Exercise 73

1. Define:
a) LEVERAGE

b) DERIVATIVES

c) MORAL HAZARD

2. Why would interest rates fall as inflation fell in the 1980s?

3. Imagine you are an investment bank, and that you are leveraged 30 to 1. That is, for every dollar of the bank's money invested, there are 30 dollars of borrowed money invested. Imagine that the bank buys a stock at $31 per share. Assuming no interest on the money the bank borrowed, if the stock went to $32 per share, after paying back the borrowed money:
a) How much money does the bank have left over?

b) How much of that money is profit?

c) What percentage is this profit of the bank's initial investment?

d) What would have happened to the bank's investment had the share gone to $30?

4. Imagine that you are again an investment bank, and that you are now trading derivatives contracts, specifically options, which give you the right, but not the obligation, to buy a commodity at a certain price on a certain date in the future. You buy a contract to buy gold at $1600 per ounce (the same price it is now) in 6 months, and this contract costs you $10.
a) If, on the options expiry date (ie in 6 months time) the gold price is $1650 per ounce, how much should your contract be worth?

b) How much profit did you make on the contract? What percentage profit did you make on your initial investment?

c) What would have happened to the value of your option if the price of gold had been below $1600 on the expiry date?

d) Now, redo 'b', but imagine that you had bought the options contract with leverage, so that you borrowed $9 of the cost of the contract and only used $1 of your own money. Assuming no interest on the money you borrowed, what would be your percentage profit now?

Lesson 74 The Global Financial Crisis of 2008-2011
Part Three - Enter Fraud

When the bank robber Willie Sutton was asked by a reporter why he robbed banks, he reputedly replied *"because that's where the money is."*
Similarly, as financial markets became increasingly where the money was, so too did they increasingly attract individuals and firms interested in perpetrating fraud.

The "cult of equities" (aka stocks) reached a fever pitch in the late 1990s during the dotcom bubble. By the end of the decade financial news was on the front page and everyone, rich and poor, was excited by technology companies whose stocks rose steadily in value on the NASDAQ stock exchange despite often having no earnings. In a nice touch, information technology enabled people to invest in stocks without having to go through a broker so long as they had a computer and an e-trade account.

With money flooding into the stock market, and with the media increasingly infatuated with the financial markets they were supposed to be monitoring, what Alan Greenspan famously called "irrational exuberance" took hold. For a while, it was a virtuous circle, as the money flooding in financed worthy innovation and product development which in turn supported higher stock prices. However, in the end, the dotcom bubble became a **Ponzi scheme**. A Ponzi scheme (or pyramid scheme) is so named for the fraud perpetrated by Charles Ponzi in the 1920s, where investors are encouraged to invest with promises of high returns which come, in fact, from the money contributed by later investors. Towards the end of the dotcom boom, many investors were buying stocks without even considering a firm's products or earnings. Instead, they were buying expensive and over-valued stocks in the hope that they would be able to sell them to even 'bigger fools' willing to pay even more later on.

The 2001 collapse of the energy trading firm Enron, which had been a darling of the financial media and whose spectacular profits and rapidly rising stock price had lured in many investors, exposed significant corruption in the financial industry. In the Enron case, while retail investors were buying stocks in what was purportedly a wonderfully profitable company, company insiders aware of the true condition of the firm were selling. What was most disturbing about the Enron story was the revelation that it had engaged in massive accounting fraud, aided and abetted by the accounting firm Arthur Andersen. Enron employed a dizzying array of accounting tricks to keep profits on its books while putting losses onto the books of subsidiaries (ie off-balance sheet accounting) registered in offshore banking centres like the Cayman Islands. However, in order not to lose lucrative consulting contracts with the firm, Arthur Andersen's auditors (ie the people who check the accounts of companies to make sure they are in accordance with the law) did not look too closely at irregularities which even business school students found suspicious in the course of their case studies. The exposure of this, and other scandals in the early 2000s shook confidence in the stock market, which, like any other market, depends upon trust. Investors felt, quite rightly, that their trust had been violated and began to pull their money out.

