Mandatory Mediation and the Renegotiation of Mortgage Contracts (Short Title: Mandatory Mediation and Mortgages)*

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Abstract

Scholars have studied the use of mediation—a third party to facilitate the settlement of a dispute—in a variety of settings. The theoretical literature asserts that mediated negotiation weakly dominates unmediated negotiation, increasing the flow of information between the principal and the agent. This paper tests these predictions using a mandatory mediation policy for mortgage contracts in default. Difference-in-differences estimates from three metropolitan statistical areas before and after at least one sub-jurisdiction imposed mandatory mediation show that mediation increased the flow of information, especially for selected sub-groups, as demonstrated by increasing rates of loan contract modifications.

1 Introduction

A mortgage is a contract between a borrower and a lender, with the mortgaged property serving as collateral. Mortgage loans are often highly leveraged, meaning that when borrowers cannot pay, if the value of the property has dropped significantly, the collateral backing the contract becomes doubtful. In the aftermath of the housing boom of the 2000s, the subsequent housing and labour market recession has resulted in millions of households in the United

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States entering into foreclosure due to loss of income and falling property values.[1] A residential mortgage that enters foreclosure can prove costly for lenders.[2] Maintaining and reselling a non-cash-flowing property consumes time and money, as legal fees and administrative processes mount. It would seem likely that lenders would be willing to negotiate with borrowers for new repayment terms to avoid foreclosure.[3] Yet the rate at which lenders are modifying defaulted mortgage contracts appears to be low.[4,5]

Information asymmetry could be a partial explanation for the low rate of formal loan mortgage contract modifications.[6] Consumers frequently fail to take any action to avoid the repossession of their home when faced with an imminent foreclosure (Cutts and Merrill 2008). Those borrowers who do make contact with lenders have incentives to overstate their ability to repay the loan with new (cheaper) terms. Lenders can observe a borrower's past payments (and defaults) but may not be able to accurately assess a borrower's current financial condition, or willingness to pay in the future.

One potential mechanism to address this information problem is an automatically scheduled third-party out-of-court mediation session. Mediation sessions could provide the lender with clearer information on the borrower's ability to pay—information that is otherwise unobserved. With information, each party can more accurately compute the expected payoff from a modified mortgage contract. This should result in an increase in the number of mortgage contract modifications compared to the case of no mediation (where less, no, or inaccurate information is conveyed).

We draw upon and test conclusions from the theoretical literature studying mediation generally, where mediated negotiation weakly dominates unmediated negotiation (Mitusch and

[1] Brown *et al.* (2010) and Foote *et al.* (2008a) document these trends. See also Duca *et al.* (2011) and citations therein for more on the importance of credit constraints associated with the subprime boom in the U.S. market in explaining house prices.

[2] Gerardi and Li (2010) and White (2009) further discuss the costs lenders face in completing foreclosures.

[3] This is consistent with Ambrose and Capone (1997) as well as Lauria *et al.* (2004) and Phillips and VanderHoff (2004).

[4] See, for instance, Adelino *et al.* (2009) and Agarwal *et al.* (2011b, 2010).

[5] When loan originators, servicers and investors each face differing incentives. it is more difficult to distinguish between the problem of asymmetric information and that of structural barriers to modifying. If we consider a state of the world where originators own and process payments on a loan throughout its full term, the largest barrier to modifications would be the asymmetric information between borrowers and lenders, and lenders might invest heavily in information discovery. However, in the state of the world where servicers, investors, and originators each own loans and derive value from mortgages for discrete periods or tasks, then structural issues serve to exacerbate the information asymmetry problem.

[6] Miles (2005) also discusses the possibility that information is an obstacle for borrowers when first selecting mortgage terms and interest rates in the UK.

Strausz 2005; Goltsman *et al.* 2009). This applies in cases where the principal (lender) has decision-making power and is uninformed and the informed agent (borrower) has no power in the decision. The outcome of mediation depends on the ex-ante probability of conflict between the borrower and the lender, and we find that on the extensive margin, mediation increases the probability of a formal change in the terms of the mortgage contract.

To test these predictions, this paper exploits a natural experiment in which judicial courts administering foreclosures implemented a mandatory mediation policy, while other courts in the same area did not. This provides a unique environment to study the ability of mediation to reduce the information asymmetry between borrowers and lenders. Three courts in Florida implemented a mandatory mediation policy in which mediation sessions were automatically scheduled with the initial mailing of the intent-to-foreclose notice. This provides us with a fortuitous opportunity—as far as we know for the first time in the economics literature—to empirically test mediation in a market with asymmetric information.[7]

This analysis is unique in that there is an exogenous change in the local procedures of the courts, allowing us to observe loans before and after being subject to a mediation policy, as well as similar loans in the same housing market not subject to mediation policies. Voluntary mediation policies have a selection problem in that borrowers who choose to work with a mediator are different in unobservable ways. However, in our example, the state of Florida put forth an administrative order for mandated mediation sessions and began this programme with a pilot programme. The policy was implemented in just three jurisdictions where the administering non-profit had long-established local offices, making the selected jurisdictions unrelated with the outcomes of interest. To empirically test the possibility that asymmetric information limits the number of renegotiated loan contracts, we use a difference-in-differences strategy, comparing loans in courts that implemented mandatory mediation to loans in the same metropolitan area for which courts did not implement mandatory mediation.

Using monthly loan performance data, we show that mandatory mediation increased the probability of lenders modifying mortgage contracts, resulted in deeper concessions and reduced rates of redefault among modified loans. Effects are most pronounced among least informed

[7]See Kydd (2006), Wall *et al.* (2001), Wall and Lynn (1993), Carnevale and Pruitt (1992), Bercovitch and Jackson (2001), Umbreit (1993) and Smith (1995) for examples of applied work in other fields studying mediated negotiations in other contexts. Brown and Ayres (1994) also study the role of mediators in controlling the flow of information in alternative dispute resolutions.

borrowers and are robust to a variety of tests. The finding supports the theory that mediation can address information asymmetry between borrowers and lenders.[8]

The following section describes the potential role of mortgage mediation and the theoretical implications of mediation in other contexts. We next lay out the theoretical implications found in previous literature and the institutional setup of the programs studied. We then offer an overview of the data and empirical methods used, followed by findings and robustness checks. We discuss potential cautions and conclude with a summary of the findings and their direct relation to the theoretical literature, as well as implications.

2 Background

The theoretical literature shows that mediation, in certain contexts, improves information transmission. We suggest an application of this literature to the mortgage market, where we examine the outcomes of mortgage contract renegotiations. The imposition of a mediation policy by courts in Florida presents a natural experiment we exploit for our analysis.

2.1 *The Role of Mediation*

In a legal review, Levitin (2009) describes mediation as a form of "procedural requirement to encourage consensual workouts." [9] Mediation involves each party in a case meeting with a neutral third party appointed by the court in an attempt to resolve a dispute.[10] The goal of the mediator is to find a mutually agreeable solution for the parties.

Two recent theoretical papers provide insight on the role of mediation. These papers describe a setting that is directly comparable to the setting exposited in the mortgage market. Both Goltsman *et al.* (2009) and Mitusch and Strausz (2005) use an asymmetric information framework, where the principal (lender) ultimately has the power in the final decision, but also has limited information; in our setting, this information is the borrower's ability to pay in the

[8]Loans are technically managed by a servicer who represents investors, including the lender. We alternatively use servicer and lender to mean the authorised representative who administers loan payments and has the authority to make mortgage contract modifications, as well as to foreclose.

[9]Mediation is common as a form of alternative dispute resolution, but it is not commonly used for mortgages. The concept of mediation for mortgages dates back at least to the 1980s, when courts in Iowa and Minnesota required debtors and lenders to conduct out-of-court settlement meetings before formal foreclosure proceedings could enter the court.

[10]Mediation differs from arbitration in that the solution proposed by the mediator is nonbinding.

future. While the lender knows whether or not the borrower missed payments in the past, the borrower can more accurately calculate the probability that he can make future payments. The agent (borrower) has this information, but ultimately has no power in the final decision about the terms of any new mortgage contract offered by the lender (the borrower is essentially a price taker). The mediator helps the agent (borrower) to reveal the proper amount of information in order to reach an agreement (Mitusch and Strausz 2005). These papers find that mediators help parties disseminate information that would not be revealed in their absence, but also show that the ex ante probability affects the outcome. More specifically:

1. If the level of conflict between the principal and the agent is low, information dissemination increases slightly with a mediator (Mitusch and Strausz 2005), but any outcome reached through mediation can also be reached with unmediated negotiation (Goltsman *et al.* 2009) unless the ex ante level of conflict increases (Mitusch and Strausz 2005).

