Comments on “The Dynamic Effects of Forward Guidance Shocks”

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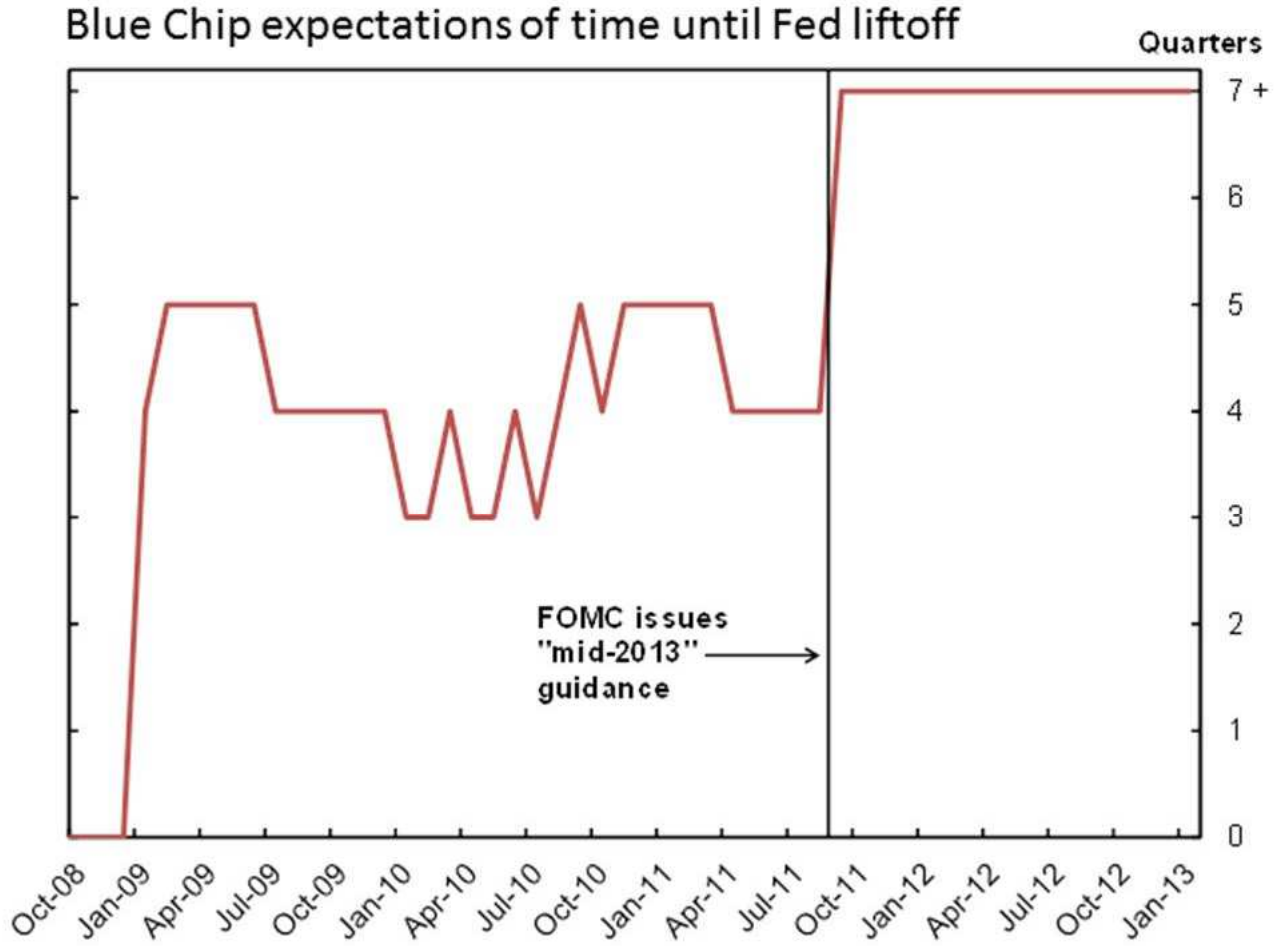
- Responses of fed funds futures and Treasury to FOMC announcements is multidimensional
  - Gürkaynak, Sack and Swanson (IJCB, 2005); Campbell, Evans, Fisher, and Justiniano (BPEA, 2012); Bauer (JMCB, 2015)
- Signaling future intentions matters in addition to current target level (forward guidance)

- This paper treats as one-dimensional during the ZLB
  - Empirical: response of fed funds futures after 7^{th}-upcoming FOMC meeting
  - Theory: Shock to serially-correlated residual in a shadow-rate Taylor Rule
- Striking coherence between theoretical prediction and empirical finding

- Theory: a change to the *future* monetary policy rule may be single most effective tool for monetary policy at the ZLB
  - Krugman (BPEA, 1999); Eggertsson and Woodford (BPEA, 2003)
- Practice: how does today's Fed change the future monetary policy rule?

