Lecture 9: Bubbles and Crashes

- Rf: AM-3
- Financial Bubbles
- John Law: Financial Innovator and Policy Maker
- Mississippi Company and South Sea Bubbles
- Stock Market Crashes

financial bubbles

- A succession of financial bubbles.
  - share prices have soared to unsustainable heights only to crash downwards again,
  - this process has been accompanied by skullduggery, as unscrupulous insiders have sought to profit at the expense of naive neophytes.
  - The process have ben repeating more frequently in the last 50 years

financial bubbles

- Five stages of bubbles:
  - 1. Displacement
  - 2. Euphoria or overtrading
  - 3. Mania or bubble
  - 4. Distress
  - 5. Revulsion or discredit

Financial bubbles

- 1. Displacement:
  - Some change in economic circumstances creates new and profitable opportunities for certain companies.
- 2. Euphoria or overtrading:
  - A feedback process sets in whereby rising expected profits lead to rapid growth in share prices.
- 3. Mania or bubble:
  - The prospect of easy capital gains attracts first-time investors and swindlers eager to mulct them of their money.

Financial bubbles

- 4. Distress:
  - The insiders discern that expected profits cannot possibly justify the now exorbitant price of the shares and begin to take profits by selling.
- 5. Revulsion or discredit:
  - As share prices fall, the outsiders all stampede for the exits, causing the bubble to burst altogether.

Stock market bubbles

- Three key themes with recurrent features.
- 1. *The first:* the role of asymmetric information.
  - Insiders- those concerned with the management of bubble companies - know much more than the outsiders, and, in a bubble, exploit outsiders them fraudulently

Stock market bubbles

- *2. The second :* the role of cross border capital flows.
  - Bubbles are more likely to occur when capital flows freely from country to country.
  - The seasoned speculator, based in a major financial center, may lack the inside knowledge of the true insider, but is much more likely to get his timing right - buying early and selling before the bubble bursts - than the naive first-time investor.
  - In a bubble, i.e., not everyone is irrational; or, at least, some of the exuberant are less irrational than others.

Stock market bubbles

- 3. The third: the role of easy money
  - Finally, and most importantly, without easy credit creation a true bubble cannot occur. That is why so many bubbles have their origins in the sins of omission or commission of central banks.

