

Concluding Comments on the FRBNY-NAS Conference on New Directions in Understanding Systemic Risk

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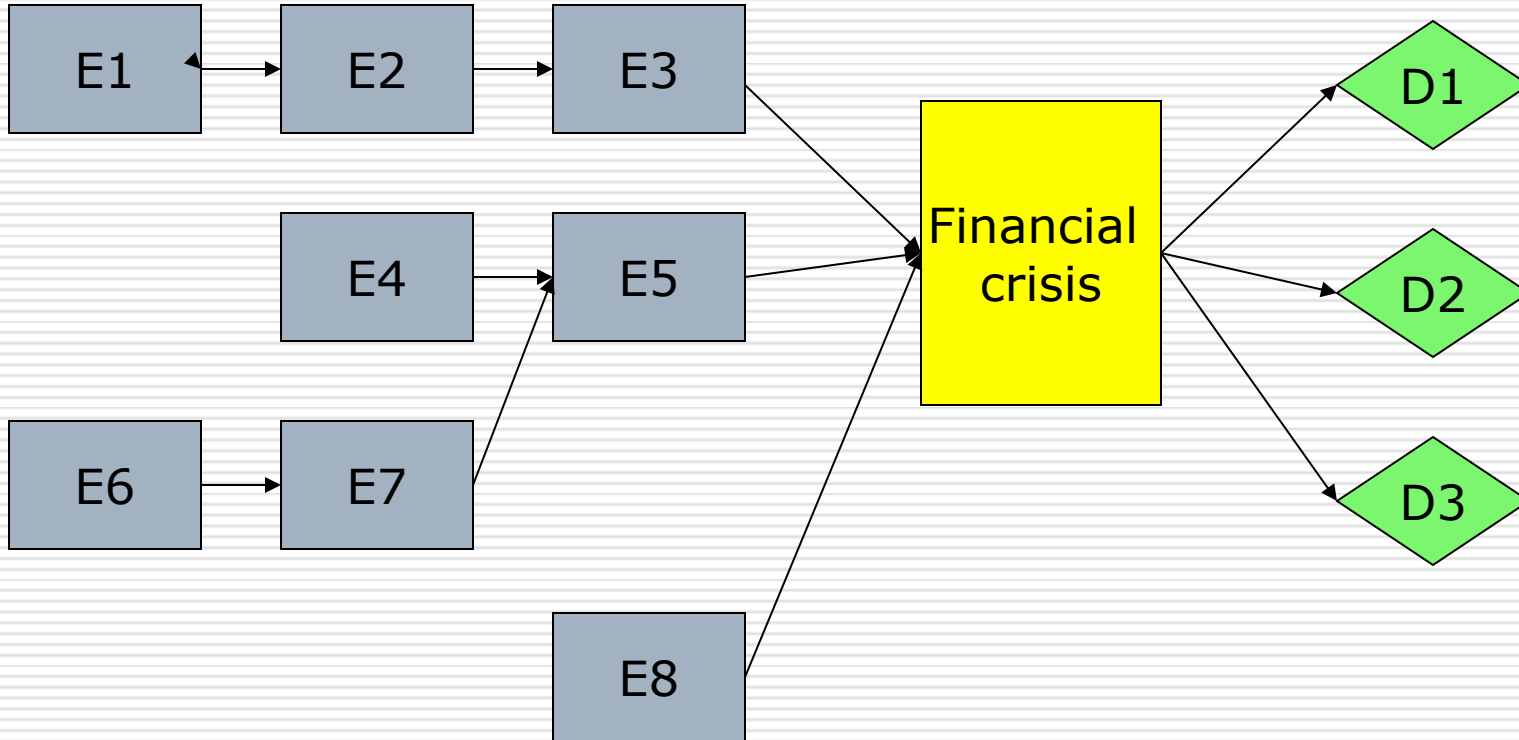
Two usual disclaimers

- The views expressed are my own and are not necessarily shared with anyone else in the Federal Reserve System.
 - Thanks to the organizers (not).
 - This is a hard job because
 - The goal of the organizers is to bring together researchers from diverse fields
 - If it was easy to summarize linkages across fields, then you probably didn't learn anything new.
 - QED, hope that I fail here so that the conference can be judged a success.
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Having beat down expectations,

- I will touch on three themes in assessing and managing financial crises
 - The multiple roles of policymakers,
 - The varieties of nonlinearities in economic behavior, and
 - The importance of disaggregation.
 - And “financial crisis” should be heard as synonymous with
 - “extreme event”
 - “catastrophic failure”
 - “systemic strain”
 - Note that I haven’t given fourteen possibilities (as was mentioned yesterday) but I think perhaps the clearest definition is an event that is “rare and severe” (BHLMZ, 1999).
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To state the obvious, there may be many potential paths to a catastrophic failure and many different possible policy outcomes.



