



APRIL 2018

Why Are Consumers Leaving Money On The Table?

One call could save you \$1,500

*Well you know it's going to be all right
I think it's going to be all right
Everything will always be all right
When we go shopping*

—“Shopping” by Steven Page and Ed Robertson

You drive by a busy corner, and you see that several gas stations all charge different prices for the same kind of gas. You're in a rush, so it may not be worth your time to pull into the one with the cheapest gas just to save a few cents a gallon. But when it comes to mortgages, shopping around for a better rate could save you hundreds or thousands of dollars. Our research indicates that borrowers could save an average of \$1,500 over the life of the loan by getting one additional rate quote and an average of about \$3,000 for five quotes.

Yet nearly half of consumers don't shop for better rates before taking out a mortgage to buy or refinance a home. Worse, many consumers do not seem to realize that the rates offered by lending institutions vary widely.¹

Why are consumers leaving money on the table? Answering that question just won Richard Thaler the most recent Nobel Prize in economics. His research into seemingly irrational economic behaviors finds that in general consumers search too little, get confused while evaluating complex alternatives, and are slow to switch from past choices, even if it costs them. These types of behavior apply to more complex tasks such as taking out a mortgage, and can lead to borrowers relying solely on their existing banking relationship or a single referral from a real estate agent or a friend.

At any given time, consumers must contend with different rates for the same 30-year fixed-rate mortgage. Freddie Mac tracks these variations each week in our Primary Mortgage Market Survey (PMMS) where we information on the mortgage rates and points from about 125 lenders across the country. The mix of lender types in this sample—thrifts, credit unions, commercial banks, and

¹ See Consumer Financial Protection Bureau (2015), http://files.consumerfinance.gov/f/201501_cfpb_consumers-mortgage-shopping-experience.pdf. The survey reports that almost half of consumers “seriously considered” only one lender before making a choice. More than three-quarters (77 percent) applied to only one lender. Very few consumers considered more than three lenders.



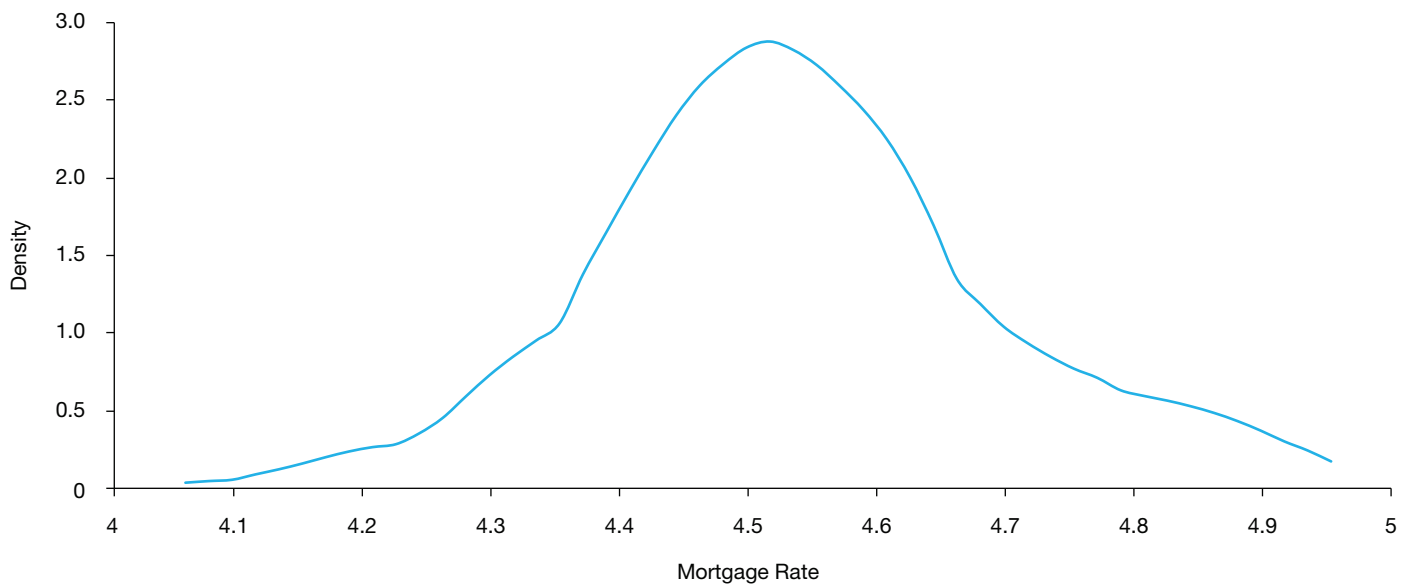
mortgage lending companies—roughly matches the level of the mortgage business that each type commands nationwide.²

