Editorial

Anatomy of a Credit Crisis

Almost two years after the first market signs of the Global Financial Crisis (GFC) and following my editorials in the last two issues of the *Journal* (Marks 2008a, 2008b), in this issue, as well as publishing a revised timeline of the GFC (see below), I think it is time to begin attempting to answer the question of what caused the GFC. This is not simple. Many decisions and actions, by many individuals and organisations, came together to cause the GFC. Even asking whether it would still have happened absent any one of these decisions or actions is difficult to answer since it is counterfactual, and we can't run history again with this single difference in order to answer the question.

Instead, in the timeline, I have listed decisions and actions that together accompanied the GFC, as well as (for the past two years, since mid-2007) market indications of the crisis, and subsequent government actions in attempting to alleviate the crisis. (I will not here engage in the debate of what government policies are appropriate except to say that apparently Richard Nixon was wrong when he claimed in 1971—almost 40 years ago—that: 'We are all Keynesian now'. Conservative politicians, both here and abroad, appear to be unaware of the merits of incurring debt to pay for Keynesian stimuli and the virtues of the automatic macro equalisers of the modern economy.)

Looking at the timeline (which is now much richer than the version I published six months ago in Marks 2008b), I count six significant changes to U.S. legislation from 1977 to 2008; two changes in corporate governance; two changes in financial institutions' ownership; two new technologies; a couple of market and extra-market events; two negative regulatory changes and three positive changes in the past 18 months; and at least six changes in corporate behaviour. I have also included no shortage of Cassandras—voices warning of danger who were ignored or, worse, shouted down since 1994, but more prevalent in the past two years. Accompanying these have been a series of denials, and, more recently, a number of admissions of prior mistakes. Before I discuss these in more detail, I repeat that it must remain a question of individual judgement about which of the earlier actions caused the GFC.

The six legislative changes are all in the U.S.A. In 1977 U.S. banks were offered incentives to lend to poor people. In 1980, usury controls for U.S. mortgages were lifted, allowing higher interest rates for risky borrowers. In 1988, discrimination of the U.S. mortgage market was outlawed. In 1999, many 66-year-old restrictions on U.S. banks were lifted, and bank regulation was eased. In 2000, self-regulation of derivatives was affirmed, and some (such as the recently invented credit default swaps, CDSs) were explicitly exempted from state gaming regulations. In 2008, the (new) regulator was given the power to place government-sponsored enterprises (GSEs), such as Fannie Mac and Freddie Mae, into receivership or conservatorship. It is debated whether this was a cause or an effect of the financial crisis (McLean 2009).

The changes in financial firm ownership occurred over 18 years: in 1991 the first of the Wall Street investment banks, Salomon Brothers, previously a private partnership as were all such investment banks then, sold itself, to become a publicly traded corporation. The other banks followed suit, until the last, Goldman Sachs, went public in 1999. They were now using what was predominately other people's money. In 1977, the U.K. building society (or thrift), Northern Rock, demutualised to become a bank, the first of several. Ten years later Northern Rock would experience the first bank run in the U.K. since 1866.

The changes in corporate governance occurred in 1993, when American International Group (AIG) took control of Financial Products (FP), whose activities later crippled AIG; the second was as a consequence of the crisis, when, in 2008, Goldman Sachs and Morgan Stanley converted to bank holding companies, to receive bank oversight and support from the Fed.

The two new technologies are the 1983 invention of the collateralised mortgage obligation (CMO), which led directly to the mortgage-backed security (MBS). The second invention was the 1977 invention of many credit derivatives, including credit-default swaps (CDSs), whose use later laid AIG low.

In 1988, the Russians defaulted which led to the rescue of Long-Term Capital Management, but no increase in regulation. In 2001, the Al Qaeda attacks led to a permissive monetary policy (with low interest rates), that, it is argued, was sustained far too long, resulting in global financial imbalances.

In 2004, the U.S. Securities and Exchange Commission (SEC) relaxed the minimum capital requirement for securities firms and investment banks, leading to much higher bank leverage. In 2007 the SEC eliminated the 'uptick' rule for short sales of securities. But in 2008, as a reaction to the evident crisis, the SEC began tightening regulations: in July banning 'naked' short selling of several financial corporations; in September tightening its 2004 relaxed capital requirements for investment banks (closing the stable door?); and in October the Congress was told that the SEC had only one officer left in the Office of Risk Management.

Over the past twenty-odd years there have been many changes in corporate behaviour: in 1986 American pension funds started buying CMOs, their first investments in home mortgages; in 1987 international bands started buying CMOs; in 1998 trade in CDs began, between AIG and JP Morgan; in 1999 Frannie Mae eased the credit requirements on mortgage loans it would buy from banks and other lenders; in 2004, after the SEC's agreement to relax capital requirements for investment banks, Merrill Lynch's capital ratio rose to 40:1 (or 2 ½%); in 2005, after its credit rating fell to AA from AAA, and it had to post an additional US$1.16 bn collateral, AIG stopped writing new CDs, although pre-existing contracts exist as I write.

In the earlier version of the timeline, I deliberately avoided referring to individuals because I then believed the crisis was a systemic failure rather than the consequence of individuals' actions. This view is similar to that espoused in Posner (2009). In this version, I have included people's names and have also given their highest university qualification, since I think it is impossible to understand how the crisis evolved without ignoring the identities of the players, for good or ill. This approach is closer to that of Tett (2009).

The crisis has not crept up on us completely unawares. A procession of Cassandras have tried to warn us (or at least the U.S. Congress): James Bothwell in 1994; Brooksley Born in 1998 and 1999; Warren Buffett in 2007, 2008 and 2009; Ed Gramlich in 2004; Timothy Geithner in 2004; Ben Bernanke in 2005 and 2007;

Richard Hillman in 2007; John Taylor in 2007; Meredith Whitney in 2007; C.K. Lee in 2008; George Soros in 2008; and, Paul Volker in 2009.

But these brave men and women had little, if any, impact. Arrayed against them were the optimists, most significantly Alan Greenspan, Robert Rubin, Arthur Levitt Jr., Hank Paulson, Joe Cassano and Dick Fuld.

After the crash had arrived, it is true, Alan Greenspan did admit 'partial' responsibility and later he allowed that temporary bank nationalization might be appropriate once every century. Ben Bernanke has also spoken of the lack of regulation of AIG's financial activities, with today's consequences. Others have been mute.

On reflection, I believe the crisis was brought on mainly by three actions in the U.S., which occurred on November 12, 1999, December 21, 2000, and July 21, 2004: repeal of the Glass-Steagall Act, the explicit decision not to regulate derivatives, and allowing the Wall Street banks to expand their leverage threefold or more. These were failures of regulation, not acts of venality. Another way of looking at what happened is that, like the Prisoner's Dilemma or the Tragedy of the Commons, it was a phenomenon where individually rational actions were collectively irrational: no investment bank could afford not to trade in credit default swaps, since others would do so at the first bank's competitive expense, but the eventual aggregate outcome was the credit crisis. Such phenomena require effective regulation, which failed here, over a period of years.

Please email me (bobm@agsm.edu.au) for references to any specific item in the timeline, or any other comments. Note that an updated version of the timeline is available on-line, at http://www.agsm.edu.au/bobm/iows/timeline.pdf. Note that dollars are U.S. dollars throughout.

