

THE MOTHER OF ALL HEDGE FUNDS & THE EFFICIENT MARKET HYPOTHESIS

On Friday, August 21, 1998, the world's most prestigious hedge fund, Long-Term Capital Management (LTCM), virtually collapsed, ultimately resulting in its investors' losing over 90% of the capital they had put into it.¹

Though accepted as established fact by many, for investors needing further evidence of the validity of the "efficient market hypotheses" (EMH), the saga of LTCM provides an excellent example.

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THE EFFICIENT MARKET HYPOTHESIS

The efficient market hypothesis is a theory, based upon countless scientific studies, of how the securities markets work. It states that, because information relating to factors affecting security prices and markets is transmitted to, and assimilated by, investors and potential investors so rapidly, the price of any security or level of any market, at any time, almost instantly reflects any and all publicly available information about that security or market.²

¹ Most of the information herein on LTCM is taken from the lead story in the *Wall Street Journal* of November 16, 1998.

² If the information is not yet in the public domain, and so not yet incorporated into the price of a security, it is "insider" information and so illegal to act upon. Given the enormous scale upon which hedge funds operate, and the severity of the consequences of being caught, it is inconceivable that any such professionally managed fund as LTCM would ever so much as contemplate trading on inside information.

Corollaries of the efficient market hypothesis include the following:

1. Nobody, with a consistency greater than that of random chance, can successfully time short-term price moves in either securities markets or individual securities.
2. A strategy of trying to exploit mispricings in securities (buying issues that appear to be undervalued and selling issues that appear to be overvalued) is futile.
3. Anomalies or "free lunches" in the securities markets do not exist.
4. Nobody, over time, can outperform the market sector in which he invests³.
5. Aside from matters of efficiency,⁴ incremental return in investing is achieved by, and only by, taking on added uncertainty or sacrificing safety.
6. We prosper as investors by participating in markets, not by trying to outwit them.

WHAT IS A HEDGE FUND?

Let us suppose we have \$100,000 and we want to create our own hedge fund. It is not a difficult task.

First, we take \$50,000 and buy, or "go long," the common stocks of a number of companies that we think should do relatively well in the marketplace. Then, with our other \$50,000, we sell "short" a number of companies that we think will do relatively poorly in the marketplace.

(A "short" sale involves selling a security we do not own, borrowing the security from somebody else to deliver to the party to whom we sold it, and planning to repurchase the security to replace our borrowed security at a lower price at some time in the future. If we sell at \$50 per share, and repurchase later at \$40 per share to "cover" our short sale, we make \$10 per share on the pair of

³ It is also comforting to note that, if nobody, over time, can outperform the market in which he invests, neither can he underperform. By definition, the performance of a market is the average of all those who outperform and those who underperform. If there are no outperformers, then, mathematically, there can be no underperformers.

⁴ The efficiency of investing can be enhanced by not paying for services that add no value to the investment process - owning one's securities outright, rather than via the intermediary of a mutual fund or a variable deferred annuity, for example.

transactions. Brokerage firms readily accommodate short sellers by locating lenders of securities that need to be borrowed.)

As we can see, we are now "hedged" against moves in the market. We are "market neutral." If the market goes down, in theory, we gain on our short sales what we lose on our long positions; and, if the market goes up, we gain on our "longs" what we lose on our "shorts."

Though we may now be insulated from moves in the market, if we are to make any money, it must be by outperforming the market - by buying stocks that go up more than the market when the market goes up and/or go down less than the market when the market goes down, and by selling short stocks that go down more than the market when the market goes down and/or go up less than the market when the market goes up.

Though this is the basic theory of a hedge fund, money managers have found numerous other innovative ways to implement the theory. We can hedge with bonds, instead of with stocks. We can hedge with derivative securities. We might, for example, buy call options on a group of stocks we think should do better than the market, and buy put options on a group of stocks we think should do worse than the market.

Hedge funds also engage in arbitrage transactions. As an example, suppose that Company A is selling at \$30 per share and Company B is selling at \$50. Company B announces that it will make a tender offer for all of the shares of Company A and will give Company B shares in exchange for Company A shares on a one-for-one basis. Company A shares immediately jump in price to \$45 per share. The \$5 shortfall represents mostly the risk associated with the possibility that the merger will never materialize.

