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Agency-MBS Risk and Return: Social-Impact Factors

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Homeownership: The US housing agencies' mandate

U.S. agency mortgage-backed securities (MBS), with an outstanding balance of approximately USD 9 trillion, represent a cornerstone of global fixed-income investment. The ongoing modernization of mortgage securitization and the housing agencies the Federal Housing Administration, Fannie Mae, Ginnie Mae and Freddie Mac — particularly through increasingly granular data disclosures over the years — has enabled a more refined and targeted approach to advancing housing sustainability. This shift has become especially critical as the dramatic rise in home prices over the past decade has placed severe pressure on housing affordability.

As a result, investments in agency MBS now exhibit more nuanced risk-return profiles, with markets beginning to price in social-impact factors, either explicitly or implicitly. This evolution raises a compelling question: Can investors be rewarded for doing good? These emerging dynamics have motivated us to develop new tools and analytical metrics to better understand and evaluate MBS risks and returns in this evolving landscape.

Ginnie Mae began reporting "first-time home buyer" status in its loan-level data starting in September 2012 and has gradually introduced "low- to moderate-income" (LMI) disclosures in multiple phases over the past four years. Meanwhile, Fannie Mae and Freddie Mac — collectively known as government-sponsored enterprises (GSEs) — launched the Mission Index (formerly the Social Index[1]) in 2022. This index integrates borrower, property and income characteristics to assess the social significance of the MBS they issue. The Mission Index is underpinned by two key metrics: the social-criteria share (SCS) and the social-density score (SDS), which capture the proportion of loans in a pool that meet defined social criteria and quantify the concentration of those socially significant loans. In this context, we introduce a framework to calculate pool-level market-implied option-adjusted-spread (OAS) premium, designed to evaluate the risk and return of MBS through the lens of social-impact factors.

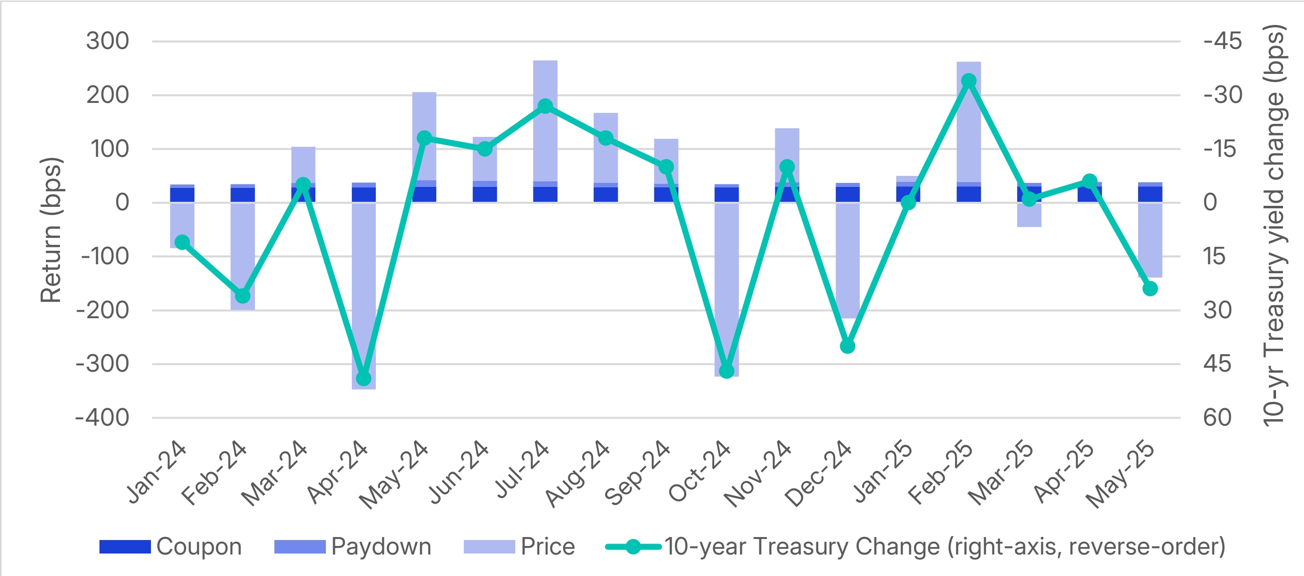
MBS total return by social attributes: An ex-post measure

