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into investment insight

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Analyzing MSR Dynamics Using MSRKinetics

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MSR Dynamics

- MSRKinetics captures servicing cost and prepayment risk through cash flows and scenario analysis
- MSRK seamlessly captures the impact of
  - Interest rate hedging
  - Scenario analysis for interest rate and credit risk

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MSRKinetics Inputs

Kinetics

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Analysis Editor - MSR Rates 2

Servicing | **Inputs** | Calculations | Results

Enable Hedges

Volatility Type: Absolute

File Type	Status	Record Count	Last Modified Date
Portfolio	Imported	1	10/23/2023 12:33 PM
Hedge Positions	Imported	2	10/23/2023 4:17 PM
Current Coupon Yields	Imported	18	10/23/2023 12:37 PM
Yield Curves	Imported	14	10/19/2023 4:37 PM
Swaption Volatilities (Proportional)	Imported	8	10/12/2023 2:15 PM
Swaption Volatilities (Absolute)	Imported	8	10/12/2023 2:15 PM

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Servicing Assumption Template

Servicing Assumption Sets Select an assumption set to view: GSE ▼ [New] [Rename]

Cost to Service
Override

Current Loan

Cost Per Loan ($/yr)	150

Delinquent Loan

30 Days Cost ($/yr)	2500
60 Days Cost ($/yr)	2500
90 Days Cost ($/yr)	2500
120 Days Cost ($/yr)	2500
150 Days Cost ($/yr)	2500
180+ Days Cost ($/yr)	2500

Foreclosure

Cost Per Loan ($)	2500

Earnings
Defaults

Escrow Earnings

Rate / Spread Earned (%)	0	float
Rate / Spread Paid (%)	0	fixed
Escrow Inflation (%/yr)	0	

Payment Float

Schedule Days	24	
Prepay Days	24	
Rate / Spread Earned (%)	0	fixed

Ancillary Income

Income Per Loan ($/yr)	50
Income Per Payment (%)	0.5

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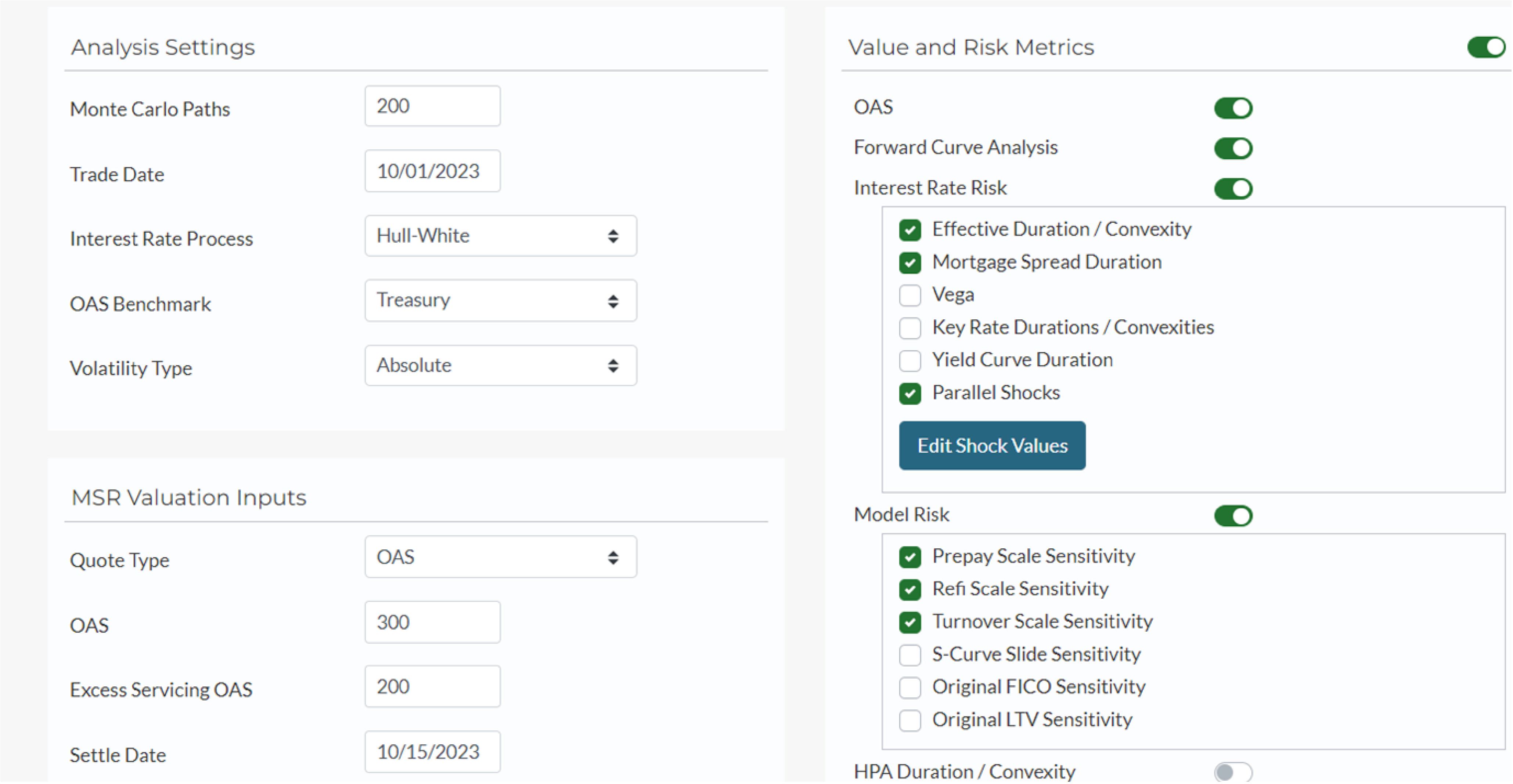
MSRK Calculations Tab