Exhibit 1 displays the dispersion of mortgage rates across all lenders for a typical period, the week of March 29, 2018. These offered rates center around 4.5 percent, but some rates are as low as 4.2 percent and others are as high as 4.8 percent. If borrowers only search once, some will get lucky and get a low rate; others will get a high rate; and many will get a rate around 4.5 percent.

Exhibit 1

Distribution of rates on 30-year fixed rate mortgages (Week of March 29, 2018)

In a typical week, rates cluster around the mean, but lower rates are available to consumers



Source: Freddie Mac Primary Mortgage Market Survey® (PMMS®) data and authors' calculations.

Note: The density plot of mortgage interest rates displays the underlying frequency distribution with the mortgage rate on the horizontal axis and the rate of occurrence on the vertical axis.

2 The survey covers three single-family loan products: a 30-year fixed-rate mortgage, a 15-year fixed-rate mortgage, and a 5/1 Treasury-indexed adjustable-rate mortgage. The survey is based on first-lien, prime, conventional, conforming home purchase mortgages with a loan-to-value of 80 percent. The mortgage rates are typically quoted in two parts. The first is the mortgage rate, and the second is the number of points required to get that rate. One point equals 1 percent of the mortgage amount in fees (or \$1,000 for every \$100,000). Essentially, borrowers who chose to pay points pay some interest upfront in exchange for a lower interest rate over the life of the mortgage. We standardized the rates we used in this analysis to do away with points. We assumed that one additional point would reduce the rate on a 30-year fixed-rate mortgage by 0.25 percentage points. So, we divided the points by a conversion factor of 4 (100/25) and added it on to the rate. Homeowners' trade-off between rate and points will depend on how long they expect to pay off the mortgage.



