Time on your side: Labor Market Effects of Foreclosure Delays

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(Link to most updated version)

Abstract

I study the effect of foreclosure delays on labor income and employment outcomes, exploiting a temporary CFPB rule that restricted servicers from initiating foreclosures. Using detailed employee-employer matched administrative data linked with individual credit profiles in the U.S., I employ a difference-in-differences design and compare borrowers who were 120+ days delinquent one month before versus one month after the cutoff eligibility date of the rule. I estimate a 2.5 percent increase in income for borrowers eligible for up to four months of foreclosure delays. The higher income is attributed to an increased probability of job switching. Temporary liquidity and extended period of housing stability explain my findings. Furthermore, these delays lead to a persistent decrease in the probability of default and foreclosure over the year following the policy. Overall, my research suggests temporary delays, when implemented during the early stages of the foreclosure process, can empower borrowers to achieve financial stability by fundamentally reshaping their income prospects through the labor markets.

Keywords: Foreclosure Delays, Labor Income, Job Mobility, Liquidity, Credit, Default, COVID-19

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1 Introduction

Do policies designed to prevent foreclosures, such as foreclosure delays, yield substantial economic benefits? Since the aftermath of the Great Recession, delays in the foreclosure process, whether mandated by law or government intervention, have been utilized to mitigate the impact of foreclosures—a situation known to have far-reaching consequences on financially struggling homeowners and neighborhoods (Clauretie and Herzog (1990), Calomiris et al. (2008), Campbell et al. (2011), Mian et al. (2015), Gupta (2019), Diamond et al. (2020), Piskorski and Seru (2021)). Despite being a widely used policy instrument for foreclosure prevention, little consensus exists over the efficacy of foreclosure delays. Whereas some studies suggest that they result in a higher rate of recovery and loan modifications (Maturana (2017), Collins and Urban (2018), Gabriel et al. (2021), Sandler (2023), Padi et al. (2023)), others offer evidence that points to a recurrence of homeowner delinquencies and only modest effects on consumption and wealth (Calomiris and Higgins (2011), Cordell et al. (2015), Zhu and Pace (2015), Gerardi et al. (2015), Kim (2019)). These contrasting views have led some to conclude that the benefits of foreclosure delays have been overstated. This debate primarily revolves around the advantages associated with debt restructuring while overlooking the substantial potential for recovery through local labor markets. A report by the US Government Accountability Office (2011) highlights the possibility that foreclosure delays could provide borrowers with extra time to secure additional income, thereby affecting their ability to address the root causes of financial distress.

In this paper, I present new systematic evidence for this prospective benefit of foreclosure delays, revealing a pathway to sustained economic recovery through labor markets. Specifically, I ask, Can early stage foreclosure delays, that is, delays in foreclosure filing, enhance the income and employment prospects of distressed borrowers? I exploit a temporary rule delaying foreclosure filing and leverage detailed employee-employer matched administrative data linked with individual credit profiles to answer this question.

Conceptually, there are two opposing forces influencing the impact of foreclosure delays on labor income. On the one hand, there is moral hazard stemming from an increased likelihood of income-contingent loan modifications during delays, which might diminish the incentives for borrowers to actively pursue higher-wage employment. On the other hand, the

supplementary resources—both in terms of time and liquidity—that foreclosure delays offer can strengthen borrowers' capacity to engage in job search, leading to an increase in income.

My central finding is that delaying foreclosure filing increases labor income, primarily driven by increased job mobility. Temporary liquidity and extended period of housing stability from foreclosure delays enhances job search ability by acting as a private source of self-insurance against search-and-matching frictions in the labor market. Consistent with this, my estimated effects are concentrated among ex-ante liquidity-constrained borrowers, especially those facing labor market slackness. Furthermore, I note larger effects for borrowers in non-judicial states and those with high loan-to-value ratios in states permitting recourse on non-mortgage assets, proxying for susceptibility to housing insecurity. I discuss the detailed theoretical underpinnings of this mechanism in the conceptual framework section below. Finally, I document long-term benefits of delaying foreclosure filing. I provide evidence of a persistent decrease in the likelihood of both mortgage and non-mortgage defaults and a reduction in the probability of foreclosure occurring over a year following the implementation of the policy.

Identifying the causal effect of foreclosure delays on labor market outcomes is empirically challenging. This challenge arises from the difficulty in identifying appropriate counterfactuals given the broad coverage of foreclosure prevention policies and the need for granular borrower-level income and employment data. My paper overcomes these challenges by combining a novel administrative payroll dataset with credit bureau records within the framework of a quasi-natural experiment. The quasi-random variation in foreclosure delays stems from a temporary extension of foreclosure filing introduced by the Consumer Financial Protection Bureau (CFPB), which applied retroactively.

The CFPB policy was announced in June 2021 and went into effect between September and December 2021. It mandated servicers to complete a detailed list of procedural safeguards before issuing foreclosure notices to eligible mortgages. Eligibility was based on delinquency status around an arbitrary cut-off date of March 1, 2020, more than a year before the policy announcement. The retroactive eligibility limits strategic selection into eligible groups because individuals could not have anticipated this rule in 2020. Specifically, this policy delayed foreclosure filing by up to four months for borrowers who missed their fifth mortgage payment (i.e., entered 120+ days of delinquency) in March 2020 (treated

group). By contrast, borrowers for whom the transition to 120+ days delinquency happened in February 2020 (control group) were not granted the delays. I employ a difference-in-differences (DiD) research design that compares the labor income of the treated group with the control group before and after the policy implementation. I condition on individual fixed effects to control for all time-invariant heterogeneity due to differences in preferences, zip-code by year-month fixed effects to control for all time-varying geographic variation, and industry by year-month fixed effects to control for industry-specific shocks.

I begin by evaluating the first-stage relevance of the policy. The probability of foreclosure filing for the loans subject to the policy reduced by as much as 3 percentage points compared with the control group during the policy's effective period. This reduction constitutes a substantial 52 percent decrease when compared with the average likelihood of foreclosure filing within the sample, indicating a noteworthy adherence to the policy directives.

The paper's first result identifies the effect of foreclosure delays on labor income. My DiD estimate indicates the income for treated borrowers increased by 2.5 percent relative to the control group of borrowers. Specifically, delaying foreclosure filings by four months boosts borrowers' annual income by $1600 following the implementation of the CFPB policy.

The causal interpretation of the treatment effect relies on the assumption that, in the absence of delays in foreclosure filings induced by the CFPB rule, labor income for individuals in the treatment and control groups would have evolved according to parallel trends. I provide evidence for this assumption by analyzing dynamic treatment effects and find no indication of pre-existing trends and a significant increase in income by up to 5 percent over the one-and-a-half years following the policy. Furthermore, I conduct a falsification test by exploiting variation within a group of eligible loans for which the policy did not bind, namely, loans that were already in some stage of foreclosure or were current as of the month before policy implementation. I find no significant differences in labor income between the pseudo treated and control groups after policy implementation within this group.

I address any residual concerns related to potential systematic differences between the treatment and control groups attributable to COVID-19-induced distress, which could threaten my identification. In my research design, I compare loans that missed their fifth mortgage payment in March 2020 with those in February 2020. This approach ensures the treated group differs from the control group in only one missed payment. In fact, this transition

from 120 days of delinquency to 120+ days past due is marginal compared with entering a 90-day delinquency, which both groups had experienced before the onset of pandemic-related events. Furthermore, mortgage contracts typically adhere to a standardized payment structure, specifically requiring payments at the start of each month, with a 15-day grace period before borrowers are classified as delinquent.[1] Because lockdowns in the US began after March 19, [2] the ability to pay for the mortgage within the due date, that is, before March 15, should remain unaffected by pandemic-related events. I demonstrate that layoffs followed a consistent seasonal pattern until March 18, after which a notable surge occurred, coinciding with the timing of the lockdown. I also show the likelihood of transitioning from 120 to 120+ days of delinquency in March 2020 is similar across states that experienced lockdown earlier versus later. Finally, I present evidence indicating no meaningful differences between the treated and control groups across a wide set of observable characteristics.

My baseline finding which indicates a positive effect of foreclosure delays on labor income is inconsistent with moral hazard, and rather aligns with the job search mechanism. Subsequently, my second set of findings furnishes supporting evidence for the job transition as a primary driving force. Specifically, my analysis reveals a 18% higher relative likelihood of individuals changing their job compared to the sample mean and an increased likelihood of individuals working in a different zip code. Furthermore, the relative income increase from unemployment to employment transition is 8.7% and is larger compared to the income increase attributable to on-the-job transition. Additionally, a decomposition of gross income into components such as commissions, hourly wage rates, and the number of hours worked reveals a relative increase in hourly wage rates, more hours worked, and heightened commissions for the treatment group over a year and a half following delays. Moreover, individuals subject to the treatment exhibit longer tenure following foreclosure delays, a higher likelihood of working in full-time positions, and a reduced likelihood of holding multiple jobs. I find limited evidence for changes in individual income within the same employer. Considering insignificant income variation among non-switchers, these findings likely indicate an

[1] Borrowers have discretion on when to close the mortgage, but the mortgage payment is typically due on the first day of each month starting the second month after the loan's closing date. Some lenders provide the flexibility of due date changes, but borrowers owe more once the account matures to cover any interest accrued because of the change. Moreover, this flexibility is subject to several conditions, e.g., the borrower must have made the first mortgage payment, the intended due date cannot be more than 15 days from your existing mortgage payment due date, this change is permitted only once during the loan's duration, and the borrower must be current at the time of requesting a due date change. Source: Source: Experian, Quicken, Lending Club, US Bank

[2] https://en.wikipedia.org/wiki/COVID-19_lockdowns

enhanced job-match quality subsequent to job switch.

Underlying job mobility is the enhanced ability to search, which is faciliated by resources from foreclosure delays such as liquidity and extended time to stay in the house. In my third set of results, I test the merit of this resource channel by examining heterogeneity based on differential exposure to liquidity constraints, search-and-matching frictions and housing insecurity. In the cross-section, I observe that liquidity-constrained individuals — as measured by above-median credit utilization, debt-to-income ratio, and credit score below 620 — experience a larger relative increase in labor income. The treatment effects are further concentrated amongst liquidity constrained individuals in slack labor markets. Additionally, the unemployed, who face relatively more severe labor market frictions compared to employed experience larger relative income increases following foreclosure delays. Lastly, conditional on finding a job, within employed, the treated take longer to make a job switch and within unemployed, the treated experience a longer unemployment duration relative to the control group respectively. These findings align with the concept that liquidity empowers individuals to extend their job search by facilitating costly job search efforts and acting as a form of self-insurance. Moreover, the effects are larger for borrowers in power-of-sale states versus judicial states and high loan-to-value (LTV) borrowers in recourse states vs low LTV borrowers in non-recourse states. The findings underscore the added benefit of prolonged housing stability in the context of job search.

The paper's final result evaluates the long-term impacts of foreclosure delays on borrowers' credit performance. I observe a sustained decline in the probability of mortgage and non-mortgage defaults and foreclosure incidents over a year following the introduction of the CFPB policy. This observation suggests pre-foreclosure delays empower borrowers to achieve lasting financial stability by fundamentally reshaping their income prospects through the labor markets. This finding has important implications in light of concerns that many debt-relief measures may still leave individuals susceptible to delinquency and financial irresponsibility. Nevertheless, given that these measures come with expenses such as direct costs for servicers and indirect costs such as housing market inefficiencies and tighter credit conditions for new borrowers,[3], further analysis is required to determine if the benefits from

[3]I perform back-of-the envelope calculations to quantify the direct costs to services based on a report by Goodman (2016), which outlines the penalties imposed by FHA and GSEs for delaying foreclosure filings beyond 180 days from the initial default. The penalty for each loan per month is determined by multiplying the remaining balance at the time of default by the note rate divided by 12 and then multiplying this amount by the number of delayed months. As

foreclosure delays can outweigh these costs.

Conceptual Framework: I rely on different existing theories of job search to inform my empirical examination of the underlying mechanisms explaining my results.

Temporary liquidity from foreclosure delays comes in the form an implicit credit line that opens up during delays where mortgagors may default on their mortgage payment without facing imminent foreclosure or eviction. This liquidity may enhance individuals' ability to navigate labor market frictions.[4] Theories of job search which incorporate liquidity and financial frictions inform this mechanism. A broad class of search models accounting for factors like dependence on unemployment benefits (Mortensen (1977), Diamond (1981), Acemoglu and Shimer (2000), Chetty (2008)) and credit access (Herkenhoff et al. (2016), Braxton et al. (2020)) demonstrate that additional liquidity leads to increases in reservation wages, unemployment durations, and subsequent re-employment wages. Another class of models, not mutually exclusive, incorporates on-the-job search, expanding the scope of analysis beyond the unemployed to also consider employed individuals. These models show that job switching is often triggered by low or volatile earnings and heightened unemployment risks (Pissarides (1994), Akerlof et al. (1988), Christensen et al. (2005), Pinheiro and Visschers (2015), Gregor (2015), Jung and Kuhn (2019)). Furthermore, within this class of models, financial market incompleteness has been shown to affect labor income by preventing workers' ability to switch to more productive occupations (Hawkins and Mustre-del Rio (2016); Cubas and Silos (2020)).

Besides liquidity, the extended period of housing stability and avoidance of time intensive foreclosure and eviction proceedings allow individuals to allocate more time to improving employment prospects. This assertion aligns with existing literature on housing insecurity, which documents the negative effects of eviction of low-income renters (Desmond (2012); Desmond and Shollenberger (2015); Desmond and Gershenson (2016)) and foreclosure-related evictions (Collinson et al. (2022), Diamond et al. (2020)) on employment outcomes.

Finally, an extension in foreclosure filing may serve as a crucial respite for borrowers,

of August 2021, there were 720,000 mortgage accounts in default that had not yet undergone foreclosure. The average outstanding balance for these accounts was $110,000. I further assume an average note rate of 3% because most of the loans in the sample originated between 2010 and 2019. Consequently, the calculation is as follows: 720,000 x (0.03/12) x 110,000 x 4 = $800 million.

[4] In search models, the "job offer arrival rate" is modeled as a function of search effort or waiting time.

offering temporary relief from the overwhelming stress and anxiety associated with impending foreclosure (Currie and Tekin (2011); Osypuk et al. (2012); Houle (2014); Allen et al. (2015); Tsai (2015); Bernal-Solano et al. (2019)). To the extent that reduced financial stress frees up cognitive resources for productive work (Sergeyev et al. (2023)), this may empower borrowers to approach their financial predicament with a clearer mindset. This clarity could lead to optimized employment choices, such as improving job match or increasing work hours, ultimately resulting in higher earnings.

The rest of the paper is structured as follows. Section 2 discusses the related literature, and section 3 presents the institutional details. Section 4 describes the data employed, sample construction, and my empirical strategy. Section 5 presents the main results of the paper. Section 6 examines the underlying mechanisms, section 7 discusses policy implications, and section 8 concludes.

2 Related Literature

The contribution of this paper is three-fold. Firstly, my paper assesses the impact of foreclosure delays on borrower income and reveals a new channel, mediated by labor markets, through which foreclosure prevention policies like delays can lead to sustained economic benefits. In doing so, it broadens our understanding of the effects of such delays on a borrower's overall financial profile, going beyond the typical focus on the liabilities side of borrowers' balance sheets. To the best of my knowledge, my research is one of the first papers to provide a systematic empirical analysis of the effect of foreclosure delays on labor market outcomes. A closely related study by Herkenhoff and Ohanian (2019) examines the impact of extended foreclosure timelines on job search for unemployed in a quantitative job search model and uses aggregate data for unemployed mortgagors to show that foreclosure delays enhance job match quality by providing people additional time to search for high paying jobs. My paper differs in several significant ways. I investigate the broader labor market implications of foreclosure delays, considering both employed and unemployed individuals. Moreover, the rich microdata on credit and employment allows me to delve into detailed mechanisms by which foreclosure delays affect job search and subsequent labor income. My research specifically focuses on evaluating the consequences of foreclosure delays introduced

at the filing stage, diverging from their study, which investigates the effects of a general increase in the foreclosure timeline owing to various regulatory changes in the years following the Great Recession.

Second, my paper contributes to the broad literature examining the causes and consequences of delays in the foreclosure process. Varying regulations across states, such as right-to-cure law or the judicial-review right (Gerardi et al. (2013)) and documentation issues (Allen et al. (2015)) have been shown to lengthen foreclosure timelines. Foreclosure delays induced by these regulatory changes have proven costly (Calomiris and Higgins (2011), Gerardi et al. (2013), Cordell et al. (2015),Dagher and Sun (2016), Cordell and Lambie-Hanson (2016)) with implications on borrower credit outcomes (Ghent and Kudlyak (2011), Collins and Urban (2014), Zhu and Pace (2015), Chan et al. (2016), Kim (2019), (Calem et al. (2017), Sandler (2023), Padi et al. (2023)), credit supply (Jones (1993), Pence (2006),Ghent and Kudlyak (2011), Curtis (2014), Dagher and Sun (2016), Zhao et al. (2019)) and house prices (Gerardi et al. (2015), Gabriel et al. (2021)). Unlike previous studies that heavily rely on variations between states to identify foreclosure delays, the individual-level cross-sectional variation in foreclosure timelines induced by the CFPB policy in my setting allows me to tackle numerous underlying endogeneity concerns by enabling me to utilize variations within a state and within lenders to identify foreclosure delays.

