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Interest Rate Swaps and Yield Curve Notes: Innovative Techniques in International Finance

ABSTRACT

This paper describes two recent financial innovations, interest rate swaps and yeild curve notes, and explains how and why they would be used by firms facing exchange rate risk, interest rate risk, or yield curve risk. These techniques can assist financial managers in balancing the enterprise's cashflows and in setting up temporary effective risk reduction arrangements.

INTRODUCTION

Multinational firms are continually at the mercy of currency and interest rate fluctuations. Not only do these rate changes affect the cash flow of multinational firms, but they also increase financing costs. The help control these costs, firms can participate in different forms of interest rate swaps or issue yeild curve notes.

Basically, swaps convert floating rate debt to fixed rate debt, or vice versa, without disturbing the underlying borrowing arrangement undertaken by a company. Two independent borrowers agree to exchange their interest payment obligations but retain the legal obligation of repaying the principal. Yield curve notes is a technique which may aid multinational corporations create debt portfolios with stable yields. Both techniques are discussed in greater depth in the ensuing sections.

THE SWAP MARKET

Interest rate swaps are one of the fastest growing areas in finance. Five years ago they hardly existed, and now they are running at a pace greater than $300 billion annually.[1] One reason for this rapid growth is that almost any company which owes money can take advantage of them. Swaps are not just for big companies or for multinationals. They are for any firm which has interest payment obligations that are not well matched to its expected cashflows.

A report from the International Swap Dealers Association (ISDA) states that about 50 percent of swap users are non-US institutions with financial institutions accounting for 60 percent of the overall volume, corporations 29 percent, and governments and international agencies 11 percent.[2] Interest rate swaps are used primarily to help firms hedge interest rate risk and as a way of obtaining cheaper financing. Banks, however, also earn fee income from acting as intermediaries on swap deals. For corporations, swaps offer an opportunity to gain access to debt markets that may otherwise be closed to them. Also, using interest rate swaps to structure debt portfolios is cheaper for many firms than

the refinancing of an old debt since there are no legal fees and there is no risk of having to refinance at a higher rate in the future.[3]

An example of how swaps have helped an entire industry reduce its interest rate risk is found in the thrift companies. In the 1970's thrifts did not forecast the increase in interest rates and ended up providing customers with mortgages at 9 percent while having to borrow funds at 14 percent. With the availability of swaps from large money center banks, thrifts have been able to borrow funds at a fixed rate of 11 percent instead of facing a variable borrowing rate and then have lent the money at mortgage rates fixed at 13 percent resulting in a two percent profit margin.[4]

Another feature of a swap is that it is not in standard contract form. Extending over a period of many years, the maturity of a swap contract is usually far greater than the maturity of traded options and futures. This is important because it allows a borrower to obtain funds with a particular maturity on terms that are better relative to a benchmark in one market than in another. In contrast, if a firm used a financial future to hedge its interest rate risk, the maximum maturity is only two and a half years; swap deals often have a maturity of three to ten years.

Some firms activately manage their swap portfolios as they would any other investment. They manage their portfolios by unwinding swaps when the economics of a swap contract move against them. A swap is a contract whose value depends on how interest rates and currencies move while the swap is in force. Before a contract matures, one or the other counterparty can unwind it, for profit or loss. Two methods used to unwind swaps are to either tear up the initial engagement with a cash transfer reflecting the value of the contract, or make a supplementary engagement, called a mirror contract, on top of the initial contract. The effect is to cancel the first contract but not legally invalidate it.

Risks In Swap Agreements

Swap agreements are not without risk. For example, suppose a company issued a 12% Eurobond and swapped interest payments with another company that borrowed at the London Interbank Offer Rate (LIBOR). The swap replaces fixed rate with floating rate debt. If two years later LIBOR is 8%, the company has a profitable swap. If the swap partner had disappeared then the company must resume the 12% interest payments when LIBOR is only 8%. Holding a swap in default is safer, however, than holding a loan in default. If a counterparty cannot make interest payments then the other party can just withhold the interest payments that he owes on behalf of the defaulting party. Only the interest payment is at risk with a swap, not the principal.

Some banks, such as First Boston, have attempted to reduce the credit risk of swaps. A clause is written into swap contracts which allows either side to call for collateral equivalent to about 10 to 15 percent the market value of the swap at any time during the life of the swap.

Also, fears that imprudent behavior on the part of swap participants could damage the market have resulted in an attempt by swap partners to organize the market. In 1985, the International Swap Dealers Association (ISDA) was formed in an effort to impose some structure on an otherwise unregulated market. The ISDA has aleady produced a reference book containing standard definitions for different contracts and a standardized contract agreement.

No defaults have occurred thus far, or if so, none have been reported. Counterparties may have defaulted, but since at least one bank guarantee is always interposed, from the point of view of a receipient of payments, no default has occurred.