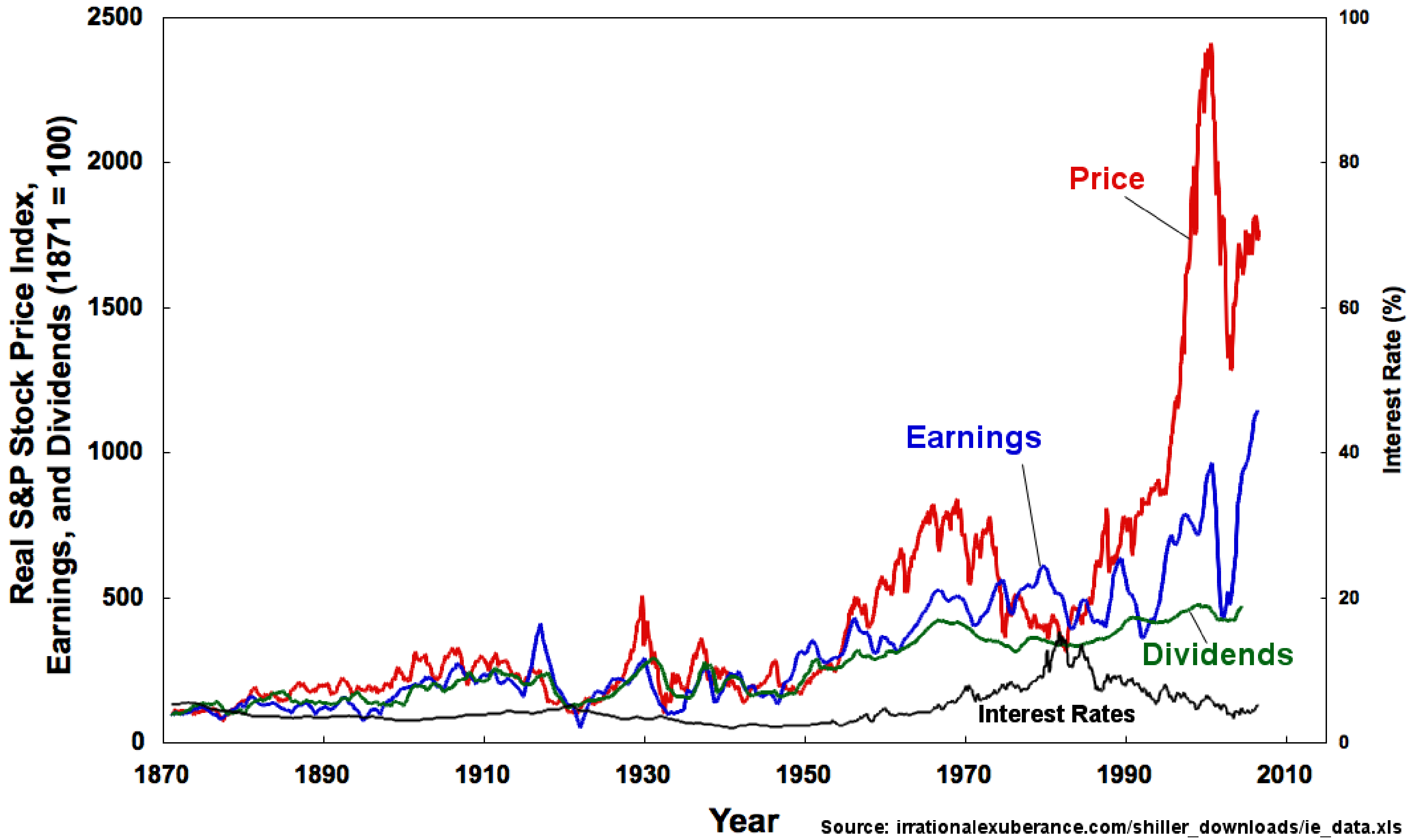
Financial Bubbles

- An **economic bubble** (sometimes referred to as a **speculative bubble**, a **market bubble**, a **price bubble**, a **financial bubble**, a **speculative mania** or a **balloon**) is "trade in high volumes at prices that are considerably at variance with intrinsic values".[
- Famous bubbles:
  - Tulip mania (top 1637), South Sea Company (1720), Mississippi Company (1720, Roaring Twenties stock-market bubble (circa 1922-1929), 1997 Asian Financial Crisis (1997), The Dot-com bubble (1995–2000), Subprime bubble (2008-2009)

Bubbles and Crashes

- A stock market crash: defined as a sharp dip in share prices of equities listed on the stock exchanges.
  - In parallel with various economic factors, a reason for stock market crashes is also due to panic and investing public's loss of confidence.
  - Often, stock market crashes end speculative economic bubbles.
- Famous stock market crashes:
  - Wall Street Crash of 1929, the stock market crash of 1973–4, the Black Monday of 1987, the Dot-com bubble of 2000, and the Stock Market Crash of 2008.

Crashes



Real S&P Stock Price Index, Earnings, and Dividends (1871 = 100)
Interest Rate (%)
Price
Earnings
Dividends
Interest Rates
Year
2500
2000
1500
1000
500
0
100
80
60
40
20
0
1870
1890
1910
1930
1950
1970
1990
2010
Source: irrationalexuberance.com/shiller_downloads/ie_data.xls

John Law

- **John Law** (1671 –1729):
  - a Scottish economist who believed that money was only a means of exchange , did not constitute wealth in itself and that national wealth depended on trade.
  - He was appointed Controller General of Finances of France under King Louis XV.
  - In 1716 Law established the Banque Générale in France, a private bank, but three-quarters of the capital consisted of government bills and government-accepted notes, effectively making it the first central bank of the nation.

John Law

- **John Law** (1671 –1729):
- Law was a gambler and a brilliant mental calculator. He was known to win card games by mentally calculating the odds.
- He originated economic ideas such as "The Scarcity Theory of Value" and the "Real bills doctrine"

- He was responsible for the Mississippi Bubble and a chaotic economic collapse in France.