Third, my study speaks to the growing literature evaluating borrower protection policies, including studies on bankruptcy protection (Dobbie and Song (2015), Dobbie et al. (2017), Auclert et al. (2019), Di Maggio et al. (2019)), debt waiver (Mukherjee et al. (2018), Piskorski and Seru (2021)) and forbearance and debt restructuring (Mayer et al. (2014), Agarwal et al. (2017), Ganong and Noel (2020), Cespedes et al. (2021), Cherry et al. (2021), Aydin (2021), Fiorin et al. (2023), Dinerstein et al. (2023), Lourie et al. (2023)) and moratoriums (O'Malley (2021), Dinerstein et al. (2023)). The large real effects I document from a temporary four-month debt relief in the form of an extension of foreclosure timeline suggests that well-designed borrower protection policies, even temporary in nature have the potential to be cost-effective instruments for promoting financial stability.

3 Institutional Details

3.1 Foreclosure Process

The Dodd-Frank Act grants the Consumer Financial Protection Bureau (CFPB) the authority to oversee and enforce compliance with the Real Estate Settlement Procedures Act (RESPA) and its rules. In January 2013, the CFPB introduced Mortgage Servicing Rules, incorporated into Regulation X, to implement RESPA.

According to Regulation X, a borrower's mortgage loan enters default if it becomes more than 90 days delinquent; however, servicers cannot initiate foreclosure until the delinquency exceeds 120 days. This period from the first missed payment until 120+ days of delinquency is referred to as the pre-foreclosure period. During this phase, when a borrower defaults, the lender sends a notification known as a "breach letter" or "notice of default" before accelerating the loan and moving toward foreclosure. Regulation X provides guidelines for early intervention, maintaining communication with borrowers, and pursuing loss mitigation actions during this period. Once the delinquency surpasses 120 days, the lender sends a "Notice of Intention to Foreclose (NOI)." The subsequent steps vary depending on whether the mortgage originated in a judicial or non-judicial foreclosure state. In non-judicial states, the lender may combine the NOI with a notice of sale or a publicly posted/published announcement indicating the property's intended sale unless missed payments are resolved. Failure to reinstate the loan by a specific deadline leads to auctions, deed transfers, and eviction. For judicial foreclosure, the lender sends the NOI at least 30 days before filing a complaint in the Office of Foreclosure. The borrower has 35 days to respond and 60 days to request mediation. In the absence of a response or case of a non-contesting answer, the lender asks the court to Enter default, followed by the court permitting foreclosure. The property then undergoes a Sheriff's Sale Process (public auction), and eviction follows. The stages in the foreclosure process are depicted in Figure 1.

3.2 Details of the CFPB Temporary Rule

This section describes the temporary amendments to mortgage servicing rules under Regulation X announced by CFPB, which introduced delays in foreclosure filing.

With the onset of the Covid-19 pandemic and the various protections granted to borrowers within the scope of the CARES Act, March 27^{th} 2020 (e.g., forbearance program of up to 180 days and foreclosure moratoria), any new foreclosure actions were halted, and ongoing foreclosure proceedings were suspended until a specified date. Over subsequent months, extensions were granted to these provisions until their final expiration in July 2021.[5] Since the forbearance program/moratoriums did not necessarily pause delinquency, borrowers could have been delinquent for longer than 120 days at expiration of the CARES act protection without having faced foreclosure action during this period.[6] As a result, once a borrower's forbearance program or the moratorium ended, the servicer could accelerate the foreclosure process unless further extensions were granted to these protective measures.

Recognizing this foreclosure risk faced by millions of borrowers upon the expiration of the federal moratoria, on June 28, 2021, the CFPB issued amendments to the federal mortgage servicing regulations, which became effective starting August 31^{st} 2021. These amendments aimed to reinforce the ongoing economic recovery and protect mortgage borrowers as the federal foreclosure moratoria were phased out. The rule established temporary special safeguards to ensure that borrowers had sufficient time before foreclosure to explore their options, such as loan modifications and selling their homes.[7] In particular, during the protected period effective from August 31, 2021, to December 31, 2021, for "eligible" mortgages, servicers were prohibited from initiating foreclosure proceedings under state law unless they fulfilled specific procedural safeguards in addition to those mandated under Regulation X (Details in Appendix A). These procedural safeguards applied to mortgages secured by the borrower's primary residence that became more than 120 days delinquent on or after March 1, 2020. Mortgages that entered 120+ days of delinquency before March 1, 2020, were not considered eligible. Starting in January 2022, servicers could resume foreclosure actions on all

[5] See the following for details. https://www.nhlp.org/wp-content/uploads/2020.04.10-NHLP-Homeowner-Relief-Info-Sheet-Update2.pdf

[6] See for details https://www.federalregister.gov/documents/2021/06/30/2021-13964/protections-for-borrowers-affected-by-the-covid-19-emergency-under-the-real-estate-settlementfootnote-62-p34853

[7] See CFPB Amendment to Mortgage Servicing Rules for the exact rule. These extensions weren't automatically granted to eligible borrowers; instead, they needed to contact their servicer and choose to participate proactively.

mortgages without the requirement to adhere to these comprehensive procedural safeguards. Because the procedural safeguards closely resembled the mitigation actions recommended before foreclosure filing, this temporary rule essentially prolonged the pre-foreclosure timeframe by as much as four months for qualifying mortgages, allowing foreclosure proceedings to commence for other cases. The timeline is summarized in Figure 2.

4 Data

My empirical analysis uses anonymized proprietary data on individual credit profiles and administrative payroll records from Equifax Inc..

4.1 Credit Data

The anonymized credit data contains information on the credit histories of all individuals (with a credit history) in the U.S. between 2010Q1-2023Q1. This data includes anonymous information on historical credit scores along with disaggregated individual credit-account level information such as account type (e.g., home loan, auto loan, student loan, and credit cards, etc.), borrower location, account age, total borrowing, account balance, monthly scheduled payment, any missed or late payments, defaults, foreclosures, and bankruptcy filings. It contains over 260 million consumer credit files and over a billion credit trades, i.e., information about single loans, and is updated monthly.

4.2 Payroll Data

The employment data contains anonymized information reported by employers who subscribe to the income verification services. Employers may face income and employment verification requests for their employees from social service agencies, property managers, mortgage/auto lenders, credit card issuers, pre-employment screeners, and ACA (Affordable Cares Act) verifications. While the requests from state and federal agencies mandate compliance, employers also want to fulfill other requests to support employees during significant life events. The employers use the services of Equifax Inc. to streamline and automate the

process to ensure faster and more secure verifications and free up HR departments from this time-consuming and complex task, mainly because many different parties at different points in time can request these verifications. The data covers over 5,000 employers who report all employees' information on a payroll-to-payroll basis. It contains anonymized employee information on income, job locations, job tenures, type of jobs, and industry, among other details. The data covers over 100 million employees between 2010Q1 and 2023Q1 and is representative of the U.S. labor force along several dimensions, including median personal incomes and median employee tenure. In addition, the data closely tracks aggregate U.S. private sector payroll growth, hiring, and separations as shown in Gopalan et al. (2021). Additionally, Kalda (2020a) shows that the credit profiles of employees in the data are similar to those of the U.S. population.

4.3 Sample Construction and Summary Statistics

There were 720,000 active[8] mortgage accounts in default and not subject to foreclosure as of August 2021. From this population, the treatment group constitutes 13,000 loans, which had transitioned to 120+ days delinquency in March 2020, indicating that they were reported as only 120 days delinquent as of February 2020. The control group consists of 10,000 loans that entered 120+ delinquency in February 2020

I merge these borrowers' income and employment records using the payroll data described above. This merging process enables me to construct a panel dataset at the individual-employer-month level. By linking the relevant information, I can analyze the income and employment dynamics of the borrowers in question. I can identify employment records, including labor income, employer information, and industry classification, for approximately 12,000 loans out of 23,000. My sample period spans from September 2020 to April 2023.

Table 1 summarizes the main variables in my analysis. The median individual in my sample originates a $151,304 mortgage and has an outstanding balance of $129,459. Additionally, the median individual in my sample has seven active revolving credit accounts with overall credit utilization of 64%, measured as the ratio of the outstanding balance on revolving credit and their credit limit. The median credit score in the sample is fairly low at 554.

[8]These were also active as of January 2020

These measures indicate that the median borrower in the sample is extremely credit constrained. The loan-to-value ratio (LTV) is imputed using origination amount, outstanding balance and zip code level house price index from Corelogic, assuming an origination LTV of 0.8. The median sample LTV of 0.46 and mean is 0.44, both indicating positive home equity. The average annual labor income in my sample is $61,815, with median income of $54,575. I provide summary statistics of the full sample in Table B1. The two sample are very similar.

Note that my sample consists of individuals who fell into 120+ days of mortgage delinquency between February and March 2020 and remain delinquent, yet have not faced foreclosure as of August 2021. In Figure B1, the distribution of loans is illustrated across various underlying reasons for survival from March 2020 to August 2021. Considering that forbearance protection was available for federally backed loans under the COVID-19 CARES Act during this timeframe, nearly 50% of loans survive due to forbearance or federal moratoriums. Additionally, 35% of the loans able able to self-cure either completely or partially at least once and another 15% receive modification but eventually re-default.

I further investigate the underlying predictors of mortgage delinquency for these loans from June 2019 to August 2021. [9] Table B2 indicates that the likelihood of delinquency increases with the probability of unemployment and the presence of outstanding medical, child care, and utility-related debt (see Columns (1)-(2)). Alternatively, the growth in these expenses also positively influences the incidence of mortgage default. Interestingly, the coefficient on Loan-to-Value (LTV) is insignificant, suggesting that strategic motives are not the primary driver of default in my sample. This aligns with two facts presented earlier: a significant fraction of loans attempt to cure without assistance, and the median and average borrower has positive equity in their home.

[9] I estimate the following OLS regression:

$$y_{i,t} = \beta_1 \times Unemployed_{i,t} + \beta_2 \times Utilization_{i,t} + \beta_3 \times LTV_{i,t} + \sum \beta_k Expenses_{k,i,t} + \theta_i + \gamma_{z,t} + \epsilon_{i,t}$$

where $y_{i,t}$ is a dummy coded as 1 if individual i has a delinquent mortgage in year-month t and 0 otherwise. $Expenses_k$ measures the incidence of $k = \{medical,\ child\ support,\ utility\}$ debt, represented as an indicator coded as 1 in case of a positive outstanding balance in year-month t or the growth from $t-1$ to t. θ_i denotes individual fixed effects, $\gamma_{z,t}$ for zipcode x year-month fixed effects.

4.4 Empirical Strategy

My paper estimates the effect of foreclosure delays on labor income. I exploit the cross-sectional and time-series variation due to the temporary amendments to the foreclosure filing process announced by the CFPB. The CFPB policy was implemented on August 31^{st} and delayed foreclosure filing by up to four months with retroactive eligibility. Delays in foreclosure filing were applicable for individuals who entered 120+ days delinquent on or after an arbitrary cut-off date of March 2020. However, the policy did not grant foreclosure delays to loans for which the transition to 120+ days of delinquency happened before this cut-off date. My research design considers a tight one-month window around this arbitrary cut-off date. In particular, loans that missed their fifth payment (i.e., became 120+ days delinquent) in March 2020 constitute my treated group, and those that missed their fifth payment in February 2020 form my control group.

My baseline specification is a difference-in-differences research design, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t} \tag{1}$$

where $y_{i,z,h,t}$ represents log earnings or dollar earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+DPD in March 2020 and 0 if the loan became 120+DPD in February 2020. $Post^{Sep2021}$ is an indicator variable equal to 1 for September 2021 and after and 0 for the months before. Individual fixed effects (θ_i) address the concern that a direct comparison of the treatment and the control group may pose an empirical challenge if the two groups differ. Individual fixed effects allow to control for all time-invariant heterogeneity due to differences in preferences, skills, and other unobserved traits. Another issue with a direct comparison is that the labor income is a function of the local economic development and idiosyncratic shocks that may affect certain industries. Zipcode $\times$ month fixed effects ($\gamma_{z,t}$) and industry x month fixed effects ($\delta_{h,t}$) allow me to non-parametrically control for all time-varying granular differences arising from geography and industry that may determine labor earnings. Zipcode and industry are measured as of February 2020. Since individuals employed in the same industry may be

subject to similar economic shocks, I cluster the standard errors at the 6-digit NAICS code throughout my analysis, allowing the errors to be correlated for all individuals within the same industry.

A potential concern with Equation 1 is that the systematic differences between the treatment and control groups due to COVID-19-induced policies and distress could drive the estimate of β_{DD}. In my research design, I compare loans that missed their fifth mortgage payment in March 2020 with those in February 2020. This approach ensures that the treated group differs from the control group by only one payment, shifting from 120 to 120+ days delinquent. This distinction is marginal compared to entering a 90-day delinquency, which both groups had experienced prior to the onset of pandemic-related events. I further argue that mortgage contracts adhere to a standardized payment structure, specifically requiring payments at the start of each month with a 15-day grace period before borrowers are classified as delinquent. The decision on whether to skip a mortgage payment in March should remain unaffected by pandemic-related events, notably since lockdowns began only after March 19. Figure 3 demonstrates that layoffs followed a consistent seasonal pattern until March 18, after which a notable surge occurred. I also show that the likelihood to transition from 120 to 120+ days delinquency in March 2020 is similar across states that experienced lockdown in March versus later (See Table B3). Furthermore, in Table 2, I present evidence indicating no statistically significant differences between the treated and control groups concerning observable loan and borrower characteristics prior to the intervention, except for loan origination amount and origination term. However, I include these attributes as non-parametric controls in my baseline estimates to validate that these distinctions do not introduce bias into my findings.

The estimate of interest is the coefficient of the interaction term of $Treated_{i,z,h}$ and $Post_t$ given by β_{DD}. β_{DD} is the estimate of the treatment effect capturing the treatment group's response to the policy relative to the control group. Specifically, β_{DD} is a within ZIP code and within industry estimator comparing the average difference in the treatment and the control groups operating in the same zip code and within the same industry after controlling for all observed and unobserved time-invariant heterogeneity across individuals.

The causal interpretation of β_{DD} relies crucially on two assumptions. First, the treatment group was subject to delays in foreclosure filing, whereas the control group was not. I

verify the first-stage relevance assumption by examining the time series distribution of the cumulative share of foreclosure filing in my sample for the treated and control loans when the CFPB policy was effective. I further formally examine the differential likelihood of foreclosure filing between the treated and control group of mortgages by implementing Equation 1, replacing y with an indicator coded as 1 if the loan contains a flag for foreclosure filing in calendar month t and 0 otherwise. I further include lender x year-month fixed effects ($\delta_{j,t}$) accounting for any time-varying lender characteristics and control for time-varying origination cohort-specific effects using $\omega_{c,t}$.

Second, without a policy change, the outcomes for mortgagors in the treatment and control groups would have evolved according to parallel trends. I investigate the parallel trends assumption by estimating a dynamic specification as in Equation 2 to analyze the log earnings for the treatment and control groups before the policy.

$$y_{i,z,h,t} = \sum_{\substack{k=Sep'20 \\ k \neq Aug'21}}^{Apr'23} \beta_k \times Treated_{i,z,h} \times D_k + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t} \tag{2}$$

where D_k is an indicator that equals one for observations corresponding to individual i when the observation belongs to month k. All other variables are the same as defined earlier. The omitted baseline period is August 2021. An added advantage of the dynamic specification is that it allows us to evaluate the evolution of the treatment effect after the policy.

Another assumption is the stability of the treatment and the control unit over time. The stability assumption is mechanically satisfied in my setting due to the institutional feature of the policy. The policy was announced in June 2021 and fixed eligibility based on delinquency status as of March 2020, i.e., approximately a year before. Therefore, the policy design makes eligibility an immutable characteristic and ensures the stability of my treatment and control units over time.

5 Results

This section presents the results of the effect of foreclosure delays under the CFPB policy on labor earnings and job mobility.

5.1 First-Stage Relevance of the Policy

I begin my analysis by evaluating the first-stage relevance of the policy. The treatment group, which experienced up to four additional months of foreclosure delays, experienced a smaller likelihood of foreclosure filing when the policy was effective vis-a-vis the control group. Panel a of Figure 4 plots the time series distribution of the cumulative share of foreclosure filings in my sample for the treated and control loans separately. During the policy's effective period, between September 2021 and December 2021, there was a notable difference in foreclosure filing activity between the treated and control groups. The cumulative share of foreclosures increased at a steeper rate for the control group compared to the treated group, indicating that the policy slowed down foreclosure filings for the treated mortgages relative to the control group. However, following the expiry of the policy, foreclosure filings for the treated loans started to catch up. Note that the eventual foreclosures/repossession did not fully catch up for the treated group relative to the control group, as shown in parallel trends observed between the two groups in Panel b of Figure 4.

The estimates of the dynamic treatment coefficients are shown in panel a Figure 5. Consistent with the time series plots, the Figure 5 shows a decline in the likelihood of foreclosure filing by up to 3 percent, representing a nearly 52 percent decrease relative to the average probability of foreclosure filing in the sample, i.e., 5.6%. This reduction in foreclosure filing likelihood is statistically and economically significant, indicating meaningful compliance with the policy guidelines.

