Mortgage Moratoria: Buying Time or Delaying the Inevitable?

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April 8, 2013

[Preliminary Draft: Do Not Circulate]

Abstract

In the midst of the housing crisis that started in 2008, policymakers became interested potential mechanisms to curb foreclosure filings and help backlogged courts hearing foreclosure cases including moratoria that prevents foreclosures from being filed. Such approaches run the risk of distorting lender and borrower behavior by accelerating problem behaviors, however. Difference-in-difference-in-difference (time-servicer-state) estimates using a 7 month moratorium initiated in 2010 for 6 lenders in New Jersey MSAs that border nearby states (without a moratorium) show an increase in foreclosure filings just after the moratorium concludes, but not before the policy is initiated. Importantly, we also find a rise in modifications during and after the moratorium is imposed. Finally, we see little evidence of an increased probability of delinquencies as predicted by industry groups. Overall moratoriums on foreclosures do little to prevent foreclosures in the short run, and may have other desirable policy effects from the perspective of policymakers.

Keywords: Mortgage Foreclosure; Moratorium

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1 Introduction

As the housing boom turned bust in 2008, millions of homeowners fell behind on their mortgages, triggering lenders to file for foreclosures at record levels in many localities. Media coverage of foreclosure filings focused on metaphors such as "the floodgates have opened."Martin (2011) State policymakers struggled to respond to the housing crisis, and in particular the volume of people losing their homes as lenders repossessed homes. One potential mechanism states can use to is to issue a moratorium that slows or prevents lenders from filing for foreclosures for a temporary period. In the past, policymakers have initiated moratoria in cases of dire need, such as in the aftermath of Hurricanes Katrina, Rita, and Wilma.[1] In recent years, local, state, and federal governments have proposed implementing moratoria of varying durations (ranging from 1 month to 5 years), although the incidence of implementation remains limited.[2]

Federal policy responses to the housing crisis has included policies such as the Home Affordable Modification Program (HAMP), counseling hotlines, and other attempts to provide facilitate borrowers to seek out alternatives to foreclosure. But these programs have been slow to implement and require borrowers to initiate responses. As foreclosure filings mounted in local communities, the legal system for administering the repossession of homes became overloaded. In states that use the courts to adjudicate foreclosures (so called judicial foreclosure procedure states), courts became backlogged with filings. Court administrators struggled to keep up. Meanwhile, lenders processing high volumes of legal filings related to repossession failed to follow proper procedures, made errors and even falsified legal documents. Concerns about due process combined with overloaded courts and hopes for promoting alternatives to foreclosure coalesced into calls for temporary moratoria on new foreclosure filings.[3] There were even calls for a national level moratorium, though the Obama Administration rejected this proposal Bohan and Daly (2010).

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[1]See Wheelock (2008) for more on moratoria during the Great Depression, and see the USDA release (2006) for more on foreclosure moratoria extensions for victims of Katrina, Rita, and Wilma. Alston (1984) was the first to study mortgage moratorium legislation, within the specific context of farm foreclosures during the farm crisis of the 80s.

[2]See Pierce and Tan (2007) for more on specific state policies and policy proposals.

[3]See, for example, "California Activists Call for Foreclosure Moratorium" in DSNEWS.com (2011).

This turn of events begs the question: what does a moratorium, or "a timeout," do for borrowers? There have been a bevy of natural field experiments in cities and states in recent years. Yet, most moratorium policies that were implemented lasted for very short durations or had too many loopholes to truly offer more time.[4] One state that implemented a substantive moratorium, however, was New Jersey. In response to potential "Robo-signing" of servicers, New Jersey implemented a 7-month moratorium on foreclosures for 6 servicers in 2010. The variation in time and servicer results in a potential comparison group for estimating the effects of the foreclosure moratorium. Because there are several Metropolitan Statistical Areas (MSAs) in New Jersey that overlap into bordering states without any moratoria, it is possible to estimate a difference-in-difference-in-differences (DDD) to evaluate the impacts of this policy.

We begin with a review of trends in foreclosure filings and defaults, showing that timing of the moratoria in New Jersey was unanticipated by borrowers and lenders. We show that there is no increase in foreclosure filings prior to the moratorium, but observe a spike in foreclosure filings after the policy. We also examine borrower's incentives in the likelihood of delinquency as well as the the rate of lenders offering alternatives to foreclosure, including loan modifications due to the policy.

2 Background

In this section, we provide background on moratoria policies, as well as specific information on the legislation implemented in New Jersey that we study in depth in this paper.[5]

2.1 Foreclosure Moratoria

Other studies have previously investigated the effects of delay or "more time" on borrower behavior. For example, Zhu and Pace (2010) find that delay increases the probability of future default, where they measure delay as the time from the first missing payment to the end of the foreclosure sale, or the period of "free rent." Concern may arise that lenders go after borrowers from whom they can make the most money first, and hence those with the longest "delay," may be those with the lowest amount of equity in their homes and the most likely to be delinquent in

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[4]See the National Council of State Legislatures (2011) report for a list of proposed mortgage-related policies.

[5]For a full review of how to legally implement moratoria policies, as well as potential outcomes, see Zacks (2012)

general. Gerardi et al. (2012) instead uses variation in state legislation to determine the impact of delay on foreclosures. They find that borrowers in judicial states, which take significantly longer to conclude the foreclosure process, are no more likely to cure or renegotiate their loans. There is, however, often a buildup of filings, causing a backlog in courts. Finally, the authors use a difference-in-differences framework and find that the "right-to-cure" law in Massachusetts did not lead to any better outcomes for borrowers, though it did lengthen the foreclosure timeline.[6]

However, Collins et al. (2011), using a border model, find that judicial foreclosure requirements increase the probability of a formal renegotiation of contract terms, or a modification. While they attribute this finding to the lengthy process in judicial states, they do not find that loans in judicial states are more likely to cure or avoid foreclosure. Each of these studies use laws that are intended to extend the process to determine how additional time affects loan performance. In this paper, we instead are able to see what happens when borrowers are offered a "free period."

Many other studies have found that the rate of modifications is extremely low (Agarwal et al. 2010; Cordell et al. 2009). Further, there is high degree of heterogeneity in mortgage default by geographic location and economic characteristics of the area (Foote et al. 2008); for this reason, as well as ease in analyzing the implementation of a policy, we will only provide analysis of one geographical area (or 6 MSAs).

2.2 New Jersey Foreclosure Filing Moratorium

September, 2010 marked the first time that servicers were flagged for having "robo-signing" activities, where these servicers were using questionable methods in determining which borrowers were served foreclosure filings. Each of these 6 servicers: Bank of America, JP Morgan/Chase, Citi Residential, Ally Financial (GMAC), OneWest, and Wells Fargo, were then required to file paperwork ensuring that each foreclosure filing was justly served. Each of these servicers did, in fact provide adequate documentation within two months, though most supplied the information much sooner (See Table 7 for more on the specific dates each servicer returned the paperwork.)

