Unconventional Monetary Policy: How Well Did It Work?

Outside the Box: Unconventional Monetary Policy in the Great Recession and Beyond
by Kenneth N. Kuttner

Discussion by Anna Cieślak
Duke University, Fuqua School of Business

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Introduction

Ken Kuttner’s paper:

- Is an excellent review of research on the effects of unconventional monetary policy (UMP)
- It will become a staple reference for those wanting to get a synthesis of Fed’s UMPs
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In my comments:
- I will focus on the role of Fed communication during the UMP period, specifically:
- How does the Fed’s communication affect asset prices (and hence broader economy)?
- What is the main piece of news that market participants gleaned from the Fed’s UMP announcements?
What’s the news in Fed’s announcements?

News revealed through central bank communication is multidimensional

Gürkaynak, Sack, Swanson (2005, IJCB)

- Target shocks (“actions”)
- Path shocks (“words”)
What’s the news in Fed’s announcements?

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Gürkaynak, Sack, Swanson (2005, IJCB)
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- Path shocks (“words”)

Length of FOMC statements
What’s the news in Fed’s announcements?

- News revealed through central bank communication is multidimensional
  Gürkaynak, Sack, Swanson (2005, IJCB)
  - Target shocks ("actions")
  - Path shocks ("words")

- Not just news about monetary policy but also other "information effects"
  - News about fundamentals
    Campbell, Evans, Fisher, Justiniano (2012 Brookings); Nakamura, Steinsson (2018 QJE)
  - News affecting risk premia
    Hanson, Stein (2015 JFE)
What’s the news in Fed’s announcements?

- Most event studies focus on univariate responses of various asset prices to Fed announcements.
- To sort out which type of news drives market reactions, I’ll argue that it is useful to study the comovement of asset prices around those events.
- Specifically, I’ll discuss what we can learn from the high-frequency comovement between stocks and Treasury yields across maturities.
Predicted effects of economic shocks on stocks and yields

- **Monetary policy shock** → **negative** comovement (weakening in maturity)
  - Slowly mean-reverting real rate

- **Growth shock** → **positive** comovement (weakening or humped in maturity)
  - Taylor rule adjusting less than one-for-one with growth expectations

- **Risk premium shock** → **positive** comovement (strengthening in maturity)
  - Independent price-of-risk shocks; pro-cyclical inflation

<table>
<thead>
<tr>
<th>Shock</th>
<th>Yields</th>
<th>Stocks</th>
<th>Comovement of stocks and yields</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short/Med.</td>
<td>Long</td>
<td></td>
</tr>
<tr>
<td>Monetary policy: $\varepsilon^m_t \uparrow$</td>
<td>↑</td>
<td>↑</td>
<td>↓</td>
</tr>
<tr>
<td>Growth: $\varepsilon^g_t \uparrow$</td>
<td>↑</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>Risk premium: $\varepsilon^p_t \uparrow$</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
</tr>
</tbody>
</table>
The central bank news classification matrix

In Cieslak and Schrimpf (2018), we propose to classify news revealed by central bank announcements as follows:

<table>
<thead>
<tr>
<th>Stock-yield cov &gt; 0</th>
<th>Stock-yield cov ≤ 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{Var}(y^{\text{Short/Mid}}) &gt; \text{Var}(y^{\text{Long}}) )</td>
<td>(1,1) economic growth</td>
</tr>
<tr>
<td>( \text{Var}(y^{\text{Short/Mid}}) ≤ \text{Var}(y^{\text{Long}}) )</td>
<td>(1,2) monetary policy (conventional, via short-rate expectations)</td>
</tr>
<tr>
<td></td>
<td>(2,1) risk premium (risk on/off)</td>
</tr>
<tr>
<td></td>
<td>(2,2) monetary policy (unconventional, via long rates/risk premia)</td>
</tr>
</tbody>
</table>

→ This classification identifies the dominant piece of news in a communication event
Stock-yield covariances on selected Fed events

Realized stock-yield covariances in event window (-15,+90) minutes, in bps-squared

A. MPD on 22Jan2008 (unsched.)

B. MPD on 16Dec2008

C. MPD on 09Aug2011
Draghi’s “Whatever it takes” speech Jul 26, 2012

- Draghi references “risk aversion factor”
- Short end of German yield curve barely changes
- 10y German yield ↑ by 8 bps; DAX futures ↑ 2.3%
- Commonly interpreted as a major “risk-on” event
Realized covariances of stock returns and 5y yield changes at FOMC decision announcements