1977:	*The Community Reinvestment Act* offers U.S. lending institutions incentives to issue loans to low-income borrowers.
1980:	*The Depository Institutions Deregulatory and Monetary Control Act* eliminates all usury controls on U.S. mortgage rates, permitting lenders to charge higher rates of interest to borrowers who pose elevated credit risk, including those with weaker or less certain credit histories.
1981 August 1:	Salomon Brothers, a private partnership since its founding in 1910, sells itself to Phibro Corporation, a commodities firm. The new entity will be known as Phibro-Salomon Inc. until 1986, when Salomon gains control and changes the name of the parent company to Salomon Inc. This is the beginning of the transformation of Wall Street investment banks from private partnerships to publicly traded corporations, which is completed when Goldman Sachs (GS) goes public in May 1999.
1983 June:	Larry Fink (UCLA MBA '76), a bond trader at First Boston, is the co-inventor, for Freddie Mac, of the collateralised mortgage obligation (CMO), which slices packages of mortgages into several different 'tranches' of risk, sold

	separately as securities, with corresponding interest rates: the riskier, the higher. Freddie Mac issues the first mortgage-backed security (MBS).
1986 June:	American pension funds hold about $30 bn of CMOs; three years ago none of their $600 bn of assets was invested in home mortgages.
1987:	The London office of Salomon Brothers sells $2 bn of the first tranche of CMOs to international banks looking for higher-yielding short-term investments.
1987 January 27:	American International Group (AIG) and Financial Products (FP), a new risk-management firm, sign a joint venture agreement. FP will use computers, derivatives, and AIG's AAA rating.
1988 January:	Between June 1983 and January 1988, $60 bn of CMOs have been sold by Wall Street investment banks: a boost to American home finance.
1988 September 13:	*The Fair Housing Act* of 1988 prohibits discrimination in the U.S. housing market. In mortgage lending: No one may take any of the following actions based on race, colour, national origin, religion, sex, familial status or handicap (disability): Refuse to make a mortgage loan; Impose different terms or conditions on a loan, such as different interest rates, points, or fees; Refuse to purchase a loan; or Set different terms or conditions for purchasing a loan.
1993 August:	AIG gains control of FP. AIG chief Maurice 'Hank' Greenberg (NY Law School '50) says, 'You guys up at FP ever do anything to my Triple A rating, and I'm coming after you with a pitchfork.'
1994 May:	A U.S. Government Accounting Office (GAO) report (leader: James Bothwell, UC Berkeley PhD '76) entitled, 'Financial Derivatives: Actions Needed to Protect the Financial System,' warns that: 'the sudden failure or abrupt withdrawal from trading of any of [the 15 major over-the-counter (OTC) derivatives] dealers could cause liquidity problems in the markets and could also pose risks to the others, including federally insured banks and the financial system as a whole.' And that: 'the federal government would be likely to intervene to keep the financial system functioning in cases of severe financial stress.' And that: 'in some cases intervention has and could result in industry loans or a financial bailout paid for by taxpayers.'
1997 October 1:	Northern Rock floats as a demutualised building society. Other demutualisations include Alliance & Leicester, Halifax/HBOS, and Bradford & Bingley.
1997 December:	Blythe Masters (Trinity Cambridge BA '91), Bill Demchak (Michigan MBA), and a team at JP Morgan (JPM) develop

many of the credit derivatives (including credit-default swaps, CDSs, invented at Bankers Trust) that are intended to remove risk from companies' balance sheets, combining securitization and credit derivatives to create Bistros, or Broad Index Secured Trust Offerings. Masters writes, 'By enhancing liquidity, credit derivatives achieve the financial equivalent of a free lunch, whereby both buyers and sellers of risk benefit from the associated efficiency gains.'

1998: AIG FP begins to write CDSs, at first with JPM. CDSs are contracts to insure against the default of financial instruments such as bonds and corporate debt. But CDSs also are bought and sold as bets against bond defaults (or 'naked' CDSs if neither party holds the underlying loan). The CDSs contain provisions requiring AIG to put up cash as collateral if its AAA credit rating ever falls.

1998 May 7: Brooksley Born (Stanford Law '64), chairperson of the Commodity Futures Trading Commission (CFTC), roils colleagues when her agency says that it will consider whether OTC derivatives instruments should remain exempt from regulatory oversight. Later this day, Robert Rubin, Alan Greenspan, and Arthur Levitt Jr. issue a rebuke of Born's plan, saying in a joint statement, 'We seriously question the scope of the CFTC's jurisdiction in this area.' Rubin (Yale Law '64) is the Treasury Secretary; Greenspan (NYU PhD '77) is the Chairman of the Board of Governors of the U.S. Federal Reserve (the Fed); and Levitt (Williams BA '52) is the Chairman of the Securities and Exchange Commission (SEC).

1998 September 23: As a result of the Russian default of September 1, the hedge fund Long-Term Capital Management's equity has fallen to \$600 million from a high of \$4 bn eight months ago. The Fed of New York coordinates a rescue package for LTCM.

1999 March 3: Brooksley Born, chairperson of the CFTC, in testimony before the House Subcommittee on Capital Markets, Securities and Government-Sponsored Enterprises of the Committee on Banking and Financial Services, reports on analysis conducted by the President's Work Group on Financial Markets into the collapse of LTCM and studies on OTC derivatives. She argues that derivatives should be brought under regulatory supervision, or they 'could pose potentially serious dangers to our economy.'

1999 March 19: At the Futures Industry Association, Alan Greenspan, Fed Chairman, argues that derivatives should remain unregulated, despite the demise of LTCM six months ago and attempts by the CFTC to extend its regulatory reach to OTC derivatives.

1999 September: Taking on significantly more risk, Fannie Mae, the biggest underwriter of home mortgages in the U.S., eases credit requirements on mortgage loans it will buy from banks and other lenders. The American Enterprise Institute warns that an economic downturn could result in a government bailout similar to the savings-and-loan industry rescue in the 1980s.

1999 November 12: The Gramm-Leach-Bliley *Financial Services Modernization Act* repeals the Glass-Steagall Act of 1933, the purpose of which was to prohibit the emergence of consolidated financial/insurance one-stop-shop corporations, in order to reduce the threat of contagion: U.S. banks were not allowed to own insurers or securities companies (and vice versa) and had to operate in a single state, inter alia. Lobbying by Citibank (subsequently to become Citigroup) and others (including Robert Rubin and Larry Summers (Harvard PhD ’82)) has finally borne fruit. The Act allows a range of possible regulators, from the Fed to the SEC (depending on the company’s mix of financial services); holding companies that own one or more ‘thrifts’ (savings-and-loans) may choose to be regulated by the Treasury’s Office of Thift Supervision (OTS). Later in 1999 AIG receives approval from the OTS to own a thrift in Delaware, and its entire operation becomes regulated by the OTS.

2000 December 21: *The Commodities Futures Modernization Act*, which allows U.S. banks to continue to self-regulate OTC derivatives, is signed by President Clinton (Yale Law ’73). It specifically exempts CDSs and other derivatives from state gaming laws, and excludes certain swaps from being ‘securities’ under SEC rules. Co-sponsored by Phil Gramm (Georgia PhD ’67) and Richard Lugar (Pembroke Oxford MA ’56).

2001 September 11: Although the destruction of the World Trade Center did not directly contribute to the GFC, U.S. monetary policy (the ‘Taylor gap’ with prolonged low interest rates) and fiscal policy (going into massive deficit as a consequence of the costly invasions of Iraq and Afghanistan and the Bush tax cuts) after the Al Qaeda attacks exacerbated global financial imbalances.

2002 November 8: On the occasion of the ninetieth birthday of Milton Friedman (Columbia PhD ’46), Ben Bernanke (Governor, and later Chairman, of the Fed; MIT PhD ’79), after discussing the role of monetary policy and lack of liquidity, continues: ‘I would like to say to Milton and Anna [Schwartz (Columbia PhD ’64)]: Regarding the Great Depression. You’re right, we did it. We’re very sorry. But thanks to you, we won’t do it again.’

2003 March 3: In his annual letter to shareholders of Berkshire Hathaway, Warren Buffett (Columbia MA ’51) warns that derivatives are ‘financial weapons of mass destruction.’

2003 May 8: Alan Greenspan at the Conference on Bank Structure and Competition: 'As a result [of the use of derivatives and more sophisticated risk measurement and management methods], not only have individual financial institutions become less vulnerable to shocks from underlying risk factors, but also the financial system as a whole has become more resilient.'

2004 January 3: Alan Greenspan at the San Diego meetings of the American Economic Association argues that it would be easier to clean up after the bursting of a bubble than identify such a bubble in real time and then prick it.

