Pricing Power in the Mortgage Market: Evidence from GSE Fee Waivers

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Abstract

In 2022, Fannie Mae and Freddie Mac waived a portion of their guarantee fees for mortgages to lower-income first-time homebuyers in order to reduce barriers to homeownership. We estimate that private intermediary mortgage lenders, on average, capture nearly half the value of the fee waiver rather than fully passing them through to homebuyers, consistent with a failure of competition stemming from a lack of shopping. Pass-through is heterogeneous across loan officers; those with a track record of originating expensive mortgages (independent of lender pricing) pass through less than 40% of the waiver. Our evidence suggests loan officer incentives to steer borrowers into higher-rate mortgages persist despite post-crisis regulations aiming to limit such incentives.

*The views expressed in this paper are those of the authors and do not necessarily represent those of the Federal Reserve.

1 Introduction

Mortgage rates rose sharply in 2022, pushing housing affordability in the U.S. to historic lows. To help improve affordability for targeted populations, the Government-Sponsored Enterprises (GSEs), Fannie Mae and Freddie Mac, began waiving a portion of their guarantee fees (g-fees) for mortgages to lower-income first-time homebuyers. The fee waivers reduced the cost for lenders to originate and sell targeted mortgages to the GSEs. Yet the extent to which these waivers actually benefited consumers depends on the competitiveness of the mortgage market. The combination of low concentration (Amel, Anenberg, and Jorgensen, 2018) and product homogeneity has led to the common assumption that mortgage markets are highly competitive, implying that g-fee waivers should be fully passed through to consumers.

However, we estimate that lenders pass through only about half the value of the waiver, on average. We generate this estimate using confidential loan-level data and a difference-in-difference identification strategy where there is a clear counterfactual set of fees and total mortgage costs for first-time home buyers who did not qualify as "low-moderate income" (LMI) under the program rules (either 100% or 120% of area median income, depending on housing market costs). A further advantage of this setting is that while the potential benefits for consumers are large (waivers have an average present value of about $2500), the policy is narrowly targeted, mitigating concerns that waivers would not be fully passed through due to supply-side capacity constraints, which have been shown to increase lenders' margins during broad-based refinance booms (Fuster et al., 2021).

Limited pass-through, despite many lenders selling a homogeneous product, can arise in models where some consumers do not shop, as we describe in more detail in Section 2. A lack of shopping in the mortgage market is clearly evident in surveys (Consumer Financial Protection Bureau, 2015), and has been hypothesized in the literature as playing a key role in why there is considerable price dispersion (e.g. Woodward and Hall (2012); Alexandrov and

Koulayev (2018); Bhutta, Fuster, and Hizmo (forthcoming)). However, dispersion can also arise from unobserved lender costs (e.g. "high-touch" lenders charge more). In this paper, we draw on a quasi-experimental shock to costs that is identical across lenders as a more direct test of whether lenders are earning rents.

We also find heterogeneity in pass-through across lenders and loan officers. We classify lenders and loan officers as "expensive" if they tend to originate loans with higher rates, all else equal, in the period prior to the fee waiver policy (estimated using data before November 2022). In addition to lender variation in expensiveness, as shown previously in bhutta2024paying, we document considerable variation in pricing across loan officers *within* lender. We find that expensive lenders and loan officers exhibit the lowest pass-through of the fee waiver. For example, we estimate that only about 35% of the waiver is passed through by the most expensive quintile of loan officers. These patterns of price dispersion and heterogeneous pass-through that is correlated with expensiveness may reflect variation in captive demand. For example, some loan officers may have stronger networks with real estate agents that generates more referrals.

In the aftermath of the Global Financial Crisis, the Dodd-Frank Act substantially altered the rules for how loan officers could be compensated, prohibiting pay from being tied to the terms of a specific loan transaction, such as the interest rate, known as a "yield spread premium" (U.S. Congress (2010), Consumer Financial Protection Bureau (2013)). This heightened regulatory environment for loan officer compensation aimed to reduce incentives for steering consumers into high-cost mortgage products. Yet dispersion and limited pass-through at the loan officer level suggests persistent pricing discretion and incentives to profit from uninformed borrowers.

Finally, we find that pass-through varies substantially by demographics, as Black borrowers experience the smallest benefits with less than 40% of the fee waiver passing through on average. We also find somewhat lower pass-

through at nonbanks relative to banks and credit unions, possibly reflective of different compensation structures or pricing technologies (Buchak et al. (2018); Bartlett et al. (2022)).

Our paper makes three main contributions. First, we estimate the pass-through of federal policy to consumers in a novel setting that is transparent, where the effects are large, and where we have clear counterfactuals.[1] Exploring the November 2022 fee waiver policy focuses on an unambiguous prediction from a large change targeted at a precise and policy-relevant population. Recent work by Kalda, Pearson, and Sovich (2023) studies pass-through of revisions to the GSEs' loan-level price adjustment (LLPA) matrix, which reflect many small changes that average to roughly zero. We estimate far less pass-through than what is found by Kalda, Pearson, and Sovich (2023). Amornsiripanitch and Ricks (2024) and Kim, F. Liu, and Zhang (2024) study other effects of these same LLPA revisions, including how fee changes affect application rejection rates and their differential effects on loan demand across the income distribution. Finally, Ahsin (2024) shows that a GSE fee increase for refinances during the pandemic was fully passed through, which could be consistent with perfect or imperfect competition.

Second, this paper provides novel evidence that mortgage loan officers exert pricing power in the post Dodd-Frank era. Prior to the mortgage crisis, Woodward and Hall (2012) demonstrated how mortgage brokers were able to exploit their informational advantage to charge borrowers high fees. We build on their influential work by shedding light on whether new loan officer compensation and mortgage disclosure rules are sufficient to produce competitive market outcomes. While the mortgage market is relatively unconcentrated (Amel, Anenberg, and Jorgensen, 2018), market power can arise through poorly informed consumers, search frictions, or some combination of the two (Syverson, 2019). For instance, Jorgensen (2025) shows that when real estate

[1]See, e.g. Weyl and Fabinger (2013) and Nakamura and Zerom (2010) on the general phenomenon of incomplete pass-through.

agencies merge, affiliated lenders are able to charge higher interest rates, all else equal. Lu (2019) documents strategic pricing of fees across lenders in the UK mortgage market. We find that pass-through varies systematically with loan officer expensiveness, independent of lender pricing, consistent with a loan officer market power interpretation.

Third, we provide new evidence on the effectiveness of affordability policies in the housing market for vulnerable populations. A long literature has investigated the difficulties faced by low-income households to access the mortgage and housing markets (see, e.g. Bostic and Lee, 2008; Retsinas and Belsky, 2004). Our findings underscore that private mortgage intermediaries can impede policies aimed to lower costs for low-income families, similar to findings in Bhutta, Fuster, and Hizmo (forthcoming) showing that price dispersion and overpayment are especially large for FHA borrowers, who tend to be low income and low wealth.

