

Economic Brief

November 2021, No. 21-38

Mortgage Refinance Costs and a Better Adjustable-Rate Mortgage Contract

By [Borys Grochulski](#)

Using data from the latest refinance wave, this *Economic Brief* estimates the mortgage refinance transaction costs paid by the borrowers in 2020 at \$44.5 billion. Financing homeownership with a sequence of conventional fixed-rate mortgage products implies additional, indirect costs. A simple redesign of the adjustable-rate mortgage contract offers potential for eliminating these costs and, thus, improving both homeownership affordability and the transmission of interest rate cuts to the final users of credit.

Interest rate cuts — especially those of significant magnitude — lead to a flurry of activity in the mortgage origination industry as homeowners replace their mortgages with cheaper ones. This process (known as refinancing) can decrease the overall cost of homeownership over the long run but can also be costly and fraught with uncertainty and market frictions in the short term.

After interest rates were cut in March 2020 in response to the COVID-19 pandemic, refinancing activity exploded. Overall, 2020 set a new record for first-lien originations with \$4.04 trillion in mortgages originated during the year.¹ Among these originations, two-thirds were refinance transitions, and one-third were new purchase loans. According to [Freddie Mac](#), the typical refinance loan in 2020 was for \$300,000 with an average interest rate of 3.1 percent replacing an existing loan with an average interest rate of 4.3 percent.

Direct Costs of Refinancing

These refinancings will yield substantial savings in interest paid by borrowers over the life of the mortgage. However, the transaction costs borrowers pay to refinance are also significant. The 2013 paper "[Optimal Mortgage Refinancing: A Closed-Form Solution](#)" calibrates the direct cost of a mortgage refinance transaction at \$2,000 plus 1 percent of the amount borrowed.

Using this calibration, the following back-of-the-envelope calculation provides an estimate of the total transaction cost paid by the borrowers who refinanced their mortgages in 2020. With the total refinance origination amount of \$2.67 trillion (two-thirds of \$4 trillion) and the average refinance mortgage size of \$300,000, approximately 8.89 million refinance transactions occurred in 2020. Each of these transactions cost \$5,000 on average.² Thus, the total transaction cost paid by U.S. borrowers to refinance their mortgages in 2020 amounts to almost \$44.5 billion.

Indirect Costs of Refinancing

In addition to the direct transaction costs, mortgage refinancing is fraught with uncertainty and is subject to market frictions and bottlenecks, which imply additional indirect costs. Four such indirect costs are worth noting.

Mistakes in the Timing of Refinancing

As interest rates decline, it is very hard to predict how far exactly they will fall, and how soon. Borrowers therefore face a difficult problem of timing their refinancing decisions: Refinance now or wait in anticipation of further interest rate declines?

There is evidence that borrowers make "mistakes" in this tricky timing decision. [Freddie Mac](#) reports that 10 percent of refinance transactions in 2020 were repeat refinancings, meaning a refinancing of a loan that itself is a refinanced loan not older than 12 months.

Origination Bottlenecks

Bottlenecks in the mortgage origination pipeline impede the transmission of interest rate cuts to borrowers. One important piece of evidence indicating the existence of such bottlenecks comes from the spikes in the measure known as Originator Profit and Unmeasured Cost (OPUC), as discussed in the 2013 paper "[The Rising Gap Between Primary and Secondary Mortgage Rates](#)." The OPUC shows the difference between the average price of mortgages in the secondary markets (where mortgage loans are sold into securitization pools) and the prices paid by borrowers in the primary market (at origination).³

In January and February of 2020, this margin stood at 2.5 percentage points, which was very much in line with the average OPUC level of the preceding five years. Starting in March 2020 — coinciding with a spike in mortgage demand triggered by interest rate cuts — the OPUC shot up. It reached 6 percentage points in August, then receded moderately to 4.5 percentage points in December.⁴

Additional evidence consistent with the existence of origination bottlenecks comes from disaggregated mortgage prepayment patterns, as shown in the 2021 paper "[Mortgage Prepayment and Path-Dependent Effects of Monetary Policy](#)." Borrowers with a strong incentive to refinance — as measured by the gap between their current rate and the rate

they could refinance into — prepay their loans with at most 2.5 percent probability per month. Such sluggish pace of prepayments is consistent with bottlenecks in the origination pipeline, as the borrowers who desire to refinance cannot all do so at the same time.

Prohibitive Fixed Cost

For some borrowers, the fixed component of the refinance transaction cost can be prohibitive, thus excluding these borrowers from the benefits of interest rate cuts. One example is when the remaining mortgage balance is low, which is more likely to be the case for older borrowers. Another is when the borrower is likely to move within the next few years, as is often the case for households with young children.

Further, the 2021 working paper "[Racial Differences in Mortgage Refinancing, Distress and Housing Wealth Accumulation During COVID-19](#)" provides evidence of disparities in the allocation of the benefit of interest rate cuts among racial groups in the U.S. Using data from the 2020 refinance wave, this paper shows that Black, Hispanic and Asian borrowers were significantly less likely to refinance and take advantage of the large decline in the level of interest rates.

High Prepayment Spreads

From the perspective of mortgage investors, prepayments are costly because investors incur transaction costs when redeploying their funds. Those capital redeployment costs increase the mortgage rates available to borrowers.

