

PENSFORD

OPTIMIZING DEBT STRATEGIES

2020



BACKGROUND

This borrower wants to implement an interest rate strategy to improve returns while protecting investor returns. Pensford was asked to examine their portfolio for inefficiencies.

Interest rates are the biggest risk to investor returns outside of their control.

We reviewed 33 recent dispositions to analyze how they may be able to improve returns through a more active interest rate risk management strategy.

Asset	Term Mismatch	Prepayment Penalty*	Impact on Effective Rate	Term Premium	Total Effective Rate Increase	Total Interest Expense Increase
Property 1	36	\$849,688	1.71%	0.52%	\$258,375	2.23%
Property 2	53	\$278,222	0.38%	0.51%	\$370,233	0.89%
Property 3	38	\$1,129,350	1.15%	0.82%	\$802,992	1.97%
Property 4	35	\$229,306	0.50%	0.37%	\$170,940	0.87%
Property 5	36	\$331,078	0.24%	0.60%	\$826,278	0.84%
Property 6	49	\$1,273,586	2.06%	0.97%	\$601,006	3.03%
Property 7	70	\$271,841	0.86%	0.08%	\$25,372	0.94%
Property 8	72	\$1,545,163	2.96%	1.57%	\$820,601	4.53%
Property 9	69	\$658,535	0.80%	0.32%	\$264,880	1.12%
Property 10	68	\$658,535	0.95%	1.54%	\$1,067,003	2.49%
Property 11	25	\$1,271,705	0.70%	0.62%	\$1,131,358	1.32%
Property 12	48	\$644,393	0.30%	0.82%	\$1,780,548	1.12%
Property 13	59	\$227,104	0.48%	1.33%	\$631,528	1.81%
Property 14	32	\$1,653,801	1.27%	0.48%	\$624,624	1.75%
Property 15	62	\$432,818	0.38%	1.17%	\$1,328,077	1.55%
Property 16	94	\$821,192	1.67%	1.44%	\$706,306	3.11%
Property 17	21	\$632,271	0.80%	0.55%	\$433,558	1.35%
Property 18	80	\$2,457,116	3.78%	1.55%	\$1,007,433	5.33%
Property 19	18	\$576,864	0.70%	0.44%	\$360,046	1.14%
Property 20	55	\$1,493,650	2.21%	0.90%	\$608,108	3.11%
Property 21	16	\$781,595	0.91%	0.56%	\$483,489	1.47%
Property 22	27	\$328,251	0.55%	0.83%	\$498,258	1.38%
Property 23	76	\$1,746,260	5.15%	1.14%	\$386,232	6.29%
Property 24	73	\$2,362,192	5.07%	1.45%	\$675,622	6.52%
Property 25	4	\$415,435	0.25%	0.22%	\$365,226	0.47%
Property 26	9	\$41,195	0.15%	0.28%	\$77,926	0.43%
Property 27	38	\$1,471,332	2.08%	0.52%	\$367,217	2.60%
Property 28	74	\$1,817,038	4.66%	1.09%	\$424,686	5.75%
Property 29	24	\$888,950	1.31%	0.63%	\$428,343	1.94%
Property 30	24	\$97,901	0.18%	0.62%	\$331,793	0.80%
Property 31	21	\$0	0.00%	0.71%	\$507,303	0.71%
Property 32	2	\$0	0.00%	0.00%	\$0	0.00%
Property 33	0	\$0	0.00%	0.00%	\$0	0.00%

*accounts for positive/negative hedge values

HISTORICAL ANALYSIS – PORTFOLIO

Across all loan types, this borrower's average loan term was 90.5 months.

Across all loan types, on average, they prepay 43 months prior to maturity.

- Only four loans were held to within 15 months of maturity
- Only two loans were held to within 3 months of maturity

Lender Type	Average Loan Term	Average Hold	Average Term Remaining
LifeCo	110 months	54 months	56 months
Agency	94 months	49 months	45 months
Bank	63 months	34 months	29 months

This, in turn, has resulted in additional costs:

1. Prepayment – the borrower has paid more than \$27mm in prepayment penalties in the last four years.
2. Higher Interest – by taking a longer fixed rate than necessary, they have overpaid by \$18.3mm.
3. Floating – had they chosen floating instead of fixed for the deals most likely to be prepaid early, they could have saved an additional \$8.8mm.



1. PREPAYMENT ANALYSIS

Long term fixed rates offer the appearance of certainty, but when combined with prepayment penalties, they frequently exceed the perceived benefit of avoiding higher floating rates or refinancing in a higher rate environment.

In the last four years, the borrower has paid more than \$27mm in prepayment penalties.

Lender Type	Average Prepayment Penalty
LifeCo	\$1,262,687
Agency	\$963,594
Bank	\$350,204

If the borrower had just one year less of remaining term, they could have saved \$8.7mm.