Partly as a result of this, in 2001 the US economy slipped into a recession. As there had been a lot of misdirected investment in previous years a recession was what was needed to reset prices and redirect investment capital towards other productive sectors. However, in the wake of the 9/11 attacks, it was decided that the last thing American needed was a recession. Famously, President G.W. Bush exhorted people to go out and shop in response to the attacks to show the terrorists

that Americans would not let them affect their way of life. To encourage such spending, the Federal Reserve lowered interest rates steadily until they reached just 1% in 2004. Global trade imbalances, in particular those between East Asia (mainly China) and the US, also helped to keep US interest rates low (as was discussed in lesson 69).

As we discussed in lesson 39, though, ultra low interest rates can result in precious capital being misallocated. In many countries, low rates led to a frenzy of home building and buying, and a significant increase in real estate prices. For a time, growth in the housing sector became self-sustaining, and contributed significantly to economic growth as people used the increase in the value of their homes as collateral for loans to finance increased spending. In short, rising asset prices supported increased borrowing which in turn supported increased consumption and therefore GDP.

Banks were eager to profit from rising real estate prices and so (in line with the tendency to create and trade derivatives) increasingly securitized mortgages to sell to investors. This process of securitization, though, became corrupt. In the old days, when a homeowner took out a mortgage from a bank, the bank would keep that mortgage on its accounts as an asset and so was concerned that the asset be a good one. In other words, as mortgages granted were owed to the bank, the bank would only grant mortgages to lenders clearly capable of paying them back. **Securitization** changed all of this. The process of securitization was as follows. First, a mortgage broker would grant a mortgage to a homebuyer. The mortgage broker was paid a commission that was based on the type and value of mortgage sold. Mortgages to riskier homeowners (those with few assets or with a spotty employment and income record) often could command higher interest rates and would often net the brokers a better commission. The mortgages then were passed to the bank that issued the money, which would in turn pass the mortgages on to an investment bank which would then create what was called a 'mortgage backed security'. Investors (pension funds, municipalities etc.) who bought mortgage backed securities (which were certified as low risk investments by the ratings agencies) would then receive the mortgage payments from the homeowners.

The problem with this approach was that the people who ultimately held the mortgages were not the same people who had approved the mortgages. Mortgage brokers were interested in simply awarding as many mortgages as possible and collecting their commission, while the banks, knowing that they would in turn pass the mortgages on to investors, also were not motivated to ensure that the people being granted mortgages were likely to pay them back. Predictably, some people who were granted mortgages in this way (and who faced sharply higher interest rates a couple of years in, at least partly due to the Federal Reserve's decision to start raising rates in 2005 to arrest what was obviously a housing bubble) later on proved unable to make their payments.

As these 'sub-prime' (ie high risk) mortgages began to go into default in 2007, two things happened. First, the homes of the people in default were repossessed and sold. This increase in housing supply had the effect of driving down real estate prices, which led to some other homeowners owing more on their mortgage than their home was worth. In this situation, many people who were able to make their payments decided they would be better off walking away from their homes and associated mortgages, which further increased the supply of homes on the market, further depressing prices in a vicious circle. Secondly, the investors who had bought-mortgage backed securities stopped receiving the payments that they had been promised. The models used by the ratings agencies when certifying the securities as low risk had assumed that housing prices would always rise. Now that this assumption was being shown as false, a crisis of confidence swept the financial world. Most banks held mortgage backed securities in their portfolios and up until the middle of 2008 they were a heavily traded and valuable liquid asset. However, once they were seen as potentially risky, banks rushed to get rid of them and sought the safety of cash. This caused them to collapse in value and led in turn to the collapse of Lehman Brothers in the fall of 2008. This collapse caused financial markets to grind to a complete halt as Lehman Brothers had assets and debts with most other large financial institutions which were now also potentially in financial trouble if their money held with Lehman turned out to be unrecoverable.

