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Fear and Loathing in Swaps

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Swap meet? I almost went to one, but the vision of a tie-dyed fifty-something trying to convince me that his Popsicle-stick scale model of Jerry Garcia's Haight-Ashbury flat was worth at least two of my vintage Honus Wagner baseball cards dissuaded me.

Swap spreads? I hadn't heard of them until I made a questionable vocational choice and opted for fixed income over dentistry. Swaps sound like a Wall Street creation designed to amaze and confuse, which indeed they do. But the interest rate swap market is currently the technical driving force that determines how much corporations pay to borrow, what you must pay for a mortgage, and how I spend my non-dental professional life. What is most topical is that the current state of the swap market seems to represent a disconnect with reality, or more accurately, with investment reality.

The swaps idea started innocently enough, back in the late 1970s, when gaps in the US capital markets presented a gaping opportunity to bankers to make a buck. In those bygone days, corporations needing money had two options: its bank or the public debt market. There were two options for paying interest: fixed rate or floating. Since all corporations are not created equal, the rates they had to pay reflected two basic variables: the chance that they would repay at all (its credit rating) and how long they wanted the money. On the street, those variables determine the "vig," but in a suit and tie, it is called the "credit

premium" or "spread." If an U.S. steel company wanted to fund a new smelter, no one wanted to provide the money, and if they did, they wanted it back in a week. If you were, say, Coca Cola, bankers got in line to give you 30-year money you didn't even need, just to tell their friends.

Into this breach stepped the United States capital markets to make both sorts of parties happy — for the appropriate fee.

Let's say that in those days the U.S. Treasury could borrow for 90 days at 8% and for 30 years at 10%. Our poor steel maker would be offered 90 days at 10%, but 30-year money would demand an extraordinary 18%, while happy Coke would be close to the Treasury curve at 9% short and 12% long. You see the profit opportunity? Our beleaguered steel company needs the money for 30 years since smelters aren't investments that pay off quickly. Coke, on the other hand, may from time to time need short-term loans to pay for sugar until they sell a case of soda.

See it now? A bank or other intermediary convinces the steel company to issue short term paper at 10% and gets Coke to issue 30-year debt at 12%. The bank, as intermediary, then arranges for the parties to "swap" their interest payments in the following manner: the bank pays Coke the 12% it owes and asks Coke to pay it 8%. Coke thereby swaps its fixed rate payment into a floating rate below where it could borrow in the public market. Our steel company agrees to pay the bank a fixed rate of 15% for 30 years in return for receiving a floating rate at 8%. Steel is therefore in the hole for 2% against the 10% short-term market rate it could get,



but it saves 3% for thirty years against what the market would charge. Both parties end up saving money — net, of course, of the bank's fees.

As is the case in any profitable undertaking, the swap market exploded both in size and in complexity. You name it, someone is willing to swap it. Currencies? No problem. Libor vs. Fed funds? In my sleep. The classic fixed vs. floating rate swap market has matured into one of the world's deepest markets and now represents a new alternative for that classic corporate financing problem: hedging. Which brings us to our current tale.

Everybody on the planet is issuing debt. Corporate bond issuance in the past three months has been in excess of \$300 billion, with more in the pipeline. Why the rush? The Fed hasn't helped. Fears of rate increases have scared issuers into thinking rates are headed higher. Y2K hasn't convinced issuers that rates are going higher, but it has served to rush issuance to avoid the uncertainty of year-end. Herein lies the problem, or opportunity, depending on your market outlook. The spread over Treasuries that companies pay to enter into a swap is a function of two variable. First, since you're entering into a contract with a financial institution, you are wise to

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consider whether or not that entity will be around to meet its obligation. That's the credit spread. Last fall, when Russia was defaulting, the President was on the ropes, and Seinfeld was going off the air, the spreads that companies were demanding vs. Treasuries doubled from about 50 basis points to almost 1%. When the Fed breathed life into stock market bulls with three quick rate reductions, the gloom lifted; credit risk subsided; and interest rate swap spreads fell back into the mid-60 basis point range.

