Is Crypto A Bubble?
An Historical Perspective

A Public Lecture
Goethe University, Frankfurt am Main

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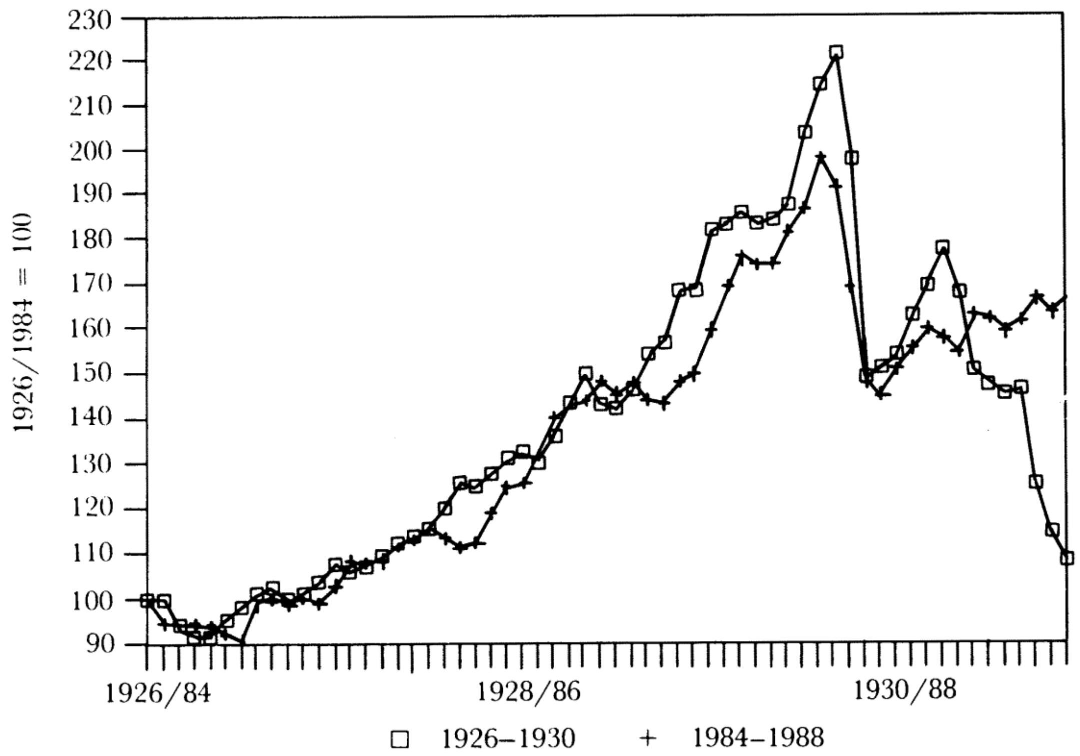
Crypto is the thing! Don't miss out, Bro! Or is it a Dangerous Bubble?

- Key Questions
  - Should we as individuals dive in?
  - Should we in financial institutions reorient our operations?
  - Should we as regulators take a laissez-faire approach or put a firm hand on the beast?
  - Are CBDCs thwarting market development or are they rational culmination of Crypto evolution, as in the evolution of bank currencies into a uniform national currency?
- My approach to consider financial history as an analytical framework to ask the right sort of questions
- Why financial history?
  - Limited number of observations with multiple dimensions
  - Bubbles are infrequent events; twenty years might pass between financial bubbles.
  - Each one has some distinctly different features that requires nuanced comparisons. (Approach of Mishkin and White [2003] for central bank interventions in crises).

What is a bubble?

- When U.S. Supreme Court Justice Potter Stewart was asked to describe his test for obscenity in 1964, he responded: "I know it when I see it.“
- Tempted to give a description rather a definition.
- A typical description an asset bubble has some key elements
- 1. A sustained rise in the value of an asset, i.e. a long nearly steady series of large positive returns, for which the probability seems unlikely
- 2. a sudden drop in the value of the asset that would indicate an abrupt shift in the fundamentals but which are not necessarily observed.
- Both of these suggest that what is driving the market is the “madness of crowds” or “irrational exuberance” not just fundamentals

Figure 1
Common Stock Indices



Source: The index for the 1980s is Standard and Poor’s 500. The data for the 1920s is found in the Board o Governors of the Federal Reserve System (1943).

Beyond the Visuals:
The Essential (?) Elements for a Bubble

1. **The Political Economy of Transformative Innovation(s):** There is an opportunity for the public to invest in some new disruptive technology.
2. **Effective Promoter-Insider(s):** Individuals held in high public esteem for their advice to invest
3. **"Irrational Exuberance"** of the "Fools" allows the Rational Investors to Ride the Bubble
4. **Easy Credit** for Investors Fuels the Market's Rise
5. **Causes of a Bubble's Collapse**: Credit surprise or Run out of Exuberant Investors or Increased Supply of alternative investments.
6. **Cost of the Bubble and Clean Up:** Wealth shock and liquidity shocks to economy. Protect or punish the insider-promoters? Compensate investors?

Beyond the Visuals: The Essential (?) Elements for a Bubble in Detail

1. **The Political Economy of Transformative Innovation(s): O**pportunity for the public to invest in some new disruptive technology.
   - Political market determines the "rights" to that technology, whether it is the patent, ownership or access rights. High returns excites interests of potential winners and losers.
   - Political allocation of rights is complicated by poorly understood nature of a transformation innovation in its early stages and the degree of uncertainty about its ultimate effects on the economy: railroads, the internet, AI or the management of government debt or information dissemination.
2. **Effective Promoter-Insider(s):** Individuals held in high public esteem for their advice to invest
   - Their effectiveness often stems from the fact that they are insiders.
   - Consequently, they have conflicts of interest that are exploited when asset price rise rapidly enough to warrant sacrificing their reputation for large immediate personals.

Beyond the Visuals:
The Essential (?) Elements for a Bubble in Detail

3. **“Irrational Exuberance” of the “Fools” allows the Rational Investors to Ride the Bubble**:
    - Investors, especially new investors are drawn by apparent opportunity for quick wealth, not on the basis of some rational calculation, but their collective “Irrational Exuberance” or ”Unreasoning Wave of Optimism” and ignoring skeptics criticisms
    - Rational investors enter the market to ride the bubble for a while, assuming that they sell the asset they bought from an irrationally exuberant “fool” and sell it to “a great fool.” [“Greater Fool Theory”].
4. **Easy Credit?**
    - Do Lenders Fuel the Bubble with Easy Credit for Investors, lowering the cost of funds?
    - Do Skeptical Lenders Reluctantly Provide Credit to Investors at Substantially Higher Cost?

Beyond the Visuals:
The Essential (?) Elements for a Bubble in Detail

5. **Causes of a Bubble's Collapse**
   - If leverage is important, an unexpected increase in interest rates leads investors start to sell.
   - Failure of supporting fractional reserve intermediaries
   - Finite number of Greater Fools to keep driving the price up, with a wave of pessimism sweeping over the mass of investors and permits short sellers to synchronize an attack and pop the bubble
6. **Cost of the Bubble and Clean Up:**
   - More is invested than is warranted by its fundamentals→a wealth shock→drop in consumption and investment-→recession.
   - If investment is funded by borrowing from financial intermediaries→added liquidity shock, damaging economy further.
   - Will the political system may protect or punish the insider-promoters & allied institutions
   - Will loosing investors compensated by clawing back funds from the insider-promoters or from the revenues of the state?

The South Sea Bubble, 1719-1720
Transforming Government Debt

1. The Need to Transform Government Debt

- War of the Spanish Succession (1700-1713) and the Great Northern War (1700-1721) engulfed Europe and undermined the solvency of most states.
- General failure to market and manage government debt. High interest, often in arrears and defaults are frequent.
- In England, before 1710 no consolidated accounting of debt. Each government department managed its own debt.
- Debt took the form of (a) Long Term Annuities Redeemable at Option of Crown, (b) Loans from the three major joint stock companies and (c)"Irredeemable" Life Annuities, heterogeneous and no redemption option. Illiquid and difficult to trade.

The South Sea Bubble, 1719-1720
Transforming Government Debt

2. Political Economy and Effective Promoter-Insider(s):

- Chancellor of the Exchequer Robert Hawley and small group of financial insider-promoters secure charter South Sea Company (1711) granting a monopoly of trade with Spain's American colonies
- Innovation: (1719), by Harley and John Blunt (director of Hollow Sword Blade Company) arrange for a £1 million conversion of irredeemable debt for SCC stock at par values. Immediate gain for holders of depreciated annuities. Crown pays reduced interest to SSC to be passed through to shareholders of SSC as a 6% dividend. A Pareto Optimal move—all parties better off.
  - Public holding Irredeemables obtained a new asset, which was homogenous and tradeable and in a promising trading company.
  - The government obtains a cut in the rate paid on irredeemable, easing its debt service
  - The SSC gained a steady a income from the government stock and the right to issue more shares .
  - Harley and other insiders profit from conversion of the holdings of government debt.

The South Sea Bubble, 1719-1720
Transforming Government Debt

- **3. Irrational Exuberance**
- Immediate gains attracts the public and the book spreads to two other major companies Bank of England and East India Company.
- Promoter-insiders eager for further debt conversions and money subscriptions. These required passage of bill in Parliament then the King's approval
- Lubricating the process were bribes in the form of options to buy stock to 27 members of House of Commons, 6 members of the House of Lords, the prime minister and some of his ministers and probably the King and the Prince of Wales
- To public---the elite's investment certifies value.

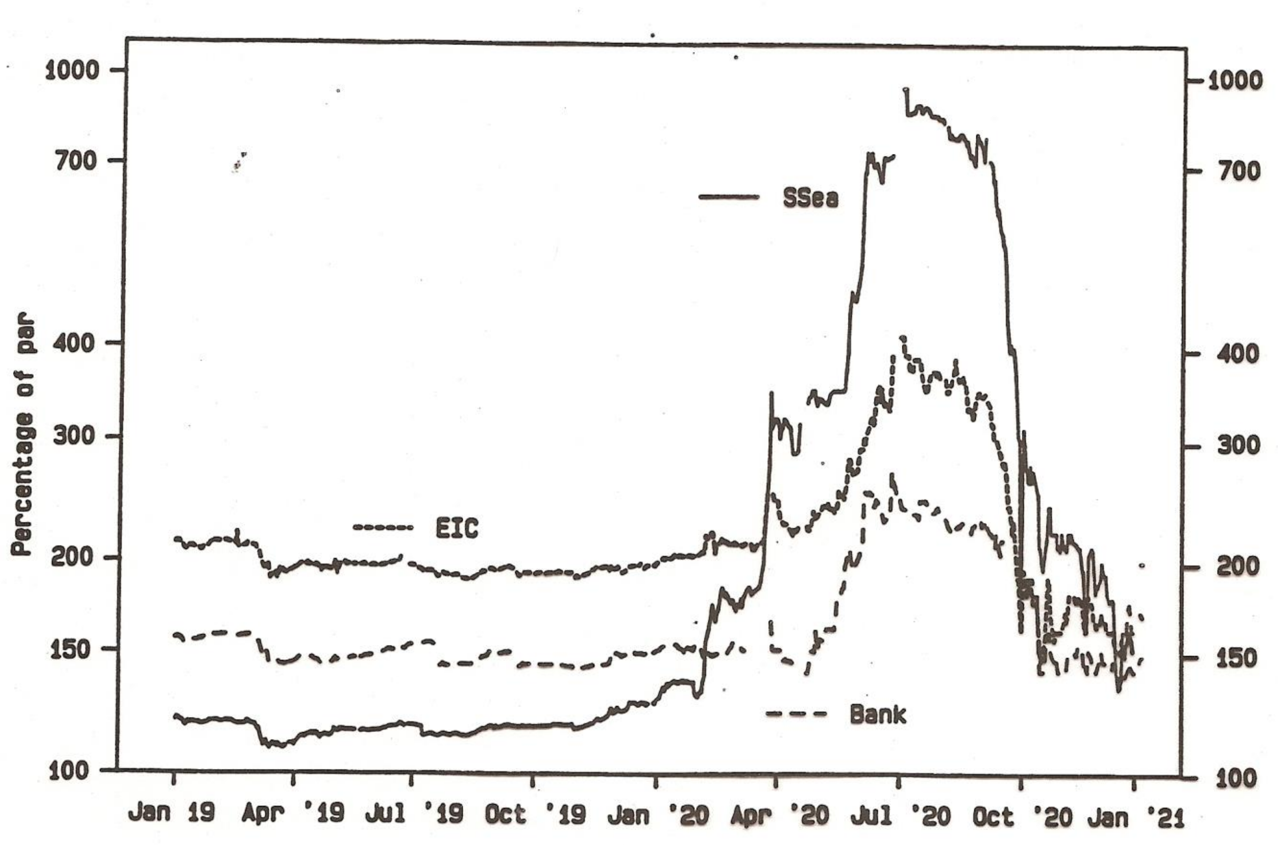


Figure 4.5. London stock prices for Bank of England, East India Company, and South Sea Company, 1719–20.