2 Setting

2.1 Mortgage Market Fees and Waivers

The GSEs, Fannie Mae and Freddie Mac, purchase mortgage loans from lenders and bundle them into mortgage-backed securities (MBS), and guarantee those MBS against default risk. Fannie and Freddie impose underwriting requirements on lenders to limit both their credit risk and the prepayment risk faced by investors. In addition, they charge two types of guarantee fees ("g-fees"). The first is an ongoing monthly fee as a percentage of the loan amount but otherwise does not vary across loans. The second is an upfront fee that is based on borrower risk characteristics, principally FICO credit score and the loan-to-value (LTV) ratio. Lower credit scores and higher LTV ratios are assessed higher fees. This fee is charged to lenders upon delivery to the GSEs, and can be thought of as a component of lenders' marginal cost of producing mortgages for the GSEs.

By controlling the fee schedule, the GSEs can thus implement credit policy. For example, underpricing the fee for riskier borrowers effectively creates a subsidy that should facilitate the flow of mortgage credit to those households, making it easier for them to obtain a loan to buy a home. Appendix Figure A1 illustrates the fee pricing schedule for Fannie Mae as of May 2023, showing granular pricing differences across FICO score and LTV ratio. These "Loan-Level Pricing Adjustments," (LLPAs), are expressed as a percent of the loan balance at origination. Lenders can pass through these LLPAs into borrowers' interest rates or into the upfront fees ("points") they charge borrowers. Borrowers generally are unaware of g-fees or the extent to which lenders pass these costs through.

In November 2022, to promote low-income homeownership, the Federal Housing Finance Agency (FHFA) required the GSEs to implement fee waivers that eliminated LLPAs for first-time home-buyers whose income is below the area median income (defined as the metropolitan statistical area, or MSA, in which the property is located).[2] Below, Figure 1 illustrates the hypothetical effect of a waiver by comparing eligible and eligible borrowers along both the income and first-time home-buyer dimensions:

The fee waiver was viewed at the time as a well-targeted subsidy at a time of high housing and mortgage costs to those mortgage borrowers who could benefit greatly from cost relief. As the president of the Mortgage Bankers Association described, "Given the ongoing affordability challenges facing homebuyers, FHFA's targeted adjustments to the GSEs' pricing framework are well-timed and will improve access to credit for low- and moderate-income households, first-time buyers and minority buyers" (Yale, 2022). Market observers expected fee-adjusted rates to fall by over 50 basis points, saving the average affected homebuyer roughly $1,200 per year, but potentially much more for the most fee-burdened (low credit score, high LTV) borrowers, with

[2]See Fannie Mae (2023) for details. For high-cost areas, incomes needed to be below 120% of area median income.

the highest LLPAs reaching over two percent of the loan's balance.

2.2 Fee Pass-Through and the Role of Intermediaries

Importantly, the LLPA waivers are automatically applied to eligible loans through Fannie Mae's and Freddie Mac's automated underwriting systems. Thus, lenders will have the entirety of the fees waived without any additional effort required beyond their normal processes to originate and sell mortgages. However, the FHFA and GSEs rely on market mechanisms to ensure that borrowers receive the benefits of the waivers. Although borrowers are generally unaware of g-fees and the waivers, if they shop around to find the best deals then lenders will need to compete for their business and pass through the waivers.[3]

If borrowers shop around and mortgage supply is highly elastic, then fee waivers should be passed through entirely to borrowers. Elastic supply is reasonable to expect in our context given that late 2022 was a period of muted demand in the mortgage market, and low-income first-time home buyers represent a small share of the mortgage market. Thus it is unlikely that the fee waiver would strongly influence aggregate mortgage demand or bump up against supply constraints from lenders or officers.[4] Unlike the refinancing boom early in the pandemic when supply constraints led to incomplete pass-through of easing monetary policy (Fuster et al. (2021)), application volume was down sharply by the time the waivers went into effect, as shown in Figure 2.

[3]The LLPA waiver contrasts with other programs targeting first-time homebuyers that provide benefits directly to consumers rather than through intermediaries, such as the Great Recession era first-time homebuyer tax credit program (Berger, Turner, and Zwick, 2020) and the 2015 cut to FHA insurance premiums by the Obama Administration (Bhutta and Ringo, 2021).

[4]Consistent with this assumption, Bhutta and Ringo (2021) show that when the FHA implemented a surprise 50 bps cut to their ongoing mortgage insurance premium (MIP), mortgage rates did not rise despite a jump in borrowing by lower-income borrowers in response to the MIP cut.

Under the assumption of perfectly elastic supply, a plausible mechanism through which incomplete pass-through can arise is if borrowers fail to shop for their mortgage. Below, we present a simple model clarifying this mechanism.

2.3 Limited search and incomplete pass-through

In this section we present a theoretical framework, similar to varian1980model, to show how the presence of some borrowers who do not shop for their mortgage can lead to equilibrium price dispersion and incomplete pass through of a reduction in marginal cost.

2.3.1 Setup

Consider a market with N ex-ante identical mortgage lenders. Each lender originates loans at constant marginal cost $c \geq 0$ and offers an interest rate r. Borrowers share a common reservation rate $r^* > c$. Further, there are two types of borrowers:

- *Shoppers*, who comprise a fraction α, sample two lenders randomly and accept the lower of the two rates (provided it does not exceed r^*).
- *Non-shoppers*, who comprise a fraction $1 - \alpha \in (0, 1)$ of the population sample one lender at random and accept any offer $r \leq r^*$. Although shopping is costless here, some borrowers nevertheless fail to shop because they do not realize it has value, as documented in surveys (Bhutta, Fuster, and Hizmo, forthcoming), or they simply go with a lender recommended by their real estate agent (Jorgensen, 2025).

Lenders know α, c, and r^* but cannot distinguish borrower types. Let $F(r)$ denote the cumulative distribution function from which lenders draw offer rates in equilibrium. Because lenders cannot distinguish borrower types, they offer the same rate to all borrowers that arrive.

2.3.2 Demand

Consider a lender that offers a rate $r < r^*$. A non-shopper samples this lender with probability $1/N$ and accepts the offer for sure. Hence, expected demand from non-shoppers is $(1-\alpha)/N$.

A shopper samples this lender with probability $2/N$. Conditional on sampling the lender, the shopper chooses this lender if the competing lender's rate exceeds r, which occurs with probability $1 - F(r)$. Thus, expected demand from shoppers is $(2\alpha/N)(1 - F(r))$.

Total expected demand is therefore

$$D(r) = \frac{1-\alpha}{N} + \frac{2\alpha}{N}(1 - F(r)).$$

2.3.3 Profits and equilibrium

Expected profit from posting rate r is

$$\pi(r) = (r-c)D(r) = \frac{r-c}{N}\left[(1-\alpha) + 2\alpha(1-F(r))\right].$$

No lender offers $r > r^*$ in equilibrium, since such a rate yields zero demand. If there are no shoppers ($\alpha = 0$), then all lenders will offer the known reservation rate r^* to maximize profits. When there are some shoppers ($\alpha > 0$), however, there is a symmetric mixed-strategy equilibrium, where all rates in the support of F yield the same expected profit.

