Remarks on Unconventional Monetary Policy

CGFS policy panel, Federal Reserve Bank of New York

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Q2: The WG has identified two related objectives of UMP interventions: **repairing the disrupted transmission channel** of monetary policy and **providing stimulus to the economy when policy rates reached their ELB**.

- With hindsight, **what is the set of tools that central banks should deploy to achieve each of these objectives?**
- What should be the preferred sequencing within each category?

Let me focus on disrupted transmission channels (rather than the ZLB/ELB)
Drivers of disrupted transmission

- **Risk premia (prepayment risk, corporate default risk, sovereign default risk, redenomination risk)**

  \[ \text{Borrowing cost} = \text{Riskfree rate} + \text{Risk premium} \]

  Bad news → Risk premia tend to go up → Larger reduction in riskfree rate (policy rate) needed to reach a given effect of conventional monetary policy on borrowing cost.

- **Equity losses:**

  Driver of increased risk premia:

  \[ \text{Risk premium} = \text{Risk} \times \text{Compensation for risk} = \text{Risk} \times f(\text{Risk aversion, Risk bearing capital}) \]

  But equity losses also cause *constraints*:

  - Home owners with low equity cannot refinance in response to lower mortgage rates
  - Companies with less collateral can borrow less
  - Low intermediary net worth constrains lending (intermediary asset pricing)
Example:

Beraja, Fuster, Hurst, Vavra (QJE, 2019) show that low home equity problems mean that monetary policy in the great recession worked the least well in areas that really needed it.

- More refinancing in MSAs with higher home equity

**FIGURE III**

Mortgage Refinance Activity 2008–2009 in Top and Bottom Quartile of MSAs Defined by Median Borrower Equity in November 2008
Policy response: Policies other than central banking are also needed

- **Housing programs** to address negative home equity constraints:
  
  HARP: Instructed GSEs to provide **credit guarantees on refinances of conforming mortgages**, even when resulting loan-to-value ratios exceeded usual eligibility threshold of 80%.
  
  HAMP: Provided mortgage servicers **incentives to renegotiate distressed residential loans**.
  
  +3 million refinancings and +$20B in consumption during first 3 years
  +1 million additional loan modifications and 600,000 fewer foreclosures


- **Stress tests and recapitalization of the banking sector** to alleviate intermediary net worth constraints.

- **Reduced government spending/fiscal reforms** to alleviate sovereign default risk.
To the extent monetary policy is used:

a. Policy rate needs to be *more sensitive to bad news* if this news drives up risk premia.

b. Asset purchases more effective if they involve *purchases of securities with high risk premia*:
   - This is not just about duration risk premia. You can’t just buy any long duration asset.

c. Purchases of assets *disproportionately held by constrained intermediaries* more effective via both:
   - Stealth recapitalization (increase bank net worth via higher asset values)
   - Reducing the need for on-balance-sheet holdings.

d. *Lending operations to subsidize bank lending* is an option but there’s slippage:
   - Banks may just buy government bonds (reduced effectiveness of LTROs).
   - Companies who get the lending may just buy government bonds/cash.

e. *Forward guidance about aggressive actions in bad states becomes powerful*:
   - “Whatever it takes” (Draghi), ”stand ready to act as needed” (Fed).
   - Risk premia responds dramatically to monetary policy actions that reduce left tail.
Example: The “Fed put” in the US has worked by reducing risk premia (leading to market rebounds) following stock market drops (Cieslak, Morse and Vissing-Jorgensen, JF, forth.)
Monetary policy literature has not focused enough on effects of removing tail risk because of its focus on Fed funds futures:

- Extreme case: If promise of lower policy rate in bad state eliminates the bad state, then futures rates would increase, since policy rate is good state is high.

- The stock market reveals the policy shift since the removal of the bad state increases the stock market.
Q3: Asset purchase programs appear to work through some combination of channels, including a portfolio-balance channel and an expectations- or signaling-channel.

- *Through which channel or channels do you think purchases work, if at all?*
- If purchases work primarily through the expectations channel, does that influence the *circumstances* under which they should be used again? Does it affect the *scalability* of asset purchase programs?
Signaling channel is there but rarely dominant for long yields

- **QE1:** About 1/3 (of total policy effect around 70-100 bps for long govt bonds)
- **QE2:** >1/2 (but policy effect is more modest, <20 bps)
- **MEP:** None/small
- **QE3:** None/small

- **SMP:** None/small
- **OMT:** None/small
- **3-year LTROs:** None/small
- **PSPP:** >1/2 for core bonds (yield changes, around 20 bps)
  <1/2 for periphery bonds (saw larger yield changes, >40 bps)

- **UK’s QE:** <1/2

QE2, PSPP: Purchase of government bonds at times of low credit risk.

Some of these estimates overstate the signaling effect of asset purchases: Some event dates had policy rate changes/updated forward guidance

Examples:

• QE1: On Dec 16, 2008 Fed funds futures (12th month) drop ≥10 bps (2-day change)
  o But policy rate was lowered to 0-25 bps
  o And statement added: “the Committee anticipates that weak economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.”

