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Literature Review of Narrative Economics

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Outline of talk

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Introduction

- Calls for economists' attention to social aspects
  - social dynamics and popular models (Shiller 1984); new culturomics (Michel et al. 2005); humanomics (McCloskey 2016); for more narrativeness in economics (Morson and Schapiro 2017)
- Controlled experiments in other disciplines showing that people respond strongly to narratives
  - marketing (Escalas 2007); journalism (Machill, Köhler, and Waldhauser 2007); education (McQuiggan et al. 2008); health interventions (Slater et al. 2003); and philanthropy (Weber et al. 2006)

Definition and Scope

- Economics that describe popular narratives and study the causal influence of changed narratives on changed (economic) behavior (Shiller, 2017)
  - severity of a recession may be related to the prevalence and vividness of certain stories, not the purely economic feedback or multipliers

Definition and Scope

- Attempt to quantify narratives as an exogenous shock or friction in New Keynesian models using textual analysis
    - "narrative shock" can be viewed as an candidate or alternative to productivity shock that drives business cycle
    - "narrative popularity" can be modeled as the friction that affects the propagation of the initial shock
        - bank run as an example
        - may relate to network effect/demand-side economies of scale (Rohlfs, 1974)
- Derivation of quantitative data from qualitative materials such as text or recordings using expert judgment

Narratives study trends throughout the social sciences, but remains minority in Economics
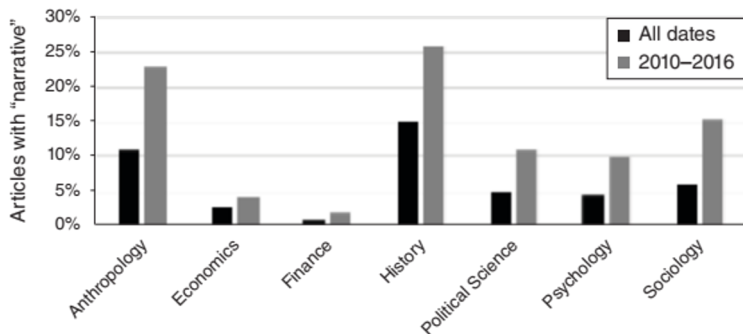

Figure 1: JSTOR counts by field of articles containing the word narrative as a percent of all articles in the field, entire database (left) and the years 2010-2016 only (right)

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Characteristics of popular narratives

- Narratives are spread in context of contagious human-interest stories
  - dynamics can be described using SIR model from epidemiology
- What stories interest human?
  - constellations of narratives
  - confluence of narratives
  - historic recurrence with narrative mutation
  - nine important perennial economic narratives

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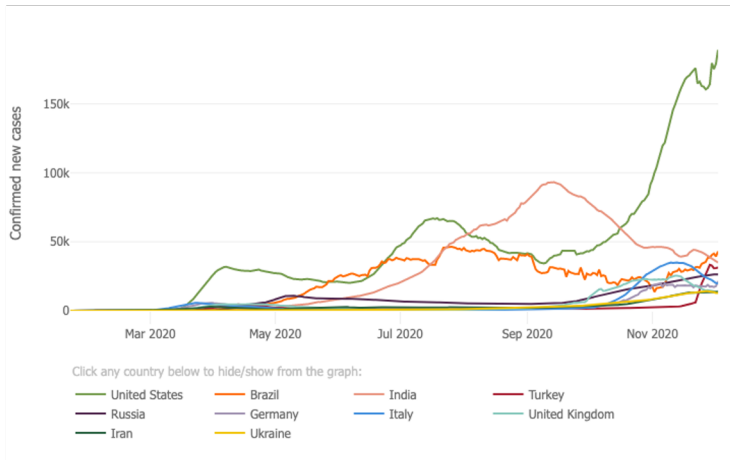○○●○○○○○○

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Learning from Medical Epidemiology: COVID-19

Figure 2: Daily confirmed new cases (7-day moving average) from JHU Coronavirus Resource Center

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Similar hump-shaped curves can be found in the trend of popular economic theories
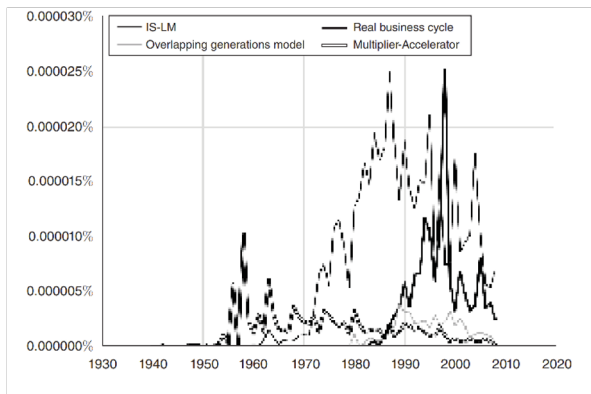
Figure 3: Google Ngrams Counts for Four Economic Theories

