

Economic Narratives

How Bimetallism and Bitcoin Went Viral

Lecture 2

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Recap of Yesterday's Lecture

- What are narratives?
- Narratives smaller role in economics and finance than in other sciences
- Narratives as vectors of change in low-brow economic thinking that leads to action
- The Kermack-McKendrick SIR epidemic model, 1927
- Example of an economic narrative: Bimetallism 1890s
- An analogous narrative: Bitcoin 2010s
- Other examples

Outline of Today's Lecture

Applying Narrative Economic Theory

- Size and duration of epidemic
- Direction of Causality
- Contagion and recovery parameters and size and duration of epidemic
- Recurrent Economic Narratives
 - Economic effects of bimetallism and bitcoin narratives
 - Narratives about others' animal spirits and decency
- The Future
 - The coming world with vastly accelerated communications
 - How economic models can be advanced to take account of economic narratives

From Previous Lecture Again: Kermack-McKendrick SIR Disease Epidemic Model 1927

- S =fraction of population susceptible, I =fraction of population infected and now contagious, R =fraction of population recovered and now immune, $S+I+R=1$, c =contagion rate, r =infection rate

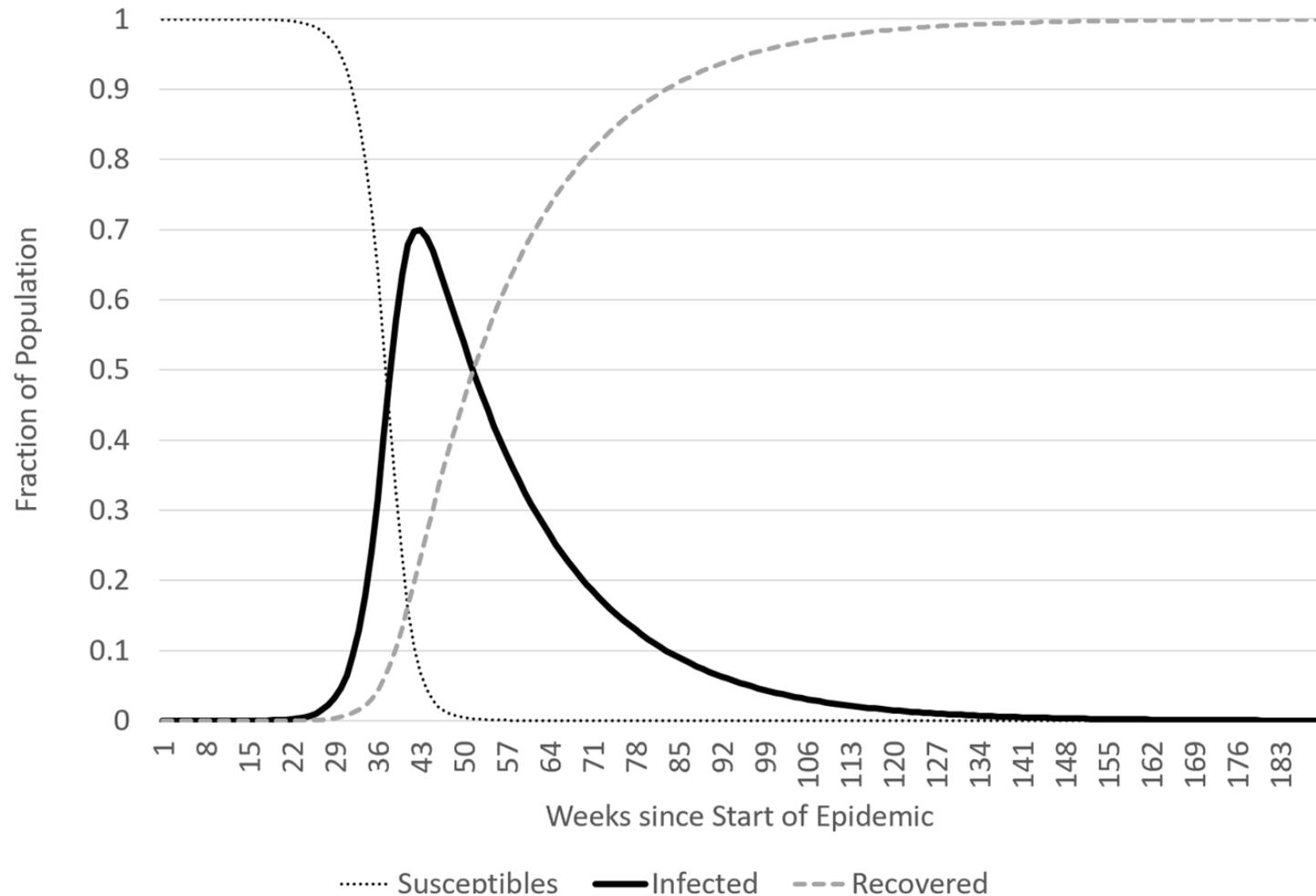
$$\frac{dS}{dt} = -cSI$$

$$\frac{dI}{dt} = cSI - rI$$

$$\frac{dR}{dt} = rI$$

Time Paths of S , I , and R in Kermack-McKendrick Model

$$I(0) = 1/10000000, \quad c = 0.5, \quad r = 0.05$$



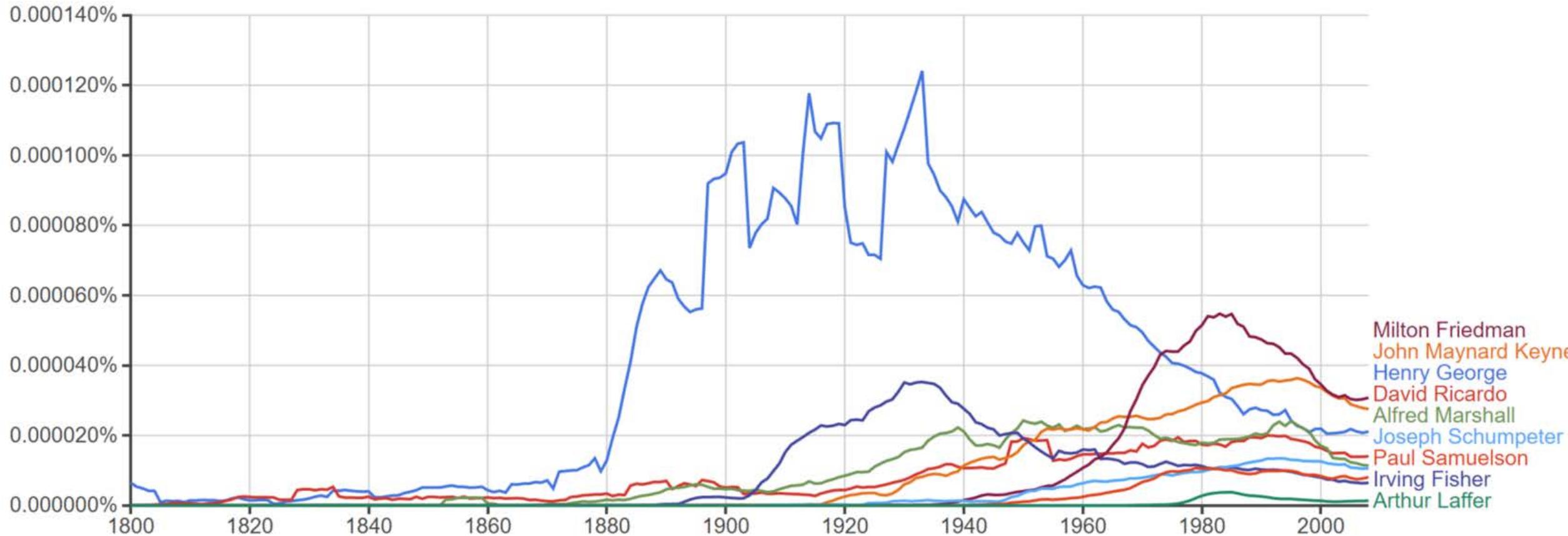
Size of Kermack McKendrick Epidemic Determined by c/r