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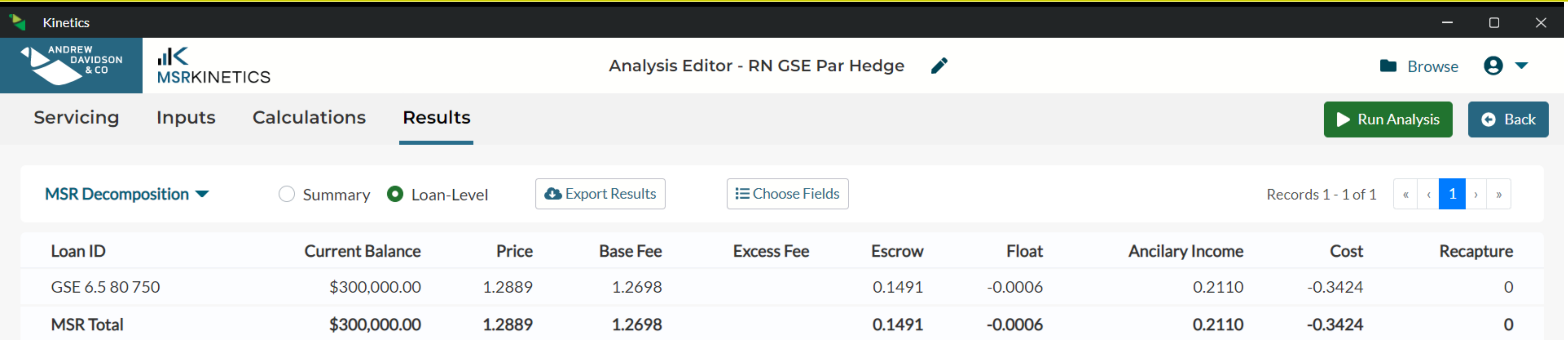
Value Decomposition



Loan ID	Current Balance	Price	Base Fee	Excess Fee	Escrow	Float	Ancilary Income	Cost	Recapture
GSE 6.5 80 750	$300,000.00	1.2889	1.2698		0.1491	-0.0006	0.2110	-0.3424	0
MSR Total	**$300,000.00**	**1.2889**	**1.2698**		**0.1491**	**-0.0006**	**0.2110**	**-0.3424**	**0**

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MSRK TBA Swap Hedge

Kinetics

Hedge Positions

Save Undo Redo Insert Row Save Undo Redo Insert R

Loan ID	Rate Fixed	Quote Type	Quote	Orig Rate	TuneString	Position Balance
TBA 6.5	☑	0	98.88	7.34	FNMA (Fannie Mae)	71330
-TBA 7.0	☑	0	100.75	7.85	FNMA (Fannie Mae)	-70000

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MSR Dynamics with TBA Swap Hedge