5.2 Second Stage: Effect of the CFPB Policy on Labor Earnings

This section examines the effect of foreclosure delays on labor earnings under the amended CFPB rule. I estimate the differential change in earnings between the treated and control

groups of mortgagors around policy implementation following different combinations of the empirical specification in Equation 1. The findings are summarized in Table 3 where column (1) is the least saturated specification with only individual and month fixed effects. The difference-in-differences estimator shows that treated individuals, on average, experienced between 2.5 percentage points (pp) growth in annual earnings following a four-month delay in foreclosure filing. Measured in dollar terms, this growth corresponds to an average increase in annual earnings of $1,600, as indicated in column (1) Panel B. [10] I gradually saturate the model by including additional fixed effects in columns (2) through (4). For example, in column (2), I add zip x month fixed effects where the zip is the zip code of residence of the mortgagors before treatment and captures any changes in local economic conditions over time. Column (3) further controls for industry-specific differences varying over time using industry-by-month fixed effects. Finally, wage quartiles x month and credit score quartiles by month fixed effects in column (4) allow comparing individuals with similar income and credit quality. Finally column (5) includes non paramteric controls for loan size and loan term in the form of loan and term deciles interacted with month to control for any pre-existing differences betwen treated and control group based on these attributes as indicated in Table 2. My estimates for the treatment effect are robust across these different specifications, suggesting that differences across the treatment and control groups are less likely to be systematically correlated with the treatment and labor earnings.

Figure 6 shows the coefficients β_k from Equation 2, which capture the differential response of labor earnings for treated mortgagors relative to the control ones in the months around CFPB policy, along with the 95% confidence intervals. While there are no significant pre-trends in income before treatment, there is a notable increase in income for the treated group in the subsequent months. This increase becomes particularly evident from February 2022 onwards. It persists, resulting in the treated group experiencing income levels that are approximately 5 percent or equivalently up to $3,000 higher than the control group one year after the implementation of the policy. The rationale behind the lagged response is discussed in section subsection 6.1.

[10] Figure B2 illustrates the evolution of income for both treated and control individuals during the period surrounding the policy implementation. The raw plot suggests that the relative increase in income is not a result of income decline in the control group; instead, it stems from the treated group experiencing a relative income increase compared to the control group.

5.2.1 Robustness

This section examines several potential concerns related to the robustness of the findings presented in Table 3 and Figure 6.

Sample Attrition: My sample consists of individuals who seek employment within firms that subscribe to the verification services of the data provider. This creates two potential issues. First, there could be a selection of who gets hired within this set of employers that can bias my findings. Furthermore, if the control individuals are more likely to transition to employers outside of my data coverage following treatment, my interpretation of the relative increase in earnings may be misleading. I address these issues by examining dropout rates from my sample across the treated and control mortgagors. Specifically, I re-estimate Equation 1, replacing the outcome variable with an indicator called *Inactive*, which is coded as 1 if an individual is not actively employed at time period t and 0 otherwise. As summarized in Table B4, the treated individuals do not exhibit any differential likelihood of sample attrition relative to the control group in the months following policy implementation.

Falsification Test: Differences between the treated and control group of loans other than foreclosure delays induced by the CFPB policy could be driving my results. To alleviate this concern, I exploit variation between treated and control within loans for which the policy did not bind. These include mortgages that met the eligibility criteria but were either already in some stage of foreclosure before the policy or had recovered from delinquency as of August 2021, i.e., the month prior to policy implementation. If my relative income increase was explained by factors other than foreclosure delays, then we should expect to see differential income for the treated relative to the control following policy within the group of non-binding loans. First, I confirm the absence of any first-stage effects of the policy in terms of differential likelihood of foreclosure filing within the non-binding group of loans as shown in Figure B3. Then, I re-estimate Equation 1 for the non-binding group of loans. Table B5 shows that the treatment effect is both statistically and economically insignificant. The corresponding dynamic treatment effects are shown in Figure B4. I also estimate a triple difference-in-differences (DiD) specification as in Equation A2, where the coefficient of the triple interaction measures the differential treatment effect for the binding loans relative to the non-binding loans. This coefficient shown in Table B6 resembles my baseline treatment effect. Taken together, these results provide direct evidence for the assumption that the

treatment and control groups would have evolved according to the parallel trends in the absence of the policy.

Confounding Effects due to forbearance or modification: Mortgages within my dataset may not have undergone foreclosure proceedings as of August 2021, as they could have been subject to a forbearance arrangement. Given that forbearance temporarily suspends mortgage payments, it's plausible that those subject to this treatment experienced a relative increase in their income due to the liquidity provided by forbearance, rather than as a result of foreclosure delays. However, it's worth noting that as of August 2021, less than 2% of individuals in my sample were enrolled in a forbearance plan, primarily because most federal protections that offered forbearance had expired in July 2021, predating the CFPB policy. Importantly, my baseline estimates remain robust even when excluding loans that were under forbearance as of August 2021, as demonstrated in Table B7. Similarly, loans in my sample may have been subject to modification in the form of payment or principal reductions. To the extent that individuals could have utilised the resulting liquidity towards enhancing labor outcomes, this may confound my estimates. My baseline estimates are robust to the exclusion of these loans as well as depicted in Table B8.

Other: Table B9 shows that my estimates are robust to alternate choices of stand error clustering, for e.g., cluster standard errors at the individual and zip code level respectively. My estimates are also robust to alternate specifications of the dependent variable. I use normalized labor income as the dependent variable where I divide monthly income by the average monthly earnings from September 2020 to April 2023. The results are presented in Table B10.

6 Mechanism

In this section, I explore the mechanisms of how foreclosure delays lead to higher earnings. I start by examining the job search channel and show that foreclosure delays increase job mobility and transition from unemployment to employment and positively alter the nature of job match. Next, I investigate temporary liquidity and additional time period of housing stability as a potential pathways in facilitating higher earnings. I consider some alternative mechanisms to explain my findings in Appendix Appendix C.

6.1 Sources of Increase in Labor Earnings

There are three potential sources of increase in labor income: 1) individuals may experience increase in income in their current employment attributable to enhancements in labor productivity; or foreclosure delays may facilitate 2) job-to-job transitions and 3) transition from unemployment to employment. I explore each of these possibilities in detail.

Within Employer Changes: The higher earnings could stem from changes in income within the same employer, possibly due to improvements in labor productivity subsequent to foreclosure delays. I isolate within employer changes in earnings by replacing individual fixed effects by employer interacted with individual fixed effects in my baseline specification Equation 1. The treatment effect here is identified from variation in earnings for individuals who are employed with the same firm as their pre-policy employment for atleast some time during the months following the CFPB policy. Column (5) in Table 3 shows that with the inclusion of employer x individual fixed effects, the treatment effect is no longer statistically different than zero. Within firm, changes explain little variation in labor earnings following CFPB policy.

Job Mobility: The delayed reaction of labor earnings, as illustrated in Figure 6, suggests job-mobility to a potential reasons behind the relative earnings increase. This delay may be linked to the time required for job searches. I investigate the possibility of job mobility by examining two proxies, namely, the likelihood to change employer and the likelihood to change employment zip code respectively. In Panel A of Table 4, I present the effects of foreclosure delays on the likelihood of changing job. This variable is coded as 100 if individuals change their job from the month before and 0 otherwise. I find that individuals who are subject to foreclosure delays under the policy are 0.31 percentage points more likely to change their employment. In terms of economic magnitude, this represents a 18% increase relative to the mean likelihood of switching job in my sample for employed (1.772%). Similarly, Panel B shows the changes in the likelihood of changing employment zip code. This variable is coded as 100 if an individual works in a different employment zip code relative to their employment in the previous month. I find consistent evidence of increasing job mobility along this dimension as well. Moreover, when individuals undergo a change in employment, those subjected to delays, conditional upon making the switch, take 6% more time or 0.58 months longer—a proxy for extended job search duration.

Unemployment to Employment: I re-estimate the income effects for the sub-group of individuals who were unemployed as of August 2021 and compare the magnitudes to those who had a job as of this date. As shown in Columns (1)-(2) of Table 5, the relative earnings increase for treated individuals following foreclosure delays is 8.7%. Note that the wage change is relative to the earnings in the pre-unemployment job. This increase is larger is compared to the earnings increase for those employed. Furthermore, considering unemployment duration as a proxy for search duration, I find that treated individuals have a greater unemployment duration i.e., between 0.37-1.61 months or 4-19% relative to the control group, depending on how long these individuals had been in unemployment.

Nature of Job Transition: I analyze the impact of foreclosure delays resulting from the CFPB policy on various components of gross income. Specifically, for hourly wage workers, I observe both their hourly wage rate and the number of hours worked. The findings, presented in Table 6, reveal several noteworthy outcomes. Treated individuals experience a 1.7% increase in their hourly wage rate (column (6)), and there is a positive and significant effect on hours worked (column (5)). Additionally, there is a 0.182% rise in the share of commission as a fraction of total compensation, representing a 25% increase relative to the average commission share. Moreover, individuals subject to the treatment exhibit longer tenure following foreclosure delays, a higher likelihood of working in full-time positions, and a reduced likelihood of holding multiple jobs. Considering that individuals with more than one job tend to earn less on average, as indicated in Table B11, these findings suggest that foreclosure delays enable individuals to transition to more stable employment. Overall, as there is insufficient variation in earnings from non-movers, as illustrated in subsection 6.1, these results signify long-term effects of foreclosure delays on the quality of job matches.

6.2 Temporary Liquidity and Extended Period of Housing Stability

In the context of imperfect credit markets, the financial expenses linked to job search, coupled with search-and-matching frictions in labor markets, render job-seeking a costly and time-consuming endeavor. Consequently, the supplementary liquidity stemming from delayed foreclosure may serve as a form of self-insurance and bolster individuals' capacity

to cover the costs associated with job search. Moreover, beyond the aspect of liquidity, the heightened housing and financial stability arising from an extended stay in the residence and the mitigation of the prolonged foreclosure process may independently empower individuals to devote more time to job search activities. This, in turn, holds the potential for a substantial improvement in their income. Empirically differentiating between these two channels poses a challenge. Consequently, I discuss evidence consistent with both these channels.

I begin by presenting evidence supporting the notion of temporary liquidity creation resulting from foreclosure delays. These delays afford borrowers the opportunity to reside in their homes on partial or no mortgage payments, shielding them from the immediate threat of foreclosure or eviction. This implicit line of credit, extending from the lender to the borrower, generates temporary liquidity. Essentially, it enables individuals to bolster their current liquid asset position by borrowing against future payments. In my sample, borrowers granted foreclosure delays exhibit a 7% higher likelihood of skipping mortgage payments without facing foreclosure during the four months when the CFPB rule was effective relative to those exempt from the policy. This, coupled with the observation that the relative likelihood of defaulting on non-mortgage and mortgage debt in the subsequent months following the policy is lower, aligns with the consumption smoothing motive of default documented in Baker and Yannelis (2015) and Gelman et al. (2015) and is consistent with the limited roles for strategic default found in Guiso et al. (2013).

Subsequently, considering that individuals with ex-ante liquidity constraints stand to gain the most from additional liquidity, I investigate heterogeneity in my baseline results by employing various proxies to assess the pre-policy liquidity constraints. The summarized findings are presented in Table 7. I observe that the relative increase in labor earnings is more pronounced among individuals with above-median credit utilization (Column (1)), above-median mortgage payments as a fraction of their monthly income (Column (3)), above-median debt-to-income ratio (DTI) (Column (5)), and a credit score lower than 620 (Column (7)). [11]

[11] I present supplementary evidence. If larger mortgage payments result in more significant temporary savings from missing them, liquidity creation should be more pronounced for individuals with higher ex-ante monthly mortgage payments. In line with this, I observe a larger relative increase in income for individuals with above-median monthly mortgage payments (refer to Table B12) and for the subgroup of individuals who missed mortgage payments during the four-month effective policy period (see Table B13). Given that missing mortgage payments is an endogenous decision, this finding is suggestive and must be interpreted with limitations.

Furthermore, recognizing that additional liquidity could be particularly crucial for individuals navigating greater labor market frictions, I conduct an analysis to investigate this aspect. Specifically, I explore heterogeneity based on ex-ante labor market tightness. To measure this, I utilize vacancy and separations statistics from the Bureau of Labor Statistics (BLS) and construct an industry-level measure of tightness. I divide my sample based on median level of tightness, with below (above) median group referred "Slack" ("Tight") respectively. The results are summarized in Table 8. Columns (1) - (2) indicate that the relative increase in income is more pronounced among individuals working in industries with slack labor market conditions compared to those in tight markets. Moreover, in columns (3) - (6), I narrow down the analysis to borrowers facing ex-ante slack conditions and observe that the effects are concentrated among the liquidity-constrained subgroup of individuals, across various proxies for liquidity such as debt-to-income and credit utilization. Furthermore, considering that the unemployed face more frictions than the employed, implying a relatively lower job offer arrival rate, I hypothesize that the income effects should be more substantial for the unemployed compared to the employed. As already discussed, the evidence in Table 5 is consistent with this hypothesis.

Additionally, if income increase is due to extended period of housing security, the grace time from foreclosure delays should be marginally more valuable for borrowers in power-of-sale states. In these states, foreclosure completion timelines are shorter due to the absence of judicial intervention. I test heterogeneity in my baseline findings across judicial and power-of-sale states. The results in Table 9 support this conjecture. Additionally, I stratify the sample based on ex-ante home equity and cross-state variation in creditor laws such as recourse debt, no debt collection and wage garnishment restrictions. [12] As depicted in Table 10, I find that the relative increase in earnings is more substantial in the subgroup of high LTV borrowers in states with pro-creditor laws compared to the other extreme of low LTV borrowers in states with borrower-friendly laws, supporting my hypothesis.

[12] Recourse mortgages provide lenders with legal recourse to pursue additional actions, such as wage garnishments or levying the borrower's bank account, to recover outstanding amounts even after collateral has been seized and the home has been sold. Similarly, states vary in laws affecting the ability of third-party debt collectors to recover delinquent debts. I utilize the index of state debt collection restrictions from Fedaseyeu (2020) to measure the extent of restrictions on debt collectors, where a lower value of this index indicates fewer restrictions. Finally, following Lefgren and McIntyre (2009) and Kalda (2020b), I classify borrowers in my sample based on whether they reside in states with severe, medium and no restrictions on wage garnishment, that is, states that impose different caps to wage garnishment, potentially lower than the 25% of disposable income that is the federal maximum.

7 Discussion

My research uncovers the positive impact of foreclosure delays on labor earnings. However, when contemplating policy proposals aimed at providing debt relief, a common concern is the perception of these policies as transfers from lenders to borrowers. Foreclosure delays come with various associated costs. These costs encompass direct expenses, such as penalties imposed on servicers by entities like GSEs and FHA (Goodman (2016)). When borrowers fail to make their monthly payments, servicers are also obligated to cover property taxes and hazard insurance premiums. Additionally, they may encounter liquidity challenges as they continue to advance principal and interest payments to investors for delinquent loans, a process that only ceases with the official commencement of the foreclosure process and is recoverable only at the end of liquidation (Cordell et al. (2015)). Indirect costs also come into play, including housing market inefficiencies and the potential for lenders to miss out on housing returns, especially in a thriving market (Calomiris and Higgins (2011)). These costs can become particularly significant if these borrowers remain at risk of financial difficulties in the future. Indeed, the advantages of assisting financially distressed borrowers may diminish if there is an expectation that these individuals will continue to be prone to delinquency and financial irresponsibility.

Nonetheless, my analysis demonstrates that foreclosure delays in the form of foreclosure filing extensions mandated by the CFPB policy provide borrowers with the opportunity to address the root causes of financial distress i.e., additional time and resources to increase their earnings, yielding long-term benefits. As seen in both Panel (a) and Panel (b) of Figure 7, there is a sustained reduction in the likelihood of default on mortgage and non-mortgage debt over a year following the implementation of the CFPB policy. Moreover, the relative likelihood of foreclosure also decreases significantly after the CFPB policy, as depicted in Panel (b) of Figure 5. It's important to note that the decline in mortgage defaults may be partially attributed to an increased rate of mortgage modifications, in addition to the improved financial position of borrowers. However, as revealed in Table B14, the increase in the probability of mortgage modifications in the post-policy period, while statistically significant, demonstrates limited economic significance compared to the mean modifications within the sample. These findings imply that the observed economic recovery, characterized by decreased delinquencies and actual foreclosures, can be attributed to the fundamental

resolution of borrower distress, primarily driven by a relative increase in labor earnings. To the extent that prior research that examines in-foreclosure delays from judicial review fails to find positive effects, my research underscores that foreclosure delays if introduced during the early stages of the foreclosure process may be a crucial dimension to consider when assessing the merits of foreclosure delays. Nevertheless, while I document long-term benefits from foreclosure delays, further analysis is needed to assess whether these benefits can outweigh the costs. This provides a direction for future research.

Finally, there could be concerns regarding the external validity of my findings. The introduction of foreclosure delays through the CFPB policy coincided with a period of economic recovery following the pandemic, marked by tight labor markets. These concurrent factors may have amplified the income and employment responses I observe. While the extent of the observed effect may fluctuate in a different time period, the economic mechanisms I've described are likely to persist, suggesting that the link between foreclosure delays and income remains relevant.

8 Conclusion

In this paper, I provide empirical evidence on the significant real effects of temporary foreclosure delays on borrowers' income and labor market dynamics. By taking advantage of the June 2021 CFPB amendment to the foreclosure initiation process as a source of exogenous variation to delays in foreclosure filings, my analysis reveals a substantial increase in labor earnings for borrowers eligible for up to four months of foreclosure delays. I document the role of job mobility in achieving earnings increase. I find evidence consistent with the results being driven by temporary liquidity and additional period of housing security. Finally, I provide evidence for a persistent decline in the default and foreclosure likelihood. Overall, I present novel evidence showing that delays can foster sustained economic recovery through local labor markets, allowing borrowers to re-evaluate their employment decisions and address the root causes of their financial distress. These results are particularly important in light of the debate surrounding the effectiveness of foreclosure prevention policies. My results underscore the potential for foreclosure policies that offer borrowers more time to address their financial distress to not only benefit individual homeowners but also to contribute to

economic stability.