Financial Innovation and John Law

- the First two decades of the 18C, a period of profound financial innovation
  - the Bank of England and some of Britain’s major insurance companies were crated
  - also a time long remembered due to the rise and collapse of the Mississippi Company in Paris and the South Sea Bubble in London.
- Enter John Law
  - A great financial innovator, sentenced to death in the year of the creation of the Bank of England,1694,
  - but had become the equivalent of the prime minister of France (Controlleur Général des Finances) in 1720.

John Law, The Innovating Theorist

- John Law , an Innovating theorist
- Law, a fugitive from English justice, become the equivalent of a bookmaker, made a fortune at gambling and on the banking.
- Law in his Essay on a Land Bank, 1704 (not published until 1994:
  - argued for the creation of a land bank in England,
  - At a time when William of Orange was put on the throne of England in 1688, the establishment of the Bank of England.

John Law, The Innovating Theorist

- Law's Essay published as Money and Trade:
  - to discuss 18C economic issues using the terminology of a modern writer.
  - Law was the first writer to present the water/ diamonds paradox, later to be borrowed without acknowledgement by Adam Smith, in his attempt to determine the determinants of value.
  - These were not trivial discoveries. His analysis on money was the first introduction of the concept of demand for money.

John Law, The Innovating Theorist

- Law's Essay published as Money and Trade:
  - he showed that when the supply of money was greater or lesser than the demand for money; prices would change and have redistributive effects on creditors and debtors:
  - If the quantity is less than the demand for it the landed man who owes money and has his rent paid in the product of the ground is wronged, for money being more valuable it will cost him a greater quantity of his goods to pay the debt he owes.

John Law, The Innovating Theorist

- Law's Essay published as Money and Trade:
  - If the quantity of money is greater than the demand for it the money'd man is wronged for money being less valuable.
- Law went on to show how an overall expansion in the European money supply due to an influx of precious metals from South America would have inflationary consequences throughout Europe:
  - When the Spaniards bring money or bullion into Europe, they lessen its value, but gain by bringing it; because they have the whole benefit of the greater quantity and only bear a share of the lesser value.

John Law, The Innovating Theorist

- the Quantity Theory of Money
  - In effect, Law’s theory was a statement of the quantity theory of Money.
  - In his restatement of the modern quantity theory Milton Friedman wrote that “the quantity theory is in the first instance a theory of the demand for money. It is not a theory of output, or of money income, or of the price level. Any statement about these variables requires combining the quantity theory with some specifications about the conditions of supply of money";

John Law, The Innovating Theorist

- Rejection of the vagaries of the metallic monetary system.
  - Quite simply Law wished to remove this reliance on metallic money and replace it with a credit-creating paper money system.
- Law’s concept of money
  - Rather than having a gold-backed banking system Law believed that it was possible to remove gold and silver completely from the monetary system. From his earliest writings Law had put forward a view that there were other financial instruments besides banknotes that could be used as money

Law’s View of money

- Law’s View of money
- He had seen dealings in the coffee houses of Exchange Alley where the shares of the East India Company and the Bank of England had been used as money.
- Shares of the Bank of England and the East India Company Law as media-of-exchange money.
  - Law was interested in the media of exchange qualities of financial instruments and as early as 1704 was prepared to categorize

Theory behind the Incident of Mississippi Company

- Financial instruments as bills of exchange
  - The visualization of a broad range of financial instruments that could be used as media of exchange- ranging from gold and silver to banknotes, and shares of the bank and the large trading companies
- Monetizing these shares of Mississippi Company
  - The ides later led him to consider the shares of the as a type of money and, furthermore, to monetize these shares at a guaranteed price of 9,000 livres a share in the spring of 1720.

John Law, The Innovating policymaker

- Law' an innovating policymaker.
  - To solve the debt overhang and financial crisis, supply financial money, or monetize.
  - General Bank he founded for this purpose was a success
- Financial background of France.
  - When Louis XIV, the Sun King, died,, France was in a state of bankruptcy.
  - Continuous warfare had left France short of money and facing a sizable state debt.