Event window: (-15, +90) minutes, bps-squared
# UMP announcements chronology

<table>
<thead>
<tr>
<th></th>
<th>No. annnc.</th>
<th>First obs.</th>
<th>Last obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMP</td>
<td>45</td>
<td>12 Dec 2007</td>
<td>01 Nov 2017</td>
</tr>
<tr>
<td>of which: FG</td>
<td>9</td>
<td>16 Dec 2008</td>
<td>18 Mar 2015</td>
</tr>
<tr>
<td>Phases:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QE1 (quantitative easing phase 1)</td>
<td>5</td>
<td>25 Nov 2008</td>
<td>18 Mar 2009</td>
</tr>
<tr>
<td>Exit (early)</td>
<td>3</td>
<td>12 Aug 2009</td>
<td>04 Nov 2009</td>
</tr>
<tr>
<td>QE2 (quantitative easing phase 2)</td>
<td>5</td>
<td>10 Aug 2010</td>
<td>03 Nov 2010</td>
</tr>
<tr>
<td>MEP (maturity extension program/operation twist)</td>
<td>4</td>
<td>26 Aug 2011</td>
<td>01 Aug 2012</td>
</tr>
<tr>
<td>QE3 (quantitative easing phase 3)</td>
<td>3</td>
<td>31 Aug 2012</td>
<td>30 Oct 2013</td>
</tr>
<tr>
<td>Tapering of asset purchases</td>
<td>2</td>
<td>22 May 2013</td>
<td>19 Jun 2013</td>
</tr>
<tr>
<td>Exit (late)</td>
<td>9</td>
<td>18 Dec 2013</td>
<td>29 Oct 2014</td>
</tr>
<tr>
<td>Balance sheet wind-down</td>
<td>3</td>
<td>26 Jul 2017</td>
<td>01 Nov 2017</td>
</tr>
</tbody>
</table>
Realized covariances of stock returns and 5y yield changes around various UMP programs
Event window: (-15,+90) minutes, bps-squared

 QE1 (18mar2009)
# Stocks-yield comovement around UMP announcements

<table>
<thead>
<tr>
<th></th>
<th>2y</th>
<th>5y</th>
<th>10y</th>
</tr>
</thead>
<tbody>
<tr>
<td>QE1</td>
<td>251.8*** (3.36)</td>
<td>415.5*** (8.28)</td>
<td>316.2*** (6.51)</td>
</tr>
<tr>
<td>QE1 × FG</td>
<td>-1168.7*** (-14.51)</td>
<td>-3041.8** (-2.03)</td>
<td>-2898.7* (-1.78)</td>
</tr>
<tr>
<td>Exit (early)</td>
<td>39.0 (0.95)</td>
<td>83.3 (1.48)</td>
<td>57.0 (1.26)</td>
</tr>
<tr>
<td>QE2</td>
<td>-24.3 (-0.45)</td>
<td>-12.3 (-0.12)</td>
<td>7.01 (0.07)</td>
</tr>
<tr>
<td>QE3</td>
<td>-7.87*** (-6.58)</td>
<td>1.53 (1.26)</td>
<td>5.51*** (5.26)</td>
</tr>
<tr>
<td>QE3 × FG</td>
<td>32.1 (0.91)</td>
<td>29.8 (0.68)</td>
<td>31.4 (0.82)</td>
</tr>
<tr>
<td>MEP</td>
<td>-4.80 (-0.10)</td>
<td>129.8 (1.01)</td>
<td>172.2* (1.94)</td>
</tr>
<tr>
<td>MEP × FG</td>
<td>238.9 (1.17)</td>
<td>552.6 (1.02)</td>
<td>397.4 (0.89)</td>
</tr>
<tr>
<td>Taper asset purch.</td>
<td>-66.6*** (-4.35)</td>
<td>-146.4*** (-3.73)</td>
<td>-148.8*** (-5.12)</td>
</tr>
<tr>
<td>Exit (late)</td>
<td>-21.5 (-1.41)</td>
<td>-33.5 (-1.05)</td>
<td>-27.8 (-1.02)</td>
</tr>
<tr>
<td>Exit (late) × FG</td>
<td>-116.6*** (-7.62)</td>
<td>-307.3*** (-3.80)</td>
<td>-248.2** (-2.25)</td>
</tr>
<tr>
<td>Bal. sheet winddown</td>
<td>-34.9*** (-6.69)</td>
<td>-41.0*** (-10.51)</td>
<td>-41.8*** (-21.65)</td>
</tr>
<tr>
<td>Constant</td>
<td>26.3*** (21.97)</td>
<td>39.3*** (32.31)</td>
<td>36.9*** (35.23)</td>
</tr>
</tbody>
</table>