Let the support be $[\underline{r}, r^*]$. At the upper bound $r = r^*$, $F(r^*) = 1$, so the lender attracts only non-shoppers. Expected profit at r^* is

$$\bar{\pi} = \frac{1-\alpha}{N}(r^* - c).$$

Equating profits for any $r \in [\underline{r}, r^*]$ to $\bar{\pi}$ yields

$$(r-c)\left[(1-\alpha) + 2\alpha(1-F(r))\right] = (1-\alpha)(r^*-c).$$

Recognizing that $F(\underline{r}) = 0$ at the lower bound, we can solve for the lower bound, $\underline{r}$:

$$\underline{r} = \frac{(1-\alpha)\, r^* + 2\alpha\, c}{1+\alpha}$$

In sum, equilibrium features price dispersion over the range $[\underline{r}, r^*]$, and all lenders earn rents of value $\bar{\pi}$, including lenders offering the lowest rates. Notably, we can see from this last expression that if all borrowers are non-shoppers ($\alpha = 0$), then the lower bound, $\underline{r}$, equals r^*: There is no price dispersion and all lenders charge the maximum price. At the other extreme, if all borrowers are shoppers ($\alpha = 1$), then $\underline{r} = c$; price dispersion again disappears, but the competitive outcome is attained with all lenders earning zero profits.

2.3.4 Comparative Statics with Respect to Cost

A decline in marginal cost c leaves the upper bound price unchanged, but reduces the lower bound of the price distribution, increasing equilibrium price dispersion. Differentiating the expression for $\underline{r}$ shown above with respect to c yields:

$$\frac{\partial \underline{r}}{\partial c} = \frac{2\alpha}{1+\alpha} \in (0, 1).$$

With a fixed upper bound and a lower bound that declines less than 1 for 1 with c (when $\alpha < 1$), average prices decline by less than the cost reduction, implying partial pass-through on average.

3 Data

We combine two principal datasets to conduct our analysis. First, we utilize mortgage origination records obtained via the Home Mortgage Disclosure Act (HMDA) of 1975, which record detailed information about borrower and loan characteristics. We combine this database with public loan-level data from Freddie Mac and Fannie Mae (henceforth GSE data), which allow us to

identify first-time homebuyers and also track loan performance over time.[5] We merge the two datasets using a combination of origination and borrower characteristics that are reported in both datasets by procedure described further in the appendix.

3.1 HMDA Data

The Home Mortgage Disclosure Act of 1975 mandates mortgage originators who originate more than twenty-five loans per year to report detailed mortgage information (on both applications and originations) to financial regulatory agencies under the Federal Financial Institutions Examination Council (FFIEC). This data include detailed characteristics of the borrower and mortgage such as the borrower's race, sex, age, income, and credit score; the mortgage's amount, interest rate, loan-to-value ratio, debt-to-income ratio; the property's census tract and census tract characteristics; whether the application was approved or denied, and the precise date on which the action was taken.

A redacted version of this dataset that includes only the year of action (approval or denial) and coarser mortgage details (such as loan amount rounded to the nearest $5,000) is publicly available at the CFPB's website. We use the confidential, non-redacted version of the data. We include all originated loans made in 2022 and 2023 that satisfy the following characteristics: conventional (eligible to be sold to Fannie/Freddie after origination), first-lien mortgage for home purchase, 30-year fixed-rate, backed by an owner-occupied single-family residence.[6]

[5] For eligibility purposes, a first-time home-buyer is defined as a borrower who has not had any interest in a residential property within the past three years prior to origination.

[6] HMDA includes townhomes and condominiums as single-family properties.

3.2 GSE Data

Fannie Mae and Freddie Mac make publicly available loan-level origination and performance data on fixed-rate mortgages securitized by those agencies.[7]. These datasets record borrower characteristics, origination characteristics, and the loan's monthly payment history. We select only those loans which are owner-occupied purchase mortgages on single-family properties, so that the resulting subset should theoretically cover the same mortgages that are found in the HMDA subset described above. For our primary analysis sample, we subset to only those loans where the borrower is recorded as a first-time home buyer, and their income is between 60 and 140 percent of the area median income (80 to 160 for high-cost areas[8]). However, we use data on borrowers with other incomes and non-first-time buyers for placebo analyses.

3.3 Match

We merge the HMDA and GSE datasets based on the following characteristics: State and the first three digits of the zipcode, loan amount (rounded to nearest thousand), and origination year and month. This approach yields a high number of unique matches. Remaining ties are resolved by comparing differences in FICO, LTV, CLTV, and DTI as reported between both datasets. Overall, we are able to match about two-thirds of GSE loans to a HMDA record. Table A1 in the Appendix shows that summary statistics for the matched dataset align closely with the full GSE and HMDA datasets.

Finally, we add county-level data from Fannie Mae and Freddie Mac which contain the published income limits that lenders must use when determining a borrower's eligibility for the waiver. With the borrower's income from HMDA, these income limits allow us to determine whether or not that

[7]The data can be accessed on their website.

[8]As mentioned previously, FHFA designates certain high-cost areas where the income restriction is slightly relaxed in that borrowers' incomes cannot be more than 120 percent of the area median income, as opposed to the normal 100 percent.

borrower would have qualified for the LLPA waiver. Generally, a borrower is eligible if their income does not exceed 100 percent of the area median income. In certain "high-cost" areas, which are determined by the GSEs, this threshold is raised to 120 percent.

4 Design

We are interested in capturing the effect of waiver eligibility on the borrower's interest rate. Our main identification strategy rests on comparing eligible borrowers to a control group. In particular, we use difference-in-differences to compare borrowers in a range below the income eligibility threshold to borrowers in a range above the threshold, before and after the waiver took effect. Since these borrowers may differ along some credit characteristics, we include a detailed set of covariates so that the identifying assumption becomes one of conditional parallel trends: that is, absent the waiver policy, conditional on the covariates, interest rates would have continued on identical paths for both eligible and ineligible borrowers. This assumption is plausible because income, on its own, is generally not a factor in underwriting or mortgage pricing; rather, income relative to monthly debt payments may be a relevant risk factor, and we will control for this factor directly in our regressions.[9]

4.1 Empirical Specification

Formally, let $POST$ represent the period of time after the waiver (November 22nd, 2022), and let LMI (low and moderate income) represent income eli-

[9]We could also consider an alternative difference-in-differences strategy comparing first-time and non-first-time homebuyers below the income threshold. However, the assumption of parallel trends is arguably less plausible when comparing first-time homebuyers to non-first-time homebuyers. More importantly, some non-first-time homebuyers who are low-income are eligible for fee waivers under other programs (e.g. Fannie Mae's "Home Ready" program), which may confound the estimates.

gibility for the waiver. Using the population of borrowers who are first-time homebuyers ($FTHB$), we then estimate:

$$rate_{it} = \alpha + \beta_1 POST_t + \beta_2 LMI_i + \beta_3 LMI_i \times POST_t + \mathbf{X}_i'\Gamma + \epsilon_{it} \quad (1)$$

We include in the covariates $\mathbf{X}$ a rich set of controls including bins for the borrower's LTV and FICO score (which are then interacted, as in the LLPA grid shown in Appendix Figure A1), debt-payment-to-income (DTI) bins, the quarter of the borrower's application, the county in which the property is located, and the lender who originated the loan.

