Implementing Monetary Policy

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The pre-crisis consensus and post-crisis questions

- The pre-crisis consensus
  - Price stability as primary objective
  - Importance of credibility, independence, and transparency
  - Flexible inflation targeting as best practice
- Post-crisis questions
  - Should central banks pursue other objectives?
  - Is inflation targeting flexible enough?
  - Are quantitative easing and credit easing effective policies?
  - What is the appropriate relationship between monetary and fiscal policy?

Outline of paper

- Instruments
  - Conventional policies and the ZLB
  - Unconventional policies
    - ★ Quantitative easing
    - ★ Credit easing
- Objectives and the policy framework
  - Raising the inflation target
  - Adding other objectives
    - ★ Credit frictions and labor frictions
  - Price level targeting

Conventional instruments: Interest rate policy

- Interest rates – both current and expected future matter:

$$x_t = -\left(\frac{1}{\sigma}\right)(i_t - \mathrm{E}_t \pi_{t+1}) - \left(\frac{1}{\sigma}\right)\mathrm{E}_t \sum_{i=1}^{\infty}(i_{t+i} - \pi_{t+1+i}) + \left(\frac{1}{\sigma}\right)\mathrm{E}_t \sum_{i=0}^{\infty} r^n_{t+i},$$

- Narrow view of the transmission mechanism.
  - Issue relevant in assessing quantitative easing policies.

Conventional instruments: Interest rate policy

- Even at the ZLB, policy has the potential to influence real spending if it can affect expectations of future real interest rates.
  - Eggertsson and Woodford (2003)
- If $i_t = 0$ and is expected to remain at zero until $t + T$, then

$$x_t = \left(\frac{1}{\sigma}\right)\sum_{i=0}^{T} \mathrm{E}_t \pi_{t+1+i} - \left(\frac{1}{\sigma}\right)\mathrm{E}_t \sum_{i=T+1}^{\infty} (i_{t+i} - \pi_{t+1+i}) + \left(\frac{1}{\sigma}\right)\mathrm{E}_t \sum_{i=0}^{\infty} r^n_{t+i}.$$

- Raising expected future inflation or committing to lower future nominal rates can stimulate current spending.
- Cost of ZLB low in linear models when central bank is credible.

Conventional instruments: Interest rate policy

Difficulties with promising future zero rates or higher inflation

- Reluctance to promise higher future inflation
  - Contrast with recommendations made to the Bank of Japan by Krugman (1998), McCallum (2000), Svensson (2001, 2003), and Auerbach and Obstfeld (2005)
- Central banks may lack the credibility to steer future expectations
- Communicating clearly the conditional nature of future interest rate paths cited as concern
- Commitment requires promises be fulfilled – have to deliver higher future inflation.

