymnt	-0.000*** (0.000)
RC balance in Mar20	0.000*** (0.000)
R-squared	0.193
S.E. type	by: zip_cd
Observations	385284

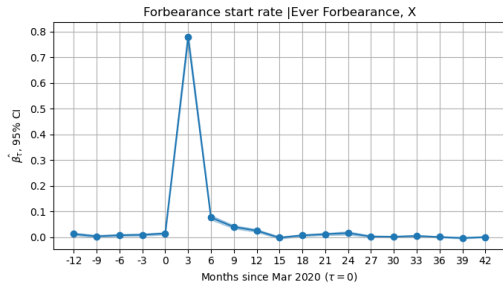
Results Primer

- ▶ timing of forbearance: highly concentrated in 18 months after CARES
- ▶ mortgage stability: delinquency and foreclosure rates fall significantly
- ▶ loss mitigation alternatives: balloon payments increase, refinancing rates fall
- ▶ revolving credit stability: credit card delinquency and utilization rates fall significantly

Timing of Mortgage Forbearance



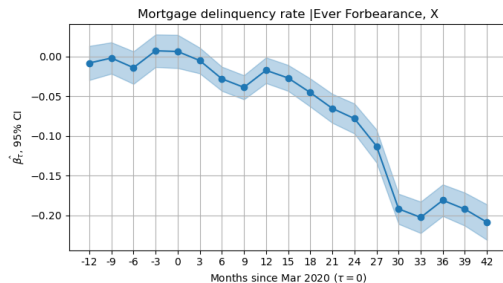
(a) Rate of Participants in Forbearance



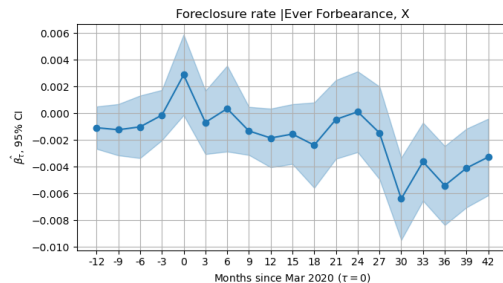
(b) Rate of Participants Starting Forbearance

Panel 2a shows the proportion of participants using the program at each point time. Panel 2b shows the start rate among forbearance users.

Mortgage Stability Effects



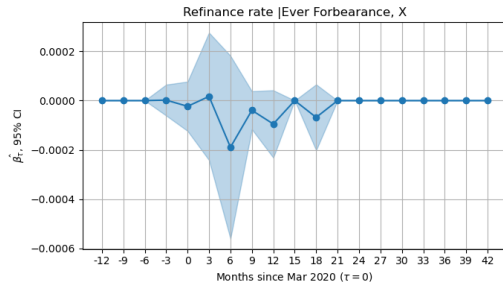
(a) Mortgage Delinquency Rate



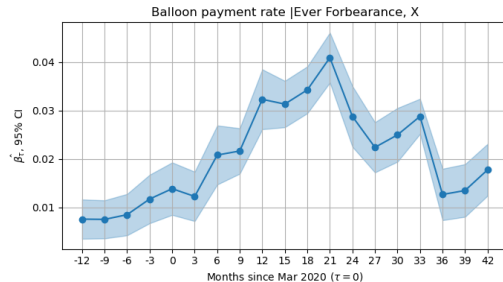
(b) Mortgage Foreclosure Rate

Delinquency is defined as any payment more than 30 days past due.

Loss Mitigation Strategies



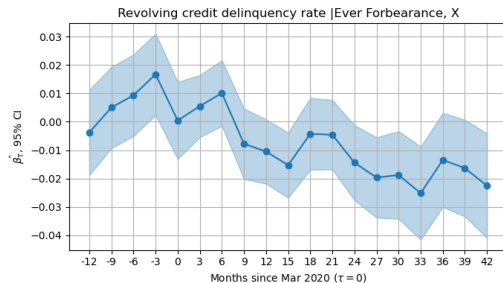
(a) Mortgage Refinance Rate



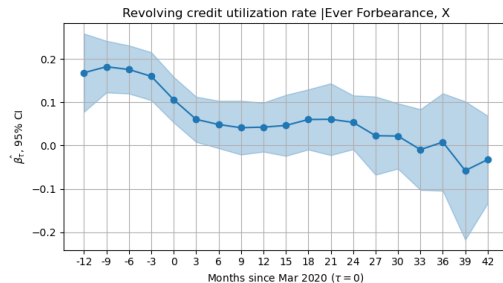
(b) Mortgage Balloon Payment Rate

Panel 4a shows the instrumented effect of CARES forbearance on refinance rates, where sufficient variation is available to estimate β_τ . Panel 4b shows the instrumented effect on balloon payment rates.