In 2006, the state of New Jersey experienced 21,752 foreclosure filings, and by 2010, this number had risen to 65,222. In 2010 the Chief Justice for the state Supreme Court issued an

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[6]The authors additionally provide a border model and find a similar effect.

examination the foreclosure document preparation and filing practices by mortgage servicers. The court focused on these 6 largest lenders responsible for more than 29,000 of the filings in 2010 (another 24 accounted for 16,000 filings). On Nov. 4, 2010, the Supreme Court received a detailed report prepared by Legal Services of NJ, alleging industry wide deficiencies in filings. The court found only 6% of all foreclosure actions were contested by borrowers, meaning the filing procedures did not appear to offer due process for a taking under the law. While there was a national effort to reduce "Robo-signing" by each of these six lenders, further outlined in Table 7, each of these were addressed prior to the start of the NJ moratorium on foreclosure filings for these servicers. On December 20, 2010, Administrative Order 01-2010 created a moratorium on new foreclosure filings by the 6 largest lenders. In a press release, Chief Justice Rabner of NJ (2010) stated:

> "Today's actions are intended to provide greater confidence that the tens of thousands of residential foreclosure proceedings underway in New Jersey are based on reliable information. Nearly 95 percent of those cases are uncontested, despite evidence of flaws in the foreclosure process."

Thus, this moratorium was intended to address confidence in foreclosure filings, and never says that it intends to keep borrowers in their homes. No new filings would be accepted from these lenders in the state for at least 60 days, or until the courts were satisfied the lender and its servicers satisfied due process for foreclosure filings. These lenders were not permitted to begin regular filings until June 2011, 4 months beyond the 2 months the courts required as a minimum review period, and was potentially to be extended even longer to August, 2011 (Portlock 2011).[7] See Figure 1 for the timeline of the policy. On August 15, 2011, 4 servicers (Bank of America, Citigroup, JP Morgan Chase, and Wells Fargo) were each permitted to resume mortgage foreclosure filings (Portlock 2011). Ally Financial and OneWest were next to follow suit less than one week after.[8]

Earlier in 2010 the Mortgage Bankers Association released a brief outlining the policy case against a moratorium in any state or locality (MBA 2010):

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[7]Kraus (2011) discusses the backlash from lenders, where lenders took legal action accusing the New Jeresey Supreme Court of overeaching on their rights. They claimed that the robo-signing and documentation issues had been resolved, finding it unconstitution to extend past the 2 month court-required minimum review period.

[8]Alternatively, if we drop Ally Financial or OneWest from our sample, the results remain robust.

- more time will not prevent homes from going to foreclosure sale, especially abandoned properties;

- moratoria will increase the number of delinquencies as borrowers who would 'otherwise stretch to continue to make payments will decide to stop at least for the duration of the moratorium', and

- moratoria will harm borrowers as the longer the loan remains delinquent, the less likely the borrower will catch up and be able to become current again.

The experience of New Jersey, the fact that only a subset of lenders are impacted, and that the same lenders were active in similar housing markets in neighboring states provides a unique opportunity to test the outcomes of foreclosure moratorium. While we verify that each state included in our sample is a judicial state, or a state in which foreclosure proceedings must work through the court (Collins et al. 2011), each state does have some variation in the average process period (RealtyTrac 2012).[9] Figure 2 shows the exact MSAs we use in this study.[10]

The cost of delay, especially delay of an undetermined length of time, would seem to be significant for lenders. To the extent borrowers are less likely to make payments, properties deteriorate and the lender's date of repossession is pushed into the future, a moratorium could increase the costs of default for lenders. Meanwhile, borrowers, if they remain in the home, benefit from obtaining utility from the property while paying no housing costs or payments. The longer the period the more short run benefits to borrowers and the greater costs to lenders.

However, in the 2010 housing market, with depressed home values, repossession was a less than attractive option. Lenders would take on the liability from property ownership and maintenance, and the prospects of selling the home to pay off the loan balance was bleak. Lenders lose out on the cash flow from payments during a moratorium, but the delay in filing and repossession is more ambiguous. To the extent missed payments are still captured, with late payment fees, at a later date, the lender's cost could be further minimized. For the borrower, the costs of delaying payments could have a negative impact on credit ratings and raise overall borrowing costs. In addition there is a stigma effect of being delinquent which has some non-pecuniary cost. There remains an additional potential that media attention on mortgages, mortgage payments and focus on a few lenders might even heighten awareness of borrowers to the need to make

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[9]In particular, NJ, DE, and PA each take between 210-270 days to process, while NY and MD take approximately 445 and 46 days on average, respectively.

[10]All of NJ is contained in metropolitan statistical areas. However, when we estimate our DDD treatment parameter, this will not be identified from MSAs completely contained within NJ. This parameter δ in Equation 1 will be identified off of the four MSAs that overlap state borders.

timely payments and avoid a foreclosure filing—which were widely portrayed in the media as capricious processes leaving borrowers few rights.

3   Data

The data for this study were drawn from a nationwide database on home mortgage loans administered by Corporate Trust Services (CTS). The data is comprised of individual monthly loan payments for mortgages initially made by more than 50 different lenders. These lenders sold each mortgage contract to investors as part of mortgage backed securities. The CTS is a report to investors on the payments of principal and interest on each loan underlying these securities. The CTS only captures loans that are privately securitized, meaning they were not backed by government sponsored agencies such as Freddie Mac and Fannie Mae (or Ginnie Mae). A majority of the loans in the CTS have characteristics consistent with industry standards for subprime mortgages such as lower relative credit scores and a higher proportion of Adjustable Rate Mortgages (ARMs). The data are made up of monthly remittance reports from more than 80 different loan servicers, including the loan number, payment history, zip code, original and current loan balance, and information on whether the loan contract has been permanently modified.[11]

White (2009) offers some analysis of the quality of these data, showing that these data include loans from seven of the top ten subprime mortgage lenders at the peak of that market in 2006. Quercia et al. (2009) also assess the CTS data quality, suggesting that the lenders/servicers of loans in the CTS data may have different incentives than lenders who did not sell loans into the secondary market–namely that these firms have 'no skin in the game.' This might result in less aggressive efforts to modify loans. These data do not observe all loans each borrower or property may have. Thus, borrowers may have gotten modifications designated for or become delinquent on a loan outside the CTS dataset.