Importantly, our outcome variable, $rate_{it}$, is inclusive of upfront fees, or points, charged by the lender. To incorporate points we add 25 bps to the rate per point paid, which is a typical tradeoff between points and rates observed in the market.[10]

We can also estimate (1) dynamically, in an event-study design:

$$rate_{it} = \alpha + \beta_2 LMI_i + \sum_{t=S}^{T} (\beta_{1,k} \mathbb{I}\{k = t\} + \beta_{3,k} \mathbb{I}\{k = t\} LMI_i) + \mathbf{X}_i'\Gamma + \epsilon_{it} \quad (2)$$

Where $t < 0$ represents observations in the pre-treatment period, starting with some $S < 0$ as the first period (in practice, $S = -T$, although this need not be the case), and $t > 0$ represents observations in the post-treatment period up until some maximum period $T > 0$ (we omit the time period immediately before treatment ($t = -1$)). This specification allows for a direct test of whether the trends in y_i for the LMI and non-LMI groups were moving in parallel prior to the fee waiver policy.

[10] In some cases, borrowers may receive "lender credits" or negative points, instead of paying positive points. We observe lender credits in the HMDA data, although there are some limitations (see Bhutta and Lambie-Hanson (2024)). That said, lender credits were not likely to be common during this period of high interest rates.

4.2 Pass-through Estimation

The estimate of β_3 from equation (1) tells us how much of a rate reduction eligible borrowers received when the fee waiver policy was in place. To convert this coefficient to a measure of pass-through, we divide it by the average LLPA that those eligible borrowers *would have paid* had they not received any waiver.

For each eligible borrower in our dataset, we can assign their counterfactual LLPA according to the fee schedule shown in Appendix Figure A1. Since the LLPA is expressed as a percentage of the loan balance, we convert it to a rate over time assuming that reduction in 1% in upfront fees is equivalent to 25bps increase in the interest rate. This 4:1 conversion factor is an approximation of the true point-rate tradeoff that is market determined and can vary over time. For instance, Kalda, Pearson, and Sovich (2023) use secondary market pricing data to estimate a tradeoff of 3:1. When we adopt this 3:1 tradeoff, our estimates of pass-through are even smaller. Thus, we view our results using the 4:1 tradeoff as somewhat conservative.

Formally, let ϕ represent pass-through and μ be the counterfactual waiver that eligible borrowers would have paid. Then our measure of pass-through is simply $\hat{\phi} = \hat{\beta}_3/\hat{\mu}$, where $\hat{\mu}$ is the average LLPA (in the absence of the waiver) across treated borrowers, converted to its interest-rate equivalent value.[11]

4.3 Expensiveness

To calculate how relatively "expensive" lenders and loan officers are, we follow a methodology similar to that in bhutta2024paying, regressing interest rates on the same controls as in (1), but omitting the difference-in-difference dummies (i.e., $POST$ and LMI). We estimate this specification over the entire pre-waiver period for which we have data, from 2018 to 2022, and consider only loans originated by lenders of a sufficient size and loan officers

[11] In the appendix, we describe the two methods we use to estimate standard errors for ϕ, one using a delta method approach, and another relying on a bootstrapping procedure.

who originated a plausible number of loans, at least 10 in each calendar year, and no more than five hundred [12]. To estimate lender expensiveness, we run a rate regression including lender fixed effects, and those lender fixed effects provide our us with an estimate of how expensive a given lender is relative to other lenders, conditional on time, and borrower and loan characteristics.

To estimate loan officer expensiveness, we further add in loan officer fixed effects. Because we include both lender and loan officer fixed effects, these loan officer fixed effects reflect whether loan officers systematically vary in their pricing independently of the lending institutions where they are employed.

5 Results

5.1 Baseline Results

Table 1 displays summary statistics of the estimation sample by LMI status, and Table 2 presents the coefficients from the difference-in-differences specification in Equation 1, progressively adding more controls with each column. In column 1, which includes only controls for county and application quarter fixed effects, the coefficient on the interaction, $LMI \times Post$, of -0.09 implies that mortgage rates (inclusive of points, as discussed above) for LMI borrowers declined by 9 bps relative to non-LMI borrowers after the waiver policy went into effect. Under full pass-through, however, we would expect a rate drop of 21 bps, as shown in the row toward the bottom of the table labeled "LLPA." Our estimate of pass through in column 1 is the ratio of these two numbers, or 42 percent.

Adding additional controls for borrower attributes pushes the pass-through estimate up somewhat to 49 percent. Further adding lender and loan officer

[12] In some cases, loans in HMDA are assigned to an officer who is likely the head of a branch, and such officers end up with an implausibly high number of loans attributed to them.

fixed effects raises the estimate to 57 percent.

Next, we present the time-series effect of the fee waiver policy by estimating Equation (1) dynamically as an event-study. Figure 3 shows the interest rate estimate β_3 in green, along with the full pass-through counterfactual (i.e., the interest rate assuming borrowers received the full value of their LLPAs in savings) in blue.[13] First, the figure shows that there are no differential pre-trends when comparing first-time homebuyers' interest rates depending on whether they are LMI or not. This pattern supports the conditional parallel trends assumption underlying our identification strategy.

Looking at the periods after the vertical red line, Figure 3 establishes that interest rates on the treated LMI first-time homebuyers fell after November 2022, but not by as much as the full pass-through counterfactual. After a year of the policy being in place, interest rates for the treated group were both different from the control group and from the full pass-through counterfactual rate.

In Figure 4, we show results from a placebo test that estimates our dynamic difference-in-difference regression model using LMI and non-LMI borrowers who were *ineligible* for the waiver because they were not first-time homebuyers. The results show that rates for these two groups did not diverge in the post period. Importantly, this result provides some assurance that rates did not trend higher for LMI borrowers relative to non-LMI borrowers during the post period, which would likely bias our main estimates against finding full pass through.

To explore heterogeneity in pass-through, in Figure 5 we estimate pass-through on a variety of subsets of the data and compare them to the baseline estimate shown by the bottom bar. A key finding is that pass-through is substantially lower for Black and Hispanic borrowers, with only 37 percent and 48 percent pass-through, respectively, relative to overall average pass-

[13]The LLPA grid changed in May 2025, resulting in slightly lower LLPAs for some eligible borrowers, hence the second, smaller decline in the counterfactual at that time.

through of 57 percent.

Additionally, we examine heterogeneity in pass-through by type of lender in Figure 6. Notably, banks exhibit relatively high pass through of nearly 80 percent, whereas Fintechs (and nonbanks as a whole) display below-average pass-through. These results may reflect pricing technology employed by Fintechs (Buchak et al. (2018)) and/or perhaps different compensation schemes for loan officers and managers that incentivize rent extraction. It is also interesting that the largest banks have relatively high pass through, which suggests lender size is not necessarily the driving force behind the observed pricing power.

5.2 Lender and Loan Officer Expensiveness

Figures 7 and 8 display histograms of our estimated lender and loan officer fixed effects using the methodology described in 4.3. These figures indicate considerable dispersion in mortgage pricing across lenders and loan officers holding all else equal. Loan officer dispersion, which is conditional on lender fixed effects, is not quite as wide as lender-level dispersion, but nonetheless still quite dispersed.