A hedge fund might seek to exploit this \$5 shortfall by buying the shares of Company A and selling short an equal number of the shares of Company B. If the deal goes through, the hedge fund makes the \$5 per share profit. If the deal falls through, and the price of Company A stock goes back to \$30, the hedge fund loses \$15 per share. If the odds of consummation of the merger are better than 3-to-1, the hedge is a good one.

Of great importance, too, hedge funds typically use borrowed money to leverage their bets.

LTCM'S CREDENTIALS

What makes the story of LTCM so instructive is that it probably represented the greatest congregation of human intelligence and financial expertise ever assembled for the purpose of outwitting the markets.

LTCM was the brainchild of John Meriwether who had made a name for himself trading bonds at Solomon Brothers. At Solomon, Meriwether had recruited a Harvard Business School professor, Eric Rosenfeld, who, in turn, had recruited a Harvard economics professor and a professor of finance at the University of California at Berkeley.

Meriwether next brought on board two Nobel Laureates. One was another Harvard Business School professor, Robert Merton, who was noted for his expertise in risk management. The other was Myron Scholes, who had been a professor at both the Massachusetts Institute of Technology and the Stanford Graduate School of Business. Scholes won his Nobel prize in economics in part based upon his model for the pricing of derivative securities.

It was these six former Solomon employees who started LTCM; and, as the fund was getting organized, it was joined by David Mullins, a former Harvard Business School professor, former assistant Treasury secretary for domestic finance, and then vice chairman of the Federal Reserve Board.⁵

LTCM was born in late 1993. It continued to attract financial and mathematical experts (often referred to as "rocket scientists") and, at one point, counted 25 Ph.D.s on its payroll.

LTCM'S CLIENTS

In addition to having a group of the world's most talented financiers to manage its assets, LTCM attracted a collection of extremely sophisticated investors who obviously had enormous faith in the capabilities of these managers. The founding principals themselves had put up a total of \$100 million and now a minimum investment of \$10 million was required of each new participant.

⁵ According to the WSJ, at a meeting to woo an investor, "Mr. Mullins explained that, because he once was the Fed's vice chairman, he was in the 'heads' of the Fed members and could 'figure out' what they would do."

Among LTCM's domestic clients were PaineWebber with \$100 million of its own capital committed, the CEO of PaineWebber with \$10 million, the CEO of Bear Stearns with \$13 million, Merrill Lynch with \$15 million of its own capital and \$1.5 billion which it raised from other investors.

Among LTCM's overseas clients were the Dresden Bank of Germany, the Bank of Italy (with a \$100 million investment), and several Swiss banks (one of which lost \$650 million).

THE KINDS OF BETS LTCM MADE

An example of one of LTCM's early successful trades was its purchase of \$2 billion 29 1/2-year U. S. Treasury bonds and the short sale of \$2 billion 30-year Treasury bonds to exploit what it concluded was an unwarranted spread between the prices of the two securities. LTCM did not care whether interest rates went up and forced all bond prices down or interest rates went down and forced all bond prices up. It was "market neutral" or "hedged" against such uniform price moves in the bond market. It sought merely to take advantage of the historically wide spread between the prices of the two securities. As these prices converged, and because LTCM borrowed so heavily to finance the transaction, the fund made a \$25 million profit, in a relatively short period of time, on an investment of only \$12 million of its own capital.

LTCM used takeover arbitrage, as explained above. It dealt in Danish mortgage bonds; it bought Norwegian currency, the krone, and sold the German mark short; it took positions in emerging markets and bond futures; and it made simple bets on the direction markets would move, including a bet that German interest rates would rise.

It was ultimately Russia's default on its debt and the collapse of the Russian ruble that was the undoing of LTCM. The fund had taken a large long position in Russian bonds and a large short position in U. S. Treasuries at a time when the yield spread between the two was historically very wide. It assumed that the spread could only narrow. It did not narrow. It widened still further in what is characterized as a global "flight to safety" or "flight to quality." This led to LTCM's massive losses on August 21, 1998 and fatal margin calls in the days immediately thereafter.

LTCM'S PERFORMANCE

LTCM formally began trading in February 1994 and, in that year, earned 19.9% for its investors, net of expenses. It earned 42.8% in 1995, 40.8% in 1996, and 17.1% in 1997. By late 1998, however, the original LTCM investors had lost over 90% of their capital.⁶

Ignoring the 1998 wipeout, let us put just LTCM's good years in tabular form and compare them with the returns on stocks over that period:

<u>YEAR</u>	<u>LTCM</u>	<u>STOCKS</u>
1997	17.1%	33.4%
1996	40.8%	23.1%
1995	42.8%	37.4%
1994	19.9%	1.3%
Average	30.2%	23.8%

Source: Ibbotson 1998 Yearbook: Stocks = S&P 500

To have outperformed stock investors during its first four years in existence surely led to celebration by LTCM managers and investors alike.