The most conventional metric for evaluating investment performance is total return, an ex-post measure. For agency MBS, we calculate total return at the pool level by decomposing it into three components: price return, coupon return and paydown return. Returns for individual pools are then aggregated across various segments or groupings. The paydown return is measured from month-end to month-end, using actual principal factor data as reported by the agencies.

The chart below illustrates the monthly breakdown of total return since January 2024. The performance of agency MBS is closely tied to movements in the 10-year U.S. Treasury yield, which is widely used as the benchmark for MBS duration hedging. For example, in May 2025, the 10-year Treasury yield rose by 24 basis points (bps), primarily due to increased Treasury issuance, elevated government spending and inflationary concerns. This broad sell-off was prominent in the agency-MBS market: The total return for the month was led by a price return of -100 bps, partially offset by a 30-bp coupon return and a 8-bp paydown return.

[1] Yihai Yu, "MSCI Agency MBS Model Version 2.1: Single-Family Social Index," MSCI Model Insight, June 1, 2023. Client access only.

Aggregated agency-MBS total-return breakdown since January 2024



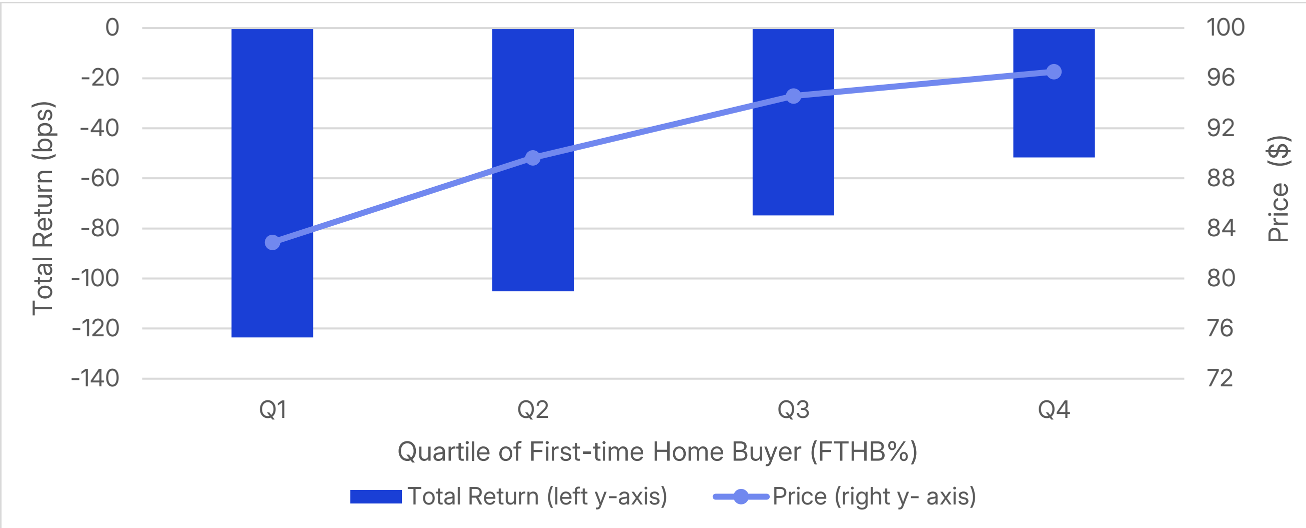
Source: MSCI, Refinitiv, Recursion Co.

As noted earlier, our total-return calculation is conducted at the pool level. Conveniently, we want to examine total-return outcomes for specific collateral attributes — particularly those relevant to social-investment dimensions — that can be aggregated readily, bottom-up from pool level.