One potential interpretation of this price dispersion is that it might reflect unobserved costs. For example, "expensive" lenders may be serving borrowers that tend to be costlier to work with along unobservable dimensions such as having language barriers (C. Liu (2023)) or being self-employed. Alternatively, these lenders may have higher labor costs that allow them to approve and close loans more quickly and accurately, which some consumers are willing to pay for.

If these cost factors drive expensiveness heterogeneity, then we should see little connection between expensiveness and pass-through of fee waivers. However, if the most expensive lenders and loan officers have greater pricing power, or are more willing to exploit their expertise relative to consumers, they may have lower pass-through rates.

Figures 9 and 10 present evidence supporting the latter story about pricing power. The most expensive quintile of lenders and loan officers exhibit substantially lower pass-through: about 45% for the most expensive lenders, and about 35% for the most expensive loan officers. It is also notable that the least expensive lenders and loan officers still exhibit far less than full pass through, even while their pass through rates are significantly higher than those of the most expensive.

Finally, in Table 3 we re-run our difference-in-difference specification, but now interact the lender and loan officer fixed effects with $LMI \times Post$. In the first 4 columns, the triple interaction coefficients show that more expensive lenders and loan officers reduce pass through (i.e. the positive coefficients offset the negative coefficients on $LMI \times Post$). Most notably, column (5) includes both triple interactions simulataneously, and show that expensive lenders and expensive loan officers independently reduce pass-through. In other words, this result shows explicitly that the relationship between pass-through and loan officer expensiveness is not simply capturing a lender effect (e.g. expensive loan officers tend to work for expensive lenders). This pattern is not entirely surprising given that our loan officer fixed effects were estimated conditional on lender fixed effects. Nonetheless, this result underscores the conclusion that mortgage loan officers exhibit independent pricing power.

6 Conclusion

In this paper, we study the ability of guarantee fee waivers to support affordability for lower-income first-time homebuyers. While these waivers were designed to reduce borrowing costs through competitive pass-through, we document that borrowers received only a fraction of the intended benefits. In addition, the benefits of the waivers vary systematically across borrower types, lender types, and the degree of ex ante lender and loan officer ex-

pensiveness. These findings suggest that competitive forces alone do not discipline mortgage pricing in practice.

Our results highlight the central role of mortgage loan officers as active price setters, even in a regulatory environment designed to limit compensation incentives tied to loan terms. Despite restrictions imposed after the Global Financial Crisis, loan officers appear to retain meaningful discretion over pricing and extract rents from borrowers who may be less informed about underlying costs like g-fees. Our findings are thus consistent with a view of mortgage markets in which product homogeneity and low concentration coexist with frictions, such as search costs or information asymmetries, that limit competition at the point of origination.

Taken together, our paper sheds new light on the effectiveness of credit market policies implemented to expand access to homeownership. Subsidies delivered through intermediaries may fail to reach intended beneficiaries when pricing discretion and borrower inattention are pervasive. Policies aimed at improving affordability may therefore require greater transparency, enhanced consumer literacy, or alternative approaches to reduce the scope for intermediary capture. More research is needed to better understand how regulatory and pricing interventions interact with market participants in the design of housing finance policy.

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	LMI		Non-LMI	
	Mean	S.D	Mean	S.D
Interest Rate	5.71	1.15	5.73	1.18
Zero-Point Rate	5.84	1.18	5.88	1.22
Origination Fees	3,179	2,976	3,687	3,525
Loan-to-Value	86.95	12.30	87.12	11.35
Debt-to-Income	39.04	7.83	36.24	8.50
Loan Amount	295,418	129,993	370,327	149,746
LLPA	0.81	0.63	0.75	0.62
LLPA (rate)	0.20	0.16	0.19	0.15
Credit Score	748.05	40.33	748.64	39.76
Age	35.62	11.85	36.10	10.87
Income	84.04	26.05	121.52	32.52
Observations	370,655		238,053	

Table 1: Summary statistics of analysis sample: LMI vs. non-LMI

	(1)	(2)	(3)	(4)
LMI	-0.041***	-0.131***	-0.116***	-0.109***
	(0.004)	(0.008)	(0.006)	(0.005)
LMI:Post	-0.090***	-0.103***	-0.120***	-0.120***
	(0.009)	(0.009)	(0.007)	(0.007)
Obs.	608,557	607,591	607,469	573,083
R^2	0.757	0.777	0.812	0.858
LLPA ($\hat{\mu}$)	0.213	0.213	0.213	0.213
yellow!30 Passthrough	0.421	0.485	0.564	0.565
Std. Err.	0.0126	0.0124	0.0115	0.0102
County FE	Y	Y	Y	Y
Application Quarter FE	Y	Y	Y	Y
Borrower Info		Y	Y	Y
Lender FE			Y	Y
Loan Officer FE				Y

Source: HMDA, FNMA, FHLMC.

Table 2: Fee waiver pass through estimates

	(1)	(2)	(3)	(4)	(5)
LMI:Post	-0.127***	-0.125***	-0.123***	-0.123***	-0.127***
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
LMI:Post:LenderFE	0.190***	0.200***			0.167***
	(0.039)	(0.042)			(0.040)
LMI:Post:OfficerFE			0.124***	0.118***	0.084***
			(0.031)	(0.030)	(0.032)
Obs.	607,256	491,620	492,182	491,620	491,620
R^2	0.811	0.821	0.820	0.822	0.822

Source: HMDA, FNMA, FHLMC.

Table 3: Effects of lender and loan officer expensiveness on pass through

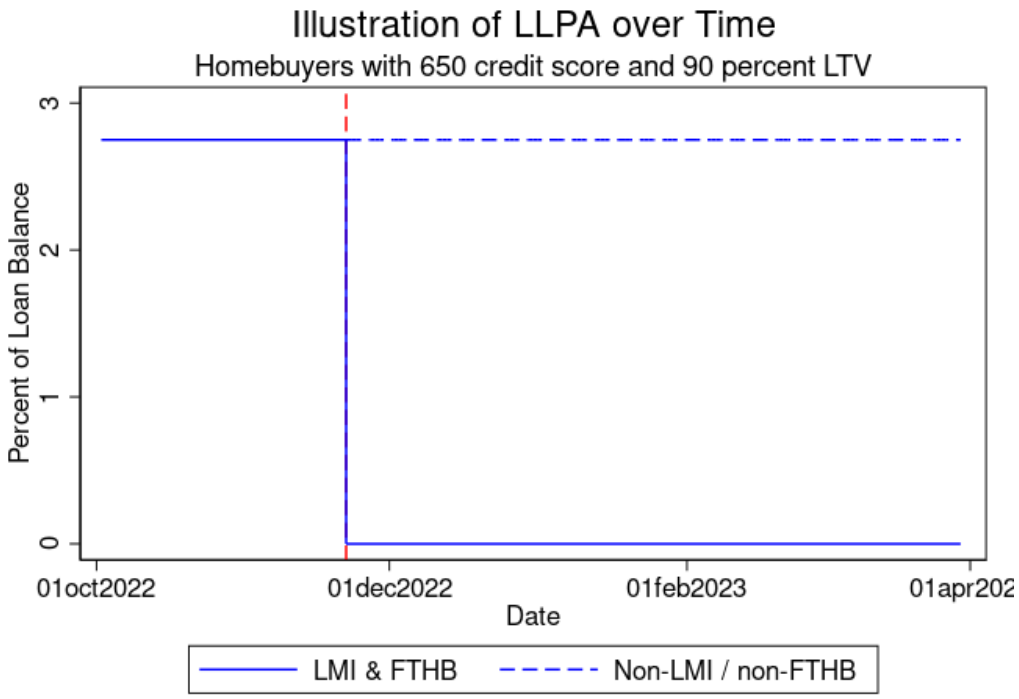


Figure 1: Hypothetical LLPA over time for waiver-eligible and ineligible borrowers. Source: FNMA.