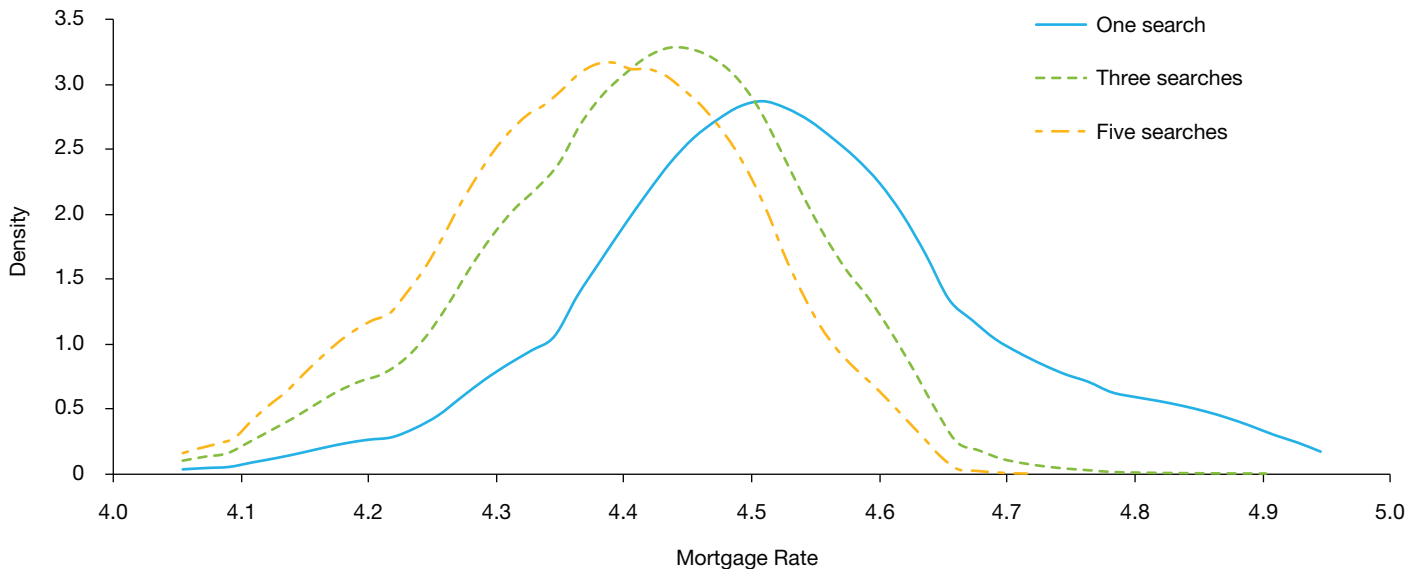
What happens when consumers intensify their search? We mimicked the results of a consumer's search by randomly drawing mortgage rate offers from this distribution and calculating the minimum rate. If consumers search twice, they obtain two draws from this distribution and will pick the lower rate. If consumers search five times, they choose the lowest of the five rates. In practice, this shopping can be as simple as doing an internet search, visiting one's local bank, and of course, making a few phone calls.

Exhibit 2 pictures what happens when consumers search for one, three, and five rate offers. Searching multiple times greatly reduces the chance that a consumer will get a mortgage with an unusually high rate (4.8 percent to 4.6 percent). Searching five times lowers the average mortgage rate to consumers from about 4.5 percent to around 4.4 percent. Finally, searching multiple times greatly increases the chance that a consumer will get a very low mortgage rate.³

Exhibit 2

Consumer mortgage interest rate distributions with different search intensities

The more consumers search, the better the distribution of rates available to them



Source: Freddie Mac Primary Mortgage Market Survey® (PMMS®) data and authors' calculations.

Note: The density plots of mortgage interest rates display the relative likelihood of different values and shows the underlying frequency distribution. Shifting curves to the left implies that lower mortgage rates are more likely.

3 As a reality check, we examined mortgage rates displayed by Zillow (<https://www.zillow.com/mortgage-rates/>) from 22 lenders and found the rate dispersion consistent with that in the PMMS survey data. The rates displayed on November 30, 2017, ranged from 3.25% to 4.25%, with almost half the rates at 3.875%.



How much could a borrower save by searching for more rates?

The savings are clear when we look at the patterns for the past two decades. **Exhibit 3** displays the average rate reduction from consumers searching for multiple rate offers using PMMS survey data from the last 22 years (1995 to 2017). Consumers who obtain five rate offers saved around 16.6 basis points (bps) (or 0.166 percent) on their rate on average. Not all consumers get the same reduction from searching (see sidebar): The luckiest ten percent get more than 22.3 bps, while the least lucky ten percent get fewer than 12 bps.⁴ While these might sound like modest reductions in the mortgage rate, the present value of the change in mortgage payments add up to a substantial sum.

Exhibit 3

Average reduction in rates from searching for better rates (1995 to 2017)

The more consumers shop for rates, the more they can save

Number of offers	Two	Three	Four	Five
Average	0.082%	0.121%	0.147%	0.166%
10th percentile	0.055%	0.083%	0.101%	0.119%
90th percentile	0.119%	0.168%	0.199%	0.223%

Source: Freddie Mac

Note: For each week of PMMS (Primary Mortgage Market Survey) data, we calculated the distribution of the realized interest rate as a function of the search intensity. We computed the average, 10th, and 90th percentiles of the rate distributions and then averaged them over all weeks from 1995 to 2017.

