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Swaps and Bank Exposure

The market for swaps has been one of the most rapidly growing financial markets in recent years. New swap activity currently is running at about \$450 billion annually. The fifty largest U.S. banks are parties to about \$675 billion of outstanding swaps.

The swap has become an important instrument for hedging long term currency fluctuations as well as many same-currency interest rate risks. The rapid growth of the market has generated concerns among regulators and others about the off balance sheet exposures of banks and other institutions. Currently, capital requirements relate only to on balance sheet exposures, although changes are being considered. One such proposed change would relate a bank's capital to its swap exposure. This *Letter* will examine swap growth and some of the risks involved in light of the current debate regarding capital regulation of swaps.

What is a swap?

Although there are a number of different kinds of swaps, they are all based on the same idea. A swap involves two parties who generally first borrow funds under separate loan contracts with different terms and then agree to pay off each other's obligation. In some cases, a swap party assumes his counterparty's obligation without first taking out an explicit loan. In essence, the swap is a financial arrangement in which two parties agree to exchange streams of payments over time. Banks are often one of the parties to a swap, but in some cases act as swap brokers or arrangers.

The two main types of swaps are *currency swaps* and *interest rate swaps*. A currency swap is a transaction in which two parties exchange specific amounts of fixed-interest rate debt obligations in two *different* currencies and then repay over time the interest payments on each other's loan. At maturity, the principal amounts are then exchanged. For example, a German exporter who receives dollars for his shipments might pay his swap partner's dollar denominated obligation and receive from that partner a stream of Deutschemark denominated payments.

In an interest rate swap, coupon payments from two loans in the *same* currency are exchanged. The swap partners exchange only interest payments according to predetermined rules and based on a mutually agreed underlying notional principal amount.

The three main types of interest rate swaps are: *coupon swaps*, *basis swaps*, and *cross-currency interest rate swaps*. In a coupon swap, one party pays a stream of fixed-interest rate payments and receives a stream of floating-interest rate payments (both denominated in the same currency). The counterparty receives fixed and pays floating-interest rate payments. No principal is exchanged. For example, one party may agree to pay a fixed rate of 10 percent on a swap amount of \$10 million for five years. In exchange, this party receives payments tied to the six-month London Interbank Offer Rate (LIBOR), and based on the same notional amount. In a basis swap, the parties exchange interest payments tied to two different floating rates such as the prime rate and LIBOR. A cross-currency rate swap involves the exchange of payments denominated in different currencies and tied to different interest rate bases, one fixed and one floating. This swap could be considered a combination of a currency swap and a coupon swap.

The swell of the swap market

The swap market sprang from the introduction of the "plain vanilla" swap in the early 1980s. This was a five- to seven-year swap of fixed rate payments for floating rate payments tied to six-month LIBOR (both denominated in U.S. dollars). Typically, U.S. companies rated BAA or better borrowed funds in the U.S. at a fixed rate and then swapped their fixed rate obligations for floating rate ones. Their counterparties in these transactions, frequently highly rated European banks, did the opposite: they exchanged their floating rate obligations for fixed rate ones. As a result of this type of transaction, U.S. companies often were able to borrow floating rate funds in the euromarket at a rate below LIBOR, even after taking into account the swap arranger's usual fee of 50-75 basis points.

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Although this plain vanilla swap still is common, by 1983 the swap market had evolved from international transactions involving U.S. and European counterparties to domestic transactions involving only U.S. counterparties.

Regional banks and insurance companies in the U.S. appeared on both sides of the market. The minimum size of transactions fell and Treasury bills became a common index on the floating rate side.

Swap activity accelerated sharply between 1984 and 1987. Large U.S. and U.K. commercial and investment banks developed the capacity to "make markets," or act as dealers in swaps. Real estate companies and high-grade U.S. corporations increasingly entered the market to exchange fixed rate payments for floating rate payments. U.S. thrift institutions, on the other hand, exchanged floating rate obligations for fixed rate ones. Swap deals were broken into units as small as \$one million, and shorter maturities became more common. Heavy competition among intermediaries reduced fees for arranging swaps to the 13-25 basis point range. Coupon swaps began to be transacted in non-dollar currencies as well.

Recent developments

With the introduction of standardized contracts by leading market makers in 1985, a secondary market in swaps has developed, encompassing reverse swaps (where a new swap is made to offset an existing swap), swap sales, and voluntary terminations (where a swap partner has an "option" to terminate the agreement before maturity). Several new floating rate indices also have become common, including U.S. certificates of deposit, U.S. commercial paper, bankers' acceptances, prime, and federal funds. The market for swaps of coupons based on different indices among this group has grown rapidly. Other innovations include swaps with capped or collared floating rates, swaps with escape clauses, and "swaptions," or swaps that include option-like components.

There are now two broad classes of participants in the swap market: end-users and intermediaries. Initially, intermediaries brought the two end-users together and arranged the swaps. They also provided letters of credit or other forms of credit enhancement for weaker credits.

