Whither Fed Communication: Lessons From Mike Woodford

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Woodford's Contributions to Central Bank Communication Practice Immense

- Has led to central banks' recognition that management of expectations central to successful monetary policy
  - Optimal policy requires central banks to communicate and follow target criterion that trades off inflation gaps against output gaps:

    i.e., provides more detail to communication about what "flexible inflation targeting" means

Woodford's Contributions to Central Bank Communication Practice Immense

- Need for history dependent communication of monetary policy, particularly at ZLB
  - Rationale for Price Level Targeting, Nominal GDP Targeting

    Not adopted yet, but may need to be
  - Has influenced Fed statements: e.g., March 19, 2014

    The Committee currently anticipates that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run.

Woodford's Contributions to Central Bank Communication Practice Immense

- His work has tremendous implications for how forward guidance, that is, guidance about path of future policy rates, should be practiced
  - Example: Mike's work is basis of recent research I have been involved with that looks at current Fed forward guidance

Language After Liftoff: Fed Communication Away from the Zero Lower Bound

Michael Feroli, David Greenlaw, Peter Hooper, Frederic Mishkin and Amir Sufi

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Introduction

- Federal Reserve communication has come a long way
- Key communication issue now is forward guidance
- Paper examines Fed's communication strategy to see how well it has worked and how it can be improved, particularly after liftoff

Key Theme

- Two types of forward guidance
  - Time-based: specifies future policy path with calendar dates
  - Data-based: specifies how future policy path changes with different possible economic outcomes:

    i.e. provides information about reaction function
- We argue that Fed communication recently has relied too heavily on time-based forward guidance, even though it mentions conditionality

Setting the Stage

- Example: Yellen speech July 10, 2015
  - "Based on my outlook, I expect that it will be **appropriate at some point later this year** to take the first step to raise the federal funds rate and thus begin normalizing monetary policy. But I want to emphasize that the course of the economy and inflation remain highly uncertain, and **unanticipated developments could delay or accelerate this first step.**"
  - Financial press (and many market participants) essentially ignored the conditionality
- Media interviews with Fed officials and market participants focus on calendar dates

Setting the Stage

"A couple of [meeting] participants questioned whether some financial market participants fully appreciated that monetary policy is data dependent, and a number of participants emphasized the importance of continuing to communicate this aspect of monetary policy."

- Federal Open Market Committee Minutes, January 2016

Key Question

- Is it advisable for the Fed to provide such forward guidance when financial press and markets likely to ignore any data-dependency that comes with it?

Outline

- What does Woodford's work say about theory of forward guidance
- Describe how Fed communication has evolved over last 20 years
- Empirical evidence
- Lessons
- Recommendations

Woodford and Theory of Forward Guidance

- Optimal monetary policy involves a commitment to a target criterion (flexible inflation targeting) which leads to a policy reaction function that is communicated to public: Woodford (2003)
- Communication is then data-based forward guidance
- Has desirable expectations dynamics:

  Negative shock leads to expectations that future policy path will be easier in future, so markets do heavy lifting by immediately lowering long-term rates, thereby stimulating the economy

Woodford and Theory of Forward Guidance

- Data-based forward guidance should NOT be interpreted as a Taylor Instrument Rule (which has serious problems)
  - Policy reaction function changes over time, either as policymakers learn how economy works or when the structure of economy changes and allows judgement
  - However, because the policy reaction function changes over time and allows for judgement, it may be hard to credibly explain it with data-based forward guidance