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Servicing | Inputs | Calculations | Results

Value and Risk | Summary | Loan-Level | $ | Export Results | All Positions | Choos

Loan ID	Position Type	Current Balance	Price	Multiple	OAS	Yield (FC)	Effective Duration	Prepay Sensitivity
GSE 7.85% 80 740	MSR	$300,000.00	1.2697	5.08	298	11.35	-9.32	-3.70
MSR Total	**MSR**	**$300,000.00**	**1.2697**	**5.08**	**298**	**11.35**	**-9.32**	**-3.70**
TBA 6.5	Hedge	$71,350.00	98.8800		141	6.70	4.73	0.01
-TBA 7.0	Hedge	-$70,000.00	100.7500		148	6.90	4.09	-0.07
Grand Total	**Total**	**$301,350.00**	**1.2726**		**146**	**11.28**	**2.46**	**-2.21**

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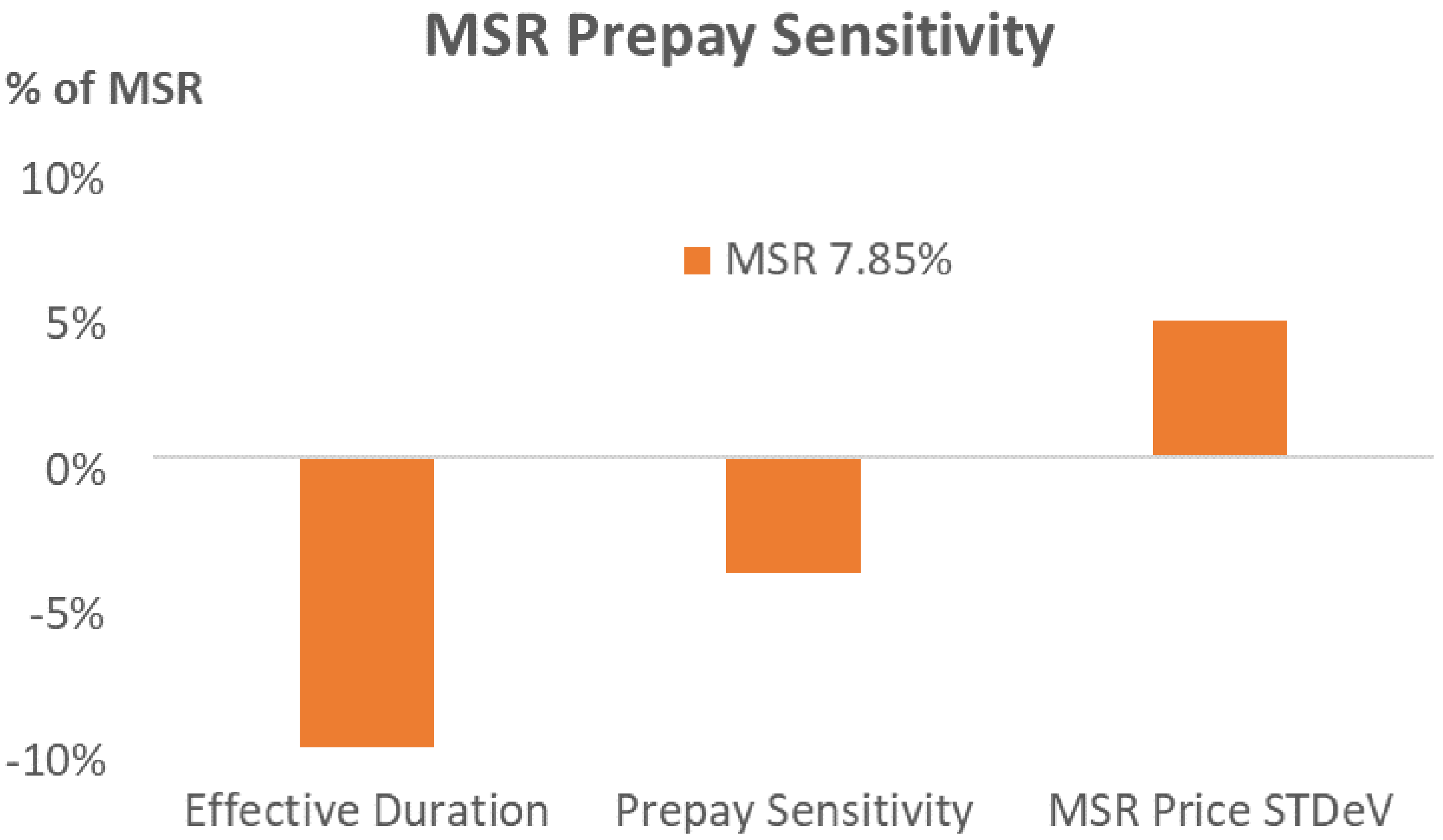
MSR Prepayment Dynamics