Revolving Credit Stability Effects



(a) Revolving Credit Delinquency Rate



(b) Revolving Credit Utilization Rate

Panel 5a represents the instrumented effect of CARES forbearance on credit card delinquency rates. The credit card delinquency rate is defined as available to estimate β_τ . Panel 5b shows the instrumented causal impact on balloon payment rates.

Results Summary

- ▶ Mortgage delinquency falls by up to 20pp by 2022Q4. Foreclosure rates fall by .6 to .8 percentage points at long horizons
- ▶ Forbearance users may have suboptimally missed refinance opportunity while in forbearance during low interest rate period
- ▶ Balloon payment prevalence increases by up to 4pp, but did not lead to rebound effects in aggregate
- ▶ Positive spillovers to revolving credit stability: 2pp reduction in delinquency, 15pp reduction in utilization rates

Heterogeneity Analysis: Balloon Payments and Forbearance Duration

Balloon Payments and Borrower Outcomes

- ▶ 9% of CARES forbearance exiters faced balloon payments.
- ▶ CFPB bulletins indicate many borrowers avoided forbearance due to perceived risk associated with balloon payments.
- ▶ How did balloon exiters fare relative to non-balloon exiters after forbearance?

Balloon Payments Specification

Consider the event study:

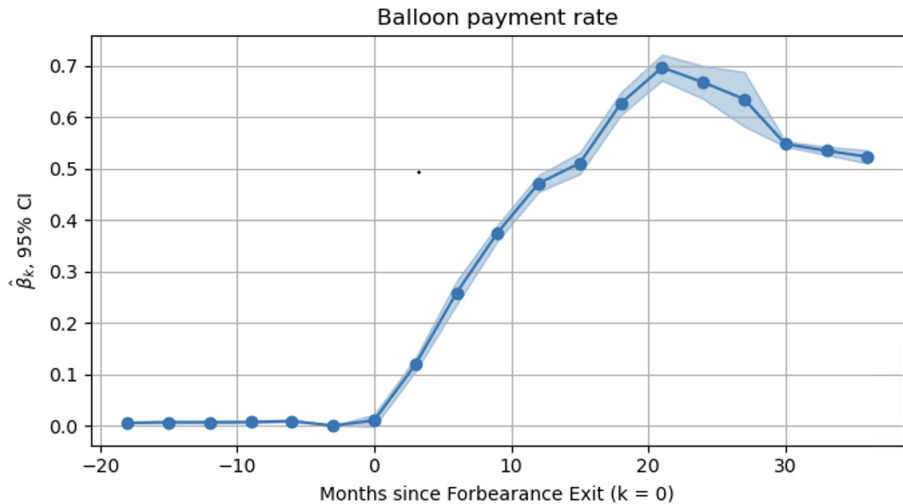
$$y_{i,t} = \alpha_t + X_{i,t}\gamma + \sum_{k=-18, k \neq -3}^{36} \beta_k D_{i,t}^k \times \text{EverBalloon}_i + \varepsilon_{i,t}$$

- ▶ $k = 0$ is the time of forbearance exit.
- ▶ β_k captures the differential impact of having a balloon exit at period k .
- ▶ $X_{i,t}$ includes credit scores, number of accounts past due, and credit card balances prior to COVID.
- ▶ α_t is a calendar time fixed effect.