- This suggests they don't need to be overly aggressive when choosing terms in order to mitigate some prepayment penalties.

When converted to an interest rate, the prepayment penalties increased the borrower's average interest rate by 1.09% over the average hold period.

2. TERM PREMIUM ANALYSIS

Generally, longer term fixed rates translate into higher interest rates. For example, a 10 year fixed is usually higher than a 7 year fixed rate.

Had the borrower been able to match the term of the fixed rate with the ultimate term of the hold period, they could have saved \$18.3mm in interest expense. Converted to an interest rate, this increased their interest rate by 0.69%.

Of the 33 loans we examined, 18 were held for four years or less. These loans were paid off, on average, 50 months prior to maturity.

3. FIXED VS FLOAT

Floating is almost always cheaper than fixed. Given this borrower's aversion to rate risk, they would likely only consider floating on those loans that are most likely to be prepaid within four years.

Of the 18 loans that were prepaid in under four years, the average savings the borrower could have achieved by floating is 0.88%. This translated into higher interest expense of \$8.8mm.

If we extend this analysis to all 33 loans, they would have saved \$34.3mm by floating instead of fixing.

CONCLUSION

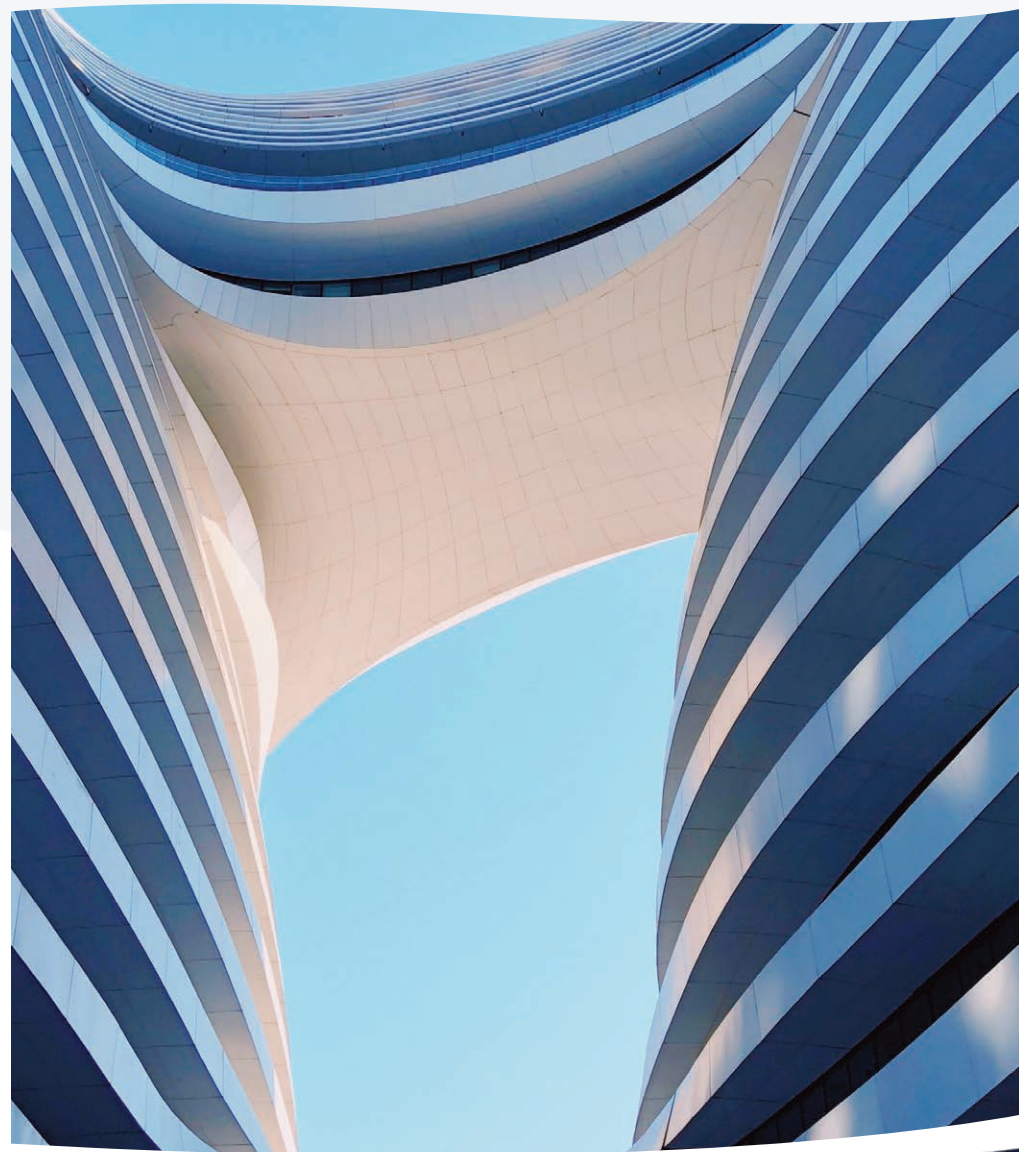
The borrower should focus on matching the duration of the fixed rate with the expected hold period of the asset.

