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Bank Asset/Liability Management

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Bond Hedging Reconsidered: Bonds Aren't Gold

Controlling risk is at the core of virtually any portfolio manager's responsibilities, and an overarching principle in this regard is the establishment of limits, i.e., how much of any position is it prudent to hold? Generally, such limits reflect the consideration of how much capital the financial institution is willing to risk along with a sensibility as to the amount of loss that could reasonably arise; this despite the presumed expectation that that such a loss would be deemed to have a low probability.

Stress testing is one approach that serves to assure that appropriate limits have been instituted. Conceptually, these exercises simulate a possible (low probability) price perturbation and seek to confirm that the firm's available capital would be sufficient to cover this loss. If not, the position limit would be violated and some reduction of the exposure would be mandated.

An alternative orientation takes a reactive orientation, whereby position reductions would arise when some threshold of loss is realized. Many stock market investors apply this approach when using stop loss orders that are set to automatically liquidate positions if and when a stock price falls by some preset amount, thereby seeking to constrain losses to affordable limits.

Despite the seeming appeal of both of these approaches, each suffers from the same potential pitfall. That is, the adverse price event may turn out to be a temporary dislocation that ends up being reversed, in which case the investing entity would be better served by maintaining the established position until the price recovers. The problem with this approach, however, is that the hoped-for price reversal might never happen.

In this regard, fixed income instruments have a clear advantage over all other asset classes: Baring default, the prices of fixed income instruments will necessarily converge to their par values at maturity. In other words, when managing fixed

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income exposures, we should be operating with an appreciation of the fact that, for most of these instruments, price perturbations are temporary. Ultimately, the final values at maturity would be known with certainty, such that any deviations from that final value would self-cancel. No other investment category has this attribute, save transactions that include forward contracts with stipulated forward sales prices.

To be fair, this orientation fails to recognize that the instrument in question may *have* to be liquidated prior to its natural maturity date, or, more drastically, the debtor could default. In both cases, prior price perturbations might not be reversed. This consideration justifies segmenting the consideration of risk in fixed income portfolios into two categories: Elements that would be expected to be held for maturity versus those that would be, or could be, liquidated before maturity. The nature of risk for these two investment categories is palpably different, thus justifying different risk metrics and risk mitigation strategies.

This orientation also highlights the critical distinction between market interest rate risk and credit risk. Both could foster unintended income volatility; but in one case, value effects would be temporary with subsequent reversals, while in the other case, the value effects would likely be permanent.

This dichotomy is well-recognized by the accounting community, but less so by risk professionals. That is, at many financial institutions, accounting practice requires classifying fixed income instruments as being either *held to maturity*, *held for trading*, or *available for sale*. Trading and available for sale instruments are recorded on the balance sheet at fair market value, while held to maturity instruments are generally carried at amortized cost. The accounting rules have a carve-out, however, if it appears likely that losses on held-to-maturity assets won't be reversed. In that case, the assets would be written down to the instrument's fair value.

For fixed income instruments, modeling market interest rate risk is a fairly straight forward exercise. Not so for credit risk. Although credit risk is a binary risk for individual instruments (the borrower defaults or not), professional investors generally mitigate this risk by diversifying. For such institutions, the prospective worst-case loss would typically be estimated by assuming default on some seemingly elevated percentage of the portfolio. Making that judgement, however, seems to be fraught, as prior experience could easily fail to appropriately reflect the coming circumstances. Ultimately, accommodating to this risk requires the determination of some level of capital to be reserved specifically to cover this exposure. More likely than not, this determination would be monitored and adjusted over time, as changing circumstances dictate.

Returning to the concern of market risk management relating to fixed income instruments, an interesting question arises: If the prices of a fixed income instruments are known to revert to their par values at maturity, does it make sense to hedge these market risk exposures? In fact, it depends. Two very different contexts justify different answers to this question.

First consider the case of a bond portfolio manager who operates in a mark-to-market environment with a short term-orientation. Clearly, if this manager anticipates a rising interest rate environment, he or she could mitigate this risk by introducing a hedging derivative. Ultimately, the objective would be to overlay a derivative that would serve to reduce the duration of the overall portfolio. In some cases, the derivative of choice might be a swap, other times, an option, or possibly futures contracts. Sometimes these hedges might be static, and sometimes dynamic. In all cases, though, we can expect that underlying exposures will generate known gains or losses over their lives, equaling the difference between the starting price as of the time the hedge is initiated and the final (known) par amount.

In contrast, the performance of any derivative will be unrelated to this gain or loss. The derivative's gain or loss will depend on whether interest rates rise or fall, but the magnitude of the derivative's overall result will be independent of the change in values of the exposure being *hedged*.

On the basis of this understanding, it would seem prudent to hedge only if you were confident, and correct, in your expectation that the derivative would generate a gain – a highly problematic expectation. The irony of this situation is that what would appear to be a risk mitigation strategy in the short run actually serves to add to the overall risk exposure in the longer run.

Given the long run independence of these two effects, one might argue that the hedge could be performing a diversification function; but if the expected return on an added asset class (i.e., the hedging derivative) isn't necessarily positive, inclusion in an overall portfolio wouldn't be justified. In this case, inclusion would more appropriately be considered to be a speculation, rather than a hedge. In any case, exactly how such a derivatives use is described in the company's formal disclosures would seem to be an area worthy of inquiry. Intuition and experience suggests to me that many reporting entities would be guilty of telling only half of the story.

This cautionary note notwithstanding, it *would* be reasonable to hedge fixed rate instruments when part of an overall portfolio of assets and liabilities – typical of practices

in banking institutions. In these situations, harmonizing the durations of the assets and liabilities is legitimate and understandable, as is typical for depository institutions that rely on shorter-term deposits to fund longer-term fixed rate loans and investments. On the other hand, for stand-alone investment entities, it may not make a lot of sense to hedge fixed rate instruments on their own, intending to offset value changes due to changing interest rates, without consideration of the broader, asset/liability context.

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