SPECULATION AND CRISES

Speculation Speculation entails running the risk of a loss in the expectation of a high reward. Financial speculation involves the buying, holding, selling, and short-selling of stocks, bonds, commodities, currencies, real estate, derivatives, or of any other financial instrument, in order to profit from fluctuations in its price.

Leverage Financial leverage (or gearing) entails borrowing money to supplement existing funds for investment in such a way that the potential positive or negative outcome is magnified. The degree of leverage is measured by the *debt-to-equity ratio.*

Equity capital Equity capital is capital raised from the owners of a company. It differs from debt capital, which is money raised through the issuance of debentures and bonds etc. Ownership equity is the remaining interest in assets after all liabilities are paid. If valuations placed on assets do not exceed liabilities, then there is negative equity.

The Leverage of the Banking System. The entire banking system is based on leverage. Commercial banks accept short-term deposits, on which they pay a modicum of interest, and they make long-term loans at higher rates of interest, thus deriving a profit.

The money loaned by banks finds its way back to the banks as fresh deposits. The indefinite process of receiving desposits and of making loans results in the expansion of the money supply.

Banks are highly leveraged, since their equity capital is a very small proportion on their total assets.

Reserve Requirements The expansion of the money supply is limited only by the requirement for reserves of liquid assets, which is often a legal requirement. The essential reserves are notes and coins and money at call and short notice, lent to the national Treasury and to commercial borrowers.

The Money Multiplier Let L be the total of the reserve assets of the banks, and let r be the reserve ratio, which is the proportion of reserves to liabilities, and define $\lambda = 1 - r$. Then, the supply of money resulting from the process of depositing and lending will be

$$M = \frac{L}{1 - \lambda} = L(1 + \lambda + \lambda^2 + \cdots) = \frac{L}{r}.$$

Successive terms of the geometric expansion represent successive loans. The money multiplier is $m = 1/r$.

The Lender of Last Resort The process can go into reverse. In the 19th century, banking crises were caused by depositors demanding the return of their money. To give stability to the banking system, the central banks, e.g. the Bank of England the Federal Reserve Board, undertook to be lenders of last resort to the commercial banks.

A Self-Inflicted Banking Crises Whereas the banking crises of the 19th century were caused by the loss of confidence of ordinary depositors, the current crisis in the banking system has been generated within the system itself.

Speculating with Futures and of Options One way of speculating would be to buy an asset at time $t = 0$ at the spot price of S_0 in the expectation that an increased price S_τ at time τ will produce a profit. A more risky way of speculating is to use the funds for buying options.

The purchase at time $t = 0$ of a call option on an asset gives the buyer the right to purchase the asset at a given strike price $K_{\tau|0}$ at the future date of $t = \tau$. If the price of the asset rises above $K_{\tau|0}$, then the value of the call option will rise at a rate far greater than will the value the asset itself.

However, if the spot price falls below $K_{\tau|0}$, then the call option will become worthless, implying a much greater loss than if the money had been invested in the asset. A put option will allow the holder to make a similar speculation that envisages a fall in the price of the asset below the level $K_{\tau|0}$ of the strike price.

Suppose that, at time $t = 0$ a treasurer has a sum of V_0 at his disposal. Then, he will be able to purchase $N = V_0/S_0$ units of stock. At time τ, when the price is S_τ, his profit or loss from the speculation will be

$$\pi_\tau = N(S_\tau - S_0) = \frac{V_0}{S_0}(S_\tau - S_0).$$

The proportional gain or loss of is $(S_\tau/S_0) - 1$, which is liable to be small.

Suppose that the investment is in call options. The returns would be:

$$\pi_\tau = \begin{cases} \dfrac{V_0}{c_{\tau|0}}(S_\tau - K_{\tau|0}), & \text{if } S_\tau > K_{\tau|0}; \\ 0, & \text{if } S_\tau \leq K_{\tau|0}. \end{cases}$$

The factor $V_0/c_{\tau|0}$, which amplifies the difference $S_\tau - K_{\tau|0}$ if $S_\tau > K_{\tau|0}$, will be far greater than the factor V_0/S_0, which would amplify the difference $S_\tau - S_0$. Therefore, if it were profitable, we would expect the options to yield a far greater profit.

Credit Derivatives Credit derivatives have a payoff that is determined by whether or not a third party defaults on a promised payment or debt obligation. These were financial innovations of the 1990's; and they have allowed banks and others to take a careless attitude to the security of their loans by enabling them to rid themselves of credit risk. Issuing such guarantees should be an easy way of making money.

Traditionally, banks were very cautious about the security of their loans. With the availability of credit derivatives, they have become less cautious. Those who have sold the credit derivatives, the insurers, have not always been in a good position to assess the risks.

