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Bank Asset/Liability Management

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Synthetic Debt, Repos, and Dollar Rolls

Most financial professionals recognize that forward contracts are price-fixing mechanisms that allow buyers or sellers to set the price of some reference asset for some prospective, future value date. Perhaps less well-understood is the fact that forwards also offer the capacity to affect *synthetic* short term borrowings or, alternatively, synthetic short term investments.

Using gold as a prototypical example, consider the owner of gold who simultaneously sells 100 ounces of gold and buys back that same volume of gold with a forward purchase contract having a forward value date one year later. It should be clear that these combined transactions will serve to generate cash for the one-year interval between the original sale and the subsequent repurchase, i.e., a one-year synthetic debt. Assuming the spot sales price for gold is $1,000 per ounce and the forward purchase price is $1,050, this pair of trades affects a synthetic borrowing with an effective cost of 5 percent (=1,050/1,000 – 1).

From the counterparty's perspective, the same transactions would serve to synthesize an asset, i.e., a synthetic loan, earning 5 percent. In the case of gold, forward prices are determined with direct consideration of these respective implied borrowing/lending rates. That is, gold arbitrageurs will buy spot gold and sell in the futures (or forward) market when the yield on this combined purchase/sale exceeds that firm's financing costs; and similarly, they will do the opposite—sell spot gold and buy in the futures market—when the implied rate is below their alternative borrowing costs.

This *cash-and-carry* arbitrage is common in precious metals markets and a variety of other commodity markets where the commodity is storable. It should be clear that the precise nature of the underlying good can be anything for which forward contracts can be negotiated, at least in theory. The prevailing spot/futures pricing may make the yields associated with such synthetic borrowing/lending unattractive, but the

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design is nonetheless do-able.

This concept underlies a very widely used financing practice known as the *repo* market. A repo or *repurchase agreement* is typically constructed where an interest bearing security substitutes for the gold used in the prior example. Despite the terminology, however, no sale or repurchase actually transpires with repo transactions. Repos are not *synthetic* debt. They are just a particular form of secured *real* debt, where the reference security serves as collateral for a debt. The lender on the other side of the repo transaction would be said to be entering into a *reverse repo* transaction.

Under the repo contract design, instead of actually selling the security and buying it back later, the borrower maintains ownership of the security but pledges it as collateral for the duration of the borrowing. At maturity, when the debt is repaid, authority over the collateral reverts to the borrower. Repos also typically incorporate a *haircut*, where the outstanding balance on the loan will generally be for an amount *less than* the full market value of the security. For instance, a 5 percent haircut would mean that $100 of collateral would be required to secure $95 of debt.

Most financial professionals recognize that forward contracts are price-fixing mechanisms that allow buyers or sellers to set the price of some reference asset for some prospective, future value date. Perhaps less well-understood is the fact that forwards also offer the capacity to affect* synthetic *short term borrowings or, alternatively, synthetic short term investments.

In contrast to real debt, synthetic debt is engineered by pairing a true sale and a forward purchase of that same (or substantially similar) asset, allowing the full market value of the reference asset to be accessed by the borrower for a temporary period. Thus, the concept of a haircut just does not apply. Moreover, in contrast to the repo situation, where the interest generated by the reference asset is maintained by the borrower throughout the financing term, with a true sales and repurchase, the interest on the reference security moves to the lender at the time of the sale and then reverts to the buyer with the repurchase.

Mortgage Dollar Roll Transactions. One active category of synthetic debt is called a *mortgage dollar roll* transaction. The same design as described above applies but, with dollar rolls the reference asset is an Agency such as the U.S. government insured mortgage backed security (MBS), and a to-be-announced (TBA) contract serves as the requisite forward contract. TBAs are, in essence, forward contracts that specify the character of a given MBS (i.e., the issuer, coupon rate, maturity, par amount, price, and forward delivery date). The *specific* MBS delivered under the contract will not be identified, however, until two days prior to delivery. This delivery process conveys an embedded option that allows the TBA seller to deliver the *cheapest-to-deliver* underlying asset. As a consequence, yields on TBAs will be somewhat inflated, relative to cash MBA securities, to compensate the TBA buyer for this effect.