2. If there is a moderate level of conflict between the principal and agent, without a mediator, the principal cannot get the agent to reveal pertinent information. However, with a mediator, revelation is feasible and improves the welfare of the decision-maker, resulting in higher rates of renegotiation (Mitusch and Strausz 2005; Goltsman *et al.* 2009).

3. If the conflict between the two parties is high, the mediator has no value and provides no additional information as compared to unmediated negotiation, and the outcomes from mediation can be reached through unmediated negotiation (Mitusch and Strausz 2005).

If we apply these principles to the mortgage market, we expect in situations of high and low conflict, mediation policies will provide no difference when comparing mortgage modifications before and after mandatory mediation is initiated. While we do not observe the ex ante level of conflict between the borrower and lender, if a non-negative number of loans fall within this "moderate conflict" range, we expect there to be an increase (although not very large in magnitude) in the probability of a formal modification of mortgage contract terms after a mandatory mediation policy is implemented relative to nearby areas not subject to mediation.

In this paper, we test the implications of the theoretical literature, where we expect to see an increase in modifications on the margin once mandatory mediation policies are implemented.

2.2 *Modification Efforts and Information Barriers*

There is some history of lenders negotiating with mortgage borrowers dating at least to the Great Depression (Ghent 2011). The issue of mortgage renegotiation had been of little policy or industry concern until the precipitous drop in home values in the 2000s and rapid increase in mortgage defaults. But even in a context of record levels of foreclosures, Agarwal and colleagues (2010) find that only 15% of seriously troubled mortgages enter into any formal modification of mortgage terms, or even informal repayment agreements, within six months of becoming delinquent.[11] The literature suggests three potential barriers to loan modifications: information asymmetries between borrowers and lenders, institutional frictions related to securitization, and organizational limitations of servicers that inhibit modifications.[12]

Lenders always face information asymmetries related to borrowers. Borrowers have incentives to mislead lenders or engage in "cheap talk" regarding their willingness and ability to pay (Herzenstein *et al.* 2011; Farrell and Rabin 1996). For a troubled loan, the borrower's goal is to convince the lender to reduce payments as low as possible, but still signal that he or she will follow through on payments. For example, while lenders can observe past tax returns and pay stubs, a borrower's future income can be determined largely based on knowledge only the borrower has and the lender cannot easily verify. Mortgage debtors therefore have private information on their ability to pay and future prospects. Lenders rely on various forms of "soft information" beyond loan documents (Agarwal *et al.* 2011a) to make decisions. It is difficult for lenders to determine which borrowers are likely to self-cure versus those requiring more intensive interventions (Adelino *et al.* 2009). In the absence of this information, renegotiations of loan contracts may break down. While policies such as counselling, as studied in Collins *et al.* (2013) may help to alleviate information asymmetries on the borrower side, lenders take no part in counselling activities and thus gain no information from the process. In addition, the authors find that borrowers in the most trouble take up counselling.

Several recent papers discuss how information asymmetry problems for troubled loans pre-

[11] Cordell and colleagues (2009) also present evidence that modifications are not occurring at the rates that might be predicted given the extent of defaults and the potential losses to lenders and borrowers from foreclosures.

[12] It should also be noted that there is a high degree of heterogeneity in mortgage default by geographic location, initial purchase price and timing, loan terms and home equity, and local unemployment trends (Foote *et al.* 2008a). Munch *et al.* (2006) find a negative correlation between homeownership and unemployment duration. While homeownership limits one's ability to move for work, the probability of finding work locally is higher for homeowners.

vent lenders from observe the borrower's repayment probabilities (Foote *et al.* 2008b; Gerardi *et al.* 2013).[13] In some cases offering concessions could create a moral hazard problem. Mayer *et al.* (2011) shows that in response to a court mandated change in mortgage contract terms, borrowers who otherwise would have been unlikely to default stopped making payments in order to be eligible for more attractive loan terms.

Beyond information barriers, the structure of mortgage markets may also impede modifications. Piskorski *et al.* (2010) document that conditional on being delinquent, bank-held loans are less likely to be foreclosed upon than similar, securitised loans. Further, Agarwal *et al.* (2011b) find that bank-held loans are significantly less likely to be modified than securitised loans, and that bank-held modifications have lower redefault rates than comparable securitised loans. These papers assert that the frictions involved with selling and securitizing mortgages create impediments to loan modifications.[14] This is directly relevant to our study, since we have a sample of all securitised loans and as such should expect low rates of modifications. It also follows that since ownership and tasks related to the collections and management of the loan are fractured, servicers and investors may each lack incentives to invest in information discovery, in the absence of external mandates.

Finally, there is the limited capacity of servicing firms to engage in renegotiations of mortgages. Agarwal *et al.* (2012) argue that servicers are limited by their organizational ability to perform modifications. The authors document that even following the 2009 Home Affordable Modification Program (HAMP), which offered servicers large incentives to renegotiate mortgage contracts, a few large servicers responded at half the rate of others. While the programme increased the intensity of renegotiations, the effect of HAMP was muted by these nonresponsive servicers, who were also less likely to modify contract terms before the policy was enacted. Thus, there exists an institutional barrier among servicers that results in varying rates of mortgage contract modifications.

[13]The mortgage market is peculiar in this regard relative to other markets with loan contracts in default. Benmelech and Bergman (2008) describes the airline industry and suggests that the default is sufficient such that lenders perceive the expected value of a workout to be preferable to the greater losses of default. Information is far more transparent for publicly traded firms releasing regular investor reports than for individual mortgage borrowers, however.

[14]There appears to be wide variation in the rate of mortgage modifications across loan servicers, even controlling for observable differences in risk factors (Agarwal *et al.* 2011b; Eggert 2007). This suggests that institutions use different calculations for the net value of foreclosures versus modifications, perhaps even implying that some firms leave potential economic gains on the table.

Informational failures may play a role in all three of these explanations, but the process of borrowers revealing information is central to the first. Borrowers retain private information that lenders cannot otherwise obtain. Mediation offers the potential for information to be revealed that can facilitate mortgage contract modifications.

2.3 *Implementation*

This study is based on mandatory mediation programs in Florida, a judicial foreclosure state.[15] In each area included in our study, one court has implemented a policy whereby an administrator schedules a third-party mediation upon the initiation of foreclosure—and the lender cannot proceed with the foreclosure suit unless the borrower fails to accept the offer to participate in the out-of-court mediated session.

As of 2013, 12 states and the District of Columbia had some form of statewide foreclosure mediation, and at least six local court districts had some form of mediation programme. We found only four programs that required mediation by 2011, with the vast majority offering a mediation option only upon borrower request (Rao *et al.* 2010, 3d ed., 2011 Supplement).[16] According to a report from the Center for American Progress (2010), areas where automatic mediation is mandated have participation rates of about 75% of eligible homeowners. In other areas with opt-in programmes, where courts only inform homeowners that mediation is available but do not require it, only about 21% request a mediation session.[17] We focus on a mandatory programme in Florida that required the homeowner and an authorised representative of the lender to participate in mediation.

Florida started a mandatory mediation programme in three circuit courts. The State of

[15] A judicial foreclosure is a foreclosure supervised by the court. The lender commences foreclosure by a lawsuit against a borrower who has defaulted on a mortgage contract (Black and Garner 1999). Just like any other lawsuit, the lender must file a complaint and give notice to the borrower. After the borrower receives notice that a lawsuit has been commenced, he or she must file an answer detailing why the foreclosure should not be ordered. The court sets a hearing date, and ideally, both parties appear before the court to argue their positions. If the court rules in favour of the lender, then the court issues an order that allows the lender to sell the mortgaged property.

[16] We explored other areas with mandatory mediation, including New York, Connecticut, Providence, RI and Philadelphia, PA. The New York programme began on September 1, 2008, but only for "high cost" loans, and expanded to all loans January 1, 2010. However, it is hard to identify effects given the time frame of the expanded mediation. Connecticut has mandatory mediation statewide, but there are no obvious comparison areas. Finally, the city of Providence mandated mediation, but the programme was challenged in court. The city of Philadelphia implemented mandatory mediation, but simultaneously put a moratorium on foreclosure filings, making identification of a mediation effect impossible. All of these areas are omitted from our study due to these complications.

