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# Analyzing Investments Backed by HECM Reverse Mortgages

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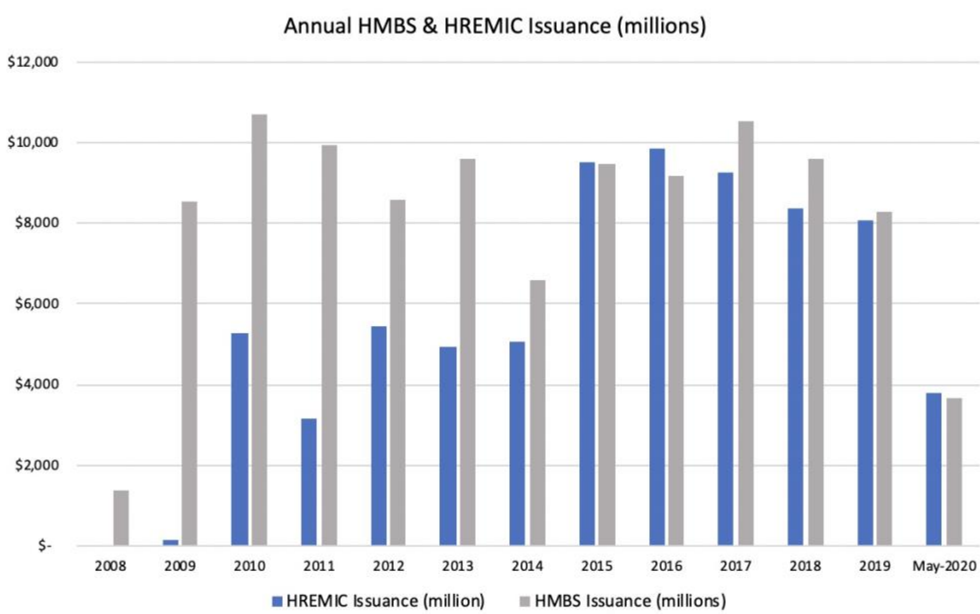
The reverse mortgage market is dominated by the HECM ("Home Equity Conversion Mortgage") program, where the Federal Housing Administration ("FHA") provides a guarantee against default. Supply within this market is supported by positive demographic trends. The program has been in existence for over 30 years. In 2007 Ginnie Mae started the Home Equity Conversion Mortgage-Backed Security ("HMBS") program for HECM loans. This underutilized asset class offers a very attractive income stream, with low correlations to broader markets and is accompanied by the same credit rating as U.S. Treasuries, which is currently AAA rated.

As of May 31, 2020, the HECM program had almost $250 billion in mortgages issued across 1.16 million loans by count, while HMBS securitizations have surpassed $54.4 billion outstanding volume. HMBS production seems to have reached a state of equilibrium between $500 million to $750 million per month. Production has also changed from the fixed rate loans that were prevalent before 2014, to a mostly floating rate loan.




Source: HUD, GinnieMae.gov, A3 Financial Investments

**What is a Reverse Mortgage?**

A reverse mortgage is a product targeted to older home owners, generally retirees. No principal or interest payments are due on the mortgage until the borrower(s) cease to have the house as his or her primary residence (typically due to the death of the last surviving borrower and/or a sale of the house). The interest that accrues during the life of the loan is added to the balance of the mortgage and is paid in full along with the borrowed principal at maturity. Reverse mortgages are considered a higher interest rate product, yet they remain appealing to borrowers who prefer a loan where no regular payments of interest or principal are required.

The initial loan-to-value (LTV) on a reverse mortgage is capped at anywhere from 53% - 75% (depending on the age of the borrower and the mortgage rate)[1]. This allows room for the balance to grow with the unpaid interest accrued each month. The FHA manages its insurance risk by limiting this percentage thus capping the initial available equity a borrower can draw upon. Given the target demographic, reverse mortgages are often structured as a line of credit, allowing the borrower to tap the line as needed; however, single disbursement lumpsum and monthly distribution products also exist which enable a series of monthly advances, resembling an annuity.[2]

**The HECM program and HMBS**

The HECM loan program is by far the largest reverse mortgage program and exists in contrast to non-government guaranteed jumbo and private reverse mortgage programs. In return for a mortgage insurance premium (MIP) FHA guarantees the HECM against default. Loans have to be underwritten to FHA guidelines, mainly requiring that the borrower(s) must be at least 62 years old and occupy the property as the sole primary residence. FHA further establishes the maximum amount that can be borrowed as a function of the age of the youngest borrower and the rate on the mortgage.[3] The program has been altered by Congress several times changing the FHA guidelines, rates and maximum available balances, which had resulted in several program vintages.