Conventional instruments: Lender of last resort

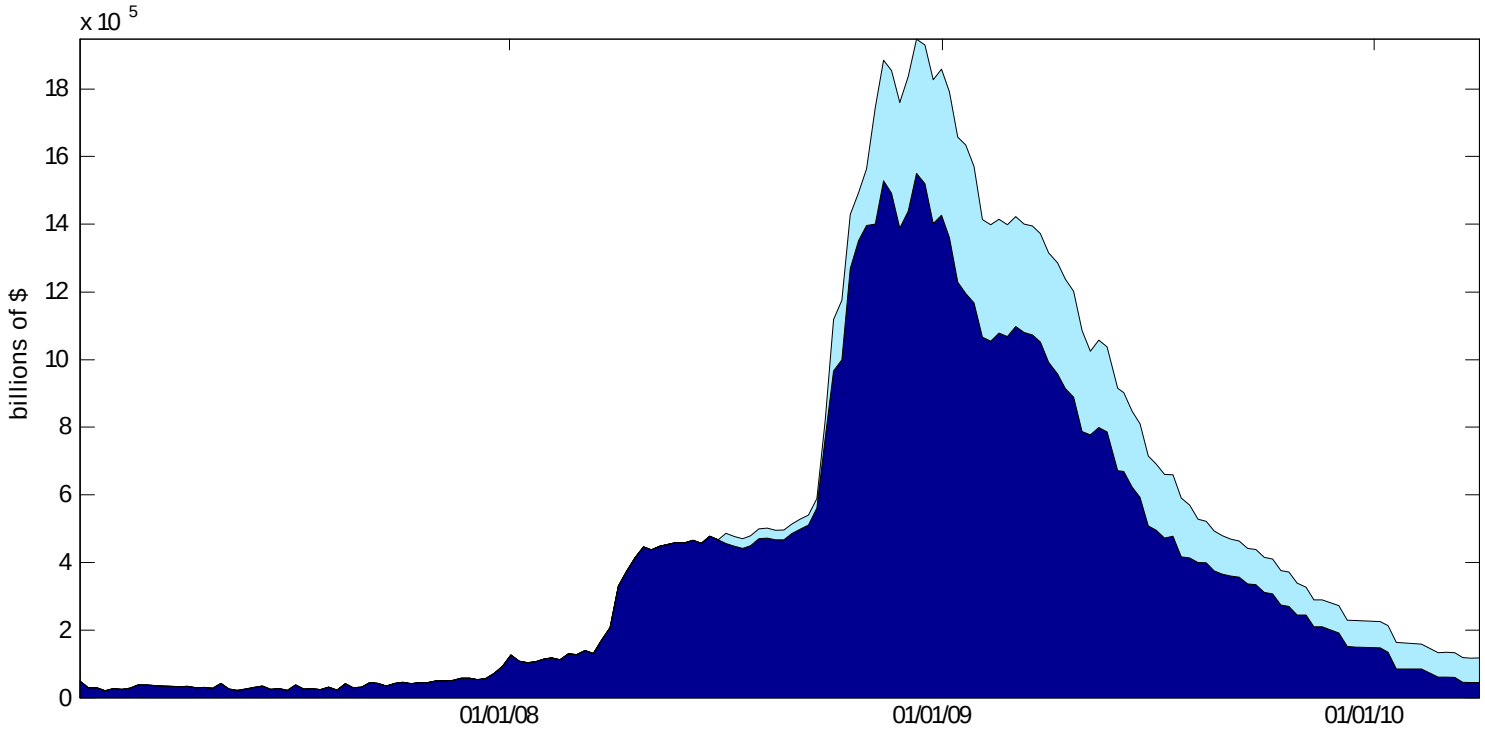


Figure: Lending to financial institutions (dark blue) and provision of liquidity (light blue) by the Federal Reserve

