Long Term Capital Management

In 1998, Long Term Capital Management was a hedge fund speculating in government bonds.

Although government bonds are seen as safe, a leveraged investment in government bonds can be risky. A derivative based on government bonds can fluctuate much in price.

Long Term Capital Management used leverage and derivatives to make complicated bets on changes in interest rates. Two economics Nobel-prize winners were part of the company.

Adoption of the Euro

In 1998, Long Term Capital Management made an interesting non-directional bet involving the Euro.

On January 1, 1999, the Euro would become the common currency in many countries. The participating countries were required to reduce the government budget deficit, to reduce the interest rate and inflation.

The Interest Rate

After the switch to the Euro, the interest rate would become the same in each country. However in 1998 some countries had much higher interest rates than others.

A Directional Bet

A directional bet would be a speculation making money if an interest rate moved in a particular direction. For example, if an interest rate were high and one expected a lower future interest rate, one could make a directional bet by buying the bond. If the interest rate indeed fell, the bond price would rise.

A Non-Directional Bet

Instead Long Term Capital Management made a non-directional bet, making money if the interest rates in two different countries would converge. Convergence is what matters, rather than the value of the interest rate.

The strategy was to buy the bond with the high interest rate and to sell the bond with the low interest rate. As long as the two interest rates converge, one makes money. For example, if the high interest rate falls to the low value, the value of the high interest rate bond goes up. Alternatively, if the low interest rate rises, one profits from the short sale.

Example

Consider a hypothetical example. An Italian bond has yield to maturity 10%, with duration 10 years. A German bond has yield to maturity 4%, with duration 5 years.

Strategy

Given an expectation that the interest rates converge, then the Italian bond is relatively underpriced and the German bond is relatively overpriced. One buys the Italian bond, and one sells the German bond short.

Since the Italian bond has twice the duration of the German bond, its price is twice as sensitive to the interest rate. Hence if one buys $1000 of the Italian bond, one must sell $2000 of the German bond.

Profit

One profits if the two interest rates converge to a common value, regardless of the value. Furthermore, the size of the profit is independent of the interest rate.

Suppose that both interest rates converge to 5%. The Italian bond rises in price by $10 \times 5\% = 50\%$, so the gain is $500. The German bond falls in price by $5 \times 1\% = 5\%$, so the gain from the short sale is $100. The total profit is $600.

Alternatively, suppose that both interest rates converge to 7%. The Italian bond rises in price by $10 \times 3\% = 30\%$, so the gain is $300. The German bond falls in price by $5 \times 3\% = 15\%$, so the gain from the short sale is $300. The total profit is again $600.

Failure

Despite its appeal, the strategy failed.

The 1997 Asian crisis disrupted the economy and the currency in many nations. In 1998 the crisis spread to Russia, and Russia defaulted on its debt.

The reaction in financial markets was to raise the bond price in countries with good credit and to push down the bond price in countries with bad credit. For the Long Term Capital Management bet, the interest rates did not converge but instead diverged. Long Term Capital Management lost billions.

Bailout

Using derivatives and leverage, Long Term Capital Management had an asset position equivalent to gigantic bond holdings, in the sense that a small change in interest rates would cause a gigantic gain or loss.

The Federal Reserve sees the stability of the government bond market as a key policy objective. It feared that bankruptcy by Long Term Capital Management would force quick liquidation of its asset position and would disrupt the government bond market. Bond markets were already skittish after the Russian bond default.

Adverse Selection

Long Term Capital Management had borrowed large sums from a number of large banks and brokerage firms and had kept secret from each lender that it was borrowing simultaneously from the others. The lenders would not have loaned so much if they had known the size of the total borrowing.

This behavior exemplifies *adverse selection*. Long Term Capital Management was risky and perhaps would not be able to repay its borrowing, so it was eager to borrow a great sum.

Crisis Averted

To protect the bond market, the Federal Reserve arranged for these lenders to make further loans to Long Term Capital Management, with the motive of rescuing themselves from default. A crisis was averted.