Disaster was avoided. We welcomed back the "new paradigm," stock prices raced ahead and all was right with the world. Except in the world of swaps. Since early July the spread over Treasuries on swaps has widened to 1.10%, or worse than last fall. Huh? Things sure feel a lot better than they did back then, so what's the deal? Here comes the payoff from my years of economic training: supply and demand.

Remember that everybody in the world is issuing debt, and they're doing it as quickly as they can. If you're concerned that rates are going up, and you want to lock in your cost of borrowing until your bonds are actually issued, you can pay a fixed rate of interest on an interest rate swap and sleep better.

If you enter into a swap to pay 7% fixed for ten years, and rates rise to 8% by the time you issue, you have made a profit on your swap that offsets the higher rate you pay on your debt. Since every one is 100% convinced that rates are going up, and they're all trying to fit through the issuance door prior to year-end, everybody wants to enter into a swap to pay a fixed rate of interest. If everybody wants to pay a fixed rate of interest right now, then you're gonna have to make it worth my while. You want to pay me 7%? You, in the back of the room, you want to pay me 7.1%? And so it goes. As eager issuers, trying to

hedge their exposure to prospective changes in market rates, boost the rates they are willing to pay, the spread versus U.S. Treasuries goes up, and we get our current disconnect.

If the world is indeed a safer place than it was last fall, yet interest rate swap spreads are wider, something has to give. Either the world isn't so safe and these spreads represent an increased credit risk, or the technical supply/demand imbalance will abate and swap spreads will decline. Though you can never be sure how these things will play out, you can take some comfort in the fact that if everybody is on the same side of a trade, it may be time to go the other way.

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1996-97 Redington Prize Awarded

To promote investment research, the Investment Section sponsors a biennial prize of \$1000. The prize is named after F. M. Redington, the eminent British actuary who coined the term "immunization" in a 1952 paper in the *Journal of the Institute of Actuaries*. This is the fourth award since the prize was first established.

The Council would like to thank all those who took the time to send in nominations. The Prize Committee received a total of 23 nominations for 1996-97 papers, which are a great deal more than was received for any previous award. Many worthy papers were submitted, and therefore, the Committee's decision was not an easy one. For this period, the Section Council decided to award two prizes to two equally deserving papers.

"Interest Rate Risk Management: Developments in Interest Rate Term Structure Modeling" by Andrew Ang and Michael Sherris, published in *SOA's North American Actuarial Journal*, Vol. 1 No. 2 (April 1997).

"Quasi-Monte Carlo Methods in Numerical Finance" by Corwin Joy, Phelim Boyle, and Ken Seng Tan, published in *Management Science* (1996) and reprinted in Chapter 24 of *Monte Carlo: Methodologies and Applications for Pricing and Risk Management* (1998).

The first paper surveys the main concepts of recent developments, in term structure modeling. These concepts are used in the valuation of interest rate sensitive cash flows as well as risk management. The authors bring together, in one place, recent developments and they provide concise and clear explanations of the concepts that are involved. Actuaries who need to construct term structure of interest rate models and value interest rate sensitive contingent claims should find this paper highly educational.

The second paper introduces a new and much more powerful version of the Monte Carlo method that is often used for valuation and risk management. The Quasi-Monte Carlo method is based on deterministic sequences rather than pseudo-random

sequences. Such deterministic sequences have the property that the points are well distributed throughout the region of interest. Asymptotically, the Quasi-Monte Carlo method achieves a better convergence rate than the Monte Carlo method, even in very high dimensions. The paper is well-written in a style that can be easily understood, and therefore actuaries will also find this paper enlightening.

On behalf of the Investment Section, the Council would like to congratulate all the authors for the exceptional work they have accomplished. The Council also expresses its gratitude to the members of the Prize Committee: Nino Boezio, Steven Craighead, Luke Girard, John Manistre, Robert Reitano, Elias Shiu, Irwin Vanderhoof and Richard Wendt.

The next Redington Prize will be awarded in 2001 for papers published in 1998-99.