References

Acemoglu, Daron, and Robert Shimer, 2000, Productivity gains from unemployment insurance, *European economic review* 44, 1195–1224.

Agarwal, Sumit, Gene Amromin, Itzhak Ben-David, Souphala Chomsisengphet, Tomasz Piskorski, and Amit Seru, 2017, Policy intervention in debt renegotiation: Evidence from the home affordable modification program, *Journal of Political Economy* 125, 654–712.

Akerlof, George A, Andrew K Rose, Janet L Yellen, Laurence Ball, and Robert E Hall, 1988, Job switching and job satisfaction in the us labor market, *Brookings papers on economic activity* 1988, 495–594.

Allen, Linda, Stavros Peristiani, and Yi Tang, 2015, Bank delays in the resolution of delinquent mortgages: the problem of limbo loans, *Journal of Real Estate Research* 37, 65–116.

Alley, Dawn E, Jennifer Lloyd, José A Pagán, Craig E Pollack, Michelle Shardell, and Carolyn Cannuscio, 2011, Mortgage delinquency and changes in access to health resources and depressive symptoms in a nationally representative cohort of americans older than 50 years, *American journal of public health* 101, 2293–2298.

Auclert, Adrien, Will S Dobbie, and Paul Goldsmith-Pinkham, 2019, Macroeconomic effects of debt relief: Consumer bankruptcy protections in the great recession, Technical report, National Bureau of Economic Research.

Aydin, Deniz, 2021, Forbearance, interest rates, and present-value effects in a randomized debt relief experiment, *Available at SSRN 3982587* .

Baker, SR, and C Yannelis, 2015, Income changes and consumption: Evidence from the 2013 federal government shutdown. ssrn scholarly paper id 2575461, *Social Science Research Network, Rochester, NY* .

Bernal-Solano, Mariola, Julia Bolívar-Muñoz, Inmaculada Mateo-Rodríguez, Humbelina Robles-Ortega, Maria Del Carmen Fernández-Santaella, José Luís Mata-Martín, Jaime

Vila-Castellar, and Antonio Daponte-Codina, 2019, Associations between home foreclosure and health outcomes in a spanish city, *International journal of environmental research and public health* 16, 981.

Braxton, J Carter, Kyle F Herkenhoff, and Gordon M Phillips, 2020, Can the unemployed borrow? implications for public insurance, Technical report, National Bureau of Economic Research.

Calem, Paul S, Julapa Jagtiani, and William W Lang, 2017, Foreclosure delay and consumer credit performance, *Journal of Financial Services Research* 52, 225–251.

Calomiris, Charles, and Eric Higgins, 2011, Are delays to the foreclosure process a good thing?, *Policy Briefing, Shadow Open Market Committee* .

Calomiris, Charles W, Stanley D Longhofer, and William Miles, 2008, The foreclosure-house price nexus: lessons from the 2007-2008 housing turmoil, Technical report, National Bureau of Economic Research.

Campbell, John Y, Stefano Giglio, and Parag Pathak, 2011, Forced sales and house prices, *American Economic Review* 101, 2108–2131.

Cespedes, Jacelly C, Carlos R Parra, and Clemens Sialm, 2021, The effect of principal reduction on household distress: Evidence from mortgage cramdown, Technical report, National Bureau of Economic Research.

Chan, Sewin, Andrew Haughwout, Andrew Hayashi, and Wilbert Van der Klaauw, 2016, Determinants of mortgage default and consumer credit use: the effects of foreclosure laws and foreclosure delays, *Journal of Money, Credit and Banking* 48, 393–413.

Cherry, Susan F, Erica Xuewei Jiang, Gregor Matvos, Tomasz Piskorski, and Amit Seru, 2021, Government and private household debt relief during covid-19, Technical report, National Bureau of Economic Research.

Chetty, Raj, 2008, Moral hazard versus liquidity and optimal unemployment insurance, *Journal of political Economy* 116, 173–234.

Christensen, Bent Jesper, Rasmus Lentz, Dale T Mortensen, George R Neumann, and Axel Werwatz, 2005, On-the-job search and the wage distribution, *Journal of Labor Economics* 23, 31–58.

Clauretie, Terrence M, and Thomas Herzog, 1990, The effect of state foreclosure laws on loan losses: Evidence from the mortgage insurance industry, *Journal of Money, Credit and Banking* 22, 221–233.

Collins, J Michael, and Carly Urban, 2014, Mortgage moratoria, foreclosure delays, moral hazard and willingness to repay .

Collins, J Michael, and Carly Urban, 2018, The effects of a foreclosure moratorium on loan repayment behaviors, *Regional Science and Urban Economics* 68, 73–83.

Collinson, Robert, John Eric Humphries, Nicholas S Mader, Davin K Reed, Daniel I Tannenbaum, and Winnie Van Dijk, 2022, Eviction and poverty in american cities, Technical report, National Bureau of Economic Research.

Cordell, Larry, Liang Geng, Laurie S Goodman, and Lidan Yang, 2015, The cost of foreclosure delay, *Real Estate Economics* 43, 916–956.

Cordell, Larry, and Lauren Lambie-Hanson, 2016, A cost-benefit analysis of judicial foreclosure delay and a preliminary look at new mortgage servicing rules, *Journal of Economics and Business* 84, 30–49.

Cubas, German, and Pedro Silos, 2020, Social insurance and occupational mobility, *International Economic Review* 61, 219–240.

Currie, Janet, and Erdal Tekin, 2011, *Is the foreclosure crisis making us sick?* (National Bureau of Economic Research Cambridge, MA).

Curtis, Quinn, 2014, State foreclosure laws and mortgage origination in the subprime, *The Journal of Real Estate Finance and Economics* 49, 303–328.

Dagher, Jihad, and Yangfan Sun, 2016, Borrower protection and the supply of credit: Evidence from foreclosure laws, *Journal of Financial Economics* 121, 195–209.

Desmond, Matthew, 2012, Eviction and the reproduction of urban poverty, *American journal of sociology* 118, 88–133.

Desmond, Matthew, and Carl Gershenson, 2016, Housing and employment insecurity among the working poor, *Social problems* 63, 46–67.

Desmond, Matthew, and Tracey Shollenberger, 2015, Forced displacement from rental housing: Prevalence and neighborhood consequences, *Demography* 52, 1751–1772.

Di Maggio, Marco, Ankit Kalda, and Vincent Yao, 2019, Second chance: Life without student debt, Technical report, National Bureau of Economic Research.

Diamond, Peter A, 1981, Mobility costs, frictional unemployment, and efficiency, *Journal of political Economy* 89, 798–812.

Diamond, Rebecca, Adam Guren, and Rose Tan, 2020, The effect of foreclosures on homeowners, tenants, and landlords, Technical report, National Bureau of Economic Research.

Dinerstein, Michael, Constantine Yannelis, and Ching-Tse Chen, 2023, Debt moratoria: Evidence from student loan forbearance, Technical report, National Bureau of Economic Research.

Dobbie, Will, Paul Goldsmith-Pinkham, and Crystal S Yang, 2017, Consumer bankruptcy and financial health, *Review of Economics and Statistics* 99, 853–869.

Dobbie, Will, and Jae Song, 2015, Debt relief and debtor outcomes: Measuring the effects of consumer bankruptcy protection, *American economic review* 105, 1272–1311.

Fedaseyeu, Viktar, 2020, Debt collection agencies and the supply of consumer credit, *Journal of Financial Economics* 138, 193–221.

Fiorin, Stefano, Joseph Hall, and Martin Kanz, 2023, How do borrowers respond to a debt moratorium?, *Development Research* .

Gabriel, Stuart, Matteo Iacoviello, and Chandler Lutz, 2021, A crisis of missed opportunities? foreclosure costs and mortgage modification during the great recession, *The Review of Financial Studies* 34, 864–906.

Ganong, Peter, and Pascal Noel, 2020, Liquidity versus wealth in household debt obligations: Evidence from housing policy in the great recession, *American Economic Review* 110, 3100–3138.

Gelman, Michael, Shachar Kariv, Matthew D Shapiro, Dan Silverman, and Steven Tadelis, 2015, *How individuals smooth spending: Evidence from the 2013 government shutdown using account data*, number w21025 (National Bureau of Economic Research Cambridge, MA).

Gerardi, Kristopher, Lauren Lambie-Hanson, and Paul S Willen, 2013, Do borrower rights improve borrower outcomes? evidence from the foreclosure process, *Journal of Urban Economics* 73, 1–17.

Gerardi, Kristopher, Eric Rosenblatt, Paul S Willen, and Vincent Yao, 2015, Foreclosure externalities: New evidence, *Journal of Urban Economics* 87, 42–56.

Ghent, Andra C, and Marianna Kudlyak, 2011, Recourse and residential mortgage default: evidence from us states, *The Review of Financial Studies* 24, 3139–3186.

Goodman, Laurie, 2016, Servicing costs and the rise of the squeaky-clean loan .

Gopalan, Radhakrishnan, Barton H Hamilton, Ankit Kalda, and David Sovich, 2021, State minimum wages, employment, and wage spillovers: Evidence from administrative payroll data, *Journal of Labor Economics* 39, 673–707.

Gregor, Jarosch, 2015, Searching for job security and the consequences of job loss, Technical report, Working Paper. 2015 [Google Scholar].

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, 2013, The determinants of attitudes toward strategic default on mortgages, *The Journal of Finance* 68, 1473–1515.

Gupta, Arpit, 2019, Foreclosure contagion and the neighborhood spillover effects of mortgage defaults, *The Journal of Finance* 74, 2249–2301.

Hawkins, William B, and Jose Mustre-del Rio, 2016, Financial frictions and occupational mobility, *Federal Reserve Bank of Kansas City Working Paper* .

Herkenhoff, Kyle, Gordon Phillips, and Ethan Cohen-Cole, 2016, How credit constraints impact job finding rates, sorting & aggregate output, Technical report, National Bureau of Economic Research.

Herkenhoff, Kyle F, and Lee E Ohanian, 2019, The impact of foreclosure delay on us employment, *Review of Economic Dynamics* 31, 63–83.

Houle, Jason N, 2014, Mental health in the foreclosure crisis, *Social science & medicine* 118, 1–8.

Jones, Lawrence D, 1993, Deficiency judgments and the exercise of the default option in home mortgage loans, *The Journal of Law and Economics* 36, 115–138.

Jung, Philip, and Moritz Kuhn, 2019, Earnings losses and labor mobility over the life cycle, *Journal of the European Economic Association* 17, 678–724.

Kalda, Ankit, 2020a, Peer financial distress and individual leverage, *The Review of Financial Studies* 33, 3348–3390.

Kalda, Ankit, 2020b, Peer financial distress and individual leverage, *The Review of Financial Studies* 33, 3348–3390.

Kim, Jiseob, 2019, How foreclosure delays impact mortgage defaults and mortgage modifications, *Journal of Macroeconomics* 59, 18–37.

Lefgren, Lars, and Frank McIntyre, 2009, Explaining the puzzle of cross-state differences in bankruptcy rates, *The Journal of Law and Economics* 52, 367–393.

Lourie, Ben, Alexander Nekrasov, and Il Sun Yoo, 2023, The impact of debt forbearance on borrowers' financial behavior and labor outcomes: Evidence from student loans, *Finance Research Letters* 57, 104265.

Maturana, Gonzalo, 2017, When are modifications of securitized loans beneficial to investors?, *The Review of Financial Studies* 30, 3824–3857.

Mayer, Christopher, Edward Morrison, Tomasz Piskorski, and Arpit Gupta, 2014, Mortgage modification and strategic behavior: Evidence from a legal settlement with countrywide, *American Economic Review* 104, 2830–2857.

Mian, Atif, Amir Sufi, and Francesco Trebbi, 2015, Foreclosures, house prices, and the real economy, *The Journal of Finance* 70, 2587–2634.

Mortensen, Dale T, 1977, Unemployment insurance and job search decisions, *ILR Review* 30, 505–517.

Mukherjee, Saptarshi, Krishnamurthy Subramanian, and Prasanna Tantri, 2018, Borrowers' distress and debt relief: Evidence from a natural experiment, *The Journal of Law and Economics* 61, 607–635.

O'Malley, Terry, 2021, The impact of repossession risk on mortgage default, *The Journal of Finance* 76, 623–650.

Osypuk, Theresa L, Cleopatra Howard Caldwell, Robert W Platt, and Dawn P Misra, 2012, The consequences of foreclosure for depressive symptomatology, *Annals of epidemiology* 22, 379–387.

Padi, Manisha, Helen Willis Banga, and Chen Meng, 2023, Mortgage servicing and household financial distress .

Pence, Karen M, 2006, Foreclosing on opportunity: State laws and mortgage credit, *Review of Economics and Statistics* 88, 177–182.

Pinheiro, Roberto, and Ludo Visschers, 2015, Unemployment risk and wage differentials, *Journal of Economic Theory* 157, 397–424.

Piskorski, Tomasz, and Amit Seru, 2021, Debt relief and slow recovery: A decade after lehman, *Journal of Financial Economics* 141, 1036–1059.

Pissarides, Christopher A, 1994, Search unemployment with on-the-job search, *The Review of Economic Studies* 61, 457–475.

Sandler, Ryan, 2023, Aligning incentives: The effect of mortgage servicing rules on foreclosures and delinquency, *Regional Science and Urban Economics* 102, 103922.

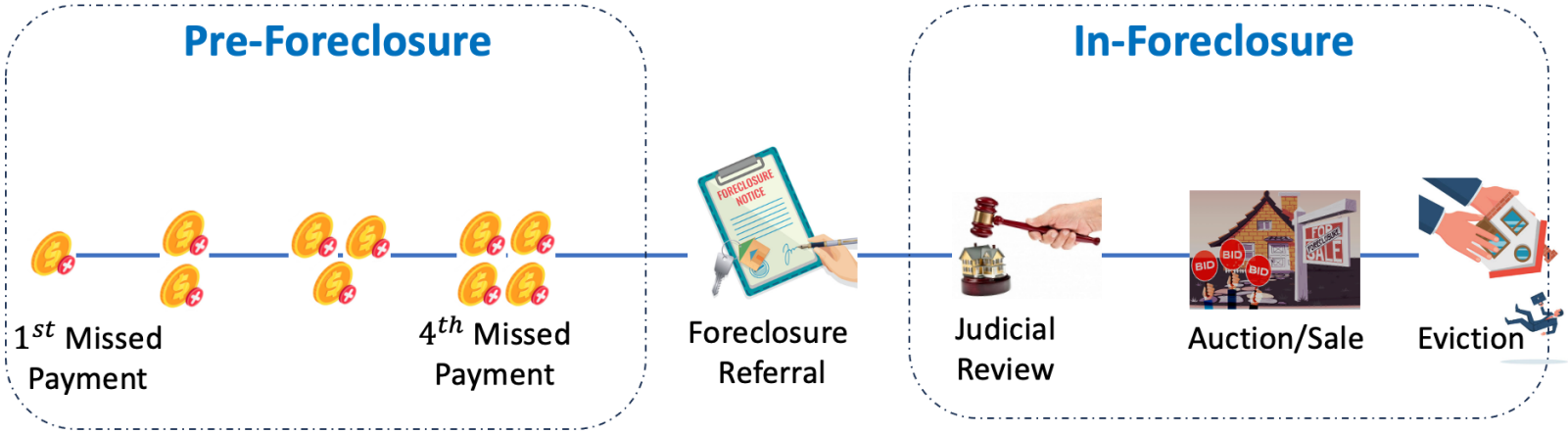
Sergeyev, Dmitriy, Chen Lian, and Yuriy Gorodnichenko, 2023, The economics of financial stress, Technical report, National Bureau of Economic Research.

Tsai, Alexander C, 2015, Home foreclosure, health, and mental health: a systematic review of individual, aggregate, and contextual associations, *PloS one* 10, e0123182.

Zhao, Daxuan, Yonglin Wang, and Tien Foo Sing, 2019, Impact of foreclosure laws on mortgage loan supply and performance, *The Journal of Real Estate Finance and Economics* 58, 159–200.