- FOMC statement Aug 9, 2011:
  - “The Committee currently anticipates that economic conditions–including low rates of resource utilization and a subdued outlook for inflation over the medium run–are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013.”



Note: Number of quarters until federal funds rate expected to rise above 37.5 basis points.
Source: Swanson and Williams (2014a), from Blue Chip Consensus Survey data.

- Is this Odyssean?
  - Fed is tying its hands preventing itself from acting before 2013
- Or is it Delphic?
  - Fed is predicting the future value of its policy shock or future value of economic conditions
- If Delphic and Fed has superior information about economy, the statement would depress rates

- Beginning of August Blue Chip 3-quarter-ahead forecast:
  - Unemployment 8.8%, inflation 1.8%
- Beginning of September forecast:
  - Unemployment 9.0%, inflation 1.7%
- Consistent with Delphic gloom

- Campbell, et al. studied correlation between rate changes in 30-minute interval around FOMC statement and month-to-month change in Blue Chip forecast
- A statement that decreased interest rates was associated with market expectations of decreased inflation and increased unemployment
- Typically we observe Delphic component

f^n_{t-} = n-period futures price just before statement in month t

f^n_{t+} = n-period futures price just after statement

y^h_t = h-quarter-ahead Blue Chip forecast at beginning of month t

y^h_{t+1} = h-quarter ahead forecast at beginning of $t+1$

$$y^h_{t+1} - y^h_t = \alpha + \beta(f^n_{t+} - f^n_{t-}) + \varepsilon_{t+1}$$

Campbell et al. found $\beta < 0$ for unemployment and $\beta > 0$ for inflation

Bundick and Smith suggest we should instead estimate

$$y^n_{t+1} = \alpha + \rho_1 y^n_t + \rho_2 y^n_{t-1} + \rho_3 y^n_{t-2} + \rho_4 y^n_{t-3} + \beta M_t + \varepsilon_{t+1}$$

$$M_t = \sum_{\tau=0}^{t} (f^n_{\tau+} - f^n_{\tau-})$$

But economic theory suggests the original specification is correct.

$y_{t+1}^h - y_t^h = \alpha + \beta(f_{t+}^n - f_{t-}^n) + \varepsilon_{t+1}$

$f_{t+}^n - f_{t-}^n$ should be martingale-difference sequence due to short time interval.

$y_{t+1}^h - y_t^h$ should be martingale-difference sequence if Blue Chip rational.

Empirically: $y_{t+1}^h - y_t^h$ indeed appears to be white noise

- Krane (AEJ Macro, 2011); Campbell et al. (BPEA, 2012)

If $y^h_{t+1} - y^h_t = \alpha + \beta(f^n_{t+} - f^n_{t-}) + \varepsilon_{t+1}$ is correct then level form is misspecified

$$y^n_{t+1} = \alpha + \rho_1 y^n_t + \rho_2 y^n_{t-1} + \rho_3 y^n_{t-2} + \rho_4 y^n_{t-3} + \beta M_t + \varepsilon_{t+1}$$

Regression wants to set $\rho_1 + \cdots + \rho_4 \simeq 1$

But $M_t \sim I(1)$

Truth:

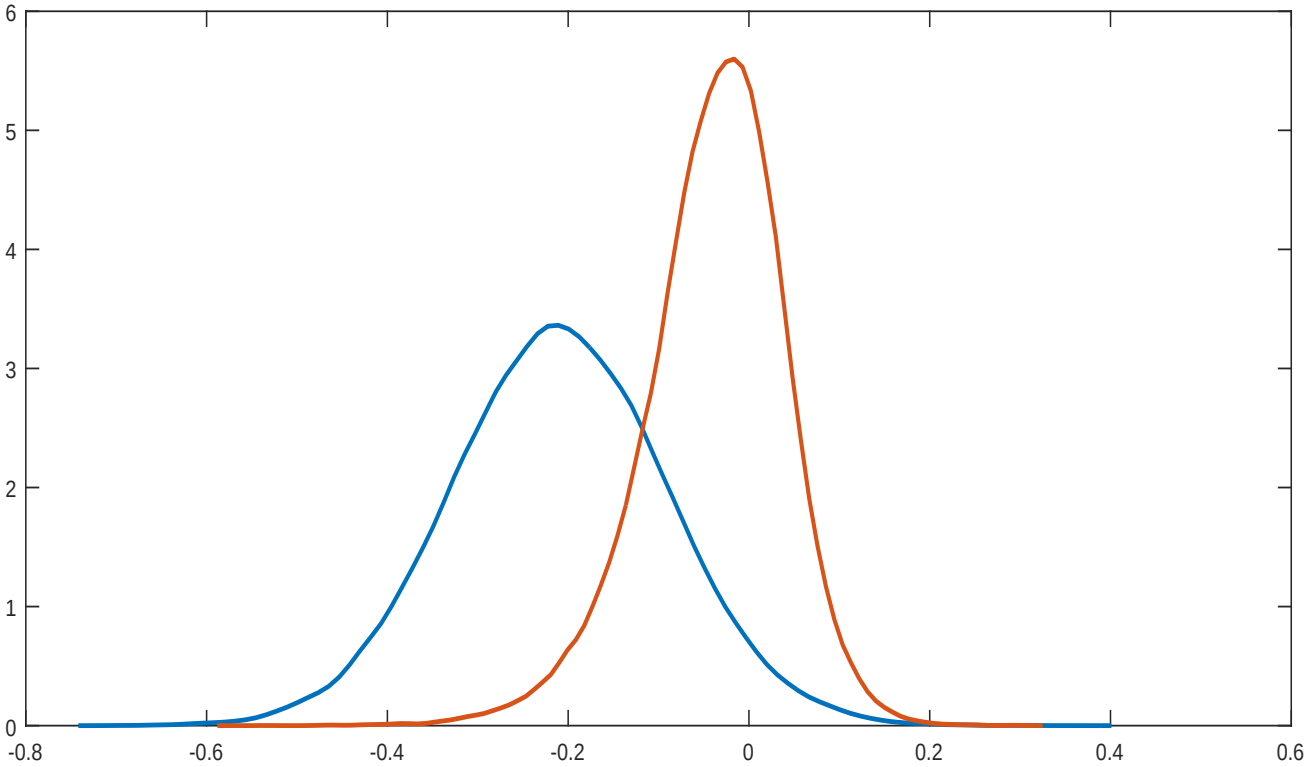
$$y_{t+1}^{h} - y_{t}^{h} = -0.21(f_{t+}^{n} - f_{t-}^{n}) + \varepsilon_{t+1}$$

$$f_{t+}^{n} - f_{t-}^{n} \sim N(0, \sigma^2)$$

$$\varepsilon_{t+1} \sim N(0, \sigma^2)$$

Estimate:

$$y_{t+1}^{h} = \alpha + \rho_1 y_{t}^{h} + \beta M_t + e_{t+1} \quad t = 1, \ldots, 72$$



Blue: density of $\hat{\beta}$ when estimated in differences

Red: density of $\hat{\beta}$ when estimated in levels

True value of $\beta = -0.21$

Levels estimation significantly biased upwards

Could fix the worst of the problem by including lag of M_{t-1}

$$y^h_{t+1} = \alpha + \rho_1 y^h_t + \beta M_t + \beta_1 M_{t-1} + e_{t+1}$$

But why intentionally create an $I(1)$ variable in order to force regression to undo?

Better to use $f^n_{t+} - f^n_{t-}$ as shock rather than M_t

Interpreting futures in theoretical model:

Better to view as essentially a forward contract

$f_t^n =$ price I agree at date t to pay you at $t+n$

- no money changes hands at t
- at $t+n$ my cash flow is $f_t^n - r_{t+n}$ for r_{t+n} actual value

FOC: $0 = E_t[\beta^n \lambda_{t+n}(f_t^n - r_{t+n})]$

- Adding margin requirement to futures does not change this as long as I would have held margin asset anyway
- Adding mark-to-market dimension of futures contract does not matter much quantitatively
  - (Piazzesi and Swanson, NBER 2004)