The South Sea Bubble, 1719-1720
Transforming Government Debt

- **3. Riding the Bubble**
- Hoare's Bank invested in the SSC and invested on behalf of its customers. Temin and Voth (2003) have shown that its investment strategy buying when the market ticked up and selling when it turned down most closely resembles an attempt to ride the bubble. It was aware of overvaluation: it initially lent to customers on collateral SSC stock at par value but began to discount the stock's value as bubble grew. Partners' gains from the ride £28,000

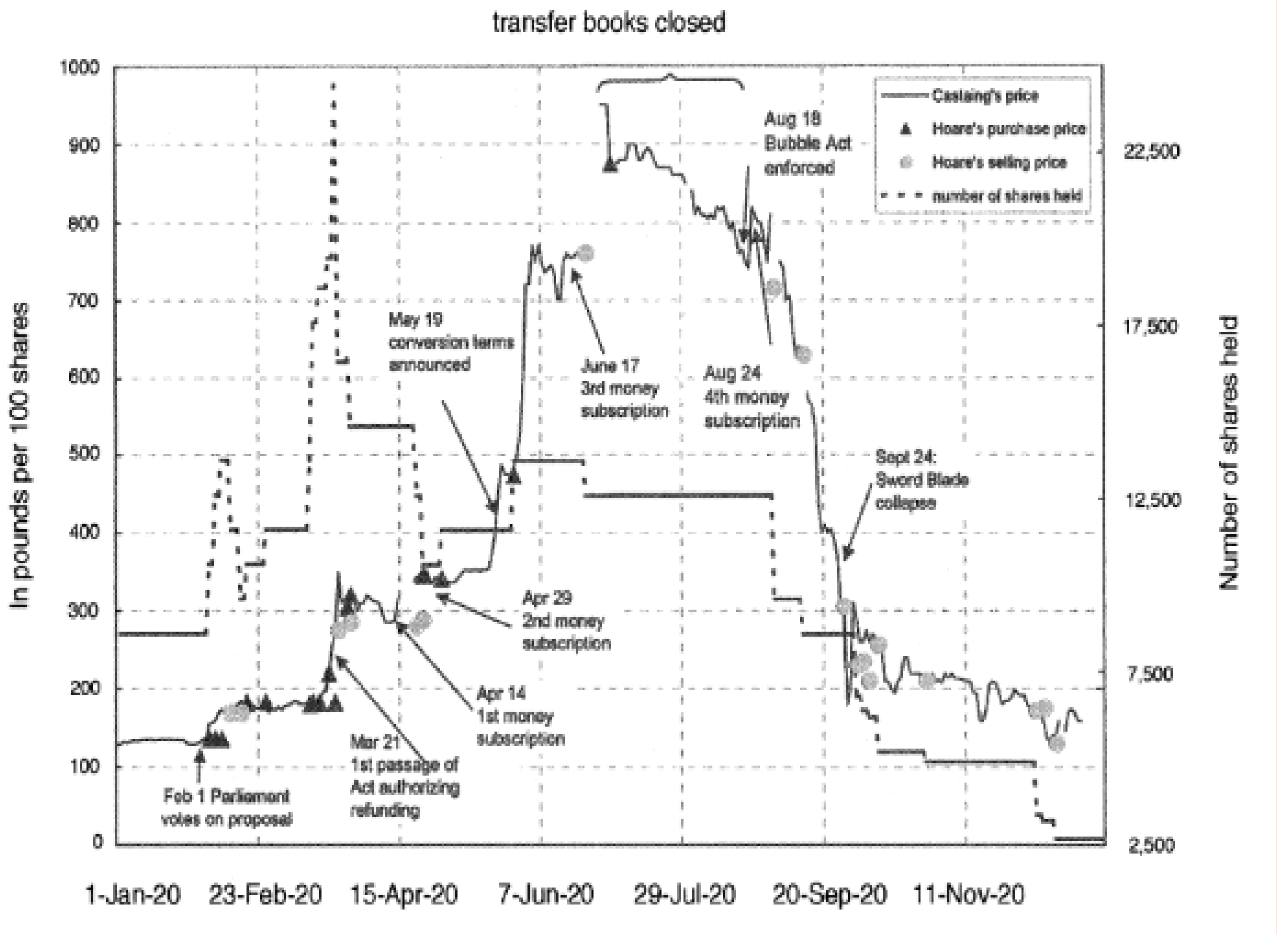
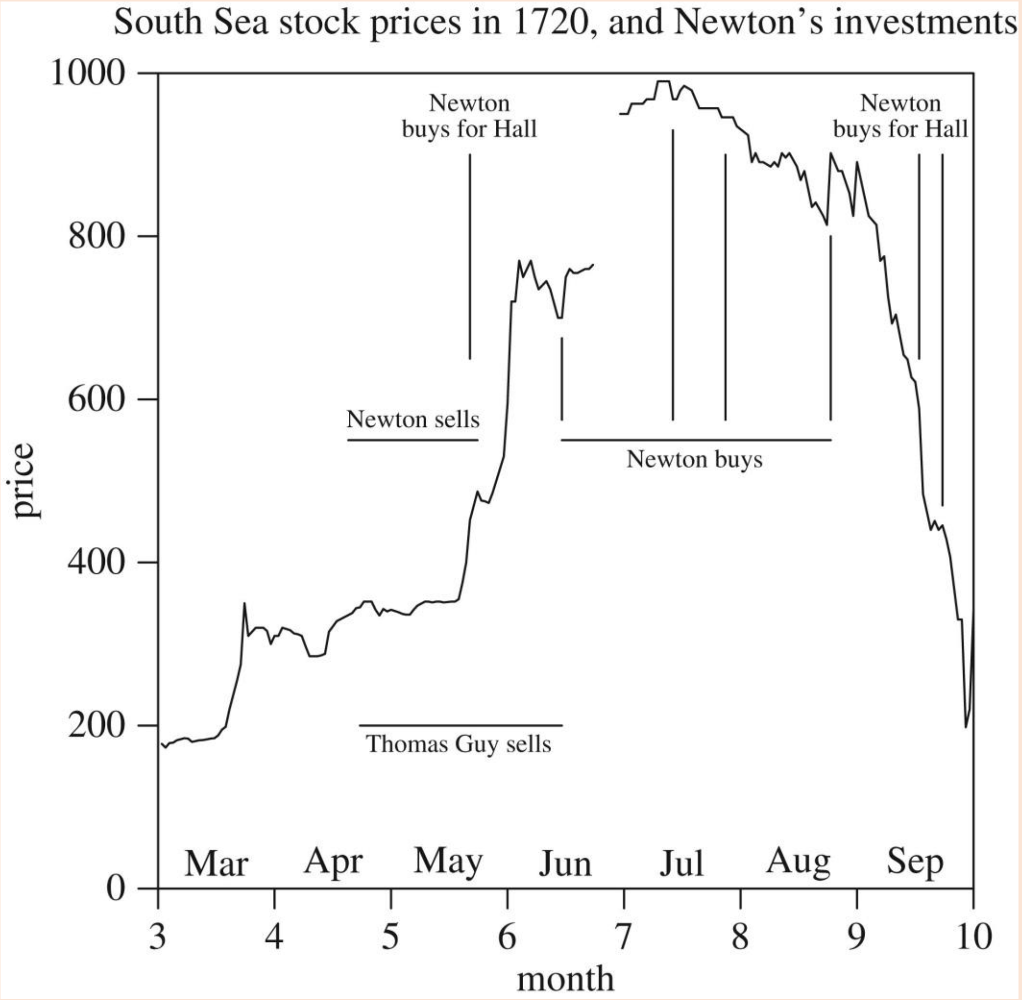


FIGURE 1. SOUTH SEA STOCK PRICE AND HOARE'S TRADING IN 1720

The South Sea Bubble, 1719-1720
Transforming Government Debt

- **3. Riding the Bubble**
- Sir Issac Newton, revered English genius and Master of the Mint
- Rode the bubble for a little while and sells with a substantial profit
- Lured back by his friends whose holding saw huge gains.
- He exits far too late.   Losses estimated £20,000

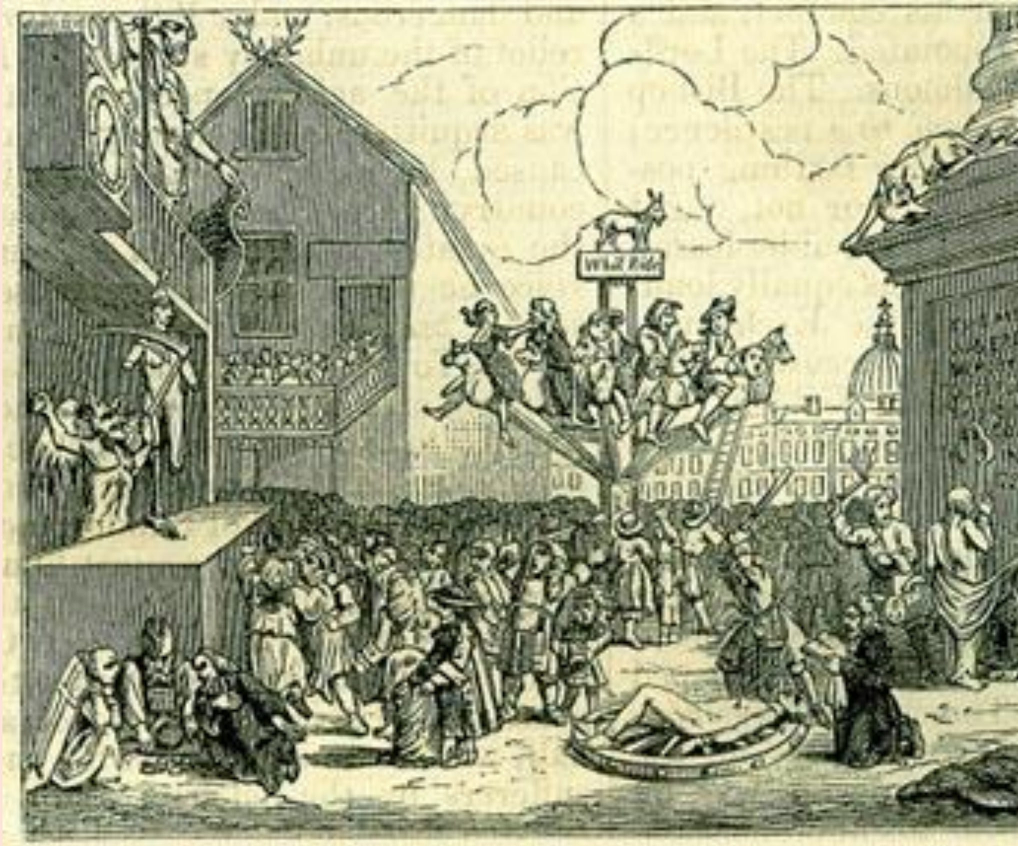


The South Sea Bubble, 1719-1720
Transforming Government Debt

- **4. Easy Credit**
- London bankers and goldsmiths provided credit to their customers. Some discounted the value of SSC stock as collateral
- Hollow Sword Blade Company [“Sword Blade Bank”] with interlocking directorships with SSC operates a fractional reserve banking business.   Offers credit in the form of its banknotes on margin to customers to buy SSC stock
- When demand begins to falter SSC lends to investors to buy shares---but may have to sell stock to repay
- 5**. Causes of Bubble’s Collapse**
- The exuberant crowd thins
- The success of the SSC spawned IPOs for new joint-stock companies with even flimsier projects that drew investors attention
- Promoters persuade Parliament to pass the Bubble Act 1720 that prohibited joint-stock companies except for those chartered by Act of Parliament….a signal of desperation.
- Falling stock prices lead to a run on the Sword Blade “Bank”→complete collapse of SSC

The South Sea Bubble, 1719-1720
Transforming Government Debt

- **6. Cost of the Bubble and Clean Up**
- When price falls from nearly £1000 to £150, no loan on SSC collateral was enough to prevent bankers and goldsmiths from failing, members of the elite and the public ruined by the thousands
- Parliament recalled and enquiry finds fraud by directors of SSC and corruption of cabinet members. Chancellor of the Exchequer Aislabie impeached and imprisoned.   New Prime Minister seizes 80% of wealth of directors to pay victims
- Stock of SSC divided half into a trading company and half into South Sea fixed interest perpetual annuities---forerunner of the 3% Consols
- Bubble Act of 1720 remains in force until 1825, limiting corporations in first industrial revolution



The South Sea Bubble

Hogarth: Investors on a “Wild Ride” while Truth is Dismembered and Honesty is Broken on a Wheel

The South Sea Bubble, 1719-1720
Transforming Government Debt

- **Conclusion?**
- **There was a real problem to be solved—restructuring of national debt and reform of its management.**
- **If the South Sea Company had confined its debt operations to the "Irredeemables," transforming these into homogeneous easily tradeable assets, then the story would not have become sordid.**
- **Problem: Venality of government officials**
  - Have Insiders advanced knowledge of plans
  - In control of the flow of information to the public
  - They could directly hold and manage government funds through their own accounts [e.g. Newton as Master of the Mint]
  - Multiple conflicts of interests that tempted officials for whom (modest?) ventality was the norm to take advantage of this spectacular opportunity to enrich themselves at the public. Discrediting the plan

The Mississippi Bubble, 1719-1720 Transforming Government Debt Part II

1. **The Need to Transform Government Debt**

- War of the Spanish Succession (1700-1713) leaves French government finances in worse shape than the English
- Debt = 3 billion livres or 18 years of revenue, interest 2 years in arrears
- Most of debt in form of irredeemable annuities with high rates of 8 to 10%, on life of individual, non-transferable.
- Government unable to pay defaults.