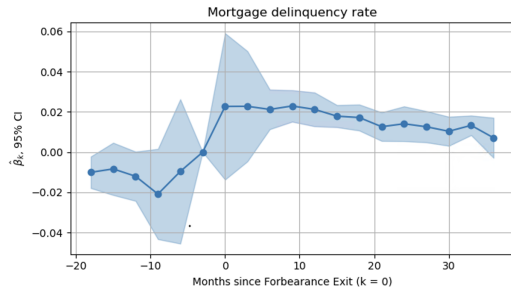
Balloon vs Non-Balloon Forbearance Summary Stats

	Non-Balloon Exit			Balloon Exit		
	Mean	Std Dev	Median	Mean	Std Dev	Median
<i>Pre-COVID</i>						
Credit score	688.45	94.20	693.00	702.67	91.84	707.00
Credit card balance	7,013.44	10,800.67	3,264.00	7,086.45	10,775.47	3,151.00
Revolving credit utilization rate	0.46	0.88	0.37	0.42	1.10	0.30
Credit limit (all accounts)	19,298.52	20,876.88	12,501.00	21,482.45	22,661.07	14,450.00
<i>Post-COVID</i>						
Credit score	702.67	91.84	707.00	714.09	92.60	722.00
Credit card balance	7,086.45	10,775.47	3,151.00	7,777.96	11,515.22	3,491.00
Revolving credit utilization rate	0.42	1.10	0.30	0.57	0.28	0.39
Credit limit (all accounts)	21,482.45	22,661.07	14,450.00	23,282.08	22,993.77	16,680.00
Original mortgage bal.	223,732.17	125,924.18	196,886.00	232,963.83	122,078.27	208,000.00
FHA/VA status	0.52			0.52		
Female	0.46			0.46		
Self employed	0.00			0.01		

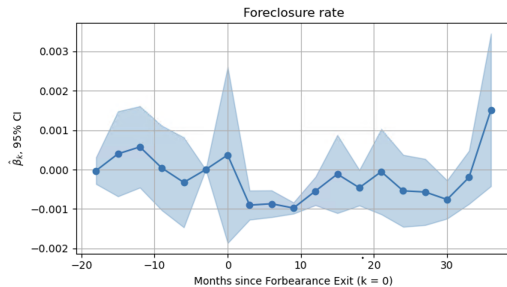
Timing of Balloon Payments



Balloon Forbearance Exit and Mortgage Stability



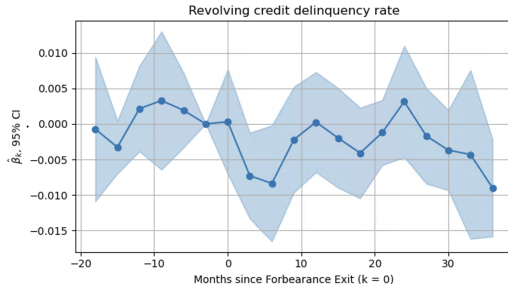
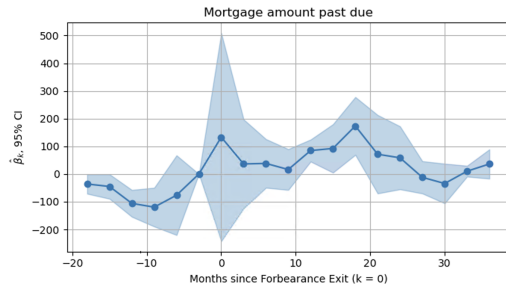
(a) Delinquency Rate with Balloon Exit



(b) Foreclosure Rate with Balloon Exit

Panel 6a event study results for the differential delinquency rate among balloon exiters. 6b shows the differential foreclosure rate.

Balloon Forbearance Exit and Debt Levels



(a) Mortgage Amount Past Due with Balloon Exit

(b) RC Delinquency Rate with Balloon Exit

Panel 7a event study results for the differential mortgage amount past due among balloon exiters. 7b shows the revolving credit delinquency rate.