This analysis uses the state of New Jersey as well as the MSAs that overlap with surrounding states. Within NJ, only 6 servicers were bound by the foreclosure on moratoria: J.P. Morgan, Wells Fargo, Ally Financial (GMAC), Citi Residential, One West (Indy Mac Federal), and Bank

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[11]Servicers flag loans with a modification indicator signifying a formal permanent contract change, rather than a temporary or trial modification or some other form of forbearance. This is an advantage over other datasets on loan payments where modifications are only observed through changes in payments, term or interest rate.

of America.[12] Only owner occupied, single family homes where the mortgage is the primary or first position lien are included.[13] Loans that are prepaid, modified or taken through foreclosure in the first period of observation (one year prior to the policy initiation) are also excluded. We also drop all loans where the original balance is greater than or equal to \$ 1 million, as some of these may actually be mis-coded by servicers and include one too many digits. This accounts for less than 1% of loans in the dataset In order to account for demographic characteristics of borrowers in some specifications, we have matched these data to the Home Mortgage Disclosure Act (HMDA) to provide borrower race and reported income when the loan was first underwritten. We are able to match approximately 80 percent of records, and thus we use this data only as a robustness check as it limits our sample size.[14]

In order to control for the value of the home in each given month, we collect zip code level house price data from Zillow. Zillow uses data on market transactions to estimate prevailing average market values for each month. These estimates are not seasonally corrected, but offer a reasonable estimate of house price trends from the date the loan was taken out to the final date of observation. We estimate the value of the home at time t using the following equation: $\text{Value}_t = \frac{\text{Balance}_{t_0}}{\text{LTV}_{t_0}} \times \Delta P_{t-t_0}$, where ΔP_{t-t_0} is the difference in average zip code level prices between the month of the loan's origin and the current month. Thus, we approximate the home's value in each time period to control for changes in house prices based on the possibility that treated areas may benefit from higher rates of modifications, lower rates of foreclosure, and hence, higher home values.[15,]

To show that the CTS data provide a good measure for foreclosure filings, we additionally collect the universe of foreclosure filings in 2010 from the NJ Department of Justice. Figure 3 shows the difference between the CTS data and the NJ DOJ data, where in general, they follow the same trend. However, since we are looking at only securitized loans, there is a drop in filings after December 2010 for the NJ DOJ data, but an increase in CTS filings.

The data are organized as a monthly panel with 14 periods, splitting the sample to allow us

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[12]One West will not be in the CTS data we employ.

[13]Piskorski, Seru, and Vig (2010) find that securitized mortgages are less likely to be modified, as are second lien loans.

[14]The loans that match and do not match to the HMDA data, or the ones that have missing observations in the HMDA data, do not systematically differ in any observable ways.

[15]See Frame (2010) and citations therein for a review on the literature stating that foreclosures have an impact on neighboring house values.

to compare borrower and lender actions before and during the moratorium, as well as before and after the moratorium. We argue that limiting the sample allows us to better isolate the effect of the specific policy. Each observation is coded as being bound by the moratorium or not based on the state in which it was located and the servicer. Our dependent variables will focus on both borrower and lender incentives: the probability of a modification of the original terms of the contract, the probability of a foreclosure start, and the probability of delinquency. We define modifications as formal, permanent legal changes to the mortgage contract. Modifications are recorded by the servicer only after any trial periods are completed and the terms are finalized. A foreclosure start marks the month in which formal foreclosure filings were served. A borrower is delinquent if he/she has missed one or more payments as of the current month. All observations are unmodified and not in foreclosure as of the first period.

Table 1 presents summary statistics for the areas we study, where we first look at all of the surrounding MSAs and then the NJ area. The baseline rate of modifications is approximately 3-4 percent in each area. The foreclosure rate is moderately high, between 5 and 7%, and delinquency is quite common, where around 20 percent of loans are behind on payments in the current month. We log income and home value when we include them in our specifications, as the means are quite larger than the median values, with the median values closer to $80,000 and $400,000, respectively. The average FICO scores are near 680, the cutoff for subprime loans in the mid-2000s. Both samples show high shares of racial minorities.

Table 2 further looks at the summary statistics of dependent and control variables by servicer types. Since the control and treatment servicers are statistically different in each of these descriptives variables,[16] the DDD framework outlined in the following section will be incredibly important. This way, we will look at changes among control servicers and treatment servicers within similar loans that have the same servicers in border MSAs, as well as compare the same loans (servicers, MSAs) to themselves in a different time period.

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[16]Treatment and control servicers and NJ and non-NJ loans are not statistically different in the year of origination, as all loans were started in 2004-2007. Thus, we will not include this variable in our specifications.

4   Methods

This paper uses the NJ moratorium on foreclosure filings on certain lenders to identify the impact of a moratorium or "delay" on borrower and lender incentives. The structure of this policy gives us a natural experiment that yields several control groups. First, we compare the NJ servicers subject to the moratorium to those that are not. Second, we compare loans in NJ to those in neighboring states within the same MSAs that overlap with NJ: New York City-Newark-Edison, Allenton-Bethlehem-Easton, Philadelphia-Camden-Wilmington.[17] Third, we use timing to compare an area to itself in several different ways: 1) comparing the pre-moratorium period to the moratorium period, 2) comparing the pre-moratorium period to the post-moratorium period, and 3) comparing the moratorium period to the post-moratorium period. This timing allows us to assess both borrower and lender incentives. In particular, we can empirically test the hypothesis that lenders increase foreclosure filings just before and just after the moratorium. We further test the ability of borrowers to "catch up" on payments in this free period, when they feel less pressure from lenders.

To empirically investigate the effects of the moratorium, we employ the difference-in-differences strategy in the following equation:

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\begin{aligned}
Y_{i,s,t} &= \alpha_0 + \beta_1 TT + \beta_2 NJ + \beta_3 TS + \gamma_1(TT \times TS) + \gamma_2(TT \times NJ) \\
&+ \gamma_3(NJ \times TS) + \delta(TT \times NJ \times TS) + \boldsymbol{\lambda X} + \eta_t + \kappa_{\mathrm{MSA}} + \epsilon
\end{aligned} \tag{1}
$$

where TT is a dummy for the timing of the moratorium. This will take several different forms, depending on the three time frames we investigate (pre- vs. during, pre- vs. post-, and during vs. post-). NJ is a dummy for whether or not the loan originated in NJ, and was hence, susceptible to the law, and TS is a dummy for the treated servicers, meaning those servicers that were subject to the moratorium based on the NJ legislation. The coefficient of interest, δ, will be the difference-in-difference-in-differences (DDD) estimator in this model, estimating the effect of the policy.

In the above specification, we include time fixed effects for each month, η_t, as well as MSA-

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[17]See Figure 2 for the specific locations of each of these MSAs.

level fixed effects, κ_{MSA}, similar to the structure provided in the DDD model used in Chetty et al. (2009). Contained in $\mathbf{X}$, are variations of loan-level characteristics and applicant-level characteristics. We include log(Home Value), log(original loan value), a dummy for an adjustable rate mortgage, the interest rates, log(income), FICO score, and a minority dummy. The applicant-level characteristics are all at the time of origination, as well as the original loan value and the ARM dummy. However, the home value and interest rate can change over time.[18] Wooldridge (2002) [pg. 469] asserts that probit models can be used to estimate the effects of policies, including aggregate time effects, as we do in this study; thus, we estimate our equation with a probit model.[19]

When using a DDD specification, we make the following four assumptions: 1) The trends in treatment and control servicers would be similar pre and post the moratorium in the absence of the policy. 2) The trends in NJ loans and non-NJ border-state MSA loans would be similar pre and post the moratorium in the absence of the policy. 3) The policy is binding for lenders, and borrowers are cognizant of the policy. 4) People do not select into their servicers based on ex-ante knowledge of the program. We can confirm that the compositions of the samples have not changed, and thus 1) and 2) are likely to be valid. Also, we confirm that there are no other confounding policies occurring in NJ or the border states in conjunction with the moratorium. We believe that the moratorium was well-publicized in New Jersey, as all local newspapers thoroughly covered the policy, in addition to local news stations. Finally, since the policy was unanticipated by both borrowers and lenders, we have no reason to believe that borrowers have an ex-ante probability of selecting servicers based on the policy.