The Mississippi Bubble, 1719-1720
Transforming Government Debt Part II

2. Political Economy and Effective Promoter-Insider:

- Louis XIV dies, Regent Duke d'Orleans for king's infant great-grandson Louis XV----government is in default and clueless
- John Law—Scottish financial pamphleteer, kills man in duel and flees to France where gets the Regent's ear. Unlike England where an Act of Parliament approved by the Sovereign is required for any new scheme, all that is required is an Royal Edict.
- Banque Generale (1716) chartered to provide domestic credit to revive economy
- Mississippi Company (1684 failed colonization scheme) bought and as Compagnie d'Occident (1717) given 25 year monopoly of trade in Mississippi and manage the Crown's debt
-

JOHN LAW

The Mississippi Bubble, 1719-1720
Transforming Government Debt Part II

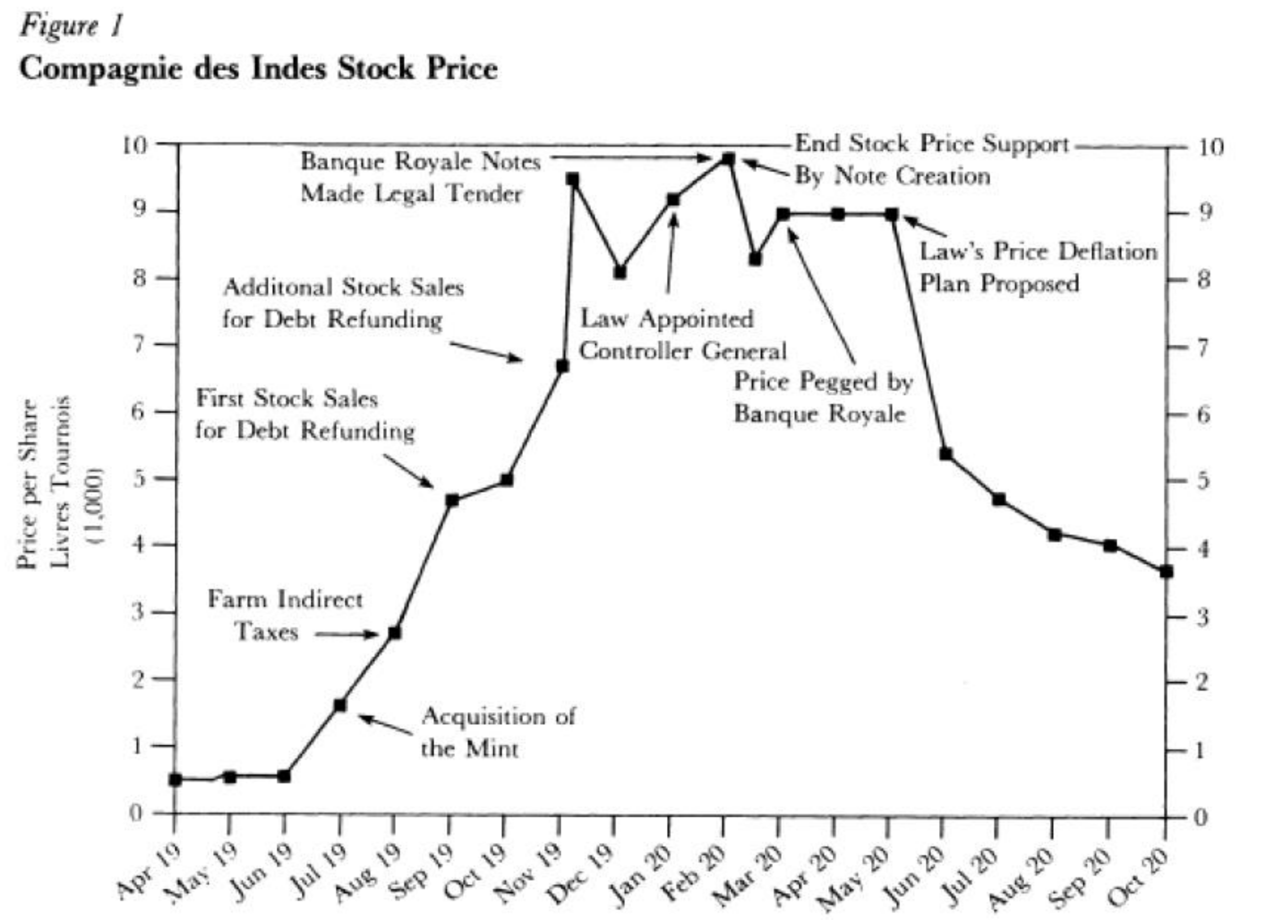
- 3. **Debt Conversion for the Irrationally Exuberant**
- The Company offers to exchange the state's Irredeemable annuities which have fallen in value with shares in his company one to one in face value. Big benefit for public as annuities fallen in value and also have a homogeneous tradable asset and possible big dividends from Louisiana trade. Crown benefits because Law accepts lower interest payments on the debt---which are passed through in dividends on stock.
- Price of Mississippi Company soars,
- From the Crown, Law agrees to accept lower interest payments on the debt, so the Crown reduces its debt payments.

Promotional Materials: A Map 1721 of Louisiana and a 1720 depiction of Biloxi Mississippi

The Mississippi Bubble, 1719-1720
Transforming Government Debt Part II

- 3. **Debt Conversion and more for the Irrationally Exuberant**
- In 1719 the Company merges with the Compagnie des Indes which has a monopoly of trade with the Far East.
- Refunding of more debt
- Takes over Collection of Indirect Taxes
- Takes over operation of th Mint
- In 1719, Banque Generale is reorganized as the Banque Royale and given a monopoly of bank note issue (currency issue).
- 1720 Law is made Controller General of Finances

Figure 3



Source: Peter Garber, "Famous First Bubbles" (1990), p 44.

The Mississippi Bubble, 1719-1720
Transforming Government Debt Part II

- 4. **Easy Credit**
- Banque Royale is a fractional reserve bank of issue that redeems notes in coin upon demand
- Banque lends to investors buying stock in Mississippi Company
- **5. Bubble's Collapse**
- When reserves dwindle, run on the bank begins notes are made legal tender and expansion fuels inflation and decline of French livre on foreign exchanges
- Inflation, depreciation and collapse of share prices, Law flees to Venice

Figure 3

Figure 1

Compagnie des Indes Stock Price

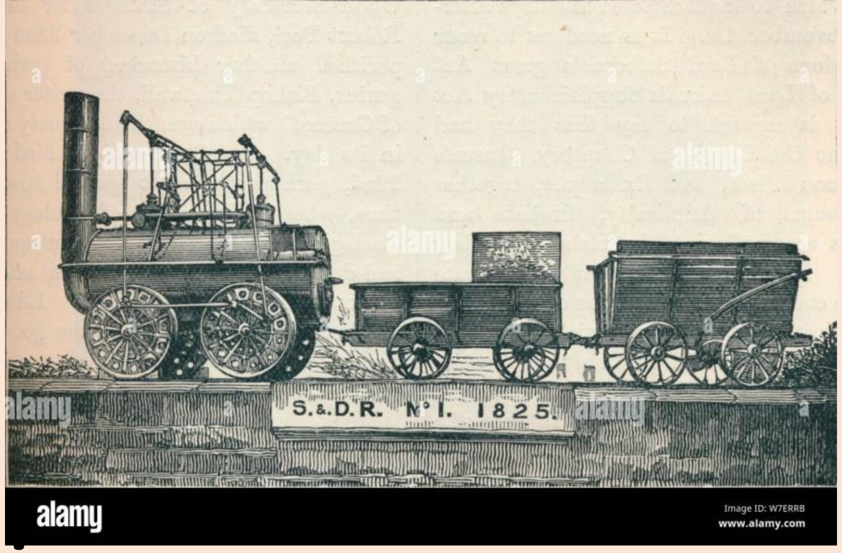
Source: Peter Garber, "Famous First Bubbles" (1990), p 44.

The Mississippi Bubble, 1719-1720
Transforming Government Debt Part II
Another Scheme Gone Too Far

6. Cost of Bubble, Clean Up and Assessment

- National debt is declared by Edict to be reduced from 3 to 1.7 billion livres. Interest payments are reduced. No clawbacks.
- Huge damage to reputation of French Crown and finances.
- Distrust of banks, stocks, and finance. No bank chartered again until 1776 and stock market limited.
- As in British case, first part of French Scheme sound but overreach by Law leads to collapse. No evidence of extraordinary venality in Law's scheme, in fact his plan is to displace old venal officers who operated tax farms and monopoly companies.
- But in Britain, new Whig government and Parliament engineers clean up to public acclaim to recovery of confidence. Regime in France unchanged. Result British never default after 1720---French multiple defaults through 18th century

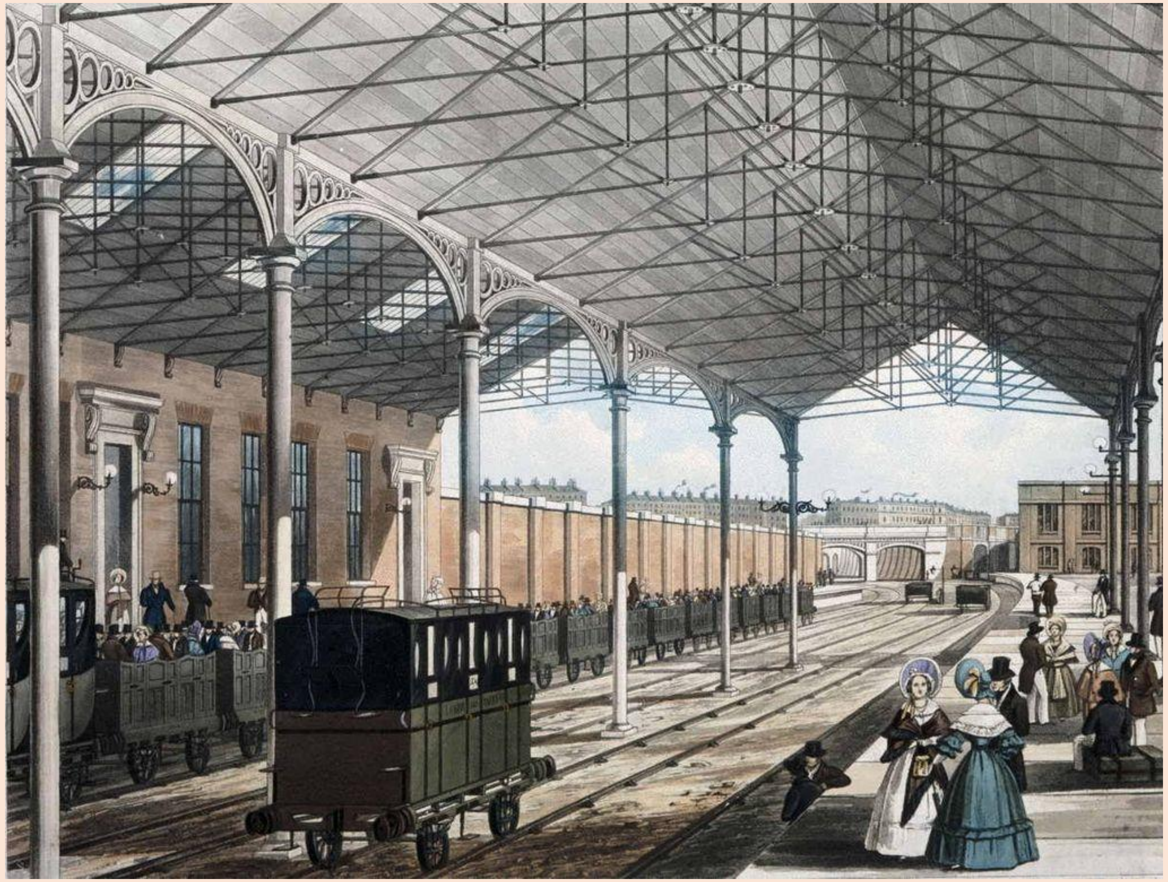
The British Railway Mania of the 1840s: Do All Technology Waves Engender Bubbles?