Key Takeaways

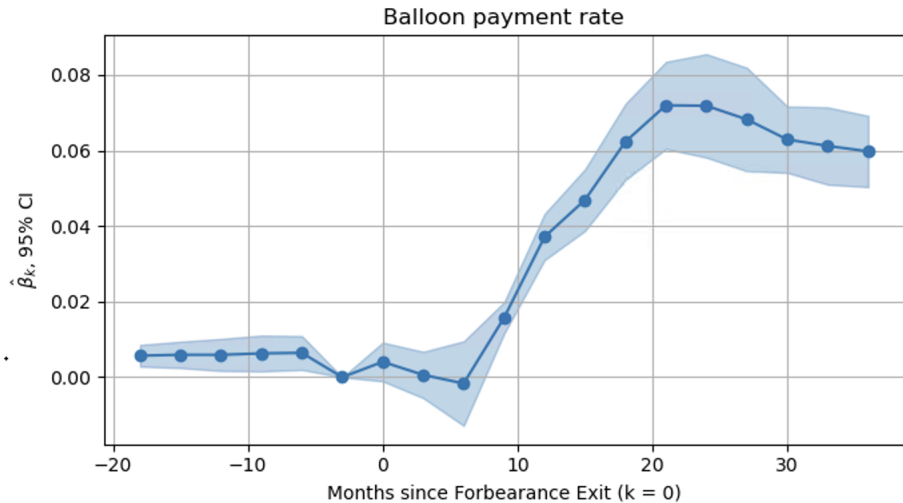
- ▶ Balloon exiters faced persistent, elevated delinquency risk (2pp)
- ▶ Foreclosure rates are slightly lower for balloon exiters (.1pp)
- ▶ Slight increase in mortgage amounts past due, but no significant trend in revolving credit delinquency

Forbearance Duration Analysis

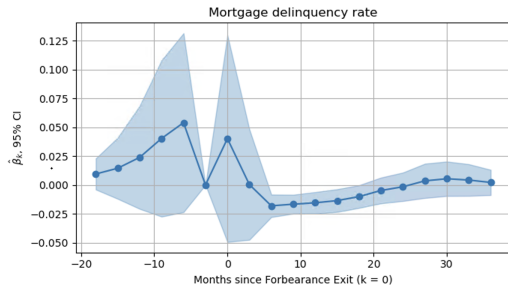
- ▶ Relief intensity varies by forbearance duration.
- ▶ Recall competing hypotheses over direction of forbearance treatment effect

Consider the same event study specification, with differential impacts for whether forbearance lasted longer than 6 months interacted with event time dummies

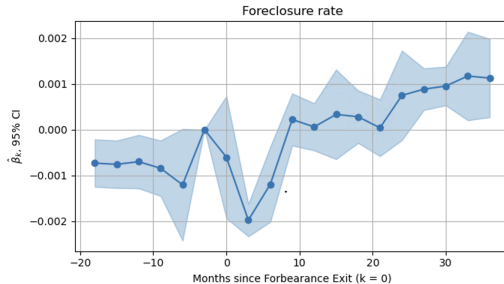
Long Forbearance and Balloon Payments



Long Forbearance and Mortgage Stability



(a) Delinquency Rate with Long Forbearance



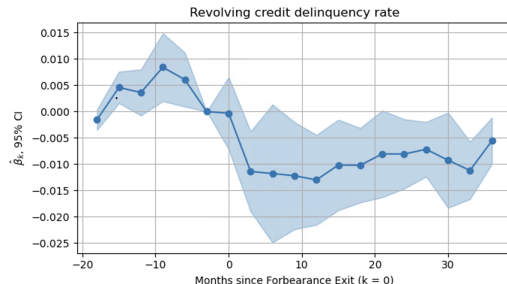
(b) Foreclosure Rate with Long Forbearance

Panel 8a event study results for the differential mortgage rate among long forbearance users. 8b shows the differential foreclosure rate.

Long Forbearance and Debt Levels



(a) Mortgage Amount Past Due with Long Forbearance



(b) RC Delinquency Rate with Long Forbearance

Panel 9a event study results for the differential mortgage amount past due among balloon exiters. 9b shows the revolving credit delinquency rate.

Key Takeaways

- ▶ Long forbearance (≥ 6 months) had temporarily lower delinquency rates after exiting.
- ▶ Foreclosure rates are temporarily lower, but exhibit persistent rebound effects beyond the 6 month mark.
- ▶ Persistent, significant reduction in revolving credit delinquency (1.5pp)

Concluding remarks

- ▶ Mortgage forbearance is highly effective at reducing mortgage-related financial distress at the household level short and long horizons
- ▶ No evidence of financial rebound effects
- ▶ No evidence of opportunistic forbearance use, on average
- ▶ Positive spillovers of forbearance to revolving credit stability
- ▶ Key benefits of forbearance as macroprudential policy include preventing waves of financial distress and improving long run household financial stability.