Figures 4 and 6 that show the difference in total filings and the probability of delinquencies in NJ versus the surrounding MSAs by servicers that are and are not bound by the moratorium. In this figures, it appears that at the conclusion of the policy, there is a substitution effect, where servicers not subject to the moratorium reduce filings after the policy is lifted and servicers subject to the moratorium increase filings. Further, we find that borrowers with lenders not subject to the moratorium are less likely to be delinquent, while borrowers at the end of their "grace period" are more likely to become delinquent after the policy is lifted (see Figure 6). This

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[18]Additionally, we provide another specification that includes servicer-level fixed effects to address concern that there is servicer heterogeneity in modifications (Agarwal et al. 2011; Eggert 2007).

[19]Our results are not reliant upon functional form, and remain consistent if we instead use a linear probability model.

allows the border MSAs to be a baseline, where holding similar housing market characteristics constant, we see how households and lenders each react to the moratorium on filings. We use the following, comparable specification to look at the servicers not subject to the moratorium, where CS is control servicers:

$$
\begin{aligned}
Y_{i,s,t} &= \alpha_{0a} + \beta_{1a}TT + \beta_{2a}NJ + \beta_{3a}CS + \gamma_{1a}(TT \times CS) + \gamma_{2a}(TT \times NJ) \\
&+ \gamma_{3a}(NJ \times CS) + \delta_a(TT \times NJ \times CS) + \boldsymbol{\lambda_a X} + \eta_t + \kappa_{\mathrm{MSA}} + \epsilon
\end{aligned} \tag{2}
$$

Here, we are interested in the δ_a coefficient, as it will represent the treatment effect from a DDD specification, where we instead focus on the incentives of the servicers NOT subject to the moratorium. This will allow us to consider a more general equilibrium setting, where the backlogs or "more time" in the courts may change incentives for borrowers and lenders alike. The indirect effects of the policy may be equally important to analyze.

5   Results

We begin with a series of figures plotting mortgage loans during 2010-2012 subject to the moratorium in New Jersey as well as those loans not subject to the action and still permitted to file cases. In each of the figures, we difference the variable of interest between the NJ loans and the loans in the surrounding MSAs, in order to hold constant the "type" of servicer. Figure 4 shows that the 6 lenders under review in New Jersey had low relative filing levels in all periods prior to the moratorium. This is likely due to oversight from regulators throughout the year, but also reflects the lower-risk nature of the loans serviced by the largest lenders relative to other subprime loans serviced by small, more specialized firms. After the moratorium is lifted in July 2011, filings increase for the covered group, though they decrease for the non-covered group. Lenders in the control group may decrease filings if they know that following the moratorium, covered lenders may increase their filings backlogging courts.

Figure 5 shifts to formal loan modifications. During the moratorium, covered loans show an increasing rate of modifications, when compared to the border MSAs. This is also true if we compare the difference in modification rate to those in non covered loans (which, again

are differenced between the border MSAs). The rate of increase for the covered loans is less than that of the un-covered loans once the moratorium ends. Figure 6 shows differences in average delinquency rates between NJ and border MSAs. Here there is a short-run increase in delinquencies leading up to the beginning of the moratorium for covered loans. During the moratorium the rate increases slightly, though shows no systematic pattern for either group. However, there is a sharp decrease in post-moratorium delinquency rates, showing that borrowers in the covered group may become delinquent during the moratorium and then catch up after the policy concludes.

Table 1 shows loans in New Jersey and border areas, with few variables showing notable differences. Table 2 shows covered and uncovered loans relative to the moratorium. Here the differences are stark—loans subject to the moratorium tend to have lower risk factors such as delinquency and credit score, and borrowers with higher incomes. Thus the simple means shown in the prior figures likely fail to capture important factors that could explain delinquency, foreclosure and modifications.

Table 3 begins the DDD (diff-in-diff-in-diff) estimates, displaying marginal effects. Each set of estimates is provided without and then with controls for MSA, time period and current home value, as described above. Each estimate is also provided to compare pre-post moratorium, before compared to during moratorium and the during the moratorium compared to after. When we first look at the differences before and after the moratorium (the first set of rows), we find that foreclosure filings rise for covered loans after the moratorium in NJ. We label this as the 'Treatment' effect as estimated in the DDD. This specification only includes loans that have been delinquent in the last 6 months, and is robust to including MSA and month fixed effects as well as an estimated home value (labeled as 'With Controls').[20] When we include loan- and applicant- level controls in Table 4, we see an increase in the modification rate and some evidence of a decrease in borrower delinquency.[21]

When comparing the before and during periods (the middle set of rows in Table 3), we see a 2 percentage point increase in the probability of delinquency for loans under the covered servicer in NJ during the moratorium. When comparing this to the mean delinquency rate, which is

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[20]We log estimated home value, as it is skewed.

[21]We control for an Adjustable Rate Mortgage (ARM) indicator, interest rate, and log(loan amount) at the loan-level, and log(income) at time of origination, a minority race borrower dummy, and FICO credit score at the borrower-level at origination.

close to 20% in Table 1, this is appears to be a modest increase. This effect is sustained with controls loan-level controls, but when we reduce the sample to include applicant-level controls, it is no longer statistically significant in Table 4. The moratorium itself appears to have little effect during its duration—surprisingly even for foreclosure filings, which suggests filings were depressed even *before* the moratorium for covered lenders/servicers.

When comparing the during and after periods (the third set of rows in Table 3), after the moratorium filings increase and delinquencies appear to decline—perhaps due to a focus by borrowers on the now more severe consequences of default with the foreclosure option back on the table. This is again robust to including loan and applicant level controls in Table 4. When we control for these additional characteristics, we find that there is also an increase in modification and foreclosure filing rates, although the foreclosure effects are no longer significant with loan/borrower level controls.

Overall, we find accelerated filings just after the moratorium concludes but not before the policy is initiated. We also find a rise in modifications during and after the moratorium. We see little evidence of increased probability of delinquencies. Borrowers do not, as predicted by the lending community, seem to strategically stop making payments at a large scale. In fact, we find some evidence post-moratorium that defaults are reduced. This moratorium on foreclosures did little to prevent foreclosures in the short run, and foreclosure starts seem to only be reduced via a reduction in delinquent behavior.