1. The Political Economy of a Transformative Innovation

- **A New "General Purpose Technology"—the Steam Engine**, breakthrough James Watt's 1776, process of continuous experimentation for many purposes---draining tin mines, powering textile factories…and transportation (railroads and steamships key to first wave of globalization 1870-1914)
- **1825 Stockton-Darlington Railway** First locomotive-hauled public railway (40 km)
- **1825 Repeal of the Bubble Act 1720** [No general incorporation until 1844] pushed by entrepreneurs whose operations were financially constrained, growth of laissez-faire, evolution of legal thought
- **The Floodgates Open**: Few regulations. Companies submit a bill to Parloiament to gain right to acquire land awhich had to be approved. No limits on number of companies or checks on financial viability
- By 1846, 263 rail companies had been granted right to corporations

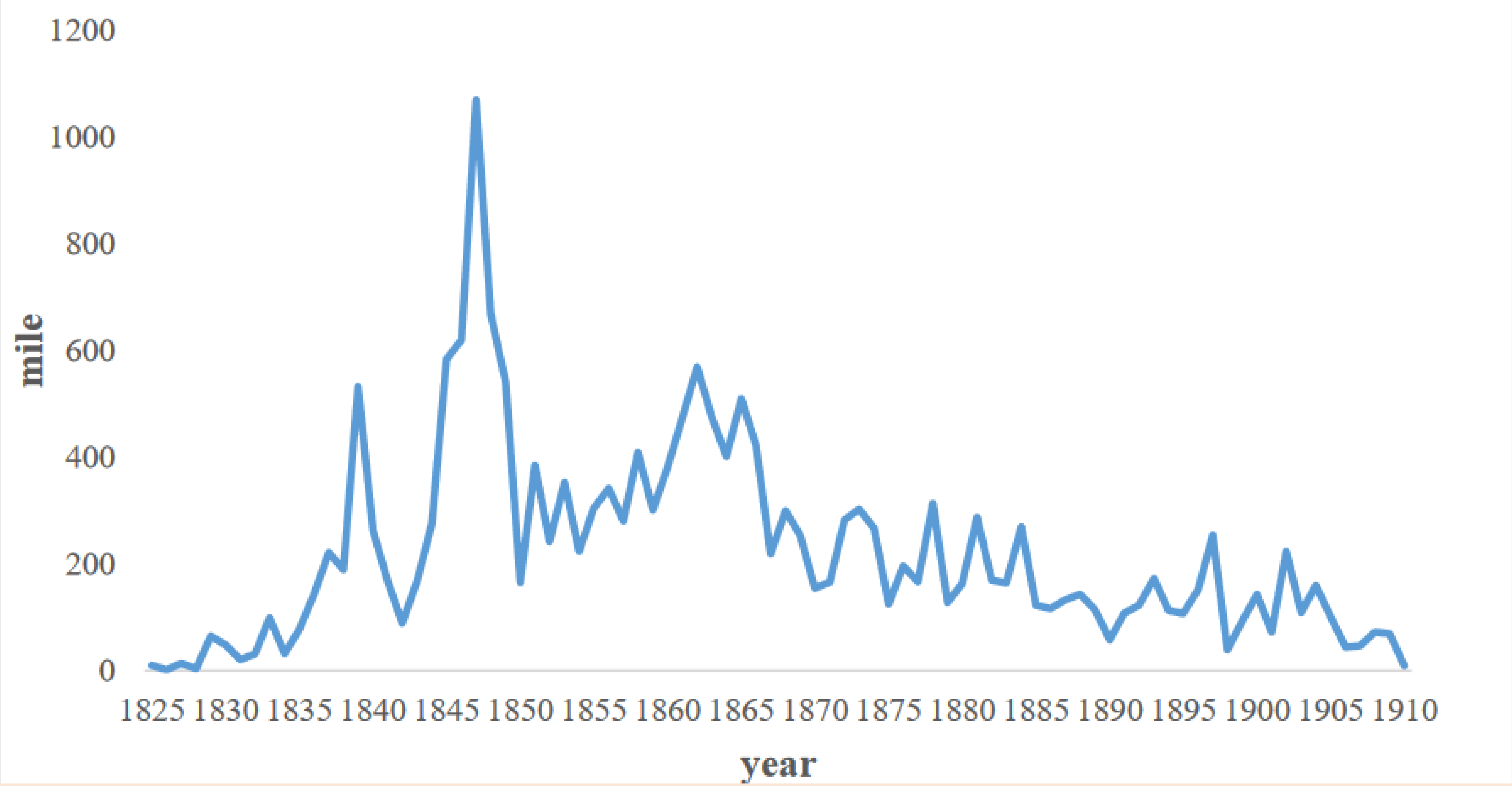
The British Railway Mania of the 1840s: Do All Technology Waves Engender Bubbles? (print 1837)



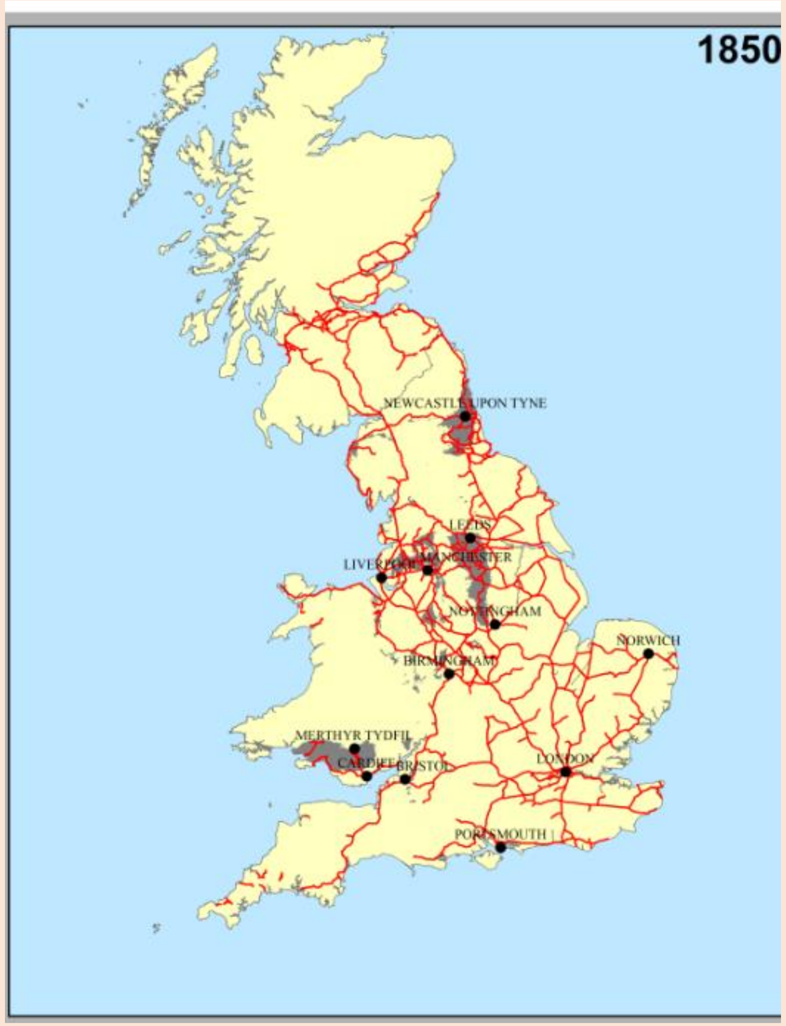
- **2. Insider-Promoters**
- Special act of Parliament sponsors—promoters need at least one Member of Parliament.
- Railroad were for short distances built mostly in one o two MPs districts.
- Landowners often dominant in local elites who had disproportionate influence before the Reform Act of 1832,
- Decisions had to be made where the railroad would have the right of way—to the benefit or detriment of the landowners.
- Promoters ally with MPs and landonwers---group Outcome was that MPs heavy investors in railroads
- 3 & 4. Easy Credit and Exuberance of the Middle Classes
- Promotion of shares promised technological revolution but also whole new class of safe assets beyond government consols. Shares could be purchased with a 10% deposit, with the railway havin the right to call for additional amounts as constructio progressed. Rising share prices suggested that leverage would miraculously produce wealth

Numerous Railway Booms but 1840s is a standout

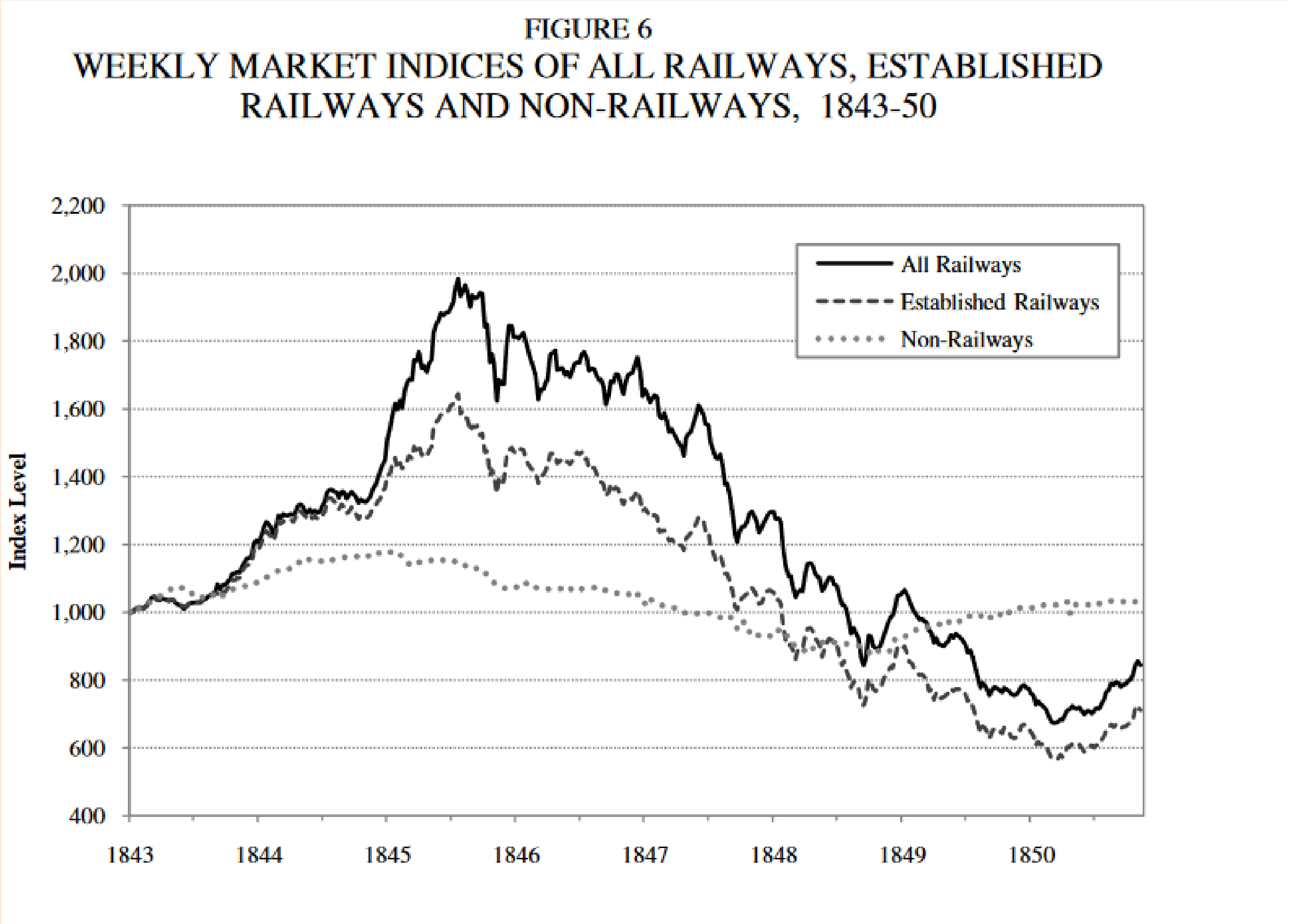
Figure 10: The annual growth of railway mileage in Britain, 1825-1911.