2004 April 28: To forestall European Union (EU) regulation of their European operations, the five Wall Street investment banks (Goldman Sachs GS, Merrill Lynch ML, Morgan Stanley MS, Lehman Brothers LB, and Bear Stearns BS), with the assistance of the GS chief Hank Paulson (Harvard MBA '70), propose to the SEC that if they agree to submit to new rules restricting them from engaging in excessively risky activity, then they will be released from any lending restrictions.

2004 May 21: Edward Gramlich (Yale PhD '65), Fed Governor, at the Financial Services Roundtable Annual Housing Policy Meeting, argues that the rapid growth of subprime (SP) mortgage lending (nearly a tenfold increase in the nine years 1994–2003) 'has been associated with higher levels of delinquency [above 7%], foreclosure, and, in some cases, abusive lending practices.' A further 8% of SP borrowers are in danger of serious delinquency.

2004 July 21: Agreeing to the proposal of April 28, the SEC, under its chairman, William H. Donaldson (Harvard MBA '58), launches the 'Consolidated Supervised Entities' program, a voluntary program that relaxes the minimum capital requirements for securities firms and investment banks. Beforehand, leverage of 12:1 is typical; after, more like 33:1 (and up to 40:1 in the case of ML). The EU drops its threat to regulate the five banks' European operations.

2004 August 10: Moody's starts using David Xiang Lin Li's Gaussian cupola default function formula in its ratings methodology for Collateralised Debt Obligations (CDOs), a type of asset-backed security and credit derivative, including SP mortgages as underlying assets. Li (Waterloo PhD '79) adapted it from the actuarial analysis of 'broken-heart' death syndrome in couples to loan default correlation. A week later Standard & Poor's (S&P) follow suit. This direct measurement of risk leads to Moody's relaxing its requirement for diversification of the portfolio comprising the CDO.

2004 October: In 2003, earnings of financial companies among the S&P's 500 peaked at 30% of total profits. Back in 1995, such earnings accounted for 18.4% of the S&P 500 total.

2004 October 14:	At the SIBOS 2004 Atlanta Conference, Timothy Geithner (Johns Hopkins MA ’85), chief of the Fed of New York, argues for the development and use of counterparty clearing arrangements in ‘the more standardized’ part of the OTC derivative market, in order to reduce systematic risk. In vain.
2005 March 10:	In Richmond, giving the Sandridge Lecture at the Virginia Association of Economics, Fed Governor Ben Bernanke ascribes the large and growing U.S. current account deficit to ‘a global savings glut,’ with low interest rates, partly because of the build-up of large quantities of foreign-exchange reserves by emerging-market nations following past financial crises, particularly the 1997 East Asia crisis. ‘[They] increased reserves through the expedient of issuing debt to their citizens, thereby mobilizing domestic saving, and then using the proceeds to buy U.S. Treasury securities and other assets.’ In discussing the implications of this imbalance, Bernanke warns of ‘the risk of a disorderly adjustment in financial markets.’
2005 March 15:	AIG’s credit rating falls to AA from AAA the day after Hank Greenberg resigns amid allegations about his involvement in a fraudulent deal with Gen Re. As a result, AIG has to post $1.16 bn in collateral for AIG FP’s existing positions, and by the end of 2005 AIG FP stops writing CDSs, but has $80 bn worth of existing ‘structured products’ such as CDOs.
2006:	From $737 million in 1999, AIG FP’s revenue rose to $3.26 bn in 2005, with an operating income in 2005 of 83% of revenue; this was 17.5% of AIG’s overall operating income that year, up from 4.2% in 1999. From 2001 to 2008 AIG FP’s 400 employees will be paid a total of $3.5 bn.
2006:	Supported by record profit margins for the sector, financial companies (including investment banks, regional banks, real estate companies, and insurance companies) now contribute 28% of the S&P 500’s total net income. Easily outstripping the other ten sectors, the financial sector profit margin is now 14%, having risen from 8% in little more than a decade.
2006 April:	In the Khoshaba case, the N.S.W. Court of Appeal holds that a loan agreement was an ‘unjust’ contract, in part because a lender had failed to obtain information from the borrowers regarding the purpose of the loan (for a dubious investment in a pyramid [Ponzi] scheme). The decision has implications for lenders in all Australian markets, particularly those providing ‘low doc’ and ‘no doc’ loans, such as SP mortgages.
2007:	In 2006 Moody’s makes more than 40% of its revenues from rating CDOs. Likewise Standard & Poor’s and Fitch’s. Moreover, SP mortgages can be repackaged into CDOs in a way that makes ‘default an extremely low mathematical probability ... If banks were forced to sell securities that had

	been downgraded, liquidity could dry up,' from *The Economist*, July 12, 2007, 'AAAsking for trouble.'
2007:	Two thirds of the U.S. SP mortgages issued in 2006 were securitised. Michael Milken (Wharton MBA '70) calls securitisation the 'democratization of capital.'
2007 February 15:	The U.S. National Association of Realtors predicts that home prices will 'spring back' in the coming months after reporting that median prices fell in 73 metro areas in Q4, 2006, 'the year of contraction.' Median prices for single-family homes in the U.S. fell 2.7% in the year since Q4, 2005.
2007 March 17:	A U.S. GAO report (leader: Richard J. Hillman, Scranton BS), 'Financial Market Regulation: Agencies Engaged in Consolidated Supervision Can Strengthen Performance Measurement and Collaboration' (specifically, the Fed, the SEC, and the OTS) notes that, although the OTS has been accepted as a competent regulator (of AIG inter alia) by British and French authorities, 'while OTS oversees a number of holding companies that are primarily in the insurance business, it has only one specialist in this area,' with little or no collaboration with the SEC or the Fed for this oversight.
2007 April 20:	Treasury Secretary Henry Paulson delivers an upbeat assessment of the U.S. economy, saying 'All the signs I look at' show 'the housing market is at or near the bottom.'
2007 July 5:	Swiss bank UBS's CEO, Peter Wuffli (St Gallen PhD '84), quits. UBS is the world's biggest manager of other people's money.
2007 July 6:	After 73 years, the SEC, under Christopher Cox (Harvard MBA & Law '77), eliminates the 'uptick rule,' which required that each short sale transaction be entered at a price that is higher than the price of the last trade, in effect preventing short sellers from adding to the downward momentum when the price of an asset is already experiencing sharp declines.
2007 July 9:	'As long as the music is playing, you've got to get up and dance,' Citigroup chief Chuck Prince (Georgetown Law '83) tells *The Financial Times*, adding, 'We're still dancing.'
2007 July 17:	Two of BS' hedge funds, betting on CDOs (backed by SP loans) have lost all \$20 bn invested in mortgage-related debt. The high-yield CDS premium soars in the U.S. and Europe.
2007 July 18:	Ben Bernanke (Chairman of the Fed since February 1, 2006) acknowledges the increasing risk of the effects of risk-bearing loan delinquencies spilling into other markets.
2007 July 31:	Sowood Capital, a \$3 bn hedge fund, lost half its value in July, and sells out, the biggest hedge fund to collapse. Harvard University reports that its endowment has lost \$330 million.

2007 August 2: The TED spread surges. A four-year low in the issuing of investment-grade bonds in July. The five Wall Street investment banks' lending commitments grew from $50 bn in 2002 to over $180 bn in 2006.

2007 August 8: President Bush (Harvard MBA '75) apparently rejects suggestions that Fannie Mae and Freddie Mac be allowed to buy some SP loans from stretched banks.

2007 August 9: An investment arm of BNP Paribas, France's biggest bank, suspends withdrawals from three investment funds, citing 'the complete evaporation of liquidity in certain market segments of the U.S. securitisation market.'

2007 August 9: The European Central Bank (ECB) responds to a sudden liquidity squeeze and a jump in the LIBOR by injecting €98.4 bn ($131 bn) into the money markets.

2007 August 9: 'It is hard for us, without being flippant, to even see a scenario within any kind of realm of reason that would see us losing one dollar in any of those transactions,' says AIG FP head Joseph Cassano (Brooklyn College BA '77) of its CDSs. But in Q3, 2007, AIG will recognize a $352 million unrealised loss on its CDS portfolio.