6 Robustness

The advantage of this study are that the state of New Jersey implemented a moratorium on a subset of loans/lenders. Using a DDD framework with loans from the same lenders in nearby states relative to lenders not covered by the moratorium is a useful identification strategy. Yet the 6 targeted lenders were targeted based on size and reputation, and are represent a different set of loans than non-targeted loans. The DDD framework across states addresses this to a large extent, but does not rule out unobserved heterogeneity. 'Control' servicers may not have been completely unaffected by the moratorium policy. Managers may have feared being caught up in a future action, civil suits or other penalties.

We offer additional variations of estimates using a Difference-in-Differences (DD) approach

in Tables 5 and 5. This estimate is based on the following specification, conditional only on loans serviced by servicers impacted by the policy, and then those not impacted by the policy:

$$Y_{i,s,t} = \alpha_0 + \beta_1 TT + \beta_2 NJ + \gamma_2 (TT \times NJ) + \boldsymbol{\lambda X} + \eta_t + \kappa_{\text{MSA}} + \epsilon \tag{3}$$

The purpose of this model is as a robustness check that the prior DDD results were driven by the control servicers not impacted directly by the policy in actuality responding in some way to the regulatory threat or signal provided by the moratorium. Table 5 shows only treated servicers. Here the effects of the policy on modifications and foreclosure starts remains positive, including with controls for borrower characteristics. We also observe a distinct, and expected drop in foreclosure filings during the policy, as well as more modifications at least with controls. After the moratorium, foreclosures accelerate. There are no differences in delinquencies—that is borrowers with the same servicer on either side of the New Jersey border repay their loans at similar rates, even though New Jersey borrowers could default without an immediate foreclosure risk. Table 6 offers the same estimates restricted only to loans serviced by firms not directly impacted by the moratorium policy. We see few effects, other than a general trend of more foreclosure in all periods, and, at least weakly, fewer modifications. These results are reassuring that the DDD estimates are not overly biased by the selection of servicers impacted by the policy.

7   Conclusions

Did the moratorium in New Jersey work? The answer depends on the rationale behind the court decision to slow the filing process. The focus on 6 lenders/services may have targeted the largest firms, but also the firms with the lower relative default rates. It is possible these firms truly were least likely to provide due process to borrowers conditional on foreclosure, and the policy was well targeted, but we cannot observe this in our data. It is hard to rule out that these lenders were not engaged in altered filing behavior in prior periods we observe due to increasing scrutiny, but in general we do not see acceleration of filings in anticipation of the moratorium. This effect is perhaps consistent with lender's fearing a backlash from 'fast' foreclosure filings

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in advance of the moratorium deadline. It seems unlikely the lenders could have predicted with precision when the moratorium would begin—or even if it would begin—or when it would end.

The CTS data—a pool of subprime securitized loans—also offers advantages in terms of being a highly policy relevant set of mortgages. But it is a subset of the overall market. Filings in the CTS do not seem to follow the overall trend in foreclosure filings in the state. A more robust analysis might expand this analysis using another mortgage payments dataset—unfortunately there are no public datasets of this nature. The use of a DDD framework and measuring impacted and non-impacted servicers across state borders addresses this to some extent, assuming and measurement error is nor correlated with the timing or location of moratorium policy.

We cannot observe the quality of paperwork filed for each foreclosure. Future work might try to identify loans with a foreclosure started, then the loan's status in observed data changes to non-foreclosure, perhaps as one signal of attention to paperwork and attention to legal processing. The court in New Jersey stated its goal related to the quality of filings, rather than the quantity of foreclosure filings. Statewide data suggest filings declined overall. Yet among the lenders in the CTS data, relative to other lenders and other states, the moratorium does not appear to have lowered individual lender filing rates during the moratorium. Filings increased immediately after the moratorium ended, however, as might be expected.

Effects on mortgage modifications are perhaps the most interesting. Relative to border areas and non-covered lenders, the moratorium's termination results in rising modifications. This is suggestive that the ability of lenders to threaten foreclosure filings may in fact bring borrowers to the table. It may also show that the added time line during the moratorium allowed borrowers, and perhaps lenders, to assess alternatives and pursue a formal re-contracting of loan terms.

Decreasing delinquencies post-moratorium are surprising and contrary to industry predictions. Treating the moratorium as a forbearance period, where borrowers make limited payments, could result in borrowers being further behind on payments and exacerbate default. Yet, fees and payments still mount in a moratorium, minimizing a forbearance function. Borrowers know that foreclosure filings are at best delayed, not put off indefinitely. As the moratorium approached, delinquencies among covered loans seems to rise sharply, then drop right after the moratorium ends. Media and lender attention to mortgage payments, and perhaps even heightened fears by borrowers of having their home taken through lender error, may even have made

timely payments more salient post moratorium.

Overall, the state moratorium in New Jersey did not have effects of a significant magnitude on borrower or lender behavior. The policy maybe justified on due process grounds, but as an illustration of the 'timeout' approach to mortgage foreclosures this policy does not appear to have the drawbacks critics feared, nor the benefits claimed by proponents.