When appropriate, it should at least consider floating rate options on a case by case basis.

The mismatch between term and actual hold period has resulted in the following:

	<u>\$ Amount</u>	<u>Interest Rate</u>
Prepayment Penalties	\$27.3mm	+ 1.09%
Term Premium	\$18.3mm	+ 0.69%
Total	\$45.6mm	+ 1.78%

Additionally, choosing floating on the deals held four years or less could have resulted in additional savings of up to \$8.8mm.



NEW DEAL CHECKLIST

- ✓ Hold period – identify the most likely hold period and determine whether a shorter term makes sense
 - a. Quantify refi risk and solve for point of indifference
- ✓ Quantify interest savings (\$ and % and maybe IRR?) from shorter term
 - a. Must factor in floors
 - b. Should factor in shape of yield curve (eg, maybe flat curve makes it less appealing to take shorter term deal if prepayment penalty is manageable)
- ✓ Quantify potential prepayment penalties
- ✓ Compare fixed vs floating options
 - a. Diversify risk
 - b. Any accelerated repayment?
 - i. Partial release?
 - c. Floating – incorporate interest rate shocks
 - d. Floating – incorporate hedge costs and protection
 - e. Solve for point of indifference – (address challenges of how fast rates rise)
- ✓ LIBOR/SOFR Transition



AUDIT

Initialize a process to monitor decision making and optimize performance.

What we did

Why we did it

What else we considered

How well did our decision do vs the alternatives?

Hold period monitoring



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ALTERNATIVE INTEREST RATE STRATEGIES

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SWAPTIONS

Swaptions are nothing more than options on swap rates. Like caps, they have an upfront premium and never further obligate the buyer to additional termination amounts. Instead of hedging a floating rate (like LIBOR), they hedge a fixed rate (like 10 year swaps).

Swaptions are generally used for two purposes.

1. Hedge against rising fixed rates

- Hedge a near term fixed rate deal
 - If the borrower has a fixed rate deal pricing in the next few months, they could buy a swaption to protect against long term rates spiking.
- Hedge against general upward movement in yields over the next several years
 - If the borrower is worried about rising 10 year rates, they could buy a swaption to be exercised in 2022 or 2023

2. Hedging against falling fixed rates

- Prepayment penalty
 - If the borrower has an expected sale and wants to hedge a prepayment penalty (eg, defeasance or yield maintenance), swaptions can mitigate the risk of falling rates

MECHANICS

Let's assume the borrower wants to hedge against 10 year rates climbing over the next two years.

Notional	\$100mm
Index	10 year swaps
Effective	July 2022
Strike	1.50%
Cost	\$1.3mm

July 2022

- If the 10 year swap rate is below the strike, the option expires worthless
- If the 10 year swap rate is above the strike, the borrower would exercise its right
 - By doing so, they would receive the present value difference between the strike and the actual rate

Breakeven – the upfront premium translates into approximately 0.13% on 10 year rates.

- Therefore, the swaption pays for itself if 10 year swap rate is at least 1.63%

LADDERING MATURITIES

Staggering the maturities of hedges diversifies exposure to one particular rate and mitigates prepayment penalties.

- For a swap, this would provide the security of a fixed rate in the short term but reduce the borrower's exposure to prepayment penalties if the asset is disposed or refinanced before the loan's maturity.
- For a cap, this would reduce the upfront premium as the term has the greatest impact on cap pricing.
- The borrower can enter into new hedges as shorter hedges mature

This generally makes sense in a steeper yield curve environment when there are interest savings associated with choosing a lower rate.

PARTIAL HEDGES WITH QUARTERLY MONITORING

Lock in a partial hedge (i.e. 50% or 75% of the notional amount) and float the remaining portion.

- Pensford would monitor the cost quarterly to hedge the remaining floating portion.

This is ideally suited for shorter term holds.

FORWARD START

The borrower could purchase a forward starting hedge (i.e. 1-year or 2-years forward) to float in the short term where there is more certainty regarding the path of interest rates, while still mitigating the long-term rate risk.

FLOORS

Negotiate floors aggressively before signing a term sheet. With the Fed likely on hold for several years, floors effectively result in an increased loan spread.