In 2007, Ginnie Mae launched the HMBS ("HECM Mortgage Backed Securities") program, aimed at increasing liquidity of the HECM loan program by creating a standard securitization channel, which addresses the main features of the loan product, which are:

- HMBS are a static pool of multiple reverse mortgages. Each pool is composed of the drawn portions of HECM lines of credit. If the borrower pays off a portion of the HECM, the payment is applied pro-rata to all drawn portions regardless of when their funds were drawn.
- Similarly, to the underlying reverse mortgage loans, unpaid interest is capitalized resulting in an increasing principal balance outstanding for the HMBS.
- In addition to the HECM prepayments and terminations, HMBS have a mandatory re-purchase clause. The lender has to buy back the HECM loan when the loan's LTV reaches 98% of the original appraisal value.[3]
- Finally, Investment Banks pool and structure HMBS into bonds referred to as HREMIC securities.

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[1] Federal Housing Administration (FHA) December 14, 2018, Mortgagee Letter 2018-12.
https://www.hud.gov/sites/dfiles/OCHCO/documents/18-12hsgml.pdf

[2] The Consumer Finance Protection Board (CFPB).
http://files.consumerfinance.gov/a/assets/documents/201206_cfpb_Reverse_Mortgage_Report.pdf.

[3] LTV is actually measured relative to the "maximum claim amount." This is established at the origination of the loan as the lowest of (a) the appraised value, (b) the recent sale price of the house, or (c) the FHA's conforming mortgage limit. This value is used for the 98% buyout.

HMBS, like the underlying HECM loans, are interest accrual securities, and therefore do not provide scheduled payments of principal and interest to investors. However, investors received unscheduled payments of principal and interest when a borrower or their estate, repays the loan either voluntarily or after a repayment event, such as the sale of the property following a borrower's death. Cash flows are composed of the aggregate unscheduled payments from a large pool of loans.

**History of Reverse Mortgages**

A reverse mortgage loan is a fully-secured, non-recourse loan that enables homeowners, generally 62 years and older, to convert the equity in their home into cash to support their living expenses. The first reverse mortgage loan in the United States was made in 1961. Throughout the next several decades, policymakers and mortgage companies explored ways for older homeowners to access their home equity. In 1987, Congress approved a program which authorized the FHA to insure reverse mortgage loans through a newly created HECM loan program, which went live in 1998. The program established FHA property standards limiting the loan eligibility to 1-4 family houses, condos and manufactured housing. [4]

The primary goal of the FHA HECM loan program was to provide older Americans with more affordable options to support their financial needs during their retirement years. This program provides insurance protection for both the investor/lender and the borrower. FHA insurance protects investors against the risk that the sale proceeds of the home securing the loan are insufficient to repay the loan's outstanding balance upon a maturity event. It also protects borrowers by allowing them to remain in their homes even if their homes become worth less than the balance of the reverse mortgage and to continue to draw available funds generally on their loans in the event of a lender bank insolvency or bankruptcy. The HECM loan is typically repaid by the borrower (or the borrower's estate) with the proceeds from the sale of the home. If the proceeds from the sale of the home are insufficient to cover the balance of the HECM loan, the FHA reimburses the lender the difference between the then appraised value or final sale and the loan balance, up to the maximum claim amount, with certain deductions for non-reimbursable foreclosure costs.

The Ginnie Mae HMBS program started in 2007. Agency HMBS are backed by the cash flows from the underlying HECM loans, which are passed on to the securities' investors, and are typically known as "pass-through" securities. For investors who demand a specific type of reverse mortgage cash flow, HMBS may be re-securitized by investment banks into HMBS Real Estate Mortgage Investment Conduits, or "HREMIC" securities. Agency HREMIC securities can be structured to provide different cash flows whose timing or other characteristics are more suitable for a given investor than a pure pass-through HMBS. Agency HMBS and HREMIC securities can be attractive because they have a security guarantee from Ginnie Mae, which guarantees the ultimate payment and timely payment of principal and interest due on the securities, in addition to the loan-level insurance from the FHA on each underlying HECM loan. The vast majority of loan volume, representing approximately $1-3 billion per quarter, as of May 2020, flows into structured HREMIC securities.