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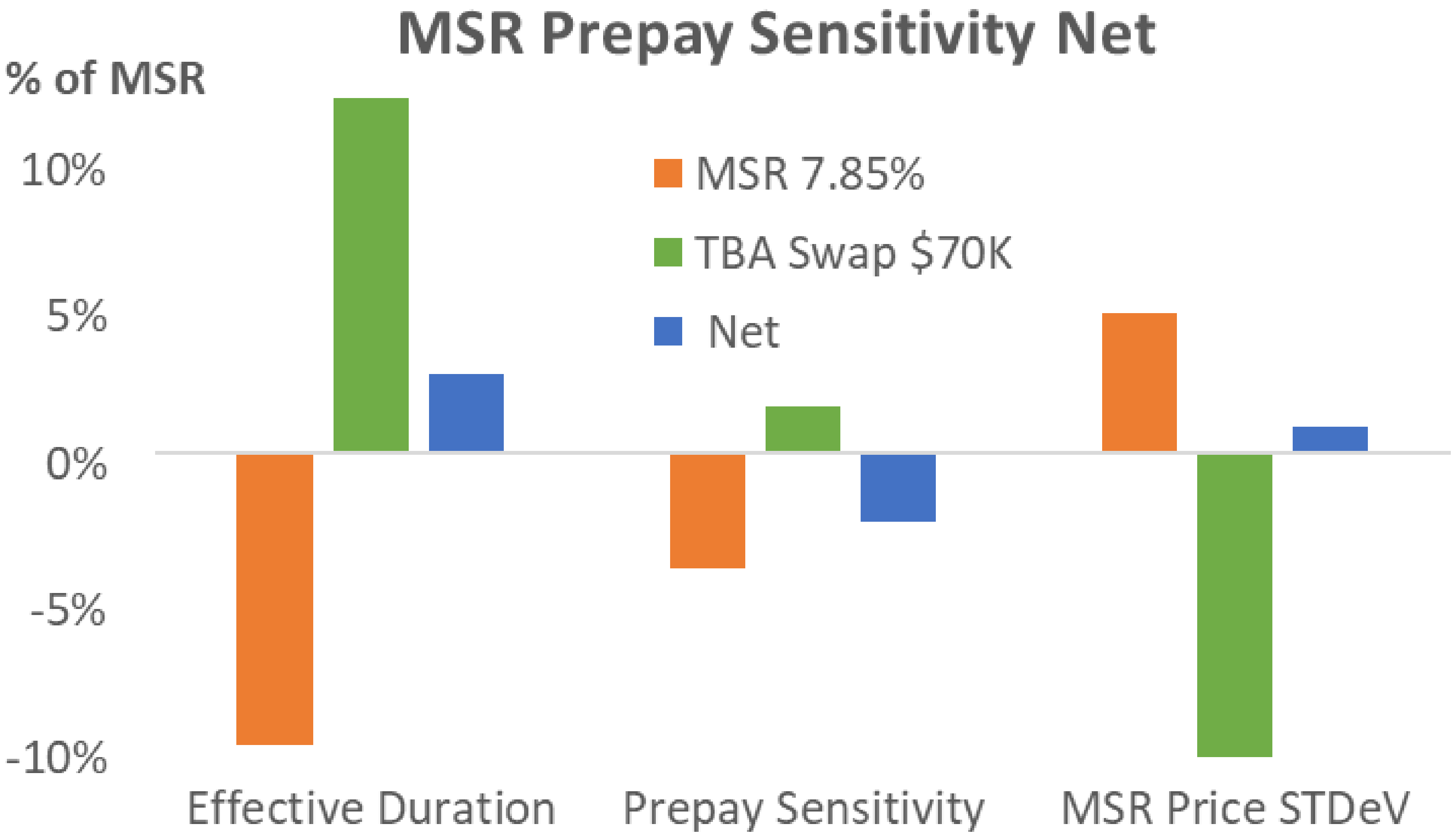
MSR Hedged Prepayment Dynamics