The chart below highlights how MBS pools with higher percentages of first-time home buyers (FTHB%) demonstrated better protection during the interest-rate sell-off in May 2025. A similar trend is observed in GSE-issued securities. Specifically, pools with lower FTHB% tended to exhibit lower prices, as shown in the same chart. This price differential played a key role in the return patterns observed.

The performance variation can largely be explained by differences in duration exposure. Securities with lower prices typically carry lower coupons, which in turn are associated with longer durations. During a rate sell-off, bonds with longer durations are more sensitive to rising yields and thus tend to underperform shorter-duration bonds. Therefore, the better total returns observed in higher-FTHB% pools were primarily a result of their shorter-duration profile, which offered more resilience in a rising-rate environment.

Higher FTHB% weathered May 2025 rates sell-off better, but correlated with duration bias



The entire Ginnie Mae II universe is divided into four quartiles groups of FTHB% from low to high. Source: MSCI, Refinitiv, Recursion Co.

While this ex-post measure offers valuable insights into historical performance and allows for some degree of price attribution and market interpretation, its retrospective nature limits its utility relative to forward-looking metrics. By design, total return looks backward, making it less effective for predicting future performance or guiding proactive investment decisions.

Moreover, the interdependencies among collateral attributes introduce analytical complexity, making it difficult to isolate the precise drivers of return. For example, characteristics such as borrower credit score, loan size and loan terms often correlate with each other, creating attribution challenges.

Attempts to categorize MBS pools into more granular buckets along dimensions of social-impact factors — such as FTHB percentages, LMI classifications or geographic targeting — can further complicate analysis. Over-segmentation may lead to increased noise in the data, largely due to liquidity constraints introduced by slicing the universe into ever-smaller subsets. These fragmented groupings can reduce statistical reliability and obscure broader performance trends.

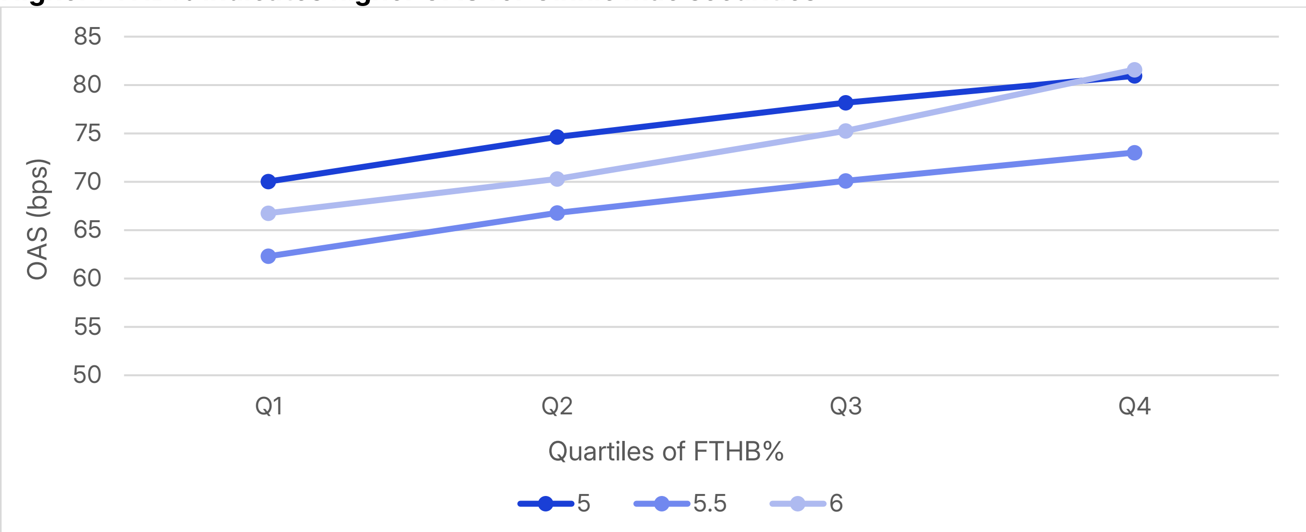
OAS distributions by social attributes: An ex-ante measure

OAS is a widely used framework for pricing MBS relative to a risk-free benchmark, such as the secured overnight financing rate (SOFR). Unlike total return, OAS is an ex-ante measure that captures the expected excess return over the benchmark curve, accounting for embedded options and interest-rate risks.