The HREMIC program was created by Ginnie Mae in 2009 as a re-securitization vehicle for HMBS. This program was important to the development of the secondary market for HECM loans as it offered dealers an outlet by which to create specific types of bonds tailored to investor needs, beyond the simple pooling of HECM loans. Like Agency HMBS, HREMIC securities carry the full faith and credit guarantee of the U.S. federal government and from a credit risk perspective are akin to US Treasury securities, both of which are AAA rated.

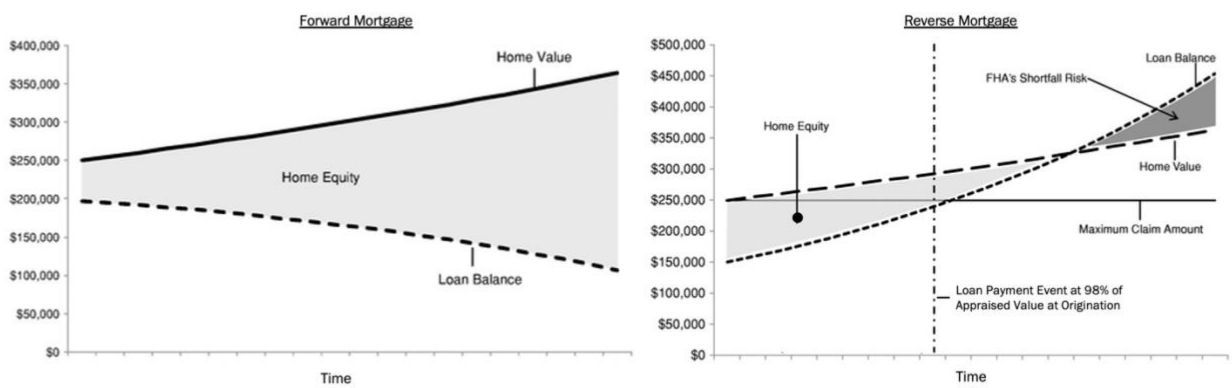
[4] Preliminary Prospectus. Registration Statement No. 333-201179
https://www.sec.gov/Archives/edgar/data/1600343/000104746915008156/a2226206zs-11a.htm

**Comparison between Reverse Mortgage and Forward Mortgages**

Reverse mortgage loans and securities backed by reverse mortgage loans exhibit certain fundamental characteristics which we believe make them more attractive investments than traditional forward mortgage securities. The predictability of HECM loan cash flows is greater than a traditional forward mortgage.

The charts below illustrate the basic behavior of a hypothetical traditional forward mortgage loan and a hypothetical reverse mortgage loan over time. With a traditional forward mortgage loan, the borrower generally makes regular principal and interest payments and the value of the borrower's equity will typically rise over time assuming a constant home value. With a reverse mortgage, however, the loan balance increases over time as interest and fees are added to the loan's principal balance, a process known as an accrual. As a result, a borrower's home equity value typically declines over time. Traditional forward mortgages typically mature in 15 or 30 years, while the HECM loan product has an embedded assignment to the FHA which shortens the cash flow received by investors.

Illustrative Mortgage vs Reverse Mortgage Loan Structure




Illustrative purpose only. The actual structure and payment characteristics of a loan may vary.

Key differentiators include the following:

- Longevity Risk: The primary factors affecting reverse mortgage maturities are death and mobility, which are not driven by changes in interest rates or Fed Policy. In fact, borrower age has exhibited a direct correlation with mortality related prepayment.
- Interest Accrual: Reverse mortgage borrowers make no monthly principal and interest payments and therefore are less sensitive to: (1) cash flow disruptions such as a job loss; and (2) changes in interest rates and FED policy.
- Refinance Risk: Falling interest rates do not have the same impact on reverse mortgages as with traditional forward mortgages, for two primarily reasons.
  - First, cash out refinance requires available home equity which is diminished by past accrued interest owed.
  - Second, the maximum amount of the HECM loan that a borrower is eligible for is calculated based on an expected interest rate which has a current floor of 3%. As a result, as interest rates fall below 3%, borrowers thinking about refinancing would not benefit from greater proceeds associated with a lower rate as would borrowers using traditional forward mortgages. In 2018, HUD lowered the interest rate floor from 5% to 3%.
- Extension Risk: The average life of an investment directly in a HECM loan or through an Agency HMBS is significantly more predictable than a traditional forward mortgage loan because when the outstanding loan balance reaches 98% of the maximum claim amount, the investor, or in practice the servicer on the investors behalf, assigns the loan to the FHA, which then purchases the loan from the lender at par,

provided the loan is not in default. This assignment to the FHA in no way impacts the borrower's rights or ability to remain in the home but has the effect of limiting the extension risk to the investor.