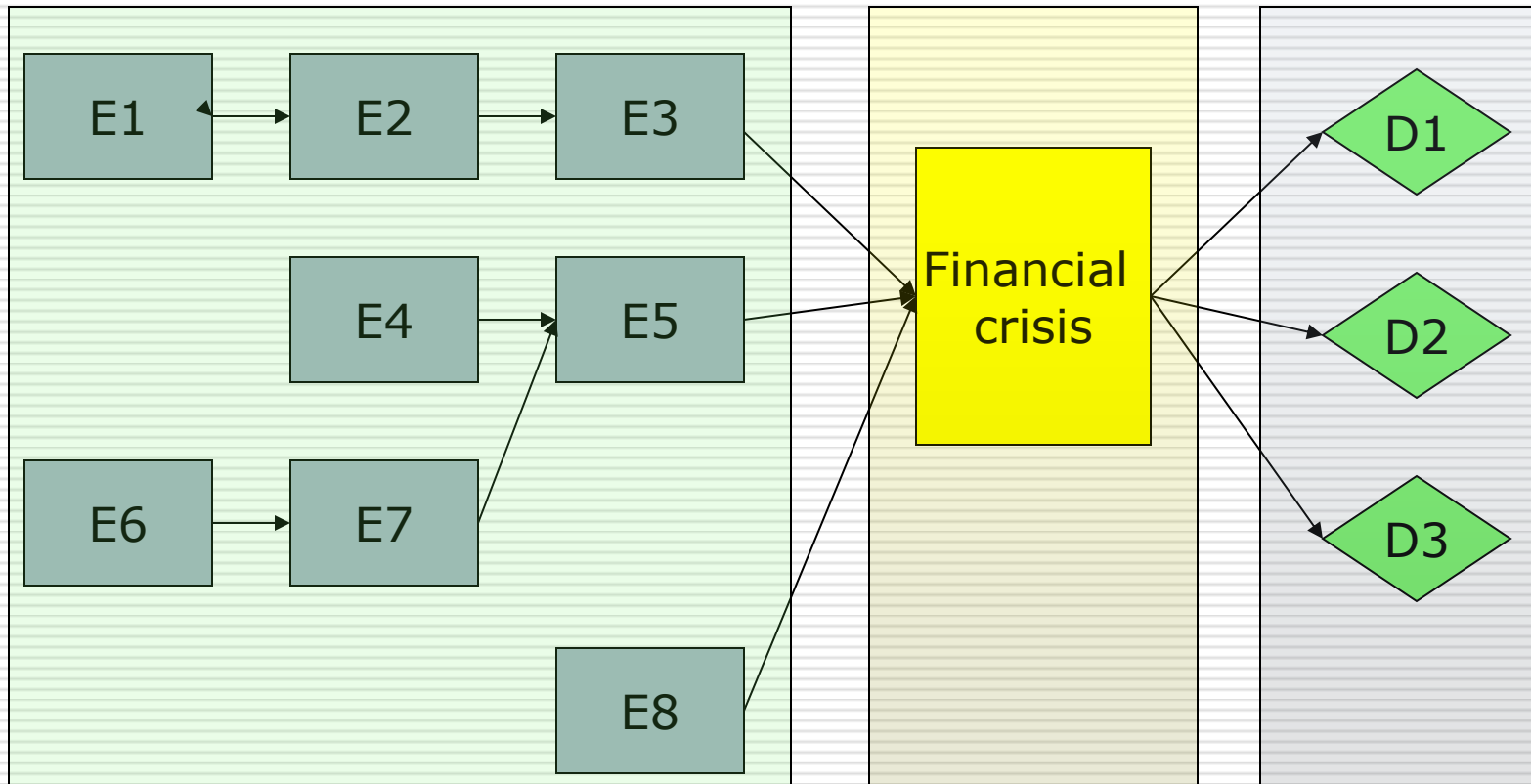
Polycymakers

Policymakers play four roles

- (1) Service provider
- (2) Supervisor and examiner

(3) Crisis manager

(4) Legislator and regulator



In these four roles,

- The *service provider* serves as a key market utility and influences trading and settlement through its rules and pricing.
 - The *supervisor and examiner* enforces the current body of law and regulation
 - Which was presumably designed (optimally, of course) to keep to a minimum systemic strains.
 - The *crisis manager* tries to mitigate the effects of the fallout of a systemic event.
 - The *legislator and regulator* tries to learn lessons from the event to improve the law and regulation.
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These multiple roles produce important tensions.

- These roles may sometime conflict
 - The service provider may demand a more robust (and expensive or limited) system than the private sector would have created.