OAS is derived from Monte Carlo simulations that incorporate several forward-looking inputs[2]: projected prepayment behavior, market-implied interest rate volatility, mortgage-rate forecasts and models for home-price appreciation (HPA). The resulting spread represents the compensation investors require, beyond the risk-free rate, for holding the bond given its risks and optionality. In essence, the higher the OAS, the greater the expected theoretical return over the bond's life, under a risk-neutral framework.

The chart below presents the distribution of OAS across Ginnie Mae securities, segmented by coupon levels and grouped by FTHB% shares. A consistent pattern emerges: Pools with higher FTHB concentrations tend to offer higher OAS values, implying a pricing premium for securities with stronger social orientation. According to this model, concentrating investments in high-FTHB pools — effectively a more socially driven strategy — could result in an additional 15 bps of expected return over the long term.

Higher FTHB% indicates higher OAS for Ginnie Mae securities

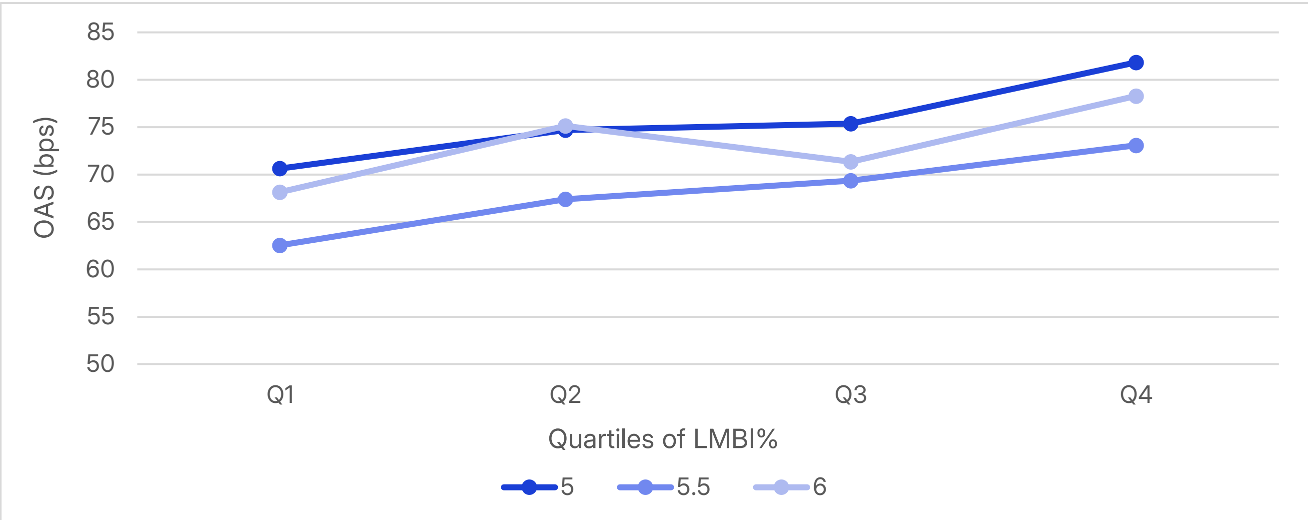


The entire Ginnie Mae II universe is divided into four quartiles groups of FTHB% from low to high. As of May 2025. Source: MSCI, Refinitiv, Recursion Co.

Our analysis of OAS distributions across another Ginnie Mae social-impact factor, LMBI%, shows higher shares of LMBI lead to higher excess returns within the same coupon.