LTCM'S USE OF LEVERAGE

In addition to the unprecedented pool of talent that LTCM had to manage its portfolio, the fund had an even more powerful tool. It had the leverage of borrowed money. It borrowed enormous amounts of money from financial institutions all over the world. In fact, it borrowed so much money that it was able to leverage its bets by as much as 50-to-1. As reported in the *New York Times*:

Long-Term Capital Management used its \$2.2 billion in capital from investors as collateral to buy \$125 billion in securities, and then used those securities to enter into exotic financial transactions worth \$1.25 trillion.

⁶ Based upon the figures provided, and assuming that an investor reinvested his earnings each year, his net return over the life of the fund was -94.4%.

What might we have done with a little bit of leverage in the stock market during the heydays of LTCM? For every dollar we put up of our own, current Federal Reserve regulations permit us to borrow as much as another dollar to purchase stocks. This is called buying stocks on margin. By thus leveraging our bet 2-to-1, we could have earned nearly twice the rate indicated in the "Stocks" column of the previous table.⁷ Had we taken on the risk of leveraging our bet 50-to-1, our returns would have been nothing short of spectacular.

Allowing for interest paid on our debit balances at the rate of 10% per year, let us see what opportunities we missed under each of the scenarios:

	LTCM	STOCKS	STOCKS
	LEVERAGED	LEVERAGED	LEVERAGED
<u>YEAR</u>	<u>UP TO 50-TO-1</u>	<u>2-TO-1</u>	<u>50-TO-1</u>
1997	17.1%	56.8%	1,203.4%
1996	40.8%	36.2%	678.1%
1995	42.8%	64.8%	1,407.4%
1994	19.9%	-7.4%	-433.7%
Average	30.2%	37.6%	713.8%

As can be seen, while LTCM was averaging a return of 30.2% per year in its four good years with leverage that ranged up to 50-to-1, we could have averaged 37.6% per year, net of interest, in the stock market with leverage of just 2-to-1; and we could have averaged 713.8% per year, net of interest, if we had leveraged ourselves 50-to-1, as did LTCM.

As we have probably heard many times before, financial leverage is a two-edged sword. While it can work in our favor when all goes according to plan, it can be unmerciful, and financially fatal, when the world does not evolve as we predict. For LTCM, in 1998, the markets clearly did not behave as its mathematical models indicated they should.

⁷ An average investor, fully margined, should have netted twice the total return on the S&P 500, less the interest on the money borrowed.

REFLECTIONS OF ANOTHER NOBEL LAUREATE

The following is the final paragraph of the *Wall Street Journal* article drawn upon for most of the factual material on LTCM used herein:

Through it all, LTCM's rise and fall proved what some of those economics professors who stayed on campus had been saying all along: The market is brutally efficient. "Most of academic finance is teaching that you can't earn 40% a year without some risk of losing a lot of money," says Mr. Sharpe,⁸ the former Stanford colleague of Mr. Scholes. "In some sense, what happened is nicely consistent with what we teach."

CONCLUSION

Why have hedge funds been responsible for so much hype in recent years? Perhaps they have appealed to the elitism of the super-rich, and perhaps they have been the envy of the not-so-rich. In the last analysis, however, they are little more than Rube Goldberg vehicles for earning less-than-market rates of return and/or for getting clobbered in the securities markets.

LTCM should help teach us the following:

1. No investor should ever expect to outperform the market sector in which he invests; nor should he ever expect to be able to employ professionals who can do it for him, no matter how brainy those professionals may profess to be.
2. Strategies which, on their surface, appear to offer something for nothing invariably have, ticking within them, time bombs, of which even their practitioners may be unaware.

There is an old stock market adage that seems a propos in the case of LTCM:

The bulls make money and the bears make money but the pigs go broke.

Clifford G. Dow, Sr., CFA, CHFC, CFP®
Chief Investment Officer
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⁸ William F. Sharpe won the 1990 Nobel Prize in Economics for his work in the area of portfolio analysis and management.