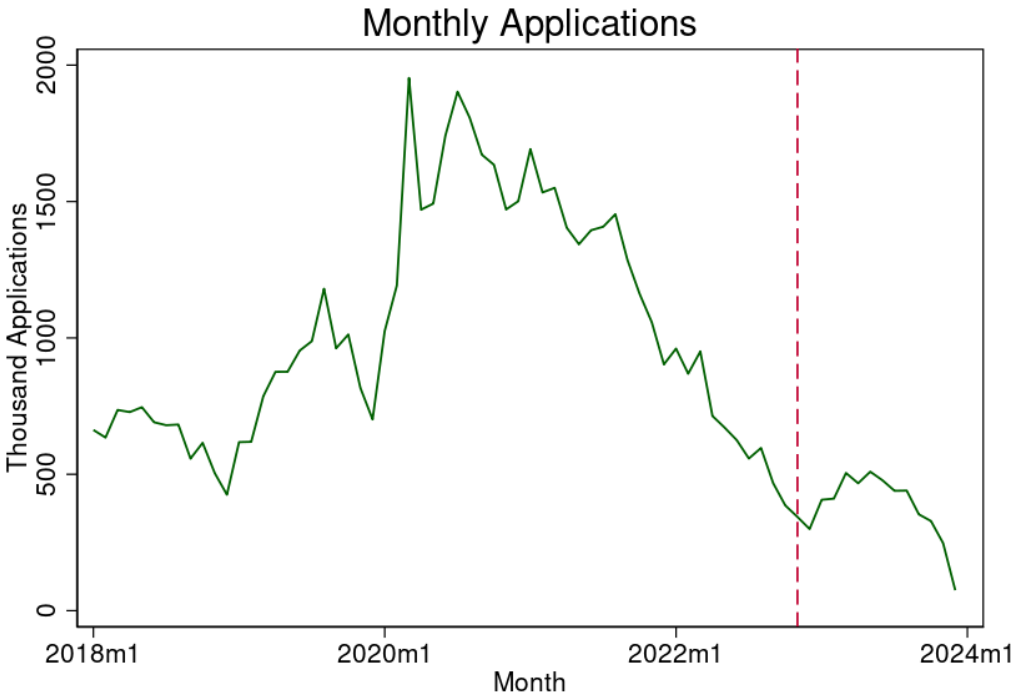


Figure 2: Monthly mortgage application volume. Mortgage demand was muted in 2022–2023 amid rising interest rates. Source: HMDA