Thank you!

Email: valboctor@berkeley.edu

References I

- Agarwal, S., G. Amromin, S. Chomsisengphet, T. Landvoigt, T. Piskorski, A. Seru, and V. Yao (2023). Mortgage refinancing, consumer spending, and competition: Evidence from the home affordable refinance program. *The Review of Economic Studies* 90(2), 499–537.
- Albuquerque, B. and A. Varadi (2022, February). Consumption Effects of Mortgage Payment Holidays: Evidence during the COVID-19 Pandemic. *IMF Working Papers* 2022(044).
- Altunok, F., Y. Arslan, and S. Ongena (2023). Monetary policy transmission with adjustable and fixed rate mortgages: The role of credit supply.
- An, X., L. Cordell, L. Geng, and K. Lee (2022). Inequality in the time of covid-19: Evidence from mortgage delinquency and forbearance. *Available at SSRN* 3789349.
- Auclert, A., W. Dobbie, and P. Goldsmith-Pinkham (2019, March). Macroeconomic Effects of Debt Relief: Consumer Bankruptcy Protections in the Great Recession. (w25685), w25685.
- Campbell, J. Y., N. Clara, and J. F. Cocco (2021). Structuring mortgages for macroeconomic stability. *The Journal of Finance* 76(5), 2525–2576.
- Cherry, S., E. X. Jiang, G. Matvos, T. Piskorski, and A. Seru (2021, January). Government and Private Household Debt Relief during COVID-19.
- Di Maggio, M., A. Kermani, and C. J. Palmer (2020, May). How Quantitative Easing Works: Evidence on the Refinancing Channel. *The Review of Economic Studies* 87(3), 1498–1528.
- Dinerstein, M., C. Yannelis, and C.-T. Chen (2023). Debt moratoria: Evidence from student loan forbearance. Technical report, National Bureau of Economic Research.

References II

- Dobbie, W., P. Goldsmith-Pinkham, and C. S. Yang (2017). Consumer bankruptcy and financial health. *Review of Economics and Statistics* 99(5), 853–869.
- Dobbie, W. and J. Song (2015). Debt relief and debtor outcomes: Measuring the effects of consumer bankruptcy protection. *American economic review* 105(3), 1272–1311.
- Dobbie, W. and J. Song (2020). Targeted debt relief and the origins of financial distress: Experimental evidence from distressed credit card borrowers. *American Economic Review* 110(4), 984–1018.
- Ganong, P. and P. Noel (2017). The effect of debt on default and consumption: Evidence from housing policy in the great recession. *Unpublished Working Paper*.
- Ganong, P. and P. Noel (2022, October). Why do Borrowers Default on Mortgages?*. *The Quarterly Journal of Economics*, qjac040.
- Gerardi, K., L. Lambie-Hanson, P. Willen, et al. (2022). Lessons learned from mortgage borrower policies and outcomes during the covid-19 pandemic. *Federal Reserve Bank of Boston Current Policy Perspectives*.
- Guren, A. M., A. Krishnamurthy, and T. J. McQuade (2021). Mortgage design in an equilibrium model of the housing market. *The Journal of Finance* 76(1), 113–168.
- Keys, B. J., N. Mahoney, and H. Yang (2023). What determines consumer financial distress? place-and person-based factors. *The Review of Financial Studies* 36(1), 42–69.
- Kim, Y. S., D. Lee, T. C. Scharlemann, and J. I. Vickery (2022). Intermediation frictions in debt relief: evidence from cares act forbearance. *FRB of New York Staff Report* (1035).
- Lee, S. C. and O. Maghazian (2023). Household liquidity and macroeconomic stabilization: Evidence from mortgage forbearance.

References III

Mian, A. and A. Sufi (2010, May). The Great Recession: Lessons from Microeconomic Data. *American Economic Review* 100(2), 51–56.

Mian, A. and A. Sufi (2014, May). *House of Debt: How They (and You) Caused the Great Recession, and How We Can Prevent It from Happening Again*. University of Chicago Press.