



Yield Book for Mortgage Servicing Rights

Mortgage Servicing Rights (MSR) analysis is the valuation of the components of a business, rather than just the projection of principal and interest payments from a security, as is the case with RMBS. LSEG Yield Book's powerful analytics framework projects cash flows received from servicing mortgage loans and compares/offsets them with the costs of servicing those loans. This provides a framework to better inform your decision making process and MSR business strategy.

For over 30 years, Yield Book has been a trusted source for analysing residential mortgage-backed securities (RMBS). Building upon our legacy, we have introduced a framework for analysing and valuing MSRs inside our products.

Our approach analyses distinct servicing components and leverages a series of market-tested models including a prepayment model and a SOFR based LMM term structure model. Our flexible and robust managed services option for MSRs includes:

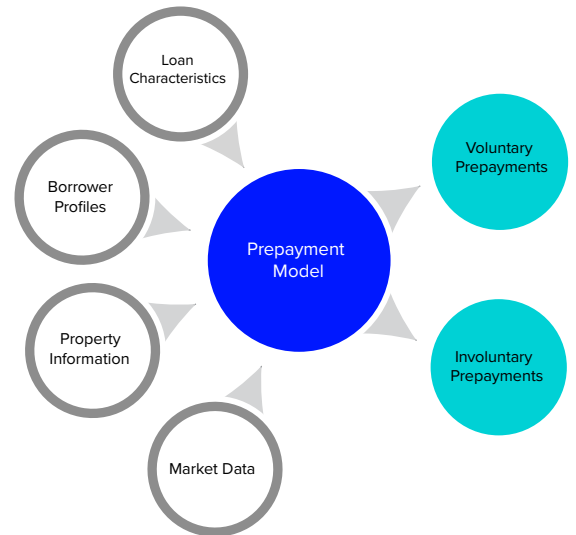
- The ability to dynamically create MSR replines based on underlying loan tape using a default cohorting logic, or a custom specified scheme based on loan level keywords
- Run MSR portfolios nightly to generate risk sensitivities and other analytics. Hedge positions will be run through the same risk scenarios, generating overall portfolio exposure
- Run bid lists to facilitate MSR trading



Suite of models

MSR income and expense cash flows depend on either the balance outstanding or the number of loans remaining in the servicing portfolio. Therefore, estimates of voluntary and involuntary prepayments have a dramatic impact on MSR valuation. Yield Book utilises a market leading prepayment model for projecting prepayments at the loan level. The model includes four basic components: housing turnover, refinancing, curtailment, and default. Yield Book employs a proprietary dynamic roll rate model to forecast delinquencies. Projections account for loan, borrower, and collateral characteristics including coupon, term, balance, LTV, FICO, geography, loan purpose, property type, occupancy status, etc.

In contrast to less sophisticated “static valuation” models, Yield Book employs a stochastic valuation methodology for MSRs. Interest rate paths are generated by a LMM term structure model. The model is built on market-observable forward LIBOR rates, with a straightforward connection to swap rates. Yield Book allows MSRs to be valued using an OAS approach to return sensitivities to various risk factors. Yield Book scenario analysis leverages this OAS approach, allowing clients to shock rates, spreads, volatility, and other model inputs to help clients better understand the underlying risks of their MSR holdings.



MSR valuation

Income and expense components include:

Income	Expense
– Servicing Fee Income	– Servicing Fee Expense
– Excess Servicing Income	– Escrow Expense
– Ancillary Income	– Principal and Interest Float Expense
– Escrow Income	– Prepayment Float Expense
– Principal and Interest Float Income	– Delinquency Expense
– Prepayment Float Income	– Foreclosure Expense
– Recapture Income	– Setup Expense

Source: Yield Book. For illustrative purposes only. The Libor Market Model (LMM) term structure model is co-owned by The Yield Book Inc and Citigroup Global Markets Inc.

Excess servicing

In addition to the income and expense components of the MSR, the servicer may retain a portion of the interest payments on the loan in excess of any contractually specified servicing fees, guarantee fees, and interest payments due to the investor. This component, known as Excess Servicing (XS), can also be modeled and analysed using Yield Book's MSR framework.

	Price	Excess Servicing	Income						Expense						
		XS	SVCINC	ANCINC	ESCINC	FLTINC	PPINC	RCPINC	SVCEXP	ESCEXP	ADVEXP	PPEXP	DLQEXP	FCLEXP	SETEXP
30 Yr Fixed 3.24%	2.420	1.225	1.151	0.018	0.003	0.007	0.008	0.000	0.007	0.001	0.000	0.018	0.000	0.000	0.004
30 Yr Fixed 3.87%	2.297	0.980	1.276	0.015	0.002	0.005	0.008	0.000	0.006	0.001	0.000	0.025	0.000	0.000	0.004
30 Yr Fixed 4.35%	1.951	0.858	1.062	0.015	0.002	0.005	0.008	0.000	0.006	0.001	0.000	0.031	0.000	0.000	0.005
30 Yr Fixed 4.81%	1.565	0.829	0.803	0.017	0.002	0.005	0.009	0.000	0.007	0.001	0.036	0.000	0.000	0.006	0.006
30 Yr Fixed 5.285%	1.438	0.829	0.803	0.017	0.002	0.005	0.009	0.000	0.007	0.001	0.036	0.000	0.000	0.006	0.006

Source: Yield Book. For illustrative purposes only.

Managed Services Use Case

A bank needs to understand their MSR risk on a nightly basis. LSEG's managed services team will take the loan tape that is provided and generates a series of replines based on custom cohorting logic the bank defined. Each night, these MSR replines, along with hedge positions, are run through Yield Book analytics to quantify interest rate, volatility, and current coupon basis risk. The team also runs Yield Book expost attribution each night to quantify the daily PnL of the portfolio due to interest rate, volatility, current coupon basis, and price movements. These files are produced overnight, and the MSR Hedging desk uses the output files each day to calculate the appropriate portfolio hedges and to judge the effectiveness of their hedges relative to daily PnL.

Analytics

Yield Book's powerful calculation engine efficiently calculates MSR analytics on large portfolios. Robust analytics libraries allow users to view:

- Price/Yield measures: price, yield, OAS, and effective duration for each income and expense component
- Scenario analysis: projected return and MSR balance, horizon measures, and scenario cash flows across a wide range of scenarios
- Option model cash flows: projected cash flows across 200 simulated rate paths
- ExPost analysis: change in price due to the change in settlement date, interest rates, mortgage current coupons spread, or volatility

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