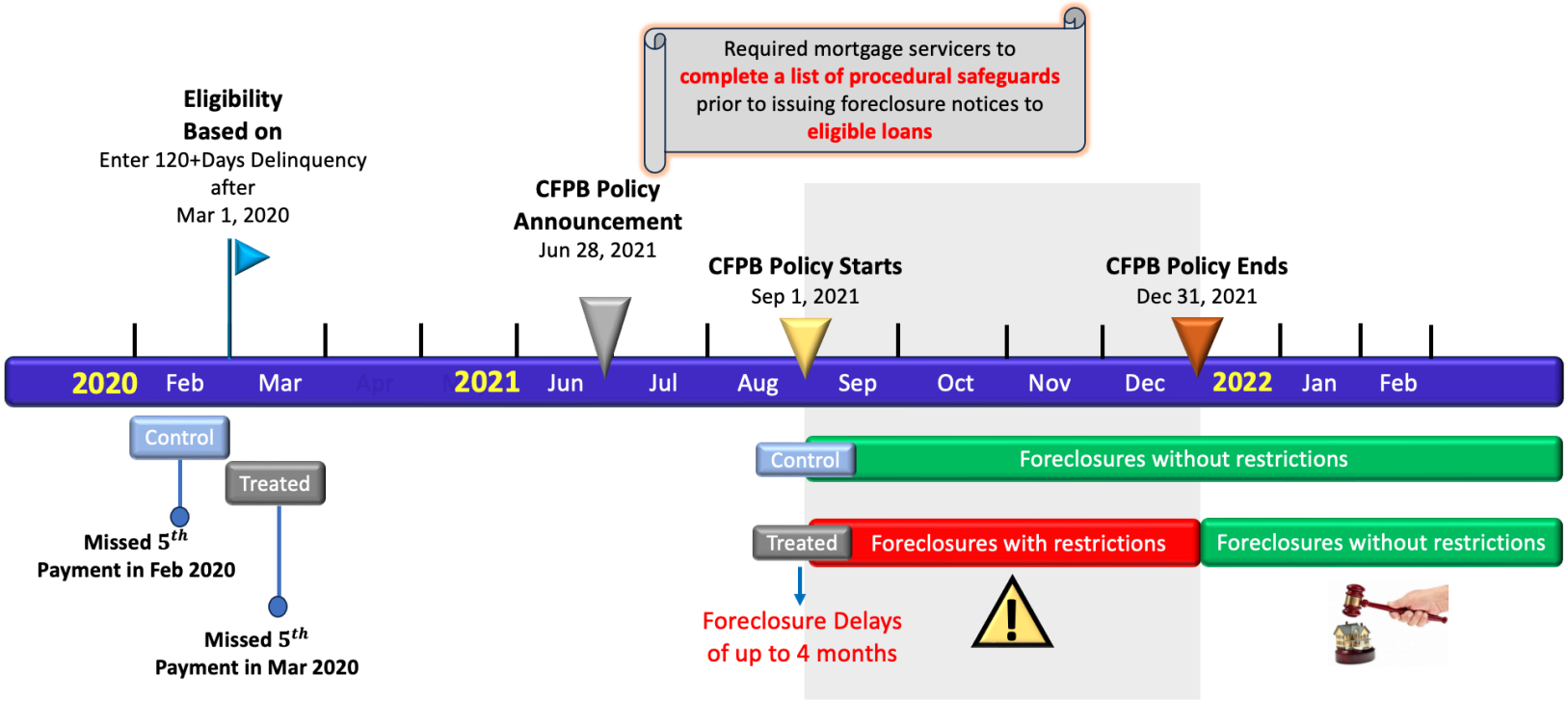
Zhu, Shuang, and R Kelley Pace, 2015, The influence of foreclosure delays on borrowers' default behavior, *Journal of Money, Credit and Banking* 47, 1205–1222.

Figure 1. Foreclosure Process



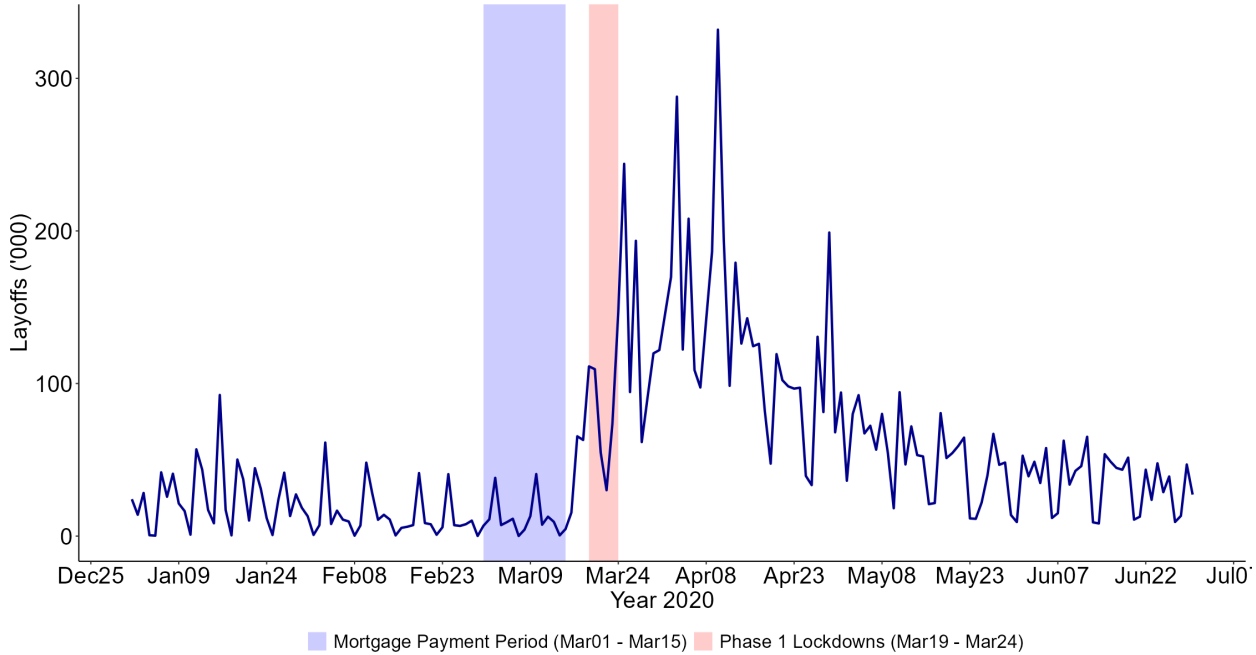
Notes: This diagram illustrates the key stages in the foreclosure process, which can be broadly categorized into two phases. The pre-foreclosure phase initiates with the first missed payment and concludes with foreclosure referral or filing. During this phase, the servicer is required to wait until 120 days have passed before they can legally initiate the foreclosure proceedings. On the other hand, the in-foreclosure phase begins with the foreclosure filing and concludes with the eviction of the homeowner. In states where judicial execution of foreclosures is required, there is a step for judicial review within the in-foreclosure proceedings. In contrast, in non-judicial or power-of-sale states, the servicer can proceed directly to the property sale stage without the need for judicial review.

Figure 2. Policy Timeline



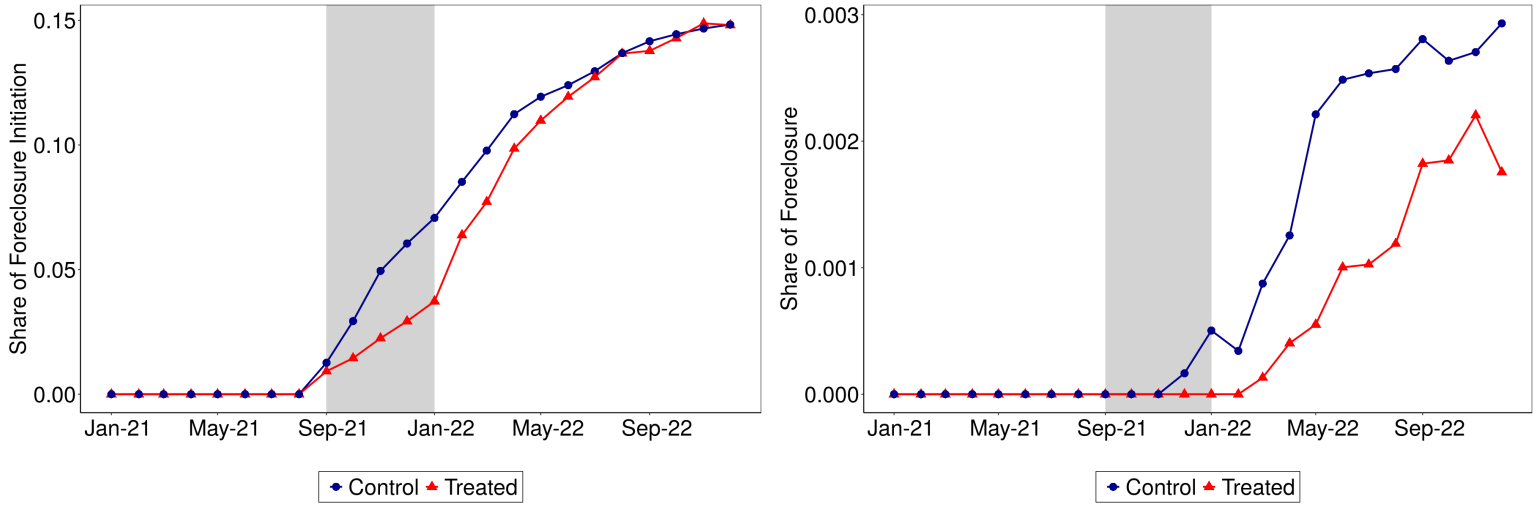
Notes: This diagram spresents a timeline of events related to the Consumer Financial Protection Bureau (CFPB) policy. The CFPB announced amendments to foreclosure proceedings on June 28, 2021. These changes were implemented and took effect between September and December 2021. Eligibility for these changes was determined based on the delinquency status of the mortgages as of March 1, 2020. The treated group in this context comprises mortgages that missed their fifth payment, meaning they transitioned from being 120 days past due to 120+ days past due in March 2020. In contrast, the control group includes mortgages for which this transition occurred in February 2020.

Figure 3. Time Series of Layoffs



Notes: This figure displays the time series of layoffs in 2020, utilizing daily separations data from Equifax Inc. The purple shaded area represents the days falling between March 1st and the 15^{th}. This period coincides with the typical due dates for mortgage payments, including the grace period allowed by servicers. The pink shaded region corresponds to the time span between March 19^{th} and the 24^{th}. This period marks the announcement of the first round of lockdowns in some states within the United States.

Figure 4. First Stage Relevance of Policy: Share of Foreclosure Referral and Foreclosure

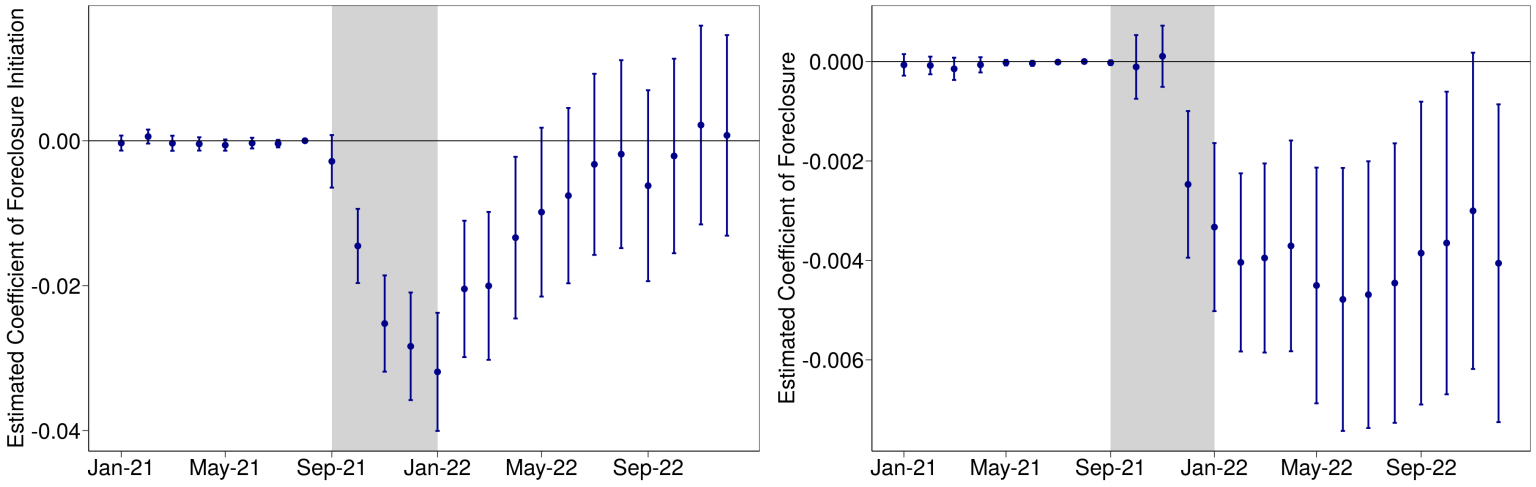


(a) Foreclosure Referral

(b) Foreclosure

Notes: The figure presents the evaluation of the first-stage relevance of the policy, showing the time series of cumulative share of foreclosure referrals in panel (a) and foreclosure in panel (b) between January 2021 and December 2022 for my sample. The red line denoted as '*Treated*' plots the trends for mortgages that entered 120+ days of delinquency in March 2020. The blue line plots the trends for the *control* group, i.e., mortgages that transitioned to 120+ days delinquency in February 2020.

Figure 5. First Stage Relevance of Policy: Effect of CFPB Policy on Foreclosure Referral and Foreclosures



(a) Foreclosure Referral

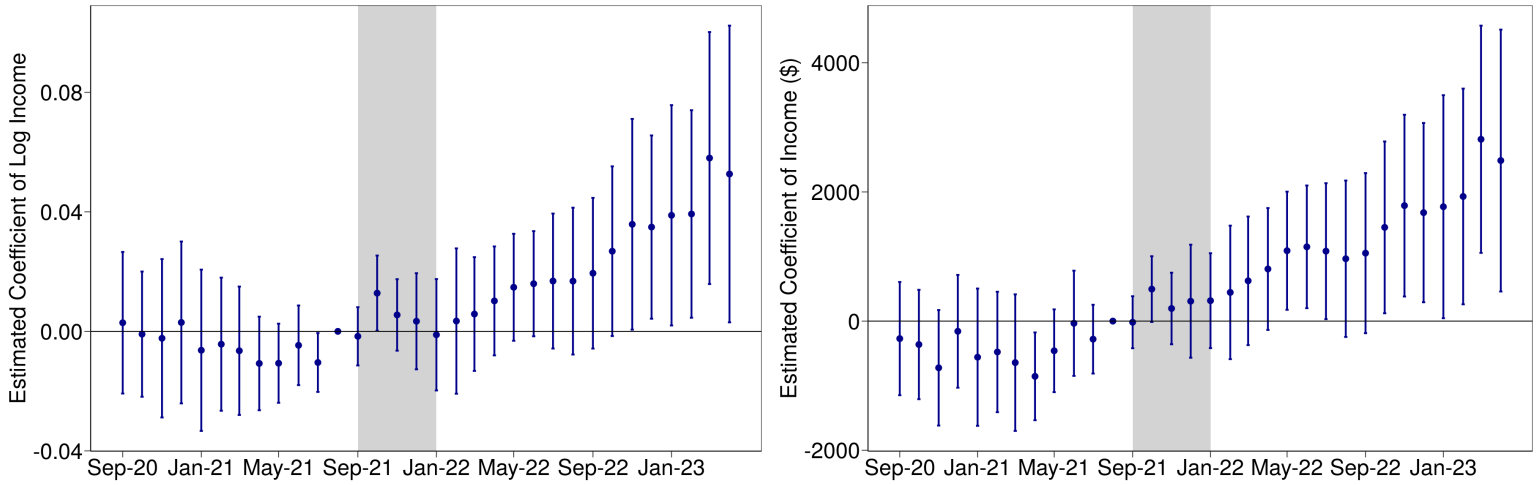
(b) Foreclosure

Notes: This figure plots the β_k coefficients along with the corresponding 95% confidence intervals from

$$y_{i,j,z,c,s,t} = \sum_{\substack{k=Jan'21 \\ k\neq Aug'21}}^{Dec'22} \beta_k \times Treated_{i,j,z,c,s} \times D_k \; + \theta_i + \gamma_{z,t} + \delta_{j,t} + \omega_{c,t} + \phi_{s,t} + \epsilon_{i,j,z,c,s,t}$$

which captures the differential change in the likelihood of foreclosure referrals (panel a) and foreclosures (panel b) in the months around the treatment between the treated and control group of mortgagors. y is an indicator variable coded as 1 if individual i's loan, serviced by lender j, originated in year-month c in zipcode z with credit score s contains a flag for foreclosure in calender month t and 0 otherwise. $Treated$ is a binary variable that takes a value of 1 if the individual's mortgage loan became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. θ_i denotes loan fixed effects, $\gamma_{z,t}$ and $\delta_{j,t}$ indicates zipcode x year-month and lender x year-month fixed effects respectively. $\omega_{c,t}$ refers to origination cohort specific effects and $\phi_{s,t}$ represents credit score quartiles-time effects. Score, lender, industry, and zip code in the fixed effects are measured in the period prior to treatment. The sample time period is between September 2020 to December 2022. Standard errors are robust to heteroskedasticity and are clustered at the loan level.