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Scenario Analysis with Hedging

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Analysis Editor - MSR Rates 2

Servicing | Inputs | Calculations | Results

Value and Risk ▾ | Summary | Loan-Level | $ | Export Results | Choose Fields

	Price Shock 1	Price Shock 2	Price Shock 3	Price Shock 4	Price Shock 5	Price Shock 6	Price Shock 7	Price Shock 8	Price Shock 9
MSR	0.7836	0.9132	1.0331	1.1328	1.2016	1.2466	1.2657	1.2708	1.2655
Hedge	75.0091	57.5679	37.8070	18.3166	0.4589	-13.7102	-23.0397	-29.4166	-33.9438
Total	1.1119	1.1637	1.1957	1.2088	1.1984	1.1805	1.1582	1.1350	1.1098

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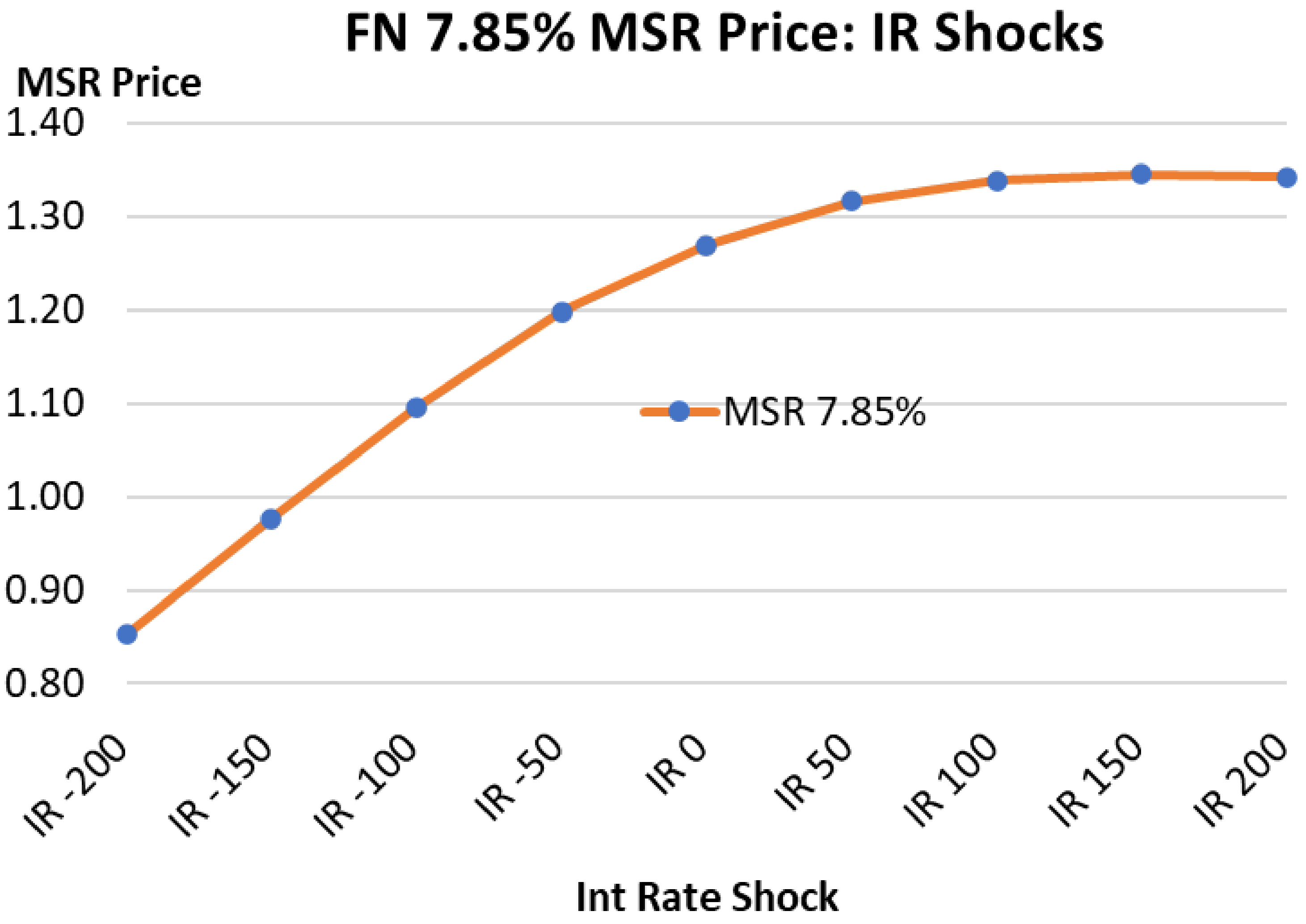
MSR Interest Rate Scenario Analysis