The Growth of the British Railroad Network 1836-1850



The British Railway Mania of the 1840s: Do All Technology Waves Engender Bubbles?



- **3. Exuberance of the Middle Classes**
- Petitions Presented to Parliament for New Railways
- 1843 63 petitions
- 1844 199 petitions
- 1845 562 peitions
- Broad public appeal in 1845 and 1846,there wer 33,959 individuals who subscribed to shares

- 4. **Easy Credit**
- Promotion of Railroad shares promised technological revolution and a new class of safe assets beyond government consols.
- Attracted new investors as shares could be purchased with a 10% deposit, with the railway having the righ to call for additional tenths amounts as construction progressed.
- Rising share prices suggested that leverage would miraculously produce wealth

The British Railway Mania of the 1840s: Do All Technology Waves Engender Bubbles?

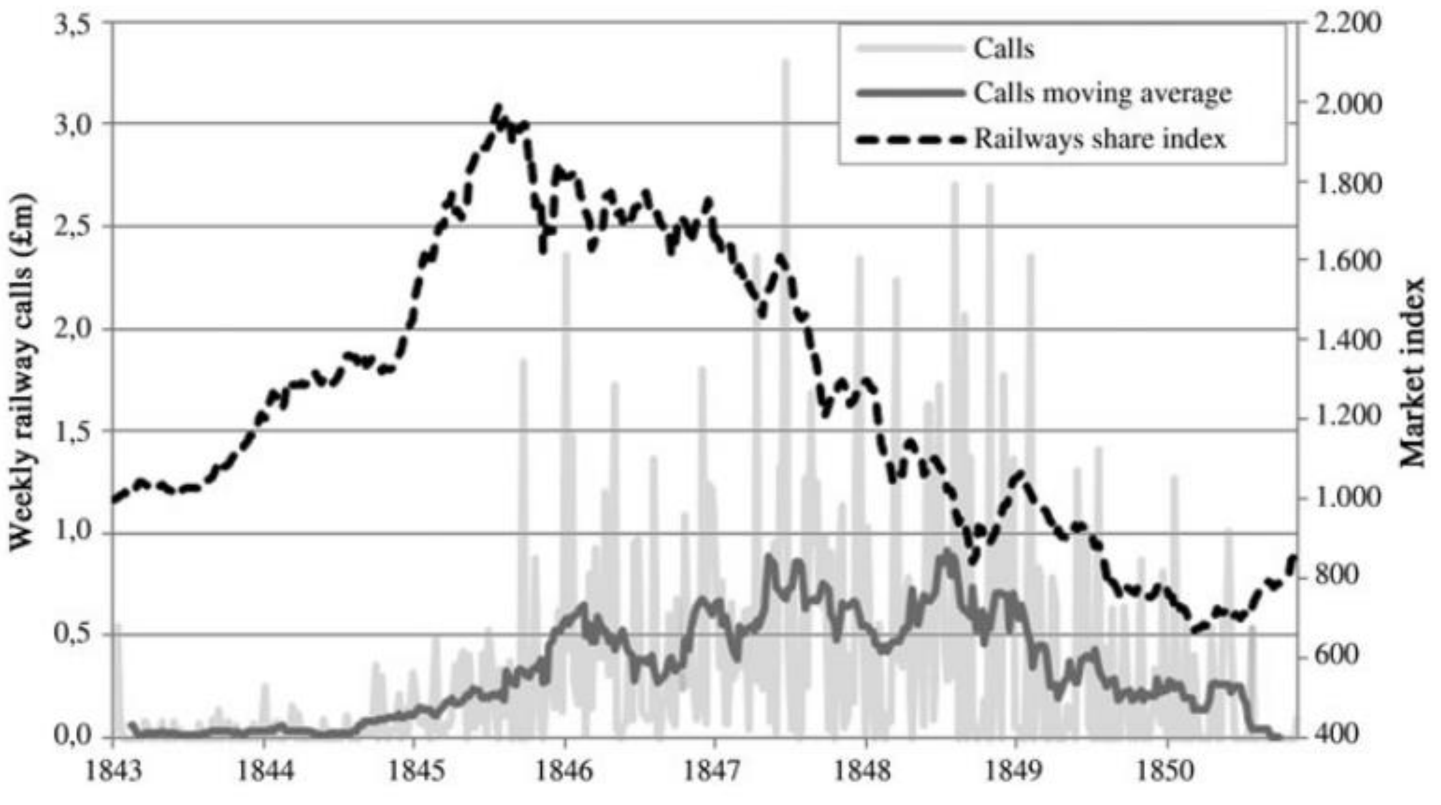


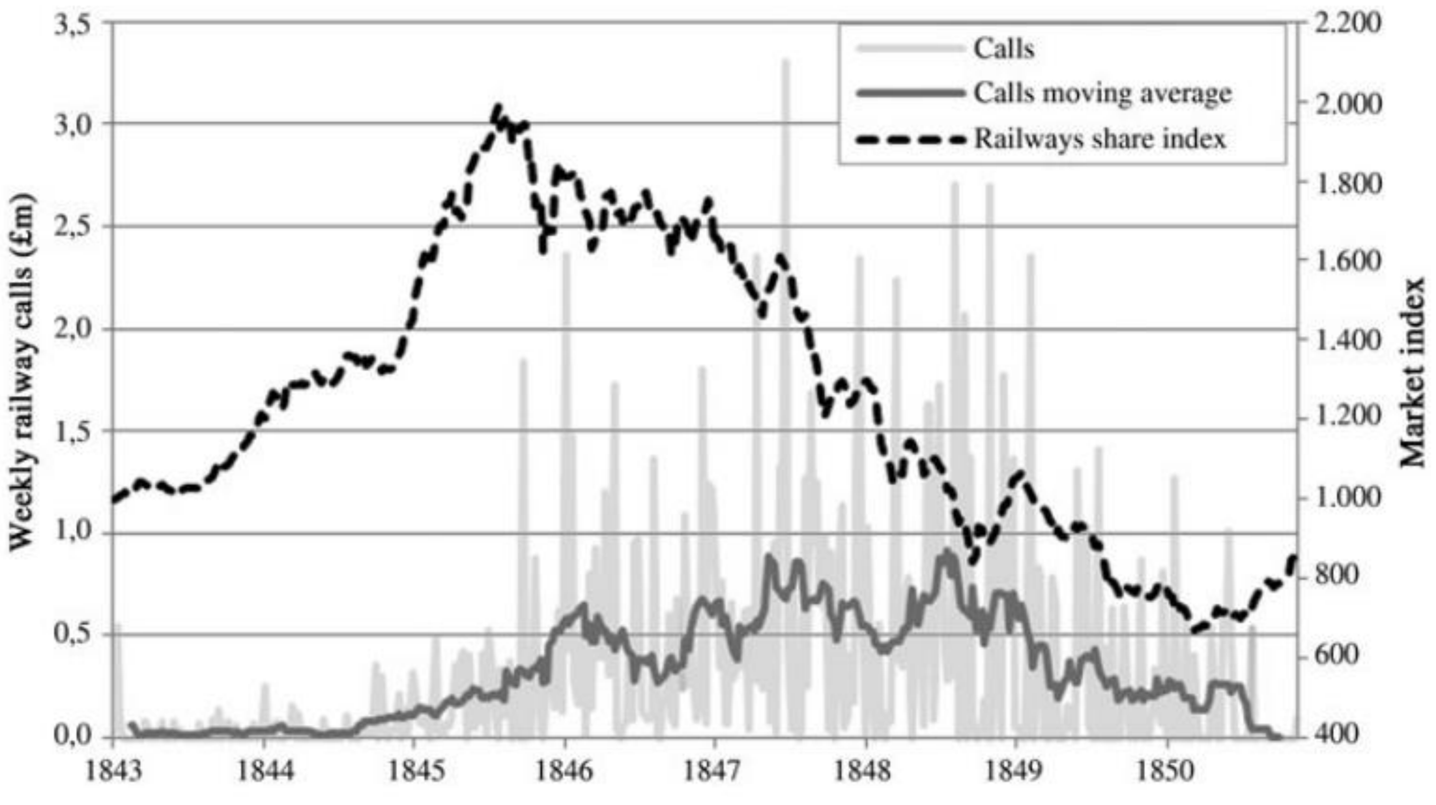
Figure 9. *Railway share index and weekly railway calls, 1843–50*
Notes: Railway share index and volume of calls calculated from weekly share price tables in the *Railway Times* (1843-50); 13 period moving average of weekly railway calls also shown.

The British Railway Mania of the 1840s: Do All Technology Waves Engender Bubbles?

- **5. Causes of Collapse**
- Poorly planned railroads found many routes not viable and far more costly, never finished.
- Calls for capital as shares prices fell led to more sales a general collapse.
- Irish famine, bad harvests, BoP deficits gold outflow leads to two banking panics in 1847. Bank of England raised bank rate rose from 4 to 8%

6. **Cost of Clean Up and Assessment**

- Large losses to individual investors, a wealth shock, but did not entangle banks
- Created large infrastructure, larger railways bought up lines and built up networks



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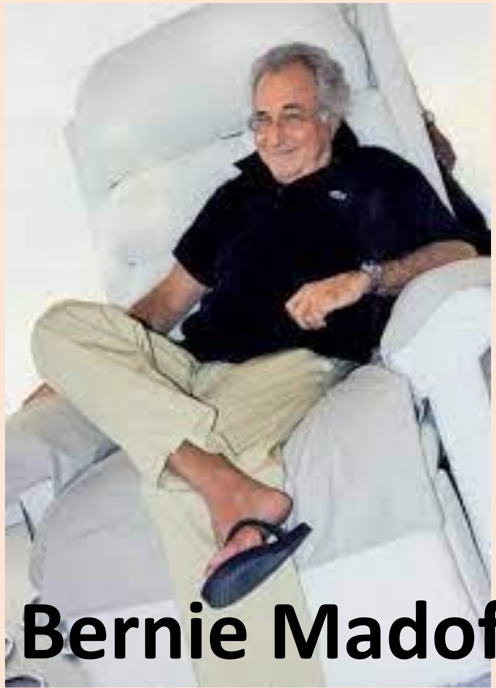
Are Ponzi Schemes Bubbles?