 - If the crisis manager is effective in limiting the fallout or the legislator makes parties whole after the fact, then market discipline is eroded, making the examiner's job harder. (Moral hazard.)
 - If the examiner intends to take action against a party or parties that might lead to financial strains, then the crisis manager might complain. (Regulatory forbearance.)
 - The knowledge that the legislator may search ex post for scapegoats may introduce incentive problems for the service provider, examiner, or crisis manager.

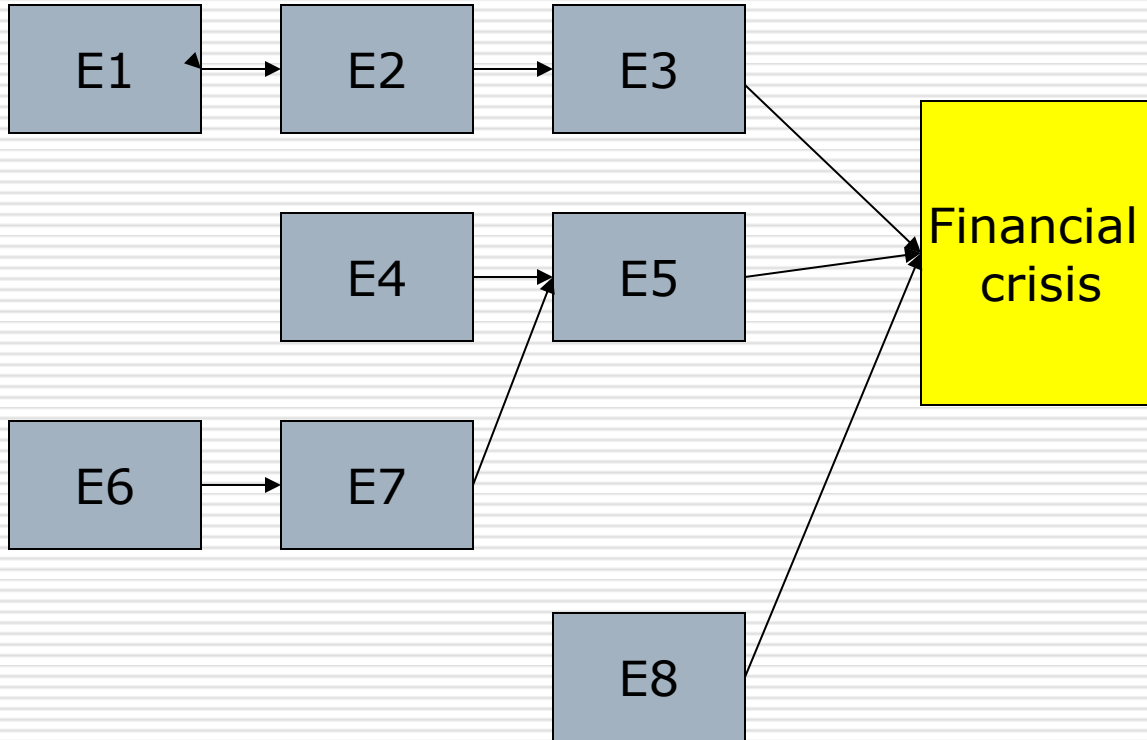
 - Conflicting interests are not always bad.
 - The private sector or an independent regulator may not internalize the aggregate costs of a crisis. Having the entity that does (the central bank) make decisions may provide more efficient outcomes.
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There is no one policymaker.