- $dS/dR = -(c/r)S$
- $S = (1 - I_0)e^{-\left(\frac{c}{r}\right)R}$
- $I_\infty = 0$
- $\frac{c}{r} = R_\infty^{-1} \log \frac{1 - I_0}{1 - R_\infty}$
- Size of epidemic depends only on *ratio* of contagion rate to removal rate
- Speed of epidemic holding c/r constant depends on their *levels*

Many Variations on Kermack McKendrick SIR Model

- Daly and Kendall (1964, 1965) variant of SIR Model for narratives adds interaction term between I and R
- SEIR Model adds component E for exposed, not yet contagious
- For Ebola epidemic, SEIHDR model, where S is susceptibles, E is exposed, I is infected, H is hospitalized, F is dead but not buried, and R is recovered or buried, has been fitted to data on African Ebola epidemics (Lagrand et al. 2007)
- Co-Epidemic Models and constellations of narratives

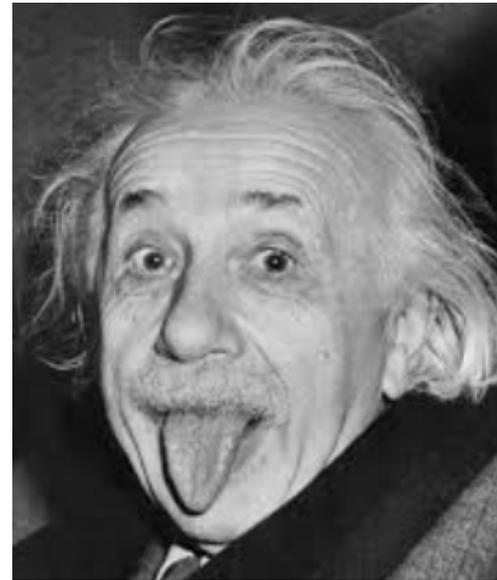
Google Ngrams Search for Famous Economists 1800-2008



Google Ngrams for Karl Marx (1818-1883) and Zeus



Google Ngrams: Albert Einstein 1878-1955 vs. Erwin Schrödinger 1887-1961



Examples of Controlled Experiments Showing Causality from Narratives to Behavior

- Marketing (Jennifer Escalas 2007)
- Journalism (Marcel Machill et al. 2007)
- Education (Scott McQuiggan et al. 2008)
- Health interventions (M. D. Slater et al. 2003)
- Philanthropy (Weber et al. 2006)
- Law (Bell et al. 1985)

Why Bimetallism Appears to Have Contributed to a Severe Economic Depression in 1890s

Example, 1896, Louis Sloss of Alaska Commercial Company said to a reporter:

“Business is very dull, almost at a standstill. Capital is timid and confidence is shaken. Nobody wants to invest in any enterprise, no matter how alluring the proposition, until this scare of unsound money is over. I know of an instance which illustrates to what extent business suffers from this unrest and agitation and the uncertainty of our financial basis. One of my relatives and a member of this firm contemplated erecting two magnificent houses to cost at least \$50,000. The plans were drawn, the bids had been submitted and all was ready, except the signing of the contracts. The prospective builder refused to sign or undertake the building until after the election, when the financial question of the country will be settled. There are undoubtedly many similar instances, and they are the things that stagnate the course of trade.”

Bimetallism and Anarchism 1896

- Prof. Goldwin Smith . . . Refers to the capture of the Democratic Party “by anarchism and repudiation.” Mere “bimetallism is the least part of the matter, even repudiation is not the greatest. The greatest is the uprising of disorder in all its forms and grades against the institutions of the republic.”