2007 August 16: GS says its funds have been hit by moves that its models suggest are 25 standard deviations away from usual, a likelihood of 6 times 10 to the power of minus 139. As Warren Buffett remarks: 'Beware of geeks bearing equations.'

2007 August 23: The Fed cuts the U.S. discount rate from 6.25% to 5.75%. Citigroup, JPM Chase, Wachovia, Bank of America take up the Fed's offer of 30-day loan terms. The 3-day AA-rated commercial-paper rate rises from 5.3% to 6.0% for asset-backed securities. From July 2006 to July 2007, U.S. home foreclosures were up by 93%. LB closes its SP lending arm.

2007 August 31: President Bush rules out large-scale federal bailouts, but proposes that the Federal Housing Administration (FHA) help 80,000 SP mortgage borrowers refinance. (Two million Americans will face sharply higher repayments over the next year or so as their honeymoon periods end.)

2007 September: John Taylor (Stanford PhD '73) (2007) argues that in the four years 2002–2005, a positive eponymous 'Taylor gap' reveals that U.S. interest rates were too low, resulting in a bubble in U.S. housing prices. (The federal funds rate had fallen from 6.5% at the end of 2000 to 1% in 2003.)

2007 September 6: Standard & Poor's says it has downgraded just 1% of SP residential MB securities, none affecting AAA bonds. CDO downgrades have affected just 1% of securities by value.

2007 September 14: Northern Rock, the U.K.'s fifth largest mortgage lender, is given a liquidity support facility from the Bank of England,

	following the first bank run in Britain since 1866. Northern Rock is the top U.K. securitiser (selling packaged mortgages), followed by Barclays, HBOS, and the Royal Bank of Scotland (RBS). The U.K. government guarantees all deposits at Northern Rock; it already guarantees all small bank deposits. Northern Rock's shares are valued at 258p on October 13, down from a high of £12.51 on February 9th.
2007 September 18:	The Fed cuts the funds rate 50 bp to 4.75%.
2007 September 19:	The U.K. government offers to lend $20 bn to commercial banks in an emergency 3-month auction.
2007 September 25:	The U.S. dollar falls to a record $1.41 per euro.
2007 October 28:	MBIA, a monoline (a company that insures corporate bonds and structured products), makes its first-ever quarterly loss. If a monoline is downgraded, so are the bonds it insures. In 1990 MBIA had $931 million in equity and only $200 million of debt; by 2006 it had $7.2 bn in equity against an astounding $26.2 bn in debt, including CDOs. It remained AAA rated until June 5th, 2008.
2007 October 29:	ML replaces its CEO, Stanley O'Neal (Harvard MBA '78), after writing down by $8.4 bn its CDO securities backed by SP mortgages and suffering its first quarterly loss since 2001. O'Neal's severance package is $160 million.
2007 November 1:	A pessimistic report of Meredith Whitney (Brown BA '92), a financial services analyst from CIBC World Market, a subsidiary of Canadian Imperial Bank of Commerce, on Citigroup's future, leads to about $369 bn being wiped off the U.S. stock market value. The Dow Jones Industrial Average slides more than 360 points, or 2.6 per cent. In London, £47 bn will be lost over November 1st and 2nd. Ms Whitney says Citigroup will need to cut its dividend or sell assets to avert what she says is a $30 bn capital shortfall. Citibank loses more than $15 bn of market capitalisation.
2007 November 4:	Citigroup replaces its CEO, Charles Prince, after a possible further $11 bn in SP write-downs. On November 27 the Abu Dhabi Invest Authority buys 4.9% of Citigroup for $7.5 bn.
2007 November 21:	The European covered-bonds market (a $2 trillion source of mortgages) is suspended because of falling prices.
2007 November 21:	The spread between high-yield corporate paper and U.S. Treasury bonds has doubled between June and November, from 260 to 520 bp.
2007 December 12:	There is joint central bank action to ease the liquidity squeeze around the developed world.
2007 December 18:	The U.K. government guarantees all Northern Rock's debts and commits more than $110 bn, after Northern Rock's share price falls to below a twelfth of its value in five months.

2008 January 3:	Warren Buffett starts his own bond-insurance company, Berkshire Hathaway Assurance, given the incumbent monolines' distress. In February BHA tries to take over $800 bn in municipal bonds guaranteed by the monolines MBIA, Anbac, and FGIC.
2008:	AIG suffered write-downs of nearly $8 bn by the end of 2007; in Q1 and Q2, 2008, it will lose another $9.5 bn in write-downs.
2008 January 10:	The CEO of BS, Jimmy Cayne (Purdue drop-out), leaves after $1.9 bn in mortgage write-downs.
2008 January 11:	Bank of America announces that it will buy Countrywide (the largest U.S. mortgage provider) for $4 bn (one-eighth of Countrywide's value seven months ago), to take effect in July. Countrywide's chief, Angelo Mozilo (Fordham BS '60), will agree to forgo $37.5 million in severance pay, consulting fees and perquisites such as use of the company jet.
2008 January 17:	Citigroup reports a $9.8 bn Q4 2007 loss, after write-downs of $18.1 bn on CDOs.
2008 January 30:	The Fed's policy rate falls 50 bp to 3%, having been cut by 75 bp to 3.5% only eight days ago, down from 5.25% in August 2007.
2008 February 10:	The spread between high-yield commercial paper and U.S. Treasuries exceeds 700 bp.
2008 February 14:	AIG writes down $4.9 bn of CDO-related swaps (five times more than its estimate two months ago); AIG has $62 bn exposure to CDOs with some SP content. Joseph Cassano resigns as head of AIG FP, having received at least $280 million in compensation (including $34 million in final bonuses and a $1 million a month six-month retainer until AIG's bailout).
2008 February 17:	Northern Rock is nationalised after two unsuccessful bids to take it over.
2008 March:	In response to February's events, C.K. Lee (LSE MSc '98), head of the OTS's Complex and International Organizations (CIO) group (for regulating AIG, inter alia), sends AIG a request for a 'corrective action plan' in 30 days, but Lee moves to OTS Dallas, and the CIO group is disbanded; AIG misses the deadline.
2008 March 10:	Investment bank BS' press release is headed STEARNS DENIES LIQUIDITY RUMORS. Its shares are trading above $60.
2008 March 11:	The Fed adds a new bailout vehicle, the Term Securities Lending Facility (TSLF), a new lending facility that allows banks to borrow up to 28 days instead of normal overnight limits; up to $200 bn.
2008 March 12:	Carlyle Capital, a mortgage-backed fund, 15% owned by executives of the private-equity firm Carlyle Group, defaults

	on $16.6 bn of debt; geared up to 32 times in order to buy AAA paper, it will wind itself up, its liabilities larger than its assets.
2008 March 13:	No buyers for AAA commercial paper in the U.S.
2008 March 14:	LB secures a 3-year facility of $2 bn; it has $64 bn of unencumbered assets. *The Economist* quotes anon.: ‘If Lehman Brothers goes, there are no sacred cows.’
2008 March 16:	ML has $1 trillion in assets and $30 bn in equity; GS has $1.1 trillion and $40 bn, respectively. There are about $45 trillion of CDSs outstanding globally.
2008 March 16:	U.S. Treasury Secretary Hank Paulson says, ‘We’ve got strong financial institutions... Our markets are the envy of the world. They’re resilient, they’re... innovative, they’re flexible. I think we move very quickly to address situations in this country, and, as I said, our financial institutions are strong.’
2008 March 16:	BS, having run afoul of its lending-capital ratios, is bought by JPM Chase at a heavily discounted price of $2 per share; its shares had been $170 at the beginning of 2007. BS had a gross debt ratio of about 33:1 prior to its demise, and about $10 trillion in CDSs and interest-rate swaps. Its clients had withdrawn $17 bn in the last two days. Less than a week ago, some said that BS enough liquid assets and borrowing capacity to survive for two years.
2008 March 16:	Counterparty risk as reflected in CD premiums—BS 750 bp, LB 470 bp, ML 320 bp, and GS 230 bp.
2008 March 17:	JPM Chase’s market capitalisation rises by $14 bn the day after buying BS for $2 a share.
2008 March 18:	BS’ shares trade at $6.51.
2008 March 18:	The Fed cuts its target rate by 75 bp (to 2.25%, down 200 bp in two months), and offers extended (28-day) loans to all bond dealers.
2008 March 24:	JPM Chase raises its bid for BS fivefold to $10, but is no longer liable for $30 bn of BS’ least liquid assets (almost 40% of BS’ assets), now assumed by the Fed.
2008 March 25:	Iceland’s interest rate rises to 15% after a 22% drop in the krona.
2008 March 25:	Spread-betting firm IG-Index doubles (from 5% to 10%) its margin for bank stocks; for four banks (Alliance & Leicester, Anglo Irish, Bradford & Bingley, and LB) its margin is 20%.
2008 March 25:	*The Economist* reports that U.S. farmers are having trouble hedging wheat prices because of excessive margin requirements.

