
Evaluating duration as part of a cash management strategy

Considerations for expected returns of duration

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1. Introduction

The fundamental question regarding any investment is how the return compares to the risk. Investing in cash is no exception to this rule, although cash is special in that it's often considered riskless.¹ Investors who think that cash is riskless may naturally gravitate toward the cash instrument with the highest yield. This is understandable, as yield represents the return you can expect if nothing goes awry. So if cash had no risk, you wouldn't need to look beyond the yield to compare different strategies.

Yet things aren't quite that simple. Yields of different cash strategies need to be interpreted in light of their risks to get to an expected return. We use 'expected' here in a mathematical sense; it represents the probability-weighted mean of returns across a range of outcomes.

The important distinction between investments and strategies is especially salient in cash due to its emphasis on short-term securities. When you compare investments, it's natural to consider how their risk or return might compare over common horizons. (For instance, you might try to forecast their annual return over a few years.) If you're comparing a 5-year bond and a 6-year bond, you forecast their performance over the next year without worrying much about the mismatch in term. If you want to compare a 1-month Treasury bill to a 12-month bill, however, it's not clear how to do this, and you might not want to simply consider how these two instruments might compare over just the subsequent month. Accordingly, when thinking about any investment, and especially for

¹ We disagree with the idea that cash investments are riskless, but would concede that a short term U.S. Treasury bill, for a USD-denominated investor, probably is — or is comparable in risk to — the lowest risk instrument in their universe.



cash, it's natural to compare the strategy of, say, rolling a succession of 1-month bills for a period of 12 months versus a buy-and-hold strategy of a single 12-month Treasury bill.

2. Takeaways

- Expected return is central to the evaluation of cash management strategies. This research primer is part of a series on expected return in cash.
- Duration/term premium, which is the expected excess return earned from locking up your money for longer, is a critical factor that differentiates cash instruments of various durations.
- Historically, the duration premium has been substantial: 5–15 basis points (bps) per month annualized for extending the duration in the <1 year range.
- Some statistical models suggest that the current duration premium is lower (or even negative), but we believe there's a modest, positive premium for taking duration risk in cash.

3. Context

Let's start with a simple question: "if you could invest in a 1-month Treasury bill yielding 4% or a 6-month Treasury bill yielding 5%, what's the difference in expected return?"² You might be tempted to say something like 1% annualized over six months, but as explained above, to answer this question well, you would first need to fit each instrument within a strategy.

A more appropriate question would be "if you invested your cash in a 6-month Treasury bill or in a succession of six 1-month Treasury bills, reinvesting after each 1-month bill matures, what would be the difference in expected return between these two strategies?" The answer to this question clearly depends on the 1-month yields that you expect to be available whenever you have to reinvest the shorter instrument. Assuming priced-in yield curves are upward sloping with a fixed slope, the ex ante market pricing of the 1-month forward yields compared to the pro rata spot yield of the 6-month strategy might be the following:

² Let's stipulate that, for the purposes of this question, neither Treasury bill has any default or late payment risk and each could be liquidated costlessly, so they're of comparable liquidity.



Period	1-month rolling strategy ³	6-month strategy
0–1 month	4.0%	5.0%
1–2 month	4.4%	5.0%
2–3 month	4.8%	5.0%
3–4 month	5.2%	5.0%
4–5 month	5.6%	5.0%
5–6 month	6.0%	5.0%

In such a scenario, the market is pricing in some tightening over the next six months, with 1-month rates starting at 4% and climbing to 6%, such that if short-term interest rates evolve in line with market pricing, the return between each of these strategies must be equal. This is a tautology, but an illuminating one. It lets you reframe the question of which short-term cash management strategy is superior as follows: “the market is pricing in a specific path of monetary policy (tightening/easing of short-term rates). What’s the weighted likelihood that the actual path is more or less tight than the pricing?”

4. Findings

Answering this question is complicated. Short-term interest rate derivatives are a deep, liquid market and in any given period, monetary policy can surprise in either direction. However, to the extent that the market pricing tends to be biased toward more tightening (steeper yield curves) than bears out, there is a risk premium to taking on more duration. In this case, investors do better rolling longer term bills rather than shorter term ones.

People have used different techniques to try to answer this question. Historical evidence is one way you could look at this,⁴ but it has its limitations.⁵ The [variation in outcomes is much larger than the premium](#) and there’s no guarantee that the historical easing/tightening surprises are consistent with what we’ll see going forward.

³ We’re taking some liberties here with rounding and precision for illustrative purposes.

⁴ Past performance is not necessarily indicative of future results.