4 The level of mortgage rate dispersion may be even higher for Canadian mortgage markets. See Jason Allen, Robert Clark, and Jean-François Houde (2014), "Search Frictions and Market Power in Negotiated Price Markets," <https://ssrn.com/abstract=2126625>.



How much would a borrower save?

For a typical \$250,000 loan, the average expected savings from only one additional quote is \$1,435. But that’s just the average. Borrowers who were quoted a higher rate in their first search will save more. **Exhibit 4** displays the present value of the rate reductions from additional searching. Savings are computed based on each week’s survey for the average savings, and both the bottom ten percent and the top ten percent of savings for each week and then averaged across all weeks. Eighty percent of borrowers who obtain one additional rate offer will save between \$966 and \$2,086. The average expected benefit increases to \$2,914 if the borrower receives five rate quotes.⁵ Eighty percent of borrowers who obtain five offers will save between \$2,089 and \$3,904.

Exhibit 4

Present value of mortgage payment savings from search (1995 to 2017)

Savings can amount to thousands of dollars over the course of the mortgage

Number of offers	Two	Three	Four	Five
Average	1435	2125	2578	2914
10th percentile	966	1451	1773	2089
90th percentile	2086	2943	3477	3904

Source: Freddie Mac

Note: Dollars savings are calculated using a \$250,000 loan and estimating the value of each basis point (bp) in interest rate as being worth 7 bps of the origination balance in present value over the life of the loan. The present value of a rate difference includes the impact of discounting, amortization, and prepayment.

Several factors will influence the actual expected savings to a household. First, the savings will be proportionate to loan size, so that a loan amount twice this size will double the expected savings. Second, borrowers who expect to have their mortgage for a longer term, and neither refinance nor move, will gain more from a reduced rate.

Finally, the dispersion of rate offers greatly affects the amount of savings. While the dispersion has remained surprisingly constant over time, it tends to be higher in periods of economic stress.

⁵ A recent study of the Belgium mortgage market found that borrowers who obtained five mortgage rate offers saved an average of 7,078 euros. See Sven Damen and Erik Buyst (2017), “Mortgage Shoppers: How Much Do They Save?” *Real Estate Economics* 45 (4): 898–929.



So in bad economic times, the gains provided by rate shopping are even greater (see the Appendix for more details). For example, during one such period in the depths of the global financial crisis (the week of December 11, 2008), borrowers with a \$250,000 mortgage could have saved \$5,020, on average, if they had obtained five rate offers.

Consumers can also benefit by shopping for the lowest fees, in addition to the lowest rates. In an important paper, Susan Woodward and Robert Hall documented that variations in consumer mortgage searches led to large differences in broker fees paid by consumers. By not shopping effectively, typical borrowers paid an extra \$1,000 in broker fees charged to originate their mortgage.⁶

Consumers can save even more if they also shop not only for better rates, but also for better terms and fees.

The research is clear: It pays to shop around for the best mortgage terms. Borrowers should compare offers made to get an accurate comparison of cost estimates from several lenders. It is important to compare interest rates, terms, and fees (including lender application, processing fees, and other loan origination fees). And it also pays to ask questions if you don't understand the loan program features. Searching for the best deal has been made easier because of the internet: Many websites provide multiple rate offers and can help make a consumer's search more efficient.⁷

By shopping more than one mortgage lender—ideally, three or more—the consumer is much more likely to get a better interest rate and save money in both the short and long term. With lower monthly payments and lower fixed fees, the loan will be more affordable, and thus safer, and consumers will have hundreds or thousands of dollars more in their pockets. Not a bad return for a few phone calls or clicks on the internet.

There are no guarantees

While the research strongly endorses shopping for a better rate, each and every borrower may not benefit from an additional search. Some borrowers may get lucky on their first try and obtain a very low rate. Lenders may offer their best rates to borrowers perceived as sophisticated. This analysis implicitly assumes that customers have access to mortgages from all the lenders in the sample, but there could be less rate dispersion—and thus less of a chance of obtaining a low rate—in any given market.