- Consider buying out the floor imbedded in the loan. This is the opposite of a cap where the bank will make payment to the borrower when LIBOR is below the floor strike, allowing the borrower to float below a floor on the loan.
- This can also be locked in tandem with a swap if there is a floor on the loan to ensure the rate is fully hedged.
- The borrower could also purchase a cap with the same strike as the floor, effectively resulting in a fixed rate. Interest rate caps are so inexpensive today this is more attractive than any other time in recent years.



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HISTORICAL INTEREST RATE INFORMATION

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FIXED VS FLOAT

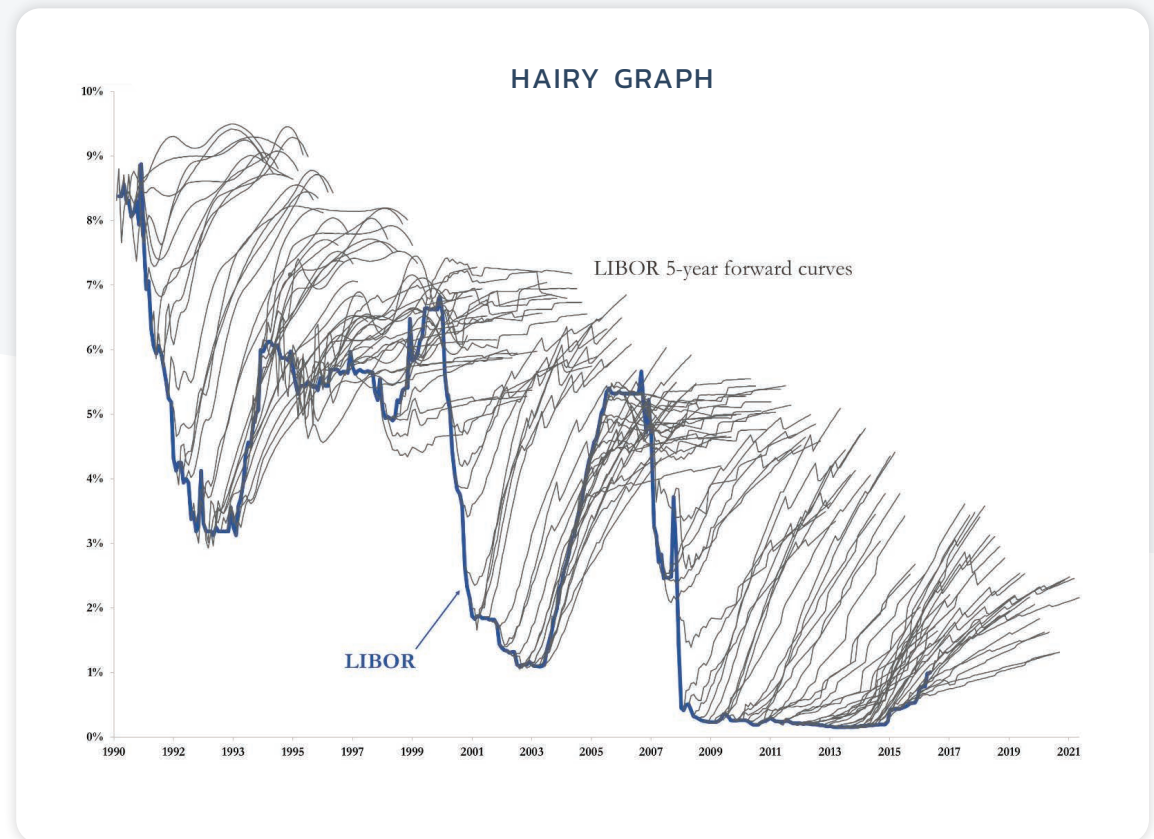
Forward Curve Accuracy – Hairy Graph

Many borrowers use forward curves to help project interest rates over the life of a project. The following graph illustrates how accurately the market predicts LIBOR for the next five years at any given time. Key takeaways:

- In general, the market substantially overestimates the path of LIBOR
- When the market underestimates the path of LIBOR, it is usually during a tightening cycle

The blue line is LIBOR.

The grey lines are forward curves, meaning what the market thought LIBOR would do for the next five years.



FIXED VS FLOATING COST – QUANTIFYING THE DIFFERENCE

The following graphs quantify the historical difference between fixed and floating rates over a variety of tenors.

Swap vs What LIBOR Ends Up Doing

Blue Shade – LIBOR

Red Line – Swap Rate

Green Line – this is the most important aspect of this graph.

- This line is what the floating rate averages over the next two years.
- In other words, if the green line is above the red line, you would have been better off locking in a fixed rate on that day.