Unconventional policies: Quantitative easing

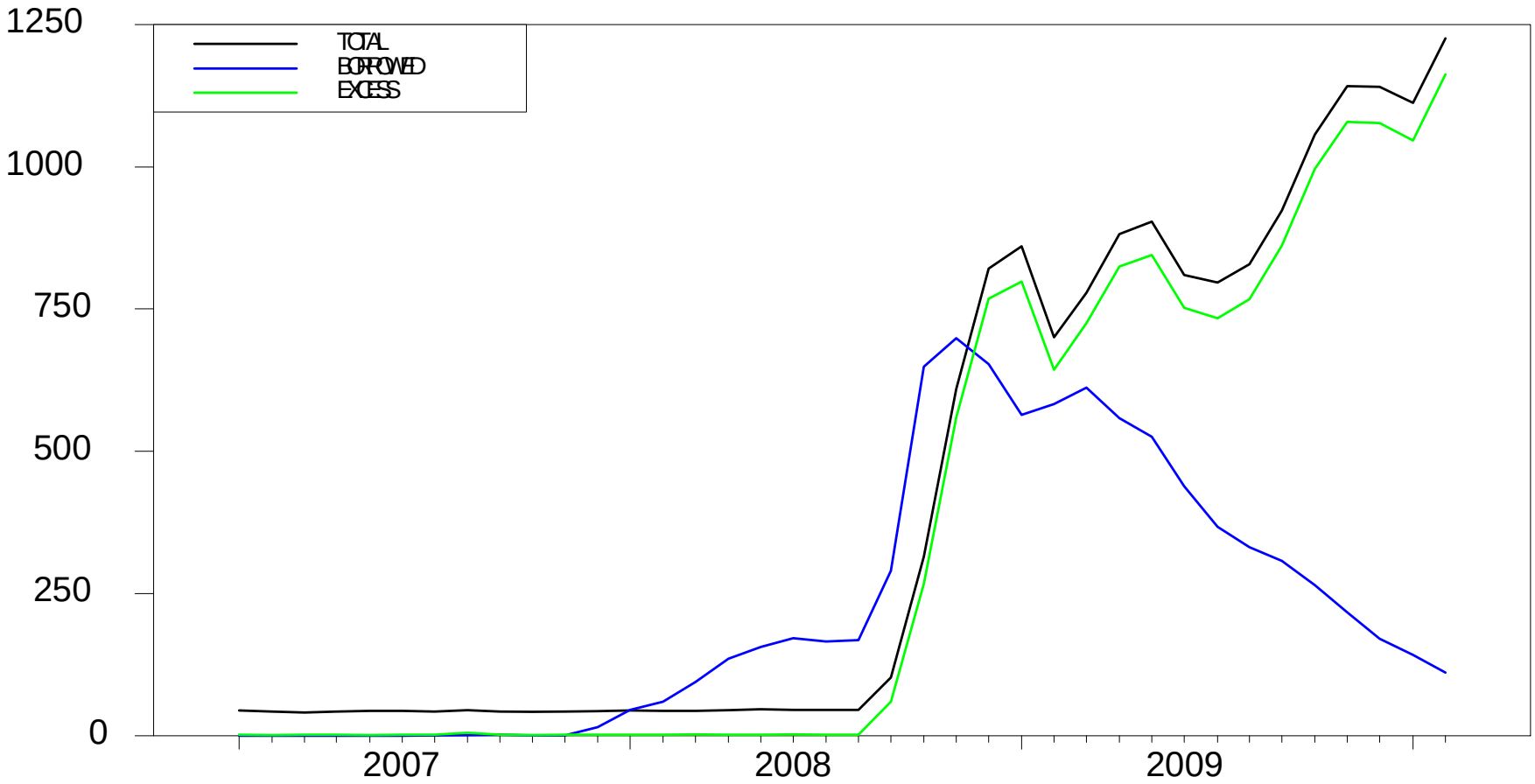


Figure: Total reserves (black), borrowed reserves (blue) and excess reserves (green)

Unconventional policies: Quantitative easing

- Pre-crisis consensus: M not a separate policy tool once i set
- At the ZLB – money and short-term assets perfect substitutes
- Quantity of money can still matter
  - Depends on the properties of money demand
  - Depends on monetary expansion being permanent
- Paying interest on reserves gives central bank two instruments:
  - Policy interest rate and rate on reserves
  - Policy interest rate and monetary aggregate
- Issue of how to convey stance of policy with multiple instruments.