1. **Lack Element of Transformative Innovation** [yes, Madoff had a side business of actual trading as a cover]
2. **Slick Charismatic Promoter-Insider**
3. **Credulity of the Public** Ponzi claimed he was arbitraging postal coupons costs between U.S. and Italy, promises to double investment in 90 days or 50% in 45 days. Network of agents working hard from immigrant working class to Boston's Brahmins and 75% of Boston police.   Able to make pay offs to existing investors with fast growing new investors.   **5. Collapse Press** investigates---sued for libel to compete….eventually Financial Press, Massachuets Attorney Genera and bank examiners excavate fraud….fof to prison   When released—admiring crowds.   **6. Clean Up?** Laborious clawbacks

Charles Ponzi



Bernie Madoff

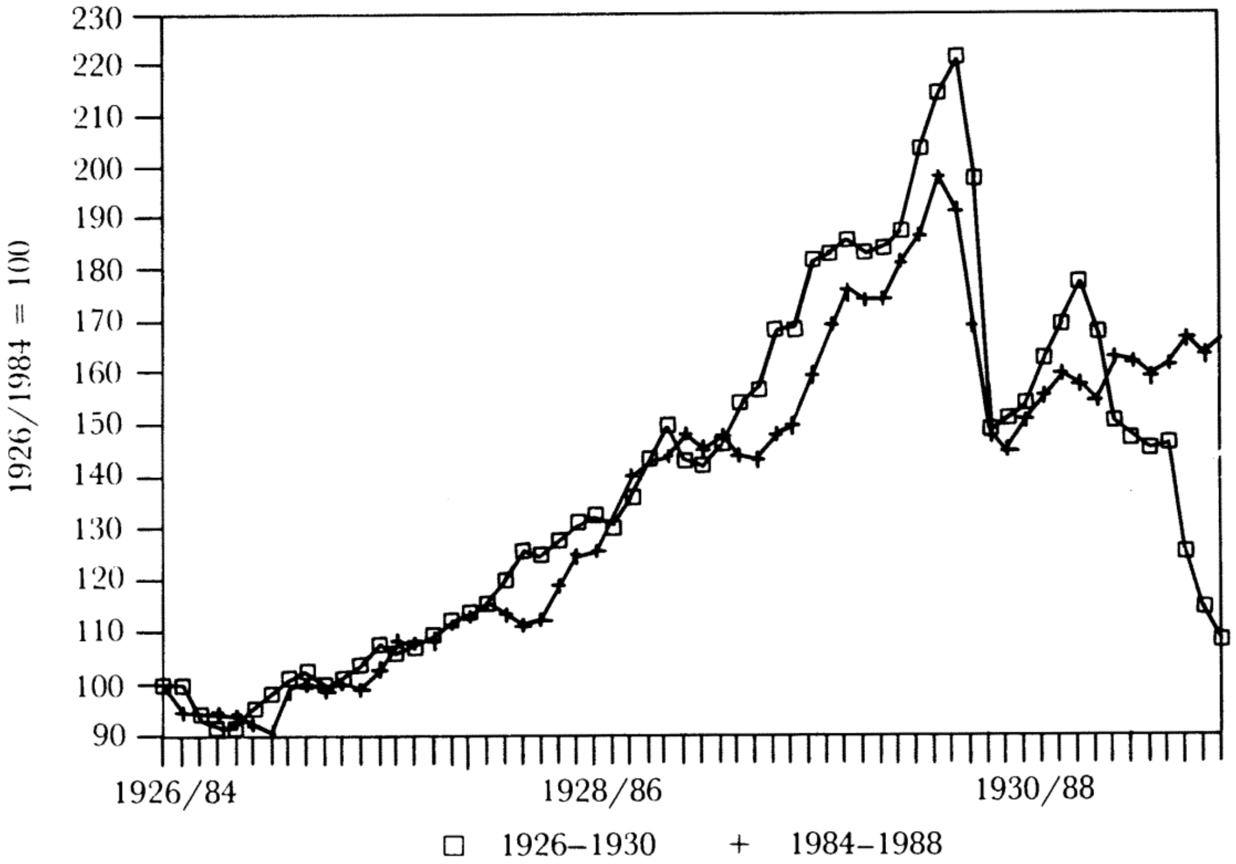
Sam Bankman-Fried?

The Great Crashes of 1929 and 1987

How could "It" Happen Again After New Deal Legislation?

Figure 1

Common Stock Indices



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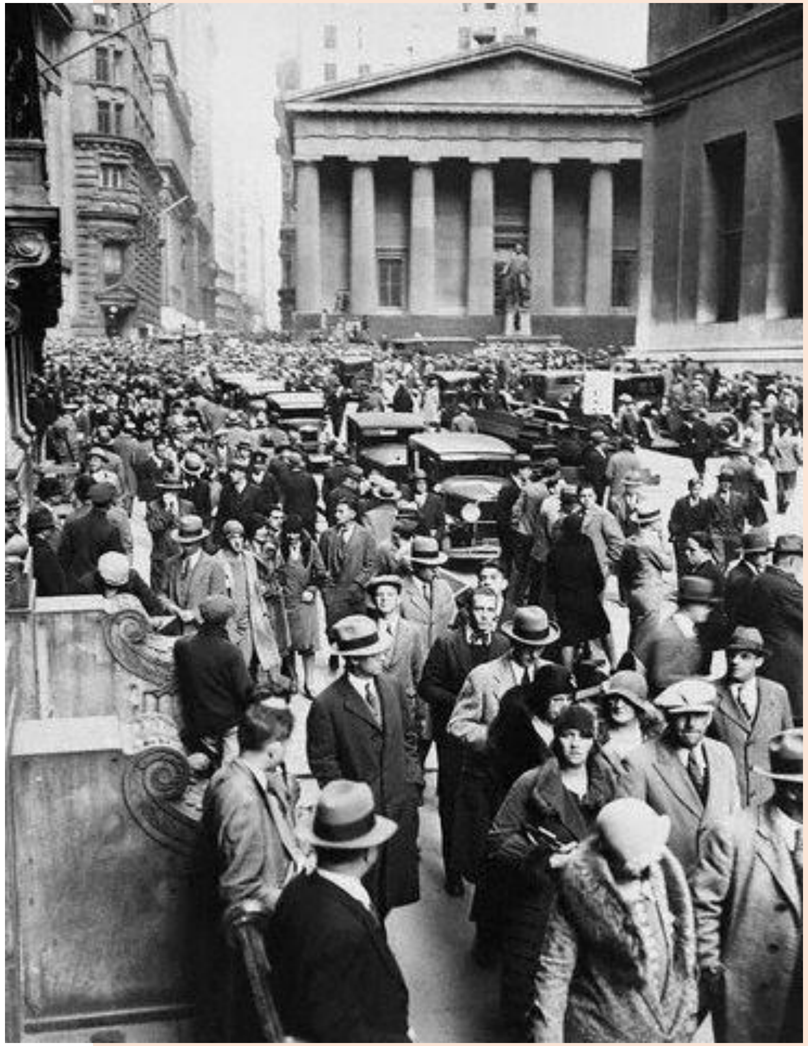


The Great Crashes of 1929 and 1987

How could "It" Happen Again After New Deal Legislation?

1922-1929

1. **Transformative Technologies**
   - General Purpose Technologies: gasoline engine, radio, aircraft, electric utilities
   - Total Factor Productivity Growth Rising
2. **Promoters:**
   - Role of Financiers in Creating New Financial Products that allowed new investors to enter from Charles Merrill—Chain Department Stores to Goldman Sachs InvestmentTrust
3. **Irrational Exuberance**
   - After World War I, Inflation, Pandemic and Recession, 4% growth, 4% unemployment and zero inflation
   - Financial Institutions that led war bond drives for Government find a ready public for higher yield bonds and equities. Age of the Industrials

1982-1987

1. **Transformative Technologies**
   - Age of electronic begins, mobile phones, desktop computers, calculators, floppy disks utilities, compact disks, artificial hearts, stealth aircraft, space shuttle,
   - Total Factor Productivity Growth Rising
2. **Promoters:**
   - Financiers Developing New Markets, Leveraged Buyouts and Junk Bond Markets
3. **Irrational Exuberance**
   - After Vietnam War, Inflation, Several Recessions, Rapid growth, falling unemployment and falling inflation
   - Avoidance of inflation and taxes growth of new vehicles that dominate investment: MMMFs, mutual funds, pension funds

The Great Crashes of 1929 and 1987

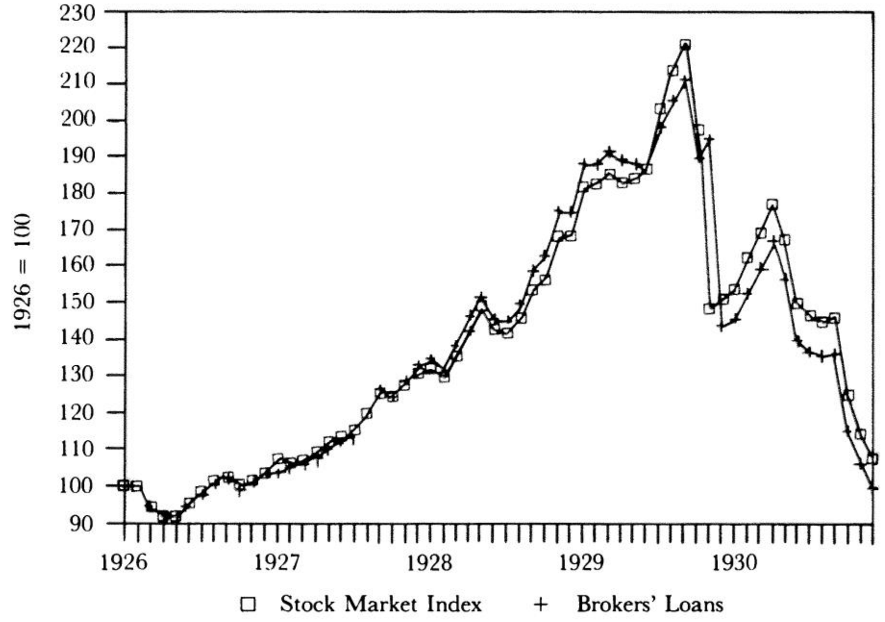
How could “It” Happen Again After New Deal Legislation?

4. Easy Credit?

- Brokers Loans Tracked Stock Market
  But Was It Credit Supply Driven?

Figure 4

Stock Prices and Brokers' Loans

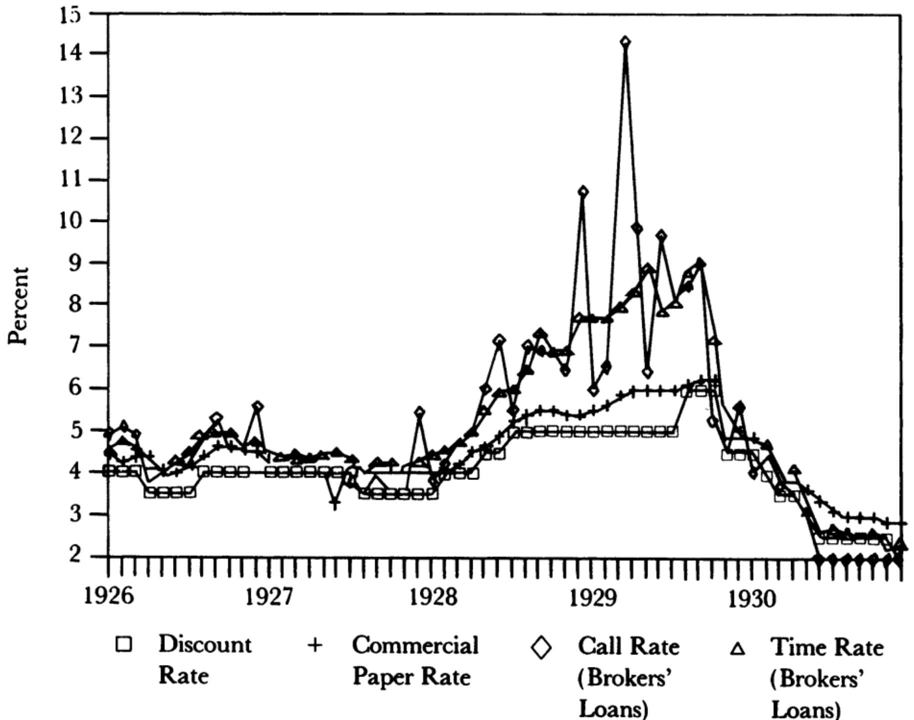


Source: Board of Governors of the Federal Reserve system (1943) and the New York Stock Exchange *Year Book* (1931).