French Financial Crisis

- French Financial Crisis
  - Furthermore, the tax revenue collection system had been farmed out to the private sector, the financiers.
  - In effect, the state heavily mortgaged to the financiers.
- the Chamber of Justice
  - To blood-let the financiers, regarded (bloodsuckers).
  - punishing the financiers by confiscating their ill-gotten gains, fining them, sending them to the galleys, imprisoning them, and even publicly executing them.

French Financial Crisis

- French Financial Crisis
  - From Law’s view, two problems: a shortage of money and Debt crisis. Or monetary crisis and financial crisis
  - In the financial vacuum created by the Chamber of Justice’s activities john Law was finally able to push through his ideas.
  - Law’s General Bank helped to solve a shortage of money.

French Financial Crisis

- French Crisis: monetary shortage
  - a shortage of money that had created unemployment and underutilization of resources.
- French Crisis: Government debt Crisis.
  - France had a further crisis-a financial crisis.
  - Over-borrowing had created a massive overhang of state debt along with high interest rates, as the state had to pay more for any securities it issued.

Law’s plan to restructure French Finance

- Founding of Mississippi Company
  - The Chamber of Justice had Law take over the Company of the West *(Compagnie d’Occident)* , and gave monopoly trading rights over French Louisiana in August 1717 .
  - The right ceded to the chamber, in partial payment of the tax exacted on the financier Antoine Crozat.
  - the Company later became Mississippi Company
  - the trading rights to Louisiana, in return for which the company taking over part of the state’s short-term debt.

Law’s Company of the West

- Law’s Company of the West Deal
  - The deal was advantageous to the crown in that part of the short-term debt was taken off the market and the rate of interest on it was lowered-this reduced rate of interest would also constitute the revenue stream for the company to finance its activities in Louisiana. It reduced interest burden of the state as well as to fund it.
  - From the company’s viewpoint it received the exclusive privilege of developing French Louisiana, a territory far larger than the current state of Louisiana.

Law's Company of the West

- Company of the West Deal
  - French Louisiana stretched from the Gulf of Mexico to Canada; bounded on the east by the British Carolinas and on the west by Spanish Texas; half of the land mass of the United States today (excluding Alaska).
  - Law hoped that by developing the agricultural and mineral wealth of this massive area the company would establish a heavy income stream to increase the dividend payments on its shares.
- To subscribe, transactors handed over their short-term government debt in return for shares of the company. These first shares,called mothers, sold at the deep discount-around 70 percent-on government debt in the

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Law's Company of the West

- The Process of bubble
  - To subscribe, transactors handed over their short-term government debt in return for shares of the company.
  - These first shares, called mothers, sold at the deep discount-around 70 percent-on government debt in the market, transactors were able to purchase shares with a nominal value of 500 livres by parting with government securities that had a market value of around 150 livres.
  - The Company of the West represented a modest financial building block for the creation of what later came to be known as the Mississippi Company.

Mississippi Company and South Sea Company

- Mississippi Company
  - The **"Mississippi Company"** (of 1684) became the **"Company of the West"** (1717) and expanded as the **"Company of the Indies"** (1719).
- South Sea Company
  - The **South Sea Company** was a British joint stock company that traded in South America during the 18th century.
  - Founded in 1711, granted a monopoly to trade in Spain's South American colonies as part of a treaty during the War of Spanish Succession.

Mississippi Company Bubble

- Mississippi Company Bubble
  - Law exaggerated the wealth of Louisiana with an effective marketing scheme, which led to wild speculation on the shares of the company in 1719.
  - The scheme was to have the success of the Mississippi Company combine investor fervor and the wealth of its Louisiana prospects into a sustainable joint-trading company.
  - The popularity of company shares were such that they sparked a need for more paper bank notes, and when shares generated profits the investors were paid out in paper bank notes.

Mississippi Company Bubble

- Mississippi Company Bubble
  - In 1720, the bank and company were united and Law was appointed Controller General of Finances to attract capital.
  - Law's pioneering note-issuing bank was successful until the French government was forced to admit that the number of paper notes being issued by the Banque Royale were not equal to the amount of metal coinage it held.

Mississippi Company Bubble

- Mississippi Company Bubble
  - The "bubble" burst at the end of 1720, when opponents of the financier attempted *en masse* to convert their notes into specie, forcing the bank to stop payment on its paper notes.
  - By the end of 1720, Law was dismissed from his positions by Philippe d'Orléans, regent of France for Louis XV.
  - Law then fled France for Venice.