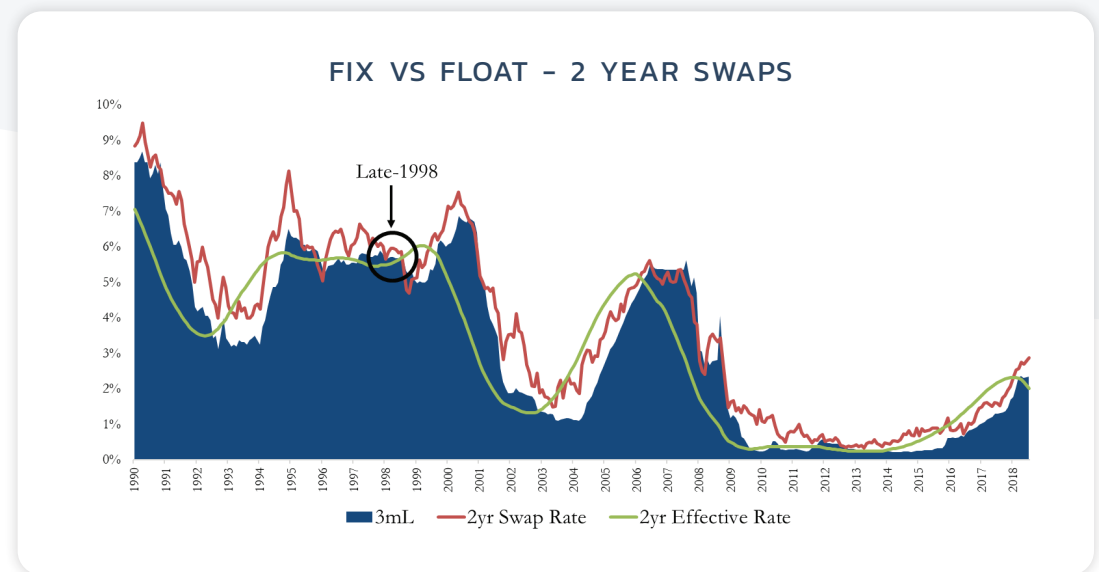
Given the complexity of this graph, let's select a data point and use it as an illustration. Look at late-1998, when all three lines converge at roughly 5.70%.

Blue Line – LIBOR on 8/1/98 was 5.70%

Red Line – borrower could swap to fixed for two years at 5.70%

Green Line – if borrower stayed floating, the interest rate over the next two years (ending on 8/1/2000) would average 5.70%.

Conclusion – On 8/1/98, regardless of whether the borrower remained floating or swapped to fix, they paid 5.70% for the next two years.



Now take a look at a different time horizon – 2007.

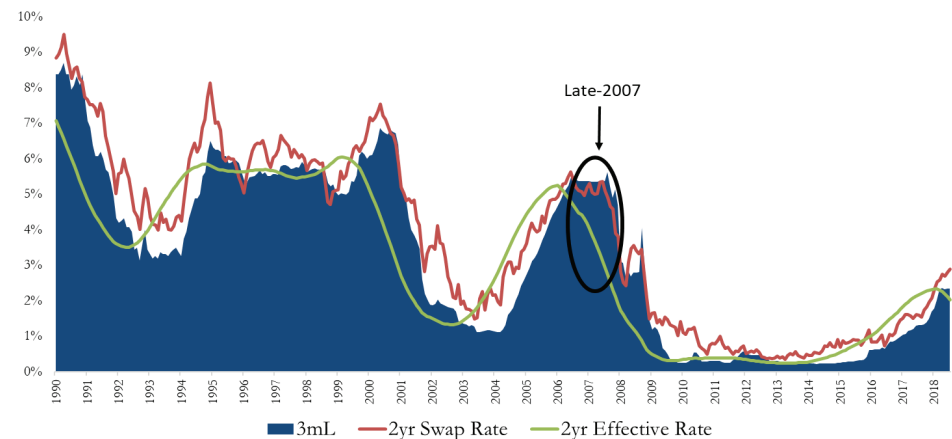
Blue Line – LIBOR on 10/1/07 was 5.23%.

Red Line – borrower could swap to fixed for two years at 4.66%.

Green Line – if borrower stayed floating, the interest rate over the next two years (ending on 10/1/09) would average 2.50%.

Conclusion – this borrower had a difficult decision to make on 10/1/07 because the fixed rate was actually lower than the floating rate. If they remained floating, however, they ended up paying an average interest rate of just 2.50% because the Fed cut rates dramatically during the Great Recession.

FIX VS FLOAT - 2 YEAR SWAPS



With the tutorial for this graph under our belt, let's shift gears and take a look at another graph that illustrates the point above.