Unconventional policies: Long-term asset purchases

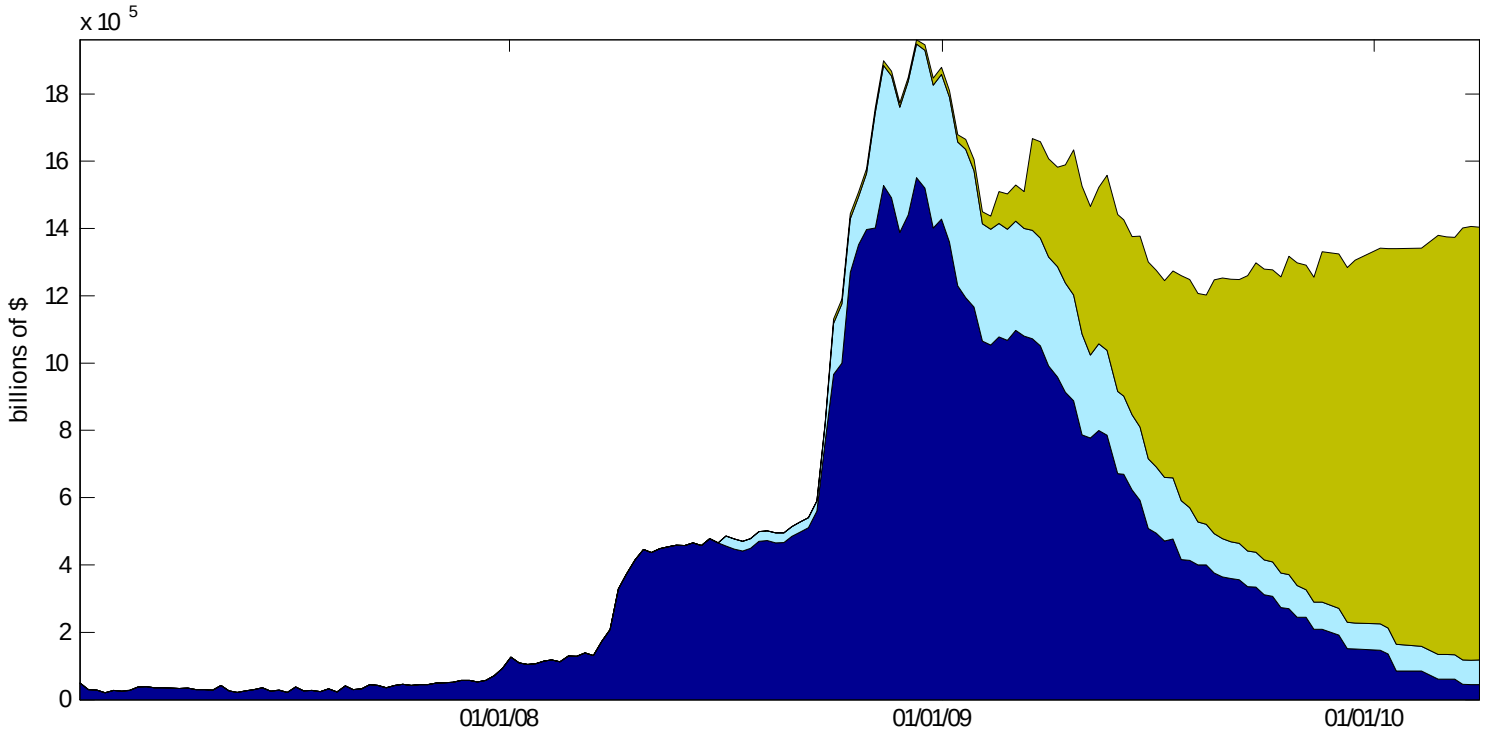


Figure: Unconventional policies: lending (blues) and purchases of long-term assets (green)

Unconventional policies: credit easing

- Assumes imperfect asset substitutability, asset market segmentation
  - Debate about quantitative significance
  - Operation Twist in the 1960s
  - Spiegel (2006): Evidence from Japan
  - Relevant for ECB sterilized purchases of government debt.
- A signal of future low rates or an effect of relative asset supply?
  - Bernanke, Reinhart, and Sack (2004)
  - Gagnon, Raskin, Remarche, and Sack (2010)
- Purchases of L-T government debt at ZLB – debt management not monetary policy.