South Sea Bubble

- Refinancing government debt
  - In 1717 the South Sea company took on a further £2 million of public debt; Britain's government spending being £64.4 million at the time.
  - The rationale for the government in all these transactions was to lower interest rates on its debt. It also gave the South Sea Company (owners) a steady stream of earnings.
  - The holder of government debt got a new investment in exchange for terminating annuities.

South Sea Bubble

- South Sea Bubble
  - In 1719 the company proposed a scheme by which it would buy more than half the national debt of Britain (£30,981,712), again with new shares, and a promise to the government that the debt would be converted to a lower interest rate, 5% until 1727 and 4% per year thereafter.
  - The purpose of this conversion was similar to the old one: it would allow a conversion of high-interest but difficult-to-trade debt into low-interest, readily marketable debt and shares of the South Sea Company. All parties could gain. In summary, the total government debt in 1719 was £50 million:

South Sea Bubble

- Shares for Debt: All parties could gain?
- In summary, the total government debt in 1719 was £50 million:£18.3m was held by three large corporations:
  - £3.4m by the Bank of England
  - £3.2m by the British East India Company
  - £11.7m by the South Sea Company
- Privately held redeemable debt amounted to £16.5m
- £15m consisted of irredeemable annuities, long fixed-term annuities of 72–87 years and short annuities of 22 years remaining maturity.

South Sea Bubble

- Shares for Debt:
  - The Chancellor of the Exchequer, John Aislabie, was a strong supporter of the scheme.
  - Crucial in this conversion was the proportion of holders of irredeemable annuities that could be tempted to convert their securities at a high price for the new shares. (Holders of redeemable debt had effectively no other choice but to subscribe.)
  - The South Sea Company could set the conversion price but could not diverge much from the market price of its shares.

South Sea Bubble

- Inflating the share price and bursting the Bubble
  - The company ultimately acquired 85% of the redeemables and 80% of the irredeemables.
  - The price finally reached £1,000 in early August and the level of selling was such that the price started to fall, dropping back to one hundred pounds per share before the year was out, triggering bankruptcies amongst those who had bought on credit, and increasing selling, even short selling-selling borrowed shares in the hope of buying them back at a profit if the price falls.

South Sea Bubble

- Inflating the share price and bursting the Bubble
  - Also, in August 1720 the first of the installment payments of the first and second money subscriptions on new issues of South Sea stock were due.
  - Earlier in the year John Blunt had come up with an idea to prop up the share price-the company would lend people money to buy its shares.
  - As a result, many shareholders could not pay for their shares other than by selling them.

South Sea Bubble

- Inflating the share price and bursting the Bubble
  - Furthermore, the scramble for liquidity appeared internationally as "bubbles" were also ending in Amsterdam and Paris.
    - The collapse coincided with the fall of the Mississippi Scheme of John Law in France.
    - As a result, the price of South Sea shares began to decline. By the end of September the stock had fallen to £150.

South Sea Bubble

- Inflating the share price and bursting the Bubble
  - The company failures now extended to banks and goldsmiths as they could not collect loans made on the stock, and thousands of individuals were ruined, including many members of the aristocracy.
  - With investors outraged, Parliament was recalled in December and an investigation began. Reporting in 1721, it revealed widespread fraud amongst the company directors and corruption in the Cabinet.