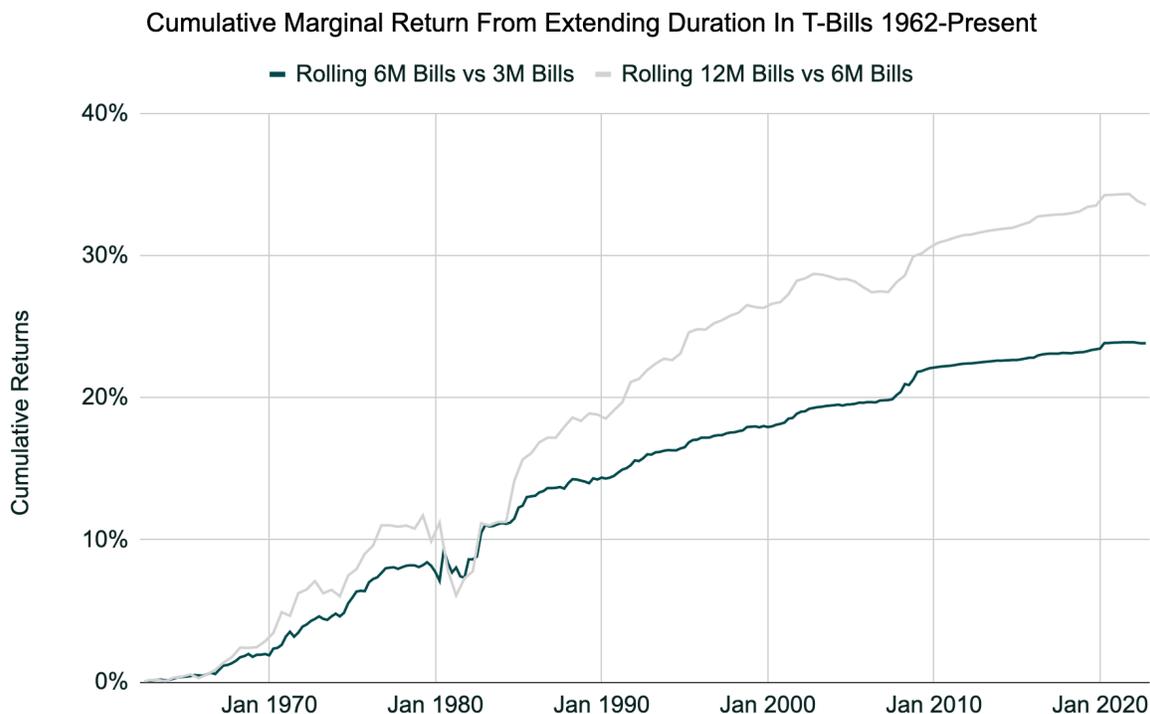
⁵ Beyond general skepticism of the predictive power of past results, an incomplete list of the ways in which past results can be misleading relating to this specific question would include an uneven balance of historical surprises relating to the drivers of easing or tightening, and the presence or absence of liquidity type strains or flows in the short-term rate market.



That said, we can compare the historical returns of rolling 3-month Treasuries against the returns of holding 6-month Treasury bills for 3 months and then rolling to the next 6-month bill. We find that the additional three months of duration have led to a substantially higher return. The same is true for extending from 6-month bills to 12-month bills.

Exhibit 1

Significant term premium has been earned by holding incremental duration risk since the 1960s. Cumulative return from rolling 6-month bills vs 3-month bills and rolling 12-month bills vs 6-month bills, both held for three and six months respectively.



Source: Federal Reserve

In particular, the average return from the additional three months of duration has been 39bps/year since 1962. Though the more recent performance has been worse, it's still a robust 26bps/year since 2000. For extending from 6-month to 12-month bills, the return improvement has been 55bps/year (32bps/year since 2000).



That said, some academic models are more pessimistic about the forward term premium than the historical averages. The Federal Reserve publishes a multifactor statistical model of term premium (the ACM model).⁶ This model has historically forecast a significant positive term premium, but the premium over the past few years has been closer to zero (and even negative).

Exhibit 2

Regression-based Treasury term premiums have been close to zero and even negative in recent years

ACM term premium, June 1961–Jan. 2023, percent



Source: New York Federal Reserve

The historical premium has been 10-15 bps per month of duration since 1962; since 2000 it has been in the 5-10 bps range. This generally diminishes as you move farther out on the duration curve (the historical pickup from going from 3m to 6m is greater than going to 9-month and then

⁶ https://www.newyorkfed.org/research/data_indicators/term-premia-tabs#/interactive



12-month bills). The ACM model has been in the range of -5-0 bps⁷ in recent years.⁸ Any estimate in these ranges would be defensible.

5. Conclusion

Managing cash well requires investors to evaluate the expected return of competing strategies. Duration premium is a critical component of cash expected return, and taking term risk can be a source of significant differentiation. Estimating the duration premium with precision is a challenge, yet we believe there's a meaningful, positive premium to be had. Investors who have the mandate and liquidity flexibility to term out their cash should generally do so.

Please review our companion pieces on cash or reach out to the research team at research@addepar.com to learn more about how to evaluate the expected return of cash.

⁷ Negative 5bps to 0bps.

⁸ These premia are from the shortest part of the cash curve (comparing a 1.5-month duration strategy to a 4.5-month duration strategy); as the duration grows longer, the premia are likely to increase sub-linearly.



References

Treasury Term Premia. Federal Reserve Bank of New York.

www.newyorkfed.org/research/data_indicators/term-premia-tabs#/interactive

Treasury Bills, Federal Reserve Bank of St. Louis. <https://fred.stlouisfed.org/categories/116>

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Asset Classifications

Asset class	Sub-asset class
Cash	Cash Cash equivalents
Fixed income	U.S. Treasuries and Agencies U.S. TIPS U.S. investment-grade credit U.S. high yield U.S. bank loans International developed markets Emerging markets Opportunistic Other fixed income Unknown fixed income U.S. municipals/tax exempt
Equities	U.S. equities Global equities Developed markets–Americas Developed markets–EMEA Developed markets–Asia Pacific Emerging & frontier markets Other equities Concentrated equity positions Unknown equities
Mixed allocation	Asset allocation vehicles Held-away accounts
Alternatives	Hedge funds Concentrated alts positions Private equity & venture Real estate funds Other alts Unknown alts
Private business	Direct private companies
Direct real estate	Direct real estate
Other	Collectibles Direct loans Unknown Liability



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