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Kermack-McKendrick (1927) Compartmental/SIR Model

- 3 endogenous stock variables
    - S: number of susceptibles
    - I: number of infectives
    - R: number of recovereds

$$S + I \rightarrow 2I$$
$$I \rightarrow R$$

- 3 exogenous parameters
    - $c > 0$: constant contagion rate
    - $r > 0$: constant recovery rate
    - $N = S + I + R$: constant total population
- 3 dynamic equations

$$\frac{dS}{dt} = \frac{-cSI}{N}$$
$$\frac{dI}{dt} = \frac{cSI}{N} - rI$$
$$\frac{dR}{dt} = rI$$

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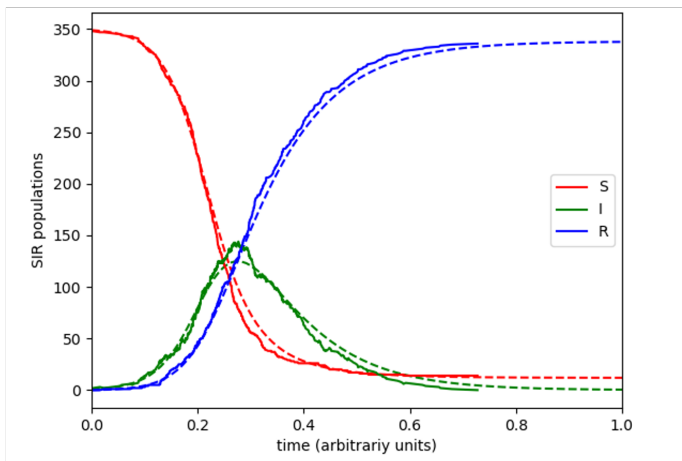# Kermack-McKendrick (1927) Compartmental/SIR Model

Figure 4: Solution to Kermack-McKendrick SIR Model

Implications

- Fast vs big disease
  - as time goes to infinity, the number of people who have ever had the disease goes to a limit R_∞ (called the size of the epidemic) strictly less than N.

$$\frac{c}{r} = R_\infty^{-1} \log \frac{N - I_0}{N - R_\infty}$$

  - higher c/r corresponds to higher R_∞, while higher c itself, holding c/r constant, merely yields a faster epidemic.
- Extensions
  - SIRS, SIER, etc.

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Multipliers from the SIR point of view

- The original Kahn-Keynes multiplier model might be described with the contagion rate c replaced by the marginal propensity to consume (MPC), and with a zero removal rate r.

- Any stimulus to the economy I_0 increases someone's income. This individual then spends MPC of that income, generating income for yet another who spends MPC of that income. Eventually the result is an increase of national income of $\frac{I_0}{1-MPC}$.

- The permanent income hypothesis can be seen as a disagreement on how "contagious" the transitory stimulus is by suggesting a lower MPC.

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Nine Perennial Economic Narratives

1. Panic versus Confidence

2. Frugality versus Conspicuous Consumption

3. Monetary Standards: The Gold Standard versus Bimetallism

4. Technological Unemployment: Laborsaving Machines Replace Many Jobs

5. Automation and Artificial Intelligence Replace Almost All Jobs

6. Real Estate Booms and Busts

7. Stock Market Bubbles

8. Boycotts, Profiteers, and Evil Business

9. The Wage-Price Spiral and Evil Labor Unions

Narratives about Monetary Standards of Value, Bimetallism and Bitcoin

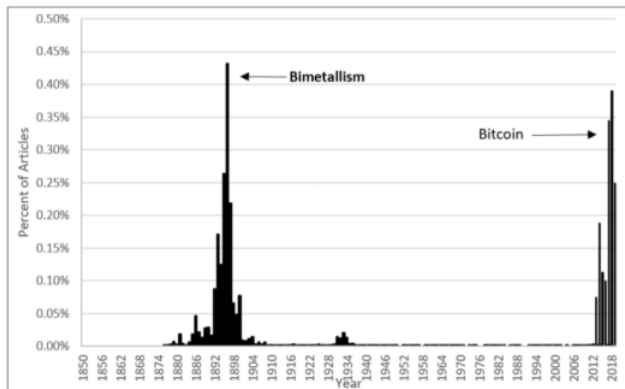- An example of confluence and mutation of narratives

