Disclaimer

- The views expressed in this talk are my own.

- They may not be shared by others in the Federal Reserve System ...

- Especially my colleagues on the Federal Open Market Committee (FOMC).
Acknowledgements

I thank Ron Feldman, Terry Fitzgerald, Samuel Schulhofer-Wohl and Kei-Mu Yi for comments.
Long-Run Monetary Policy Stance in the US

- FOMC prediction range for long-run fed funds rate: between 3.25% and 4.25%
  - My prediction is the lowest: 3.25%.
  - Note: 10 year-10 year forward Treasury yield is around 3.25%.

- Also: FOMC expects US to reach maximum employment and target inflation BEFORE fed funds rate rises back to long run level.

I expect low interest rate policy for several (maybe many) years.
Monetary Policy and Financial Stability

- Given expected future monetary policy stance, policymakers will need to be aware that:

  **Low interest rate policy could create risk of financial instability.**

- My view: It is preferable to mitigate such risks using supervisory tools.

- But in reality: Supervision may leave residual systemic risk.

  **How should this residual risk affect monetary policy?**
This Talk

- A framework to incorporate systemic risk mitigation into monetary policymaking.

- Main theme: Systemic risk creates a mean-variance trade-off for policy.
A MEAN-VARIANCE FRAMEWORK
Simple Model

- Monetary policymaker (MP)’s goal is to set a gap $X$ equal to zero.
  - For example: $X$ could equal inflation minus target

- Note well: $X$ is determined by MP’s macroeconomic goals.

- MP can increase $X$ by raising accommodation $A$.

- After MP chooses $A$, $X$ is also affected by a number of shocks, including shocks to the financial system.
The Central Banker’s Problem

- MP’s loss is given by the square of the gap (that is, $X^2$).

- Recall: $X$ depends on shocks realized after $A$ is chosen.

- MP chooses $A$ so as to minimize the mean loss associated with $A$:

$$Mean(X^2|A)$$
Usual Approach

- Mean loss equals squared mean gap + variance of gap:
  \[ [Mean(X|A)]^2 + Var(X|A) \]

- Typical assumption: MP can’t influence variance of shocks.

- Then, minimizing expected loss is same as minimizing squared mean gap:
  \[ [Mean(X|A)]^2 \]

- Solution is to choose accommodation \( A^* \) that eliminates mean gap:
  \[ Mean(X|A^*) = 0 \]
Incorporating Financial Stability Risks

• Suppose higher $A$ increases the risk of financial instability that lowers $X$.
  
  – Note: This supposition will be true only in some circumstances.

• Then, higher $A$ increases $Var(X|A)$.

• MP’s problem is to choose $A$ so as to minimize:
  
  $$[Mean(X|A)]^2 + Var(X|A)$$

• Now: MP’s choice of $A$ trades off mean versus variance.
Mean-Variance Trade-Off

• Trade-off means that MP’s appropriate choice $A^{**}$ will result in:

$$Mean(X|A^{**}) < 0$$

• That is, on average, the gap is negative under appropriate policy.

• MP gives up some mean $X$ in order to get less risk in $X$.

• But exactly how much mean $X$ should MP give up?
Comparing Two Monetary Policy Alternatives

- It is appropriate for MP to choose $A$ over $A^*$ if $A$ reduces risk sufficiently relative to $A^*$:

\[
Var(X|A^*) - Var(X|A) > Mean(X|A)^2
\]

- Central banks know a lot about assessing the RHS – that is, the mean of $X$ given choice $A$.

- Key question is about the LHS:

How do we assess the difference in the risk implied by policy choices?
A Possibly Helpful Simplification

• Suppose that a crisis causes the gap $X$ to fall by $\Delta$.

• Suppose that monetary accommodation $A$ implies that the probability of a crisis is $p(A)$.

• Then (assuming statistical independence of the crisis from other shocks):

$$Var(X|A^*) - Var(X|A) \approx [p(A^*) - p(A)]\Delta^2$$

• Then: Given any policy choice $A$ or $A^*$, we need to assess:

The **implied probability** of a crisis and its impact $\Delta$ on $X$
CONCLUSIONS
Financial Stability Framework: What We Need To Know

- Mean-variance framework implies that policymakers need to assess:

  \[ \text{Var}(X|A) - \text{Var}(X|A') \]

- Possibly could simplify this problem to gauging:

  \[ [p(A) - p(A')]\Delta^2 \]
Progress Has Been Made …

- Key measurement question: what is the probability of a crisis, given current policy?

- Federal Reserve System has made good progress on this question.
  - Intense scrutiny of financial system risks/vulnerabilities

- My own current assessment is that in the US:

  Crisis probability is too small to affect monetary policy choices materially.
... But More Has to Be Done

• Needed: Better models/measures of impact of monetary policy on crisis probability.
  – That is, better models/measures of $p(A)$.

• Needed: better models/measures of crisis impact on macroeconomy.
  – That is, better models/measures of $\Delta$. 