[17] See Cohen and Jakabovics (2010) for more on the specific policies.

Florida is divided into 20 judicial areas of jurisdiction, called circuits. Included in the mandatory mediation was the 1st Judicial Circuit (Escambia, Santa Rosa, Okaloosa, and Walton counties), the 11th Judicial Circuit (Miami-Dade County),[18] and the 19th Judicial Circuit (Indian River, Martin , Saint Lucie, and Okechobee counties) in response to a recommendation from a State of Florida foreclosure task force.[19] With the help of the non-profit Collins Center for Public Policy, this pilot programme began in May 2009. One hundred mediators were trained by the Collins Center in standard mediation procedures. The court mediation manager automatically set mediation dates and informed borrowers about the mediation requirement when the foreclosure was filed by the lender. The court allowed the mediator to charge the lender a mediation fee of up to $750, although the fee was not imposed if the borrower failed to appear or the case was settled out of court. The lender could also seek a financial judgement on the borrower for the amount of the fee if the borrower defaulted on the loan after a settlement.

A total of three court systems had mandatory mediation programs in place by May 2009. In each case, court boundaries intersect with one of three metropolitan statistical areas (MSAs). Therefore, the policies of one court may affect only a portion of mortgage contracts within an MSA. Counties not subject to mandatory mediation provide a useful comparison group to compare mediated and unmediated disputes over mortgage contracts. For example, although Miami-Dade county had mandatory mediation starting in May 2009, Broward and Palm Beach counties, while in the same MSA, each have their own circuit courts where loans were not subject to mediation. A map depicting the location of mediation and comparison areas can be found in Figure 1. The three Florida county comparisons by MSA are:

1. Pensacola-Ferry Pass-Brent MSA:

   Treatment 1st Circuit: Escambia, Okaloosa, Santa Rosa, Walton Counties
   Control Holmes, Washington, Bay, Calhoun, Gulf Counties

2. Miami-Fort Lauderdale-Miami Beach MSA:

   Treatment 11th Circuit: Miami-Dade County

[18]The 11th Circuit Court (part of the Miami-Fort Lauderdale-Pompano Beach, FL Metropolitan Statistical Area [MSA]) put its programme into action on May 1, 2009 ("Establishment of 11th Circuit Homestead Access to Mediation Program 'Champ' For Case Management of Residential Foreclosure Cases in the Eleventh Judicial Circuit Court of Florida," Case. No. 09-1, Administrative Order No. 09-08, Fla. 11th Jud. Cir. Apr. 9, 2009).

[19]The timeline of this programme is not confounded with the national robo-signing issues that emerged in September 2010.

Control Broward, Palm Beach Counties

3. Deltona-Daytona Beach-Ormond Beach MSA:

   Treatment 19th Circuit: Indian River, Martin, Okeechobee, St. Lucie Counties
   Control Seminole, Volusia, Brevard Counties

The choice of these courts was driven by the location of the Collins Center's offices.[20] The Center trained and selected the mediators, easing the administrative burden on the courts during the programme. This also created a standardised mediation programme across the three courts. We argue that the locations of the Collins Center's offices are exogenous to mortgage and housing market outcomes before the policy began, especially when comparing counties within the same MSA that were not subject to mandatory mortgage mediation. The areas in which the mediation policy was implemented seem uncorrelated with observed lender or borrower characteristics, as well as any incentives for mortgage servicers to engage with borrowers in those areas.

3 Data

The data come the Corporate Trust Services (CTS), a database on home mortgage loans also used in Collins *et al.* (2013). The data are comprised of individual monthly loan payments for mortgages initially made by more than 100 different lenders. These lenders sold each mortgage contract to investors as part of mortgage-backed securities. CTS reports to investors on the payments of principal and interest for each loan underlying these securities. CTS only captures loans that are privately securitised, 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.[21] We also observe if

[20] Named after Governor LeRoy Collins, the Center was established in 1988. After Fannie Mae cancelled a financial counselling contract in 2012, the Collins Center Board of Trustees authorised the dissolution of the Collins Center for Public Policy on January 31, 2013.

[21] 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 monthly changes in payments, term or interest rate.

a foreclosure was filed with the courts and if the property was acquired into the lender's real estate owned (REO) inventory.

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, 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 avoid foreclosure (Agarwal *et al.* 2011b). These data also do not observe all loans each borrower or property may have. Any loans taken out on the property after the focal loan are unobserved. This may also tend to result in a bias towards more modifications (Elul *et al.* 2010; Goodman *et al.* 2010).

Only owner-occupied, single-family homes where the mortgage is the primary or first-position lien are included in this analysis.[22] Loans that were prepaid, modified, or taken through foreclosure in the first period of observation (one year prior to the policy initiation) are also excluded. We also restrict the analysis to loans where the original mortgage balance is less than $1,000,000, excluding a very small number of unusual loans. 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 application was first underwritten. We were able to match approximately 82% of loans to application records; since this limits our sample size, we generally use these data only as a robustness check.[23]

In order to control for the value of the home in each month, we collect zip code-level house price data from Zillow. Zillow uses data on market transactions to estimate prevailing average market values. These estimates are not seasonally corrected, but offer a reasonable estimate of house price trends by zip code from the date of the loan to the current period. 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 origination and the current month. Thus, we approximate the home's value in each time period

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

[23] 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, however.

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.[24,25]

The data are organised as a monthly panel with 25 periods, including observations from one year before and one year after the date of the implementation of the mediation policy (May 2009). We argue that limiting the sample allows us to better isolate the effect of mediation on mortgage contract resolutions. Each observation is coded as being located in a county that offers mediation using a dichotomous indicator and is also coded with a dichotomous indicator for each month beginning the month after mediation was implemented (June 2009). Our primary dependent variable is the incidence of a loan modification, defined as a formal change in the term, balance, or rate of the loan contract. This indicator is zero for all periods until the modification and one for all periods after as long as the modified contract is in place. Modifications are recorded by the servicer only after any trial periods are completed and the terms are finalised. All observations are unmodified and not in foreclosure as of the first period.

Table 1 presents summary statistics for each area; we first look at all of the areas in Florida we study, and then separately study the Miami MSA (the largest area) versus the remaining two, much smaller, MSAs (Pensacola and Daytona). Because the Miami MSA is so large and has unique demographic characteristics, we want to check that this one MSA does not drive the results. The baseline rate of modifications is approximately 7-8%, and the foreclosure rate is between 11 and 15%. Between one-third and three-quarters of loans have adjustable interest rates, as was common in this period. Delinquency among these loans is common; 25-30% of loans in the data have been at least 60 days behind within the last six months. Current home values are between $220,000 and $270,000, above statewide averages, but showing with a high degree of variation. Loan-to-value (LTV) ratios are around 80%, a common threshold for borrower equity or leverage in the mortgage market. Median annual incomes are between $108,000 and $120,000, more than double statewide medians, but again with a high degree of variation. The skewed distributions of income and home values suggests the use of natural logs in our specifications, as the means are significantly larger than the median values. The average FICO credit scores are near 680, the cutoff for subprime loans in the mid-2000s. All samples show high shares of

[24] See Frame (2010) and citations therein for a review of the literature suggesting foreclosures may have an impact on neighbouring house values.

[25] See Section 5.3.2 for more on the effects of this mediation policy on foreclosures.

racial minorities, with the highest concentration in Miami.

Due to the rapid implementation of this policy, there were minimal opportunities for lenders or borrowers to anticipate mediation and respond strategically. Even if lenders were knowledgeable about the start date of automatic mediation, it does not appear they accelerated foreclosure filings before mediation programs began. Empirically, Figure 2 does not illustrate a spike in filings before mediation began for either the mediation ("treatment") or non-mediation ("control") areas. Additionally, it seems unlikely that borrowers were compelled to default in anticipation of mediation. A borrower eligible for mediation prior to a foreclosure filing had defaulted months earlier, before the announcement of the programme. It also seems unlikely that a borrower would miss payments simply for the opportunity to have a mediation session prior to a foreclosure hearing. Borrowers can always decide not to show up for mediation if the costs of mediation are perceived as excessive. Figure 4 supports these assumptions, as delinquency patterns for loans in both mediated and unmediated areas have similar pre-policy trends. Appendix Figure 5 shows that pre-policy home values were on differing trajectories, with mediated areas showing a faster decline in values than nonmediated areas. Figure 6 shows that pre-policy trends for FICO credit scores are consistent, however.