[2] Yihai Yu and Laszlo Abel Somlai, "MSCI Agency MBS Model Version 2.2: Extended Discount Environment," MSCI Model Insight, April 15, 2024. Client access only.
Yihai Yu, Anant Bhatnagar, Yalin Zhang, Lei Guo and David Zhang, "MSCI Agency MBS Model Version 2.3: Risk-Neutral Mortgage Curve Factor Model," MSCI Model Insight, April 15, 2025. Client access only.
Yihai Yu and David Zhang, "A 'Normal' Choice of Interest-Rate Model for MBS," MSCI Model Insight, July 13, 2020. Client access only.

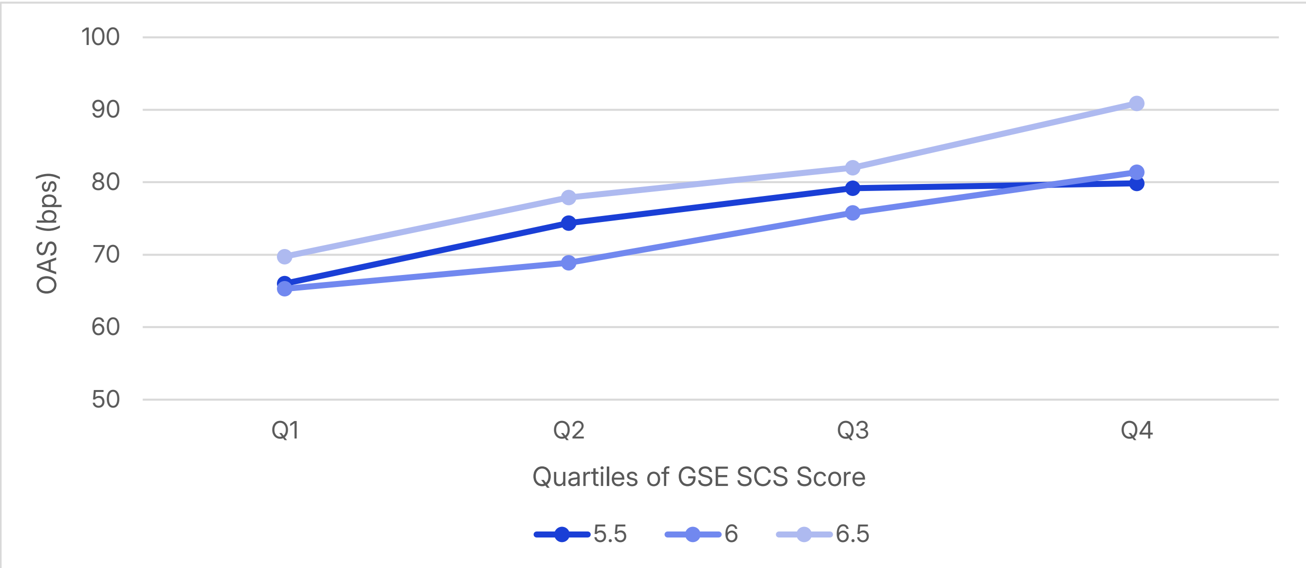
Higher LMBI% indicates higher OAS for Ginnie Mae securities



The entire Ginnie Mae II universe is divided into four quartiles groups of LMBI% from low to high for each coupon. As of May 2025. Source: MSCI, Refinitiv, Recursion Co.

The chart below shows the OAS distributions across GSE SCS%, grouped by coupons. Higher SCS%, representing more social-orientated lending in the corresponding bucket of securities, implies higher excess return for the GSE MBS.

Higher SCS% indicates higher OAS for GSE securities



The entire GSE universe is divided into four quartiles groups of SCS% from low to high for each coupon. As of May 2025. Source: MSCI, Refinitiv, Recursion Co.

Even the most objective models are not immune to inherent biases, however. Model assumptions — whether about prepayment behavior, rate volatility or borrower responsiveness — can embed structural limitations that may not fully reflect real-time market sentiment. Furthermore, the market may assign value to prepayment risk in ways that diverge significantly from what a model projects. After all, these models are built on fixed assumptions and historical data, while the market is dynamic and continuously evolving, with investor sentiment and pricing shifting minute by minute.