Demand Driven by Demand for Stocks, Lenders Charge an Interest premium and raise Margin for Collateral from 25 to 50%

Figure 5

Interest Rates



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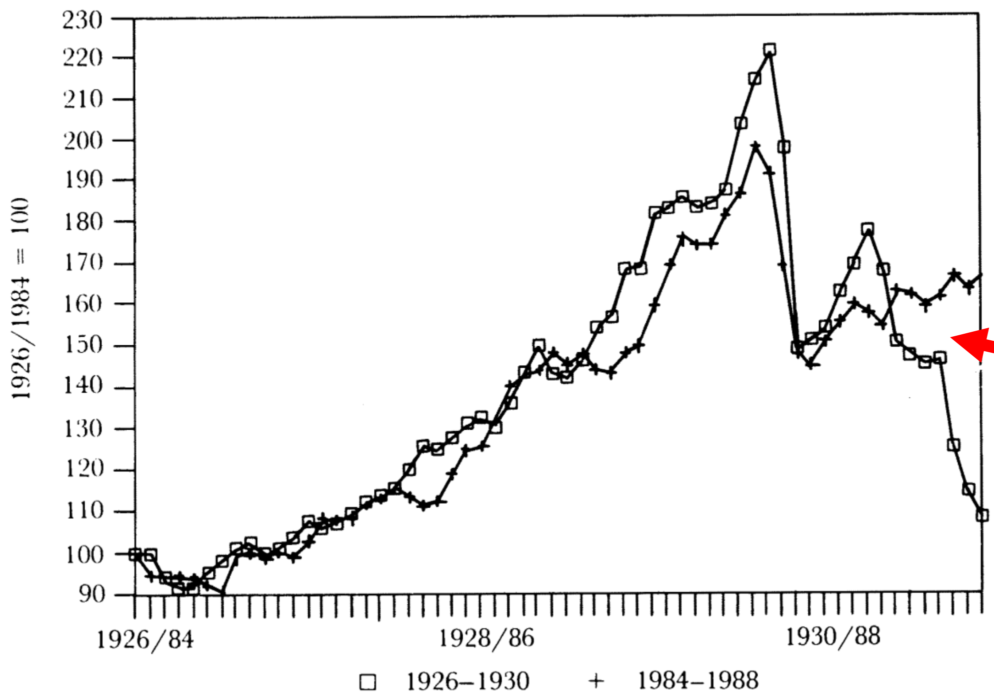

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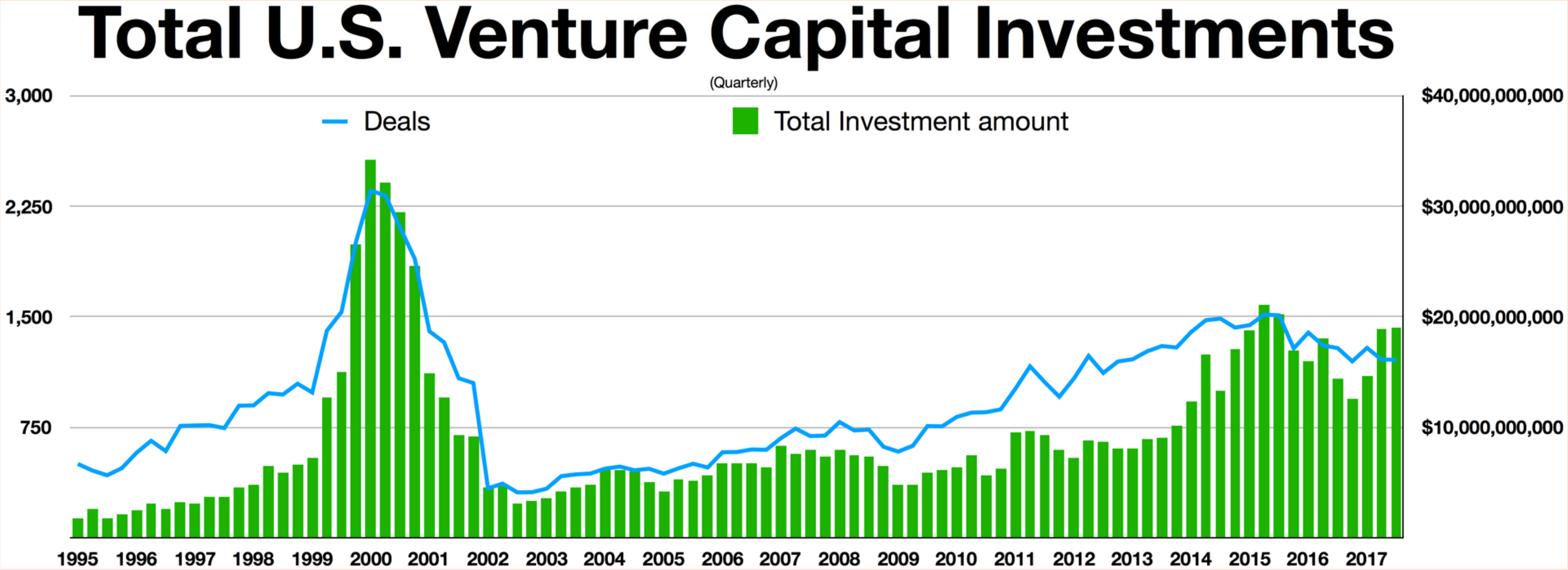
5. Bubbles Collapse

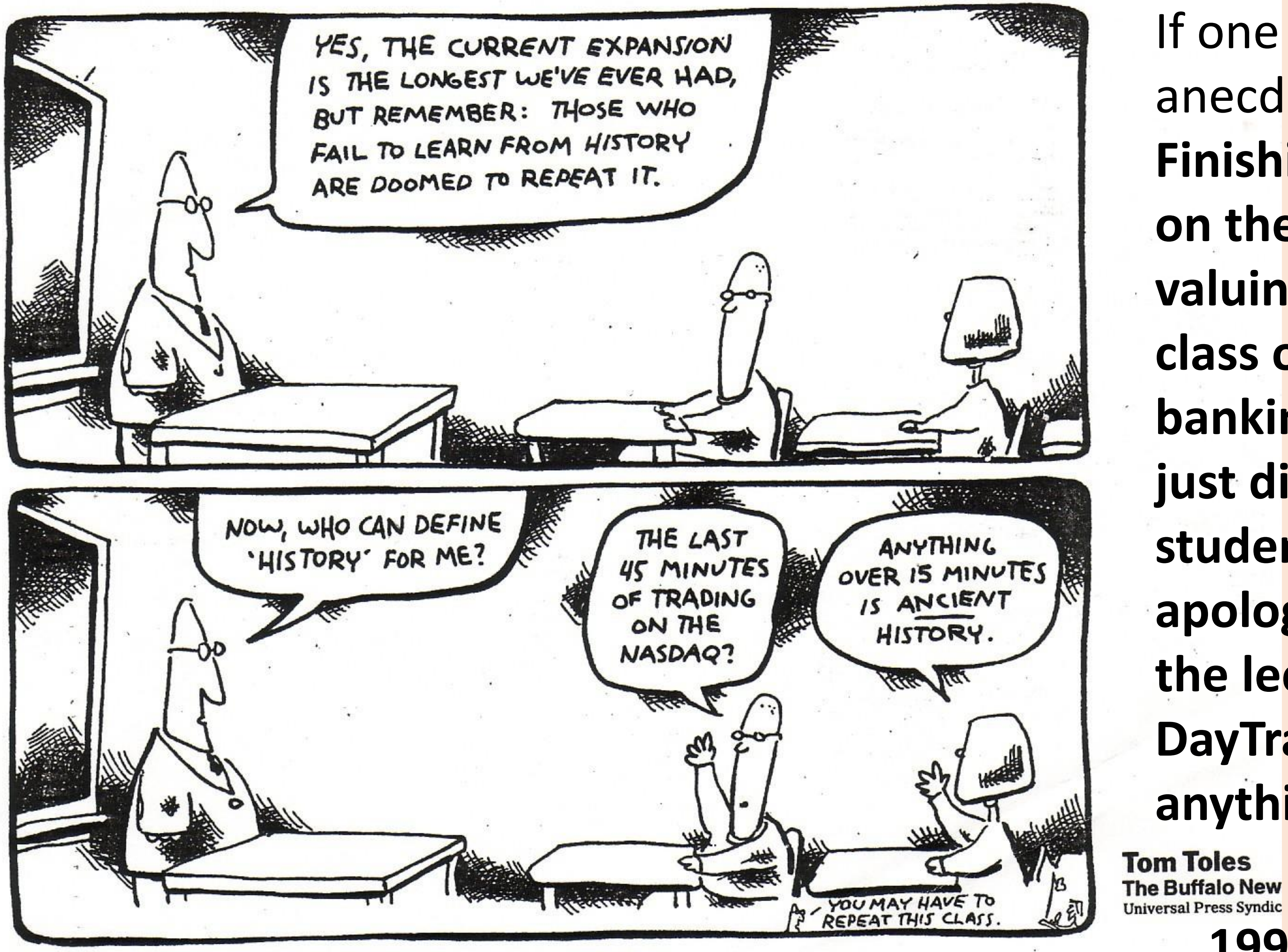
- Other the economy entering a recession and some tightening of credit—no trigger 20% drop
- Since the "Ticker Ran Late" a Wave of Pessimism Contributed
- **Divergence: 1929** NYFed provides liquidity to NY market---criticized by Board for rescuing speculators. Credit tightened as recession deepened→Banking panics→Recession
- **1987** Greenspan, a student of Friedman Schwartz, at helm of Fed Board provides steady liquidity to markets, which recover in two years,

6. Political Fallout: 1929-1933 Crash+Depression brought rushed New Deal corset of bank and securities markets regulations;
1987 Crash brought limited changes, circuit breakers

Dot.comedia of the 1990s

- 1. Transformative Innovations:
  - High Speed Internet, Home Computing, dot.coms, biotech
  - Telecommunications Act of 1996—first time inclusion of internet in broadcasting and spectrum allotments. Goals to deregulate converging broadcast and telecom markets and to "let anyone enter any communications business – to let any communications business compete in any market against any other.“





If one allows personal anecdotes as evidence: **Finishing up a lecture on the fundamentals of valuing equities in my class on money banking, the class was just dismissed as a student burst in and apologized for missing the lecture: "I was DayTrading, did I miss anything? "**

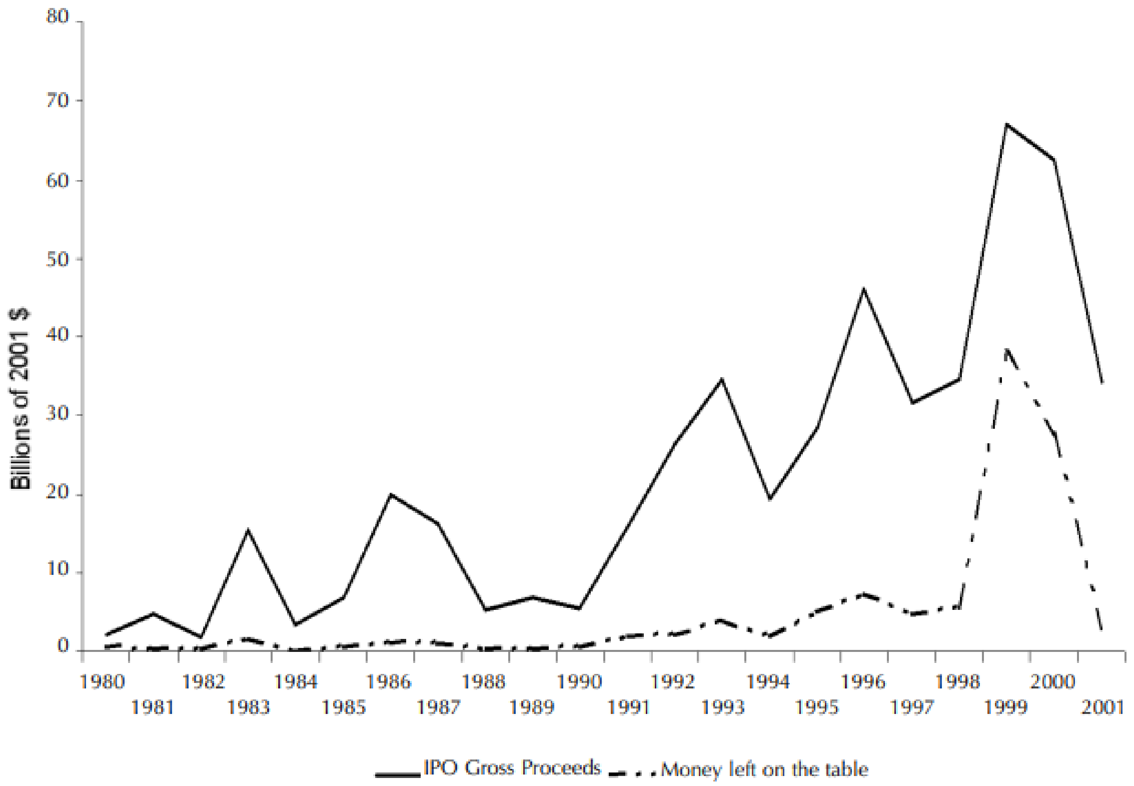
1999

Dot.comedia of the 1990s

2. Promoters-Insiders

- IPOs for Start ups are a bonanza for Wall Street Firms
- Problem of Conflict of Interest between Research and Underwriting Departments in Investment Banks.
- The King, Queen and Jack of Wall Street Trio of Bullish Analysts with big investor followings:
- Henry Blodget (Merrill Lynch) Mary Meeker (Morgan Stanley) Jack Grubman (Salomon Smith Barney)
- Growth of First Day Returns Underpricing of IPOs leaves "Money on the Table" Allocation of stocks to favored clients
-

Figure 2.2 Initial public offerings, 1980-2001



Source: Ritter and Welch (2002).