Woodford and Theory of Forward Guidance

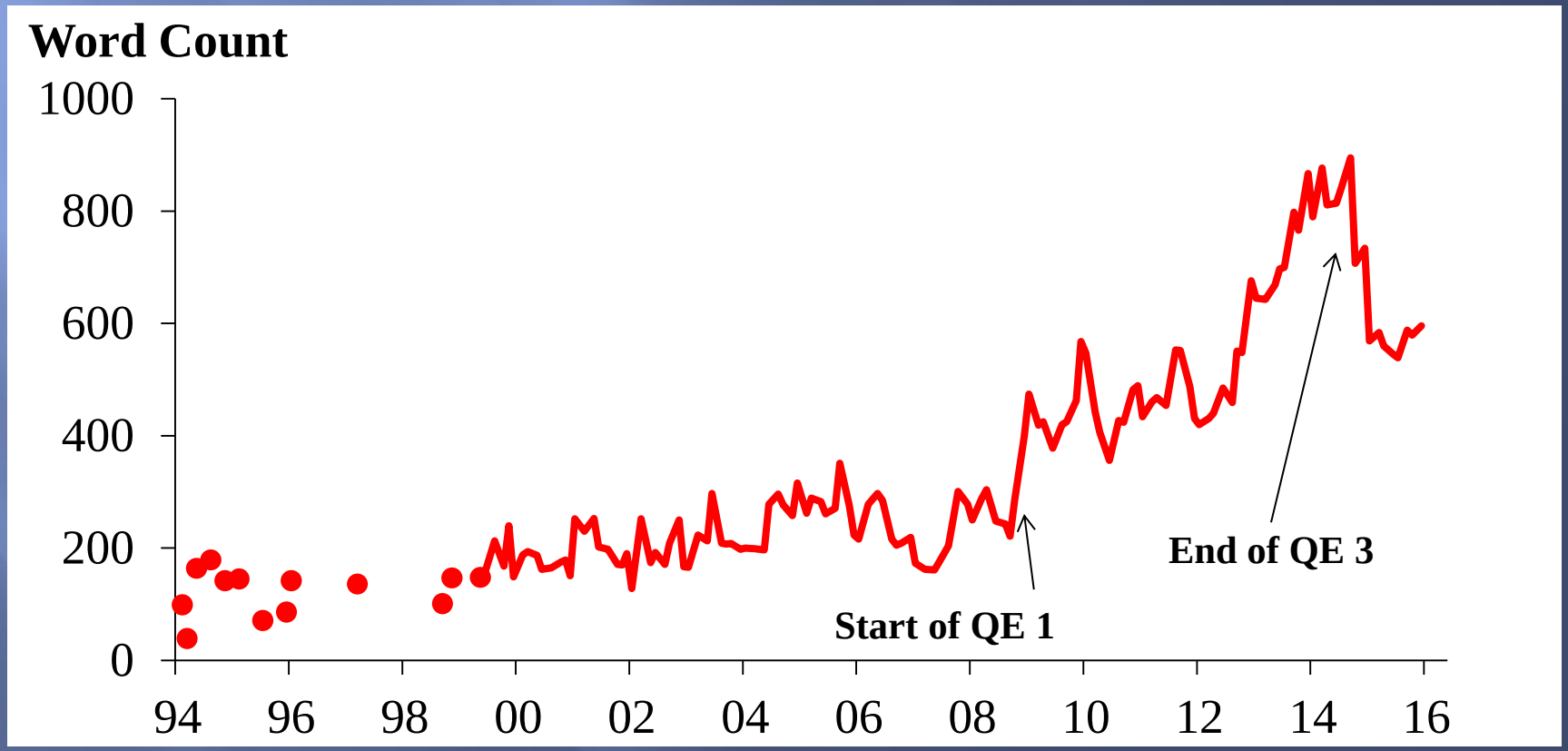
- Example of how data-based forward guidance might have might worked at start of financial crisis:
- August-September 2007, economy growing rapidly and inflation rising
  - Would have explained that disruption in financial markets required a shift to much more expansionary reaction function and that judgements about financial disruption would affect future policy path
  - If understood and credible, long-term rates would fall more rapidly in response to news that the financial disruption was getting worse

Woodford and Theory of Forward Guidance

- Time-based forward guidance has bad expectations dynamics
  - Because future policy path is fixed, negative shock does not lead to change in markets expectations of future policy, so no stimulatory effect from lowering of long rates
  - Even worse: negative shock likely to lower expected inflation, so real rate rises, which is in effect contractionary monetary policy that amplifies negative shock
  - Get same bad expectations dynamics as occurs with ZLB (Eggertson and Woodford, 2003)