This disconnect underscores the limitations of relying solely on theoretical frameworks like OAS. While such models offer a standardized, risk-neutral view of value, they may not fully capture the subjective risk perceptions and behavioral factors that drive actual market pricing.

OAS premium adjusted by implied prepayment risk: The ‘true’ carry

OAS can be viewed as the carry of a bond over its life — the compensation investors receive for assuming various forms of risk. In the case of agency MBS, a significant portion of OAS reflects the prepayment risk perceived or implied by the market. While the raw OAS provides a baseline measure, it can be further adjusted to account for this market-implied prepayment premium.

Leveraging the MSCI Agency MBS Factor Model, we construct a two-factor regression-based model to derive a market-adjusted OAS for each individual MBS pool.[3] The model incorporates two prepayment factors:

- A base prepayment factor, capturing borrower behavior in discount securities

[3] Joy Zhang, “MSCI Agency MBS Factor Model,” MSCI Model Insight, Sept. 13, 2021. Client access only.

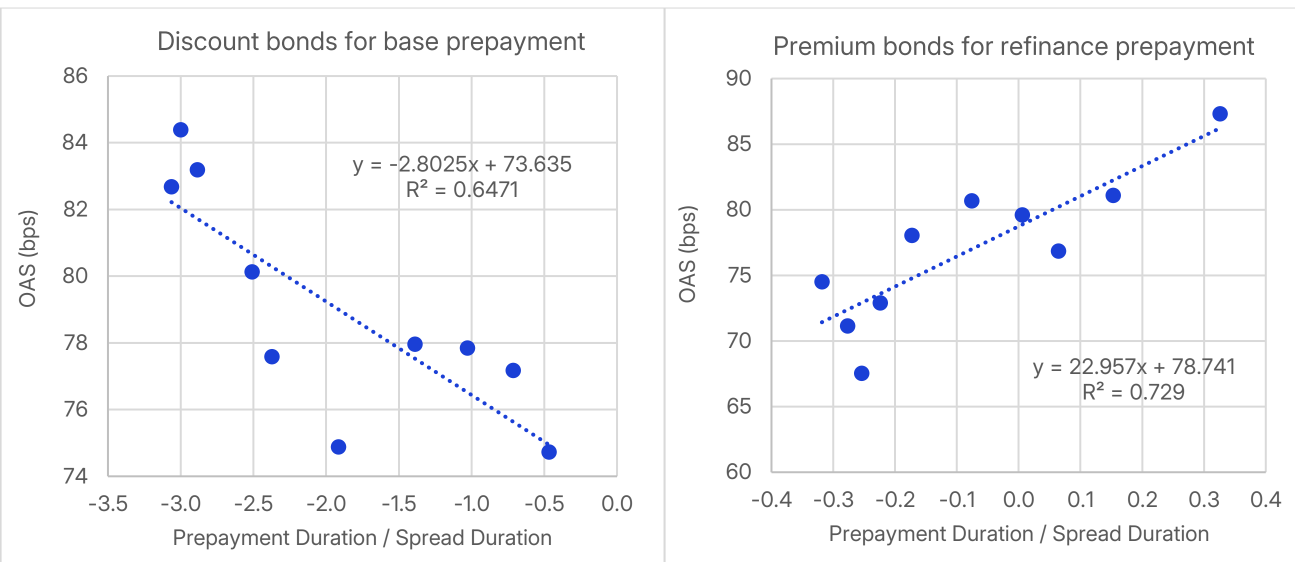
- A refinance factor, targeting the sensitivity of premium bonds to refinancing incentives

This methodology echoes the approach many market practitioners use to extract pricing signals from to-be-announced (TBA) securities (which typically cover fewer than the 10 most liquid bonds).[4] However, our framework evaluates the entire agency-MBS universe, utilizing Monte-Carlo-simulation-based OAS and duration analytics to compute a market-adjusted OAS at the pool level.