Why The Swap Market Has Grown

The main reason the market for swaps has grown so large so rapidly is that both sides to the agreement receive an economic benefit. Bicksler and Chen [1986] claim that swaps exist because of capital market imperfections and comparative advantage among different companies in this market.

Imperfections in the market are the result of:

1. Institutional differences between European and U.S. markets. In Europe, no registration or disclosure requirement exists for the bond market but the underwriting costs and credit premiums are higher than in the U.S.
2. Differences in spread between fixed and floating rate debt due to firms having different credit risks. In the U.S., short-term floating rates are lower than those in European markets due to U.S. government insurance on deposits. This difference represents a market arbitrage opportunity.

Smith, et al [1986] identify better exposure management compared with traded securities or forward contracts as a reason for the existance of swaps. Many swaps extend over a three to five year period whereas other hedging instruments extend only over a few months.

It should be pointed out that there are institutional barriers which may contribute to an imperferct swap market. These are as follows:

1. There is no standard contract and no standard set of procedures for establishing legal jurisdiction. Since no disputes have reached the courts, there is no judicial precedent for lawyers to rely on in giving opinions. Trades can only involve convertibile currencies.
2. A second barrier is that there exist no automated way of matching orders. This means that some companies have had to make as many as eight to ten swaps to get the interest payments they really want. This has also led to inefficiencies, i.e. some borrowers have ended up

with lower financing costs than that of the U.S. Treasury. Obviously, both parties to a swap must think they have improved their positions, or they would decline the agreement. But viewing the final terms that many companies have achieved, it appears that some parties have benefitted more than others.

Interest rate swaps do, nevertheless, provide the same economic benefits to concerned parties. They help match cashflows to debt service obligations. In that fashion they lower the risk of default. It follows that they also raise the amount of debt that an entity can safely borrow.

Illustration Of Interest Rate Swaps

A successful swap occurs when the parties to a swap have expected cashflows in one currecny and are obliged to make interest payments in another currency. These interest payments may be at fixed or variable rates of interest. The key factor that makes swaps attractive is that each party may be in a better position to make the other's interest payments.

For example, suppose that an American company wants to expand into Italy, finds a suitable acquisition, and borrows dollars at a variable interest rate to finance the purchase. At the same time, an Italian company wants to expand into the U.S., finds a suitable acquisition, and borrows lire at a fixed interest rate to finance the purchase.

Five years earlier, each company would have proceeded to refinance these acquisitions so as to match the cashflows from the acquired properties to the interest obligations incurred with its financing source. The U.S. company might have borrowed lire at a fixed interest rate, converted the lire to dollars, and repaid the dollar loan. The Italian company would have replaced the lire financing with dollar financing. In that way each company would owe the currency that the newly-acquired subsidiary earns.

But what if, instead of refinancing the loans, the two companies simply agreed to make each other's interest payments? That is, the U.S. company would make the Italian company's interest payments using the lire that its new subsidiary earns and the Italian company would make the U.S. comapny's interest payments using the dollars that its new subsidiary brings in. This swap would take care of the exchange risk associated with the interest payments, and the paperwork would probably be simpler than full-scale refinancing of both loans.

This interest rate swap would be arranged by a financial intermediary, and would be formalized by a contract between the two companies. There would remain the practical matter of credit quality or default risk, so swaps are easiest to arrange between companies of equal credit standing. Also, a swap does not provide a control for the exchange rate risk associated with the principal of the two loans. The U.S. company would in the end still be committed to repay dollars. If the lire had fallen during the life of the loan, the value of the subsidiary might no longer be sufficient to cash out the loan. The Italian company would face the same risk. This exposure can, however, be hedged by using conventional techniques.

YIELD CURVE NOTES

Another financial innovation which recently has further broadened the range of possible swaps for multinational firms is yield curve notes. The interest rate on these notes fluctuates inversely with the level of some key interest rate, such as the London Interbank Offer Rate. (LIBOR).

To illustrate, suppose that there was a recent issue of yield curve notes which pay 15.1 percent minus LIBOR. This means that if the LIBOR rises to 12 percent, the interest rate on the notes will fall to 3.1 percent; and if the LIBOR falls to 4 percent, the interest rate on the notes will rise to 11.1 percent.

Of what use are these yield curve notes for the multinational company? They will be useful for creating debt portfolios with stable yields. If an investor has an aggregate of variable rate notes, and fears that interest rates will decline, these notes can act as an offset if they are added to the protfolio. In the extreme, the investor can lock in a given return using yield curve notes.

To see how this is done, suppose that an investor has $2 million in a Euro CD paying LIBOR. The investor could use $1 milion of the money to buy yield curve notes paying 15.1 percent minus LIBOR and could leave the remaining $1 million invested at LIBOR. The portfolio yield would they be

$$.5(15.1\% - \text{LIBOR}) + .5(\text{LIBOR}) = 7.55\% \text{ fixed.}$$

One could use these yield curve notes to synthetically transform variable rate portfolios into fixed rate portfolios.