Figure 6. Dynamic Treatment Effects: Effect of CFPB Policy on Labor Income



(a) Log Income

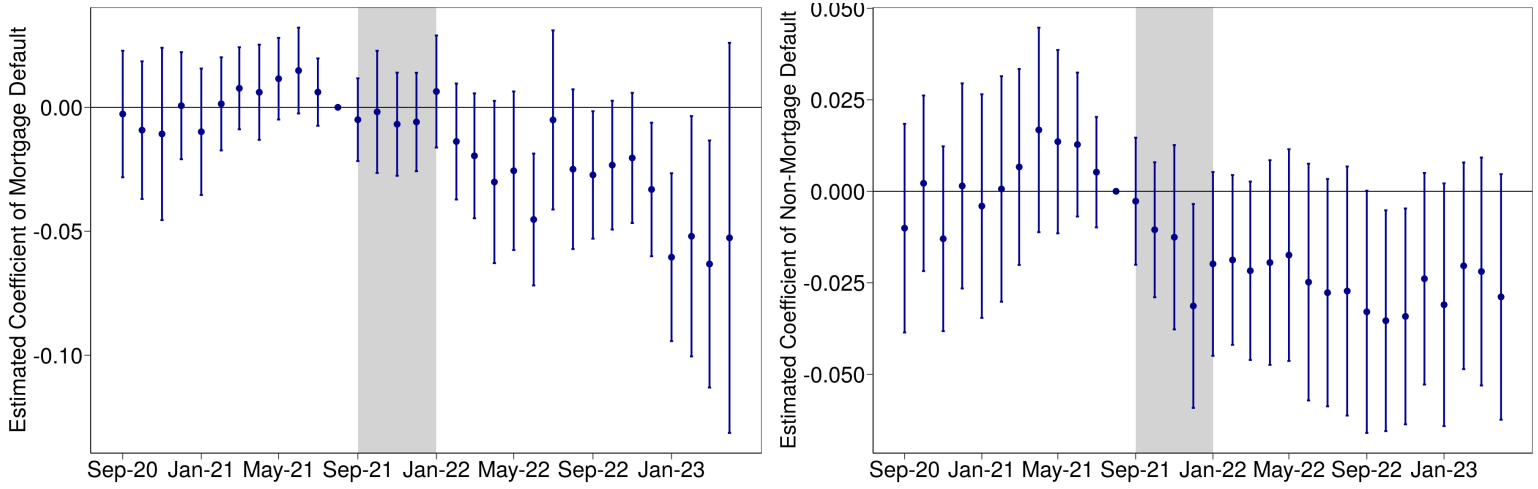
(b) Dollar Income

Notes: This figure plots the β_k coefficients along with the corresponding 95% confidence intervals from the following equation:

$$y_{i,z,h,t} = \sum_{\substack{k=Sep'20 \\ k \neq Aug'21}}^{Apr'23} \beta_k \times Treated_{i,z,h,t} \times D_k + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

which captures the differential change in log earnings in the months around the treatment between the treated and control group of mortgagors. $y_{i,z,h,t}$ represents log earnings or dollar earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. D_k is an indicator that equals one for observations corresponding to individual i when the observation belongs to month k. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects and $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured in the period prior to treatment. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level.

Figure 7. Dynamic Treatment Effects: Effect of CFPB Policy on Likelihood of Default



(a) Mortgage Default

(b) Non Mortgage Default

Notes: This figure plots the β_k coefficients along with the corresponding 95% confidence intervals from the following equation:

$$y_{i,z,h,t} = \sum_{\substack{k=Sep'20 \\ k \neq Aug'21}}^{Apr'23} \beta_k \times Treated_{i,z,h,t} \times D_k + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

which captures the differential change in the likelihood of default in the months around the treatment between the treated and control group of mortgagors. $y_{i,z,h,t}$ represents log earnings or dollar earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+DPD in March 2020 and 0 if the loan became 120+DPD in February 2020. D_k is an indicator that equals one for observations corresponding to individual i when the observation belongs to month k. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects and $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured in the period prior to treatment. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level.

Table 1: Descriptive Statistics

This table summarizes the main variables in my analysis. The sample period ranges from September 2020 to March 2023.

Statistic	N	Mean	St. Dev.	p25	Median	p75
Loan Amount ($)	164,000	179,074	139,986	89,250	151,304	235,653
Loan Term	164,000	363	114	360	360	360
Loan Balance ($)	164,000	154,014	141,977	53,968	129,459	217,734
Loan Payment ($)	164,000	840	1,423	0	336	1336
Credit Score	164,000	557	73	511	554	599
Credit Utilisation (%)	164,000	57.63	40.08	15.57	64.11	100
# of Credit Cards	164,000	4.5	6	0	3	7
Total Debt Payment ($)	164,000	1,191	1,677	0	801	1,820
Modification (%)	164,000	19.41	39.55	0	0	0
Term Modifications (%)	164,000	5.67	23.13	0	0	0
Balance Modifications (%)	164,000	5.62	23.03	0	0	0
Delinquency Non-Mortgage (%)	164,000	17	37.56	0	0	0
Annual Income ($)	164,000	61,815	37,009	35,206	54,575	81,376
% Commission	164,000	0.73	5.4	0	0	0
Hourly Wage ($)	109,077	24.52	12.36	16.50	21	28.93
Hours Worked	115,077	51.31	25.06	40	40	76
Change Employer (%)	164,000	2.245	14.81	0	0	0
Change Work-zip (%)	164,000	0.81	8.93	0	0	0
Imputed LTV	66,100	0.44	0.18	0.35	0.46	0.56

Table 2: Systematic Differences across Treatment and Control

This table compares the key metrics across treatment and control groups for my sample. *Treated* are the group of mortgagors whose loans became 120+days delinquent in March 2020 and *Control* are those whose loans became 120+days delinquent in February 2020. For comparison of the treatment and control groups I use the data for February 2020.

	Treated (1)	Control (2)	Difference (1) - (2)	t-stat (3)
Annual Earnings ($)	62,967	63,036	-69.17	-0.041
Commission Share (%)	0.654	0.806	-0.152	-0.991
Hourly wage ($)	23.623	23.431	0.192	0.488
Hours Worked	52.540	51.611	0.929	1.140
Change Employer (%)	1.429	1.487	-0.059	-0.176
Change Work Zip (%)	0.700	0.634	0.067	0.282
Credit Score	551	549	2	0.900
Debt-to-Income (DTI)	0.454	0.463	-0.009	-0.202
Origination Term	364	350	14***	4.807
Origination Amount ($)	182,795	164,181	18,614***	5.366

Table 3: Foreclosure Delays and Labor Income

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure initiation on individual labor earnings, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \eta_{w,t} + \phi_{s,t} + \alpha_{a,t} + \Gamma_{d,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings or dollar earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects, $\eta_{w,t}$ indicates wage quartile bins, credit score quartile bins-time effects are given by $\phi_{s,t}$, loan size and loan term interacted with month fixed effects are denoted as $\alpha_{a,t}$ and $\Gamma_{d,t}$ respectively. Zipcode, industry, wage bins and credit score are measured as of February 2020. Employer FE in column (6) corresponds to contemporaneous employer. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Panel A: Log Income					
	(1)	(2)	(3)	(4)	(5)	(6)
$Post^{Sep2021} \times Treated$	0.025**	0.023**	0.020**	0.021***	0.022***	-0.001
	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
N	164,000	164,000	164,000	163,610	149,392	164,000
R^2	0.850	0.871	0.874	0.875	0.880	0.954
	Panel B: Dollar Income					
	(1)	(2)	(3)	(4)	(5)	(6)
$Post^{Sep2021} \times Treated$	1,657.9***	1,515.9***	1,393.0***	1,398.0***	1,394.2***	337.9
	(458.4)	(426.8)	(422.7)	(413.8)	(404.6)	(345.1)
N	164,000	164,000	164,000	163,610	149,392	164,000
R^2	0.895	0.912	0.914	0.915	0.918	0.961
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	No	No	No	No	No
Zipcode × *Month FE*	No	Yes	Yes	Yes	Yes	Yes
Industry × *Month FE*	No	No	Yes	Yes	Yes	Yes
Wagebin × *Month FE*	No	No	No	Yes	Yes	No
Scorebin × *Month FE*	No	No	No	Yes	Yes	No
Origination Amount × *Month FE*	No	No	No	No	Yes	No
Origination Term × *Month FE*	No	No	No	No	Yes	No
Individual FE × *Employer FE*	No	No	No	No	No	Yes

Table 4: Foreclosure Delays and Job Mobility

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure initiation on the likelihood of switching job, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y represents an indicator coded as 100 if an individual i, residing in zipcode z employed in industry h in year-month t switches employer relative to $t-1$ in Panel A and changes employment zip code in Panel B respectively. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured prior to treatment. The sample time period is between September 2020 to April 2023. The sample consists of individuals emploed as of August 2021. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Panel A: Change Employer		
	(1)	(2)	(3)
$Post^{Sep2021} \times Treated$	0.306*	0.292**	0.268*
	(0.163)	(0.139)	(0.154)
N	135,105	135,105	135,105
R^2	0.085	0.264	0.274
	Panel B: Change Employment Zip code		
	(1)	(2)	(3)
$Post^{Sep2021} \times Treated$	0.218**	0.285***	0.231**
	(0.109)	(0.102)	(0.101)
N	135,105	135,105	135,105
R^2	0.061	0.238	0.266
Individual FE	Yes	Yes	Yes
Month FE	Yes	No	No
Zipcode $\times$ $Month\ FE$	No	Yes	Yes
Industry $\times$ $Month\ FE$	No	No	Yes

Table 5: Heterogeneity by Employment Status

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceeding on individual earnings by employment status as of August 2021, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h,t} \times Post_t + \theta_i + \gamma_{z,t} + \delta_{h,t} + \eta_{w,t} + \phi_{s,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings or dollar earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+DPD in March 2020 and 0 if the loan became 120+DPD in February 2020. $Post$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode, industry are measured prior to treatment. Columns (1)-(2) report the treatment effects for individuals employed as of August 2021; columns (3)-(4) corresponds to the sample of individuals with no active employment as of 2021 August (i.e., unemployed). The sample time period is between September 2020 to April 2023 and is restricted to loans not subject to foreclosure and reported as in default as of August 2021. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Unemployed		Employed	
	Log Income	Dollar Income	Log Income	Dollar Income
	(1)	(2)	(3)	(4)
$Post \times Treated$	0.087**	3431.7*	0.015*	1105.7**
	(0.039)	(1741.7)	(0.006)	(341.3)
N	28,895	28,895	135,105	135,105
R^2	0.867	0.914	0.958	0.967
Individual FE	Yes	Yes	Yes	Yes
Zipcode $\times$ $Month\ FE$	Yes	Yes	Yes	Yes
Industry $\times$ $Month\ FE$	Yes	Yes	Yes	Yes

Table 6: Foreclosure Delays and Job Match Quality

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure initiation on individual's variable compensation, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where $y_{i,z,h,t}$ measures for individual i residing in zipcode z employed in industry h in year-month t, hours worked in Column (1), log hourly wage in Column (2) and commission as a percentage of total compensation in Column (3). $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator variable equal to 1 for period September 2021 and after and 0 for the months before that. The coefficient β_{DD} represents the change in the outcome variable in the months around treatment conditional on θ_i i.e., individual fixed effects, $\gamma_{z,t}$ for zipcode x year-month fixed effects, $\delta_{h,t}$ indicating industry x year-month fixed effects. Columns (4)-(2) are restricted to hourly wage workers only. The sample time period is between September 2020 to April 2023. Reported standard errors in parentheses are heteroscedasticity-robust and clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	% of Commission	Log Tenure	Full-Time	$\#Jobs_{>1}$	Hours Worked	Log Hourly Wage
	(1)	(2)	(3)	(4)	(5)	(6)
$Post^{Sep2021} \times Treated$	0.182*	0.021**	0.024***	-0.011*	1.30***	0.017***
	(0.102)	(0.010)	(0.008)	(0.009)	(0.403)	(0.006)
N	164,000	164,000	164,000	164,000	109,093	115,077
R^2	0.829	0.838	0.796	0.681	0.801	0.768
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Zipcode $\times$ $Month\ FE$	Yes	Yes	Yes	Yes	Yes	Yes
Industry $\times$ $Month\ FE$	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: Heterogeneity by Liquidity Measures

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceeding on individual earnings by ex-ante liquidity, estimate on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where $y_{i,z,h,t}$ represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator variable equal to 1 for period September 2021 and after and 0 for the months before that. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects. Regression coefficients for sub-samples based on above (below) median credit utilisation are shown in Columns (1)-(2), median mortgage payments as a fraction of income, measured as of August 2021 in columns (3)-(4) and median debt-to-income ratio in columns (5)-(6). Finally columns (7)-(8) report coefficients by credit score below and above 620. The sample time period is between September 2020 to April 2023. Reported standard errors in parentheses are heteroscedasticity-robust and clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income							
	Credit Utilisation		Payment/Income		Debt/Income		Credit Score	
	Above Median	Below Median	Above Median	Below Median	Above Median	Below Median	<620	≥620
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Post^{Sep2021} \times Treated$	0.044***	0.004	0.024**	0.010	0.021**	0.005	0.020**	-0.009
	(0.013)	(0.015)	(0.010)	(0.020)	(0.011)	(0.011)	(0.008)	(0.025)
N	83,167	77,655	92,550	52,499	76,392	68,658	136,635	26,975
R^2	0.886	0.893	0.877	0.885	0.892	0.891	0.875	0.929
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zipcode × $Month\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry× $Month\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8: Heterogeneity by Labor Market Tightness

This table reports the heterogeneous effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceeding on individual earnings by labor market tightness:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+DPD in March 2020 and 0 if the loan became 120+DPD in February 2020. $Post$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured prior to treatment. Labor market tightness is computed at the industry level as the ratio of vacancies by unemployment using data from Bureau of Labor Statistics. $Tight$ ($Slack$) corresponds to the subsample of individuals in industries with above (below) median value of tightness. Columns (1)-(2) include the entire sample. Columns (3)-(6) condition upon ex-ante industries facing slack labor markets and then split based on median value of proxies for how liquidity constrained individuals are. The sample time period is between September 2020 to April 2023 and is restricted to loans not subject to foreclosure and reported as in default as of August 2021. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Earnings					
	Slack	Tight	Conditional upon slackness			
			Debt/Income		Credit Utilisation	
			Above Median	Below Median	Above Median	Below Median
	(1)	(2)	(3)	(4)	(5)	(6)
$Post \times Treated$	0.032**	0.019	0.044***	0.013	0.037*	0.015
	(0.012)	(0.014)	(0.012)	(0.031)	(0.021)	(0.025)
N	82,911	81,051	47,200	35,711	43,236	39,675
R^2	0.890	0.888	0.892	0.924	0.905	0.909
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
Zipcode $\times$ $Month\ FE$	Yes	Yes	Yes	Yes	Yes	Yes
Industry $\times$ $Month\ FE$	Yes	Yes	Yes	Yes	Yes	Yes

Table 9: Heterogeneity by Judicial Foreclosure Laws

This table reports the heterogeneous effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceeding on individual earnings by whether mortgages were originated in judicial states:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+DPD in March 2020 and 0 if the loan became 120+DPD in February 2020. $Post$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured prior to treatment. The sample time period is between September 2020 to April 2023 and is restricted to loans not subject to foreclosure and reported as in default as of August 2021. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Earnings	
	Non-Judicial	Judicial
	(1)	(2)
$Post \times Treated$	0.030**	0.018
	(0.013)	(0.012)
N	86,832	77,168
R^2	0.851	0.847
Individual FE	Yes	Yes
Zipcode $\times$ $Month\ FE$	Yes	Yes

Table 10: Heterogeneity by Home Equity and State Laws

This table reports heterogeneity in the effect of CFPB's amendment regarding foreclosure initiation on individual earnings by a combination of state creditor laws and home equity, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y measures log earnings for individual i residing in zipcode z employed in industry h changes employer in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator variable equal to 1 for period September 2021 and after and 0 for the months before that. Column (1) ((2)) corresponds to above (below) median LTV individuals across all panels. Panel A-C reports results for sub-samples based on recourse laws, restrictions on debt collectors and wage garnishments respectively. The sample time period is between September 2020 to April 2023. Reported standard errors in parentheses are heteroscedasticity-robust and clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income	
	(1)	(2)
	High LTV	Low LTV
Panel A: Recourse	Yes	No
$Post^{Sep2021} \times Treated$	0.029**	-0.031
	(0.016)	(0.027)
N	44,367	15,076
R^2	0.886	0.906
Panel B: Debt Collection Restrictions	Lax	Strict
$Post^{Sep2021} \times Treated$	0.037**	-0.006
	(0.018)	(0.018)
N	37,923	30,329
R^2	0.907	0.913
Panel C: Wage Garnishment Restrictions	Lax	Strict
$Post^{Sep2021} \times Treated$	0.023*	-0.017
	(0.017)	(0.028)
N	50,558	22,325
R^2	0.892	0.906
Individual FE	Yes	Yes
Zipcode $\times$ $Month\ FE$	Yes	Yes
Industry$\times$ $Month\ FE$	Yes	Yes

Table 11: Foreclosure Delays and Default

This table reports the effect of of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceedings on loan performance, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h,t} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y is an indicator variable coded as 1 if individual i residing in zipcode z employed in industry h is reported as 60+ days delinquency on mortgage debt (column 1) and non mortgage debt (column 2). $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post$ is an indicator variable equal to 1 for period September 2021 and after and 0 for the months before that. The coefficient β_{DD} represents the change in the outcome variable in the months around treatment, conditional on θ_i i.e., individual fixed effects, $\gamma_{z,t}$ for zipcode x year-month fixed effects and $\delta_{h,t}$ indicating industry x year-month fixed effects. The sample time period is between September 2020 to April 2023. Reported standard errors in parentheses are heteroscedasticity-robust and clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Default	
	Mortgage Debt	Non-Mortgage Debt
	(1)	(2)
Post$^{Sep2021} \times Treated$	-0.024**	-0.017**
	(0.010)	(0.008)
N	157,951	125,825
R^2	0.631	0.690
Individual FE	Yes	Yes
Zip FE $\times$ $Month\ FE$	Yes	Yes
Industry FE $\times$ $Month\ FE$	Yes	Yes

Internet Appendix

A CFPB Amendment of mortgage servicing rules: Details

A.1 Foreclosure Protection under CARES Act: March 2020-July 2021

On March 27, 2020, the President signed into law the CARES Act, which includes a foreclosure moratorium for certain loans on single-family properties.

- Who is protected: Borrowers with "federally backed mortgage loans" and tenants living in a property with such a loan. A "federally backed mortgage loan" is a loan owned, insured or guaranteed by one of the following entities: the Department of Housing and Urban Development (HUD)2; the Department of Veterans Affairs, the Department of Agriculture, Fannie Mae or Freddie Mac.
- What it does: Prevents mortgage servicers from initiating a judicial or non-judicial foreclosure, seeking a court order for a foreclosure judgment or order of sale, holding a foreclosure sale or executing a foreclosure-related eviction.