Unconventional policies: Purchases of long-term government debt

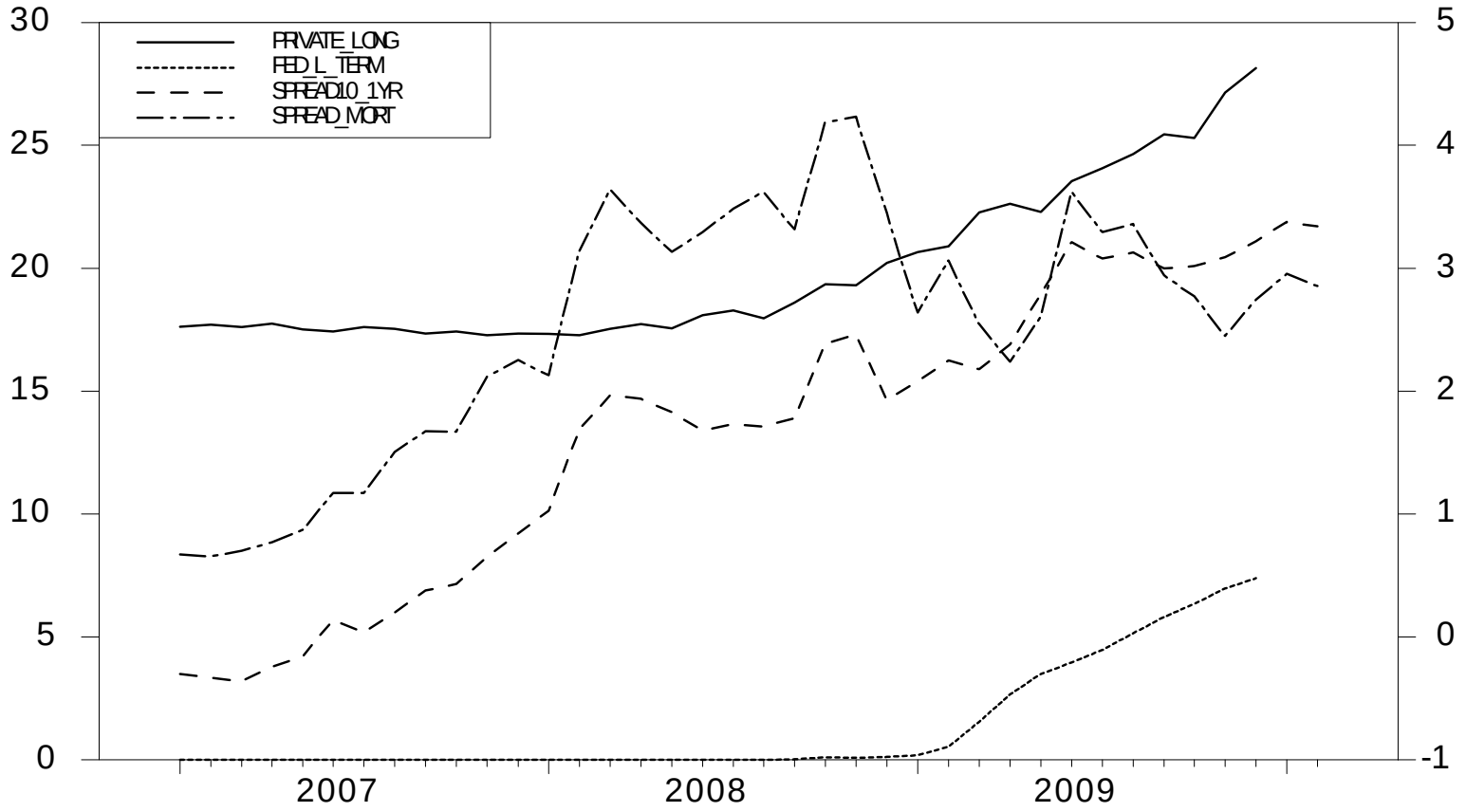


Figure: Privately held Federal gov't debt with maturity greater than one year and Federal Reserve long-term asset purchases, both expressed as a percent of GDP. Also shown are the spreads between the yields on 1-year and 10-year Federal government debt and 30-year mortgage rate (right axis).

How well has flexible inflation targeting performed?

Table 1: Real GDP: Growth Rate*

	All	IT	NIT
1995-2007	3.60	3.64	3.38
2008-2009	−1.08	−0.65	−1.27
2008-2010	−0.35	0.06	−0.53
Change to 2009	−4.54	−4.29	−4.64
Change to 2010**	−3.81	−3.57	−3.91

* Source: IMF World Economic Outlook, March 2010; ** Projected

Table 2: Inflation: Average CPI*

	All	IT	NIT
1995-2007	2.54	2.82	2.42
2008-2009	2.56	3.90	1.97
2008-2010	2.16	3.25	1.68
Change to 2009	0.012	1.08	−0.45
Change to 2010**	−0.39	0.43	−0.74

* Source: IMF World Economic Outlook, March 2010; ** Projected

Solutions for the ZLB problem

- Blanchard, et. al. (2010): raise the inflation target to 4%
- Williams (2009) – Heeding Deadalus
  - Target of $2-4\%$ likely to avoid serious ZLB problems
- How relevant is the worst case scenario?
- Efficiency cost of higher average inflation reduced by paying interest on reserves.

PLT: expectations as automatic stabilizers

- Svensson (1999), Vestin (2006), Walsh (2003).
- Cateau, et. al (2008), Dib, et. al. (2008), Kryvstov, et. al. (2008).