- These roles are not always performed by the same people, which potentially exacerbates the conflict of interests.
 - Multiple players also introduce coordination problems, which
 - May produce suboptimal regulatory structures in general (think of interest on reserves).
 - May lengthen the response time during a crisis. (Inside and outside lags.)
 - This is why, I think, central bankers take such a prominent role during financial crises—they're better integrated internally and can make quicker decisions about the use of public resources in an emergency.
 - Central bankers have not always gotten good press: In *Lombard Street* (1873), Walter Bagehot wrote, "A more miserable catalogue than that of the failures of the Bank of England . . . is scarcely to be found in history."
 - The modelers among you should appreciate that this multiplicity potentially introduces another source of shocks, persistence, and perhaps suboptimal behavior.
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Nonlinearities

(1) Welfare is likely nonlinear. So, in the design and enforcement of law and regulation,

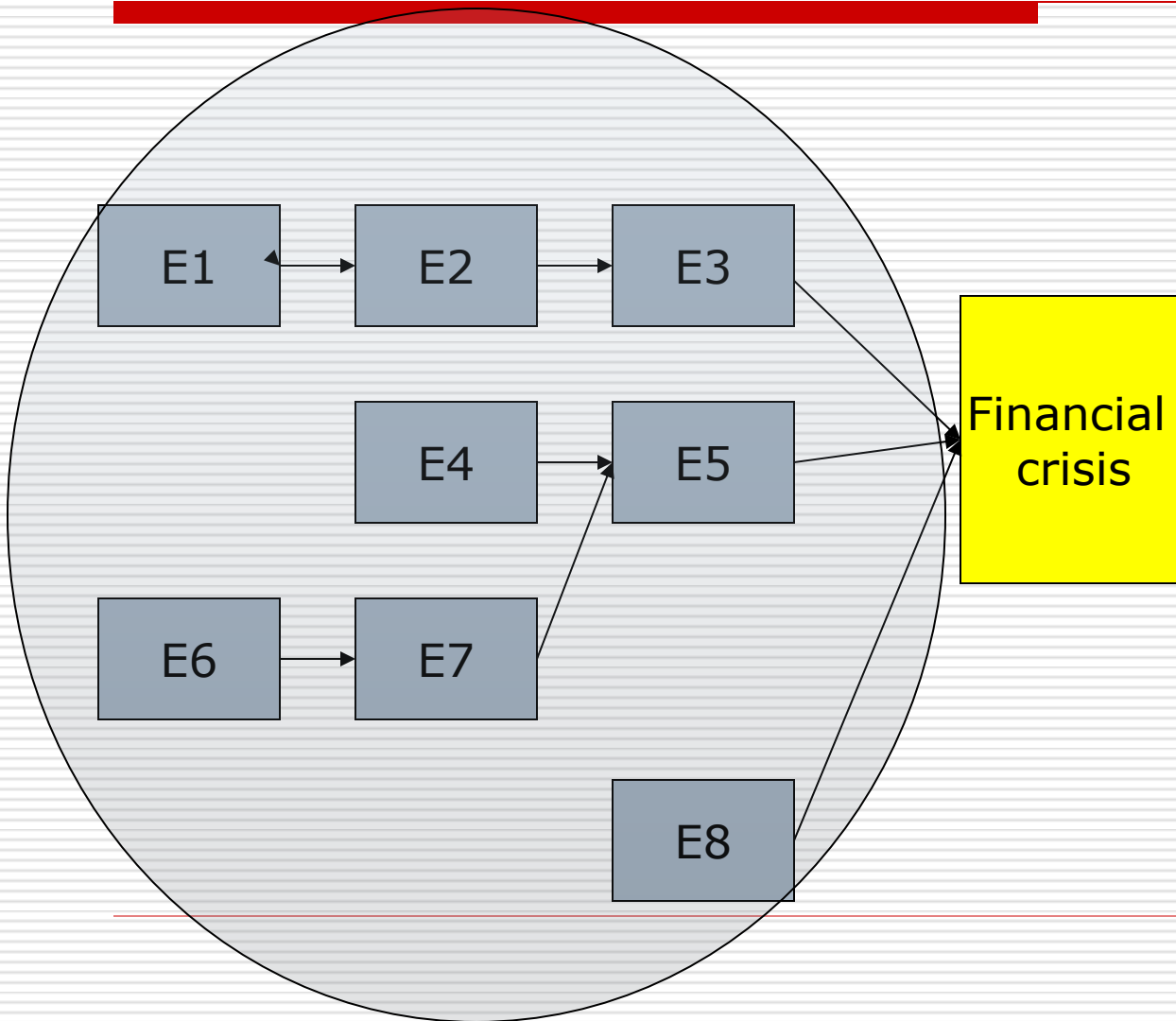


The goal should not be to minimize the probability of every adverse event but to lean especially hard against those that have more severe consequences.