4 Empirical Strategy

We employ a difference-in-differences model along the lines of that used by Mayer and colleagues (2011) in their analysis of the Countrywide settlement. We use a linear probability model with interaction terms. Linear probability models (LPMs) can generate unrealistic fitted values for binary outcomes. However, LPMs perform reasonably well for estimating marginal policy effects such as the goal of this study (Angrist and Pischke 2008) and also produce interaction terms that are easier to interpret (Ai and Norton 2003). According to Wooldridge (2002), the LPM differs from the logit and probit specifications in that it assumes constant marginal effects, while the logit and probit models imply diminishing marginal returns in covariates [p. 469]. Wooldridge (2002) further asserts that probit models can also be used to estimate the effects of policies, including aggregate time effects, as we do in this study. While we present the LPM estimates, the results are highly similar to the marginal effects from comparable probit specifications (which are provided in the Appendix). We are also careful to cluster our stan-

dard errors at the month level, as well as provide robust standard errors in order to control for heteroskedasticity in all of our models (Haughwout *et al.* 2008).

$$Y_{i,t} = \beta_0 + \beta_1 \text{Post}_{i,t} + \beta_2 \text{Mediation}_{i,t} + \beta_3 \text{Value}_{i,t} + \gamma_c + \delta_t + \boldsymbol{\phi} \boldsymbol{Z}_{i,t} + \eta_{i,t} \tag{1}$$

Equation 1 displays the specific empirical model we estimate. We compare the difference in the likelihood of modifications for counties with mediation programs to other counties in the same MSA without mediation programs, including county-level fixed effects γ_c. This assumes that the unobserved changes in the housing market before ($\text{Post}_{i,t} = 0$) and after ($\text{Post}_{i,t} = 1$) the policy change follow the same pattern for loans in the treatment and control areas. *Mediation* is the interaction of the binding time period ($Post_{i,t}$) and being a loan located in a county implementing mandatory mediation. Thus, the coefficient of interest for the difference-in-differences will be β_2, which captures the increase in modifications from being in a mandatory mediation county post mediation, compared to the average modifications in the absence of the programme.[26]

This specification also includes month-fixed effects to control for time-variant unobservables, or a rise in the trend towards modifications over time, and we are careful to look at the Miami MSA and the remaining 2 MSAs separately to ensure that there are no peculiarities to those areas. We finally estimate and include the value of the home based on the LTV ratio at the origin of the loan, the original amount of the loan, and the change in zip code-level house prices between the two time periods in our primary specification. In alternate specifications, we include controls for demographics and specifics of the loan in $\boldsymbol{Z}_{i,t}$, though we do this only in a few specifications, since it limits our sample. These characteristics include minority race status, the natural log of income at the time of application, FICO credit score at origination and loan characteristics such as dummies for delinquency in the last six months, the LTV ratio at origination, and an ARM indicator.

[26] As Puhani (2008) describes, this treatment effect is the conditional expectation of the observed outcome minus the cross difference of the conditional expectation of the potential outcome without treatment.

5 Results

In this section, we formally test the predictions of the theoretical literature in the following three ways:

1. Does mediation increase the rate of renegotiation outcomes by increasing the amount of information disseminated between the borrower and the lender? Since this should only affect cases where the borrower and the lender have a moderate degree of conflict (Mitusch and Strausz 2005; Goltsman *et al.* 2009), this effect should be moderate. This analysis is contained in Section 5.1.

2. Does the amount of asymmetric information impact the effect of mediation? We test this by asking if borrowers with more ex ante private information regarding their preferences for complex mortgage decisions have a differential effect of mediation (See, for example, Bucks and Pence (2008) and Campbell (2006) for more on borrowers with large amounts of private information). These tests are described in Section 5.2.

3. Does mediation provide clearer information? We test this in two ways:

    - First, we determine the degree to which lenders make deeper concessions with a mediator than in unmediated negotiation. Here we also ask if mediated modifications result in lower redefault rates. This is contained in Section 5.3.1.
    - Second, we ask if more foreclosures occur under mediation due to the increase in information revealed. This is provided in Section 5.3.2.

5.1 *Mediation Affects Renegotiation Outcomes*

Table 2 displays the results from the initial difference-in-differences, where we find that in all areas, the rate of modifications increases after the imposition of mandatory mediation when compared to the modification rate in the same MSA among loans not exposed to mediation. Consistent with the predictions from the theoretical literature, we find that on the margin there is a small increase in the rate of formal loan modifications, as we expect when the rate of conflict between the borrower and lender is moderate. Column (1) shows that throughout Florida, there is approximately a 0.87 percentage point increase in the rate of modifications, which is a modest

effect size but relatively large when compared to the mean modification rate (7.6%). To be sure that Miami is not driving this result, as it is the largest MSA of the three in the sample, we re-estimate this effect using only Miami, and again dropping Miami from the sample. In Column (2), there exists a similar effect looking just at Miami, where there is a 0.9 percentage point increase from a mean modification rate of 7.4%. In Column (3), dropping Miami yields a similar increase in the rate of modification of about 0.87 percentage points but from a slightly higher mean modification rate of 8.4%. Columns (4)-(6) show that controlling for individual variables at the time of application as well as loan characteristics produces a similar effect. The sample is reduced in these specifications, as the controls rely on an imperfect merge with HMDA.[27]

Bertrand *et al.* (2004) warn that using difference-in-differences over long panels to measure serially correlated outcomes will result in a false reduction in variance and increased statistical power. This increased statistical power will bias towards statistically significant findings even in the absence of true effects. Our analysis avoids this issue to some extent by using simple pre-post mediation periods as an identification strategy rather than multiple event dates in the same model. In addition, we truncate our period to one year before and one year after the policy was implemented and include robustness checks limiting the pre and post periods to six months.[28]

When reducing the sample to six months pre- and post- policy implementation (Table 3), the results remain similar, though the point estimates are slightly smaller in magnitude, and the standard errors are larger. This is especially true in Columns (4)-(6) in Table 3, where we include additional controls and further reduce the sample to loans that merge with the HMDA data (and that do not have missing observations in the HMDA data). Since the baseline modification rates are low to start and the sample reduction reduces the power of our estimates, the larger confidence intervals are expected. However, the similar magnitude of point estimates shows that the effect is robust to using smaller samples.[29]

[27] If we reduce the sample without including controls, our results remain robust.

[28] Cameron *et al.* (2008) pose the same concern for short panels, and thus we check that these results are robust to calculating standard errors with the bootstrapping method they propose. We do not present the bootstrap results, but the estimates are nearly identical to the tables presented.

[29] In March 2009, the federal Making Home Affordable Program (HAMP) was launched. The goal of the programme was to stimulate servicers and lenders to offer more loan modifications (Mayer *et al.* 2009). The timing of HAMP and the Florida mediation policies might be problematic in that both were launched around the same time. However, HAMP was national in scope and would impact counties with mandatory mediation and comparison counties in similar ways. Upon request, the authors can provide estimates for loans that are HAMP eligible; the results are consistent with the prior findings.

It has also been documented that there is distinct heterogeneity in the rate of loan modifications across servicers (Agarwal *et al.* 2012). If there is an unequal distribution of more accommodating servicers in the counties requiring mediation, this would bias our results upwards. We provide a robustness check to each of our main results in the Appendix by including servicer-fixed effects. Unless specifically stated otherwise, all of our results remain robust.

5.2 *The Amount of Asymmetric Information Impacts the Affect of Mediation*

We now consider potential heterogeneity in mediation, where the amount of asymmetric information can affect the impact of mediation. In particular, theoretical literature has asserted that when the principal and agent have a sufficiently high divergence in preferences, mediation can have its largest effects (Ganguly and Ray 2005, 2006). Prior studies show that low-income and minority-race borrowers behave in certain ways that we interpret as a form of revealed preferences for dealing with complexity in managing mortgage contracts. For example, there is variation by race and income in how well borrowers know the terms of their loan (Bucks and Pence 2008). There are also several studies which suggest low-income and minority race borrowers are less likely to refinance interest rates on mortgages (Campbell 2006; Agarwal and Mazumder 2013). This is consistent with a preference for simplicity (or avoiding "hassles") that could also result in these borrowers being less willing to engage in the mortgage modification process. In essence, borrowers vary on a preference parameter that is not obvious to lenders, which results in a lower willingness to reveal private information useful for modifications. Mandatory mediation for all borrowers would result in these borrowers revealing more information and therefore this presents the potential for heterogeneity in outcomes. Mediators remove some of the complexity (or the hassle factor) from the renegotiation process. We examine differential effects by using interactions between loans subject to mediation and minority-race borrowers, as well as an indicator for higher income (above the median) borrowers. Table 4 shows these results.

We first display the baseline effects, using the full sample including all MSAs in the previous analysis with indicators for the borrower's race, including Black, Hispanic, and Asian, with White as the excluded group. Column (2) shows the interactions with race, and (3) with higher-

income borrowers. Minorities tend to exhibit larger and statistically different effects of mediation than Whites. Likewise, higher income levels have a smaller response relative to lower-income borrowers (below the median).

These findings corroborate the predictions from the theoretical mediation literature, that only marginal loans among people who can pay and do show up for mediation should show a response.

5.3 *Mediation Provides Clearer Information*

We next provide evidence that mediation provides the lender with better information. First, we show that modifications under mediation include deeper concessions by the lender and lower redefault rates from the borrower. Second, we find evidence that foreclosures increase after mandatory mediation is imposed, showing that lenders gain additional information regarding borrowers who will not be able to repay in the future.

5.3.1 *mediation provides deeper modification concessions*

Lenders appear to modify more loans under mandatory mediation, based on the evidence just discussed. A further question is whether the information revealed in mediation results in different forms of modified contracts, and whether the ultimate performance of modified loans is better or worse given the mediation mandate.

We first limit our sample to only "ever modified" loans and flag the period and county in which each loan was modified. This allows us to distinguish loans that were modified before and after mediation began in the treatment and control counties. We then determine the interest rate before and after modification to compute the change in the rate; we do the same for the remaining loan balance amount. Next, we pull information for the same loan in the following twelve months in order to determine whether the modified loan in our sample period of interest redefaulted (defined as 60 or more days delinquent.) We redefine the sample to be cross-sectional in nature, so each observation is a modified loan in the month it was modified, and contains information on the change in balance, the change in interest rate, and whether or not the loan redefaulted in the following year.

Equation 3 shows the specification we run to determine whether loans modified under the

mediation policy appear to reveal more information than those that were not:

$$T_{i,t} = \alpha + \beta_1 \text{Post}_{i,t} + \beta_2 \text{Mediation}_{i,t} + \beta_3 \text{Value}_{i,t} + \gamma_c + \delta_t + \boldsymbol{\phi Z}_{i,t} + \eta_{i,t}, \tag{2}$$

$T_{i,t}$ is alternatively equal to the change in interest rate before and after modification, the change in current balance before and after modification, or a redefault dummy equal to one if the modified loan redefaulted within one year of the modification.

In this specification, we show results only for the full Florida sample in order to retain power in our estimates. Table 6 shows that loans modified under the mediation policy had changes between the pre- and post-modification interest rate approximately 27-38 basis points lower than those modified without mediation, depending on whether or not we add controls.[30] Columns (2)-(3) further demonstrate that the change in the current balance between pre- and post-modification is over $7,000 less (which is, on average, 3% of the balance) with mediation than in the absence of mandated mediation. This provides additional evidence that more information is revealed through formal mediation than would have been in the absence of this policy.

Finally, and perhaps most importantly, Columns(5)-(6) of Table 6 display a decrease in 12-month redefault rates of over 22% due to mediation. Given that the average redefault rate for this sample is quite high, close to 72%, this is a reasonable, yet large effect size.[31] This provides preliminary evidence that the modifications performed under mediation are better calibrated to the borrower's ability to pay and provide longer streams of cash flows to lenders.[32][33]

5.3.2 *mediation increases foreclosure filings*

While the primary purpose of this paper is to determine whether mandated mediation results in a formal change in contractual agreements between a borrower and lender, it is also important

[30] However, when we include servicer-level fixed effects, this effect is no longer statistically significant. This is shown in Table 15.

[31] Our average 12-month redefault rate upon modification is close to the rate reported by the Office of the Comptroller of the Currency (OCC), which was 70.7% in the third quarter of 2008 (OCC 2012).

[32] Since the concessions made by lenders under mediation are deeper, we do not say that this is a net benefit for lenders. We simply say that the cash flows continue longer, even if these may be less than the lender would have received under other modification terms.

[33] In addition to information quality, mediation may induce reciprocity norms on behalf of a borrower who sat at the table with a lender and mediator(Wilkinson-Ryan 2011). We consider this a possible explanation, but information as the first order mechanism.

to learn how mediation can affect the level of information revealed. We ask whether mandatory mediation polices help lenders better observe which borrowers are unlikely to repay. For these borrowers, lenders may elect to repossess troubled loans with low probability of repayment by filing foreclosure.

We use a similar linear probability specification with corrected standard errors to estimate lender foreclosure filings due to imposition of mandatory mediation policies, where the effect of mediation policies will be identified as a difference-in-differences. Neither modifications nor foreclosure starts are absorbing states; loans can move in and out of both modified status and the foreclosure process. A failed modified loan can also experience a foreclosure filing.[34] We start our first period with loans one year prior to the policy's initiation, where all loans are current. Specifically, we estimate:

$$F_{i,t} = \alpha + \beta_1 \text{Post}_{i,t} + \beta_2 \text{Mediation}_{i,t} + \beta_3 \text{Value}_{i,t} + \gamma_c + \delta_t + \boldsymbol{\phi Z}_{i,t} + \eta_{i,t}, \tag{3}$$

where $F_{i,t}$ equals one if a foreclosure was filed or initiated in month t for loan i, and 0 if the loan is current in the given month.

These models in Table 5 show that mediation policies, restricted to loans that were *not* modified, are positively associated with about a 4.3 percentage point elevated rate of foreclosure filings. The effect is much lower outside of Miami-Dade, and no longer statistically significant. With controls, the effects are reduced for Miami-Dade. The Daytona and Pensacola MSAs areas combined are still not statistically distinguishable from zero. These findings are mostly corroborated with the use of a probit specification (Table 10), although again the Daytona and Pensacola MSAs (which have smaller numbers of observations) show differing, or even opposite results. The Miami results are consistent with mediation signaling prospects for filing foreclosures.

[34] A traditional competing hazards time-to-failure model is not applicable; however, we do show the marginal effects from a probit model in Tables 8-10 of the Appendix.

6 Discussion

In Section 2.2, we indicated that the literature finds three main explanations for the low rate of modifications: 1) asymmetric information between the lender and the borrower, 2) institutional frictions due to securitization, and 3) limited organizational ability of servicers to perform modifications. We find that mediation policies are most applicable to the first barrier to modifications, asymmetric information between the borrower and the lender. Here, we discuss other potential explanations for the increase in modifications and assert that the information asymmetry is the dominant mechanism for the increased modification rate.

First, it could be the case that lenders are more likely to modify a mortgage contract under mandated mediation since they must devote resources to preparing for mediation, potentially also including up to $750 in mediator fees (which we do not observe). However, we show that the concessions lenders make in modifying loans in areas where the policy was implemented are deeper and corresponding redefault rates are lower. This is consistent with mediation revealing more quality information about willingness to pay rather than modifications being spurred by fees incurred.

Second, a growing literature emphasises that servicers do not have incentives to develop optimal workouts for troubled mortgage loans (see Piskorski *et al.* (2010), for example). This literature documents that servicers' incentives may result in more foreclosures, even if modifying the loan could benefit both the borrower and investors. Under mandatory mediation, we observe increases in both foreclosures and modifications, leading us to believe that while servicers may in fact have skewed incentives to foreclose, the information revealed increases both actions. Since all of the loans in this study are securitised; we have not tested the effects of the policy on non-securitised loans, but would predict similar–if not larger—effects relative to a pre-policy baseline.

Third, initial concerns may arise that servicers actively participated in mediation and modified loans primarily in order to avoid "bad press," rather than as a result of information revealed in mediation. However, the increase in the rate of foreclosure filings due to the mediation policy would seem to undermine this reasoning. If it is a servicer's goal to avoid negative media coverage, it is unlikely that this servicer will increase foreclosure filings (which are publicly filed) and often the focus of media attention. In addition, with a large number of servicers avoiding"bad

press" becomes a public goods problem, making the individual impact on overall press coverage minor.

While this paper examines a situation where there are a fixed number of mediators working for a non-profit organization and mediators get paid regardless of whether or not an agreement is reached, one could imagine that if this project were extended the incentives of the third-party mediators may become an issue. First, mediators who create an agreement between a borrower and lender may be most likely to be re-hired for future cases. This may result in more agreements reached when borrowers are unable to pay. Second, mediators who are only paid when an agreement is reached, may also try to reach an agreement where modification terms are reached. Third, if mediators generate more cases borrowers re-default on modified mortgage contracts, servicers may lose trust in these mediators in repeated interactions. Thus, servicers may be less willing to modify loans in the future.

7 Conclusion

A lender managing a mortgage in default has a limited set of options, where the demands of investors are to maximise the net present value of the loan. Foreclosing can be costly, but a contract modification might add to those costs if it is not well calibrated to the borrower's willingness to pay. The borrower has incentives to offer the lender limited information skewed towards lowering monthly payments and reducing principal, while also suggesting positive intentions to repay under new loan terms in the long run. This presents a situation where negotiation can improve the welfare of both parties, but information asymmetry exists such that lenders cannot easily assess the borrower's level of "cheap talk". Mediation by a third party might result in more and better information being transferred. In none of the specifications presented did we find that mediation reduces the rate of formal loan modifications, and in most models mandated mediation appears to boost modifications, in some cases significantly. There is also some evidence that information conveyed under mediation—including perhaps a borrower who fails to appear—influences lender behavior such as the terms of modifications and the decision to foreclose. There is also some evidence that lenders could benefit from these actions, at least

in terms of re-defaults.[35].

Consistent with the theoretical literature including Mitusch and Strausz (2005) and Goltsman *et al.* (2009), we find that mortgages in default appear to be cases of a moderate degree of conflict. Mediation in these cases increases the amount of information revealed to the lender, as evidenced by the increase in the number of contract renegotiations. Next, we find that the amount of asymmetric information affects the degree to which mediation improves modification rates. Consistent with Ganguly and Ray (2005), we find that those borrowers with the most private information gain more from mediation. Finally, we examine the ability of mediation to provide a lender with clearer information. Here, we conclude that lenders are able to better calibrate modifications to borrowers with a mediator. Lenders make deeper modification concessions with a mediator, and those borrowers who received modifications under mediation have lower one-year redefault rates. Further, the rate of foreclosure filings increases after mediation, suggesting that lenders gain all types of information from mediation, including negative information about borrowers.

The application of mediation to mortgages in default appears to be well positioned in the theoretical literature. To the extent that renegotiation of loan terms is a policy goal, the imposition of mandatory out-of-court mediation may be a useful strategy in the mortgage market, and perhaps could be explored in similar settings, such as for student loans and other consumer credit markets.

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Article Submitted: December 12, 2012

[35]We are not able to estimate overall gains and losses for lenders or investors based on lower default rates. While we observe the size of concessions we cannot estimate net cash flow or ultimate losses on loans with available data

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8 Tables and Figures

Fig. 1: *Florida, Locations of Mandatory Mediation*

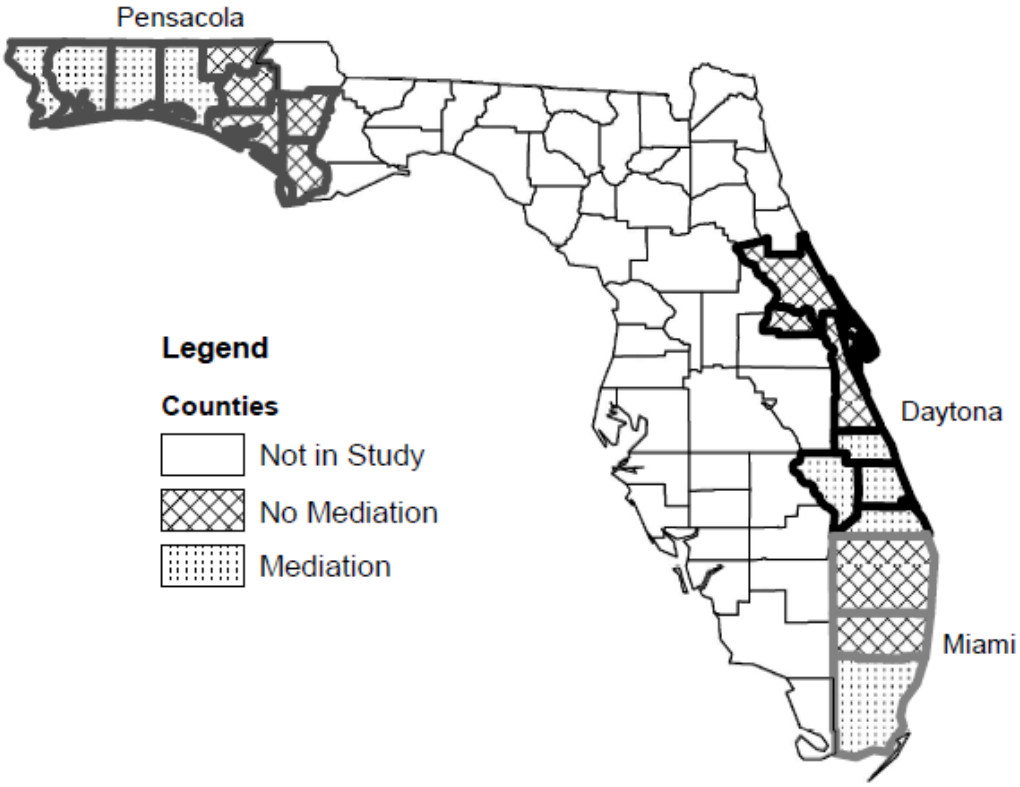

Fig. 2: *Trends in Foreclosure Filings in the Pre-Policy Period*

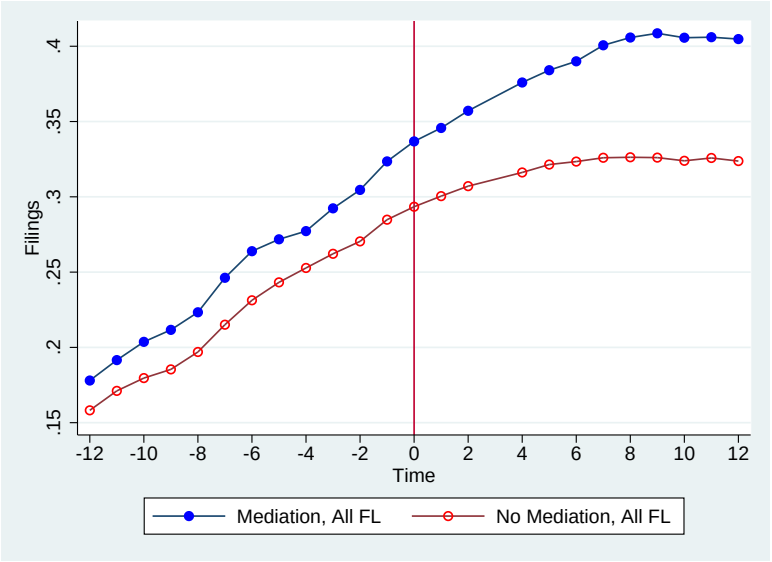

Fig. 3: *Trends in Modification Rates in Pre-Policy Period*

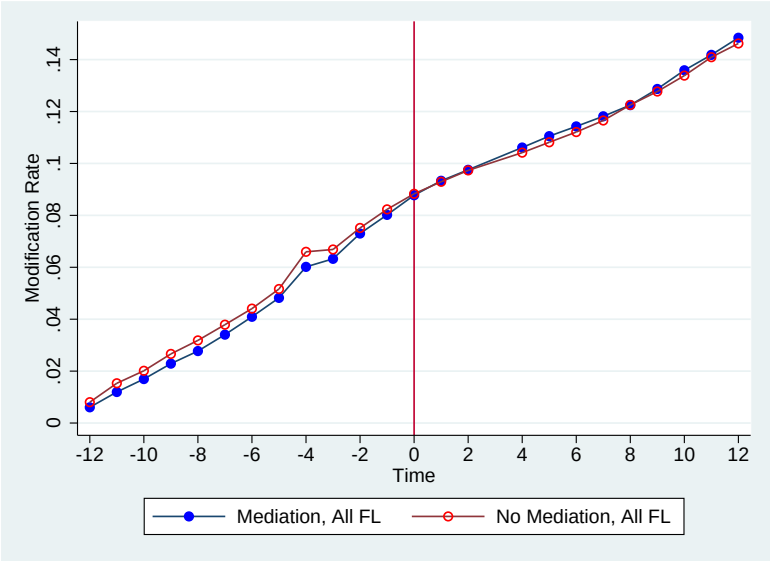

Fig. 4: *Trends in Delinquency Rates in the Pre-Policy Period*

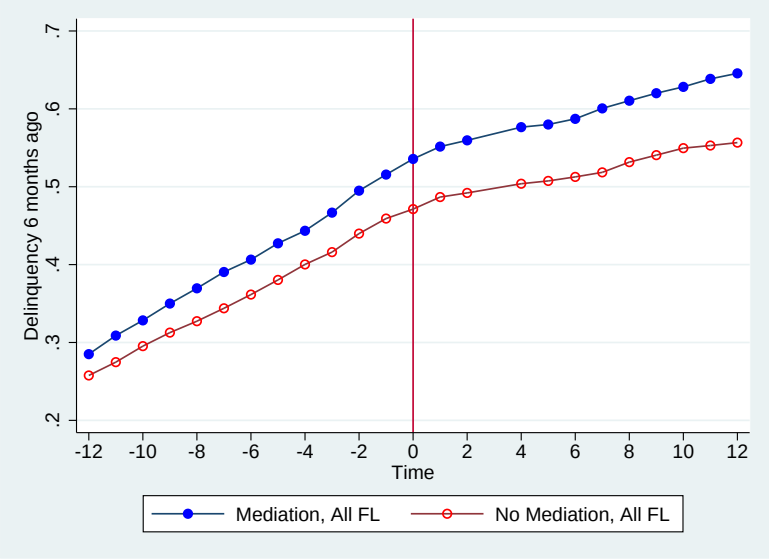

Table 1: *Summary Statistics by Area*

	All of FL	Miami	Rest of FL
Dependent Variables			
Modification Rate	0.0759	0.0736	0.0842
	(0.2649)	(0.2610)	(0.2778)
	[490773]	[381824]	[110508]
Foreclosure Starts	0.1411	0.1502	0.1094
	(0.3482)	(0.3573)	(0.3121)
	[490773]	[381824]	[110508]
Loan Characteristics			
ARM	0.7463	0.7728	0.6537
	(0.4351)	(0.4190)	(0.4758)
	[490773]	[381824]	[108949]
Delinquency in Last 6 Months	0.3116	0.3257	0.2624
	(0.4632)	(0.4686)	(0.4400)
	[490773]	[381798]	[108935]
Current Home Value (thousands)	260.74	271.73	222.47
	(1206.95)	(1297.59)	(815.30)
	[473665]	[367950]	[105715]
LTV Ratio	80.73	80.64	81.03
	(9.53)	(9.47)	(9.75)
	[474353]	[368463]	[105890]
Applicant Characteristics (at time of origination)			
Income (thousands)	117.85	120.69	107.48
	(133.09)	(127.43)	(151.51)
	[21367]	[16771]	[4596]
FICO Score (divided by 100)	6.77	6.79	6.75
	(0.7187)	(0.7070)	(0.7578)
	[21751]	[16943]	[4808]
Minority	0.5867	0.6653	0.3056
	(0.4924)	(0.4719)	(0.4607)
	[21452]	[16760]	[4692]

Mean of each variable reported with standard deviation in parentheses,
and observations in brackets.

Table 2: *Mediation Increases the Probability of Modifications*

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.00870***	0.00903***	0.00865***	0.00827***	0.00744***	0.0116***
	(0.000620)	(0.000781)	(0.000695)	(0.000712)	(0.000738)	(0.00145)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	473665	367950	105715	387548	305669	81879

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Linear probability model.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was
implemented. Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 3: *Mediation Increases the Probability of Modifications when Reducing Sample Period*

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.00486***	0.00366**	0.00957***	0.00614***	0.00549***	0.00801***
	(0.00102)	(0.00118)	(0.000894)	(0.00120)	(0.00131)	(0.00161)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	194397	151088	43309	159116	125523	33593

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Linear probability model. Sample cut to 6 months before and after policy.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was
implemented. Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 4: *Heterogeneity in Borrower Characteristics in Mediation and Modifications*

Dependent Variable=1 if Loan was Modified in Given Month			
	(1)	(2)	(3)
Mediation	0.0115***	-0.00372	0.0262***
	(0.00173)	(0.00227)	(0.00220)
Black	0.0713***	0.0614***	0.0711***
	(0.00164)	(0.00169)	(0.00164)
Hispanic	0.0118***	0.0105***	0.0119***
	(0.00104)	(0.00107)	(0.00104)
Asian	-0.0110***	-0.0141***	-0.0109***
	(0.00246)	(0.00247)	(0.00246)
Black x Mediation		0.0725***	
		(0.00537)	
Hispanic x Mediation		0.0139***	
		(0.00255)	
Asia x Mediation		0.0237**	
		(0.00997)	
High Income x Mediation			-0.0302***
			(0.00233)
Includes			
HMDA Controls	X	X	X
Month Dummies	X	X	X
County Dummies	X	X	X
Home Value$_t$	X	X	X
Observations	407847	407847	407847

Notes: Robust standard errors clustered at month level in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ High income=1 if applicant income > median.
Observations are loan months. Linear probability model.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented. All columns include loan-level controls: minority status, ln(income), FICO score, LTV ratio, delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 5: *Mediation Increases the Probability of Foreclosures*

Dependent Variable=1 if Loan Received Notice of Foreclosure in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.0342***	0.0437***	0.00205	0.0248***	0.0307***	0.00188
	(0.00574)	(0.00772)	(0.00191)	(0.00471)	(0.00616)	(0.00222)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	436854	340229	96625	354685	280611	74074

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Linear probability model, excludes loans that were modified.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 6: *Mediation Influences Modification Concessions and Redefault Rates for Modified Loans*

	(1)	(2)	(3)	(4)	(5)	(6)
	Rate Change		Balance Change		Redefault	
Mediation	-0.381**	-0.274*	-7859.1***	-7479.4***	-0.248***	-0.220***
	(0.141)	(0.149)	(1896.7)	(2140.1)	(0.0473)	(0.0501)
Includes						
HMDA Controls	-	X	-	X	-	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	1095	980	1095	980	1095	980

Notes: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loans modified between May 2008 and May 2010.
Linear probability model in (5) and (6). Mediation=1 if the loan
was modified in a county with mandatory mediation after the policy was implemented.
Columns (2), (4), (6) include loan-level controls: minority status, ln(income),
FICO score, LTV ratio, an ARM indicator, and month dummies.