- Regressions of realized covariances between stock returns and yield changes on UMP dummies
- Largest effects of QE1
- **Forward guidance**
  - **Positive** sign when no FG component
  - **Negative** sign with FG element and on policy normalization
  → monetary news
Which news drives variation in stocks and yields when the Fed communicates?
Decomposing news in asset prices

- Which news drives variation in stocks and yields when the Fed communicates?
- Rotate reduced-form shocks $u_t$ into structural shocks $\epsilon_t$

\[
\begin{align*}
2\text{y yield change} & \rightarrow \begin{pmatrix} u_{2t} \\ u_{10t} \\ u_{st} \end{pmatrix} \\
10\text{y yield change} & \rightarrow \begin{pmatrix} u_{2t} \\ u_{10t} \\ u_{st} \end{pmatrix} \\
stock return & \rightarrow \begin{pmatrix} u_{2t} \\ u_{10t} \\ u_{st} \end{pmatrix}
\end{align*}
\]

\[
\begin{pmatrix} u_{2t} \\ u_{10t} \\ u_{st} \end{pmatrix} \quad \text{into} \quad \begin{pmatrix} \epsilon_{\text{g}}_t \\ \epsilon_{\text{m}}_t \\ \epsilon_{\text{p}}_t \end{pmatrix} 
\]

$\epsilon_t$ for growth shock, monetary shock, and risk premium shock.
Decomposing news in asset prices

- Which news drives variation in stocks and yields when the Fed communicates?
- Rotate reduced-form shocks $u_t$ into structural shocks $\epsilon_t$

\[
\begin{align*}
2y \text{ yield change } & \rightarrow \begin{pmatrix} u_{2t} \\ u_{10t} \\ u_{st} \end{pmatrix} \quad \text{into} \quad \begin{pmatrix} \epsilon^g_t \\ \epsilon^m_t \\ \epsilon^p_t \end{pmatrix} \\
10y \text{ yield change } & \rightarrow \begin{pmatrix} u_{10t} \\ u_{st} \end{pmatrix} \\
\text{stock return } & \rightarrow \begin{pmatrix} u_{st} \end{pmatrix}
\end{align*}
\]

- Growth shock
- Monetary shock
- Risk premium shock

- Approach: Sign restrictions on stock-yield comovement and monotonicity restrictions along the yield curve

- Application: Let's focus on decomposing asset price movements in a (-15,+15) minute window around scheduled FOMC decision announcements
Decomposing news on scheduled FOMC announcements

Cumulative paths of shocks (shocks are normalized to zero mean)

Fraction of variance due to:

<table>
<thead>
<tr>
<th>news →</th>
<th>growth</th>
<th>monetary</th>
<th>premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>2y yield</td>
<td>0.49 (2.82)</td>
<td>0.43 (2.54)</td>
<td>0.09 (1.22)</td>
</tr>
<tr>
<td>10y yield</td>
<td>0.08 (0.89)</td>
<td>0.35 (4.40)</td>
<td>0.58 (6.20)</td>
</tr>
<tr>
<td>equities</td>
<td>0.11 (0.85)</td>
<td>0.87 (7.33)</td>
<td>0.03 (0.90)</td>
</tr>
</tbody>
</table>
Conclusions

- Importance of Fed communication has increased significantly over the last decade
- UMP announcements have a large non-monetary news content
  - Forward guidance can strengthen communication of monetary news
- Non-monetary news frequently dominates in communication that provides context to policy decisions
  - Press conferences, minutes releases, speeches (Cieslak and Schrimpf, 2018)
  - Yet, increasing role of monetary news since 2013

Questions:

- What markets heard = what the Fed said?
- What is the design of optimal central bank communication in general and with UMPs in particular?