Outcomes to shocks under discretion
PLT relative to IT

Disturbance	Price-level targeting
Inflation shocks	Better
Demand shocks, no ZLB	Same
Demand shocks, ZLB	Better

PLT: When it is adopted matters

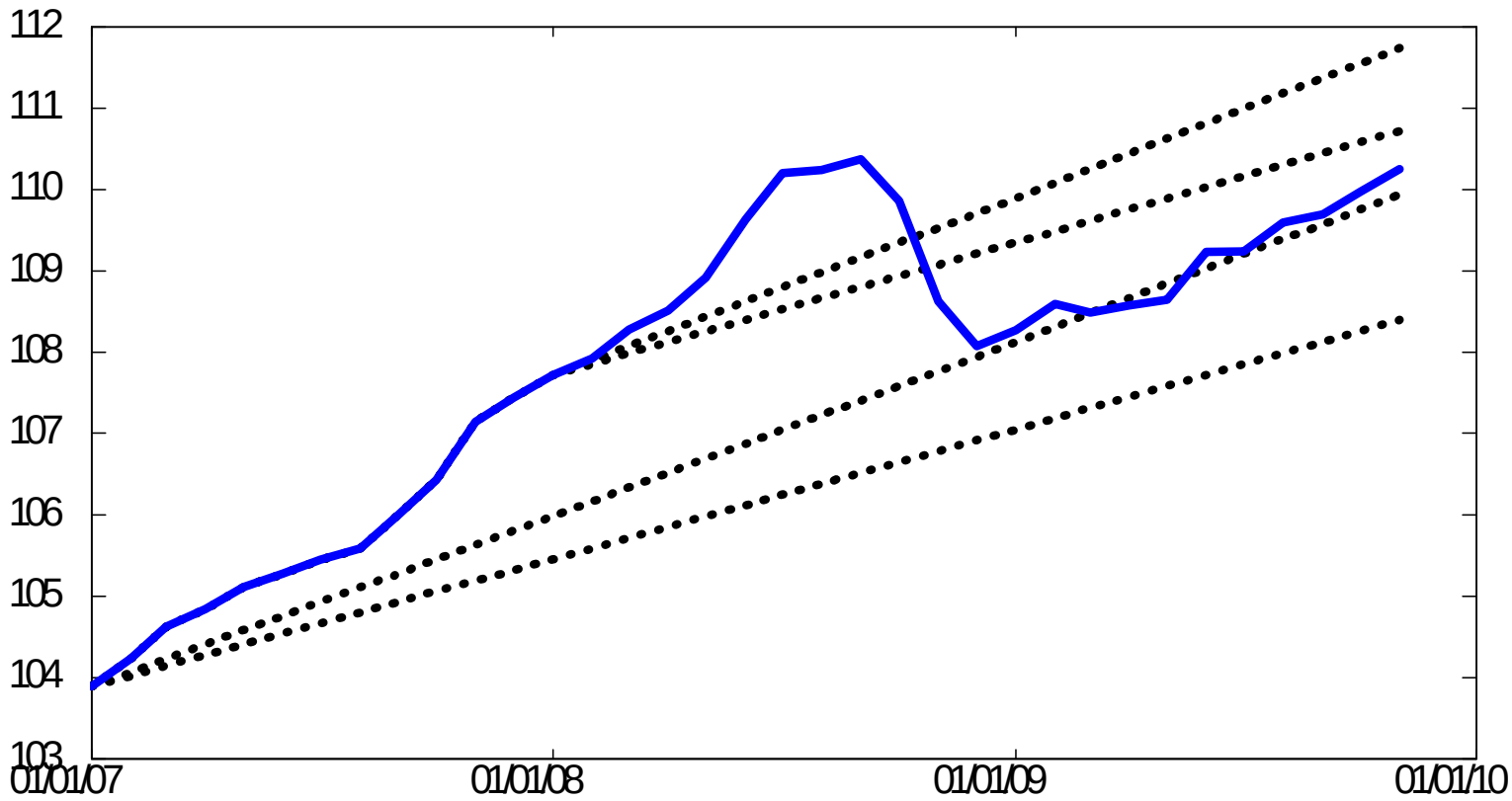
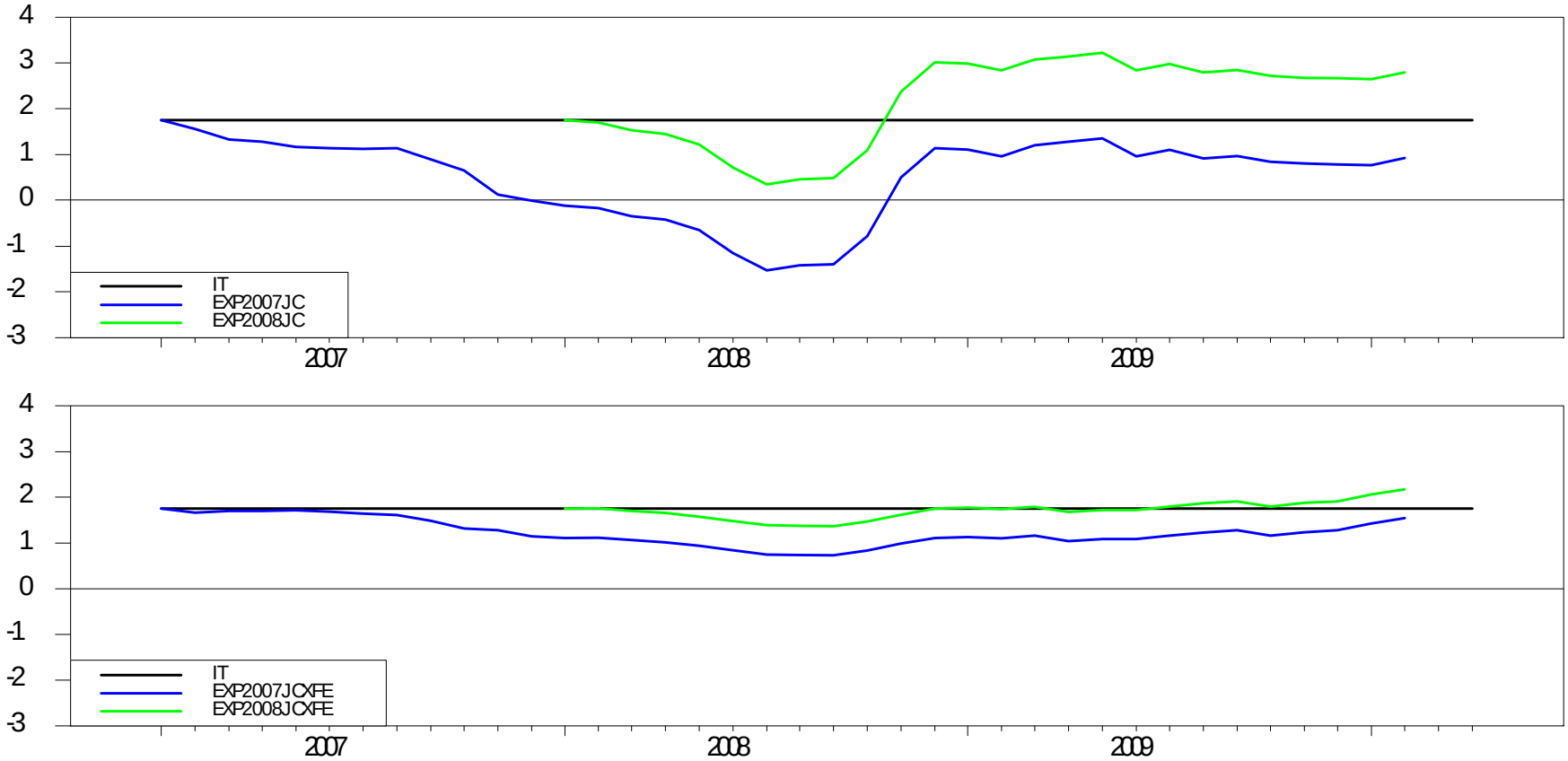


