causes and effects of the 2008 financial crisis

carol alexander is professor of financial risk management at the icma centre, and author of the new 4-volume textbooks series market risk analysis, published by wileyes. see www.marketriskanalysis.com

during the last few months the banking industry has been in turmoil, following the collapse of credit markets. by september 2008 the treasury-eurodollar (ted) spread exceeded 300 basis points, and it remains above 200 basis points at the time of writing. the value of stocks around the entire globe has fallen drastically and rapidly, reminiscent of the world stock market crash of 1929. several exchanges have suspended trading on more than one occasion, and even then several markets have crashed by more than 10% in a single day. the currencies of some emerging markets, such as the korean won, have plummeted in value against the us dollar. markets in europe have fallen more than 50% since the end of april, and some experts say further falls are imminent. why is this happening? and what is the likely effect on the financial system? these questions are not easy to answer, as the crisis is still ongoing at the time of writing. all the reasons for, and effects of, a catastrophe are usually revealed only after the event.

summary of events

there is a trigger for all financial crises, and in this case the first crack appeared with the sub-prime mortgage crisis in the us. during the years 2004–2006, stock markets across the globe surged as the cost of credit reached all-time lows. new ways of securitizing loans meant that counterparty credit quality mattered little to the salesman on commission. european banks, and investors in countries where yields had been extremely low for years, flocked to buy collateralized debt obligations (cdo) and similar new products. the main sellers were the five largest investment banks: goldman sachs, morgan stanley, merrill lynch, lehman brothers, and barclays. even retail banks began to rely on securitizing their loans and short-term funding via the interbank market rather than on a deposit base.

whenever there is uncertainty in a free market economy, this promotes a cycle in which optimism can lead to exuberance, followed by doubt and finally panic. the basic principle underlying the cdo is sound – after all, the senior mortgage backed securities (mbs) expose only two-thirds of the whole and the recovery rate on defaulting mortgages is 50% it would only be affected if more than two-thirds of the creditors defaulted! so we had reason to be optimistic in the mid 2000’s and there was a strong market for these new yield-enhancement vehicles. a fundamental problem was that their pricing lacked transparency. because of the extremely high leverage on the mortgage mbs. even though many of the mortgage mbs were rated triple a, the underlying mortgages were very high risk. the 3% down payment that was needed is a very small amount compared to the total value of the mortgage.

speculative trading in options, because the volume of trading in derivatives markets are proprietary traders in banks. when interest rates were cut banks turn to the capital markets to make profits by increasing the volume of their speculative trading. as a result, huge bonuses are often paid to successful proprietary traders and their managers. but speculative trading in futures and options is crucially dependent on the assumptions made – doubts began to infiltrate the exuberance. and, as doubt turned to panic, the market dried up, so market prices became even more unreliable than the model prices. the guaranteed mark-to-market accounting framework used by banks, a huge liquidity risk appeared in the trading book, and this was not covered by the bank’s regulatory capital.

as liquidity fell out of the cdo market, banks turned to the interbank market to fund their liquidity gap. because cash-rich banks demanded such high levels of collateral guarantees, other banks – and hedge funds, some of which were very highly leveraged – had great difficulty rolling over their loans and short-term funding via the interbank market rather than on a deposit base. eventually governments responded by increasing deposit protection, lowering interest rates and providing additional liquidity. as a last resort, schemes for partial nationalisation of banks have been proposed – schemes that include caps on the remuneration of executives and traders – along with bans on short selling to attempt to stem the slide in stock prices. regulators disregarded anti-monopoly laws as distressed banks were taken over by large cash-rich retail banks. the banking sector has now moved towards oligopolistic competition, with a few huge conglomerates such as jp morgan dominating the markets.

causes and effects

a catalyst for this particular crisis was alan greenspan’s policy of promoting us growth by keeping us interest rates low. after the russian crisis in 1998 us treasury rates were also brought down, but as the market recovered interest rates were raised to prevent inflation increasing. during the technology crash in 2001 and 2002 us interest rates were brought down to about 1%, which encouraged increased consumption and promoted us exports, and thus revived the us economy. after the recovery started greenspan did not raise interest rates quickly enough. there were no fears of inflation. yet, every time interest rates are held too low for too long, it creates a bubble. this time the bubble was caused by an ‘easy credit’ environment, culminating in the ‘credit crunch’ which marked the beginning of the 2008 financial crisis.

in relation to the underlying securities markets and in relation to world gross domestic product (gdp) the volume of financial derivatives traded is huge. at the end of 2007 the total notional outstanding on bond issues was about $80 trillion and the value of company stocks was about $40 trillion. relatively few stock and bond holders hedge their positions because securities are often held by investors that hope to make a profit over a long term. thus the notional size of the derivatives market required for investors to hedge is a small fraction of $120 trillion. many companies involved with importing and exporting goods hedge their exposures to exchange rate fluctuations, and to rising interest rates. the size of these exposures is related to the value of all goods produced in the world economy. world gdp was about $75 trillion in 2007, so corporate hedging activities should amount to some small fraction of this. thus the two hedging activities should result in a derivatives market with notional size being just a small fraction of $200 trillion. however, the total notional size of derivatives markets in 2007 was about $600 trillion.

speculative traders include proprietary traders, hedge funds, companies making bets and day traders. they trade in capital markets for different reasons – of making profits over a short-term horizon, which distinguishes them from investors, who buy-and-hold. approximately half of the speculators in the derivatives markets are proprietary traders in banks. when interest rates are cut banks turn to the capital markets to make profits by increasing the volume of their speculative trading. as a result, huge bonuses are often paid to successful proprietary traders and their managers. but why should banks bet with the money of their savers and their clients? apart from the possibility that they may be better at speculation than ordinary investors, because of better information or cheaper access to markets, banks need to create a liquid market in order to price derivatives. we need speculative trading in options, because the volume of trading creates a market where there is no reliable theoretical price. but we do not necessarily need speculative trading on futures, because we know how to calculate the fair price of a futures contract. one reason why there was approximately $25 trillion of speculative trades on futures last year is that senior managers and proprietary traders are being driven by greed to acquire huge bonuses. this is why the recent nationalisation deals for uk banks has included a clause for limiting remuneration.

this huge casino, in which many times world gdp is bet every year, has proved impossible to regulate. regulators always respond to crises by tightening rules and increasing the minimum level of risk capital to be held by banks. but this exacerbates the problem, since the only way out of the current crisis is to create liquidity. injecting taxpayers’ money into the capital markets is only a temporary solution; what is needed now is a complete reform of financial regulations. this does not necessarily mean tighter control on market operations, or increases in the minimum level of
risk capital held by banks. Indeed, there may be government pressure to loosen regulation in order to establish a leading financial centre.

Financial engineering and risk analysis
Financial engineers and risk analysts use mathematical models to measure risk, and to price illiquid products using arbitrage pricing theory. The assumptions made by these models need constant testing and refining, so that superior models can be developed. With greater confidence in market to model prices, and in portfolio risk assessment, it may be easier to stem the panic when the next crisis comes. Clearly, better education in quantitative risk analysis is the key to developing effective risk models and accurate pricing models for financial institutions.

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