2008 April 2: UBS has lost $38 bn betting on U.S. mortgage-backed assets, ‘mezzanine’ CDOs, after taking the AAA ratings as correct and assuming liquidity.

2008 April 6: George Soros (LSE BA ’52) declares that he is ‘short U.S. and European stocks, U.S. ten-year government bonds, and the U.S. dollar; and long Chinese and Indian stocks and non-U.S. commodities.’

2008 April 8: U.K. housing prices fell 2.5% in March.

2008 April 8: Paul Volcker (Harvard MA ’51), Fed Chairman 1979–1987, in an address to the Economic Club of NY, observes, ‘Simply stated, the bright new financial system—for all its talented participants, for all its rich rewards—has failed the test of the marketplace.’

2008 April 10: Eight months before the National Bureau of Economic Research (NBER) gives its official imprimatur, *The Economist* declares that the U.S. is in recession. The NBER would announce in early December 2008 that the U.S. had been in recession since December 2007.

2008 April 17: The International Swaps and Derivatives Association (ISDA) reports that OTC derivatives at the end of 2007 totalled $455 trillion globally, of which $62 trillion were CDSs. Global nominal Gross Domestic Product (GDP) was estimated at $54.5 trillion in 2007. (In December 2008, the derivatives market is $531 trillion, up from $106 trillion in 2002.)

2008 April 17: In 1989 financial stocks were 8.8% by value of the Standard & Poor’s 500; by Q1 2007 this had grown to 22.3%. The average profit margin of U.S. finance companies over the past 60 years has been 40%. From a 10% share of corporate profits in the early 1980s, the U.S. financial services industry’s share was 40% in 2007. In the early 1980s, U.S. financial assets were worth about 450% of GDP; in 2007, about 1000%.

2008 April 17: U.K. banks RBS and Bradford & Bingley are trading at a market cap of between 3 and 4% of their deposits. U.S. banks are priced at between 15 and 30% of their deposits.

2008 April 22: RBS announces the largest rights issue in U.K. history to raise $24 bn in new capital to offset a write-down of $12 bn resulting from bad investments and the earlier purchase of ABN-Amro. RBS has core capital equal to 4.5% of its assets.

2008 April 24: LB reports a net profit of $489 million in Q1 2008; ML and Citigroup lost a combined $7.1 bn in Q1 2008.

2008 April 24: The Iceland krona has fallen 30% against the euro in four months, and Icelandic banks cannot borrow from other banks.

2008 June 2: Wachovia, the fourth-largest U.S. bank, replaces its CEO, Ken Thompson (Wake Forest MBA ’75), after losing $707 million in Q1.

2008 June 5:	Standard & Poor's downgrades monoline bond insurers AMBAC and MBIA from AAA to AA.
2008 June 9:	LB announces a Q2 loss of \$2.8 bn, far higher than analysts had expected; will seek to raise \$6 bn in fresh capital from investors.
2008 June 15:	AIG, the world's largest insurer, replaces its CEO, Martin Sullivan (no degrees), after \$13 bn losses in Q4 2007 and Q1 2008; it announces plans to raise \$20 bn in fresh capital.
2008 July 3:	Apparently concerned about rising inflation, the ECB raises its bid rate by 25 bp to 4.25%.
2008 July 11:	Indy Mac bank collapses, with assets of \$32 bn and deposits of \$19 bn. Eight other banks have failed in 2008 and the U.S. Federal Deposit Insurance Corporation (FDIC) has 117 banks on its 'problem list' in Q2 2008, up 30% in three months. Wachovia's share price has fallen by three-quarters in six months.
2008 July 13:	The share prices of Fannie Mae and Freddie Mac are less than one sixth their values of a year ago.
2008 July 17:	ML announces a \$4.9 bn loss for Q2, after write-downs of \$9.7 bn, bringing total charges since mid-2007 to more than \$41 bn.
2008 July 21:	The SEC bans 'naked' short selling of the stocks of mortgage finance companies Fannie Mae and Freddie Mac and 17 large investment banks until August 12th.
2008 July 26:	The U.S. FHA will guarantee up to \$300 bn refinanced mortgages. The Federal debt limit is raised to \$10.6 trillion.
2008 July 28:	ML writes down a further \$4.4 bn, selling \$30.6 bn of CDOs at 22% of par.
2008 July 30:	The *Federal Housing Finance Regulatory Reform Act* is signed, which merges the Federal Housing Finance Board and the Office of Federal Housing Enterprise Oversight, creating the Federal Housing Finance Agency (FHFA), with the power to place GSEs into receivership or conservatorship.
2008 August 9:	Large European banks report falls in earnings of between 28% and 63% one year after the start of the credit crunch.
2008 September 7:	The U.S. government announces that the GSEs, Fannie Mae and Freddie Mac, have been placed under the 'conservatorship' of the FHFA, and commits to provide up to \$100 bn to each company to cover any future shortfalls in capital. The CEOs of both companies are replaced, and dividend payments to current shareholders eliminated. The two hold or guarantee \$5 trillion, about half of all U.S. mortgages.
2008 September 8:	Washington Mutual, the sixth-largest U.S. bank, replaces its CEO, Kerry Killinger (Iowa MBA '71).

2008 September 10:	LB says that it will spin off a majority of its remaining commercial real estate holdings into a new public company. And confirms plans to sell a majority of its investment management division in a move expected to generate \$3 bn. It also announces an expected loss of \$3.9 bn (\$5.92 a share) in Q3, after \$5.6 bn in write-downs. Korean Development Bank decides against buying a stake in LB.
2008 September 15:	LB, with \$613 bn of debt including \$160 bn of unsecured bonds, files for bankruptcy protection; its major assets are later sold to Barclays, Nomura, Bain Capital, and Hellman & Friedman; those holding its commercial paper (bonds) will receive about 10% of par.
2008 September 15:	ML to be bought by Bank of America at half its early 2007 value after posting losses of more than \$17 bn over the past year; B. of A. had earlier decided against buying LB.
2008 September 15:	AIG's credit rating is downgraded, from AA to A, forcing it to post \$14.5 bn in collateral. Its shares fall 61% to \$4.76.
2008 September 16:	AIG is bailed out by the Fed, with an \$85 bn infusion. The government takes 79.9% of the company, whose share price has recently fallen to 5% of its level 18 months ago. The Fed also replaces chief Robert Willumstad (Adelphi BA) with Edward Liddy (George Washington MBA '72).
2008 September 17:	Losses from the LB default result in the Reserve Primary Fund, the oldest U.S. money-market fund, 'breaking the buck'—going into the red.
2008 September 18:	Lloyds buys HBOS, with 20% of the mortgage market, Britain's largest mortgage lender.
2008 September 18:	The U.S. Treasury announces a three-page, \$700 bn proposal to buy toxic assets from U.S. banks. It requires Congressional approval.
2008 September 18:	The U.S. SEC prohibits 'naked' short selling of more than 900 financial-services stocks until October 4th.
2008 September 18:	The Fed, the Bank of England, the Bank of Japan and other central banks promise up to \$180 bn to boost liquidity.
2008 September 19:	The U.S. Treasury announces that, for a fee, it will guarantee eligible money-market mutual funds.
2008 September 21:	GS and MS convert to bank holding companies, to receive bank oversight and support from the Fed. GS sells \$5 bn shares to Warren Buffett's Berkshire Hathaway and raises \$5bn more on the equity markets.
2008 September 25:	The U.S. SEC abolishes the 2004 'Consolidated Supervised Entities' program.
2008 September 25:	Washington Mutual Bank is placed in receivership, after a ten-day bank run of \$16.7 bn; it is partly sold to JPM Chase for \$1.9 bn.