COST/SAVINGS OF FIXED RATE

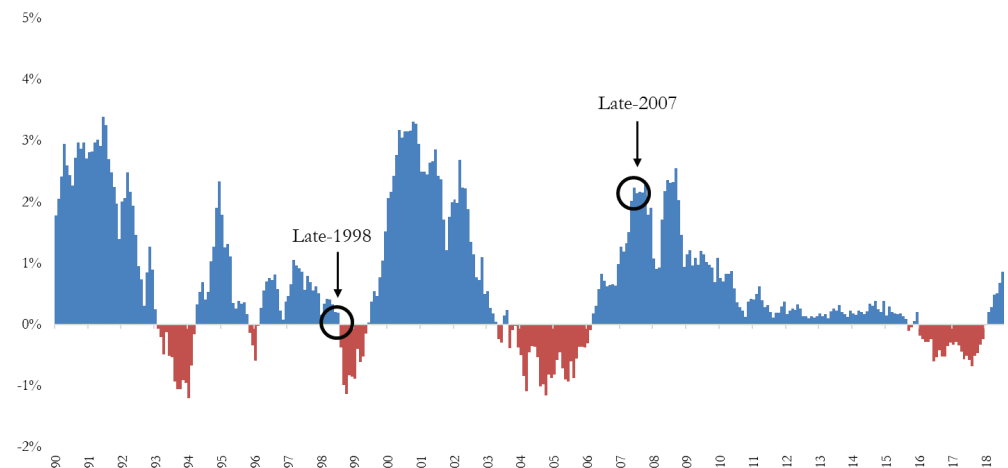
This graph helps to quantify the cost borrowers paid over the term by fixing the rate. We used swap rates to represent the fixed rate.

When the cost is negative (the red bars in the graph below) a borrower would have been better off fixing the rate instead of staying floating.

This graph really aggregates the information from the graph above and more simply illustrates three things:

- the cost/savings from fixing the rate
- when was the best time to fix the rate
- magnitude of cost/savings

PREMIUM TO FIX - 2 YEAR SWAPS

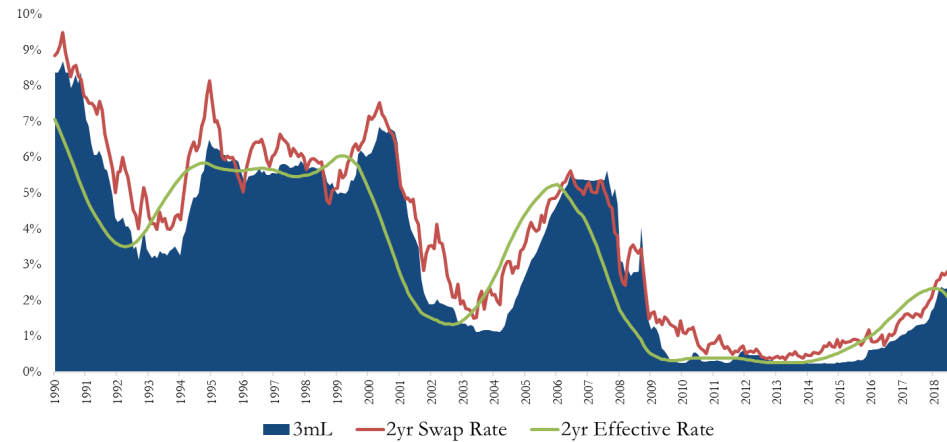


With a better understanding of what these graphs illustrate, let's look at how this analysis compares over different tenors beginning with the two-year graphs we just examined

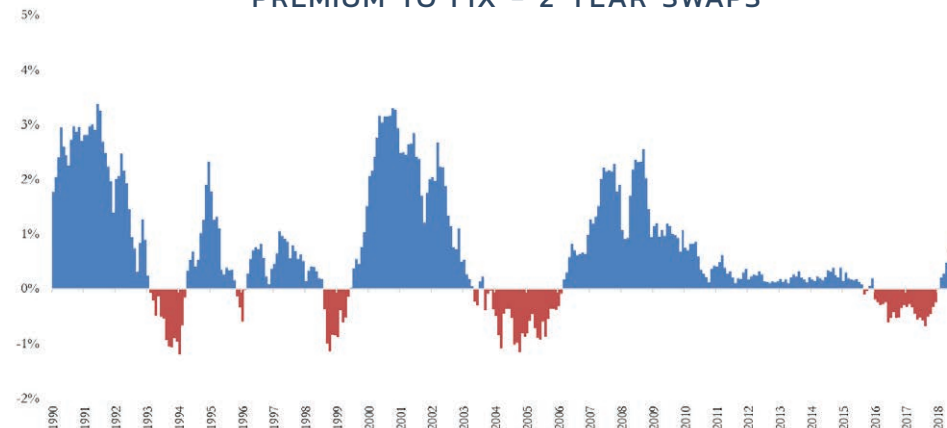
2 YEAR TIME PERIOD – BETTER TO FIX OR FLOAT?