3. Investor Exuberance

- Growth of individual investing with novelty of personal computers
- Day Trading. Focus on firms with suffix ".com" IPOs for firms with little record profits or a clear business plan. NASDAQ Composite reaches a P/E ratio of 200.
- Are People Really Riding the Bubble: Personal Anecdote: Concerned about the height of the market and knowing I had a large fixed dollar payment to made by withdrawing funds from my TIAA account, I called my investment advisor. Told I wanted to liquidate 1/3 to ½ of the account, she replied,"Why would you want to do that, as long as more people keep coming into the market stock prices are going to rise." I told her sell it all (January 2000) Market peak? March 2000

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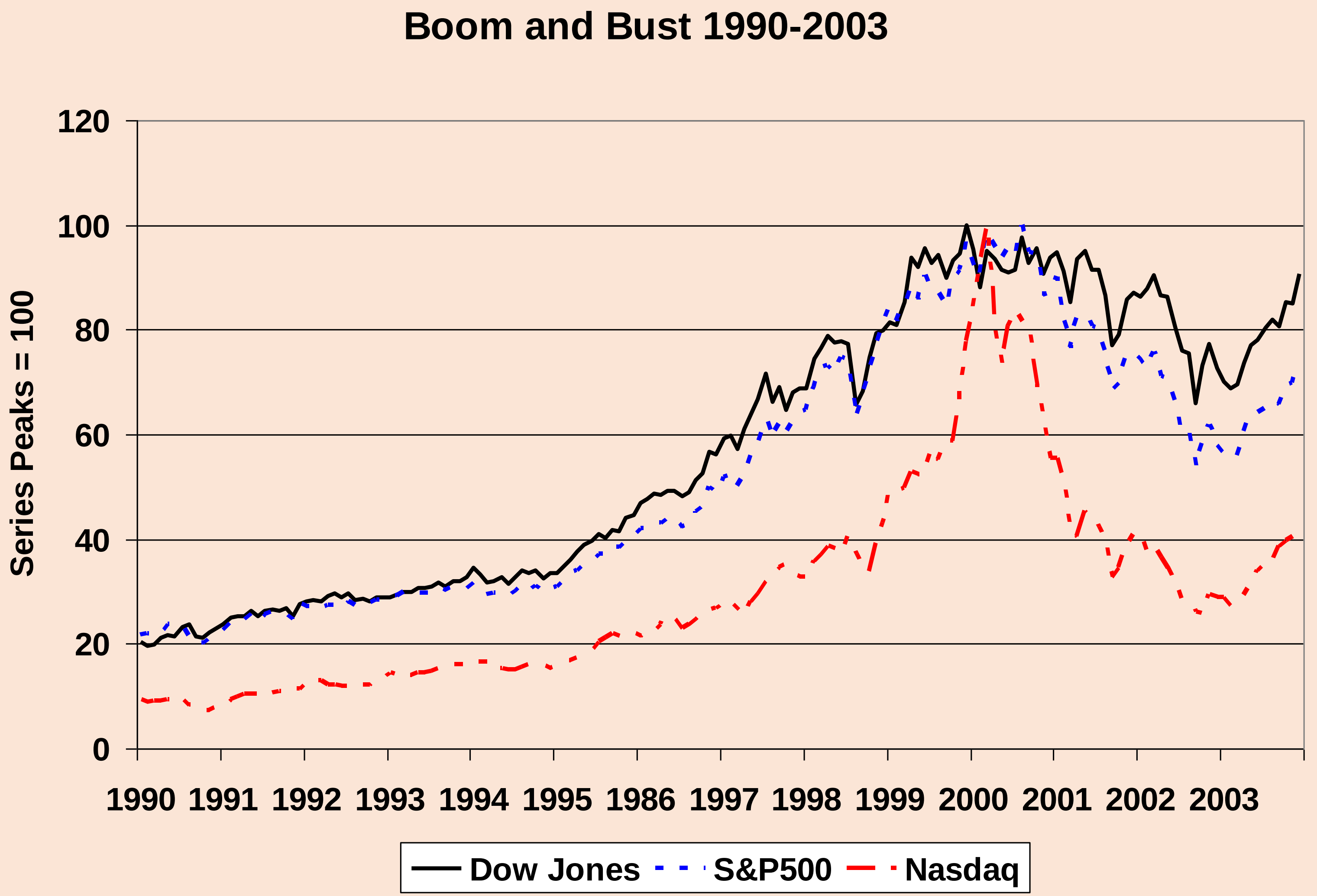


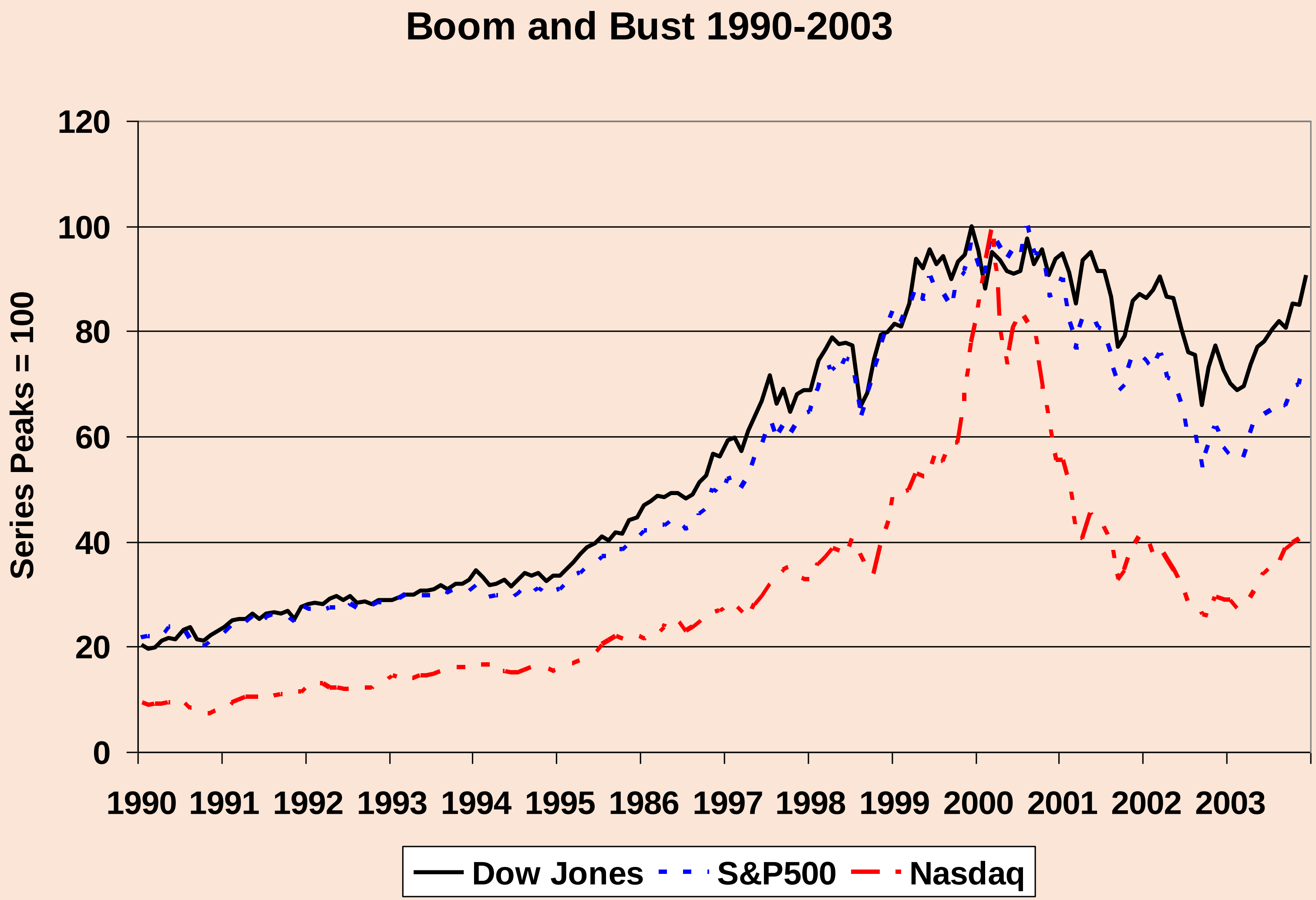
Dot.comedia of the 1990s

4. Easy Credit & Easy Accounting and 5. Bubble's Collapse

Telecoms lay $500 billion in optic cable and networks.   Often subsidized by state governments, it is financed by debt. Result is over capacity.

Start-ups propelled by Venture Capital. In spite of huge venture capital firms burnt through it. When he Fed raised interest rates several times.

Major Frauds: World.Com, Enron etc. Assisted by leading accounting firms leads to bankruptcy and dissolution



Dot.comedia of the 1990s

- **6. Clean Up**
  - Huge losses by many investors, large wealth shock that contributes to brief recession 2000-2001. Investment boom is not financed by borrowing from financial intermediaries, limited damage. Damage to financial agents—brokers, investment banks that promoted
  - Huge scandals undermine reputations of accounting firms—guardians of financial honesty. Arthur Anderson forced to dissolve.
  - Sarbanes-Oxley Act of 2002 Requires management to individual certify accuracy of financial information and Increases oversight role of boards of directors and defines independence of outside auditors. Severe per\alties for fraudulent activities. Created the Public Company Accounting Oversight Board to oversee, regulate, inspect and discipline accounting firms as auditors

Is Crypto a Bubble? How does it Compare?

1. Transformative Innovations?

- A Cryptocurrency is a digital currency designed to serve as a medium of exchange through a computer network that is not reliant on a government or a central bank to protect it as a store of value.
- Instead there is a decentralized system for verifying counterparties stakes. Individual coin ownership records are kept in a digital ledger with cryptography to control creation of coins and transfer of ownership.
- Most cryptocurrencies are designed to gradually decrease the production of that currency, restraining the total amount of that currency that will ever be in circulation
- Bitcoin first cryptocurrency released in 2009. In 2022 there were 9,000 cryptocurrencies, 70 having a market capitalization over $1billion.

Is Crypto a Bubble? How Does it Compare?

1. Transformative Innovations?

- What is the advantage of a cryptocurrency over a traditional currency? Does it ease, lower the cost of ordinary transactions? Does avoid cheating by members of the public (counterfeiting/fraud) or cheating by the central bank or the government (inflation).
- Is it only venue for hiding illegal activities with bubbling enthusiasts adding to the activity?
- Does a central bank digital currency function better than multiple cryptocurrencies? Why the fury against CBDCs?
- Is there any role for discretion in the supply of a medium of exchange? Crises? (Hurricanes? Earthquakes? Wars?) Can one really expect a government to give up discretion? [Suggested parallel: in 19th century America: currency=national banknotes whose issue was limited by need for 100% backing by U.S. government bonds. Critics noted lack of "elasticity" of currency hugely problematic in crises→creation of the Fed]

Is Crypto a Bubble? How Does it Compare?

2. Promoters/Insiders?

Lots of shady, charismatic promoters—Sam Bankman-Friedof FTX and bankruptcies of Terra, Luna, Celsius. Use of celebrities from social media, sports, music to promote

3. Irrational Exuberance?

The “Crypto Bros” Detailed household survey show cryptocurrency holders tend to be young, white, male, less educated, more likely to be looking for a job, and libertarian in political leanings compared to non-crypto households. Changes in Bitcoin prices affect purchases of durables. Exogenously provided information about Crypto returns leads them to buy more crypto.

Is Crypto a Bubble? How Does it Compare?

4. **Easy Credit?** End of 2023, 23 prominent banks invested in Crypto, Loans for Crypto?
5. **Collapse?** High decree of volatility. Large wealth shocks, is the financial system insulated?
6. **Clean Up?**

What is the advantage of a cryptocurrency over a traditional currency? Should one follow the Chinese example and ban Crypto or speed up issue of CBDCs

Key Question: Crypto claims to lower transaction costs as a medium of exchange. For most or all markets as transaction costs decline, transactions tend to be made in one location or in one currency. Doesn't this apply to cryptocurrencies?