2008 September 28:	The Benelux governments jointly nationalise Fortis, at €11.2 bn.
2008 September 29:	The House rejects U.S. Treasury's $700 bn proposal. The S&P 500 plunges almost 9% (over $1 trillion). The LIBOR shoots up to 6.88%.
2008 September 29:	U.K. bank Bradford & Bingley is nationalised at $80 bn and partly sold off, after its unsuccessful June rights issue.
2008 September 29:	Mitsubishi UFJ Financial Group pays $9 bn for a 25% stake in MS.
2008 September 30:	Icelandic bank Glitnir is nationalised at $1 bn. The other two largest Icelandic banks follow on October 7 (Landsbank) and October 9 (Kaupthing). The banks' total liabilities are ten times the country's GDP; the stock market falls by 90%, along with the krona.
2008 October 3:	Following the Senate, the House passes a revised and amended version of the U.S. Treasury $700 bn proposal to create the Troubled Asset Relief Program (TARP). Bank deposits of up to $250,000 are guaranteed, previously $100,000.
2008 October 3:	Wells Fargo wins the battle against Citigroup to buy the failed Wachovia Bank, for about $15 bn. Later attempts to block the deal are unsuccessful.
2008 October 3:	The TED spread is up to 330 bp (from 20 bp in early 2007).
2008 October 4:	The Irish government announces that it will guarantee all deposits ($575 bn) in six Irish banks. The German government follows suit a day later. The European Union responds similarly two days after that.
2008 October 5:	Richard S. Fuld Jr. (NYU MBA '73), LB's CEO, testifies before a Congressional panel that while he takes full responsibility for the debacle, he believes all his decisions 'were both prudent and appropriate' given the information at the time. On November 10, Fuld will sell his half share in a Florida mansion ($13.75 million in March 2004) to his wife, Kathleen, for $100. Mrs Fuld is a Vice Chairman, The Museum of Modern Art.
2008 October 7:	The Fed will buy commercial paper, thus extending short-term loans to companies for the first time.
2008 October 7:	In front of the Congressional Committee on Oversight and Government Reform, Lynn Turner (Nebraska MA '77), former chief accountant at the SEC, reveals that the SEC's Office of Risk Management was cut back to a single employee.
2008 October 8:	The U.K. government policy for bailing out the financial system is announced. The Treasury will infuse $64 bn of new capital into RBS, Lloyds TSB, and HBOS, with the government taking equity stakes in any banks bailed out.

2008 October 12:	The Australian government announces guarantees on bank deposits of up to A$1 million, and wholesale funding guarantees. New Zealand also guarantees its bank deposits.
2008 October 13:	The U.S. government outlines a three-part rescue package involving the Treasury and the FDIC of at least $250 bn. It may also involve direct recapitalisation of banks.
2008 October 15:	The Baltic Dry Index (a proxy for world shipping) has fallen 85% from its May record high. Spot iron-ore prices have fallen to half in ten months, along with other metals prices. Oil prices continue to fall.
2008 October 23:	Credit markets revive. The LIBOR falls to 4.96%, the lowest since LB's collapse. The TED spread also narrows after the Fed makes $540 bn available to buy assets from money-market funds. The ECB has lent European banks $1 trillion.
2008 October 23:	Alan Greenspan admits in front of a congressional hearing that he was 'partially' responsible by not advocating regulation of derivatives; he confesses to being 'shocked' to find a 'flaw' in his ideology that banks could be trusted to be 'self-interested' in serving their shareholders.
2008 October 27:	The Japanese Financial Services Agency bans 'naked' short selling from November 4 to March 31. Mitsubishi UFJ Financial Group (Japan's largest bank) needs $10.6 bn to cover its dwindling capital after the Nikkei plunges.
2008 October 27:	The International Monetary Fund (IMF) bails out Hungary and Ukraine.
2008 October 28:	The Bank of England estimates the amount of so-called toxic debt that has been lost by global financial institutions during the credit crisis as £1.8 trillion ($2.8 trillion), yet total bank writedowns by the end of 2008 would only be about $583 bn and total capital raised about $435 bn.
2008 October 29:	The U.S. cash rate drops 50 bp to 1%, down from 5.25% in mid 2007.
2008 October 31:	The Japanese lower their policy rate 20 bp to 0.3% and announce a fiscal stimulus of $51 bn.
2008 November:	AIG FP has $2.7 trillion worth of swap contracts and positions; nearly 50,000 outstanding trades (some lasting up to 70 years) with 2,000 counterparty firms.
2008 November 6:	The Bank of England cuts the benchmark rate by 150 bp to 3%, the sixth cut since late 2007, when the rate was 5.75%. The ECB cuts its rate by 50 bp to 3.25%, its second cut since July, when the rate was 4.25%.
2008 November 9:	China announces a fiscal stimulus of almost $600 bn.
2008 November 10:	The U.S. Treasury announces a new rescue package for AIG, bringing the total cost to $150 bn.

2008 November 12: The U.S. Treasury announces it will use the $700 bn TARP to recapitalise banks and other financial institutions, rather than buying their toxic mortgage-backed assets.

2008 November 19: The Swiss government proposes a $5 bn bailout of UBS, which has written off over $45 bn, as well as assuming up to $60 bn of toxic assets, and taking a 9.3% stake in the bank.

2008 November 20: The benchmark CDS Index, which shows the cost of insuring firms against default, has almost doubled to 284 bp, from 152 prior to LB's demise.

2008 November 24: The U.S. government bails out Citigroup for an additional $20 bn, using a loss-sharing agreement with the Treasury's TARP. The bailout could cost taxpayers up to $306 bn after guaranteeing mortgage assets.

2008 November 25: The New York Fed creates Maiden Lane III, a holding company, to buy (up to $35 bn of) AIG FP's mortgage-related securities from its counterparties to free it to terminate its CDSs. (AIG states that $74 bn in CDS arrangements should be ended.) It also creates Maiden Lane II to use $1 bn from AIG and up to $22.5 bn from the Fed to help AIG shut down its securities lending operations.

2008 November 25: The Fed announces the creation of the Term Asset-Backed Securities Loan Facility (TALF), a joint venture with the U.S. Treasury designed to increase credit availability by supporting the issuance of asset-backed securities (ABS) collateralised by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Administration (SBA). The Fed of New York will lend up to $200 bn, later increased to $1 trillion, on a non-recourse basis, and the Treasury will provide $20 bn of credit protection from the TARP.

2008 November 26: The *New York Times* estimates that the total value of guarantees, investments, and loans given by the U.S. government since the beginning of the financial crisis has reached $7.8 trillion—as an insurer (guarantees made to investors and depositors against default): $3.1 trillion committed ($97 bn spent); as an investor (stakes taken in big financial companies in exchange for cash): $3.0 trillion committed ($649 bn spent); as a lender (low-interest loans made to large financial institutions): $1.7 trillion committed ($617 bn spent). This total does not include $5 trillion in guarantees made by Fannie Mae and Freddie Mac and apparently on the government balance sheet since September 7th.

2008 December 5: From a high of $147/bbl five months ago, the world price of oil drops to $41/bbl and will continue to fall.