As the variety of end-users on both sides of the market increased, potential counterparties became more reluctant to accept the credit risks involved in a purely brokered swap. This created an opportunity for large commercial and investment banks to earn fees from underwriting this credit risk. Today large intermediaries act as counterparties to both sides of a transaction because such intermediaries frequently are more acceptable credit risks to the end-user.

The largest intermediaries in the swap market are major U.S. money center banks, major U.S. and U.K. investment and merchant banks, and major Japanese securities companies. Commercial banks in Canada, France, Japan, Sweden, Switzerland, and the United Kingdom are also active. These institutions deal in swaps in order to earn fee income and to profit from trading opportunities. For both commercial and investment banks, swaps are a growing source of off balance sheet earnings.

Why swap?

Why does such a seemingly convoluted form of borrowing take place? After all, if I want to borrow in U.K. sterling, why not just do so directly rather than borrowing dollars first and then swapping them for sterling? In some cases, the reason may be that a borrower is prohibited by regulation or some other institutional constraint, such as tax or accounting considerations, from borrowing directly in the desired currency or loan form.

In other cases, the reason is less clear. Some have argued that there may be informational asymmetries related to different lenders having access to different sets of information about borrowers. For example, if firm A is well known in New York but not in London, and the opposite is true for firm B, A can borrow dollars for B in New York and B can borrow sterling for A in London through a currency swap. Both would benefit because each partner could obtain superior loan terms due to connections and reputation in his respective home market.

However, such informational asymmetries cannot explain all the swaps that occur. They cannot, for example, explain most same-currency swaps. In these swaps, the borrower frequently is well known to all the lenders and could have obtained the desired loan form and terms without having to use a swap. Similarly, it would be difficult to explain the use of swaps for hedging by multinational and internationally renowned large corporate borrowers on the basis of informational asymmetries.

Even when asymmetry appears to exist, the informational problems could be solved through the use of rating services, making swaps unnecessary in this respect. Thus, the source of the swap's comparative advantage as a financial instrument remains an open question.

Swap risks and bank exposure

The swap has become a major concern of financial regulators in the United States and the U.K. Proposed changes in capital regulation give special emphasis to the swap market. Apparently, there are fears that the rapid growth of the swap market and the expanding role of banks in that market may lead to excessive risk exposure for banks.

What exactly are the risks? The main risks seem to arise in instances when a bank's swap counterparty defaults at the same time that exchange rates or interest rates move against the bank. As long as a bank's swap counterparty does not default, there is little difference in the risk to the bank between taking on a swap obligation and simply issuing a liability with the same risk characteristics. In either case, banks can hedge these interest risks and exchange risks.

If the bank's counterparty were to default on the swap agreement, the bank would be legally obligated to repay all remaining coupons on *its own original obligation*, and not the partner's obligation. This is an important point. Although swap contracts have not been tested yet in the courts, legal scholars argue that swaps are governed by contract law: default by either swap party automatically also relieves the other party of its obligation. Thus, in the case of default, the original obligation ultimately remains the responsibility of the original borrower or issuer.

Thus, a U.S. bank that had borrowed dollars and swapped them for sterling would simply resume payments on its original dollar loan in the event of a breach of the swap contract by its partner.

Note that this inflicts a loss on the bank *only* if the pound sterling has depreciated relative to the dollar in the interim. If, on the other hand, the pound has appreciated, the bank actually would be better off paying back dollars than paying back (more expensive) sterling. Moreover, since the terms of the swap agreement likely would have reflected any *anticipated* depreciation of the pound, a breach would inflict losses on the bank only if the *actual* depreciation exceeded expectations.

A concern, then, is whether such breaches are more likely to occur when the terms are unfavorable to the bank. In many swap transactions the odds may be at least even that breach actually would benefit the bank. For example, suppose the U.S. bank has swapped sterling with a British exporter. The exporter is more likely to go bankrupt when sterling *appreciates* than when it depreciates. But when sterling appreciates, default benefits the U.S. bank. Similarly, breaches of some interest-rate swaps could actually benefit a bank.

Unlike an unsecured commercial loan, there is no chance that all or most of the bank's capital invested in a swap contract could vanish in the event of default by the bank's customer. Another way of saying this is to note that swaps are in some ways like secured loans where the "collateral" is the principal and set of loan coupons exchanged with the partner. If the counterparty fails to repay the bank's loan, the bank may cease repaying the counterparty's obligation. The swap is risky only to the extent that the value of this "collateral" falls below the value of the bank's own position in the swap, and even then, bank exposure is only the difference in values. To date, breach of swap agreements has been rare and bank losses associated with such breaches small. Excessive regulation of bank swap activity could stymie the further development of this dynamic market.

Steven E. Plaut

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NOTE

The table entitled, "Selected Assets and Liabilities of Large Commercial Banks in the Twelfth Federal Reserve District," will no longer be published in conjunction with the *Weekly Letter*. For those in need of these data, a more timely publication entitled, "Weekly Consolidated Condition Report of Large Commercial Banks and Domestic Subsidiaries" (F.R. 2416x), is available from the Statistical and Data Services Department of this Bank.