- 25% of the time it was better to fix the rate
- the maximum savings by fixing the rate was 1.20% annually over the next two years
- the maximum savings by floating was 3.30% annually over the next two years

FIX VS FLOAT - 2 YEAR SWAPS



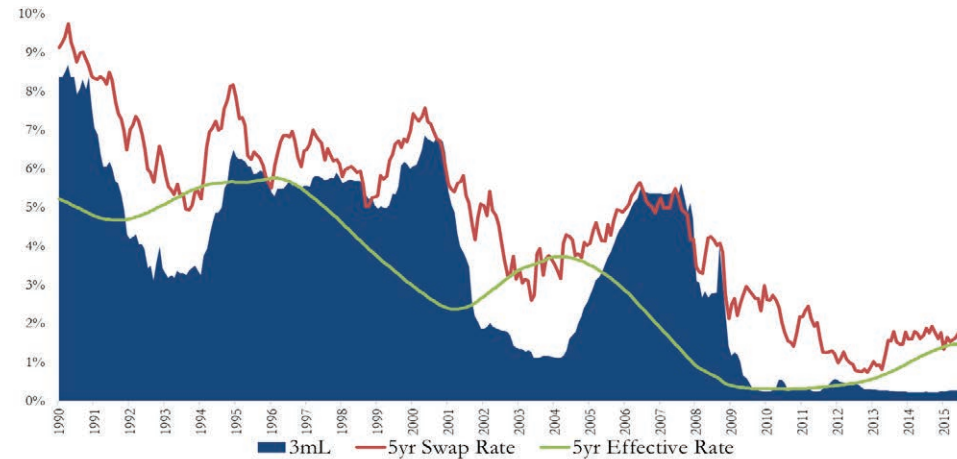
PREMIUM TO FIX - 2 YEAR SWAPS



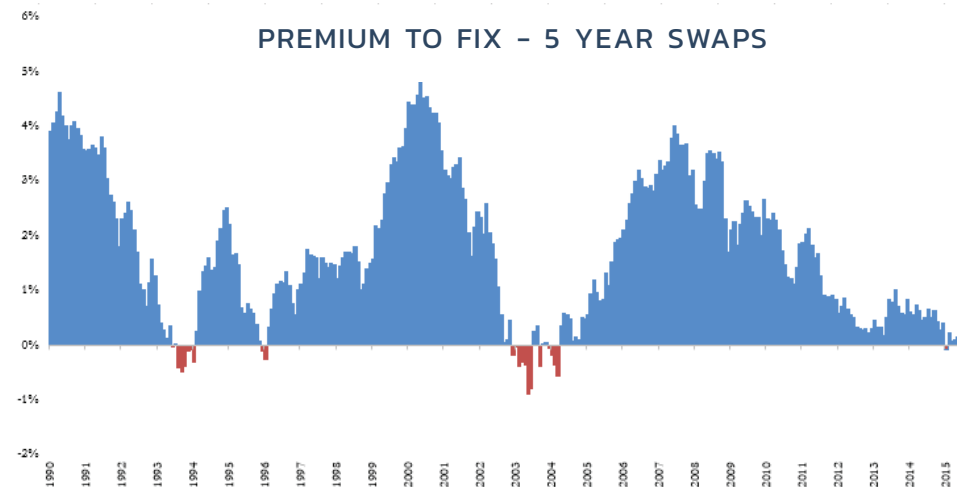
5 YEAR TIME PERIOD – BETTER TO FIX OR FLOAT?

- 7% of the time it was better to fix the rate
- the maximum savings by fixing the rate was 0.90% annually over the next five years
- the maximum savings by floating was 4.80% annually over the next five years