• QE1: On Mar 18, 2009 Fed funds futures drop 8 bps
  o But forward guidance was updated from “some time” to “extended period”
What are the main channels accounting for the rest of the effect?

- **QE1:**
  - Lower *prepayment risk* premia for MBS
  - Lower *default risk* for corporate bonds
  - Increased *scarcity of long-term safe* assets for Treasuries, agencies
- **QE2:** Increased scarcity of long-term safe assets for Treasuries, agencies
- **QE3 (and MBS reinvestments in MEP):**
  - *Scarcity of current coupon MBS*
- **SMP and OMT effects on periphery bonds:**
  - Reduced *sovereign credit risk* premia
  - Reduced *segmentation* of domestic sovereign bonds
  - Some, but smaller effect of reduced *redenomination* risk
- **PSPP effects on periphery bonds:**
  - Couldn’t find paper that decomposes into credit risk/segm/redenom.

**General lessons:**
- *The assets you buy moves more because of narrow channels.*
- Evidence for a general duration risk channel is modest – possibly some for MEP, PSPP.
Why does it matter how QE works?

- The larger the role for narrow channels, the more it matters what you buy.

- As for the signaling channel, I’m not so worried that it doesn’t scale. It does scale, if:
  1) QE makes forward guidance more credible (not clear), or
  2) QE is informative about shift to central bank dovishness (likely)

• More interestingly, if the signaling channel is large, perhaps you could achieve the same with forward guidance. Quite clear evidence that forward guidance by itself moves yields.

Example:
Aug 9, 2011: “exceptionally low levels for the federal funds rate at least through mid-2013”

  o 1-day changes in Treasuries:

    | 30-yr | 10-yr | 5-yr | 3-yr |
    |-------|-------|------|------|
    | -12 bps | -20 bps | -20 bps | -12 bps |

  o 1-day changes in 24th month Fed Funds futures: -22 bps.
Q1: On balance, the general commentary assesses positively the effectiveness of UMP.

- It suggests that most of the UMPTs have produced the intended effects, both on intermediate policy targets (e.g. long-term rates) and on inflation and aggregate activity, albeit not necessarily to the desired extent.
- At the same time, the side effects of these interventions appear to be limited.

Do you agree with this broadly positive assessment of UMPTs?

Which UMPT would you single out as particularly effective or particularly problematic, and why?
The chain of evidence needed:

1) Asset prices
2) Borrowing/lending quantities
3) Consumption, investment, employment, realized inflation
4) Lack of side effects

My take:

- Lots of evidence for 1) and effects likely larger than estimated in many cases.
- Emerging evidence for 2) for both the US and Europe
- Emerging evidence for 3) for the US, but not (yet?) Europe
- As for 4), government borrowing appears particularly responsive to low borrowing costs.
  - US fiscal situation is very concerning (will r<g forever…)
  - We have many financial stability reports. We need more fiscal stability reports.
Asset pricing evidence from event studies likely understates the true effects

Focus on key dates, often a small number.

- This is good for clean identification. But could dramatically understate total effects.
- Cieslak, Morse and Vissing-Jorgensen (JF, forth.):
  
  Based on the US stock market, most news comes out between meetings on days with no major press releases or speeches. True pre-ZLB and during ZLB period.

This is a bigger problem for later programs that came as less of a surprise when announced.

- A solution is to scale up event study estimates based on surprise component using survey data (Joyce, Lasaosa, Stevens and Tong, IJCB, 2011).
- But often no surveys are available or programs do not announce amounts.
Stock returns over the FOMC cycle, 1994-2016

Based on data covering 184 FOMC cycles (8 scheduled FOMC meetings per year). Numbers along the line indicate the value on the horizontal axis.
Work on the real effects of QE is only emerging.

Initial work used DSGE and VAR approaches:

- Relies on a lot of assumptions. *Does not seem to have converged to a clear conclusion.*
- Newer work relies on program design features and *clever labor/corporate finance style identification*. Provides more convincing results.

Findings of the newer corporate-finance-style literature:

- Effects of QE1 on *mortgage refinancing and consumption via cash-out refinancing*.
- Effects of QE1 and QE3 on *bank lending, consumption and employment*.
- Effect of MEP on *corporate long-term debt use and employment*.

- Effects of LTROs on *bank lending*, but I didn’t find any papers testing for consumption or employment effects.
- Effects of OMT on *bank lending* via stealth recapitalization, but not on employment.
  Zombie lending problems.