That is, probabilities are rotated by the weights of the welfare function.

That's the point of PMRM or, in asset pricing, using probabilities in the martingale rather than physical measure.

(2) Some economic processes are self-reinforcing. So, in the run-up to a crisis, the size or transmission of some events may amplified.



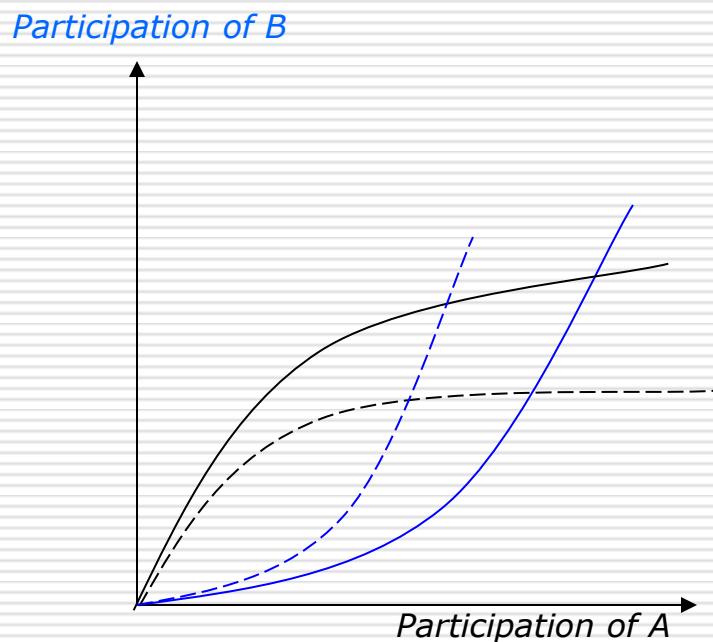
Margin calls may cause selling that forces prices down more sharply. (Fire sales.)

Concerns about collateral values or an uncertain stock of capital may reduce arbitrage. (The limits of arbitrage.)

Problems at intermediaries may restrict the availability of credit. (The financial accelerator.)

A lot of this sounds similar to what goes wrong in the power grid when lightning strikes.

One of my favorite examples of nonlinear behavior is participation in trading activity.