A.2 Procedural Safeguards prescribed by CFPB for Amendment of Regulation X

From August 31, 2021 through December 31, 2021, unless an exception applies, before referring certain 120-day delinquent accounts for foreclosure the servicer must make sure at least one of the temporary procedural safeguards has been met.

1. The borrower was evaluated based on a complete loss mitigation application and existing foreclosure protection conditions are met. To meet this safeguard, the servicer must confirm that:
    - The borrower submitted a complete loss mitigation application, and the servicer evaluated the application.

- The borrower remained delinquent since submission of the loss mitigation application.
- The foreclosure protection conditions in the existing Mortgage Servicing Rules discussed above, are met, such that a servicer is permitted by the Rules to make a foreclosure referral.

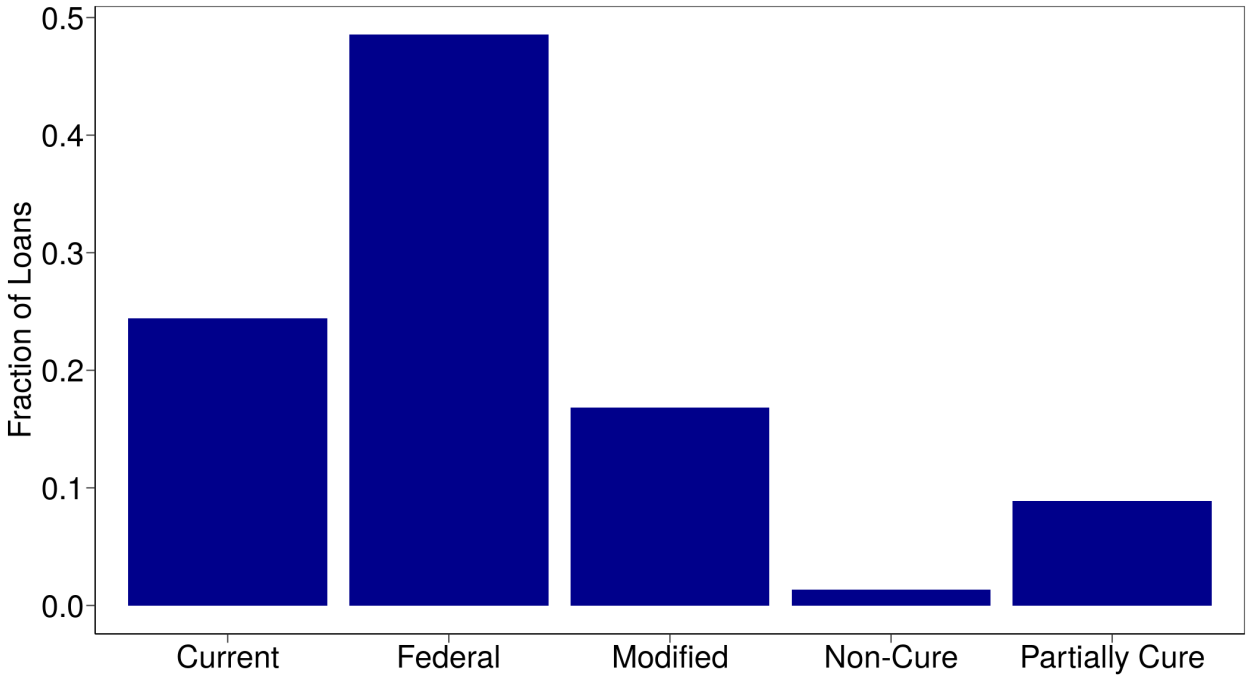
2. The property is abandoned. To meet this safeguard, applicable state or local law must consider the property securing the mortgage abandoned when referred to foreclosure.

3. The borrower is unresponsive to servicer outreach. To meet this safeguard, the servicer must not have received any communications from the borrower in the 90 days prior to the foreclosure referral and the servicer must confirm:

   - It has complied with the early intervention live contact requirements in the Mortgage Servicing Rules during that 90-day period.
   - It has provided the early intervention 45-day written notice required by the Mortgage Servicing Rules. The servicer must have sent the notice at least 10 but no more than 45 days before foreclosure referral.
   - It has complied with all loss mitigation notice requirements in the Mortgage Servicing Rules during that 90-day period, such as the notice of an incomplete loss mitigation application.
   - The borrower's forbearance program, if applicable, ended at least 30 days before foreclosure referral.

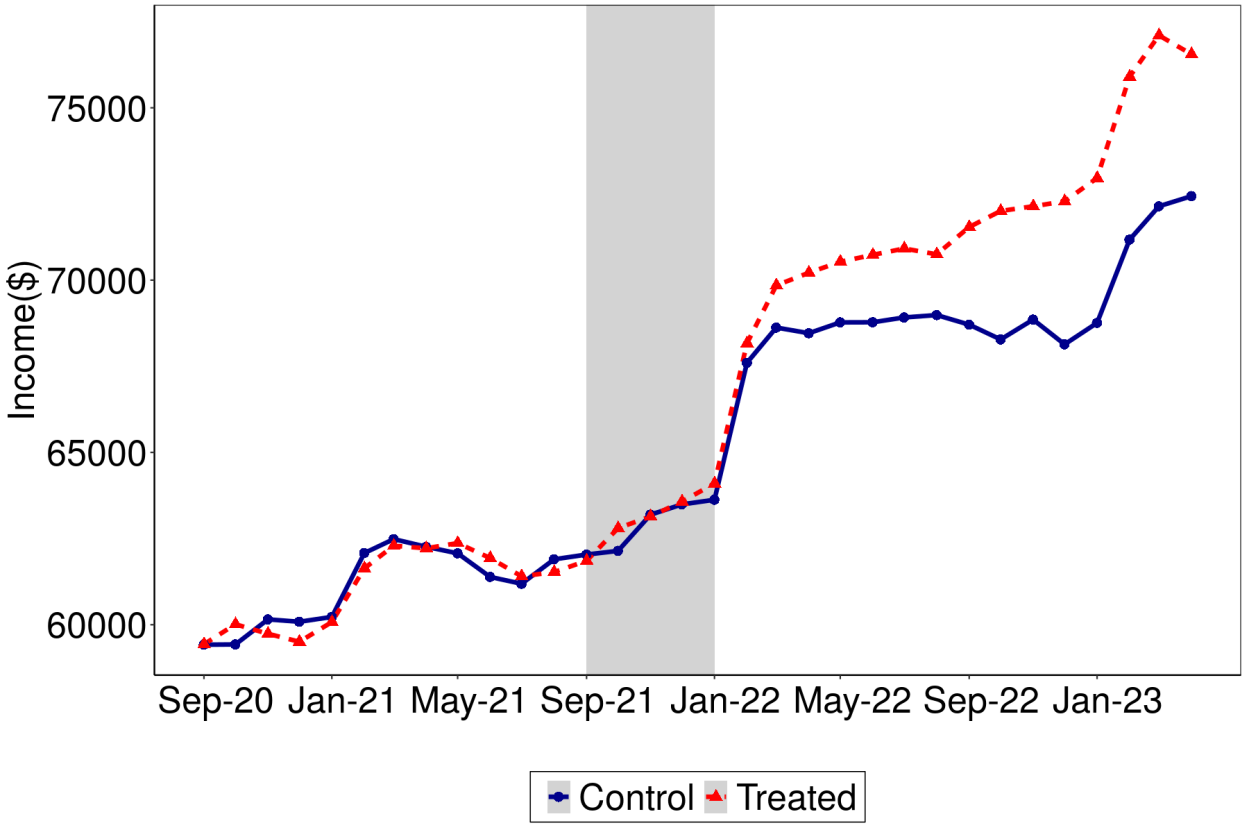
B Figures and Tables

Figure B1. Reasons for survival



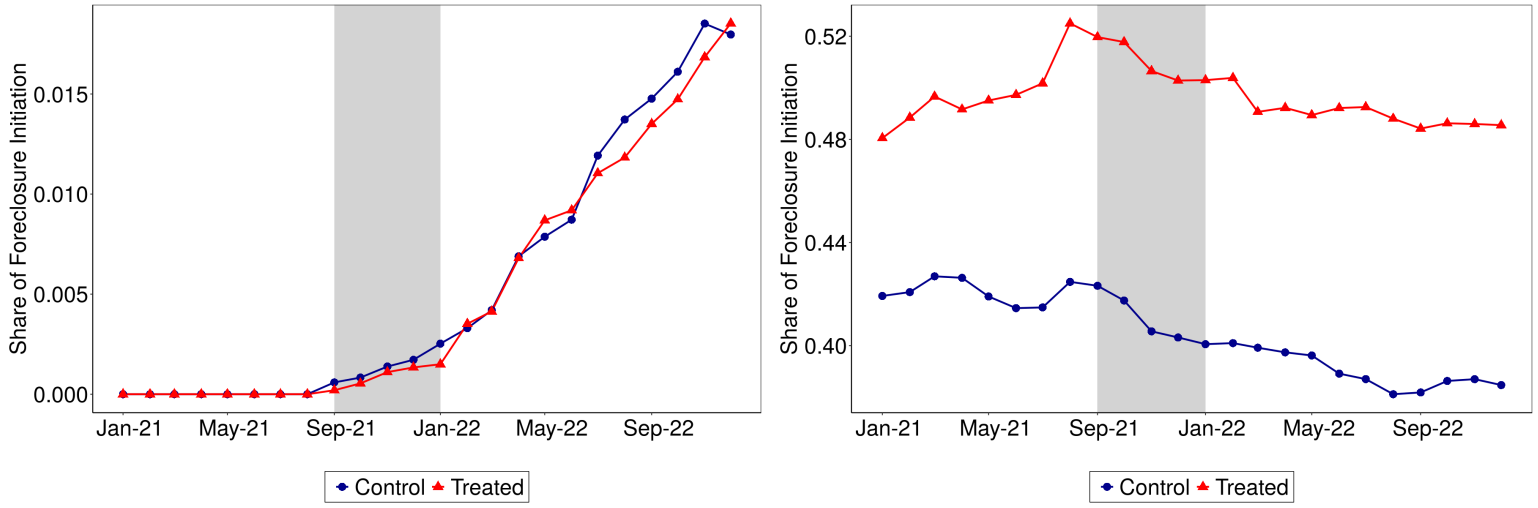
Notes: This figure displays the distribution of underling reasons for survival of loans that became 120+days delinquent in February or March 2020 but were reported as in default and not foreclosed upon as of August 2021.

Figure B2. Time Series of Labor Income



Notes: This figure displays the time series of labor income, separately for the treated and control group.

Figure B3. Share of Foreclosure Filings: Non Binding Loans

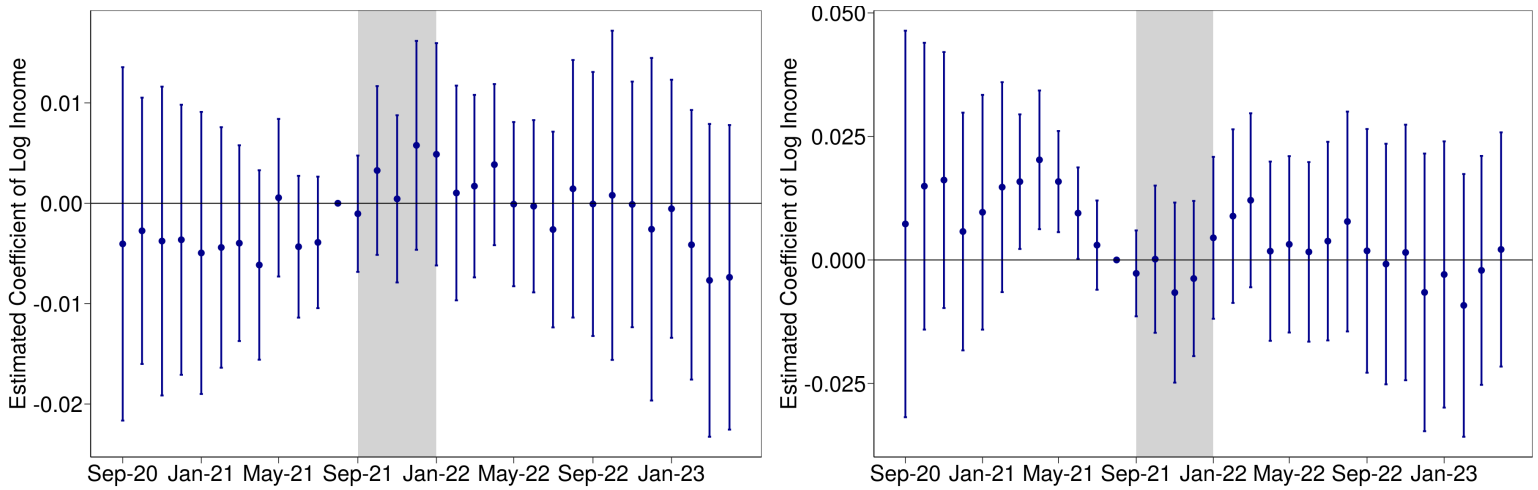


(a) Foreclosure Process not Started and Current

(b) Foreclosure Process Started

Notes: This figure presents the time-series for the cumulative share of foreclosure filing between January 2021 and December 2022. The red line denoting '*Treated*' plots the cumulative share of mortgages that entered 120+days of delinquency in March 2020 for which foreclosure was initiated. Similarly the blue line plots the cumulative share of foreclosures by month for the control group i.e., mortgages that transitioned to 120+days of delinquency in February 2020. Panel (a) restricts the sample to loans reported as current as of August 2021 and Panel (b) presents the trends for mortgages subject to foreclosure proceedings on or before August 2021. These correspond to loans for which the CFPB policy did not bind.

Figure B4. Dynamic Treatment Effects: Effect of the Policy on Labor Income for Non Binding loans



(a) Foreclosure Process not Started and Current

(b) Foreclosure Process Started

Notes: This figure plots the β_k coefficients along with the corresponding 95% confidence intervals from the following equation:

$$y_{i,z,h,t} = \sum_{\substack{k=Sep'20 \\ k\neq Aug'21}}^{Apr'23} \beta_k \times Treated_{i,z,h} \times D_k + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

which captures the differential change in log earnings in the months around the treatment between the treated and control group of mortgagors. $y_{i,z,h,t}$ represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. D_k is an indicator that equals one for observations corresponding to individual i when the observation belongs to year-month k. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects and $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured in the period prior to treatment. The sample time period is between September 2020 to April 2023 and is restricted to loans reported as current as of August 2021 in panel (a) and subject to foreclosure on or before August 2021 in panel (b). Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level.

Table B1: Summary Statistics: All Loans

This table summarizes the entire data consisting of all loans whether foreclosed or not in the period prior to August 2021. The sample period ranges from September 2020 to March 2023.

Statistic	N	Mean	St. Dev.	p25	Median	p75
Origination Amount	798,765	185,803	132,453	100,152	158,822	241,147
Origination Term	798,765	381	108	360	360	360
Loan Balance	798,765	155,560	132,491	68,201	133,271	215,713
Loan Payment	798,765	774	2,418	0	0	1268
Credit Score	798,765	588	73	540	586	637
Total Debt Payment	798,765	1,163	2,582	0	727	1,813
Utilisation (%)	798,765	56.87	38.66	19.00	60.55	100
Modification (%)	798,765	23.74	42.55	0	0	0
Term Modifications (%)	798,765	5.15	22.1	0	0	0
Balance Modifications (%)	798,765	4.97	21.73	0	0	0
Delinquency Non-Mortgage (%)	798,765	15.24	35.94	0	0	0
Annual Income ($)	798,765	64,234	37,971	36,611	57,000	85,000
% Commission	798,765	0.73	5.18	0	0	0
Hourly Wage	515,171	24.86	12.49	16.71	21.42	29.2
Hours Worked	544,818	51.17	25.25	40	40	77
Change Job (%)	798,765	0.81	8.97	0	0	0

Table B2: Borrower & Loan Characteristics and Mortgage Delinquency

This table reports the predictors of mortgage delinquency for borrowers that became 120+ days delinquent between Feb-Mar 2020 and were in default and not foreclosed as of August 2021. The following OLS regression is estimated on an individual-month panel between June 2019 to August 2021.

$$y_{i,t} = \beta_1 \times Unemployment_{i,t} + \beta_2 \times Credit\ Utilization_{i,t} + \beta_3 \times LTV_{i,t} + \sum \beta_k Expenses_{k,i,t} + \theta_i + \gamma_{z,t} + \epsilon_{i,t}$$

where $y_{i,t}$ is a dummy coded as 1 if individual i has a delinquent mortgage in year-month t and 0 otherwise. LTV is imputed using zip code house price index from CoreLogic. $Expenses_k$ includes indicators for outstanding medical, child support and utility debt/expenses in columns (1-2) and the growth in the medical, utility and child support expense from $t-1$ to t in columns (3-4). θ_i denotes individual fixed effects, $\gamma_{z,t}$ for zipcode x year-month fixed effects.