Compare with Multiplier-Accelerator Model (Samuelson 1939, following Kahn, 1931, Keynes 1936) and Others)

The national income at time t , Y_t , can be written as the sum of three components: (1) governmental expenditure, g_t , (2) consumption expenditure, C_t , and (3) induced private investment, I_t .

$$Y_t = g_t + C_t + I_t.$$

But according to the Hansen assumptions

$$C_t = aY_{t-1}$$

$$I_t = \beta[C_t - C_{t-1}] = a\beta Y_{t-1} - a\beta Y_{t-2}$$

and

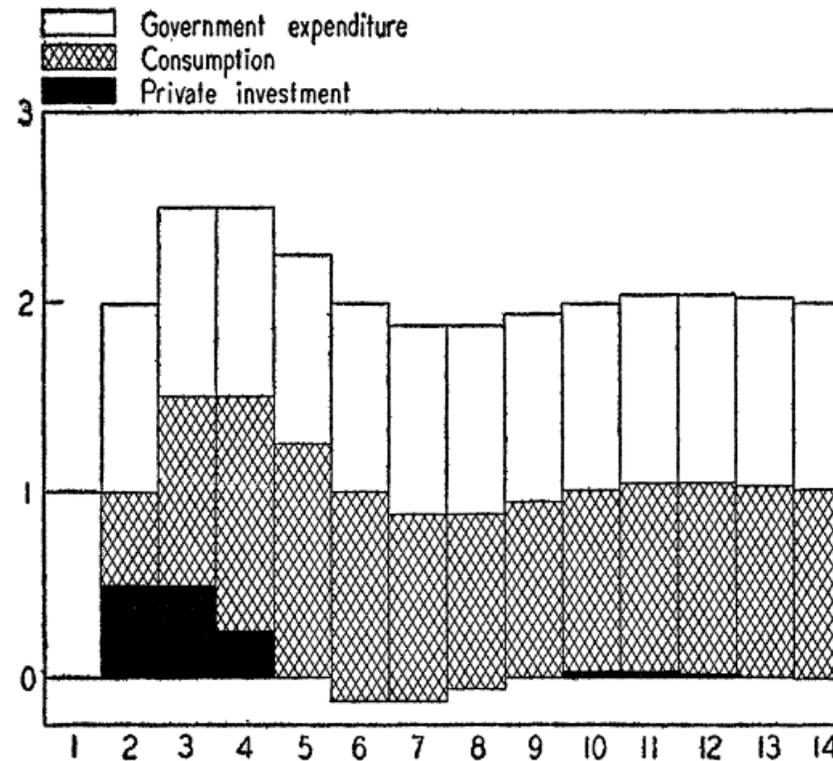
$$g_t = I.$$

Therefore, our national income can be rewritten

$$Y_t = I + a[1 + \beta]Y_{t-1} - a\beta Y_{t-2}.$$

From Paul Samuelson, 1939. "Interactions between the Multiplier Analysis and the Principle of Acceleration"
Review of Economics and Statistics

CHART I.—GRAPHIC REPRESENTATION OF DATA IN
TABLE I
(Unit: one dollar)



Why Bimetallism Went Viral in 1890s in USA West

- Self interest played a role for some, western farmers whose mortgage debt had been amplified by deflation. But deflation rate does not match up with the pattern of the bimetallism epidemic
- William Jennings Bryan lived in Nebraska, L. Frank Baum in South Dakota; Wizard of Oz was set in Kansas
- Westerners smarting under cheap talk that bimetallism was stupid, loved Coin's smart and youthful talk about abstruse monetary economics. Setting that in a comic book style with page after page of pictures was an inspiration.

Compare Bitcoin Contagion with Other Cryptography Innovations

- Proquest News and Newspapers finds only 4 articles that use the phrase “digital signature algorithm” in all history.
- The RSA algorithm, the original cryptography algorithm that may have started the whole thing, which dates back to 1977, gets more: 25 articles.
- But that doesn’t begin to compare with “Bitcoin,” for which Proquest finds 12,194 articles.
- Why was Bitcoin so successful?