FIX VS FLOAT - 5 YEAR SWAPS



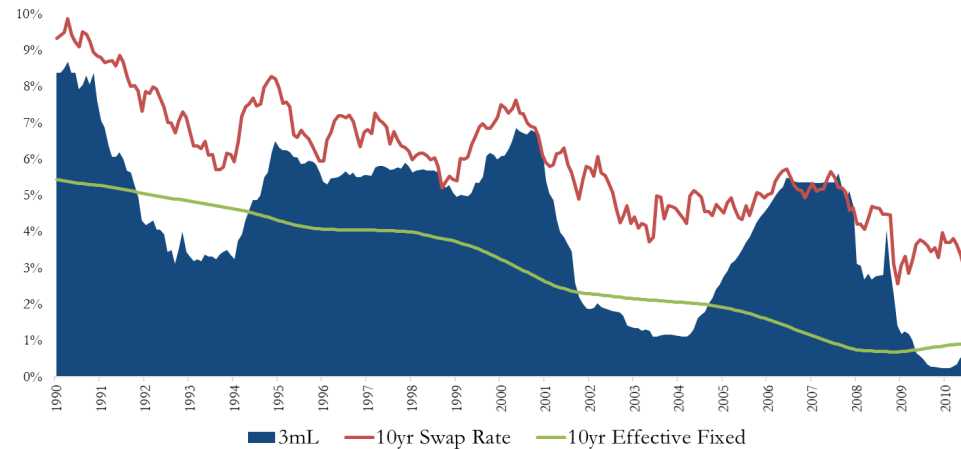
PREMIUM TO FIX - 5 YEAR SWAPS



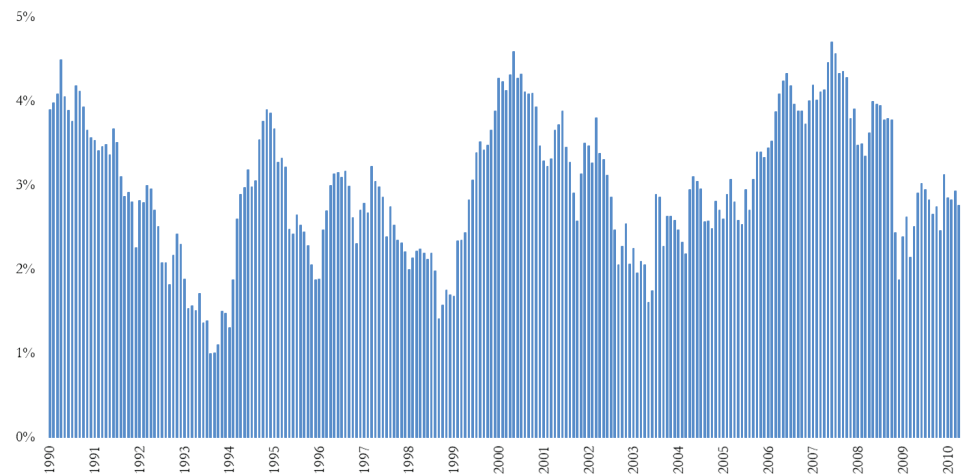
10 YEAR TIME PERIOD – BETTER TO FIX OR FLOAT?

- It has never been less expensive to fix the rate
- the maximum savings by floating was 4.70% annually over the next ten years

FIX VS FLOAT - 10 YEAR SWAPS



PREMIUM TO FIX - 10 YEAR SWAPS



FIXED VS. FLOAT CONCLUSIONS

Generally, the market dramatically overestimates the path of Fed Funds. This explains why borrowers that remain floating generally save money vs the fixed rate alternative.

- The most notable exception to this, however, is during a tightening cycle. When the FOMC is hiking interest rates, the market tends to underestimate the path of Fed Funds.

Asymmetric risk/reward – the magnitude of savings when floating is substantially greater than when fixed.

When it was right to be floating, it was right by a significant amount.

When it was wrong to be floating, it was wrong by a small amount.

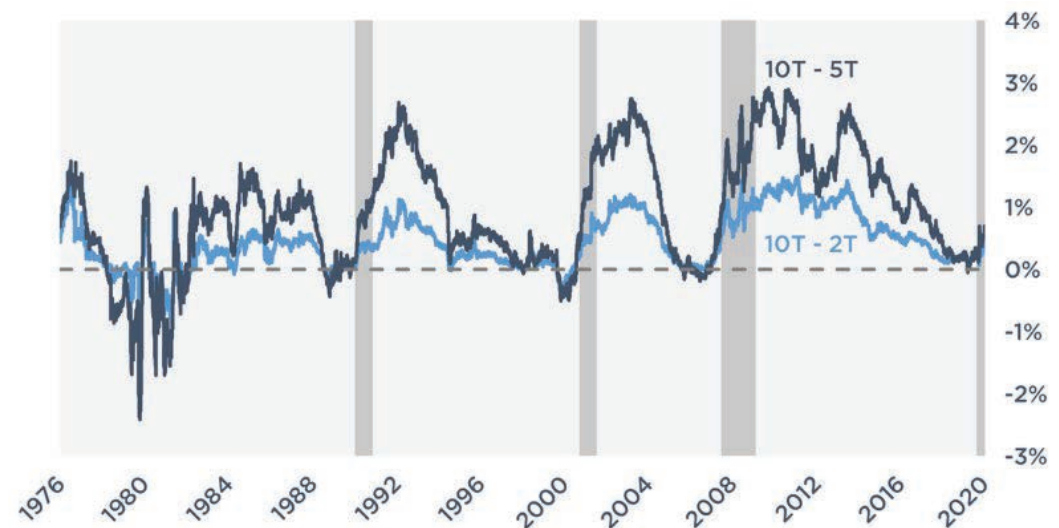
The longer the term, the greater the likelihood of that floating interest rates will save money relative to the fixed rate alternative.



STEEPNESS

The interest rate environment is constantly changing. Not only should the absolute levels of interest rates factor into decisions, but the shape of the yield curve.

SPREAD	CURRENT	AVERAGE
2/10 spread	0.50%	0.93%
5/10 spread	0.35%	0.44%



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