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In fact, dollar rolls may be confusing because the term is commonly used in connection with two distinct practices, and only one of these designs happens to be a financing. The *non-financing* dollar roll starts with an entity buying a TBA. Then, subsequent to delivery under this contract, the dollar roll is simply the act of liquidating this starting TBA and replacing it with another TBA with a more deferred value date. The price differential between these two TBAs is referred to as the *price drop*. Given the starting long TBA position, it would make sense to *roll* if the price drop were sufficiently generous, i.e., if the more deferred TBA were cheap enough. This strategy stands to make or lose on the basis of the price changes of the respective TBS that are traded, but it never generates cash in amounts that correspond to the notional values of the TBAs. Hence, considering this strategy to be a financing would be inappropriate. Again, we only construct synthetic debt when the transaction involves the sale of a physical instrument.

Accounting Treatments. Despite the economic differences between repos and synthetic debt, the accounting treatments for both are quite similar, provided the following transpire:

a. the sale and repurchase contracts in the synthetic debt transaction are entered into in contemplation of each other, and

b. the repurchase contract serves to allow the borrowing entity to regain control of the originally sold asset *or a substantially similar asset*.

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In other words some degree of substitution is allowable for the *collateral*. Such a substitution necessarily arises with bone fide dollar roll financings, as the originally sold MBS would likely not qualify as the cheapest to deliver MBS.

The correct journal entry at the start of both real and synthetic financing transactions is *debit cash/credit debt;* interest expenses are reflected on an accrual basis; and finally, with the repayment of the debt (or the repurchase of the security), the debt account would be closed, and cash credited. Accounting for synthetic debt in this way may satisfy the accounting rules, but it distorts the economics of the trade. That is, this treatment leaves the sold asset on the balance sheet when, in fact, it has been transferred to another party. Synthetic debt thus inflates the balance sheet relative to real debt.

Financing Rates. Because of the different treatment of the interest on the reference security for the repo versus the synthetic debt, the two respective financing rates are not directly comparable. Besides the explicit financing rate inferred by spot and forward pricing in the synthetic debt, the synthetic borrower also gives up the income on the reference asset. Economists label this cost an *opportunity cost*, and failure to consider it would understate the true cost of this kind of financing. Besides this issue, the fact that the delivered asset under the TBA contract would be the cheapest to deliver, the true market value of this security might be *different* from the prescribed repurchase price, thereby introducing some degree of uncertainty for financing under the dollar roll strategy, while the cost of borrowing under a repo transaction is explicitly stated and will be realized, baring default.

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One More Perspective on Rising Interest Rate Risk(s)

The regulatory world has made it very clear over the past several years that it is concerned about banks in the next rising rate cycle, especially regarding economic value of equity (EVE)-related risks. In the post-crisis era of historically low interest rates, banks have experienced unquestionable pressure to extend maturity terms in the loan portfolio and have been tempted to add option/extension risk in the investment portfolio. This has all been to help moderate downward pressure on aggregate asset yields. On the liability side, deposit balances with greater elasticity have accumulated in non-maturity categories and CD customers have become overweight in short maturity products. When rates do rise, the economic value of those long assets will drop while the short deposit base adjusts at higher market rates. Equity values are, therefore, damaged in this theoretical storyline. Additionally, most banks will experience margin compression and increased earnings challenges. The only question will be…to what degree?

Our position, at Darling Consulting Group (DCG), is that bankers should be careful not to focus on a singular viewpoint that emphasizes rising rate risk mitigation (and especially economic value exposures). Margins/earnings based models reveal that current or falling rate scenarios (i.e., ongoing flattening of the yield curve) are still plausible and may present even greater challenges. Despite the near term exposures, higher market rate conditions actually present the *best long-term scenario* for margin performance at many small to mid-sized community banking institutions.

For several reasons, we have also been critical of the use of the EVE method in gauging interest rate risk, specifically when used to project financial performance. To help understand why, it might be worthwhile to travel back in time.

Remember Gap Analysis? The origins of interest rate risk modeling began with gap analysis, which attempted to capture the timing of cash flows and repricing activity on both sides of the balance sheet.

A balance sheet is defined as having a *positive gap* when asset cash flows and repricing (rate-sensitive assets, or RSA) exceed liability maturities and repricing (rate-sensitive liabilities, or RSL).

This would indicate that assets on the current balance sheet turn over more quickly than funding sources when rates rise and fall and implies a direct correlation between margin/earning performance and market rates.