

An Introduction to MSRs and Their Interest Rates

Ben Marley

Copyright © 2017 Ben Marley

All rights reserved.

INTRODUCTION

MSR stands for Mortgage Servicing Right, and it is an underlying accounting and legal agreement in which banks and other institutions are given the rights to service mortgages that have been packaged with similar loans and sold to investors in financial markets. MSRs are also considered level 3 assets because they are mostly illiquid, and therefore there is no financial market which can easily or quickly determine the value of an MSR asset—they must usually be valued at “fair value,” or the value at which they would theoretically be valued if they were to trade in a marketplace. It is crucial to note that MSRs are distinct from mortgage loans that are kept on the portfolio of a bank or financial institution because MSRs solely exist for loans in which the primary principal and interest portion of the loan is remitted to outside investors in the form of, for example, a mortgage-backed security (MBS). Therefore, for example, for a loan in which all of the principal and interest is kept by the bank that originated the loan, there can be no MSR, but if the bank that originated the

loan then sells most the principal and interest to a financial investor and continues be the primary point of contact for the loan, then an MSR has been created.

VALUING THE COSTS AND BENEFITS OF MSRS

The primary compensation for having the right to service a mortgage is called the base servicing fee, which is generally a cut of .25-.44% (depending on the type of mortgage, whether Fannie Mae or Freddie Mac, Ginnie Mae, or Private) that is taken off the interest rate of the originated loan. This income is therefore generated for the mortgage servicer every time the borrower pays an interest payment on his or her loan. For example, if the interest rate that a borrower pays for a mortgage is 4%, then the servicer will take .25-.44% off of that as their fee before sending the remaining 3.56-3.75% on to other places. There are other forms of compensation for servicing a mortgage as well, including ancillary income (such as late charges, credit life premiums, overdraft charges, and various other fees that are kept by the servicer). In addition, there are also various “float” incomes (such as payoffs, principal and interest, and taxes and insurance) that are earned by keeping monies such as taxes or principal payments for a certain period

of time (while earning interest on them) before remitting them to authorities (in the case of taxes) or investors (in the case of principal payments).

Servicing a mortgage does have its costs, however, and the primary cost is the aptly named cost to service which is usually considered a fixed monthly cost. Most of the cost to servicing a loan depends on the payment of personnel and equipment such as call-centers and computers to help with servicing. These costs are also usually given an inflation multiplier to account for things such as yearly pay increases of personnel or the increased costs of buying equipment. Other costs to servicing a mortgage include the unreimbursed/uninsured costs to servicing a mortgage that has fallen into foreclosure (unreimbursed foreclosure costs), the costs of servicing a loan that has become past-due or “delinquent” (delinquency expense), escrow float interest that must legally be paid back to the borrower (IOE expense), advances of interest payments to investors in cases where an interest payment is missed (Interest Advances), and the interest lost when a loan refinances (Prepay Interest Lost).

Both the costs and revenue that come from mortgage servicing rights depend highly on the type of mortgage that is being created (whether it is a government-insured loan by Ginnie Mae, conventionally-insured by Fannie Mae/Freddie Mac, or private), where it is being created (which US state or province), and the financial institution and environment in which it is being created and serviced. When a loan is insured by Ginnie Mae, Fannie Mae, or Freddie Mac, this means that if the loan defaults, these institutions will

reimburse the outside financial investors of the loan for the principal and interest that they would have received had the loan not defaulted; these institutions also receive a fee for insuring/guaranteeing the loan (called a g-fee) which is similar in nature to the servicing fee in that it exists as a small part of the interest payment on the loan. This system, however, provides investors with reassurance to invest their money in mortgages and this benefits both lenders and borrowers by ensuring that the funds to provide mortgages will be more readily available.

However, depending on the type of loan, where it exists, and when it is originated, the costs and benefits of servicing it can vary greatly. For example, a large balance, Ginnie Mae loan in California that was originated just before the 2008 financial crisis will likely have servicing costs that greatly outweigh the benefits because it will likely become (or has already become) delinquent and will fall into foreclosure. However, a recent, Fannie Mae loan with a low balance existing in rural Nebraska will likely be a fairly easy—and, therefore, profitable—loan to service.