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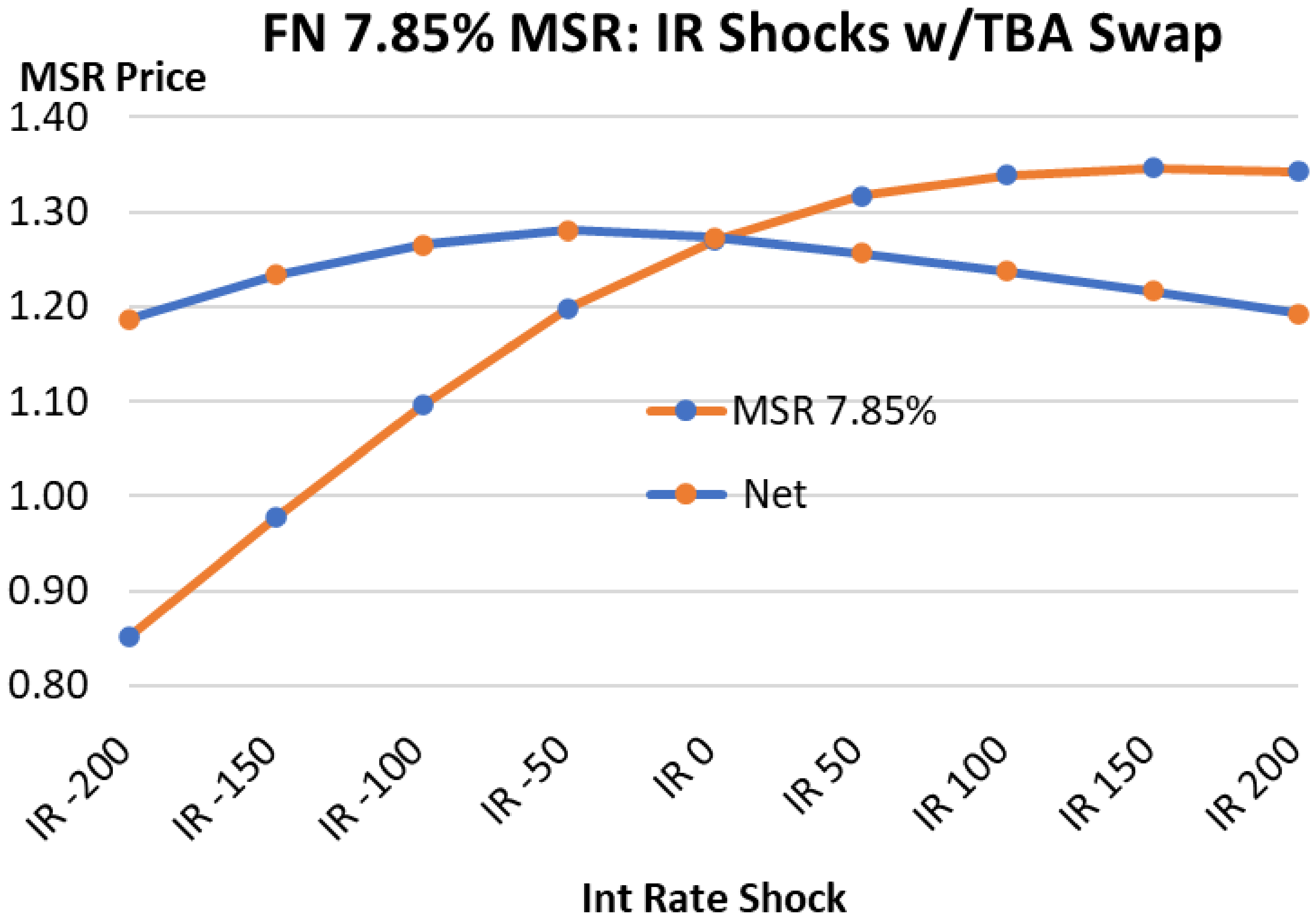
Scenario Analysis with Hedging