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8   Tables and Figures

Figure 1: Timeline: NJ Foreclosure

Figure 2: NJ and Surrounding MSAs

Legend

MSAs Included
Names

- Allentown-Bethlehem-Easton, PA-NJ Metro Area
- Atlantic City-Hammonton, NJ Metro Area
- New York-Northern New Jersey-Long Island, NY-NJ-PA Metro Area
- Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metro Area
- Trenton-Ewing, NJ Metro Area
- Vineland-Millville-Bridgeton, NJ Metro Area
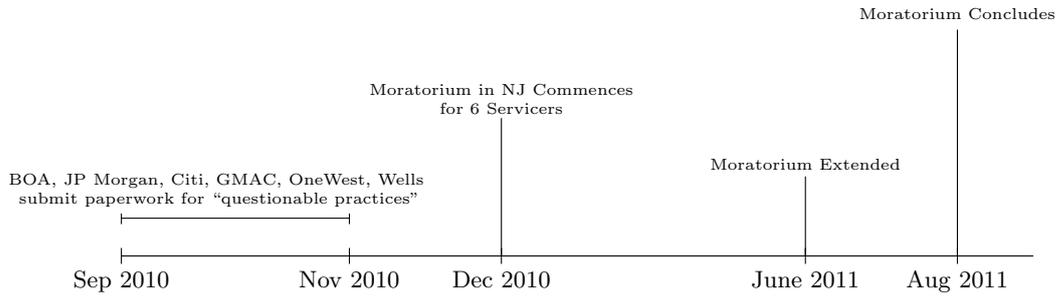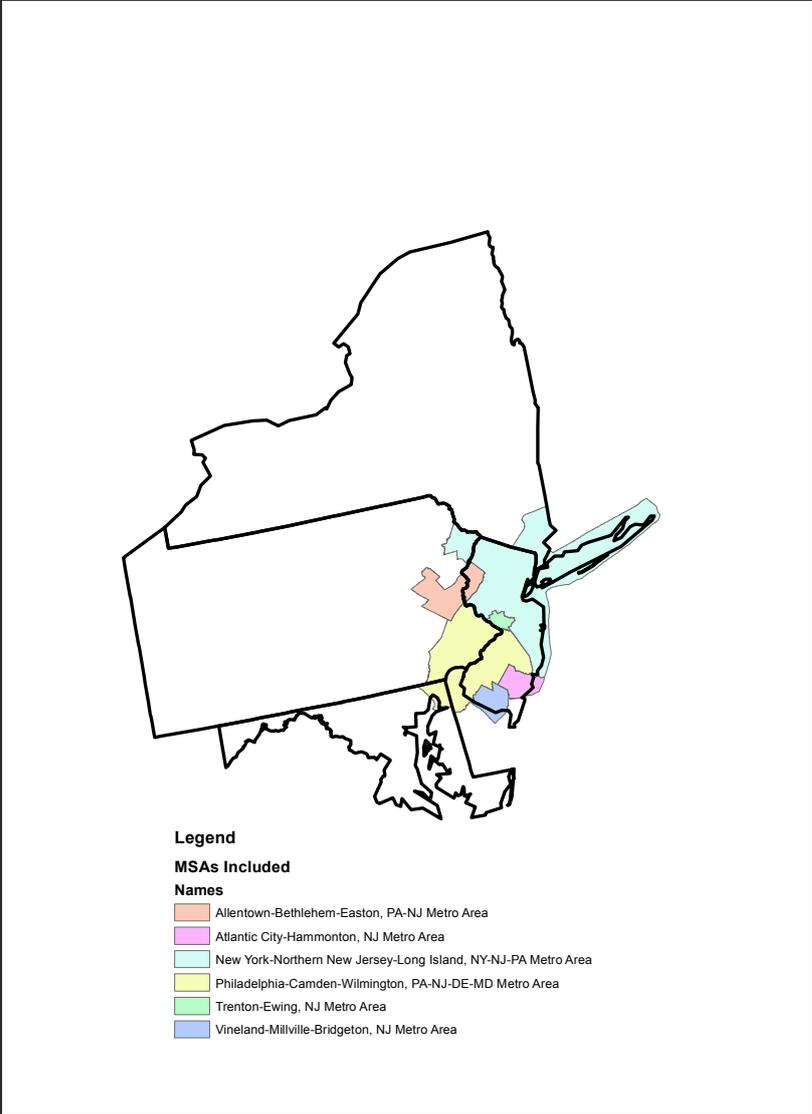
Figure 3: NJ Difference in Total Filings Between NJ DOJ and CTS Data
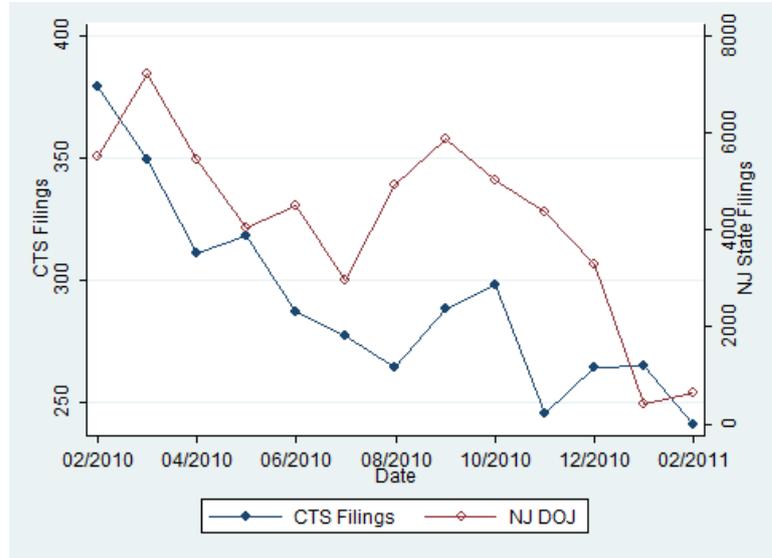

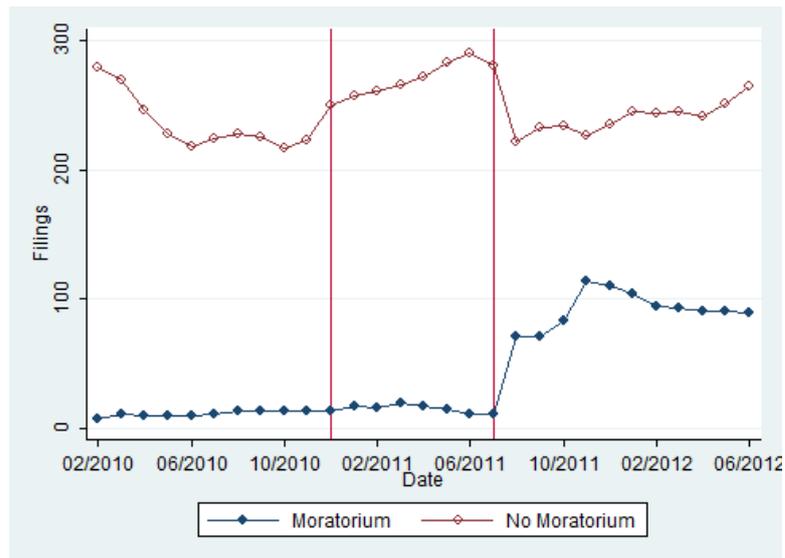Figure 4: NJ Difference in Total Filings Between NJ and Border MSAs By Date, Servicer

Figure 5: NJ Difference in Average Modification Rates Between NJ and Border MSAs By Date, Moratorium Servicer
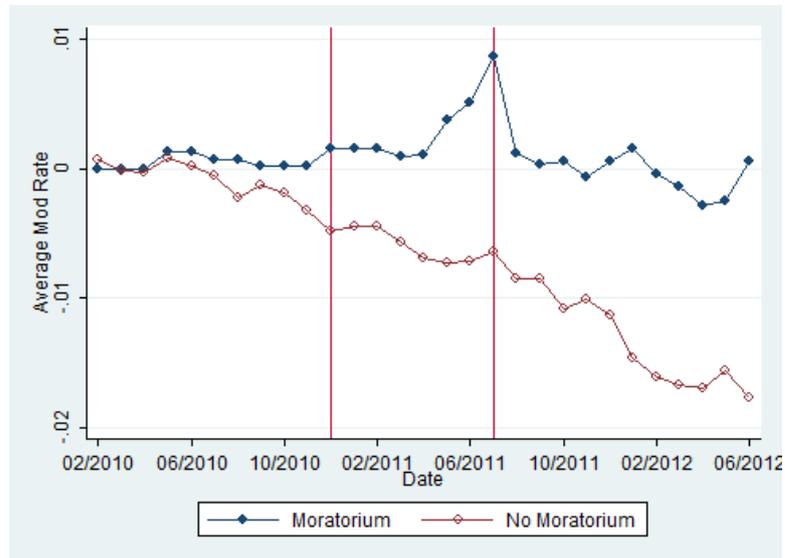
Figure 6: NJ Difference in Average Delinquency Rates Between NJ and Border MSAs By Date, Moratorium Servicer
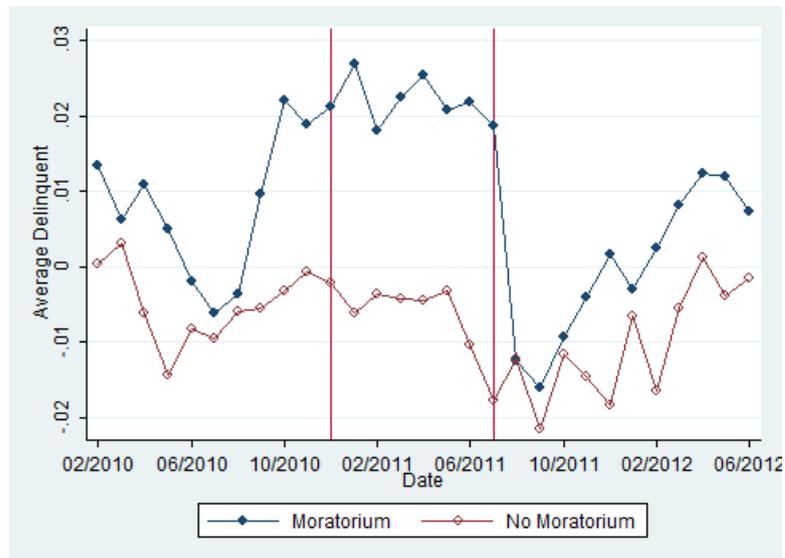
Table 1: Summary Statistics New Jersey vs. Border MSAs