The profitability of mortgage servicing will also depend on the institution that is servicing them. A loan that may not have been profitable for a smaller institution to service may be more profitable for a larger bank that already has significant infrastructure and experience in servicing various types of mortgages, and therefore it will incur fewer costs in servicing and will have more resources to do so due to economies of scale.

Nonetheless, the environment in which an MSR is

being created largely determines factors such as inflation, discount, forward, and mortgage rates. These factors are often more important to the longevity and profitability of the loan than both where the loan is being created and the financial institution that is servicing the loan. This is because mortgages are very similar to options within a liquid financial market. The borrower has the option to refinance their loan (or prepay) at any time should the financial market's mortgage rate for their borrowing profile/credit score fall below their current mortgage rate. The mortgage servicing asset is also valued using a discounted cashflow based on a projection of the current financial environment's interest rate, and servicing costs are determined by the current inflation rate. Therefore, these rates—which are dependent on the larger financial environment—are paramount to the valuation of mortgage servicing rights.

MORTGAGE RATES

When it comes to interest rates, it is important to make an initial distinction between primary rates and secondary rates. Primary rates are those rates which are readily available to consumers (for example, a borrower taking out a mortgage), while secondary rates are interest rates that are found on financial markets, and there is always a spread between primary and secondary rates to maintain profitability for the originator of a loan. For example, a mortgage may have a primary rate (the rate that a borrower pays) of 4%, while the secondary rate of that mortgage—if it were to independently trade as a mortgage backed security in a financial market—might be closer to 3.25%. The remaining .75% interest would be—in a simplistic world—kept by the financial institution that originated the mortgage. However, in the case where the mortgage is sold on the financial market as an MBS, there must instead be a servicer of the loan (in many cases, this is oftentimes the originator of the loan), and that servicer will take the

aforementioned base servicing fee of, usually, anywhere between .25-.44%. The remainder will go to an excess servicing fee (any servicing fee that may exist above and beyond the base strip) and/or a guarantee fee (an “insurance” fee paid to Freddie, Fannie, or Ginnie to securitize the loan in case the loan goes bad). Since Mortgage Backed Securities are packaged and sold in increments of .5% (such as 3.5%, then 4% and so on), a process known as “best execution” exists in order to determine, for any particular loan, how much of the excess servicing fee and guarantee fee should exist. Reducing the guarantee fee below the base levels for Fannie Mae, Freddie Mac, or Ginnie Mae is called a “buy-down,” and means that the institution that reduced the guarantee fee must pay an upfront price commensurate with the amount that the guarantee fee was reduced, while doing the reverse is called a “buy-up.”

So, mortgage rates are important in terms of their impact on the securitization of MBS, but they also hold another, more important function: they determine refinances. Specifically, primary mortgage rates determine refinances. Refinances are more commonly called prepayments in the world of MSRs, and they determine whether an MSR is worth nothing or worth a substantial amount. For example, if a mortgage prepays (refinances), the original loan goes away because the entirety of the principal and remaining interest payment are made immediately, thus meaning the loan’s “life” has ended and there will be no more MSR associated with it. Obviously, however, prepayments generally occur when mortgage rates fall below the previous mortgage rate that a borrower may have had, so the trajectory of

mortgage rates becomes one of the most important facets in valuing an MSR. The lower mortgage rates go, the more prepayments will occur, and therefore the lower the value of the MSR asset will be because loans will begin dropping away at a faster rate over time. Inversely, the higher mortgage rates go, the fewer prepayments will occur, and the longer the MSR will exist in perpetuity with a higher value.

The projection and establishment of both primary and secondary mortgage rates is therefore an important aspect of MSR valuation. Secondary mortgage rates are determined on the financial market as the yield that is associated with an MBS tranche that is trading “at par” (meaning has a price closest to 100). There is some debate as to the definition of “par,” however, since there should be some exceptions made for institutional profits. Beyond this, many institutions wish to hedge their mortgage servicing asset, and therefore look to independently establishing and precisely modeling mortgage rates without necessarily depending on the actual mortgage rate that may currently exist in the secondary market. To do this, they may look at a formulaic solution that relies more heavily on highly liquid, consistent, and stable interest rate swaps, and in this way mortgage rates can be more easily forecasted and modeled since swaps usually comprise the majority of the terms points on their forward curve (more on that later).