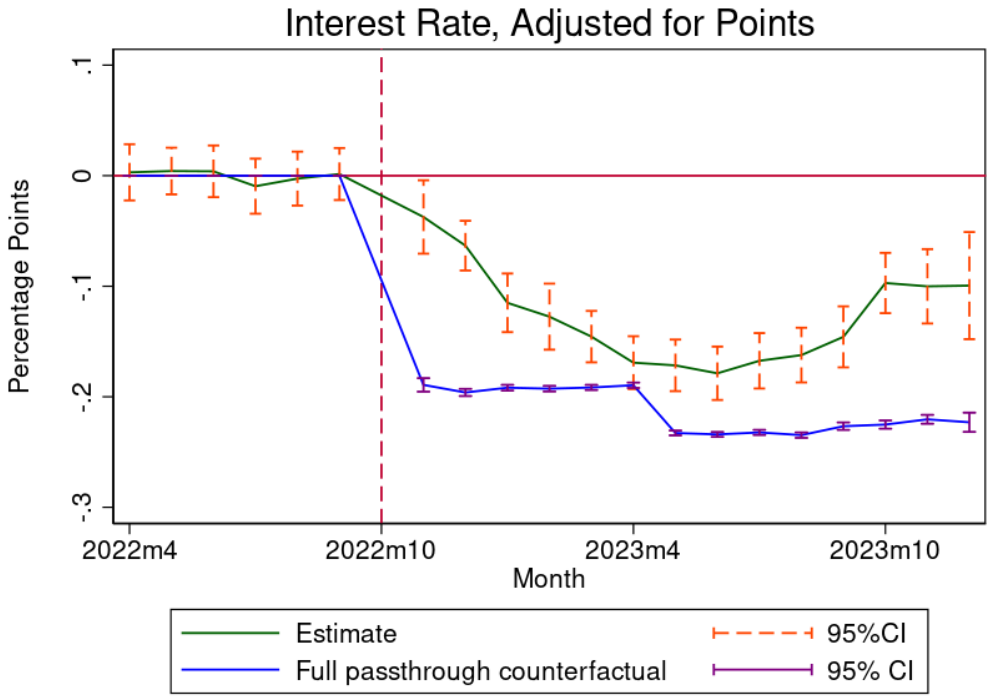


Figure 3: Dynamic estimates of pass-through

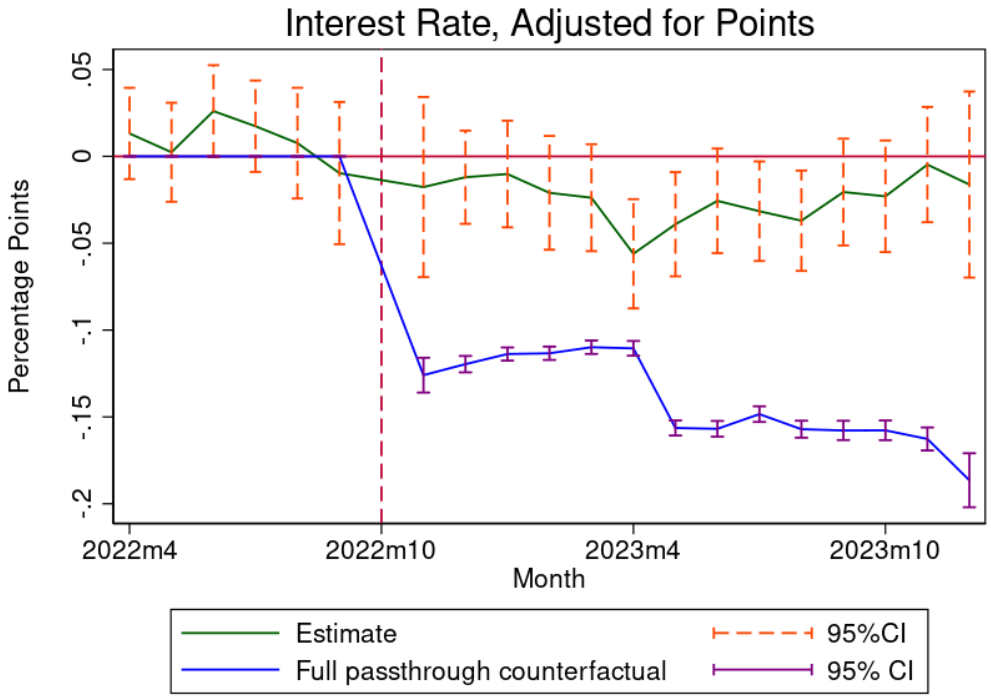


Figure 4: Placebo test: Waiver-ineligible LMI vs non-LMI borrowers

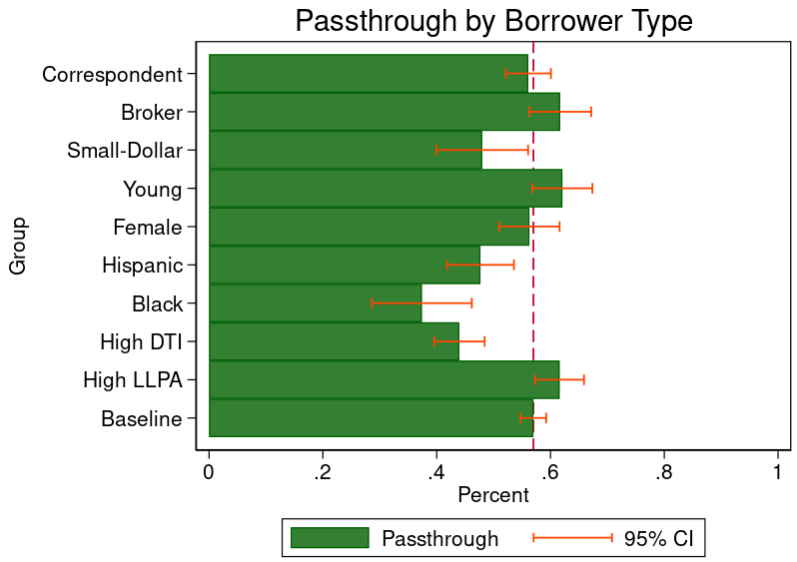


Figure 5: Heterogeneity in pass through

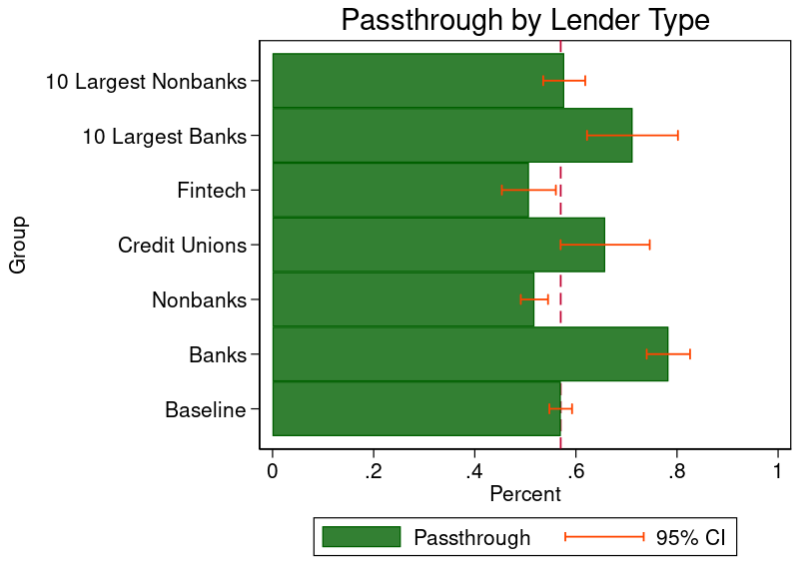


Figure 6: Heterogeneity in pass through by lender type

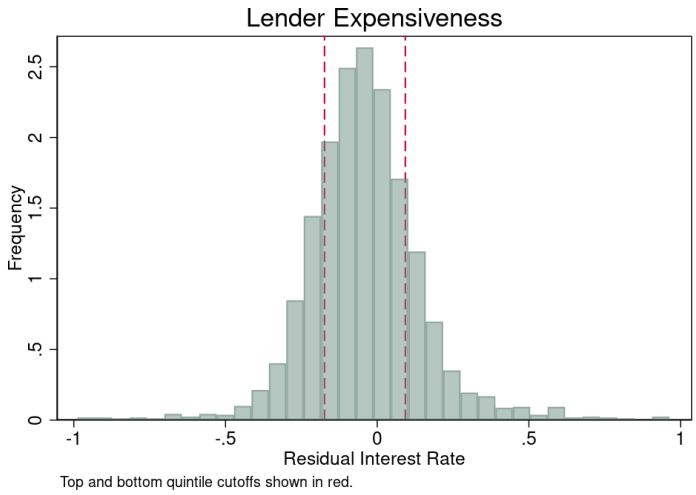


Figure 7: Estimated lender fixed effects on mortgage rates

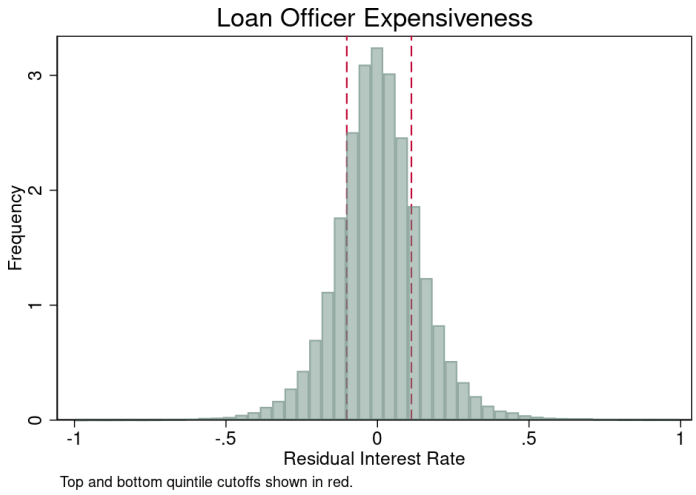


Figure 8: Estimated loan officer fixed effects on mortgage rates (conditional on lender)