	Border	NJ	Total
Dependent Variables			
Modification Indicator	0.0383	0.0301	0.0357
	(0.1920)	(0.1709)	(0.1856)
	[166693]	[78260]	[244953]
Begin Foreclosure	0.0586	0.0660	0.0610
	(0.2349)	(0.2482)	(0.2393)
	[166693]	[78260]	[244953]
Delinquent this month	0.2154	0.1913	0.2077
	(0.4111)	(0.3934)	(0.4057)
	[166691]	[78260]	[244951]
Control Variables			
ARM Indicator	0.5131	0.6081	0.5434
	(0.4998)	(0.4882)	(0.4981)
	[166693]	[78260]	[244953]
Interest Rate	5.7906	5.5905	5.7267
	(1.8027)	(1.8319)	(1.8145)
	[166693]	[78260]	[244953]
Home Value (thousands)	405.9109	343.0784	385.8365
	(215.6167)	(179.2444)	(206.7855)
	[166693]	[78260]	[244953]
Income (thousands)	125.2124	127.8955	126.0696
	(71.4510)	(72.3932)	(71.7641)
	[166693]	[78260]	[244953]
Origination Year	2005.3740	2005.3734	2005.3738
	(0.8951)	(0.8606)	(0.8843)
	[166693]	[78260]	[244953]
FICO (divided by 100)	6.9027	6.9333	6.9124
	(0.6741)	(0.6535)	(0.6678)
	[156888]	[72955]	[229843]
Minority	0.4747	0.4379	0.4630
	(0.4994)	(0.4961)	(0.4986)
	[146927]	[68311]	[215238]

Means reported, standard deviations in parentheses.

Observations in brackets.

All variables except origination year differ from each other at the 1% level.

Table 2: Summary Statistics Treated vs. Control Servicers

	Control Servicer	Treatment Servicer	Total
Dependent Variables			
Modification Indicator	0.0400	0.0138	0.0353
	(0.1959)	(0.1167)	(0.1846)
	[167761]	[36278]	[204039]
Begin Foreclosure	0.0612	0.0426	0.0579
	(0.2398)	(0.2019)	(0.2336)
	[167761]	[36278]	[204039]
Delinquent this month	0.2186	0.1672	0.2095
	(0.4133)	(0.3732)	(0.4069)
	[167761]	[36277]	[204038]
Control Variables			
ARM Indicator	0.5747	0.4845	0.5587
	(0.4944)	(0.4998)	(0.4965)
	[167761]	[36278]	[204039]
Interest Rate	5.6858	5.6653	5.6821
	(1.9157)	(1.4927)	(1.8476)
	[167761]	[36278]	[204039]
Home Value (thousands)	373.2636	460.5414	388.7815
	(201.8422)	(213.4075)	(206.6579)
	[167761]	[36278]	[204039]
Income (thousands)	121.9162	150.4314	126.9862
	(69.9446)	(77.7567)	(72.2236)
	[167761]	[36278]	[204039]
Origination Year	2005.3479	2005.4365	2005.3636
	(0.9017)	(0.8264)	(0.8894)
	[167761]	[36278]	[204039]
FICO (divided by 100)	6.8826	7.1953	6.9364
	(0.6478)	(0.4874)	(0.6342)
	[157727]	[32763]	[190490]
Minority	0.4762	0.3868	0.4604
	(0.4994)	(0.4870)	(0.4984)
	[147806]	[31659]	[179465]

Means reported, standard deviations in parentheses.

Observations in brackets.

All variables differ from each other at the 10% level.

Table 3: DDD: Moratorium in New Jersey, using a probit

	Baseline			With Controls		
	(1)	(2)	(3)	(4)	(5)	(6)
	Modification	Foreclosure Starts	Delinquency	Modification	Foreclosure Starts	Delinquency
Before vs. After the Moratorium						
Treatment	0.0437	0.0587**	-0.0104	0.0287	0.0906***	-0.0090
	(0.0346)	(0.0243)	(0.0093)	(0.0273)	(0.0253)	(0.0105)
Observations	71938	71938	281625	51088	51088	207328
Before vs. During the Moratorium						
Treatment	0.0135	0.0192	0.0214*	0.0152	0.0155	0.0216*
	(0.0321)	(0.0301)	(0.0116)	(0.0324)	(0.0301)	(0.0115)
Observations	62460	62460	257688	61778	61778	253967
During vs. After the Moratorium						
Treatment	0.0348	0.0310	-0.0339***	0.0250	0.0804***	-0.0319***
	(0.0348)	(0.0281)	(0.0109)	(0.0334)	(0.0292)	(0.0120)
Observations	62245	62245	235313	42652	42652	165479
Controls Included						
MSA Fixed Effects	-	-	-	X	X	X
Month Fixed Effects	-	-	-	X	X	X
Log(Home Value)	-	-	-	X	X	X

Marginal effects reported. Robust standard errors in parentheses. Treatment estimated as δ from Equation (1).

Dependent variable is equal to 1 if the loan was modified, foreclosure start, or delinquent in the given month

Each observation is a loan, month pairing.

The treatment effect is a loan in NJ in second time frame specified for a servicer bound by the moratorium.