Credit Default Swaps The most popular Credit Derivatives are Credit Default Swaps. The buyer of a swap, who is the holder of a bond or the maker of a loan, undertakes to make a series of periodic payments to the seller, which may be a proportion of their own interest receipts from the loan. In return, the seller promises to compensate the buyer for any loss they might incur by a cash payment of by buying the bond at its face value.

FINANCIAL RISKS

The Dangers of Leverage Companies that are highly leveraged may be in danger of bankruptcy if they are unable to make payments on their debt. Financial crises have often been accompanied by excessive leverage. During the boom that preceded the Wall Street crash of 1929, it became common to purchase stock on margin, which is a case of leverage

Brokers were lending to speculators the funds to purchase stock in return for a small marginal payment. The buyer of securities on margin acquired the full title to the assets in question, but they were required to leave these securities with the broker as collateral for the loan.

If the price of the securities increased, then the speculator got the full benefit of the increased value, since the value of the loan was fixed. If the price of the securities fell, as it did dramatically in the stock market crash, then the speculator, who was obliged to repay the full value of the loan to the broker, was liable to be ruined. Soon, the brokers were also ruined.

The Dangers of Options The high degree of exposure from dealing in options, allied to an excessive degree of leverage, was responsible for the demise of *Long Term Capital Management,* which was a hedge fund established by the Nobel Prize winners Merton and Scholes.

In October 1997, they were awarded the Nobel Prize for their work in deriving the options pricing formula. By August 1998, their company was effectively bankrupt.

For fear of a generalised meltdown, it was bailed out to the tune of $3.625 billion by a consortium of fourteen Wall Street banks orchestrated by the Federal Reserve Board. The loss of capital had increased its leverage from 19:1 up to 42:1.

The fund was speculating that, as redemption dates approached, the lower prices of bonds of lesser liquidity would converge to the higher prices of bonds of greater liquidly. It took long positions on the illiquid bonds and short positions on the liquid bonds.

In August 1998, Russia defaulted on its debt, which put a premium on liquidity. The bond prices diverged. The fund, which was subject to a margining system (marking to market), was busted.

The Dangers of Credit Derivatives The dangers of credit derivatives are illustrated by the demise A.I.G. (American International Group). This is the world's largest insurance company with a trillion-dollar balance sheet, 116,000 employees and operations in 130 countries. The Federal Reserve Board, which had let Lehman Brothers die, bailed out the insurer with $85 billion in September 2008.

The problem had been created by A.I.G. Financial Products, a 377-person unit in London, which had been operating since 1987. The unit was writing insurance on packages of debt known as *Collateralised Debt Obligations,* which are pools of loans sliced into tranches and sold to investors. It also specialised in *Credit Default Swaps.*

The unit's revenue rose to $3.26 billion in 2005 from $737 million in 1999. Operating income at the unit also grew, rising to 17.5 percent of A.I.G.s overall operating income in 2005, compared with 4.2 percent in 1999. A.I.G. Financial Products portfolio of credit default swaps stood at roughly $500 billion. It was generating as much as $250 million a year in income on insurance premiums.

THE FAILURE OF REGULATION.

Since A.I.G. itself was a highly rated company, it did not have to post collateral on the insurance it wrote, which made the contracts all the more profitable. Since A.I.G. Financial Products is not formally an insurance operation, it did not have to report to the insurance regulators.

Much of modern financial actively evades the regulators, whose provisions were fashioned many years ago, mainly in consequence of the Wall Street Crash of 1929 and the ensuing distress.

Whereas they were intended to diminish risk, credit derivative have instead magnified the impact of bad mortgages like the ones that felled Bear Stearns and Lehman Brothers. They threaten the entire economy. Many European banks, for instance, paid A.I.G. to insure bonds that they held in their portfolios.

THE FATE OF THE HEDGE FUNDS

In spite of the credit crunch, 11 of the world's top hedge fund managers succeeded in taking home nearly $10 billion last year by outsmarting plunging financial markets, according to the *Guardian* of March 16 2009.

Despite the deep recession, it was the third most lucrative year on record for the hedge fund managers. They have achieved this by benefiting from the troubles affecting major financial institutions and by selling short mortgage backed assets that have become toxic.

In the past, banking fortunes were made through activities such as mergers, acquisitions and underwriting. The modern fortunes have been made simply through financial trading

HEDGE FUNDS: TOP EARNERS

Jim Simons	Renaissance	$2.5bn
John Paulson	Paulson and Co.	$2.0bn
John Arnold	Centarrus	$1.5bn
George Soros	Soros Fund	$1.1bn
Ray Dalio	Bridgewater	$780m
Bruce Kovner	Caxton Ass.	$640m
David Shaw	DE Shaw and Co.	$275m
S Druckenmiller	Duquesne Cap.	$260m
David Harding	Winton Capital	$250m
Alan Howard	Brevan Howard	$250m
John Taylor Jr	FX Concepts	$250m