Bitcoin Narrative as Recurrence of Mutated Bimetallism Narratives

- Human interest: Satoshi Nakamoto has an engaging hero story (or mythology): He has never been identified, if he even exists
- Perhaps he has evaded taxes on a huge fortune. Government can't tax him if they can't even find him
- Like Coin, he is (or his surrogates are) definitely smart
- Cryptocurrencies, like bimetallism, can be very cool
- The invention of cryptocurrency is an engineering tour de force that few understand, including pretentious financiers

Why Bitcoin's c/r is high: Bitcoin's r is reduced by the Easy Opportunity to Take Action to buy Bitcoin, and then have a stake in it.

- One doesn't have to understand cryptocurrencies to take action to invest in them
- Vending machines appearing in convenience stores
- Having made a gamble and betting on a theory enhances memory
- Bitcoin.org website leads with an immediate invitation to invest:

Bitcoin is an innovative payment network and a new kind of money.

Get started with Bitcoin

Choose your wallet

Pierre-Joseph Proudhon, Father of Anarchism, Set in Motion a Narrative. This from 1840:

“To be GOVERNED is to be watched, inspected, spied upon, directed, law-driven, numbered, regulated, enrolled, indoctrinated, preached at, controlled, checked, estimated, valued, censured, commanded, by creatures who have neither the right nor the wisdom nor the virtue to do so.”



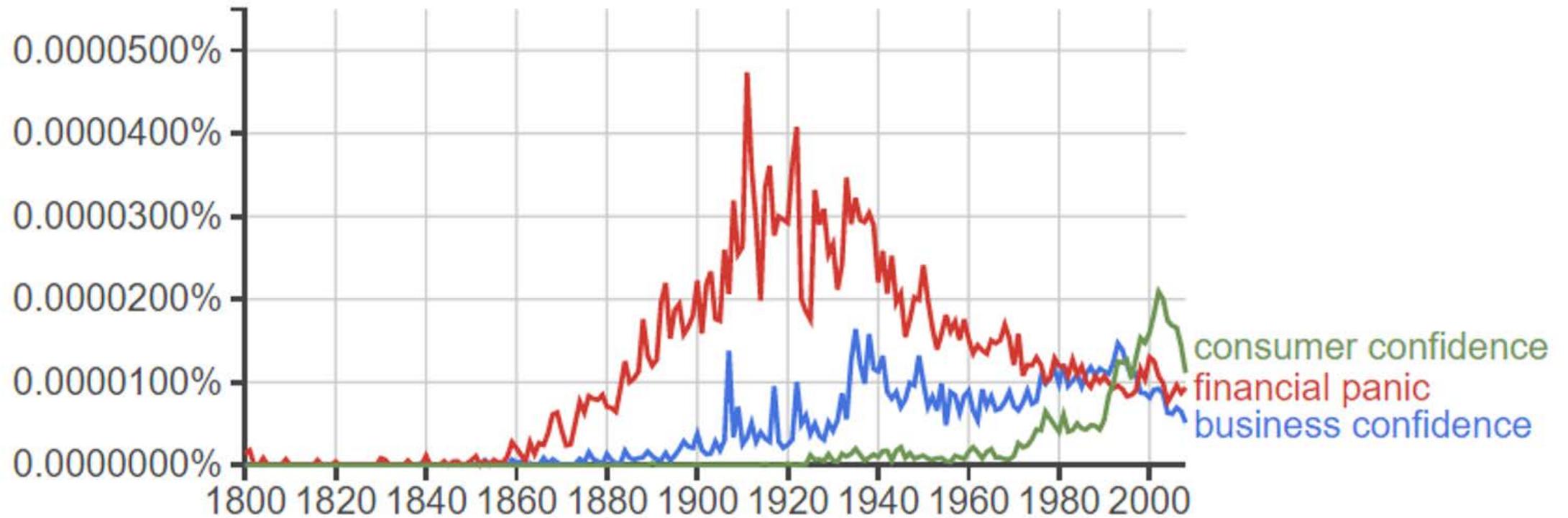
Cryptocurrencies Have an Anarchism Flavor