Figure: The PCE index and hypothetical price cones beginning January 2007 and January 2008. Lower paths correspond to 1.5% inflation, the upper paths to 2.0% inflation.

PLT: The choice of price index matters



Paths for π^e under PLT in the U.S. with start dates Jan. 2007 (solid line) and Jan. 2008 (dashed line).

Top panel, PCE; bottom panel, PCE less food and energy.

Other considerations

- Advantages of PLT require that expectations act as automatic stabilizers.
  - Raises issues of credibility and learning
- Switching policy regimes in a crisis risks gains in credibility achieved by inflation targeters.

Conclusions on the future policy framework

- Flexible inflation target seems to have worked well during the crisis.
- When macro volatility is at the levels seen during the Great Moderation, occurrences of the ZLB may be sufficiently rare that raising average inflation is unnecessary.
  - If macroeconomic shocks are likely to be larger in the future, the benefits of higher average inflation increase, though these must be balanced against the costs of higher inflation.
- Price level targeting is a viable alternative to inflation targeting and may lead inflation expectations to move in a stabilizing fashion, particularly in helping to avoid the ZLB.
  - When adopted, the choice of price index, the underlying trend inflation rate, and the speed with which deviations from target path are expected to be reversed are all important.

Adding other objectives

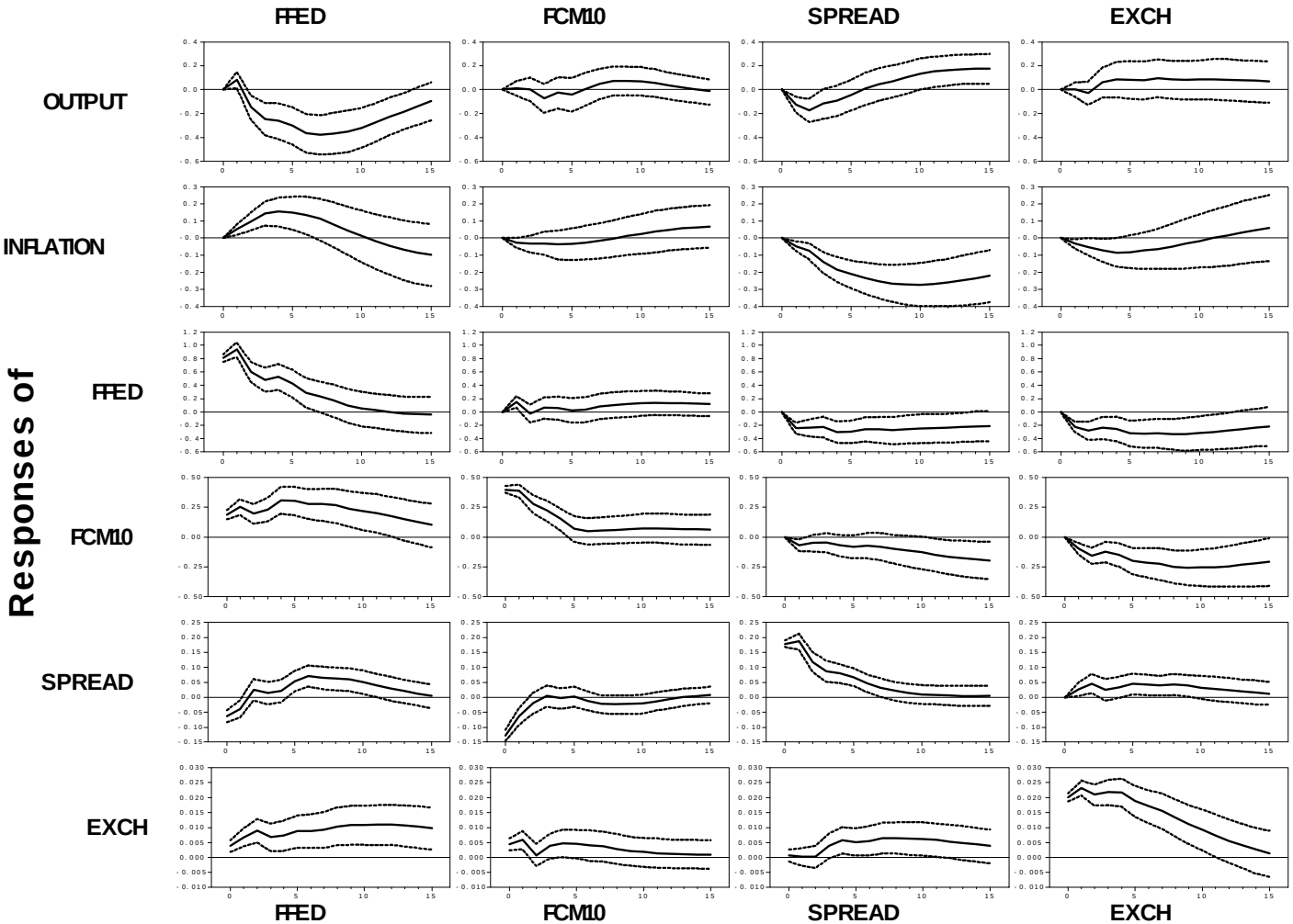


Figure: Impulse responses from a VAR estimated for the U.S., 1974:1-2007:4. See text for details.