	Mortgage Delinquency = {0,1}			
	(1)	(2)	(3)	(4)
Unemployment	0.013***	0.012***	0.013***	0.012***
	(0.003)	(0.003)	(0.003)	(0.003)
Credit Utilization	0.036**	0.017*	0.036**	0.017*
	(0.016)	(0.010)	(0.017)	(0.010)
LTV		0.048		0.048
		(0.032)		(0.032)
Outstanding Medical Debt	0.082***	0.050***		
	(0.014)	(0.014)		
Outstanding Child Support	0.027**	0.036***		
	(0.013)	(0.013)		
Outstanding Utilty Debt	0.085***	0.069***		
	(0.007)	(0.008)		
Medical Debt Growth			0.012*	0.012*
			(0.007)	(0.006)
Child Support Expense Growth			0.0006*	0.0007**
			(0.0003)	(0.0003)
Utility Expense Growth			0.014	0.017
			(0.011)	(0.012)
Individual FE	Yes	Yes	Yes	Yes
Zip FE $\times MonthFE$	Yes	Yes	Yes	Yes
N	487,727	453,782	487,859	453,910
R^2	0.460	0.455	0.460	0.455

Table B3: Transition Rate from 120 to 120+ Days Delinquency in March 2020

This table reports the percentage of loans that transitioned from 120 to 120+ delinquency in March 2020 for different sample of states based on the timing of lockdown imposition. The first row corresponds to sample of loans in states which were the earliest to go into lockdown i.e., between March 15 and March 21, 2020. Similarly, the second and thir row correspond to loans in states where lockdown was imposed between March 22-March 31 2020 and April 2020 onwards respectively. *None* in row 4 represents states where no official stay home orders were passed by state authorities.

Lockdown Begins	% Loans
March 15 - March 21	32.45%
March 22 - March 31	33.44%
April onwards	31.97%
None	33.38%

Table B4: Foreclosure Delays and Sample Attrition

This table estimates the change in the likelihood of attrition around the CFPB amendment estimated on a balanced individual-month panel:

$$y_{i,z,h,t} = \beta \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \eta_{w,t} + \phi_{s,t} + \epsilon_{i,z,h,t}$$

where y is an indicator variable coded as 1 if individual i, residing in zipcode z employed in industry h drops out of the sample in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects, $\eta_{w,t}$ indicates wage quartile bins-and credit score quartile bins-time effects are given by $\phi_{s,t}$. Zipcode, industry, wage bins and credit score are measured prior to treatment. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Inactive			
	(1)	(2)	(3)	(4)
$Post^{Sep2021} \times Treated$	-0.003	0.002	0.001	0.003
	(0.008)	(0.011)	(0.009)	(0.009)
N	285,192	285,192	285,192	284,340
R^2	0.519	0.569	0.589	0.596
Individual FE	Yes	Yes	Yes	Yes
Month FE	Yes	No	No	No
Zipcode $\times$ $Month\ FE$	No	Yes	Yes	Yes
Industry $\times$ $Month\ FE$	No	No	Yes	Yes
Wagebin $\times$ $Month\ FE$	No	No	No	Yes
Scorebin $\times$ $Month\ FE$	No	No	No	Yes

Table B5: Foreclosure Delays and Labor Income: Non Binding Loans

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceeding on individual earnings, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \eta_{w,t} + \phi_{s,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects, $\eta_{w,t}$ indicates wage quartile bins-and credit score quartile bins-time effects are given by $\phi_{s,t}$. Zipcode, industry, wage bins and credit score are measured prior to treatment. Panels A-B report estimates for loans not foreclosed but current as of August 2021 and foreclosed as of August 2021 respectively. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income			
	Panel A: Current and Not Foreclosed as of August 2021			
	(1)	(2)	(3)	(4)
$Post^{Sep2021} \times Treated$	0.006	0.005	0.005	0.003
	(0.005)	(0.005)	(0.005)	(0.006)
N	469,152	469,152	469,152	435,665
R^2	0.839	0.847	0.849	0.851
	Panel B: Foreclosed as of August 2021			
	(1)	(2)	(3)	(4)
$Post^{Sep2021} \times Treated$	0.001	-0.006	-0.009	-0.010
	(0.008)	(0.008)	(0.008)	(0.010)
N	165,613	165,613	165,613	156,873
R^2	0.855	0.877	0.880	0.882
Individual FE	Yes	Yes	Yes	Yes
Month FE	Yes	No	No	No
Zipcode × $Month\ FE$	No	Yes	Yes	Yes
Industry × $Month\ FE$	No	No	Yes	Yes
Wagebin × $Month\ FE$	No	No	No	Yes
Scorebin × $Month\ FE$	No	No	No	Yes

Table B6: Foreclosure Delays and Labor Income: Collapsed

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceedings on individual earnings relative to the loans for which the policy was non-binding, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_1 \times Treated_{i,z,h} \times Post_t^{Sep2021} \times Binding_{i,z,h} + \beta_2 \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t} \tag{A2}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Binding$ is 1 if a loan is not foreclosed and in default as of August 2021 and 0 for loans reported as current for which foreclosure process was not started as of August 2021 in Column (1); mortgages subject to foreclosure proceedings as of August 2021 in column (2) respectively. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects, $\eta_{w,t}$ indicates wage quartile bins-and credit score quartile bins-time effects are given by $\phi_{s,t}$. Zipcode, industry are measured prior to treatment. The sample time period is between September 2020 to April 2023. Reported standard errors in parentheses are heteroscedasticity-robust and clustered at the industry level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income	
	Foreclosure Not Started & Current	Foreclosure Started
	(1)	(2)
$Post^{Sep2021} \times Treated \times Binding$	0.020**	0.025**
	(0.009)	(0.012)
$Post^{Sep2021} \times Treated$	0.005	-0.005
	(0.005)	(0.008)
$Post^{Sep2021} \times Binding$	-0.003	-0.005
	(0.006)	(0.009)
N	633,152	329,613
R^2	0.850	0.867
Individual FE	Yes	Yes
Zipcode × *Month FE*	Yes	Yes
Industry × *Month FE*	Yes	Yes

Table B7: Foreclosure Delays and Labor Income: Excluding Loans in Forbearance as of August 2021

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure initiation on individual labor earnings, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \eta_{w,t} + \phi_{s,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects, $\eta_{w,t}$ indicates wage quartile bins-and credit score quartile bins-time effects are given by $\phi_{s,t}$. Zipcode, industry, wage bins and credit score are measured prior to treatment. The sample excludes loans which were in forbearance as of August 2021. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income			
	(1)	(2)	(3)	(4)
$Post^{Sep2021} \times Treated$	0.023**	0.019**	0.017**	0.019***
	(0.009)	(0.009)	(0.008)	(0.008)
N	159,637	159,637	159,637	159,247
R^2	0.852	0.874	0.877	0.878
Individual FE	Yes	Yes	Yes	Yes
Month FE	Yes	No	No	No
Zipcode × $Month\ FE$	No	Yes	Yes	Yes
Industry × $Month\ FE$	No	No	Yes	Yes
Wagebin × $Month\ FE$	No	No	No	Yes
Scorebin × $Month\ FE$	No	No	No	Yes

Table B8: Foreclosure Delays and Labor Income: Excluding Modified Loans

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure initiation on individual labor earnings, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \eta_{w,t} + \phi_{s,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects, $\eta_{w,t}$ indicates wage quartile bins-and credit score quartile bins-time effects are given by $\phi_{s,t}$. Zipcode, industry, wage bins and credit score are measured prior to treatment. The sample excludes loans which were in forbearance as of August 2021. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income			
	(1)	(2)	(3)	(4)
$Post^{Sep2021} \times Treated$	0.029**	0.023**	0.019*	0.019*
	(0.110)	(0.010)	(0.009)	(0.010)
N	109,991	109,991	109,991	109,677
R^2	0.844	0.875	0.880	0.881
Individual FE	Yes	Yes	Yes	Yes
Month FE	Yes	No	No	No
Zipcode $\times$ $Month\ FE$	No	Yes	Yes	Yes
Industry $\times$ $Month\ FE$	No	No	Yes	Yes
Wagebin $\times$ $Month\ FE$	No	No	No	Yes
Scorebin $\times$ $Month\ FE$	No	No	No	Yes

Table B9: Foreclosure Delays and Labor Income: Alternate Clustering

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure initiation on individual labor earnings, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \eta_{w,t} + \phi_{s,t} + \alpha_{a,t} + \Gamma_{d,t} + \epsilon_{i,z,h,t}$$

where y represents log income for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects, $\eta_{w,t}$ indicates wage quartile bins, credit score quartile bins-time effects are given by $\phi_{s,t}$, loan size and loan term interacted with month fixed effects are denoted as $\alpha_{a,t}$ and $\Gamma_{d,t}$ respectively. Standard errors are robust to heteroskedasticity and are clustered at the individual level in Column 1 and zip code level in Column (2). Zipcode, industry, wage bins and credit score are measured as of February 2020. The sample time period is between September 2020 to April 2023. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income	
	(1)	(2)
$Post^{Sep2021} \times Treated$	0.020**	0.020***
	(0.010)	(0.011)
N	164,000	164,000
R^2	0.874	0.874
Individual FE	Yes	Yes
Zipcode × $Month\ FE$	Yes	Yes
Industry × $Month\ FE$	Yes	Yes

Table B10: Foreclosure Delays and Normalized Labor Income

This table reports the effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure initiation on individual labor earnings, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \eta_{w,t} + \phi_{s,t} + \alpha_{a,t} + \Gamma_{d,t} + \epsilon_{i,z,h,t}$$

where y represents normalized earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects, $\eta_{w,t}$ indicates wage quartile bins, credit score quartile bins-time effects are given by $\phi_{s,t}$, loan size and loan term interacted with month fixed effects are denoted as $\alpha_{a,t}$ and $\Gamma_{d,t}$ respectively. Zipcode, industry, wage bins and credit score are measured as of February 2020. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Normalised Income			
	(1)	(2)	(3)	(4)
$Post^{Sep2021} \times Treated$	0.027**	0.025***	0.022**	0.023***
	(0.009)	(0.008)	(0.008)	(0.008)
N	164,000	164,000	164,000	163,610
R^2	0.895	0.912	0.914	0.915
Individual FE	Yes	Yes	Yes	Yes
Month FE	Yes	No	No	No
Zipcode $\times$ $Month\ FE$	No	Yes	Yes	Yes
Industry $\times$ $Month\ FE$	No	No	Yes	Yes
Wagebin $\times$ $Month\ FE$	No	No	No	Yes
Scorebin $\times$ $Month\ FE$	No	No	No	Yes

Table B11: Income by Number of Jobs

This table reports the summary of income for individuals with multiple jobs versus single job.

Statistic	Mean	St. Dev.	p25	Median	p75
$\text{Jobs}_{>1}$	47,659	38,541	14,354	36,777	67,196
$\text{Jobs}_{=1}$	65,543	37,615	38,282	58,234	85,915

Table B12: Heterogeneity by Monthly Mortgage Payment

This table reports the heterogeneous effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceeding on individual earnings by size of monthly mortgage payments, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured prior to treatment. The sample is split based on the median size of monthly mortgage payment. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income	
	Mortgage Payment$_{>=Median}$	Mortgage Payment$_{<Median}$
	(1)	(2)
$Post^{Sep2021} \times Treated$	0.036**	0.010
	(0.018)	(0.014)
N	78,740	85,693
R^2	0.888	0.882
Individual FE	Yes	Yes
Zipcode $\times$ $Month\ FE$	Yes	Yes
Industry $\times$ $Month\ FE$	Yes	Yes

Table B13: Heterogeneity by Missed Mortgage Payments

This table reports the heterogeneous effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceeding on individual earnings by whether individuals missed their mortgage payments during the policy effective period, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured prior to treatment. The sample is split based on whether individuals missed mortgage payments between September-December 2021. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income	
	Missed Mortgage Payments	Not Missed Mortgage Payments
	(1)	(2)
$Post^{Sep2021} \times Treated$	0.023**	-0.016
	(0.009)	(0.018)
N	111,325	57,271
R^2	0.877	0.906
Individual FE	Yes	Yes
Zipcode × $Month\ FE$	Yes	Yes
Industry × $Month\ FE$	Yes	Yes

Table B14: Foreclosure Delays and Mortgage Modification

This table reports the effect of of CFPB's amendment to mortgage servicing guidelines regarding foreclosure proceedings on the likelihood of mortgage modification, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h,t} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y is an indicator variable coded as 1 if individual i residing in zipcode z employed in industry h contains a flag for modification in calender month t and 0 otherwise. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator variable equal to 1 for period September 2021 and after and 0 for the months before that. The coefficient β_{DD} represents the change in the outcome variable in the months around treatment, conditional on θ_i i.e., individual fixed effects, $\gamma_{z,t}$ for zipcode x year-month fixed effects and $\delta_{h,t}$ indicating industry x year-month fixed effects. The sample time period is between September 2020 to April 2023. Reported standard errors in parentheses are heteroscedasticity-robust and clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Modification		
	Overall	Maturity Extension	Balance Reduction
	(1)	(2)	(3)
$\text{Post}^{Sep2021} \times Treated$	0.003	0.005**	0.004*
	(0.010)	(0.002)	(0.003)
N	155,557	155,557	155,557
R^2	0.790	0.575	0.652
Individual FE	Yes	Yes	Yes
Zipcode FE $\times$ $Month\ FE$	Yes	Yes	Yes
Industry FE $\times$ $Month\ FE$	Yes	Yes	Yes

C Alternate Mechanism

I provide some suggestive evidence supporting a third potential explanation, which involves reduced stress as a factor contributing to the observed results. Foreclosure is a highly stressful life event with documented negative impacts on mental health (Alley et al. (2011), Currie and Tekin (2011), Osypuk et al. (2012), Houle (2014), Tsai (2015), Bernal-Solano et al. (2019)). An extension in foreclosure filing may prove to be a crucial lifeline for borrowers, providing them temporary relief from the overwhelming stress and anxiety of impending foreclosure. To the extent that financial stress frees up cognitive resources for productive work, this may enable borrowers to approach their financial predicament with a clearer mindset, allowing them to consider various strategies to improve their situation. This might include optimizing their employment choices, such as enhancing job match or increasing their work hours, ultimately resulting in higher earnings. To test this conjecture, I utilize data on stress and housing indicators from the Census Bureau's Household Pulse Survey (HPS).[13] I rely on the weekly state-level aggregates on survey responses related to i) mental health for e.g., *Feeling nervous, anxious or on the edge; Not being able to control or stop worrying; Little interest or pleasure in doing things and Feeling Down, Depressed, Hopeless* and ii) housing security, for e.g., *expectations of leaving home within next two months due to foreclosure or eviction.* for this purpose. I split my sample into borrowers in states which reported a decline (increase) in stress levels or the expectation of eviction following the CFPB policy implementation. Under the assumption that this change in stress or housing insecurity is correlated with the CFPB extention in foreclosure filing, my findings in Table C1 suggest that the differential impact of foreclosure delays on log earnings is more pronounced in states where stress levels or eviction probabilities decreased. One limitation of this test is that the state-level decline in stress/eviction may have resulted from reasons other than the CFPB policy change. These tests, therefore, only provide suggestive evidence lacking robust identification.

[13]The Household Pulse Survey (HPS) is an online survey that comprehensively explores various subjects, including but not limited to physical and mental well-being, housing stability, employment status, consumer spending (including the utilization of stimulus payments), food security, and more. It was initiated with the primary aim of understanding how the coronavirus pandemic and other emerging issues have been affecting people's daily lives and economic situations. Data collection commenced at a weekly interval on April 23, 2020, known as Phase 1, and transitioned to a bi-weekly schedule in subsequent phases, with the latest Phase 3.9 concluding on August 7, 2023.

Table C1: Heterogeneity by Stress and Fear of Foreclosure and Eviction

This table reports the heterogeneous effect of CFPB's amendment to mortgage servicing guidelines regarding foreclosure initiation on individual earnings by the change in possibility of foreclosure or eviction and mental health indicators, estimated on an individual-month panel:

$$y_{i,z,h,t} = \beta_{DD} \times Treated_{i,z,h} \times Post_t^{Sep2021} + \theta_i + \gamma_{z,t} + \delta_{h,t} + \epsilon_{i,z,h,t}$$

where y represents log earnings for individual i, residing in zipcode z employed in industry h in year-month t. $Treated$ is a binary variable that takes a value of 1 if the mortgage loan associated with the individual became 120+days delinquent in March 2020 and 0 if the loan became 120+days delinquent in February 2020. $Post^{Sep2021}$ is an indicator that equals one for months September 2021 onwards and 0 otherwise. θ_i denotes individual fixed effects, $\gamma_{z,t}$ is zipcode x year-month fixed effects, $\delta_{h,t}$ indicates industry x year-month fixed effects. Zipcode and industry are measured prior to treatment. *Decline* is the sub-sample of individuals in states experiencing a decline in proportion of respondents with an expectation of leaving home due to either foreclosure or eviction in the next two months shown in Column 1 & 3 and increase shown in Columns 2 & 4. Columns (5)-(8) repeat this analysis but for a change in stress metrics .The Census Household Pulse survey was conducted bi-weekly starting April 23, 2020. The sample time period is between September 2020 to April 2023. Standard errors are robust to heteroskedasticity and are clustered at the six-digit NAICS code level. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

	Log Income							
	Expectation of leaving home in next two months due to				Feeling nervous, anxious or on the edge		Feeling Down Depressed, Hopeless	
	Foreclosure		Eviction					
	Decline	Increase	Decline	Increase	Decline	Increase	Decline	Increase
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Post^{Sep2021} \times Treated$	0.021**	-0.004	0.020**	0.011	0.021***	-0.136	0.020**	0.005
	(0.009)	(0.034)	(0.010)	(0.016)	(0.008)	(0.187)	(0.008)	(0.011)
N	146,034	17,966	130,854	33,146	161,395	2,605	162,697	1,303
R^2	0.871	0.924	0.874	0.895	0.874	0.942	0.874	0.957
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zipcode $\times$ *Month FE*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry $\times$ *Month FE*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes