

Does Mandating Interest Payments on Mortgage Escrow Accounts Benefit Consumers?

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Abstract

We use the 2018-2024 Home Mortgage Disclosure Act data in a difference-in-difference framework to show that requiring lenders to pay interest on mortgage escrow funds does not benefit consumers. Our estimates suggest that lenders almost completely offset lost revenue by increasing up-front origination fees. Low-income borrowers are those most affected, indicating a potential regressive cross-subsidy resulting from the regulation. We also find this rule lowers the likelihood applications are originated, again with greatest effect on low-income applicants. Unlike the results on origination fees, which constitute a surplus transfer, changes in the likelihood of origination signal total surplus declines stemming from this policy.

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1 Introduction

Economists have consistently articulated the idea that costs and benefits of regulatory action are not necessarily borne by the parties on which they are incumbent. That determination is ultimately made in a market equilibrium where well-intentioned policies can produce unintended results. Consumer financial markets have proven especially susceptible to such unintended effects. Recent calls for direct price regulation in these markets have once again ignited a debate regarding the effectiveness of such policies to deliver on their intention (CFPB, 2024; Sanders et al., 2025; Singh and Ward, 2026).

This paper studies the case of state laws requiring mortgage lenders to pay a minimum interest rate on monies held in escrow for the payment of taxes and insurance on the mortgaged property. About 80 percent of mortgages require borrowers to contribute into these escrow accounts so that no tax lien is generated and insurance on the collateral remains current (Avery et al., 2018). Borrowers often lack awareness that a portion of their mortgage payment goes into escrow (Lereta, 2024). In fact, many may not know an escrow account for them exists at all. Lenders can take advantage of this consumer bias by not offering fair compensation. Rules mandating minimum interest on escrow are meant to correct this market failure.

However, lenders possess numerous free levers with which to compensate for lost revenue (Barr et al., 2009; DeMuth, 2009). Ultimately, their response can nullify the intended transfer, or, to make matters worse, interrupt access to credit altogether. We quantify the extent to which this price regulation causes lenders to adjust other terms of the mortgage, shifting the cost back onto consumers. We also estimate the policy's effect on the likelihood of mortgage applications being originated, which can signal an impact to overall welfare. Finally, we explore distributional effects of the rule, detailing the types of customer most affected by it.

We conduct this analysis using data from the Home Mortgage Disclosure Act (HMDA) public filings from 2018 to 2024. These comprise detailed loan-level data on nearly all mortgage applications and originations made in the United States over that period. We estimate the effects of the policy using a difference-in-difference design. In early 2022, Iowa repealed its escrow interest law, which had been on the books for several decades. Our approach compares outcomes over time in Iowa to similar states which never enacted such laws. We select for comparison states previously most similar to Iowa, the treated state, by applying the synthetic control method in Abadie et al. (2010). The identifying assumption is that, but for repeal of the escrow interest law, outcomes in Iowa would have followed a similar path to those in the comparison states.

Our estimates indicate that lenders shifted most of the cost incurred from escrow interest payments back onto consumers, and they did so primarily by adjusting up-front origination charges. Following repeal, a typical lender charged new mortgage borrowers in Iowa \$173 less in origination fees relative to its customers in comparison states. We calculate lenders can expect to pay

between \$193 and \$276 in interest on escrow accounts in Iowa. Our estimate thereby constitutes a 60 to 90 percent pass-through of this cost back to consumers.

We also find that low income mortgage borrowers were more affected. The repeal led to an average decline in origination fees for the bottom income quartile of \$287. This implies a pass-through of more than 100 percent for that quartile. For mortgages originated among the top quartile of earners, we find no statistically significant change, or no pass-through. This distributional result indicates that the rule not only affected the lowest income borrowers most, but it potentially generated a regressive subsidy away from them and towards high income mortgage borrowers.

The repeal also increased the chances a mortgage application ended in origination. After repeal, a typical bank originated 3.1 percent more of its applications in Iowa relative to those it received in comparison states. Like for the result on origination charges, this effect was much more pronounced for low income consumers. Among this group, the likelihood of origination increased by nearly 4 percentage points. For applicants in the top income quartile, the incidence of origination is not significantly affected by the rule.

Unlike for the results on pass-through, a higher relative likelihood of origination after repeal signals potential decrease in total surplus resulting from the policy. To the extent that this meant less credit extended, all surplus from these non-completed trades is eliminated. However, an application may be withdrawn by the applicant(s) or closed for other reasons, and those applicant(s) may succeed in obtaining credit elsewhere. Even applicants denied by the lender may eventually succeed in obtaining a mortgage. Still, those frictions do impose a cost on both lenders and borrowers. Loss of surplus, while less severe than if no credit were extended, can nonetheless be quite significant.

Primarily, our paper contributes to the literature on pass-through of costs in mortgage lending. For example, [Benetton \(2021\)](#); [Benetton et al. \(2021\)](#) relate increases in capital requirements to higher mortgage rates. [Benetton et al. \(2025\)](#) measures the pass-through of monetary policy. Perhaps unexpectedly, and in line with our results, they show that banks do not always pass on tighter monetary policy by raising interest rates. Rather, they pass on much of this cost through higher fees, to which consumers are less sensitive. [Di Maggio et al. \(2017\)](#) and [Egan and McQuinn \(2023\)](#) highlight the pass-through of monetary policy to rates. The former highlights the structure of mortgage contracts while the latter looks at the effects of financial market structure.

Another strand of this literature looks at lender response to regulatory action more specific to the mortgage market. In their landmark study, [DeFusco et al. \(2020\)](#) show how ability-to-repay in the qualified mortgage rule mostly reduced access to credit, and did little to affect prices, a result not entirely expected when the rule was finalized. Similarly, [Hizmo and Sherlund \(2018\)](#) found that the incidence of high debt-to-income lending decreased markedly in the nonconforming loan market, and that the cost of credit in that sector increased significantly.

Our work also relates to a broader literature identifying unintended consequences of regulation in consumer financial markets. Evaluating the CARD Act of 2009, [Jambulapati and Stavins \(2014\)](#) find more account closure following the rule. [Santucci \(2015\)](#) shows less credit was extended among approved applicants. Also looking at price controls, [Bolen et al. \(2023\)](#) find that Illinois' 2021 all-in usury rate cap significantly reduced access to credit, especially among subprime borrowers. In a study of the market for financial advice, [Charoenwong et al. \(2019\)](#) shows that a provision in Dodd-Frank (2010) intended to free up SEC resources by shifting regulatory oversight of mid-size advisors to state agency in fact had the perhaps unexpected effect of lowering the quality of advice given to consumers. Finally, and more specific to the mortgage market, [Acharya et al. \(2022\)](#) argue that regulatory constraints on household leverage, meant to manage risk and help consumers, can have the effect of reallocating mortgage credit from low-to-high income borrowers.

Finally, we contribute to a literature on states' authority to preempt national bank powers. This authority has been hotly argued in legal circles for quite some time (e.g. *Cantero v. Bank of Am., N.A.*, 602 U.S. 205 (2024)). In their study of state predatory lending laws, [Wu et al. \(2024\)](#) find that in states with such laws mortgage supply increased by a preemption ruling. Similarly, [Di Maggio and Kermani \(2017\)](#) find the preemption of state predatory lending laws boosted national bank lending between 2004 and 2006 but resulted in more delinquencies during the Global Financial Crisis. The specific issue we study here, preemption regarding interest on escrow, has also recently come to the attention of regulators ([OCC, 2026](#)).

The rest of this paper proceeds as follows. Section 2 provides background on the history and purpose of mortgage escrow and escrow interest laws. Section 3 explains the data and the empirical design. Section 4 lays out our empirical results, and Section 5 concludes.

2 Background on Escrow and Escrow Interest Laws

Mortgage escrow accounts are set up and managed by lenders for the purpose of ensuring the on-time payment of taxes and insurance on collateral properties. They emerged during the Great Depression in response to widespread foreclosures caused by unpaid property taxes. Escrow accounts benefit banks by making sure no tax lien is placed on a mortgage property, and that it is insured in the event of damage or loss. These accounts also benefit borrowers by spreading large tax and insurance obligations over time, improving household budgeting.

In today's market, about 80 percent of mortgages have an escrow account. A number of federal agencies that purchase or insure home mortgages, such as the Federal Housing Authority (FHA) and the Rural Housing Service (RHS), require them. These accounts act as a principal tool for lenders to manage credit risk and protect loan collateral. Typically, lenders collect funds into escrow each month as a part of borrowers' required mortgage payment. The lender, or servicer,

then drains the account every six months to pay the property's tax assessment and insurance premium.

Strict rules govern both how the funds are used and the disclosures that must be provided to borrowers. These were codified in the Real Estate Settlement Procedures Act (RESPA) of 1974. The rules restrict how escrow funds can be used, place a cap on balances and mandate an analysis of their use be disclosed to borrowers. Conspicuously, RESPA did not include language dictating how banks can price these accounts, such as whether any interest be paid to their owners.

Lenders earn interest on the "cushion" in their borrowers' escrow accounts. This revenue stream in part covers the cost of maintaining the accounts. Starting in the 1970's, states began to require lenders pay interest to consumers on funds held in escrow. In 1974, New York was the first state requiring banks to return interest on escrow at a rate of not less than 2 percent per year. New York enacted their interest-on-escrow statute with the intention of rectifying an unfair advantage that mortgage lenders had by "giving themselves an interest-free loan for however long the mortgage escrow account remained in place" (Hymes, 408 F. Supp. 3d at 176-77).

Since then, California, Connecticut, Maine, Maryland, Massachusetts, Minnesota, New York, Oregon, Rhode Island, Utah and Vermont have also introduced such laws with similar justifications. For example, the California legislature determined that "it was only fair for the homeowners who fund these escrow accounts to share in their benefits." Some states with interest-on-escrow laws, like New York (2 percent), California (2 percent) and Minnesota (3 percent), specify a fixed minimum rate of return. Others set a reference to a market-based rate.

For example, Iowa law, which forms the basis for our empirical strategy, stated that lenders "shall pay ... interest on those funds, calculated on a daily basis at the rate the bank pays to depositors of funds in ordinary savings accounts." Iowa's law was repealed in 2022, as a part of a broader change of banking regulation in the state. Other states like Vermont and Maine still have active rules tied to market rates like U.S. Treasuries. Table A1 in Appendix A shows the minimum rates and timelines encoded in law for each state with an interest-on-escrow law.

In recent years, state laws requiring interest payments on escrow have been challenged on the grounds that they violate national bank preemption principles. The plain argument is that these accounts are a core component of bank's lending function, and thereby significantly interfere with national banking powers. The underlying claim is that interest rate on escrow is, in effect, not different from any other interest rate set by the bank. Regulating rates set by national banks may be interpreted as "significantly interfering" with their core lending business, which under controlling Supreme Court precedent would cause the state law at issue to be preempted.

Put another way, interest-on-escrow laws can be viewed as interfering with lenders' flexibility to exercise business judgment in setting terms and conditions for a mortgage loan, which therefore interferes with their authority to make these loans. Escrow accounts are costly to administer, and lenders may find it efficient to use revenue generated from them to cover this cost. Interest on

escrow policies limit their ability to make that choice. Lenders are then compelled to recoup that cost via other, potentially less efficient, means.

Recently, the Office of the Comptroller of the Currency (OCC) issued a notice of proposed rule making concluding that (i) the terms and conditions of mortgage escrow accounts are ultimately a business judgment made by each national bank, and (ii) state interest-on-escrow laws are pre-empted by federal law ([OCC, 2026](#)). This proposed rule, if adopted, would confirm that national banks have the power to decide the price on their escrow accounts.

3 Data and Empirical Design

3.1 Data

Our analysis is based on the Home Mortgage Disclosure Act (HMDA) public filings from 2018 to 2024. HMDA contains detailed loan-level data for the near universe of mortgage applications, and subsequent originations, in the United States. Only a tiny fraction of lenders are exempt from HMDA reporting.¹ In addition to its disposition, or action, non-exempt lenders must report the type, purpose, price and characteristics of each mortgage application or purchased loan. They are also required to provide information on borrowers' demographics, including those used in the underwriting process like income, the Census tract, and value of the property. These are appended with general demographic information about the Census tract in which the property is located.

Starting in 2018, lender filing requirements were significantly expanded as a result of two separate rule changes. Through the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Congress amended HMDA to require 13 new data points. The Consumer Financial Protection Bureau issued the 2015 HMDA Rule amending Regulation C (HMDA's implementing regulation) to include 14 additional data points. Newly required fields spanned several categories. First comprised detailed price terms, such as the interest rate on the loan as well as other points and fees, including origination fees. The second included underwriting variables, including the debt-to-income (DTI) ratio, the combined loan-to-value (CLTV) ratio, and the property value. It also included information on the borrower and the application channel. Third, lenders were required to provide greater detail on the collateral structure and the purpose of the loan. Finally, identifiers were standardized, such as with introduction of the legal entity identifier (LEI). This allowed users to track lenders both across space and over time.

The laws under consideration generally apply to conventional residential mortgage loans. As a result, we analyze a sample of applications and originations of first-lien conventional loans on site built properties not for commercial use. Subordinate liens or home equity lines of credit very

¹For data collected in 2024, an institution is exempt if its assets were \$56 million or less as of December 2023 or if it originates fewer than 100 closed-end mortgages in each of the two preceding calendar years.

rarely require escrow, as it is likely already attached to the first lien on the property. Reverse mortgages have no monthly payment, and do not typically require escrow. Similarly, mortgages on investment properties are often handled differently and are also less likely to require escrow.

Manufactured homes may be considered real personal property or chattel loans. The latter does not often require escrow be paid. Moreover, the loan may contain the land through direct or indirect ownership, or not at all. Escrow accounts attached to loans when land is now owned mandate borrowers pay insurance payments into the escrow account (and not property taxes). We exclude them from the sample. Finally, unconventional mortgages, such as FHA, VA or RHS loans, are likely treated differently by the law. We exclude those as well.

3.2 Empirical Design

To estimate the effects of mandated interest on escrow we use a difference-in-difference design. This quasi-experimental approach uses the repeal of Iowa's mandate in 2022 as the treatment.² We then compare outcomes in Iowa before and after the repeal to mortgages originated in states that never had such laws on the books. Most states never had any such laws, and some of those, for example Florida, have very different mortgage market dynamics. As a result, they may not be well suited for this comparison.

We are then left with the difficult choice of selecting a suitable set of states to compare to which will form our control group. For this we apply the synthetic control method in [Abadie et al. \(2010\)](#). The method uses a data driven algorithm to minimize differences between outcomes in the pre-treatment period for a combination of candidate control, or comparison, states. The outcome variables and all controls are inputted into the algorithm as predictors. Table B1 in Appendix B reports the weights over comparison states chosen by the algorithm. As shown in the table, Nebraska and Wisconsin, neighbor states with similar demographics and mortgage markets, are the most heavily weighted in each selection.

The identifying assumption in our analysis is that, absent the repeal, outcomes in Iowa would have followed a similar path to those in the comparison states. In other words, they would have maintained parallel trends. To show evidence validating this assumption, we first estimate the

²As aforementioned, the repeal was passed as a part of a larger bill addressing banking laws in the states. It can be found here: <https://www.legis.iowa.gov/legislation/BillBook?ga=89&ba=SF586>. Buried on page 51 of the bill, the section on mortgage escrow, the language "shall pay" was changed to "may pay" interest, and the language on required amount was struck. The larger bill does not address any other major change to mortgage lending policy in the state. For the most part, the bill addresses incorporation and dissolution of state banks, powers of the superintendent, and other fiduciary responsibilities.

following econometric specification,

$$Y_j = \alpha_s + \rho_{\ell,t} + \underbrace{\sum_{k=2018}^{2020} \delta^k \mathbb{1}(s = Iowa \wedge t = k)}_{Pre-Repeal} + \underbrace{\sum_{k=2022}^{2024} \delta^k \mathbb{1}(s = Iowa \wedge t = k)}_{Post-Repeal} + \beta X_j + \epsilon_j, \quad (1)$$

for each loan or application j in year t and state s . α and ρ are state and lender-by-year fixed effects. We use 2021, the year prior to the repeal, as the omitted base year.

The outcomes Y we consider are the loan's interest rate spread over the average prime offer rate (APOR) for similar loans, its origination fees, and the likelihood an application finalizes as an originated mortgage. The rate spread and origination fees constitute the two main avenues by which lenders can directly affect the price of a mortgage. Origination fees, in particular, are often more at the loan officer's discretion. Rate spreads are generally dictated through a series of complex rate sheets by the lending organization more broadly. The likelihood of origination, the extensive margin, signals the extent to which these laws affect the size of the market.

In our estimation of the rate spread, we restrict our sample to loans in which the borrower did not purchase points to buy down the interest rate. While HMDA filers report what borrowers spend to purchase points, they do not report how much interest that buys down. This complicates the analysis by confounding rates with and without buy-downs. Origination fees are not subject to this complication because they are chosen by the lender.

The specification includes controls for loan, borrower, and neighborhood (Census tract) characteristics X . These include the loan's amount, collateral property value, and numerous other loan terms. It also includes the borrowers' age, income and debt-to-income ratio. The tract characteristics include its population, 1-to-4 family units, owner occupied units, and non-conforming loan share. Given the complexity of mortgage underwriting, these controls allow us to compare similar loans and lending circumstances.³

We also evaluate potential distributional effects of this policy. Specifically, we estimate a heterogeneous effect by applicant or borrower income. For this we use a triple difference approach as follows,

$$Y_j = \alpha_s + \rho_{\ell,t} + \delta^1 treat \times post + \sum_{q=2}^4 \delta^q treat \times post \times (inc. qtrl. = q) + \beta X_j + \epsilon_j. \quad (2)$$

³A complete list of controls is shown in Table C1, in Appendix C. It is important to note that while we are able to control for many aspect of the loan, borrower(s), and market, two elements are not available to us in the public filings: (1) credit score, (2) action date. While these are collected, they are not made public. Other aspects of the loan circumstance are highly correlated with score, and thus likely capture much of its information. Moreover, we are able to control for bank-year time trends, which absorbs a large amount of information about pricing and allows us to effectively estimate within bank effects. It follows that an additional underlying assumption of our analysis is that the incremental information from (within-year) seasonality and credit scores, is not correlated with the treatment.

In this specification, $treat \equiv \mathbb{1}(s = Iowa)$, and $post \equiv \mathbb{1}(t \geq 2022)$. The term $(inc. qtrl. = q)$ takes a value of one whenever an applicant or borrower's income falls in quartile $q \in \{2, 3, 4\}$, and zero otherwise.

As cited earlier, the economics literature provides several examples of policies' heterogeneous effects across the income distribution. A common argument made is that consumer financial regulations intended to help low income consumers the most can have the effect of harming this more vulnerable population. This can be for two main reasons. First, when faced with a higher costs, lenders may back away from lending to lower income, and often higher credit risk, individuals. Second, lower-income borrowers are often less price sensitive to several dimensions of price (Benetton et al., 2025), which can compel lenders to adjust their pricing more for these customers.

4 Empirical Results

In this section we discuss the results of our estimation. Figure 1 reports the difference-in-difference estimates (δ^k) and 95 percent confidence intervals from Equation 1. The left panel plots this event

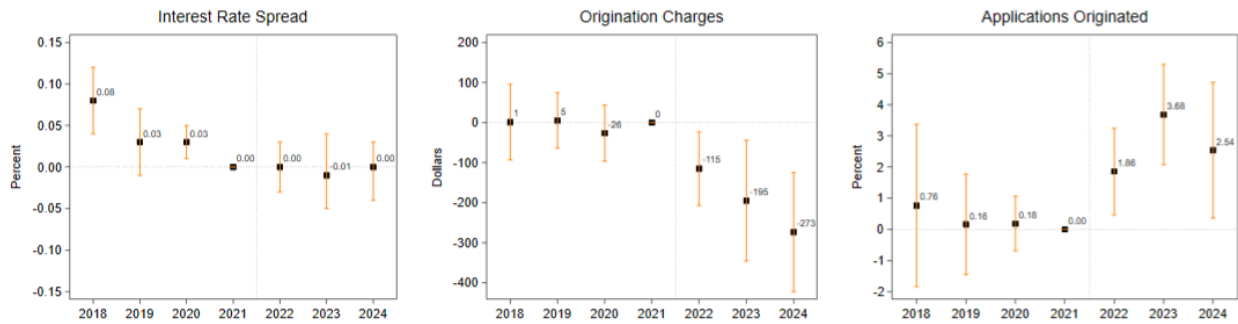


Figure 1: Difference-in-Difference Event Studies

Notes: The figure plots difference-in-difference estimates δ^k from Equation 1. These are estimated from weighted regressions using data from the Home Mortgage Disclosure Act's public filings for 2018-2024. All regressions include state fixed effects, lender by year trends, and a full set of loan, borrower, and Census tract controls. Confidence intervals shown are calculated based on standard errors clustered by legal entity identifier (LEI), HMDA's consistent lender identifier. For complete regression results see Table C1 in Appendix C.

study for interest rate spreads.⁴ Prior to the repeal, we see rate spreads in Iowa similar to or even higher relative to those in comparison states. After the repeal, rate spreads for the typical lender were not different in Iowa as compared to those in control states. This suggests that the rule did not have much effect on the interest rates charged by the typical lender.

The middle panel shows estimates for origination fees. Prior to the repeal, fees charged by the typical lender in Iowa compared well to those charged borrowers in comparison states. In

⁴As noted in Section 3.2, these are derived from a sub-sample of loans in which borrowers did not buy down the rate with points. We have estimated this with the full sample as well. The results are qualitatively similar, though noisier.

other words, outcomes show parallel trends prior to treatment. Following the repeal, origination fees for new mortgages declined significantly. In 2022, the typical lender charged \$115 less in Iowa relative to comparison states. That \$115 is equivalent to a $115/1,456 \approx 7.9$ percent decrease relative to the mean fee in Iowa in 2022. The decrease was still larger in the subsequent two years. During 2024, the typical lender charged \$273, or $273/1604 \approx 17$ percent less in Iowa as compared to control states. On average over the three years post repeal, origination fees charged by the typical lender declined by \$173 in Iowa relative to comparison states.

Borrowers pay into their escrow account every month, which is depleted generally every six months to pay the tax assessment and insurance premium. A typical mortgage survives anywhere between seven and 10 years. Using this information, we calculate how much a lender can expect to pay in interest on a typical escrow account in Iowa prior to the law repeal. To complete the calculation we require information about insurance and property tax rates, which we acquire from [insurance.com](https://www.insurance.com) and the American Consumer Survey, respectively.⁵ Finally, we account for the fact that 80 percent of new mortgages have escrow.

Our back of the envelope calculations indicate that on average a lender can expect to pay between \$193 and \$276 in interest for a mortgage lasting seven to 10 years, based on a 1.25 percent interest rate. Our estimate shows an average decline in origination fees of \$173 over the treatment period. This suggests a pass-through of between 60 and 90 percent. In other words, our findings suggest that lenders pass on most of the additional cost of the regulation to consumers. Moreover, they do so primarily by raising the fees at origination.

The right panel of Figure 1 shows effects on the likelihood a mortgage application was originated. Like for fees, we find no difference in originations between Iowa and comparison states during years before the repeal. However, in the years that followed it, the typical lender originated a higher proportion of applications in Iowa relative to control states. During 2022, the first year of the repeal, the chances a typical lender originated an application was 1.86 percentage points ($1.86/72.48 \approx 2.6$ percent) higher in Iowa relative to comparison states. During 2023 and 2024 this rose to 3.68 and 2.54 percentage points, respectively. On average over the post repeal period, the origination likelihood in rose by 2.3 percentage points, or $2.3/74.04 \approx 3.1$ percent.

The results on origination charges show that lenders transfer the cost of the regulation, almost in its entirety, back to consumers. However, it does not on its face reveal any changes to participants' buy-sell decisions, or distortion in the market arising from the policy. A higher relative likelihood of origination after repeal signals such a distortion. It raises the potential for a decrease in total surplus resulting from the policy. To the extent that this means less credit extended, all surplus from any non-completed transactions is eliminated.

However, failure of a mortgage application to result in origination can occur for various reasons. One reason is that the loan is denied by the lender. It is possible that, in marginal cases,

⁵See the full methodology see Table C3 in Appendix D.

payment of interest on escrow may render a loan unprofitable, which may trigger denial. Alternatively, the application may be approved by the lender, but not completed in a timely manner by the borrower. In this case it would not be accepted by the lender. It can also be withdrawn by the applicant or closed for incompleteness. In these instances, the lender has not denied the loan. Rather, the applicant has decided not to follow through on the application. This could be because they found a better deal at another lender or they decided not to move forward with the loan at all.

It is highly unlikely that our results mean Iowa's law reduced the size of its mortgage market by more than two percent. Rather, it is more than likely a majority of the effect is due to more borrowers starting applications but in the end finding better deals elsewhere. Potentially, these may even be outside of the conventional market. However, it is probable that some portion of the effect is means a reduction in the size of the market resulting from the policy. This is would be true whether lenders themselves denied credit or applicants decided to hold off on the loan. Even in those cases that a mortgage was eventually originated, the lender incurred the cost of going through the application. Borrowers may have lost the original property or incurred other costs in their path to the mortgage. As a result, our finding on originations signals the possibility for welfare losses stemming from the rule.

Next, we evaluate the distributional effects of the policy. Figure 2 illustrates estimates from our triple difference specification in Equation 2. The left panel illustrates that this effect is largest

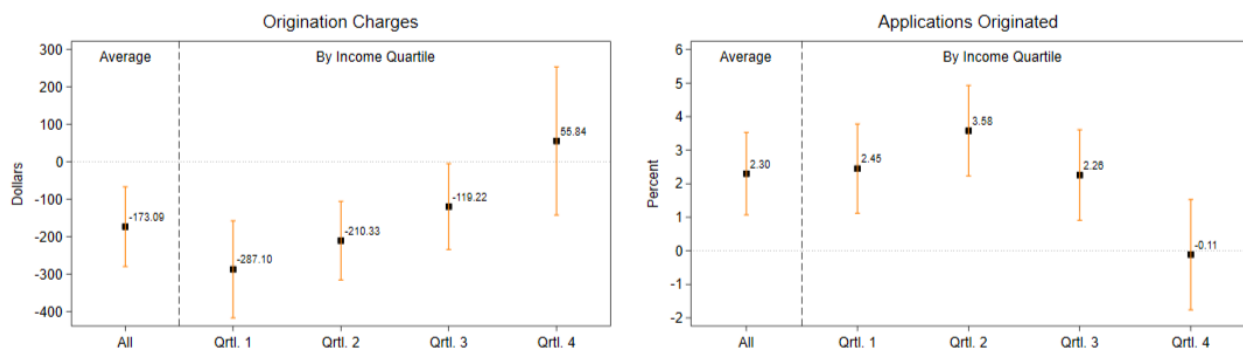


Figure 2: States with Escrow Laws and Border Counties

Notes: The figure plots difference-in-difference estimates from Equation 2. These are estimated from weighted regressions using data from the Home Mortgage Disclosure Act's public filings for 2018-2024. All regressions include state fixed effects, lender by year trends, and a full set of loan, borrower, and Census tract controls. Confidence intervals shown are calculated based on standard errors clustered by legal entity identifier (LEI), HMDA's consistent lender identifier. For complete regression results see Table C2 in Appendix C.

for the borrowers at the bottom income quartile. For this group, the repeal caused a typical lender to decrease origination fees by \$287. Moreover, the effect becomes smaller as income increases. For borrowers at the top quartile, the effect is no longer statistically distinguishable from zero.

On average, the collateral property value for a mortgage originated in Iowa to a borrower in

the bottom income quartile is \$172,940. Our back of the envelope calculations indicate that the interest payment on escrow for such a mortgage is between \$115 and \$164. Our estimate indicates an effect of approximately \$287. In contrast, we calculate an average total payment of between \$287 and \$410 on escrow for a mortgage made to borrowers at the top quartile of the income distribution.⁶

This implies a pass-through of more than 100 percent for the lowest-income borrowers. Those with high incomes saw no change, even though they put (nominally) more into escrow and thereby command higher interest payments on their escrow funds. In other words, the rule not only affected the lowest income borrowers most, it potentially enacted a regressive subsidy away from them and towards those with high incomes.

It is important to caveat this analysis. We do not possess granular information on tax assessment or insurance premiums. We also do not have precise measures of the expected life of the mortgage or whether an escrow account will be associated with it. Mortgages taken out by low-income borrowers have a lower chance of being curtailed early and more likely to have escrow. This would work against any cross-subsidy. Nevertheless, at the very least, our findings indicate the policy had greatest effect on the lowest-income borrowers.

The right panel of Figure 2 plots the distributional effect on originations. Similarly to the case of fees, we find the effect was largest among the lower income consumers. However, the results on origination reveal a more nuanced story. While we find no effect at the top quartile, the impact is not monotonic across the income distribution. It is highest at the second quartile of borrower income. While we are not able to pin down the exact reasons, we conjecture this may reflect our earlier arguments for why the rule lowers originations.

The lowest-income borrowers may have few choices when applying for credit. For them, the policy may have increased loan denials or moved them out of the market entirely. Borrowers in the second quartile, while being passed on higher fees, have more options and may have been more likely to go out and find a better deal. As a result, the effect on originations may be greatest for them. Borrowers in the third quartile might be hit with lower fees because they have more options, whereby the net effect on originations for this group is lower than for those in the second quartile.

5 Conclusions

Using loan level data from HMDA's public filings in a difference-in-difference framework, we provide evidence that policies mandating lenders pay interest on mortgage escrow raise origination fees and lower the likelihood an application becomes a funded loan. Among originated mortgages,

⁶See Table C3 in Appendix D for details.

we calculate a nearly full pass-through of this cost back to consumers. Moreover, low income borrowers are affected more, setting up the potential for a cross-subsidy from low-to-high-income consumers.

Our results on origination likely do not fully reflect a smaller market due to the policy. They nonetheless signal a distortion that may be welfare-decreasing. Some portion of the loans not originated due to the policy would never be transacted. Even among those that were, the cost to borrowers of having to apply elsewhere, perhaps losing their bid on the property, and lenders having applications not carry through, can be welfare-reducing as well.

More broadly, this policy is an example of direct price regulation in the mortgage market intended to correct a specific market failure and generate fair returns for consumers. Our study of it has suggested that the policy on average did not help consumers. Rather, it likely harmed those borrowers most in need. Finally, we note that, while our analysis sheds new light on some effects of the policy, we are left with many questions regarding the exact mechanism underlying our results. We look forward to addressing these in future work.

References

- Abadie, A., A. Diamond, and J. Hainmueller (2010). Synthetic control methods for comparative case studies: Estimating the effect of california's tobacco control program. *Journal of the American statistical Association* 105(490), 493–505.
- Acharya, V. V., K. Bergant, M. Crosignani, T. Eisert, and F. McCann (2022). The anatomy of the transmission of macroprudential policies. *The Journal of Finance* 77(5), 2533–2575.
- Avery, R. B., M. F. Bilinski, A. Clement, T. Critchfield, S. Frumkin, I. H. Keith, I. E. Mohamed, F. W. Pafenberg, S. Patrabansh, and J. D. Schultz (2018). A profile of 2016 mortgage borrowers: Statistics from the national survey of mortgage originations, technical report 6.o. Technical Report Technical Report 6.o, Federal Housing Finance Agency and Consumer Financial Protection Bureau.
- Barr, M. S., S. Mullainathan, and E. Shafir (2009). The case for behaviorally informed regulation. *New perspectives on regulation* 25, 41–42.
- Benetton, M. (2021). Leverage regulation and market structure: A structural model of the uk mortgage market. *The Journal of Finance* 76(6), 2997–3053.
- Benetton, M., P. Eckley, N. Garbarino, L. Kirwin, and G. Latsi (2021). Capital requirements and mortgage pricing: Evidence from basel ii. *Journal of Financial Intermediation* 48, 100883.
- Benetton, M., A. Gavazza, and P. Surico (2025). Mortgage pricing and monetary policy. *American Economic Review* 115(3), 823–863.
- Bolen, J. B., G. Elliehausen, and T. W. Miller Jr (2023). Credit for me but not for thee: the effects of the illinois rate cap. *Public Choice* 197(3), 397–420.
- CFPB (2024, March). Credit card penalty fees (regulation z), 89 fed. reg. 14854. techreport, U.S. Government Publishing Office.
- Charoenwong, B., A. Kwan, and T. Umar (2019). Does regulatory jurisdiction affect the quality of investment-adviser regulation? *American Economic Review* 109(10), 3681–3712.
- DeFusco, A. A., S. Johnson, and J. Mondragon (2020). Regulating household leverage. *The Review of Economic Studies* 87(2), 914–958.
- DeMuth, C. (2009, June). Unintended consequences and intended non-consequences. techreport, American Enterprise Institute.

- Di Maggio, M. and A. Kermani (2017, 06). Credit-induced boom and bust. *The Review of Financial Studies* 30(11), 3711–3758.
- Di Maggio, M., A. Kermani, B. J. Keys, T. Piskorski, R. Ramcharan, A. Seru, and V. Yao (2017). Interest rate pass-through: Mortgage rates, household consumption, and voluntary deleveraging. *American Economic Review* 107(11), 3550–3588.
- Egan, P. and K. McQuinn (2023). Interest rate pass-through in euro area mortgage markets: The long shadow of the great financial crisis. *CESifo Economic Studies* 69(4), 234–248.
- Hizmo, A. and S. Sherlund (2018, November). The effects of the ability-to-repay/qualified mortgage rule on mortgage lending. *Fed Notes*.
- Jambulapati, V. and J. Stavins (2014). Credit card act of 2009: What did banks do? *Journal of Banking & Finance* 46, 21–30.
- Lereta (2024, February). New survey finds significant lack of understanding of mortgage escrow accounts and raises concerns over expected increases. Accessed: 2026-01-23.
- OCC (2026). Real estate lending escrow accounts; notice of proposed rulemaking, 90 fed. reg. 61099. Technical report, U.S. Government Publishing Office.
- Sanders, B., J. Hawley, J. Merkley, and K. Gilibrand (2025). S.381 -10 percent credit card interest rate cap act. U.S. Congress, 119th Congress (2025–2026). Introduced in Senate by Sen. Bernard Sanders (I-VT) on February 4, 2025; read twice and referred to Senate Committee on Banking, Housing, and Urban Affairs.
- Santucci, L. (2015). A tale of two vintages: credit limit management before and after the card act and great recession. *FRB of Philadelphia-Payment Cards Center Discussion Paper* (15-01).
- Singh, K. and J. ward (2026, January). Trump calls for one-year cap on credit card interest rates at 10techreport, Reuters.
- Wu, D., A. G. Sam, and X. Wang (2024). Spillover effects of financial deregulation: The unintended consequences of the occ preemption rule on mortgage lending practices. *International Review of Financial Analysis* 95, 103462.

A Escrow Laws in the United States

Table A1: State Minimum Interest-on-Escrow Laws

State	Legislature	Minimum escrow rate
New York	N.Y. Gen. Oblig. Law §5-601	2 percent
California	Civil Code 2954.8	2 percent
Minnesota	Minn. Stat. §47.20, Subd. 9	3 percent
Utah	Utah Code Ann. §7-17-3	(a) 5-1/2 percent; or (b) the average of the 11th District monthly weighted average cost of funds index as calculated and published by the Federal Home Loan Bank of San Francisco during the calendar year, less 1-1/2 percentage points; or (c) the statement savings rate or share account rate offered to the public for accounts of like size by the depository institution holding the reserve account."
Maine	9-B M.R.S. §429	A rate of not less than 50 percent of the 1-year Treasury Bill secondary market rate.
Connecticut	Conn. Gen. Stat. §49-2a	After October 1, 2012, not less than the deposit index. Deposit index determined by the Banking Commissioner based on average national rates for savings deposits and money market deposits as published by FDIC.
Maryland	MD Commercial Law Code §12-109	Based on the weekly average yield of U.S. Treasury Securities adjusted to a constant maturity of one year as of the first business day of the calendar year as published in the Federal Reserve Board's "Selected Interest Rates" Table H.15.
Iowa	Iowa Code §524.905 (Repealed 2022)	A lender shall pay interest to the borrower on those funds, calculated on a daily basis, at the rate the bank pays to depositors of funds in ordinary savings accounts.
Massachusetts	Mass. Gen. Laws ch. 183, §61	Lender must pay interest at a rate set by lender, unless lender experiences loss in property in which case no interest required.
Oregon	Or. Rev. Stat. §86.245	Not less than the discount rate, determined with reference to the most recent auction date before May 15 and November 15 each year. As used in this section, "discount rate" means the auction average rate on 91-day United States Treasury bills, as established by the most recent auction of such Treasury bills, as published by the United States Department of the Treasury, Bureau of the Public Debt, less 100 basis points.
Vermont	8 V.S.A. §10404	Not less than the prevailing market rate of interest for regular savings accounts offered by local financial institutions.
Rhode Island	R.I. Gen. Laws §19-9-2	Prevailing market rate of interest for regular savings accounts offered by local financial institutions as determined by the director.

B Synthetic Control Weights

Table B1 reports weights assigned to candidate control units (States) from the synthetic

Table B1: Synthetic Control Weights

	(1)	(2)	(3)
	Interest Rate Spread over APOR	Origination Cost	Origination Probability
Selected Controls & Weights			
Alaska	0.075	0	0
Louisiana	0	0	0.008
Montana	0.032	0	0
Nebraska	0.481	0	0.257
North Dakota	0	0	0.735
Wisconsin	0.412	1	0
Candidates Not Selected			
Alabama	0	0	0
Arizona	0	0	0
Arkansas	0	0	0
Colorado	0	0	0
Delaware	0	0	0
District of Columbia	0	0	0
Florida	0	0	0
Georgia	0	0	0
Hawaii	0	0	0
Idaho	0	0	0
Illinois	0	0	0
Indiana	0	0	0
Kansas	0	0	0
Kentucky	0	0	0
Michigan	0	0	0
Mississippi	0	0	0
Missouri	0	0	0
Nevada	0	0	0
New Jersey	0	0	0
New Mexico	0	0	0
North Carolina	0	0	0
Ohio	0	0	0
Oklahoma	0	0	0
Pennsylvania	0	0	0
South Carolina	0	0	0
South Dakota	0	0	0
Tennessee	0	0	0
Texas	0	0	0
Virginia	0	0	0
Washington	0	0	0
West Virginia	0	0	0
Wyoming	0	0	0

control algorithm in [Abadie et al. \(2010\)](#). These weights were chosen by matching pre-Treatment

outcomes and predictors (X) of the Iowa and all candidate controls. While there are many possible candidate controls, the algorithm assigns positive weight only to a few States. Unsurprisingly, it assigns almost all weight to those states closest to Iowa in geography, demographics, and economy. For the rate spread, most of the weight is assigned to neighboring Nebraska and Wisconsin. The origination cost outcome is compared entirely to Wisconsin. The origination probability is assigned to Nebraska and North Dakota.

C Complete Regression Results

Table C1 reports the full event study regression results shown in Figure 1 in Section 4.

Table C1: Even Study Regressions

	(1)	(2)	(3)
	Interest Rate Spread over APOR	Origination Charges	Origination Probability
DiD Coefficients (Treat $\times$ Year) - Base Year 2021			
2018	0.0788** (0.0190)	1.0145 (48.2242)	0.7643 (1.3312)
2019	0.0301+ (0.0179)	5.0038 (35.2610)	0.1580 (0.8228)
2020	0.0278* (0.0113)	-26.5030 (35.8131)	0.1816 (0.4464)
2022	0.0009 (0.0135)	-115.0579* (47.0571)	1.8566** (0.7109)
2023	-0.0075 (0.0219)	-195.0711* (76.9159)	3.6838** (0.8243)
2024	-0.0025 (0.0191)	-273.3967** (75.8535)	2.5396* (1.1110)
Loan Characteristics			
log(loan amount)	-0.3328** (0.0487)	273.3331** (35.0024)	
log(income)	0.0255+ (0.0145)	2.9540 (6.5566)	4.0318** (0.3382)
log(property value)	0.0788 (0.0539)	113.9089* (46.6231)	
Conforming	-0.1328* (0.0541)	-241.9220** (67.4895)	8.7530** (1.7812)
Combined LTV	0.0095** (0.0009)	2.4216** (0.9123)	
30 year mortgage	-0.0805* (0.0345)	61.6671** (18.7921)	
15 year mortgage	-0.0094 (0.0346)	22.8533 (18.4975)	
HOEPA	2.8707** (0.7952)	-1102.6807* (533.4314)	
Prepayment penalty	0.3753** (0.0386)	-444.2577** (42.4108)	

Adjustable rate	0.1520** (0.0440)	42.9233 (45.3215)	
Non-amortizing	0.6026* (0.2954)	-32.3000 (89.4210)	
Balloon Payment	1.2868* (0.5531)	-109.1482 (71.0814)	
GSE purchaser	0.0151 (0.0288)	8.6725 (26.2701)	
Private purchaser	-0.1225* (0.0613)	55.7809** (19.2626)	
Direct application	-0.0102 (0.0428)	-138.3168 (204.5843)	-55.7189** (8.8056)
Initially payable	0.0659 (0.0457)	385.9204* (184.9235)	60.8433** (13.0086)
Cash-out refinance	0.1740** (0.0281)	206.4589** (42.3411)	-8.7054** (1.3749)
Refinance	0.0066 (0.0160)	13.8135 (17.9289)	-9.0570** (1.2891)
Owner-occupied	-0.0096 (0.0105)	-84.1073** (16.3510)	4.5939** (1.2467)
Discount points		1253.9974** (83.1148)	
Borrower Characteristics			
Co-applicant	0.0441** (0.0055)	53.1455** (19.8003)	-0.9131 (0.9412)
Non-white	0.0024 (0.0048)	20.1739* (8.6388)	-6.5296** (0.5921)
Female	-0.0050+ (0.0028)	3.2811 (3.6992)	0.4558** (0.1525)
Other sex	-0.0259** (0.0047)	-59.3549* (23.1326)	2.7991** (0.8238)
Census Tract Characteristics			
Population (000's)	-0.0035 (0.0030)	-4.7760+ (2.8338)	0.1120 (0.0754)
Median Age of Prop.	0.0000 (0.0002)	-0.7859** (0.2583)	-0.0467** (0.0085)
percent of MSA income	-0.0000 (0.0001)	-0.5222** (0.1705)	0.0155** (0.0039)
1-to-4 family (000's)	0.0130** (0.0030)	7.7781 (5.7731)	-1.1464** (0.3351)
Owner-occupied units	-0.0016 (0.0111)	20.7717+ (10.9050)	1.0843** (0.3999)
Lender loan share	-0.0005 (0.0004)	-0.1353 (0.6258)	0.1132** (0.0354)
YoY HPI growth (Cnty)	0.0018* (0.0007)	0.9147 (1.6237)	0.0225 (0.0302)
Non-bank loan share	0.0006* (0.0003)	-0.1691 (0.6691)	0.0171 (0.0166)
FHA loan share	0.0021** (0.0006)	0.4605 (0.9553)	-0.0300 (0.0235)
VA loan share	0.0002 (0.0006)	1.8215+ (0.9753)	0.0422+ (0.0255)
RHS loan share	0.0039** (0.0011)	4.2849 (2.8658)	-0.3715* (0.1494)

Total loans	-0.0000 (0.0000)	-0.0486** (0.0165)	
Fixed Effects			
Applicant Age Category	✓	✓	✓
Debt-to-Income Category	✓	✓	✓
State	✓	✓	✓
LEI × Year	✓	✓	✓
Obs.	990,982	1,044,023	1,193,823
Adj. R^2	0.0574	0.4963	0.2364

Notes: Data are from HMDA public filings between 2018 and 2024, inclusive. Standard errors, in parentheses, are clustered by Legal Entity Identifier (LEI). + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

From the results, we can identify a few features of the mortgage market that we expect to see. In loan characteristics, conforming loans attract a lower interest rate, lower origination fees and a higher likelihood of an application turning into an origination. Loans with higher combined loan-to-value ratios attract a higher interest rate and slightly higher origination fees likely due to their riskier nature. Similarly, loans with a balloon payment attract a higher interest rate as do HOEPA loans.

It is important to note that the public HMDA data does not include information on applicants credit score nor the action date, or the point at which an application was terminated or loan was originated. This complicates our analysis, especially of interest rate spreads that are very date sensitive. However, there are several mitigating factor. First, many of the controls included in the regression are highly correlated with credit score, which suggests adding it may be incremental to the analysis. Second, the difference-in-difference framework, and especially the synthetic control design, may be an ameliorating factor as well.

Table C2 reports the triple difference regression results shown in Figure 2 in Section 4.

Table C2: Heterogeneous Effects

	(1)	(2)	(3)	(4)	(5)	(6)
	Origination Fees			Origination Probability		
	All	By Income	By Age	All	By Income	By Age
DiD Coefficients						
Treat × Post	-173.0941** (54.2988)	-287.0978** (66.1601)	-198.5449** (53.9581)	2.2977** (0.6288)	2.4478** (0.6782)	2.6981** (0.7906)
Treat × Post × Inc. Qtrl. 2		76.7631* (34.9826)			1.1351** (0.4265)	
Treat × Post × Inc. Qtrl. 3		167.8740** (64.1873)			-0.1872 (0.5651)	
Treat × Post × Inc. Qtrl. 4		342.9407** (118.6641)			-2.5604** (0.6951)	
Treat × Post × (35-44)			77.3760* (33.8658)			-1.2996** (0.4675)
Treat × Post × (45-64)			38.4645			-0.3332

			(23.8417)		(0.4702)	
Treat × Post × 65+			-51.6266*		0.1446	
			(24.9358)		(0.6978)	
Loan Characteristics						
Log(loan amount)	273.4998**	272.4465**	273.9427**			
	(35.0118)	(35.6742)	(35.1137)			
Log(income)	2.9073	-10.5984	2.8899	4.0312**	4.2549**	4.0296**
	(6.5569)	(7.8272)	(6.5513)	(0.3384)	(0.3548)	(0.3384)
Log(property value)	113.8201*	112.6311*	113.2226*			
	(46.6058)	(47.0564)	(46.6046)			
Conforming loan	-241.7819**	-252.6683**	-242.2062**	8.7543**	8.7077**	8.7532**
	(67.4855)	(68.2615)	(67.4848)	(1.7817)	(1.7912)	(1.7830)
Combined LTV	2.4199**	2.4499**	2.4153**			
	(0.9111)	(0.9193)	(0.9116)			
30-year mortgage	61.5863**	61.0408**	61.1875**			
	(18.7806)	(18.8050)	(18.7998)			
15-year mortgage	22.7970	23.1655	22.7681			
	(18.4788)	(18.4659)	(18.4946)			
HOEPA	-1101.70*	-1103.47*	-1102.48*			
	(532.98)	(531.68)	(532.30)			
Prepayment penalty	-444.8751**	-448.2371**	-445.6955**			
	(42.7409)	(42.6015)	(42.6810)			
Adjustable rate	42.9187	42.7795	42.8857			
	(45.3302)	(45.1590)	(45.2962)			
Non-amortizing	-32.5192	-29.6687	-31.7191			
	(89.3685)	(88.4587)	(89.4109)			
Balloon payment	-109.1234	-111.9730	-109.4370			
	(71.0886)	(71.3692)	(71.3119)			
GSE purchaser	8.6471	8.8953	8.6546			
	(26.2711)	(26.1909)	(26.2878)			
Private purchaser	55.8899**	57.1488**	56.0123**			
	(19.2725)	(19.2482)	(19.2886)			
Direct application	-138.5881	-139.2696	-138.6098	-55.7186**	-55.7120**	-55.7167**
	(204.6451)	(204.5911)	(204.6850)	(8.8093)	(8.8085)	(8.8088)
Interest-only payments	386.5088*	386.5320*	386.4351*	60.8436**	60.8400**	60.8420**
	(184.8885)	(184.9339)	(184.9144)	(13.0079)	(13.0057)	(13.0074)
Cash-out refinance	206.5251**	208.2866**	206.8508**	-8.7054**	-8.7435**	-8.7182**
	(42.3422)	(42.5456)	(42.3736)	(1.3751)	(1.3770)	(1.3744)
Refinance	13.9271	15.6846	14.2405	-9.0574**	-9.0872**	-9.0721**
	(17.9279)	(18.1167)	(17.9471)	(1.2892)	(1.2898)	(1.2882)
Owner-occupied	-84.1103**	-88.9376**	-84.4060**	4.5914**	4.5343**	4.5880**
	(16.3862)	(16.3761)	(16.3859)	(1.2469)	(1.2472)	(1.2493)
Discount points	1253.9446**	1253.3577**	1253.9359**			
	(83.0964)	(83.0242)	(83.1012)			
Borrower Characteristics						
Co-applicant	53.1647**	51.3116*	53.2526**	-0.9140	-0.9148	-0.9137
	(19.8218)	(19.8870)	(19.8066)	(0.9411)	(0.9367)	(0.9406)
Non-white	20.2153*	20.3449*	19.9613*	-6.5298**	-6.5291**	-6.5245**
	(8.6613)	(8.6482)	(8.6532)	(0.5915)	(0.5916)	(0.5917)
Female	3.2879	3.1152	3.3079	0.4560**	0.4805**	0.4574**
	(3.6974)	(3.7261)	(3.6917)	(0.1525)	(0.1515)	(0.1525)
Other sex	-59.4004*	-58.5001*	-59.3288*	2.7992**	2.7833**	2.7938**
	(23.1665)	(23.4149)	(23.1530)	(0.8237)	(0.8241)	(0.8230)
Tract Characteristics						