- Default Risk: For HECM loans that are pooled within HMBS securities, Ginnie Mae further insures the cash flow guaranteeing timely full payment of principal and interest to investors irrespective of loan status.

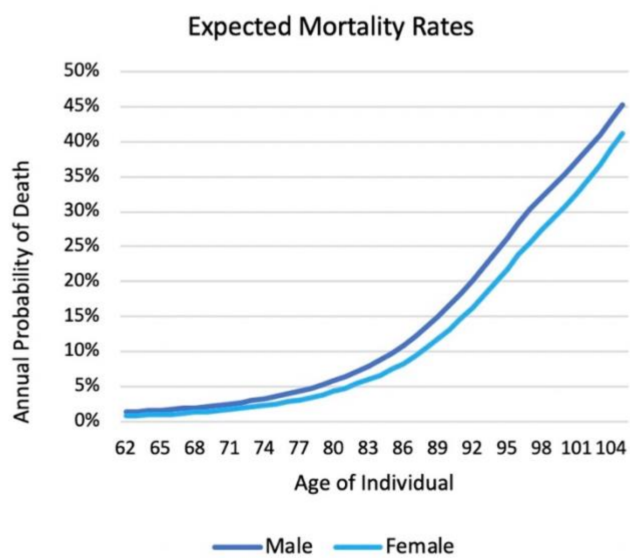
**Key Risks for HECM Performance**

Prepayment speeds for HMBS are driven by the factors that drive prepayment of the underlying HECM loans. As described above, the most important driver of prepayment for HMBS is the required buyout of the underlying HECM loan once the loan balance reaches 98% of the original appraisal value or maximum claim amount. Moreover, this prepayment factor is very predictable, especially for fixed-rate loans. At the time of origination, it is possible to determine the exact month when a fixed-rate HECM loan will accrete to 98% of its maximum claim amount and be purchased out of its associated pool, assuming it is not otherwise prepaid, voluntarily or due to a maturity event, beforehand. For adjustable-rate HECM loans, the accrual to 98% of the maximum claim amount will be influenced by changes in interest rates. For traditional forward mortgage loans and related Agency MBS, rising interest rates typically will materially extend the duration of these loans and securities (*i.e.*, extension risk). For HECM loans and related HMBS, increases in interest rates do not seem to result in a meaningful increase in extension risk. For adjustable-rate HECM loans and adjustable-rate Agency HMBS, an increase in interest rates will have the impact of increasing the amount of interest accrued, causing the loan balance to reach its 98% buyout maturity event more quickly and shortening the life of the HMBS due to the Ginnie Mae issuer's obligation to repurchase the HECM loans when those loans become assignable to the FHA. Thus, in a rising interest rate environment, adjustable-rate HMBS investors will receive repayment more quickly, compared to investors who hold Agency MBS.

There are several drivers of HECM performance that require careful risk analysis; including borrower composition (age & gender), home price appreciation (HPA), line of credit utilization, property type, loan age and vintage. When performing a probability weighted stress test analysis, assumptions must ultimately be made regarding the prepayment and line of credit draw behavior of underlying loans.

**Longevity (Borrower Composition)**

Reverse mortgages are a retirement product for older home owners, and their prepayments are primarily driven by borrower mortality. About 41% of the HECM loans are in the name of one female borrower, 21% in the name of one male borrower, and the remaining 38% are given to couples. Since the reverse mortgage remains outstanding until the last surviving borrower ceases occupancy of the property as a primary residence, the borrower composition of the HECM is important. Analysis of both the gender, age and co-borrower percentage are critical in determining prepayment assumptions. Intuitively mortgages to couples have longer average tenures as do loans to single females when compared to single males. For couples the age differential and the age at which the mortgage was taken are also very relevant.




Source: 2017 Data, Social Security Administration, A3 Financial Investments

**Home Price Appreciation**

As in many other mortgage products, HECM prepayments have also been much higher in periods of high home price appreciation and have substantially declined during periods of declining home value. However, data suggests that older homeowners may have a reduced propensity to cash out and move when they are seeking longer term at-home retirement living. Conversely, home price depreciation could result in sale proceed shortfalls requiring government insurance payments to investors and as a result leaves no cash flows for borrowers, heirs or estates following the repayment of the loan. This may be viewed as an adverse consequence of the loan product.