2008 December 8:	ML chief John Thain (Harvard MBA ’79), a former chief of the New York Stock Exchange, asks for a 2008 bonus of $10 million or more, but is turned down.
2008 December 9:	Rates on three-month U.S. Treasury bills turn negative for the first time. The same day, the U.S. sells $30 billion of four-week bills at a zero percent rate.
2008 December 11:	On a tip from his sons, the FBI arrests Bernard Madoff (Hofstra BA ’60), former Chairman of the NASDAQ stock market, who is charged with fraud relating to what Madoff himself has characterised as ‘basically, a giant Ponzi [pyramid] scheme’ of up to $50 bn in cash and securities. (On March 12, 2009, Madoff pleads guilty; he claims to have had nearly $65 bn in 4800 client accounts at the end of November; prosecutors are seeking more than $170 bn in forfeiture.)
2008 December 11:	The House refuses to pass President Bush’s car industry bailout bill.
2008 December 16:	The Fed cuts its target for the overnight federal funds rate to a range of zero to 25 bp, the lowest ever.
2008 December 19:	The Belgian government falls, following its botched attempt to bail out the failed Belgo-Dutch bank, Fortis.
2008 December 19:	President Bush bails out G.M. and Chrysler, with an emergency loan from the TARP of $13.4 bn now, and another $4 bn in February.
2008 December 22:	Toyota announces an annual loss (for the year to end next March) for the first time in 70 years. The net loss will be announced (on 2009/05/08) as ¥437 bn ($4.4 bn), including a loss of ¥766 bn ($7.7 bn) for the first three months of 2009.
2009 January 8:	The Bank of England cuts interest rates to 1.5%, an all-time low (since 1694).
2009 January:	There is nearly $1 trillion of U.S. consumer credit-card debt, an average balance of $11,212; the percentage of charge-offs rose to 5.62% in November.
2009 January 14:	In Q4 China’s exports (in dollar terms) fell by 13%, and were 3% lower than a year ago, but its imports for 2008 fell by 21%, resulting in a record Q4 trade surplus of $457 bn annualised, 50% higher than Q4 2007.
2009 January:	At end-December 2008, China’s foreign reserves (minus its holdings of gold) stood at $1.946 trillion, and was mainly bonds issued by the U.S. Treasury and by Fannie Mae and Freddie Mac.
2009 January 15:	The Irish government announces the full nationalisation of Anglo Irish Bank, the country’s third-largest lender.
2009 January 15:	U.S. foreclosures rose 81% in 2008, affecting 2.3 million households; December filings were up 41% from a year ago.

2009 January 16: Citigroup reports a Q4 loss of \$8.29 bn, and 2008 loss of \$18.72 bn. The company plans to split into two: Citicorp for the core banking, and a second business for non-core assets, eventually to be sold.

2009 January 19: The U.K. government announces new measures to bolster the country’s leading banks, to augment the measures of last October 8th, including an increase in its stake in RBS to 70%.

2009 January 20: The French government agrees to provide another \$13.6 billion of capital to its biggest lenders.

2009 January 23: ML chief John Thain resigns after spending \$1.22 million of company cash on refurbishing his office (including a \$1,405 trashcan), and accelerating a payout of \$3.6 bn in executive bonuses before B. of A. took over at the end of December (696 executives received bonuses of \$1 million or more). ML lost \$21.5 bn in Q4, and B. of A. will receive \$20 bn in TARP money in addition to the \$25 bn promised on October 14; \$118 bn of risky assets will be guaranteed as well. The U.S. government becomes the Bank’s largest shareholder, with about 6%.

2009 January 28: The IMF cuts its forecast of 2009 world economic growth to 0.5% (–2.0% for advanced economies and +3.3% for developing), down from a forecast of 2.2% (–0.3% and +5.1%) last November. Its estimate of total losses for banks and other financial services companies is now \$2.2 trillion, up from \$1.4 trillion last October.

2009 January 28: The New York State comptroller estimates that total bonuses in the N.Y. securities industry fell 44% to \$18.4 bn, down from \$32.9 bn in 2007, but still the sixth highest on record, just below 2004, in real terms. He also estimates that the brokerage units of N.Y. financial companies lost more than \$35 bn in 2008, triple their losses in 2007.

2009 January 31: In London, the Chinese premier, Wen Jiabao (Beijing Institute of Geology MEng ’68), says, ‘Whether we will buy more U.S. Treasury bonds, and if so by how much—we should take that decision in accordance with China’s own need and also our aim to keep the security of our foreign reserves and the value of them,’ raising new concerns about China’s commitment to continue purchasing U.S. government debt.

2009 February 3: At a gathering in Kuwait City, Justin Lin (Chicago PhD ’86), the World Bank’s chief economist, estimates that losses in global equity markets are now \$30 to \$35 trillion, and that real estate markets have lost an equal amount. ‘To sum them up, total losses are about \$60 trillion, which is about the size of the global GDP.’

2009 February 17: In an interview with the *Financial Times*, Alan Greenspan says, ‘It may be necessary to temporarily nationalise some

	banks in order to facilitate a swift and orderly restructuring. I understand that once in a hundred years this is what you do.'
2009 February 17:	President Obama (Harvard Law '91) signs his $789 bn stimulus bill into law.
2009 February 26:	Founded in 1727, at the end of 2007 RBS was the world's largest bank by assets; in 2008 it lost £24.1 bn ($34.4 bn), the biggest loss in U.K. corporate history.
2009 February 26:	Fannie Mae reports a Q4 loss of $25.2 bn, bringing its 2008 loss to $58.7 bn.
2009 February 27:	The U.S. government agrees to become the biggest single shareholder in Citigroup, with a stake of up to 36%, in a partial nationalisation. This brings the amount of rescue funding to $50 bn. The market value of Citi (with some $1,600 bn in assets and operations in 130 countries) is less than $9 bn. Its shares fall 30%.
2009 February 28:	In the annual letter to his shareholders, Warren Buffett argues that the danger of derivatives is not merely the difficulty in assessing their value, rather it is the 'web of mutual dependence' they create and the long periods of entanglement: 'Participants seeking to dodge troubles face the same problem as someone seeking to avoid venereal disease. It's not just whom you sleep with, but also whom they are sleeping with.'
2009 March:	One indicator of the U.S. credit crunch is commercial paper outstanding (CPO): Q3 nominal GDP grew by 3.8%, but CPO fell by more than 25% (from $2.19 trillion to $1.58 trillion), and at end-February 2009 is $1.46 trillion. Asset-backed CPO fell by more than 40% (from a high of $1.21 trillion in mid-2007 to $725 bn), and at end-February is $671 bn. Unsecured financial CPO is $588 bn, from a high of $1,050 bn at end-2007.
2009 March 2:	Former head of the RBA, Ian MacFarlane (Monash MEc '71), argues that there are two reasons why Australia's big four banks are listed amongst the eleven soundest in the world by Standard & Poor's (AA or better): the 'four pillars' policy acted to reduce takeover competition among the banks, which reduced their propensity to take excessive risks to escape being taken over; and there was a savings shortfall in Australia, relative to lending opportunities here—unlike Europe and Japan—which kept the four banks out of the U.S. SP mortgage market.
2009 March 2:	After substantial writedowns on its commercial MBSs, AIG reports a $61.7 bn Q4 loss, the largest in U.S. corporate history, which pushes its total net loss for 2008 to $99.3 bn. In the third rescue in five months, the U.S. government will take a controlling stake in AIG's Asian operations and its global life insurance business, as well as $8.5 bn-worth of

bonds backed by cash flow from the U.S. life insurance unit. In return, the government will forgive most or all of the $38 bn lent to AIG, reduce the interest rate on future loans, and provide a $30 bn standby credit line from the TARP to cover further losses. This brings to $180 bn the amount of taxpayers' cash infusions that AIG has received, and counting. The government's stake remains at just below 80% of the company.

2009 March 5: The Bank of England cuts interest rates by 50 bp to 0.5%, and the ECB cuts rates by 50 bp to 1.5%. The Bank of England will spend £75 bn ($105 bn) of newly created money ('quantitative easing') to buy nearly a third of outstanding 5- to 25-year government bonds, or gilts. The 3-month US-dollar LIBOR has fallen to 1.28%, from 4.8% last September.

2009 March 5: Angry Fed Chairman Ben Bernanke, appearing at a Senate budget hearing, says that AIG strayed from its core insurance business and took unmonitored and unnecessary risks through its Financial Products (FP) unit, which wrote billions of dollars in exotic derivative contracts (including CDSs) that faltered and nearly destroyed AIG. AIG FP's activities were unregulated (see 2000/12/21), a gap in the system.