- History since early 19th century has had a recurrent anarchism element
- Roger Ver, Bitcoin pioneer, said “At first, almost everyone who got involved did so for philosophical reasons. We saw bitcoin as a great idea, as a way to separate money from the state.’
- From Bitcoin.org web site: Bitcoin is the catalyst for peaceful anarchy and freedom. It was built as a reaction against corrupt governments and financial institutions. It was not solely created for the sake of improving financial technology. But some people adulterate this truth. In reality, Bitcoin was meant to function as a monetary weapon, as a cryptocurrency poised to undermine authority.
- <https://news.bitcoin.com/bitcoin-built-incite-peaceful-anarchy/>

The “Hacker Ethic” Generates its Own Anarchic Heroes

- The sociologist Andrew Ross, in 1991, before the Internet, wrote:
“The hacker ethic, first articulated in the 1950s among the famous MIT students who developed multiple-access user systems, is libertarian and crypto-anarchist in its right-to-know principles and its advocacy of decentralized technology.”
- Pekka Himanen in his 2001 book called the *Hacker Ethic*, referred to the ethic of the “passionate programmers.”

Narratives about Others' Animal Spirits, Confidence



From *The Boston Globe* “Confidential Chat” column, a Letter from a Troubled Mother 1932:

“I am afraid to move, for I fear the moral effect on us. Our standard of living will be lowered and I am afraid to think of the readjustment and the effect of such a move on our spirits, our courage and outlook on life. This may not seem very brave, but unless one has been through such a period it is hard to realize the strain and the worry and hard to keep a calm outlook on life.”

Narratives about Others Decency, Community Spirit



Anne O'Hare McCormick, a Pulitzer Prize winning journalist for the *New York Times* wrote in 1932:

“There are times when the complacency, the rugged selfishness and the greed for hokum of one's compatriots are hard to bear. This is not one of those times. At the bottom of the market we are much nicer than we are at the top. Main Street in a depression is the most neighborly street in the world. It is a very patient thoroughfare . . .”

Why Ford New Car Sales Dropped 86% 1929-1932, from *Wall Street Journal* 1932:

“One serious but not easily discernible obstacle is now blocking the exercise of their spending power by those who have it and are capable of using it judiciously in the benefit of industry. This is the widespread fear of being considered ostentatiously extravagant. . . .It is no mere guesswork that asserts such a handicap upon efforts to revive trade. The automobile industry, for one, has proved its reality on an extended scale by gathering conclusive evidence that important numbers of people with money and the actual need of a new car are denying themselves through fear of neighborhood criticism. A new species of sales resistance is among the “psychological” products of depression, namely, the haunting doubt whether or not ownership of a new car may be, or may seem to others, an indecent display of affluence.”

Research Directions

Combining the Epidemic Model and the Keynesian Model in Future Work

- At least two different kinds of feedback: one from epidemic contagion of ideas, the other from Keynes' multiple rounds of expenditure
- Might be modeled as a co-epidemic (A speculative bubble is a co-epidemic between a narrative justifying high prices and the level of price itself)

Developing Neuroscience

- We must “describe the neural events that underlie behavioral decision-making employing an interdisciplinary approach that is coming to be called ‘neuroeconomics’.” (Paul Glimcher)
- If people are maximizers of expected utility, we must find structures in the brain that support that. In trying to find that, we might find something else

- Society for Neuroeconomics convention 2018



Exploit Existing Digital Historical Text Databases to Infer Narratives and their Relation to Other Data

- Newspapers
- Books
- Legal cases
- Diaries
- Sermons
- Social media

Start Collecting Consistent Time Series Data

- Questionnaires, including questionnaires that allow people to answer prompts with narratives on their mind in their own words, as part of larger surveys that collect other kinds of data
- Focus groups, both digitizing past focus group results held by marketing firms, and creating new focus groups
- Invent better semantic search algorithms to find the contagious element of specific narratives

Where Expanding Social Media Might Change the Dynamics of Narrative Epidemics

- Social media already allow people to find like-minded others
- But, so far the nature of narrative transmission may not be much different from the days of the *praecones* on the Roman forum
- Social media may invent new forms of communication that alter narrative epidemics extensively