Narrative Economics and the History of Economic Crises

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My American Economic Association Presidential Address 2017 followed by book 2019

• “Narrative Economics” *AER*, April 2017

• *Narrative Economics: How Stories Go Viral and Drive Major Economic Events*, Princeton University Press, October 1, 2019
An Adventure in Consilience

• Consilience: the principle that evidence from diverse fields of study can help us converge on strong conclusions
• William Whewell, *The Philosophy of the Inductive Sciences, Founded Upon Their History*, 1840
• E. O. Wilson, *Consilience: The Unity of Knowledge*, 1998
• Fields of study: economics, management studies, marketing, epidemiology, neuroscience, neurolinguistics, psychology, sociology, anthropology, political science, historical studies, religious studies, legal studies, humanities including literature
JSTOR Counts of Word “Narrative” as Percent of All Articles, by Discipline
Real Stock Prices (S&P Composite) in U.S. with Real Earnings per Share, January 1871-March 2019
Cyclically-Adjusted Price-Earnings Ratio, January 1881-April 2019
Chinese and U.S. Stock Prices
U.S. Real Home Prices, Building Costs, Population and Interest Rates, 1890-2019
“Housing Bubble”
Google Searches Index and ProQuest News & Newspapers Percent of Articles, 2004-2019
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, \( r \) = recovery rate

\[
\frac{dS}{dt} = -cSI
\]

\[
\frac{dI}{dt} = cSI - rI
\]

\[
\frac{dR}{dt} = rI
\]
Size of Kermack-McKendrick Epidemic Determined by $c/r$

- $dS/dR=-(c/r)S$
- $S = (1 - I_0)e^{-(c/r)R}$
- $I_\infty = 0$
- $\frac{c}{r} = R_\infty^{-1} \log \frac{1-I_0}{1-R_\infty}$
- Size of epidemic depends only on ratio of contagion rate to removal rate
- Speed of epidemic holding $c/r$ constant depends on their levels
Time Paths of $S$, $I$, and $R$ in Kermack-McKendrick Model

$I(0) = \frac{1}{1000000}$, $c=0.5$, $r=0.05$
Ebola Epidemic Lofa County Liberia, Jun–Nov 2014

Source: Center for Disease Control.
Google Ngrams Search for Famous Economists 1800-2008
Google Ngrams for Karl Marx (1818-1883) and Zeus
Google Ngrams Search for Famous Models
Compare with Multiplier-Accelerator Model (Samuelson, 1939)

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

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

and

$$g_t = 1.$$  

Therefore, our national income can be rewritten

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

Chart 1.—Graphic Representation of Data in Table 1 (Unit: one dollar)
Variants of the SIR Compartmental Model

- Daley & Kendall (1964, 65) proposed a variant of the SIR model for narratives where infectives might tend to become uninfective after they meet another infective person or a recovered person, because they then think that many people now know the story.
- SEIR model, where S is susceptibles, E is exposed, I is infected, R is recovered.
- SEIHFR model for Ebola, 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.
Co-Epidemics and Constellations of Epidemics

• Co-epidemics with other diseases: HIV and tuberculosis have been modeled with variants of compartmental models (such as SI x SI and variants, Long et al., 2008)

• Co-epidemics of diseases with narratives: Ebola and conspiracy narratives (Vinck et al., 2019)
  • Over 80% of the interviewees in the Congo area during a recent outbreak said they had heard misinformation that “Ebola does not exist,” “Ebola is fabricated for financial gains,” and “Ebola is fabricated to destabilize the region.”
  • For each of these statements, over 25% said they believed the narrative. These narratives discouraged prevention measures, and amplified the disease.
Constellations of Economic Narratives

• Contagion rate of a narrative is related to the presence of other narratives

• Narratives about “bimetallism” and William Jennings Bryan and labor unrest were “all that people wanted to talk about” in US in mid 1890s

• Narratives about Donald J. Trump and his Tweets and rallies are “all that people want to talk about” in US now

• “Co-epidemic” compartmental models represent this (as with models relating HIV and TB epidemics), such models may be more important in economics than in medicine
A Constellation of Narratives about Financial Panic in U.S. Peaks around 1910 (Ngrams)
Contagion Rate of Narratives Can Be Affected by the Silliest of Story Components

• What makes for a colorful story that really spreads? No one knows for sure
• The difference between epidemic and no epidemic may depend on slight differences in $c$ (or $r$)
• A simple play on words or joke, or association with a celebrity, may increase $c$
• Some change in the environment that creates a continual reminder of the story may lower $r$
Keynes Beauty Contest and the Stock Market

- Keynes 1936: “... professional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole. . .”
- Almost a trillion possible lists of six
- Optimal strategy?
- Absence of research on how people actually deal with such strategy in speculative markets
People Surmise What Others Are Thinking by Watching or Reading News that Other People Read (Examples from October 19, 1987 Crash)

• October 12, 1987 *WSJ*:
  • Could “put the market into a tailspin.”
  • Portfolio insurance could start a “huge slide in stock prices that feeds on itself”

• October 17, 1987 *NYTimes*
  • Portfolio insurance could push “slides into scary falls.”
WSJ, Oct 19, 1987

• *Wall Street Journal* on the very morning of the biggest one-day drop in the stock market made a comparison with 1929
Google Ngrams (Books) Counts for Some Major Macroeconomic Models, 1940-2008
Recurrent Economic Narratives

- Panic versus Confidence
- Frugality versus Conspicuous Consumption
- The Gold Standard versus Bimetallism
- Labor-Saving Machines Replace Many Jobs
- Automation and Artificial Intelligence Replace Almost All Jobs
- Real Estate Booms and Busts
- Stock Market Bubbles
- Boycotts, Profiteers, and Evil Business
- The Wage-Price Spiral and Evil Labor Unions
Panic vs. Confidence: 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.”
Frugality vs. Conspicuous Consumption Narratives

• *New York Times*, 1932: “In this time of depression, publicly displayed extravagance is an offense, the Rev. Dr. Minot Simons, pastor, asserted yesterday in his Christmas sermon in All Souls Unitarian Church: “I hope that any one tempted to splurge in costly rejoicings will get that thought that they would be in bad taste. . . . Such things always stir a profound resentment, and this Winter such resentment must not be stirred.”

• *Washington Post*, 1932: “And then the mode turned a handspring, as so often happens, and poverty was chic! “I cannot afford it” was said brazenly, even boastingly—because didn’t this imply that one had lost lots of money in stocks and things. Whether one had had any or lost any, of course.”
Labor-Saving Machinery Narratives, Google Ngrams
Percent of Articles, ProQuest News & Newspapers, Automation and Artificial Intelligence, 1900-2019
Stock Market Bubble Narratives: “Great Depression” Counts as Percent of Database Each Year
How Future Research Could Turn Narrative Economics into More of a Science

• Focus interviews as a systematic long-term strategy
• Focus groups as a systematic long-term strategy
• Digitization of unconventional texts, sermons, diaries, etc.
• Improved semantic search of digitized texts
• Development of co-epidemic models of narratives and the economy