By comparing the market-adjusted OAS with the average OAS across similar pools, we can derive an OAS premium — a metric that quantifies the relative excess return after accounting for prepayment risk as priced by the market. Aggregating these premia across different social impact attributes enables us to identify collateral profiles offering superior risk-adjusted returns. A higher OAS premium associated with a given attribute suggests more attractive carry potential, adjusted for prepayment uncertainty.

To illustrate the market-implied prepayment-risk adjustment, we group all GSE pools into 10 buckets based on their prepayment durations, ranging from shortest (negative) to longest (positive). Using our two prepayment factors (base for discount bonds and refinance for premium bonds), we observe a strong correlation between OAS and prepayment duration. This relationship indicates that the market demands greater compensation for pools exposed to higher prepayment uncertainty — whether due to accelerated or delayed prepayments.

OAS returns show correlation with prepayment durations, implying market's pricing of prepayment uncertainty



Data as of May 2025.

[4] Gene Cohler, Mark Feldman, and Brian Lancaster, "Price of Risk Constant (PORC)," *Journal of Fixed Income* 6, no. 4 (1999): 6-15.

The three charts below present OAS premiums for selected social impact attributes: FTHB% and LMBI% for Ginnie Mae and SCS% for GSE securities.

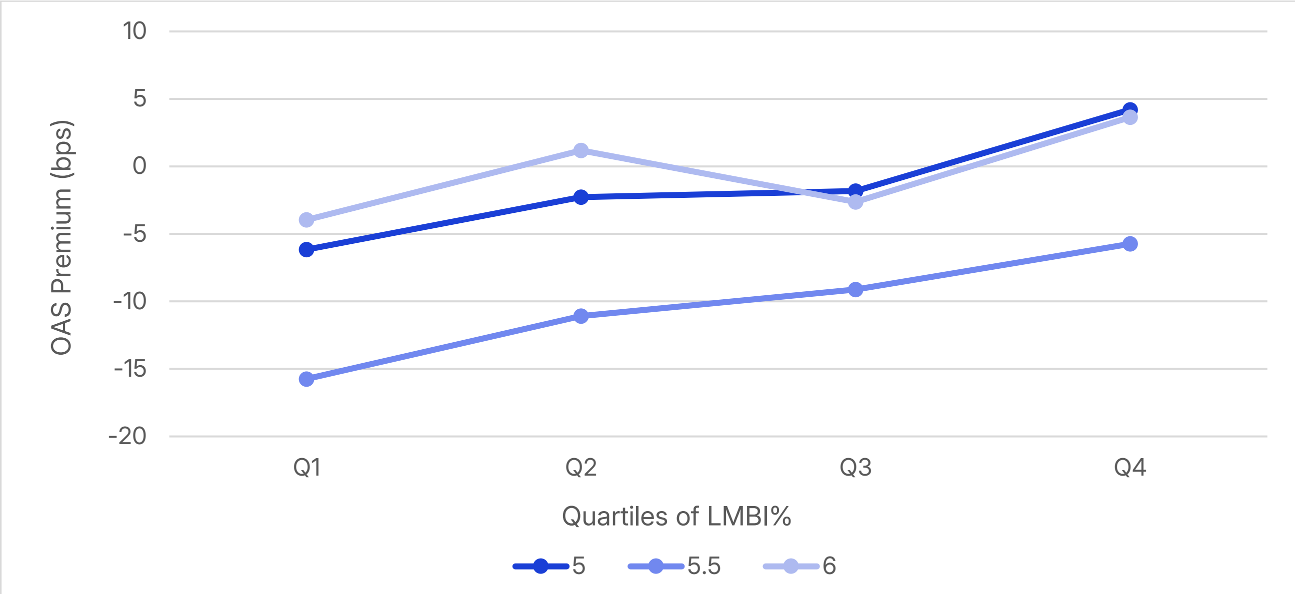
Across all three cases, a consistent pattern emerges: Securities with higher scores on social-impact dimensions tend to offer higher returns, even after adjusting for market-implied prepayment uncertainty. As of the end of May 2025, the observed OAS pickup of 10 to 20 bps for pools with stronger social attributes signals a meaningful carry advantage. This conclusion is in line with the raw OAS analysis based on the MSCI MBS valuation-models suite, confirming minimal bias in MSCI objective models.