6 See Susan E. Woodward and Robert E. Hall (2012), "Diagnosing Consumer Confusion and Sub-Optimal Shopping Effort: Theory and Mortgage-Market Evidence." *The American Economic Review* 102 (7): 3249–76.

7 Here are a few examples:
<https://www.zillow.com/mortgage-learning/how-to-shop-for-a-mortgage/>
<https://www.zillow.com/blog/mortgage-rates-shop-around-168431/>
<https://www.zillow.com/mortgage-rates/>
<https://www.redfin.com/blog/2016/01/how-to-choose-the-best-mortgage-refinance-lender.html>



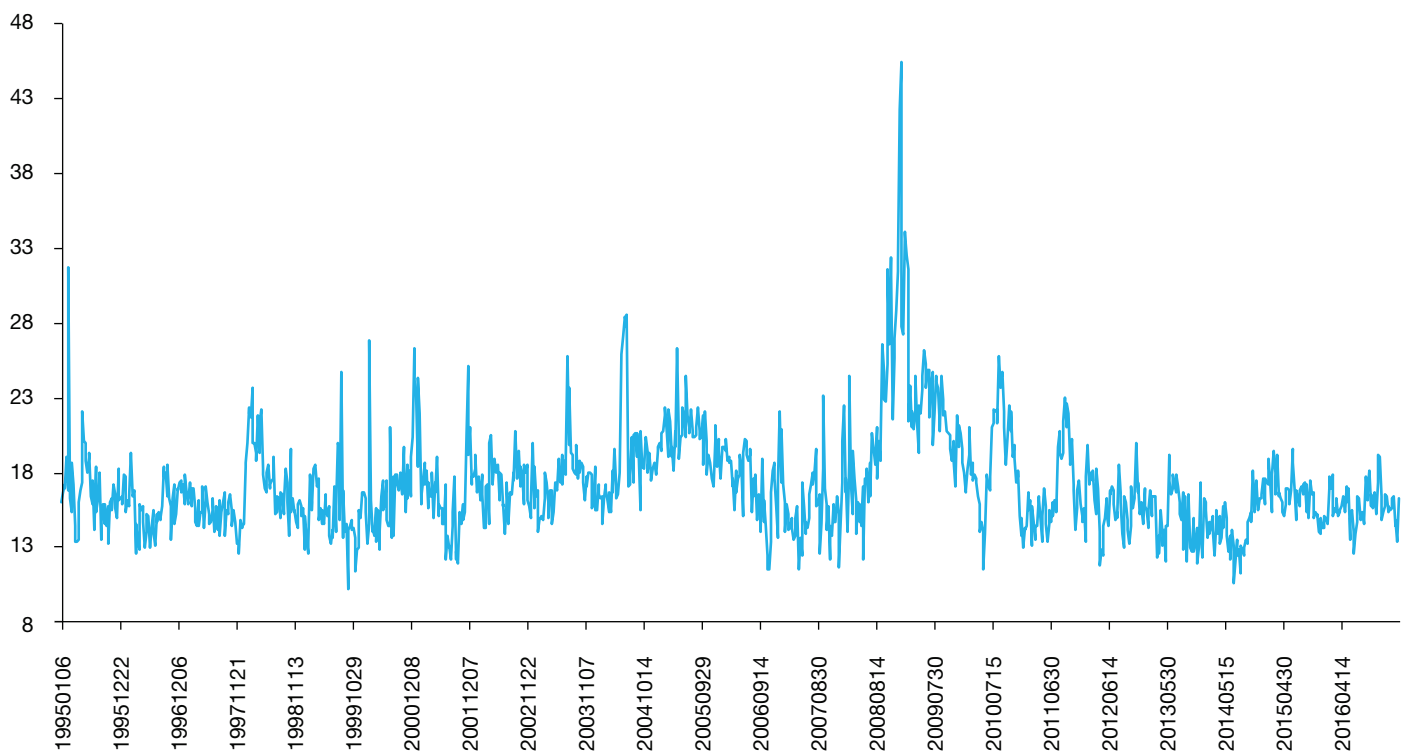
Appendix: What drives dispersion in mortgage rates?