Columns (1), (2), (4), (5) conditional on delinquency in the last 6 months.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: DDD: Moratorium in New Jersey, using a probit

	Loan-Level Controls			Loan and Applicant-Level Controls		
	(1)	(2)	(3)	(4)	(5)	(6)
	Modification	Foreclosure Starts	Delinquency	Modification	Foreclosure Starts	Delinquency
Before vs. After the Moratorium						
Treatment	0.0602***	0.0664***	-0.0231**	0.0562**	0.0276	-0.0143
	(0.0233)	(0.0248)	(0.0100)	(0.0244)	(0.0272)	(0.0111)
Observations	51088	51088	207328	44327	44327	167483
Before vs. During the Moratorium						
Treatment	0.0165	0.0103	0.0198*	0.0219	-0.0152	0.0108
	(0.0271)	(0.0296)	(0.0108)	(0.0286)	(0.0327)	(0.0121)
Observations	61778	61778	253967	53681	53681	204997
During vs. After the Moratorium						
Treatment	0.0784***	0.0632**	-0.0432***	0.0603**	0.0498	-0.0250**
	(0.0267)	(0.0287)	(0.0114)	(0.0287)	(0.0316)	(0.0126)
Observations	42652	42652	165479	36948	36948	134240
Controls Included						
MSA Fixed Effects	X	X	X	X	X	X
Month Fixed Effects	X	X	X	X	X	X
Log(Home Value)	X	X	X	X	X	X
ARM	X	X	X	X	X	X
Log(Loan Amount)	X	X	X	X	X	X
Interest Rate	X	X	X	X	X	X
Log(income)	-	-	-	X	X	X
Minority	-	-	-	X	X	X
FICO	-	-	-	X	X	X

Marginal effects reported. Robust standard errors in parentheses. Treatment estimated as δ from Equation (1).

Dependent variable is equal to 1 if the loan was modified, foreclosure start, or delinquent in the given month

Each observation is a loan, month pairing.

The treatment effect is a loan in NJ in second time frame specified for a servicer bound by the moratorium.

Columns (1), (2), (4), (5) conditional on delinquency in the last 6 months.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: DD: Moratorium in New Jersey, using a probit, Treated Servicers

	Loan-Level Controls			Loan and Applicant-Level Controls		
	(1)	(2)	(3)	(4)	(5)	(6)
	Modification	Foreclosure Starts	Delinquency	Modification	Foreclosure Starts	Delinquency
Before vs. After the Moratorium						
Treatment	0.0232***	0.0206*	-0.0063	0.0322***	0.0475***	-0.0018
	(0.0073)	(0.0124)	(0.0050)	(0.0067)	(0.0145)	(0.0057)
Observations	29092	29092	122743	16006	16183	69940
Before vs. During the Moratorium						
Treatment	0.0048	-0.0463***	-0.0069	0.0140**	-0.0441***	-0.0002
	(0.0069)	(0.0140)	(0.0052)	(0.0064)	(0.0151)	(0.0052)
Observations	18016	18016	94054	15117	15296	74132
During vs. After the Moratorium						
Treatment	0.0213***	0.0755***	0.0001	0.0273***	0.1020***	-0.0018
	(0.0078)	(0.0143)	(0.0059)	(0.0084)	(0.0168)	(0.0066)
Observations	25558	25558	101916	13533	13653	55252
Controls Included						
MSA Fixed Effects	X	X	X	X	X	X
Month Fixed Effects	X	X	X	X	X	X
Log(Home Value)	X	X	X	X	X	X
ARM	X	X	X	X	X	X
Log(Loan Amount)	X	X	X	X	X	X
Interest Rate	X	X	X	X	X	X
Log(income)	-	-	-	X	X	X
Minority	-	-	-	X	X	X
FICO	-	-	-	X	X	X

Marginal effects reported. Robust standard errors in parentheses. Treatment estimated as γ from Equation (3).

Dependent variable is equal to 1 if the loan was modified, foreclosure start, or delinquent in the given month

Each observation is a loan, month pairing.

The treatment effect is a loan in NJ in second timeframe specified for a servicer bound by the moratorium.

Columns (1), (2), (4), (5) conditional on delinquency in the last 6 months.

$* \ p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$

Table 6: DD: Moratorium in New Jersey, using a probit, Control Servicers

	Loan-Level Controls			Loan and Applicant-Level Controls		
	(1)	(2)	(3)	(4)	(5)	(6)
	Modification	Foreclosure Starts	Delinquency	Modification	Foreclosure Starts	Delinquency
Before vs. After the Moratorium						
Treatment	-0.0027	0.0216***	0.0000	-0.0097**	0.0418***	0.0075
	(0.0046)	(0.0071)	(0.0034)	(0.0039)	(0.0093)	(0.0046)
Observations	71103	71103	272688	45729	45729	166771
Before vs. During the Moratorium						
Treatment	-0.0024	0.0089	0.0006	-0.0036	0.0156**	0.0006
	(0.0038)	(0.0069)	(0.0035)	(0.0035)	(0.0074)	(0.0036)
Observations	69030	69030	266170	59540	59540	215299
During vs. After the Moratorium						
Treatment	0.0010	0.0137*	0.0000	-0.0118**	0.0279***	0.0062
	(0.0057)	(0.0080)	(0.0037)	(0.0058)	(0.0104)	(0.0048)
Observations	60778	60778	229104	37759	37759	134758
Controls Included						
MSA Fixed Effects	X	X	X	X	X	X
Month Fixed Effects	X	X	X	X	X	X
Log(Home Value)	X	X	X	X	X	X
ARM	X	X	X	X	X	X
Log(Loan Amount)	X	X	X	X	X	X
Interest Rate	X	X	X	X	X	X
Log(income)	-	-	-	X	X	X
Minority	-	-	-	X	X	X
FICO	-	-	-	X	X	X

Marginal effects reported. Robust standard errors in parentheses. Treatment estimated as γ from Equation (3).

Dependent variable is equal to 1 if the loan was modified, foreclosure start, or delinquent in the given month

Each observation is a loan, month pairing.

The treatment effect is a loan in NJ in second timeframe specified for a servicer bound by the moratorium.

Columns (1), (2), (4), (5) conditional on delinquency in the last 6 months.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Time line of Servicers Under Moratorium: Robo-signings

Bank of America

Oct.8, 2010	Bank of American Home Loans announced a freeze on foreclosure sales, pending a review of foreclosure documents in all 50 states
Oct.18, 2010	Bank of America Home Loans announced that it would resubmit affidavits in 102,000 foreclosure actions in judicial states and proceed to resume filings

JPMorgan Chase

Sep. 30, 2010	Announced a suspension of foreclosures in all judicial states, pending a review of procedures
Early Nov 2010	Announced that it would begin re-filing foreclosure docs within a few weeks that estimate has since been revised and re-filing will not be underway for several months

Citi Residential

Nov. 18, 2010	Managing director of Citi Mortgage informed the House Financial Services Committee that Citi initiated review of 10,000 affidavits

Ally Financial (GMAC)

Sep-10	Announced a temporary freeze on evictions in judicial states, citing "an important but technical defect in filings

OneWest Bank (Indy Mac Federal)

No specific dates	A case where OneWest serviced a mortgage owned by Deutsche bank. Deutsche has issued several letters and memorandum expressing concern regarding potential defects

Wells Fargo

Oct. 27, 2010	Wells announced that it would submit supplemental affidavits for approximately 55,000 foreclosures in all judicial states