2009 March 5: Shares in Citigroup briefly fall to $0.97, from a high of $57.00 at the end of 2006.

2009 March 9: The Asian Development Bank (ADB) warns that the falls in the worldwide value of 'financial assets' (stock market valuations and bonds supported by mortgages and other assets, but not financial derivatives) might have reached more than $50 trillion, a year's global economic output. 'Asia has been hit disproportionately hard.'

2009 March 12: The global economy is on track for its worst recession since the 1930s, with output likely to shrink by 1–2% this year, World Bank President Robert Zoellick (Harvard Law & MPA '81) tells the London *Daily Mail*.

2009 March 15: Between 16 September and 31 December 2008, AIG paid $49.5 bn from bailout funds to CDS and securities-lending counterparties: GS $12.9 bn, Société Général $11.5 bn, Deutsche Bank $11.5bn, Barclays $8.5 bn, ML $6.8 bn, B. of A. $5.2 bn, UBS $5 bn, BNP Paribas $5 bn.

2009 March 15: After receiving more than $170 bn in taxpayer bailout money, AIG pays out about $165 million to AIG FP executives in bonuses and 'retention pay,' under contracts signed before last year's bailouts, including a single payout of $6.5 million. This is in addition to $121 million in previously scheduled bonuses for AIG's senior executives, including $9.6 million to the top 50 executives. AIG FP is being wound down.

2009 March 18:	Acting director of the OTS, Scott Polakoff (Southern Methodist MA '92), admits to a House hearing that OTS had the authority, resources, and expertise to have stopped AIG FP's CDS and securities lending commitments in 2004, but didn't, which was a mistake. (But see the March 2007 GAO report on OTS's lack of insurance expertise.)
2009 March 18:	The Fed announces that it will pump an extra $1 trillion into the mortgage market (by buying government-guaranteed mortgage-backed securities, $750 bn, and longer-term bonds, $300 bn), using 'quantitative easing,' in addition to the $500 bn of such securities it is already buying.
2009 March 19:	The IMF predicts that the world economy will shrink by up to 1% in 2009; G7 countries will contract by as much as 3.5%; Japan is forecast to contract by 5%.
2009 March 23:	U.S. Treasurer Tim Geithner announces a 'public-private partnership' for private investors to buy up to $1 trillion of banks' toxic assets, with government help: co-investment by the Treasury, cheap, non-recourse loans from the Fed, and debt guarantees from the FDIC. The investors face a good up side, but not much down side. The Treasury will expand the TALF as part of the package by accepting legacy debt: toxic debt as collateral from borrowers, as well as AAA-rated commercial real-estate bonds.
2009 March 31:	Caja de Ahorros Castilla-La Mancha is the first Spanish bank to be bailed out, with government loan guarantees of up to €$9 bn ($11.8 bn).
2009 April 21:	The IMF revises upwards its estimate of financial institutions' total writedowns on loans and other assets to $4.1 trillion, including total writedowns on U.S. assets of $2.7 trillion (up from its January estimate of $2.1 trillion, and almost double its October 2008 estimate), by the end of 2010. Banks will bear about two-thirds of the losses, with insurance companies, pension funds, hedge funds, and others taking the rest.
2009 April 22:	In its quarterly 'World Economic Outlook,' lead author Jörg Decressin (Harvard PhD '93), the IMF revises down its January forecast and says that the world economy will contract by 1.3% in 2009, instead of growing by 0.5%. Advanced economies will contract by 3.8% this year, they say, and global trade will plunge by 11% this year, after growth of 3.3% in 2008.
2009 May 8:	Subsequent to 'stress tests,' ten of the largest U.S. banks are ordered to raise a total of $75 bn in extra capital: BofA $34.9 bn, Wells Fargo $13.7 bn, Citigroup $5.5 bn on top of the $52.5 bn it plans to acquire by letting the U.S. Treasury become its biggest single shareholder. The rest are given a clean bill of health.

The Papers

The timeline of the Global Financial Crisis, inter alia, highlights the imperfections (to put it politely) of the competitive market mechanism. The lead paper in this issue is at the vanguard of what I believe will be a re-evaluation of the consequences of market inefficiency. Market indices (or indexes), such as the ASX200, are capitalisation weighted, where a firm's market capitalisation is calculated by multiplying its share price by the number of its shares outstanding. As Mar et al. (2009) argue, using market capitalisation ('market-cap') as the firm's weight, in an index ('the market portfolio') assumes that such a portfolio is always efficient, and so offers the maximum future return for the associated risk taken: that such market-cap indices lie on the ex-post efficient frontier.

But what if such markets are not (or at least not always) efficient? Then, argue Mar et al., using market capitalisations as index weightings will overweight over-valued shares and underweight under-valued shares. Worse, such indices might be out-performed by indices using other methods of weighting. Indices using such fundamental measures of size as book value or revenue are known as 'fundamental indices'. Mar et al. construct a fundamental index using Australian data, and find evidence supporting U.S. research which finds that fundamental indices have outperformed market-cap indices.

Do firms with higher levels of corporate social performance (CSP) also exhibit higher levels of corporate financial performance (CFP)? Lee et al. argue that, although earlier research suggests a negative answer, this is misleading. By CSP, they include sustainability, as well as environmental and social responsible behaviour. They state that a negative CSP/CFP relation should not be interpreted as CSP having no value, but rather that leading CSP firms trade at a premium, which would suggest that financial markets value CSP and are prepared to accept lower returns from such firms, which are therefore able to obtain a lower cost of capital.

The political reaction against recent corporate failures in Australia, and the consequent defaults on the bankrupt firms' obligations, especially to their employees, have resulted in, first, a government-funded compensation scheme, and, second, a proposal for legislation to give employees' entitlements, such as for accumulated unpaid leave, seniority in corporate liquidation. Davis and Anderson (2009), the third paper in this issue, argue that such a measure would have an 'extremely small' effect on corporate funding costs, and should be considered further.

Does size matter? Or, more politely, do small funds outperform large funds, and if so, then why? Chan et al. (2009) report that they do, and explore transaction costs as a possible explanation for the small funds' better performance, using a unique transactions database to compare the transactions of large and small fund managers directly.

Fong et al. (2009) examine a portfolio strategy that selects stocks using the undisclosed monthly share holdings of active Australian fund managers, in so-called fund-of-funds or multi-manager investment vehicles. They find that the use of such fund-holdings information has short-term predictive ability.

It is some years since the *Journal* last featured a Counterpoint exchange. The Counerpoint section allows us to publish contentious or provocative articles which would not otherwise appear here. This issue includes a paper by Brewer (2009) and a response by Harcourt (2009). They are addressing the question of Austrade and its efforts to promote Australian exports. Although this might be of limited interest to the general reader, and although the recent commodities export boom dwarfed any exports of goods and services, as General Editor I believe that light as well as heat has been generated by the thesis and antithesis. You be the judge.

Housekeeping

As I foreshadowed in the December 2008 issue, the University of New South and SAGE Publications Ltd. have signed an agreement which will mean that from Volume 35, Number 1, April 2010, the *Journal* will be published by SAGE, who will handle the production, publication, marketing, sales and subscriptions of the *Journal* in all formats. The University will retain the editorial role. This outcome is one that I (together with others) have been pursuing for some time, and so I am pleased that we have been able to reach this agreement. The first 2010 issue will appear in April, the first of three regular issues a year. I believe that the commitment of both the University and SAGE will result in a productive partnership, to the benefit of our authors and readers.

As I have previously mentioned, the *Journal* has been accepted into ISI's web of Science's Social Science Citation Index. An Impact Factor should soon be available for 2008.

Michael Ryall of the Melbourne Business School has been the associate editor, strategy, for the past eighteen months, but is returning to the U.S. and has relinquished his editorship. Farewell, Michael. I shall announce a replacement soon.

The E. Yetton Award, for the best paper published in the *Journal* in the previous year's volume goes to the husband-and-wife team of Clement and Izan (2008) and the runner-up is Walsh and Tan (2008). Congratulations to all four authors.

Robert E. Marks
General Editor

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