This market-based pricing dynamic suggests that social-impact–aligned investments are not only mission-driven but also potentially performance-enhancing. These insights may prompt investors to reconsider portfolio construction and allocation strategies, particularly as social-impact objectives become more central to fixed-income investing.

Higher FTHB% indicates higher OAS premium for Ginnie Mae securities

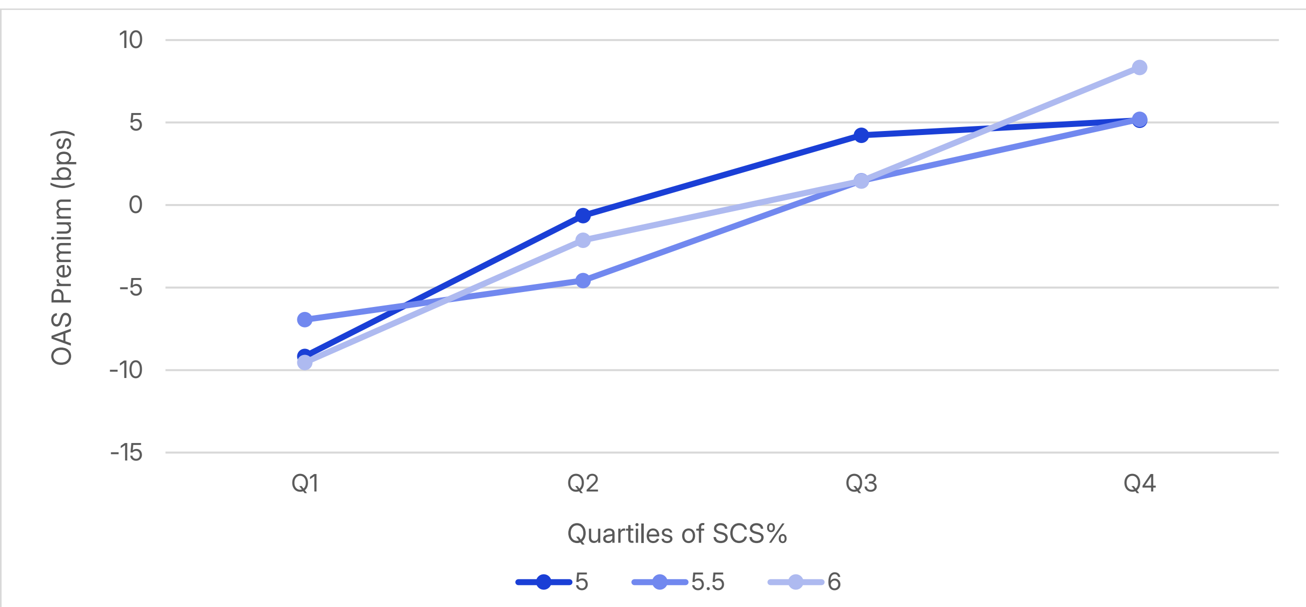
Data as of May 2025.

Higher LMBI% indicates higher OAS premium for Ginnie Mae securities



Data as of May 2025.

Higher SCS% score indicates higher OAS premium for GSE securities



Conclusion

The U.S. housing-finance system, rooted in public-policy mandates dating back to the Great Depression, continues to play a vital role in shaping homeownership and promoting social benefits. As agencies evolve in transparency and data disclosure, especially on social impact and sustainability, investors may look to embrace these new MBS trading themes. The traditional analytical metrics may not be adequate to assess risk and return. We proposed a new market-implied OAS premium framework, highlighting how social-impact and sustainability factors may offer the potential for additional return. We hope these findings may invite investors to reconsider portfolio construction with a dual lens: maximizing returns while advancing inclusive, socially responsible lending outcomes.

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