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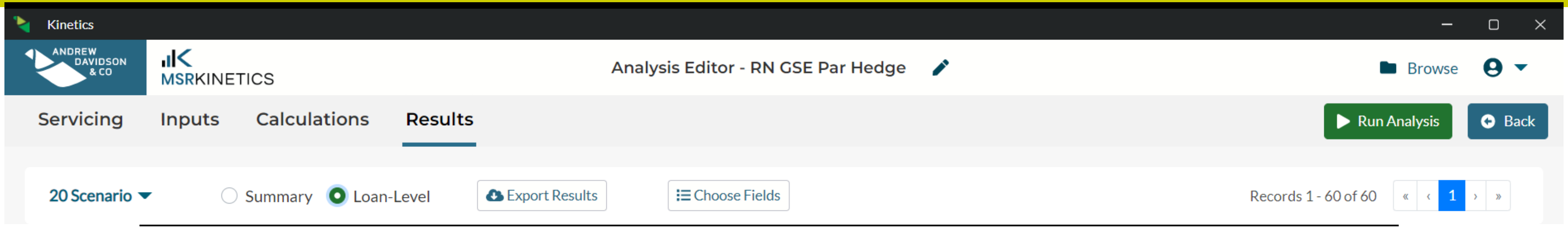
Tail Risk Analysis



Loan ID	Scenario	Current Balance	Scenario Yield	Scenario Spread	Scenario Price	Cum Default	Avg CPR	2Yr HPA	CDF2
GSE 6.5 80 750	0	$300,000	(18.65)	(2,191)	0.35	0.06	43.6	33.3	-
GSE 6.5 80 750	1	$300,000	(12.01)	(1,546)	0.43	0.09	35.1	29.0	5.9
GSE 6.5 80 750	2	$300,000	(5.61)	(926)	0.55	0.15	26.2	24.8	14.3
GSE 6.5 80 750	3	$300,000	0.25	(361)	0.70	0.23	19.1	21.7	23.3
GSE 6.5 80 750	4	$300,000	2.95	(103)	0.77	0.32	16.5	18.2	29.6
GSE 6.5 80 750	5	$300,000	5.70	161	0.86	0.43	14.1	14.7	36.2
GSE 6.5 80 750	6	$300,000	8.62	440	0.95	0.57	11.6	12.3	43.0
GSE 6.5 80 750	7	$300,000	11.39	705	1.05	0.77	9.4	9.0	50.0
GSE 6.5 80 750	8	$300,000	13.69	923	1.15	1.04	7.5	5.8	57.0
GSE 6.5 80 750	9	$300,000	15.41	1,082	1.24	1.32	6.2	3.5	63.9
GSE 6.5 80 750	10	$300,000	16.52	1,180	1.29	1.71	5.3	0.5	71.2
GSE 6.5 80 750	11	$300,000	17.18	1,232	1.33	2.16	4.7	(2.5)	78.6
GSE 6.5 80 750	12	$300,000	17.56	1,257	1.34	2.59	4.4	(4.6)	85.2
GSE 6.5 80 750	13	$300,000	17.69	1,257	1.35	3.20	4.1	(7.4)	90.7
GSE 6.5 80 750	14	$300,000	17.85	1,246	1.34	4.11	3.8	(10.4)	95.4
GSE 6.5 80 750	15	$300,000	17.93	1,226	1.33	4.99	3.5	(12.6)	98.2
GSE 6.5 80 750	16	$300,000	17.83	1,190	1.31	6.26	3.3	(15.5)	99.5
GSE 6.5 80 750	17	$300,000	17.64	1,145	1.29	7.78	3.1	(18.3)	99.9
GSE 6.5 80 750	18	$300,000	17.50	1,104	1.26	9.27	2.8	(20.3)	100.0
GSE 6.5 80 750	19	$300,000	17.15	1,043	1.23	11.37	2.6	(22.9)	100.0

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Conclusion

MSRKinetics incorporates behavioral economics, macro drivers, hedges, and servicer cash flows to generate a full complement of valuation and risk analytics

- MSRs have downside prepayment risk for the first time in over a decade
- This risk can be hedged with TBA swaps

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