Real effect channels we need to study more: *Consumption effects of asset price changes.*
Effects on mortgage refinancing and consumption demand:

Di Maggio, Kermani and Palmer (wp, 2016)

- Compare mortgage refinancing origination volume for mortgages eligible to for Fed purchase (those below the GSE conforming loan limit) to mortgages not eligible for Fed purchase.
  - QE1 lead to a much larger increase in refinancing activity for eligible mortgages.
  - Increased refinancing activity due to QE1 of around $600 billion, resulting in consumption effect of about $76 billion, mainly driven by increased consumption from cash-out refinancing.
Figure 6. Refinance Origination Volume

Panel I. Number of Originations

- **QE1**
- **QE2**
- **MEP**
- **QE3**

- **Below CLL (Left Axis)**
- **Above CLL (Right Axis)**

Non-Jumbo Originations

Jumbo Originations
Effects of QE on bank lending supply: Rodnyansky and Darmouni (RFS, 2017)

- **Banks with higher ex-ante ratios of MBS/Total assets** (top versus bottom quartile):
  - +3 pct higher lending post-QE1 (around $100B)
  - +2 pct higher lending post-QE3
  - Robust to controlling for loan demand using Khwaja-Mian approach.

No significant effect of QE2 for banks with higher ex-ante ratios or Treasuries/Total assets.

Mechanism: Increased bank lending supply driven by...

  - Bank net worth for QE1.
  - Banks’ reallocating assets for QE3: Selling MBS for reserves leaves room for more risk-taking in rest of asset holdings.
<table>
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<th>log($Lending_{it}$)</th>
<th>log(RE $Lending_{it}$)</th>
<th>log(CI $Lending_{it}$)</th>
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<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
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<td>$Treat_{M,i} \cdot QE_{1t}$</td>
<td>0.034***</td>
<td></td>
<td>0.047***</td>
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<td>0.008</td>
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<td></td>
<td>[0.018]</td>
<td>[0.014]</td>
<td>[0.034]</td>
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<tr>
<td>$Treat_{M,i} \cdot QE_{3t}$</td>
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<td>0.021**</td>
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<tr>
<td>$\left( \frac{MBS}{Asset} \right)<em>{i} \cdot QE</em>{1t}$</td>
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<td></td>
<td>0.248***</td>
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<td>[0.041]</td>
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<td>[0.046]</td>
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<tr>
<td>$\left( \frac{TRE}{Asset} \right)<em>{i} \cdot QE</em>{2t}$</td>
<td>0.084</td>
<td>0.080</td>
<td>0.291</td>
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<td></td>
<td>[0.067]</td>
<td>[0.121]</td>
<td>[0.221]</td>
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<tr>
<td>$\left( \frac{MBS}{Asset} \right)<em>{i} \cdot QE</em>{3t}$</td>
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<td>0.144***</td>
<td>0.328***</td>
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<td>Controls</td>
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<td>Yes</td>
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<tr>
<td>Controls $\cdot QE_{i}$</td>
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<td>Yes</td>
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<td>$p$-value</td>
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This table presents coefficient estimates from specifications at the BHC level relating lending from 2008Q1 to 2014Q1 with banks' initial exposure toward LSAPs, as captured by their treatment group membership or MBS-to-assets ratio back in 2008Q1. The controls include Size (log total assets), equity over assets, return on assets (ROA), and the duration gap. $QE_{i}$ denotes the triple of $QE$ indicators. The reported $p$-value tests for coefficient inequality between $QE_{1}$ and $QE_{3}$. Standard errors [in brackets] are clustered at the bank-level to allow for serial correlation across time. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Figure 7
Mechanisms: Net worth
This figure displays the average growth of bank net worth around QE1 (between vertical dash-dotted lines), QE2 (between dashed lines), and QE3 (right of vertical long-dashed line). Banks in the treatment group belong to the upper quartile of the MBS-to-assets distribution in 2008Q1, while banks in the control group belong to the lower quartile.
Effects of QE on employment:

Luck and Zimmermann (JFE, forthcoming)

- Counties whose banks (on avg.) had higher ex-ante ratios of MBS/Total assets experienced:
  - QE1: Higher mortgage origination growth for refinancing, higher consumption growth (auto sales), no overall employment effect but increased non-tradable employment.
  - QE3: Higher mortgage origination growth for home purchase, higher C&I lending growth, higher consumption growth, higher employment growth.
    +0.5 pct point empl. growth for top vs. bottom tercile of banks’ MBS/Total assets.
  - Opposite effects from QE3 tapering in 2013.
Effect of MEP on corporate debt and employment:

Foley-Fischer, Ramcharan and Yu (JFE, 2016)

- MEP – gap filling: *Firms who ex-ante rely more on long-term debt* had abnormally positive stock returns on announcement date and subsequently increased debt issuance, investment and employment relative to other firms.

+1.4 pct point employment growth for +1σ ex-ante long-term debt dependence.

Effect of OMT on bank lending, but not employment:

Acharya, Eisert, Eufinger, Hirsch (RFS, 2019)

- OMT affected banks differently via *stealth recapitalization*
- Banks with larger gains lent more
- But borrowers *didn’t increase employment*
- And some of the lending went to *zombie firms*, which hurt more productive firms (credit misallocation).
Effect of LTROs on bank lending (employment not studied in this paper):
Cahn, Duquerroy and Mullins (wp, 2018)

- Cleverly exploits extension in pool of eligible collateral in France for 2nd round of LTROs
Figure 4
Average debt growth for treated and control firms
Single-bank firms

Rating category
- ACC
- 5+