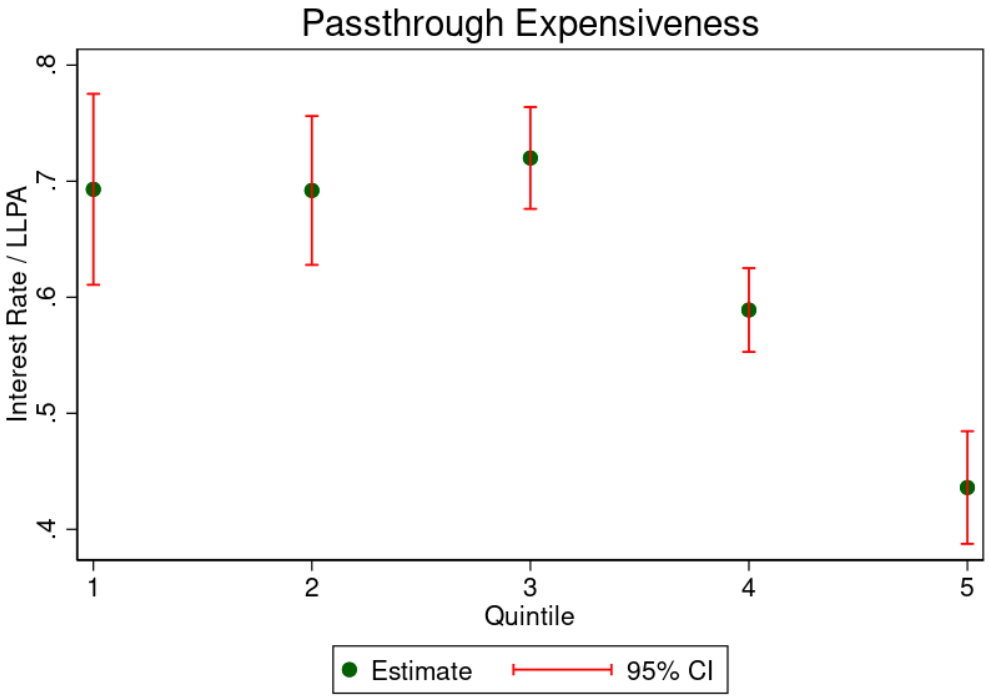


Figure 9: Pass through by quintile of lender expensiveness

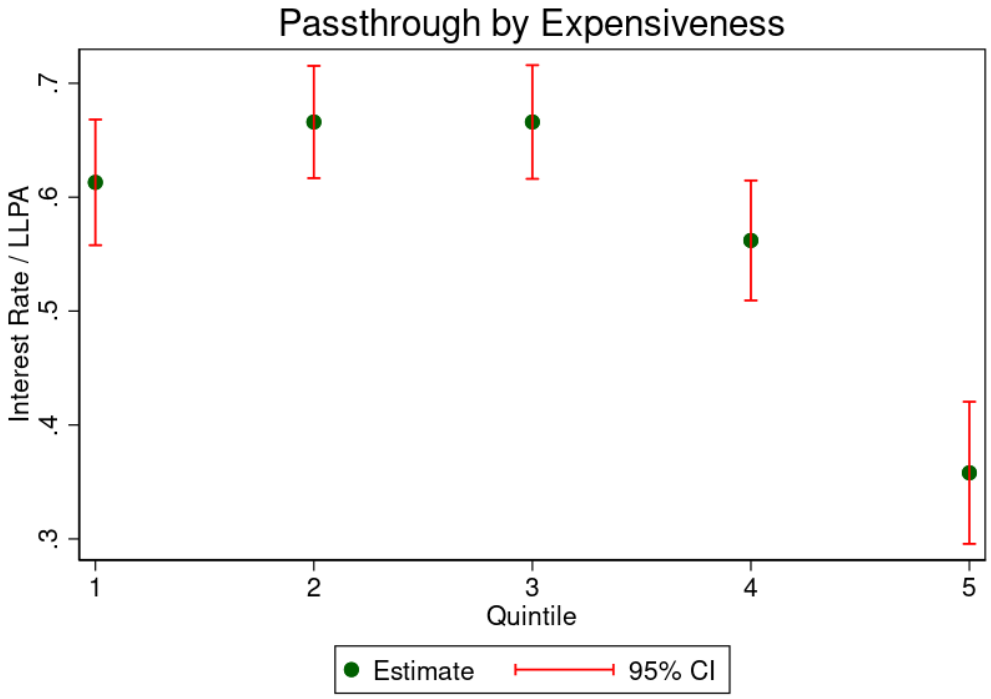


Figure 10: Pass through by quintile of loan officer expensiveness

Appendix

Table 1: All Eligible Loans – LLPA by Credit Score/LTV Ratio

Representative Credit Score	LTV Range									
	Applicable for all loans with terms greater than 15 years									
	≤ 60.00%	60.01 – 70.00%	70.01 – 75.00%	75.01 – 80.00%	80.01 – 85.00%	85.01 – 90.00%	90.01 – 95.00%	95.01 – 97.00%	>97.00%	SFC
≥ 740	0.000%	0.250%	0.250%	0.500%	0.250%	0.250%	0.250%	0.750%	0.750%	N/A
720 – 739	0.000%	0.250%	0.500%	0.750%	0.500%	0.500%	0.500%	1.000%	1.000%	N/A
700 – 719	0.000%	0.500%	1.000%	1.250%	1.000%	1.000%	1.000%	1.500%	1.500%	N/A
680 – 699	0.000%	0.500%	1.250%	1.750%	1.500%	1.250%	1.250%	1.500%	1.500%	N/A
660 – 679	0.000%	1.000%	2.250%	2.750%	2.750%	2.250%	2.250%	2.250%	2.250%	N/A
640 – 659	0.500%	1.250%	2.750%	3.000%	3.250%	2.750%	2.750%	2.750%	2.750%	N/A
620 – 639	0.500%	1.500%	3.000%	3.000%	3.250%	3.250%	3.250%	3.500%	3.500%	N/A
< 620[1]	0.500%	1.500%	3.000%	3.000%	3.250%	3.250%	3.250%	3.750%	3.750%	N/A

Table 2: All Eligible Loans – LLPA by Product Feature

PRODUCT FEATURE	LTV Range									
	≤ 60.00%	60.01 – 70.00%	70.01 – 75.00%	75.01 – 80.00%	80.01 – 85.00%	85.01 – 90.00%	90.01 – 95.00%	95.01 – 97.00%	>97.00%	SFC
Adjustable-rate mortgage	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.250%	0.250%	0.250%	N/A
Manufactured home [2]	0.500%	0.500%	0.500%	0.500%	0.500%	0.500%	0.500%	0.500%	0.500%	235
Investment property	2.125%	2.125%	2.125%	3.375%	4.125%	4.125%	4.125%	4.125%	4.125%	N/A

Figure A1: LLPA matrix as of November 2022. Source: FNMA.

	Matched Sample		All GSE Loans		HMDA, Conventional		HMDA, Direct[1]	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
Interest Rate	5.71	1.18	5.77	1.22	5.73	1.28	5.70	1.23
Loan Amount	340,216	164,549	339,147	166,274	369,924	224,732	338,593	165,675
Loan-to-Value	81.91	15.79	81.80	15.83	81.42	15.84	81.41	16.10
Combined LTV	81.99	15.81	82.08	15.90	81.47	15.87	81.43	16.10
Debt-to-Income	37.65	8.99	37.77	9.08	37.32	9.13	37.66	9.07
Credit Score	751.94	42.15	754.91	41.46	752.37	42.52	752.17	42.24
LLPA	0.71	0.65	0.68	0.62	0.97	0.76	0.90	0.73
Observations	2,065,123		3,079,482		3,120,790		1,814,677	

Note[1]: Direct means conventional and sold directly to Fannie or Freddie upon origination.
Source: HMDA, FNMA, FHLMC.

Table A1: Comparison of matched data to full GSE and HMDA data