The above methodology may also be used to simply forecast primary mortgage rates, since primary rates are the drivers of prepayments. An additional spread may be added to the pre-existing secondary rate formula, or

the formula for primary rates may be reworked altogether using complex, regressive mathematics and lots of historical data. Due to their importance on an MSR valuation and because primary mortgage rates are far more difficult to standardize due to a lack of consistent industry data, they are usually the primary target of such formulaic modeling.

INFLATION RATES

Inflation rates are generally taken into account in terms of the primary cost to service a loan. They also generally reflect the typical Consumer Price Index (CPI) or Personal Consumption Expenditures Price Index (PCEPI) of the last five to ten years, as well as a projection of where the management of the valuation believes inflation will be in the future. Usually, these rates have historically been around 2.5-3%.

SPOT, FORWARD AND DISCOUNT RATES

Finally, it is important to address the forward curve (or forward interest rates) which is comprised of spot rates and determines discount rates. Other than mortgage rates, forward rates are perhaps the most important and interesting portion of MSR valuation. Forward rates are, quite simply, the interest rates that are projected to exist after a certain period of time in the future using interest rates that we currently have available.

Spot rates are the interest rates that we have available to us on financial markets today, and these are the rates that act as inputs for forward rates. The forward rates that are then constructed are the benchmark rates that are used to discount cashflows in the future, as they give an indication of what interest rates are likely to do. As previously mentioned, MSRs are valued using discounted net present value cashflows of their various cost (such as cost to service) and revenue (such as

servicing fee) items. This discount rate can be considered the internal rate of return (IRR) of the institution that is holding the MSR plus an additional spread that is dependent on the type of product underlying the MSR. If the method of valuing the MSR is Option Adjusted Spread (OAS), an additional spread must be added that further discounts the MSR to account for the inherent optionality of the asset—that is, mortgage borrowers always have the option to refinance which is similar to a callable option in a financial market.

Forward rates can be constructed using a number of different methodologies. The most common are static and OAS. Static forward rates take spot rates (usually LIBOR and SWAP rates) for different term points (usually from 1 month to 30 years) and use that to forecast out a current projection of what these interest rates are likely to do given current information. OAS methodology, on the other hand, also uses current spot rates in a similar fashion, but also takes into account current interest rate volatility in the form of, usually, current data from swaptions. It then uses this volatility information to forecast numerous different forward rates, and then averages the net present value of the asset for each of those forward curves. By introducing volatility from swaptions into the forecasts of multiple forward rates, it more closely takes into account the inherent optionality of the MSR asset—if volatility is high for the day, then forward rate forecasts can be expected to be more divergent and variable, while low volatility will produce more clustered curves. Because of this, OAS is generally considered a more robust modeling mechanism than static forward curves for MBS and MSR valuations.

Additionally, forward rates and spot rates that comprise them also have a substantial impact on individual items in the servicing asset cost and revenue themselves. The interest paid to borrowers on their escrow accounts as well as the interest earned on holding principal and interest or taxes and insurance, for example, may be one of several short-term spot rates. Therefore, spot rates, forward rates, and discount rates all hold a very critical piece of the puzzle for MSR valuations.

CONCLUSION

MSRs are a very complex financial instrument existing within the broader scheme of Capital Markets, but they hold a very critical and important role in that they allow for greater liquidity and efficiency in mortgage and financial markets. This ultimately allows more people to buy homes while investors are able to benefit from the stability and diversification of homeowners. MSRs additionally act as a natural hedge against rises in interest rates, as they are one of the few financial assets that increases in value as interest rates rise due to a reduction of refinancing.

Although the modeling of MSR valuations is complex, the primary drivers of these models are interest rates themselves, as they not only forecast future economic behavior, but also determine the various values of each cashflow item within the MSR asset. Therefore, interest rates are important to study within the context of MSR valuation.

ABOUT THE AUTHOR

Ben Marley has worked extensively with MSRs and their interest rates in both a static forward and OAS environment at SunTrust Bank, SunTrust Mortgage, and Phoenix Analytic Services. He has also fine-tuned forward curves in their underlying composition and has worked extensively with composing and predicting mortgage rates. He can be contacted at www.benmarley.com/contact/ or at ben.marley2011@gmail.com.