Advantages of Fixed-Rate Contracts

Despite these direct and indirect costs of often multiple refinancing transactions, the strategy of locking into a fixed-rate mortgage (FRM) and subsequently refinancing into another FRM is the dominant way in which Americans finance homeownership. In fact, borrowers rarely keep their original purchase mortgages to term. The dominant strategy for financing homeownership can therefore be outlined as follows:

1. Finance the original home purchase with a conventional FRM.
2. If rates fall by a sufficient margin, lock into a lower rate by refinancing into another conventional FRM.
3. If rates fall again, repeat step 2.

Indeed, the [Urban Institute](#) reports that over 98 percent of all mortgages originated in the U.S. since 2009 were conventional FRM products.

Conventional FRM products in fact do have some great features: The contractual interest rate, the minimum monthly payment required and the maximum amortization horizon are fixed. These features give the borrowers assurance that, if they just keep making the same

monthly payment, they will pay off their debt and own the home outright after a given number of years.

The assurance offered by a conventional FRM contract is particularly desirable as a protection against any future increases in the cost of financing, as a sharp increase in financing rates could make continued homeownership unaffordable. The transaction costs of refinancing are easier to accept ex post because they are optional. If interest rates come down, the borrower can always ignore this fact and just keep making the monthly payment on their original loan.

Clearly, adjustable-rate mortgages (ARM) — where the contractual rate is tied to a floating index like Libor — provide less of an ex post incentive to refinance when interest rates decline. But standard ARM loans also take away the protection against interest rate hikes, which is a major flaw. Borrowers value the assurance of a fixed minimum monthly payment, as evidenced by the minuscule market share of ARMs relative to FRMs.

Decreasing-Rate Mortgages

To remove this flaw, the ARM product can be redesigned by applying the standard finance technique of replicating the strategy that borrowers already use. In particular, the strategy of locking into lower and lower rates by refinancing one FRM with another, lower-rate FRM can be replicated by a single adjustable-rate mortgage contract whose key feature would be that the contractual rate never increases but rather matches any future mortgage rate declines. Such a product would therefore constitute a decreasing-rate mortgage (DRM).⁵

Operationally, a DRM would not be any more difficult to price or service than a standard ARM. Its pricing could in fact be competitive with standard FRM, as FRMs already include a prepayment premium. By lowering prepayment rates — and thus investors' ex post capital redeployment costs — the DRM product could be an attractive investment vehicle for mortgage and mortgage-securitization investors.

With pricing competitive against the FRM, the DRM product could be of great value to borrowers. It would eliminate completely the direct, pecuniary transaction cost and the risk of refinance mistiming. In instances of sharp declines in interest rates — similar to those of 2020 — it would alleviate the bottlenecks in mortgage originations, as the automatic declines in the contractual rate would eliminate the need to produce new mortgage contracts for millions of borrowers.

In addition to rate-induced refinancings, the DRM could reduce term-induced refinancings. These refinance transactions are sometimes necessary if, for example, a 15-year FRM is significantly less expensive than the 30-year FRM. Homeowners who have made 15 years of payments on a 30-year FRM may find it cheaper to refinance into a 15-year FRM rather than

stay with the original 30-year FRM rate. By tying the contractual rate to, for example, the Treasury yield curve, the DRM could be the first and last mortgage a household would need to finance their home.

Conclusion

In sum, conventional FRMs offer valuable protection against future increases in the cost of financing but also expose borrowers to refinance costs when mortgage rates decrease. In 2020 alone, these costs amounted to an estimated \$44.5 billion.

The traditional ARM has the opposite issue: It reduces the borrower's exposure to refinancing costs but also reduces the protection against interest rate increases. A better ARM contract can be obtained simply by replicating the funding strategy that borrowers already use. Such a mortgage product would combine an adjustable rate with a simple clause stating that the interest rate in any given month cannot be larger than it was the previous month.

Currently, with 30-year FRM rates hovering around their all-time lows, the issue of designing a better ARM aimed at minimizing the inefficiencies of future refinancings may not seem particularly pressing. However, the cycle of increases and subsequent declines in the cost of financing is not going away. In a few years' time, the economy will face another mortgage refinance wave. With the median house price outpacing the growth of median income, housing affordability in the U.S. is a significant concern. If a simple improvement to the design of a mortgage contract can make housing a bit more affordable, these gains should not be left on the table.

Borys Grochulski is a senior economist in the Research Department at the Federal Reserve Bank of Richmond.

¹ *The previous record was established in 2003 with \$3.73 trillion in mortgages originated, according to the [Urban Institute](#).*

² *The fixed component of the transaction cost is \$2,000. With the average loan of \$300,000, the variable component of the transaction cost is \$3,000.*

³ *The measure accounts for the guarantees from government-sponsored enterprises that are attached to the loans upon entering securitization pools.*

⁴ *For further analysis, see the 2021 working paper "[How Resilient Is Mortgage Credit Supply? Evidence From the COVID-19 Pandemic](#)."*

⁵ *Similar mortgage design ideas are discussed in the 2018 paper "[Financing Affordable and Sustainable Homeownership with Fixed-COFI Mortgages](#)."*

This article may be photocopied or reprinted in its entirety. Please credit the author, source, and the Federal Reserve Bank of Richmond and include the italicized statement below.

Views expressed in this article are those of the author and not necessarily those of the Federal Reserve Bank of Richmond or the Federal Reserve System.



Subscribe to Economic Brief

Receive an email notification when Economic Brief is posted online:

Contact Us

RC Balaban

(804) 697-8144