Population (ooo's)	-4.7212+	-6.0111*	-4.8167+	0.1119	0.1178	0.1133
	(2.8272)	(2.7550)	(2.8088)	(0.0754)	(0.0757)	(0.0753)
Median age of Prop.	-0.7809**	-0.6849**	-0.7788**	-0.0467**	-0.0473**	-0.0467**
	(0.2576)	(0.2492)	(0.2576)	(0.0085)	(0.0085)	(0.0085)
percent of MSA income	-0.5243**	-0.5564**	-0.5276**	0.0155**	0.0162**	0.0156**
	(0.1717)	(0.1730)	(0.1717)	(0.0039)	(0.0039)	(0.0039)
1-to-4 family (ooo's)	7.7483	6.8704	7.5676	-1.1449**	-1.1226**	-1.1450**
	(5.7727)	(5.7513)	(5.7510)	(0.3354)	(0.3342)	(0.3354)
Owner-occupied units (ooo's)	20.7346+	24.7026*	21.2232+	1.0827**	1.0240*	1.0757**
	(10.8950)	(10.8905)	(10.8835)	(0.4001)	(0.4013)	(0.4003)
Lender loan share	-0.1414	-0.1385	-0.1441	0.1132**	0.1135**	0.1133**
	(0.6264)	(0.6646)	(0.6295)	(0.0355)	(0.0353)	(0.0354)
YoY HPI growth (Cnty)	0.8701	0.7400	0.8566	0.0238	0.0249	0.0235
	(1.5983)	(1.5953)	(1.5943)	(0.0300)	(0.0299)	(0.0300)
Non-bank loan share	-0.1988	-0.0522	-0.1929	0.0165	0.0144	0.0163
	(0.6795)	(0.6731)	(0.6799)	(0.0166)	(0.0166)	(0.0166)
FHA loan share	0.4371	0.0944	0.4233	-0.0300	-0.0272	-0.0296
	(0.9637)	(0.9503)	(0.9645)	(0.0235)	(0.0232)	(0.0234)
VA loan share	1.8303+	1.6315+	1.8136+	0.0432+	0.0433+	0.0432+
	(0.9729)	(0.9712)	(0.9721)	(0.0248)	(0.0248)	(0.0248)
RHS loan share	4.3387	4.5009	4.3483	-0.3708*	-0.3691*	-0.3709*
	(2.8613)	(2.8689)	(2.8607)	(0.1494)	(0.1492)	(0.1494)
Total loans	-0.0489**	-0.0431**	-0.0485**			
	(0.0165)	(0.0158)	(0.0164)			
Fixed Effects						
Applicant Age Category	✓	✓	✓	✓	✓	✓
Debt-to-Income Category	✓	✓	✓	✓	✓	✓
State	✓	✓	✓	✓	✓	✓
LEI × Year	✓	✓	✓	✓	✓	✓
Obs	1,044,023	1,044,023	1,044,023	1,193,823	1,193,823	1,193,823
Adj. R^2	0.4963	0.4967	0.4963	0.2364	0.2366	0.2365

Notes: Data are from HMDA public filings between 2018 and 2024, inclusive. Standard errors, in parentheses, are clustered by Legal Entity Identifier (LEI). + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

From the table, note that triple-difference coefficients in column (2-3) and (5-6) are reported as relative to a base case which is either first income quartile or ages less than 35. We show here also heterogeneity by age as an additional robustness to our analysis. The estimates on age indicate some of the effect is incumbent on older mortgage applicants.

Overall, these regression results are consistent with several known features of the mortgage market. Larger loans or loans with larger property values receive higher origination fees. Conforming loans receive lower origination fees. Loans with private purchasers receive higher origination fees compared to GSE purchasers. We are not able to control for many variables when applications are included as often this information is missing or incomplete. Removing applications with incomplete information would drastically reduce our sample size.

D Pass-Through Calculations

Table C3 reports our calculations of how much lenders could expect to pay on interest for mortgage escrow funds. We take 3 steps to calculate this additional interest payment. First, we compute the

Table C3: Estimated Cost of Iowa's Previous Interest-on-Escrow Law

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Income	Mortgage	Savings	Property	Insurance	Tax	Total Interest
Quartile	Duration (Yrs)	Rate	Value	Payment	Assessment	Paid on Escrow
Mean	7	1.25	303,390.35	3,037.19	4,550.86	193.65
1	7	1.25	172,939.73	1,919.63	2,594.10	115.19
2	7	1.25	241,149.21	2,637.09	3,617.24	159.52
3	7	1.25	307,776.67	3,062.86	4,616.65	195.98
4	7	1.25	493,130.49	3,869.80	7,396.96	287.54
Mean	10	1.25	303,390.35	3,037.19	4,550.86	276.65
1	10	1.25	172,939.73	1,919.63	2,594.10	164.56
2	10	1.25	241,149.21	2,637.09	3,617.24	228.02
3	10	1.25	307,776.67	3,062.86	4,616.65	279.98
4	10	1.25	493,130.49	3,869.80	7,396.96	410.77

Notes: Based on internal calculations. Property values are those reported in HMDA. Insurance rates are taken from insurance.com which are quotes for those with good credit and \$1000 deductible and Tax payments are based on rates taken from the American Community Survey's 5-year estimates in 2023.

average home price by income quartile based on our HMDA sample of loans originated in Iowa in 2023.

Second, we compile data on total property taxes paid (\$) in Iowa in 2023. Our data comes from the 2023 American Community Survey table B25103 which reports the median property taxes paid (5-year estimate). To obtain a property tax rate in Iowa, we divide property taxes by the value of the median owner-occupier housing unit reported in Table B25077 of the American Community Survey. That gives us an estimated tax rate of 1.5 percent. Note that actual tax rates are higher than 1.5 percent since they are applied to the taxable value of one's property (the assessed value x the roll-back rate). The roll-back rate in 2023 was 46.34 percent meaning the taxable value of each property was only 46.34 percent of its assessed value.

Third, we take data from insurance.com⁷ which gives quotes for what a typical homeowner's insurance premium would be for someone with good credit and a \$1000 deductible in 2023. The data is split up into 4 home value buckets: \$200k, \$300k, \$400k, and \$500k. Then, we interpolate between the 4 buckets to arrive at the typical insurance premium for each income quartile based on the average house price by income quartile, as above.

⁷Specifically, we use the wayback machine to obtain quotes for home insurance as at 1 May 2023 from the link: <https://www.insurance.com/home-and-renters-insurance/home-insurance-basics/average-homeowners-insurance-rates-by-state>

To estimate the interest lenders had to return on escrow account balances in Iowa before the law was repealed, we assume borrowers pay into their account monthly and the account is depleted in full every 6 months. We then calculate what the hypothetical interest cost would be for an interest-on-escrow rate of 1.25 per cent for typical loan life of between 7 and 10 years.