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# **Comment on “A Macroeconomic Framework for Quantifying Systemic Risk” by He and Krishnamurthy**

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- Also predict the effects of policy actions. Structural VAR's.
- Also tell behavioral stories about why policy works, what's been happening. DSGE's
- Also have its stories sufficiently believable that we are comfortable using the model for welfare evaluation of policies. ?

## Why modeling normal-times monetary policy was easier

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- SVAR identification proved possible. We were looking for the effects of a one-dimensional policy — monetary tightening or loosening. Identification via plausible assumptions about delays in policy effects or via beliefs about the nature of the policy effects gave similar answers.
- Normal times: Nonlinearities not so important, a disaster like the Great Depression no longer positive probability.



## Why our current task is harder

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- We don't have a standard list of variables. Indeed it is part of the nature of a financial crisis that it is likely to develop in obscurity, not be measured by widely observed variables.
- The phenomena we are interested in are rare, yet full of unknown parameters.
- “Financial frictions” are analogous to “price stickiness” for old-fashioned DSGE's — central to the model, but micro-founded only with very abstract stories and constraints that surely are not policy-invariant.

## What is being done

- This paper, and related ones by Brunnermeier and Sannikov, Gertler and Kiyotaki, and others are proposing stories that, like the various New Keynesian Phillips Curve stories, try to capture the influence of financial frictions in a quantitatively realistic way with a relatively small set of free parameters.

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- But, unlike the DSGE case, there is no consensus descriptive probability model of the data underlying these efforts.
- It's not just that we don't have a consensus list of variables. Linear VAR's will not do. We need at least time varying volatility, probably other forms of nonlinearity and non-Gaussianity. In other words, even the descriptive modeling requires methods not in every macroeconomist's toolbox.

## **My view of where we need work**

More careful statistical modeling of the time series, including possibly developing new economy-wide measures based on micro data.

## This paper

- A single state variable, leverage, and single shock, capital quality, drive a continuous time general equilibrium.
- It can generate co-movements of Sharpe ratios, investment, land prices, and intermediary equity that look like the movements of those variables during the crisis.
- There are “bankers” who can invest, and households, who can’t, except via handing funds to the bankers.
- Bankers care only about their “reputation”, which is driven by their profits. And they are in a sense risk averse.
- Reputation limits how much equity investment can be raised.



# Liquidity

- Households have to hold a fixed proportion of their wealth in bank deposits.
- That's the closest the model comes to capturing liquidity needs.
- There's no government debt, hence no handle to discuss the role of a lender of last resort.
- Banks can make money by providing a liquidity service, thus paying lower rates, on deposits.
- Which may be why one has the impression that they prefer to hold equity low.

# Structure

- Eventually, we would like explicit structural identification.
- That is, elements of the model — parameters or shocks — that are claimed to be subject to change by a policy intervention, with the rest of the model properly held constant in tracing out implications of the change.
- Nothing like this here, yet. No price level, no central bank, no government debt.

## Continuous time

- Continuous time is helpful in making model solution possible, and in allowing (in principle) use of fine-time-unit financial data.
- But much macro-data is available only at coarser time units. Serious matching to data that confronts general serial dependence will have to deal with mixed-frequency data, explicit time aggregation.

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- This suggests that at least two state variables are needed.
- Is the behavior of  $C$  an embarrassment? Figures 2 and 3 don't show it. Table 5 shows such powerful effects of financial stress on consumption growth that I wonder what a plot of it in the Figure 3 simulation would look like.

## Conclusion

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- Also its demonstration that a continuous time general equilibrium model with financial frictions can be computationally manageable.
- It is an important contribution to a very difficult project.