Figure 5: Percentage of All Articles by Year Using the Word Bimetallism or Bitcoin in News and Newspapers, 1850-2019 (Shiller 2019)

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Frugality vs. Conspicuous Consumption Narratives

- Frugality
  - date to ancient times
    - Sumptuary laws in ancient Rome, Greece, and China
  - narratives of failures among people one knows encourage modesty
    - frugality during Great Depression
- Conspicuous soncumption
  - narratives of others' riches encourage envy, FOMO
    - "keeping up with the Joneses", peer effect in empirical consumption data
  - narratives with morals that one must show off to be a success
    - narratives about Donald J. Trump

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The Future

- How new technology will affect contagion and recovery rate of narratives and economic behavior
- Quantitative method
    - new data availability - digitized text and speech
        - call for collecting better information on popular economic narratives
    - textual analysis by human or machine learning
        - compare and contrast to "narrative approach" by Romer and Romer (2004)
        - dimension reduction

Romer and Romer (2004)

- A new measure of monetary shocks relatively free of endogenous and anticipatory movements
  - Residuals from the regression of Federal Reserve's *intended* funds rate changes on its internal forecasts of inflation and real activity

Romer and Romer (2004)

- ...deriving a series on intended funds rate changes...combine information on the Federal Reserve's expected funds rate derived from the Weekly Report of the Manager of Open Market Operations with detailed readings of the Federal Reserve's *narrative accounts* of each FOMC meeting

1/14/69	6.4375, no change. The FOMC agrees that open-market operations should attempt to maintain current credit market conditions.
2/4/69	6.4375, no change. The FOMC again agrees that open-market operations should attempt to maintain current credit market conditions. There is a suggestion of a slight asymmetry toward easing, but not enough to point to a noticeable expected fall in the funds rate.
3/4/69	6.75 to 6.625. The FOMC again agrees to attempt to maintain current monetary conditions. But there is an explicit asymmetry toward easing: conditions should be eased if bank credit appears to be contracting any more rapidly than projected, but tightened only if bank credit appears to be growing substantially faster than projected. The asymmetry suggests an expected reduction of roughly 1/8 point (since a typical move is 1/4 point and the asymmetry does not guarantee a move).
4/1/69	6.75 to 7.25. The FOMC agrees that it wants the funds rate to rise by roughly the same amount as the pending increase in the discount rate, which is 1/2 point.

Figure 6: Appendix of Romer and Romer (2004)

Romer and Romer (2004)

TABLE A-1

Changes in Intended Federal Funds Rate at FOMC Meetings

Meeting Date	Initial Intended Rate (%)	Change in Intended Rate (%)	Meeting Date	Initial Intended Rate (%)	Change in Intended Rate (%)	Meeting Date	Initial Intended Rate (%)	Change in Intended Rate (%)
1/14/69	6.4375	0.0000	7/18/72	4.6250	0.0000	5/18/76	5.1250	0.2500
2/4/69	6.4375	0.0000	8/15/72	4.7500	0.1250	6/22/76	5.5000	0.0000
3/4/69	6.7500	-0.1250	9/19/72	5.0000	0.1875	7/20/76	5.2500	0.0000
4/1/69	6.7500	0.5000	10/17/72	5.0625	0.1250	8/17/76	5.2500	0.0000
4/29/69	7.6875	0.2500	11/21/72	5.0625	0.1250	9/21/76	5.2500	0.0000
5/27/69	8.5000	0.1250	12/19/72	5.3750	0.2500	10/19/76	5.0000	-0.1250
6/24/69	9.0000	0.0000	1/16/73	5.7500	0.5000	11/16/76	5.0000	-0.2500
7/15/69	9.0000	0.1250	2/13/73	6.3750	0.3125	12/21/76	4.6875	-0.0625
8/12/69	9.5000	0.2500	3/20/73	7.0000	0.1250	1/18/77	4.6250	0.0625
9/9/69	9.0000	0.0000	4/17/73	7.0000	0.1875	2/15/77	4.6875	0.0000
10/7/69	9.1250	0.0000	5/15/73	7.5000	0.5000	3/15/77	4.6875	0.0000

Figure 7: Appendix of Romer and Romer (2004)

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Multipliers and Bubbles from the SIR point of view

- In a bubble, the contagion is altered by the public attention to price increases: rapid price increases boost the contagion rate of popular stories justifying that increase, heightening demand and more price increases.

- The impact of the epidemic on the asset return would depend on the speed of the epidemic relative to the discount rate. If the speed is very low, there would be very little impact on short-term returns. Then the asset price changes would find little short-term serial correlation through time, and would be approximately a random walk over short time periods.