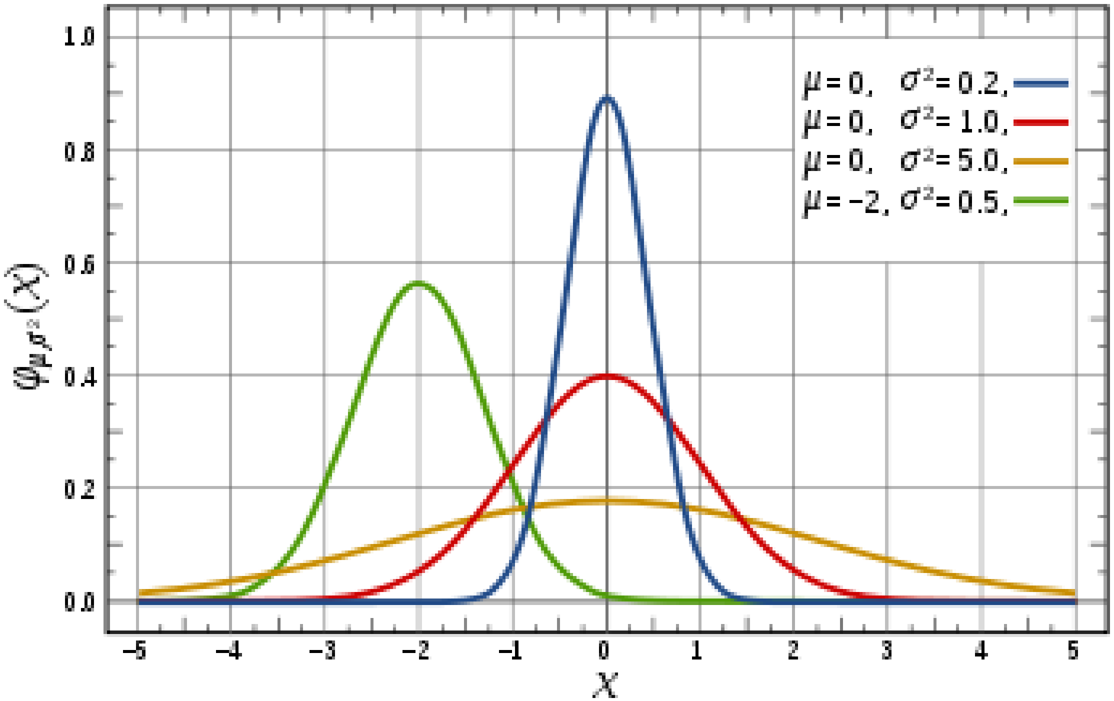
Stock Markets: ‘Black Days’

- the most important historical events vs the nonevents:
  - The economist Hyman Minsky put it well when he observed: ‘The most significant economic event of the era since World War II is something that has not happened: there has not been a deep and long-lasting depression’.
  - So-called ‘Great Moderation’
- But the world has witnessed many ‘Black Days’.
  - Market movements not well behaved like a normal distribution.

Stock Markets: 'Black Days'

- The stock market movements followed the 'normal distribution' or bell curve-price distribution, normal distribution?
- But in financial markets, there is much less clustering around the average, and there are many more big rises and falls out at the extremes.
  - the statisticians call 'fat tails'.
  - stock market plunges of 20 per cent or more, in fact there have been nine such crashes in the past century.

Black Swan or fat-tailed distribution

- A fat-tailed distribution is a probability distribution that has the property, along with the heavy-tailed distributions, that they exhibit extremely large skewness or kurtosis, in contrast to a normal **distribution.**
- 

Example: ‘Black Monday’, I9 October 1987

- On ‘Black Monday’, I9 October 1987, the Dow fell by a terrifying 23 per cent,
  - one of just four days when the index has fallen by more than 10 per cent in a single trading session.
  - The New York Times’ front page the next morning said ‘Does 1987 Equal 1929?’
  - From peak to trough, the fall was of nearly one third, a loss in the value of American stocks of close to a trillion dollars.

Example: 'Black Monday', I9 October 1987

- The causes of the crash?
  - Matters were made worse by a breakdown in the New York Stock Exchange's automated transaction system, and by the lack of 'circuit breakers' which might have interrupted the sell-off on the futures and options markets.
  - The remarkable thing, however, was what happened next, or rather, what didn't happen.

Example: ‘Black Monday’, I9 October 1987

- The causes of the crash?
  - Matters were made worse by a breakdown in the New York Stock Exchange’s automated transaction system, and by the lack of ‘circuit breakers’ which might have interrupted the sell-off on the futures and options markets. The remarkable thing, however, was what happened next - or rather, what didn’t happen.
  - There was no Great Depression of the 1930s, nor was even a recession in 1988 (only a modest one in 1990-91). Within little more than a year of Black Monday, the Dow was back to where it had been before the crash.