Consumers can save more from shopping when the dispersion of the mortgage offer rates is higher.

Appendix A.1 displays the dispersion of mortgage rates in the PMMS survey data from 1995 through 2017.⁸ For most periods, the standard deviation of offer rates ranges from 15 to 25 basis points. During the global financial crisis, the rate dispersion peaked at about 45 bps.

A.1 PMMS survey rate dispersion

Dispersion in rates has remained surprisingly constant, except during economic downturns



PMMS[®] survey data and authors' calculations.

⁸ The standard deviation can be greatly influenced by outliers. We used the robust measure of scale estimator, Gini's mean differences estimator, to reduce the impact of outliers in the raw data.



What factors drive the dispersion in mortgage rates?

To explain the dispersion of rates over time, we used regression analysis. We considered a range of variables, including macro-level indicators such as GDP growth, inflation, home price appreciation, and the change in the current coupon of mortgage-backed securities (MBS). We also included the share of MBS held by the Federal Reserve (Fed MBS holding) as share of total MBS outstanding to capture the impact of the Federal Reserve System's quantitative easing (QE). The regression equation is:

$$Volatility_t = \alpha_0 + \alpha_1 HPA_t + \alpha_2 CPI_t + \alpha_3 \log GDP_t + \alpha_4 \Delta Current Coupon_t + \alpha_5 Fed MBS share_t + \alpha_6 Fed Announced MBS buying + \epsilon_t$$

The results are presented in **Appendix A.2**.

A.2 PMMS rate dispersion regression results

Rate dispersion – and thus the benefits of shopping for better rates – are greater in hard times, when house price growth and GDP are declining

	PMMS Full Sample (1995–2017)	PMMS before QE (Jan 1995–Dec 2008)	PMMS after QE (Jan 2009–Mar 2017)
HPA	-1.322***	-0.772	-1.600**
CPI growth	-2.692***	-3.390***	-0.953
Log GDP growth	-1.126**	-1.119*	-0.833
Change in coupon rate	0.0048	0.0015	0.0061
Fed MBS share	-0.0011***	–	-0.0020***
Fed announced MBS buying	0.0738*	0.0741*	–

Source: PMMS® Survey Data and authors' calculations.

Note: CPI = consumer price index; HPA = house price appreciation; MBS = mortgage-backed securities; PMMS = Primary Mortgage Market Survey; QE = quantitative easing. Statistical significance levels are indicated by *** for p<0.01, ** for p<0.05, and * for p<0.1



As Exhibit 6 shows, benefits are greater in hard times – when house price growth and GDP are declining. For example, with full PMMS sample, a 10 percent decrease in housing price growth increases the dispersion by 13.22 basis points. A 10 percent decrease in GDP growth increase the dispersion by 11.26 basis points. The Fed MBS share is negatively correlated with mortgage rate volatility. A 10 percent increase in the Fed MBS share decreases the PMMS rate dispersion by 1 basis point. The month (December 2008) when the Fed announced MBS purchases increases the dispersion by 7.38 basis point. The results before and after the period of quantitative easing are similar.

Prepared by the Economic & Housing Research group

Doug McManus, Director of Financial Research
Liyi Liu, Quantitative Analyst Senior
Mingzhe Yi, Economic & Housing Research Intern

www.freddiemac.com/finance

Opinions, estimates, forecasts and other views contained in this document are those of Freddie Mac's Economic & Housing Research group, do not necessarily represent the views of Freddie Mac or its management, should not be construed as indicating Freddie Mac's business prospects or expected results, and are subject to change without notice. Although the Economic & Housing Research group attempts to provide reliable, useful information, it does not guarantee that the information is accurate, current or suitable for any particular purpose. The information is therefore provided on an "as is" basis, with no warranties of any kind whatsoever. Information from this document may be used with proper attribution. Alteration of this document is strictly prohibited.

© 2018 by Freddie Mac.