To unfreeze capital markets, the US Treasury and the Federal Reserve agreed to buy up 'troubled' assets (ie worthless mortgage backed securities) at full face value and to allow banks to borrow essentially unlimited amounts of money at very low (almost zero percent) interest rates. This had the desired effect on the financial system, and once again banks began to borrow and lend to one another. Had the Treasury and the Fed not acted in this way, many more banks and other financial institutions would have failed, and the crisis would have been much worse.

However, these bank bailouts (which were undertaken in concert with other governments around the world) expanded government debt and increased the money supply enormously. While they restored liquidity to the financial system, they did so at the expense of confidence in the ability of governments to pay their debts (ie the European debt crisis) or protect the purchasing power of their currencies. More ominously, the bailouts were not accompanied by thorough regulatory and other reforms designed to reduce the tendency of investment banks to engage in risky, over-leveraged speculation in derivatives (although the Dodd-Frank Act does address some concerns). In fact, the bailouts, in the view of many commentators such as Matt Taibbi at Rolling Stone Magazine, may have just encouraged more financial crises in the future due to moral hazard. The global financial system remains highly leveraged, and the banks themselves are not likely to voluntarily deleverage themselves as they are addicted to the profits that can be made from leverage, particularly when they can borrow money at zero percent interest from central banks. Fundamentally, ultra-low interest rates can be seen to be enabling the financial industry to continue to operate in the same fashion that brought on the crisis in the first place.

The collapse of the commodities broker MF Global in November 2011 was caused by a highly leveraged trade on European bond derivatives that went wrong. However, MF Global had pledged assets in the accounts of its customers as collateral for loans it had taken to make the trade. The financial industry calls this practice, legal in the UK and the US, **"re-hypothecation."** To make an analogy, when I take out a mortgage on a home, I pledge the home as collateral against the loan. If I can't pay back the loan, then the lender has the right to take my home. However, no one else is allowed to use my house as collateral for their loans. Otherwise, other people would gladly take out loans against my home secure in the knowledge that if they couldn't pay them back, that it is I who would be made homeless. However, people with accounts at MF Global have seen the assets in their personal accounts seized by the banks (JP Morgan is one) which lent MF Global money for its trades, as these assets had been pledged as collateral for the banks' loans to MF Global. The details of the bankruptcy are causing investors to lose confidence in the US financial system's institutional integrity and commitment to the rule of law.

Exercise 74

1. Define:

a) PONZI SCHEME

b) SECURITIZATION

c) RE-HYPOTHECATION

2. You live in a big city. You tell three of your friends about an investment opportunity that is too complicated to explain (but that they must trust is real) that can give a return of 50% a month. You tell them that you can only let in a few other people on this great opportunity, and so they can only bring in three other people. All you ask is for them to give you $1000.

a) Complete the table below to see how the scheme would progress if repeated 4 times before it collapses. Every round lasts one month. People only get paid their return (50% of $1000 = $500/month) after they have been involved for at least a month.

Round	New Participants	Payments Received	Old Participants	Payments Disbursed
1	3	3000	0	0
2	9	9000	3	1500
3				
4				
End	Total:		Total:	

b) What was your 'take' (payments minus disbursements) on the Ponzi scheme above?

c) Who else won from the scheme? Who lost?

3. We saw how the accounting firm Arthur Andersen failed to perform proper audits on the accounts of Enron. Similarly, ratings agencies (like Moody's and Standard and Poors) gave mortgage backed securities "AAA" ratings as very safe investments, which encouraged pension funds and others to buy them. Lastly, the trades undertaken by MF Global were approved by the Commodity Futures Trading Commission in the days prior to the firm filing for bankruptcy. What is the common denominator in all of these situations? Why do you think the relevant agencies failed to perform their duties in each case? Looking at the freeze-up of markets that tends to follow such events, what source of market failure is indicated?