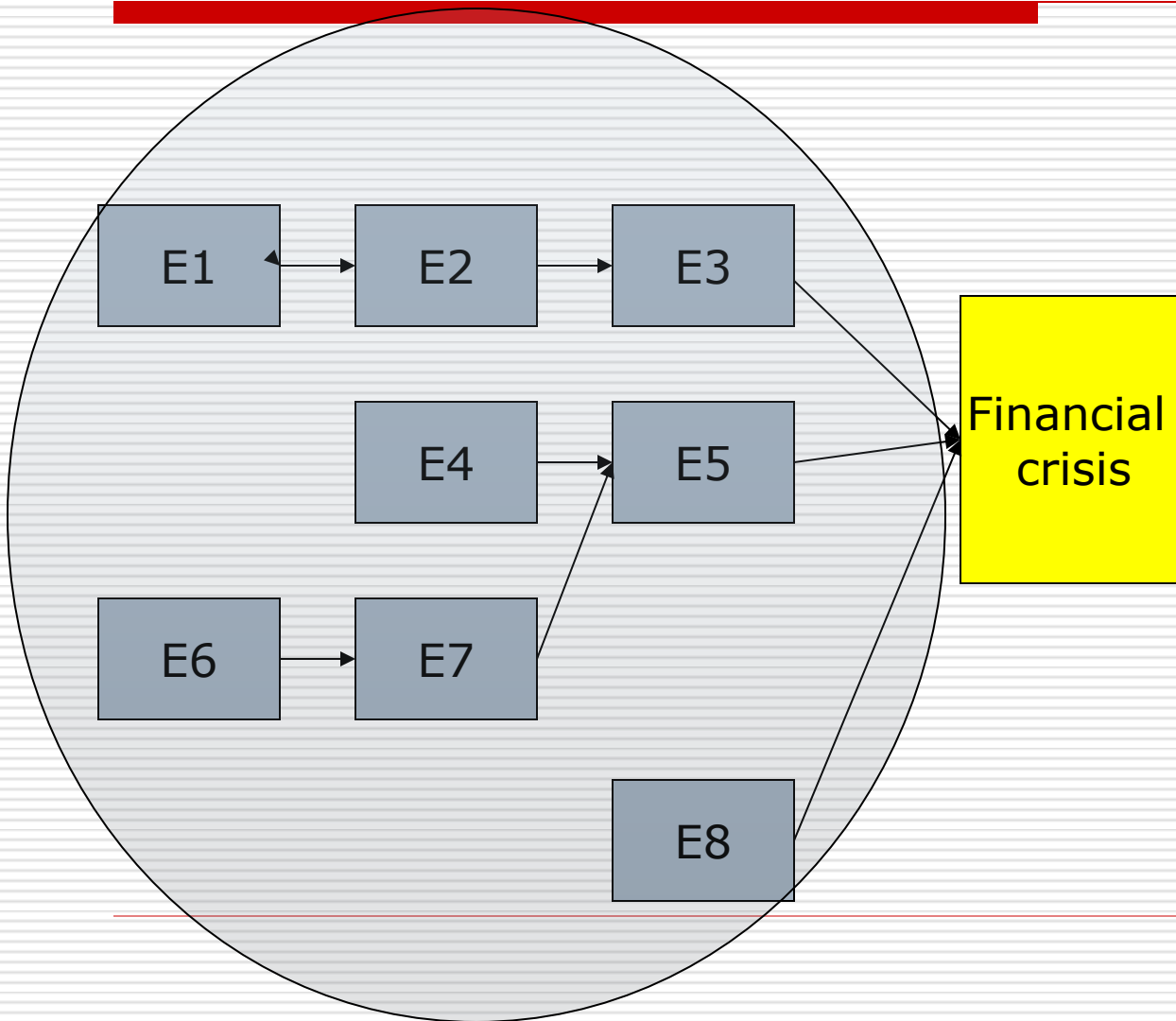


Suppose that how many resources one person commits to trading depends on how many resources another person is expected to bring.

That can turn out to be a highly nonlinear process, where small changes in costs have large changes in overall market activity. Indeed, trading could dry up. (Reinhart and Sack, *BPEA* 2001).

This mutuality of decision-making was an important feature of some of yesterday's papers.

(3) Some economic processes are self-fulfilling. So, the run-up to a crisis may have an important expectational element and be hard to predict.



There may be multiple equilibriums and how the market mechanism chooses among them may be tenuous. As a result, randomness and the sequence of events matter.

The communication of policy can, therefore, have an important influence.

It also means that some of the techniques from the physical sciences are not transferable: The odds on a 100-year storm don't change because people think it's become more likely.

Speaking of a hundred-year storm, I'm off the page in yesterday's discussions of the events of LTCM in 1998.

- The self-reinforcing view holds that:
 - The Asian and Russian Crises created losses
 - The fire-sale of assets amplified the losses
 - And creditors withdrew
 - While there was a certain inevitability because of the leverage position and inadequate risk management, it is possible to identify initiating macroeconomic shocks.
 - (First-generation model of a crisis.)
 - The self-fulfilling view holds that:
 - The closure of Salomon's prop desk worsened spreads on LTCM bets
 - Competitors took a run at LTCM's positions
 - The admission of losses convinced competitors that these were winning trades
 - The attempt to get more capital revealed information useful to competitors, making them even better trades
 - To some extent, the market generated the event and macroeconomic shocks were of second-order importance.
 - (Second-generation model of a crisis.)
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Disaggregation

The economy is a network of heterogeneous agents.

- Instead of transmission lines, transformers, and switches, financial markets have:
 - Final investors with different strategies
 - Market makers
 - Brokers
 - Market utilities
 - Data providers
 - Echo the complaint that
 - “A popular fascination of theorists in all disciplines, because of the potential for mechanistic understanding, has been with systems in which the dynamics at one level can be understood as the collective behavior of aggregates of similar units.” Levin (1992).
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This conference evidences that the grip of this fascination is loosening.

□ Thanks, after all, to the organizers.