**Line of Credit Utilization**

In order to achieve a cash out refinance, the borrower must first make a full repayment of the borrowed principal and all accrued interest. Interest is compounded based on the utilized portion of the line of credit. As a result, the aggregate loan balance is greatest when the line of credit is fully drawn which results in a greater compounding interest effect and thus reduces the economic likelihood that a loan can be refinanced without a cash payment. Our analysis has shown that retirees who are not accustomed to making loan payments for reverse mortgages have lower propensity to make an out of pocket payment to refinance than traditional mortgage borrowers.

**Loan Age**

Similarly, to regular mortgages, borrowers are less likely to prepay the mortgage soon after they have taken it out. In the case of a reverse mortgage, this means that the prepayments in the first year after the mortgage was taken are even lower than the typical mortality rate for that borrower age. Additionally, as loans season the LTV increases due to the accrual which reduces the available home equity for a cash out refinance.

**Vintages**

While the main drivers of performance seem reasonably clear and consistent over time, we know that the HECM program has gone through several sizeable shifts due to policy change. Each vintage has a different fee and available line of credit percentage which influences a borrower's refinance incentive along with their associated loan seasoning and home price appreciation. The evidence points to material differentiation amongst vintages for both prepayment and draw behavior.

**Supportive Demographic Trends for Reverse Mortgages**

According to the U.S. Census Bureau, the number of Americans aged 65 and over is projected to nearly double from approximately 52 million in 2018 to 95 million by 2060; and the share of the total population will rise from 16 percent to 23 percent. This segment of the population is expected to increase by an average of about 1.9 million individuals every year and the average life expectancy is set to increase from 68 years in 1950 to 78.6 years as of 2017, in large part due to the reduction of mortality in older ages[5]. The first baby boomers became eligible for a reverse mortgage loan in 2008 and, as they continue to age and approach retirement, they continue to be an important driving force in creating a large and growing addressable market. In addition to the growing population, older Americans also have relatively high homeownership rates. According to the U.S. Census Bureau, as of 2019, those 65 years of age and over had a homeownership rate of about 78% compared to the national average of about 64%[6]. We expect these favorable aging and homeownership demographics to provide us with positive supply technicals, while reverse mortgages remain a niche product.

We believe reverse mortgage loans are becoming an increasingly important tool that provides older Americans with greater financial flexibility. Homeowners have limited options to access home equity and are typically faced with choices of either having to sell their home or taking out a traditional home equity loan which require monthly payments. According to the CFPB, reverse mortgage borrowers are taking out loans at younger ages than they have

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[5] Sherry L. Murphy et al., "Mortality in the United States, 2017," *NCHS Data Brief*, no 328 (2018).

[6] Annual Homeownership Rates for the United States by Age Group: 1982–2019
https://www.census.gov/housing/hvs/data/charts/fig07.pdf

historically. As of June 2015, approximately 46%, of the reverse mortgage borrowers were under age 70, which we consider indicative of a growing propensity to tap home equity, rather than pass it on to an heir or estate.

**Conclusion**

Our reverse mortgage investments are based on a long history of ownership, structuring and research. We typically express our investment views in the form of structured HREMIC bonds, where we can achieve a tailored cash flow and higher yield target. While risks related to incorrectly assessing the prepayment, extension and default of underlying loans can materially alter investment outcomes and lead to loss; our view is that HREMICs have minimal credit and interest rate risk, and can provide an attractive risk adjusted yield, in a product with low correlation to boarder markets due in large part to unique value drivers such as longevity, government insurance and supportive demographic trends. Income and total return-oriented investors can benefit from the attractive yield pickup to other government guaranteed cash flows.

**Reverse Mortgage Risks.** The Fund may invest in securities that reflect an interest in reverse mortgages. In a reverse mortgage, a lender makes a loan to a homeowner based on the homeowner's equity in his or her home. While a homeowner must be age 62 or older to qualify for a reverse mortgage, reverse mortgages may have no income restrictions. Repayment of the interest or principal for the loan is generally not required until the homeowner dies, sells the home, or ceases to use the home as his or her primary residence. Reverse mortgages are subject to different risks than traditional mortgages because the repayment for the loans is uncertain and may occur sooner or later than anticipated based on the life-span of the homeowner.



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