Discussion of 2014 USMPF Monetary Policy Report

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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.
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Monetary Policy and Financial Stability

- Motivation for the Monetary Policy Report (MPR):

  Easy monetary 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.

- This is especially true given the kinds of risks described in the MPR.

  How should this residual risk affect monetary policy?
My Discussion ...

• First: A **framework** to incorporate systemic risk mitigation into monetary policymaking.
  
  – Theme: Systemic risk creates a **mean-variance trade-off** for policy.

• Second: Lessons from the MPR given this framework.
Outline

1. Financial Stability and Monetary Policy: A Mean-Variance Framework


3. Conclusion
A MEAN-VARIANCE FRAMEWORK
Simple Model

• Monetary policymaker (MP)’s goal is to set a gap $X$ equal to zero.
  
  – $X$ could equal inflation minus target
  
  – $X$ could equal output minus its efficient level
  
  – OR $X$ could equal some combination of the above

• 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, $X^2$).
  - Standard: MP wants gap to equal zero.
  - Equally bad to have positive or negative gaps.

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

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

$$\text{Mean}(X^2|A)$$
Usual Approach

• Mean loss equals squared mean gap + variance of gap:

\[ [\text{Mean}(X|A)]^2 + \text{Var}(X|A) \]

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

• Then, minimizing expected loss is same as minimizing squared mean gap:

\[ [\text{Mean}(X|A)]^2 \]

• Solution is to choose accommodation \( A^* \) that eliminates mean gap:

\[ \text{Mean}(X|A^*) = 0 \]
Incorporating Financial Stability Risks

• Suppose higher $A$ increases the risk of financial instability that lowers $X$.

• 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 $A$.

  – In my view: The RHS remains large for current choice of $A$.

• 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 $X$
THE MONETARY POLICY REPORT
Some Important Messages

• Financial instability can arise from financial institutions that are:
  – non-banks
  – relatively nonleveraged
  – solvent

• Asset flows contain key information about financial system risks.

• Good news: These ideas do shape Fed surveillance of financial system.
Amplification of Monetary Policy Changes

- Basic mechanism in the MPR: Low $R$ (easy money) leads to low risk premium.

- High $R$ (tight money) leads to high risk premium.

- As a result: Seemingly small changes in monetary policy stance can have big effects on financial market conditions.

- Authors are persuasive that this was an element in “taper tantrum”.

Implications of the Report for Monetary Policy Choices

• The mechanism in the MPR implies that:

• Easing monetary policy increases later risk of *rapid* tightening in fin. mkt. conditions.
  
  – Easing policy lowers current risk premium.
  
  – But – eventually – policy and risk premium have to normalize.
  
  – Lowering risk premium risks a rapid future increase in risk premium.

• How should monetary policymakers take this risk into account?
Using the Mean-Variance Framework

- The mean-variance framework provides a useful policy guide.

- Key question: How does the increased financial market risk map into macroeconomic risk?

- Specifically: How much does $\text{Var}(X)$ increase because of the increased risk of rapid tightening in financial market conditions?

- More simply, given accommodation $A$:
  
  - What is the probability $p$ of a rapid tightening in fin. mkt. conditions?
  
  - What is the impact $\Delta$ on $X$ of that change?
Information about $\Delta$: The 2013 Experience

- Financial market conditions tightened rapidly from May to August.
  - Mortgage rates and 10-year yields rose by over 1 percentage point.

- Arguably: This large *increase* in yields only happened because monetary policy (QE3) had *lowered* yields so much.

- Question: *Was 2013:H2 GDP lower because financial market conditions tightened so fast?*

- And if GDP was lower, by how much?
CONCLUSIONS
Financial Stability Framework: What We Need To Know

- Mean-variance framework implies that policymakers need to assess:
  \[ Var(X|A) - Var(X|A') \]

- Possibly could simplify this problem to gauging:
  \[ [p(A) - p(A')]\Delta^2 \]
Monetary Policy Report and the Challenges Ahead

- The MPR suggests that these assessments are not easy.

- Financial instability may not be associated with usual suspects:
  - Leverage, capital, liquidity, etc., etc.

- Also: The rate of change (not just level) of financial market conditions could affect macro outcomes.

There is considerable need for new theory and empirics.