A more sophisticated use of yield curve notes, however, accounts for their popularity. To see what all the excitement is about, consider two points. First, yield curve notes shift risk and reward. Many companies experience reduced profits when interest rates rise, and high profits when rates fall. These companies can issue yield curve notes when they might be unwilling or unable to issue conventional floating rate notes. Their ability to pay would be higher.

Second, short term interest rates are the major determinant of forward premiums and discounts in the foreign exchange market. For example, if short term interest rates in dollars and Deustchemarks are 7 percent and 4 percent respectively, the annualized forward premium of the Deutschemark versus the dollar will be approximately 3 percent (7% - 4% = 3%). If the short term interest rate for the dollar rises to 9% and the short term interest rate for Deutschemarks stays the same, the annualized forward premium on the Deutschemark will widen to 5 percent (9% - 4% = 5%). This fact makes it possible for a firm to create a hedged position by issuing yeild curve notes, and by using

forward exchange and interest rate swaps. Moreover, the hedged position can be set up to last longer than one year, which is the practical limit for conventional foreign exchange hedging.

To see how this can be done, suppose that a U.S. company buys a hotel in West Germany. The hotel will give a predictable cashflow in Deutschemarks. Now the problem is to arrange the financing so that the U.S. company can convert this cashflow into dollars at a stable exchange rate for a period of ten years.

To begin with, U.S. company issues ten- year dollar-denominated yield curve notes. If U.S. interest rates rise, the interest cost of these notes will fall. If West German interest rates stay the same or rise more slowly than U.S. rates, the forward premium on the Deutschemark will rise. The proceeds of the note sale are converted into Deutschhemarks to pay for the hotel. Then the U.S. company enters into a series of forward exchange contracts to convert Deutschemarks to dollars at predetermined exchange rates. This hedges the conversion of the purchase price and the first year's Deutschemarks cashflows.

Then, as each forward contract expires, the U.S. firm enters into another, rolling forward the hedge. If the Deutschemark forward premium rises, each new contract will cost more than the one that just expired. The U.S. firm will not suffer, because its dollar interest costs will probably have decreased by enough to offset the higher cost of the forward contracts.

This hedge is not perfect, but consider the following:

1) If dollar interest rates rise, the dollar/ Deutschemark exchange rate will probably move unfavorably, but the interest rate on the yield curve bonds will be low, so the two effects will tend to cancel one another.

2) If the dollar interest rates fall, the interest rate on the yield curve bonds will be high, but the dollar will probably decline versus the Deutschmark; in which case the Deutschemark cashflows would probably be more than adequate to cover the increase in interest expense.

In summary, these examples illustrate one possible use of yield curve notes in conjunction with conventional forward exchange contracts. In this simple manner, the protection against exchange risk is not complete, and additional maneuvers will give further protection against adverse fluctuations. The point is that longer term forward cover can now be created synthetically, thanks to recent innovations in financial instruments.

CONCLUSION

Interest rate swaps are a new and versatile tool, whether they are used alone or in tandem with yield curve notes. Financial managers can put them to work to balance cashflows and to set up temporary but effective risk reduction arrangements.

To expand the market, a standardized contract could be imposed. It would also help if there were a more automated and lower-cost way for interested parties to find each other.

There is another set of policy issues involving the banks that interpose their guarantees. These guarantees are contingent liabilities and generate fee income without putting a strain on the bank's capital position, at least according to the way capital adequacy is currently calculated. But if contingent liabilities were taken into account in calculating bank capital adequacy, the possibility of widespead default stemming from contingent liabilities would be properly handled. Because there have been no defaults, guaranteeing interest swaps looks like an easy way to make money. This had led to unrealistically low guarantee fees. Since these are essentially insurance policies, they could be handled as such for regulatory purposes. Bank regulators could set a limit on the face amount of guarantees that a bank could make, depending on its capital and liquidity, or on other measures of its solvency. Guarantees beyond that limit would have to be "farmed out" to other financial institutions, e.g., insurance companies. This is like reinsurance, and is an established practice in the insurance business.

ENDNOTES

[1]This information obtained from an article entitled "Banks Begin Offering Oil-Price Swaps to Help Hedge Commodity-Market Risks" from the *Wall Street Journal* on April 9, 1987, p. 47.

[2]This information was obtained from an article entitled "Interest-Rate Swap Market Rose to $313 Billion in '86," from The *Wall Street Journal,* May 5, 1987, p. 27.

[3]See "The Growth of Interest Rate Swaps" by David Lereah in *Bankers Magazine,* May-June 1986, p. 36-41.

[4]See "They Swapped and They're Sorry" in *Business Week,* May 26, 1986, p. 111.

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