Appendix

Fig. 5: *LTV Similar Across Loans in Treatment and Control Counties*

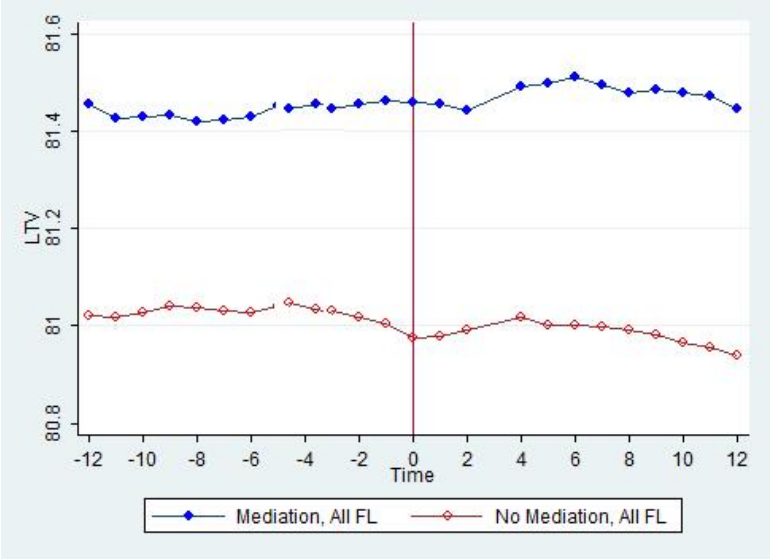

Fig. 6: *FICO Trends Similar Across Loans in Treatment and Control Counties*

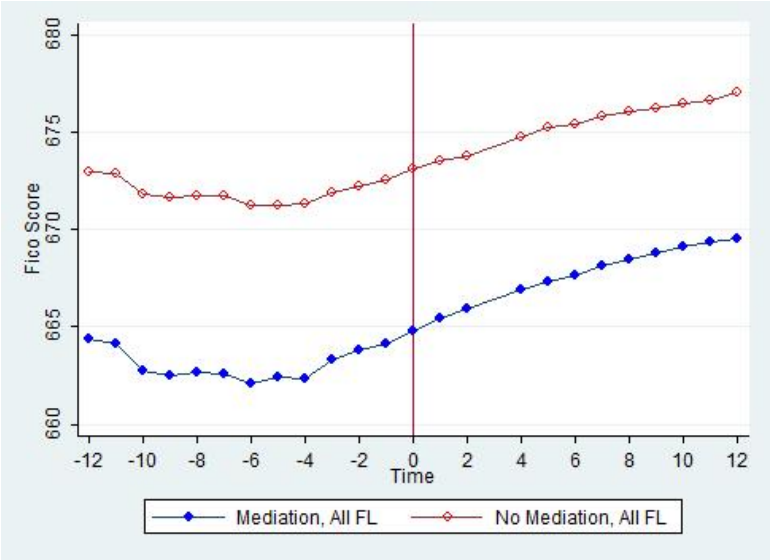

Table 7: *Pre-Mediation Trends Similar Across Loans in Treatment and Control Counties*

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Treatment	-0.0221	-0.000374	-0.0205	0.00458	-0.0161***	0.0160
	(0.0215)	(0.000692)	(0.0215)	(0.0234)	(0.00213)	(0.0227)
QY(2) x Treatment	0.00159*	0.00140	0.00197	0.00142	0.000841	0.00319
	(0.000841)	(0.00136)	(0.00143)	(0.000913)	(0.00150)	(0.00196)
QY(3) x Treatment	0.000605	0.00255***	-0.00586***	0.000798	0.00297***	-0.00697***
	(0.000372)	(0.000716)	(0.00138)	(0.000652)	(0.000883)	(0.00153)
QY(4) x Treatment	0.00453***	0.00509***	0.00256**	0.00349***	0.00423***	0.000601
	(0.000123)	(0.000208)	(0.00112)	(0.000146)	(0.000317)	(0.00151)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	247704	192336	55368	202937	159940	42997

Notes: Robust standard errors clustered at the month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months in the pre-mediation period. QY is a dummy for each quarter-year.
Treatment=1 if the loan is in a county ever implementing mandatory mediation.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 8: *Mediation Increases the Probability of Modifications with a Probit*

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.0050***	0.0045**	0.00827***	0.0084***	0.0077***	0.0110***
	(0.00160)	(0.00180)	(0.00348)	(0.00176)	(0.00196)	(0.00388)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	473662	367950	105712	387545	305669	81876

Notes: Marginal effects presented. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Probit model.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 9: *Mediation Increases the Probability of Modifications when Reducing Sample Period and with a Probit*

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.00398	0.00287	0.00882	0.0056**	0.0049	0.0081
	(0.00254)	(0.00285)	(0.00555)	(0.00280)	(0.00313)	(0.0062)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	194397	151088	43309	159116	125523	33593

Notes: Marginal effects presented. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Probit model.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 10: *Mediation Increases the Probability of Foreclosures with a Probit*

Dependent Variable=1 if Loan Received Notice of Foreclosure in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.0342***	0.0164***	- 0.00910**	0.00572***	0.0100***	-.0112***
	(0.00574)	(0.00243)	(0.00395)	(0.00193)	(0.00223)	(0.00373)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	436854	340229	96625	354685	280611	74074

Notes: Marginal effects presented. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Probit model, excludes loans that were modified.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

8.1 *Robustness to Servicer FEs*

Table 11: *Mediation Increases the Probability of Modifications*

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.0109***	0.0116***	0.00763***	0.00920***	0.00957***	0.00830***
	(0.000954)	(0.00126)	(0.000514)	(0.000981)	(0.00115)	(0.00130)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Servicer Dummies	X	X	X	X	X	X
Observations	467378	361378	106000	381339	299082	82257

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Linear probability model.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 12: *Mediation Increases the Probability of Modifications when Reducing Sample Period*

Dependent Variable=1 if Loan was Modified in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.00701***	0.00705***	0.00710***	0.00702***	0.00761***	0.00397**
	(0.00151)	(0.00198)	(0.000539)	(0.00156)	(0.00211)	(0.00129)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Servicer Dummies	X	X	X	X	X	X
Observations	192017	148489	43528	156758	122928	33830

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Observations are loan months. Linear probability model.

Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented.

Columns (4), (5), (6) include loan-level controls:

minority status, ln(income), FICO score, LTV ratio at origination,

delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 13: *Heterogeneity in Borrower Characteristics in Mediation and Modifications*

Dependent Variable=1 if Loan was Modified in Given Month			
	(1)	(2)	(3)
Mediation	0.0111***	-0.00575***	0.0183***
	(0.00167)	(0.00219)	(0.00211)
Black	0.0558***	0.0479***	0.0558***
	(0.00159)	(0.00165)	(0.00159)
Hispanic	0.00913***	0.00657***	0.00925***
	(0.00101)	(0.00104)	(0.00101)
Asian	-0.00619***	-0.00860***	-0.00613***
	(0.00235)	(0.00239)	(0.00235)
Black x Mediation		0.0574***	
		(0.00506)	
Hispanic x Mediation		0.0190***	
		(0.00245)	
Asia x Mediation		0.0180**	
		(0.00914)	
High Income x Mediation			-0.0148***
			(0.00224)
Includes			
HMDA Controls	X	X	X
Month Dummies	X	X	X
County Dummies	X	X	X
Home Value$_t$	X	X	X
Servicer Dummies	X	X	X
Observations	407631	407631	407631

Notes: Robust standard errors clustered at month level in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ High income=1 if applicant income > median.
Observations are loan months. Linear probability model.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented. All columns include loan-level controls: minority status, ln(income), FICO score, LTV ratio, delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 14: *Mediation Increases the Probability of Foreclosures*

Dependent Variable=1 if Loan Received Notice of Foreclosure in the Given Month						
	(1)	(2)	(3)	(4)	(5)	(6)
	All of FL	Miami Only	Rest of FL	All of FL	Miami Only	Rest of FL
Mediation	0.0339***	0.0451***	-0.00728***	0.0188***	0.0252***	-0.00909***
	(0.00404)	(0.00528)	(0.00212)	(0.00236)	(0.00303)	(0.00290)
Includes						
HMDA Controls	-	-	-	X	X	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Servicer Dummies	X	X	X	X	X	X
Observations	659163	523786	135377	547430	441410	106020

Notes: Robust standard errors clustered at month level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loan months. Linear probability model, excludes loans that were modified.
Mediation=1 if the loan is in a county with mandatory mediation after the policy was implemented.
Columns (4), (5), (6) include loan-level controls:
minority status, ln(income), FICO score, LTV ratio at origination,
delinquency in the last 6 months, an ARM indicator, and month dummies.

Table 15: *Mediation Influences Modification Concessions and Redefault Rates for Modified Loans*

	(1)	(2)	(3)	(4)	(5)	(6)
	Rate Change		Balance Change		Redefault	
Mediation	-0.163	-0.122	-4838.8**	-4254.5**	-0.204***	-0.198***
	(0.141)	(0.133)	(1855.9)	(2050.7)	(0.0453)	(0.0496)
Includes						
HMDA Controls	-	X	-	X	-	X
Month Dummies	X	X	X	X	X	X
County Dummies	X	X	X	X	X	X
Home Value$_t$	X	X	X	X	X	X
Observations	1095	980	1095	980	1095	980

Notes: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Observations are loans modified between May 2008 and May 2010. Includes servicer dummies.
Linear probability model in (5) and (6). Mediation=1 if the loan
was modified in a county with mandatory mediation after the policy was implemented.
Columns (2), (4), (6) include loan-level controls: minority status, ln(income),
FICO score, LTV ratio, an ARM indicator, and month dummies.