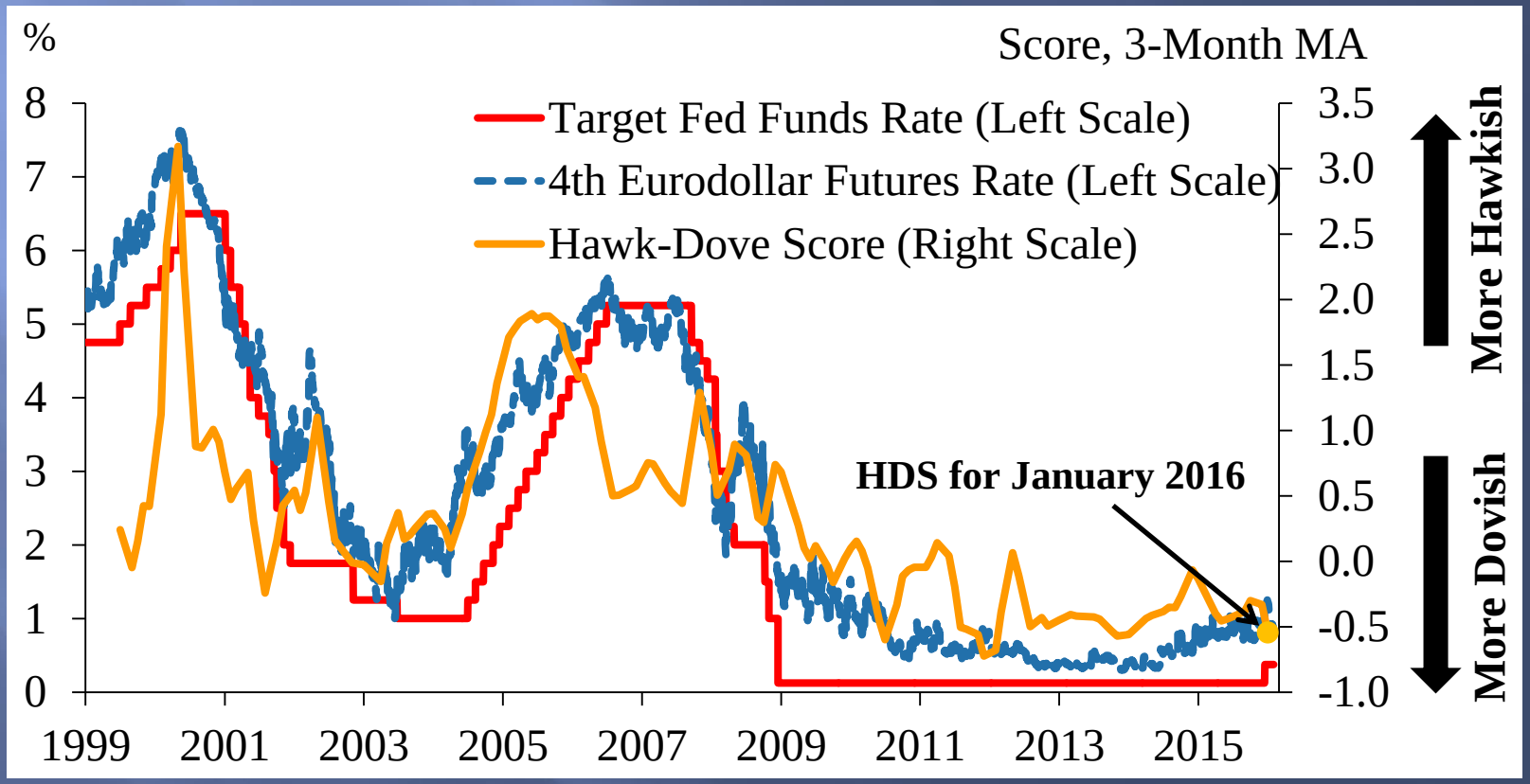
Fed Communication: Practice

- More information provided to markets
- FOMC statements



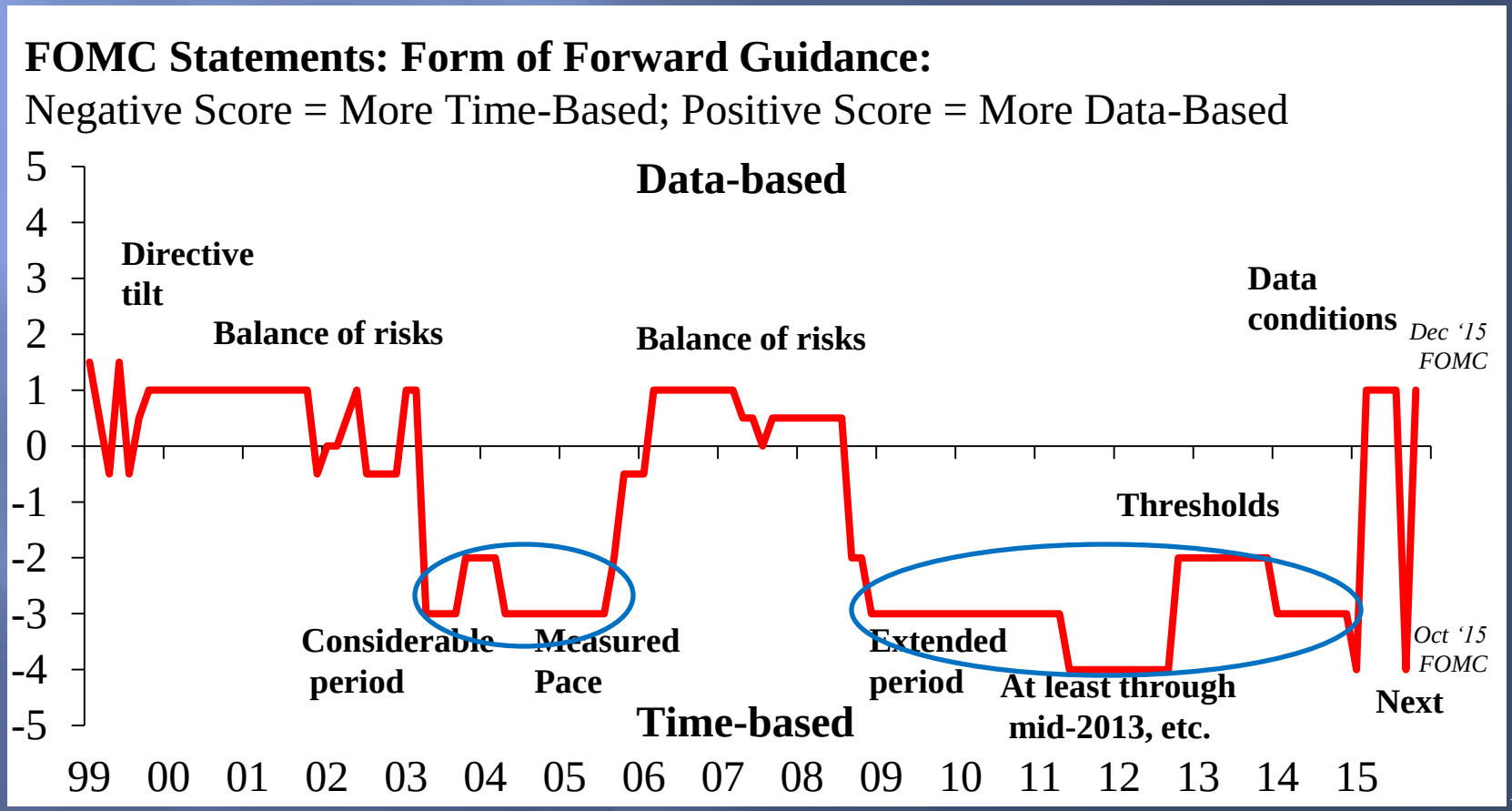
Fed Communication: Practice

- Tone of statement anticipates movements in policy



Fed Communication: Practice

- Data-based versus time-based forward guidance



Fed Communication: Practice

- Time-based forward guidance can put the Fed in a box when new data suggests a need to revise the policy path
  - May be tendency to stick to previously announced path. For example, 17 consecutive 25 bps increase in fed funds rate target from 2003-2006 led to overly easy monetary policy and may have contributed to housing bubble
  - If instead there is a change from previously announced policy path, markets may take view that Fed has flip-flopped and broken its word which damages Fed credibility. This can be seen in bad communication scores in Primary Dealer Survey as seen in the case of Sept 2013 taper tantrum and Sept 2015 delay in liftoff.

Fed Communication: Practice

- **Time-based** forward guidance can be beneficial when ZLB is binding and more expansionary policy is needed
  - Other monetary policy tools may be ineffective or have problematic consequences
  - Data-based forward guidance may be hard to explain and not credible
  - Time-based forward guidance has advantage that it is easily understood and so may be more powerful than data-based forward guidance
  - Time-based forward guidance also can lower risk premiums to stimulate economy
  - Example when time-based forward guidance may have been justified: August 2011

Fed Communication: Practice

- Summary of Economic Projections (SEP) reveals information about policy reaction function

SEP Taylor Rule Regressions

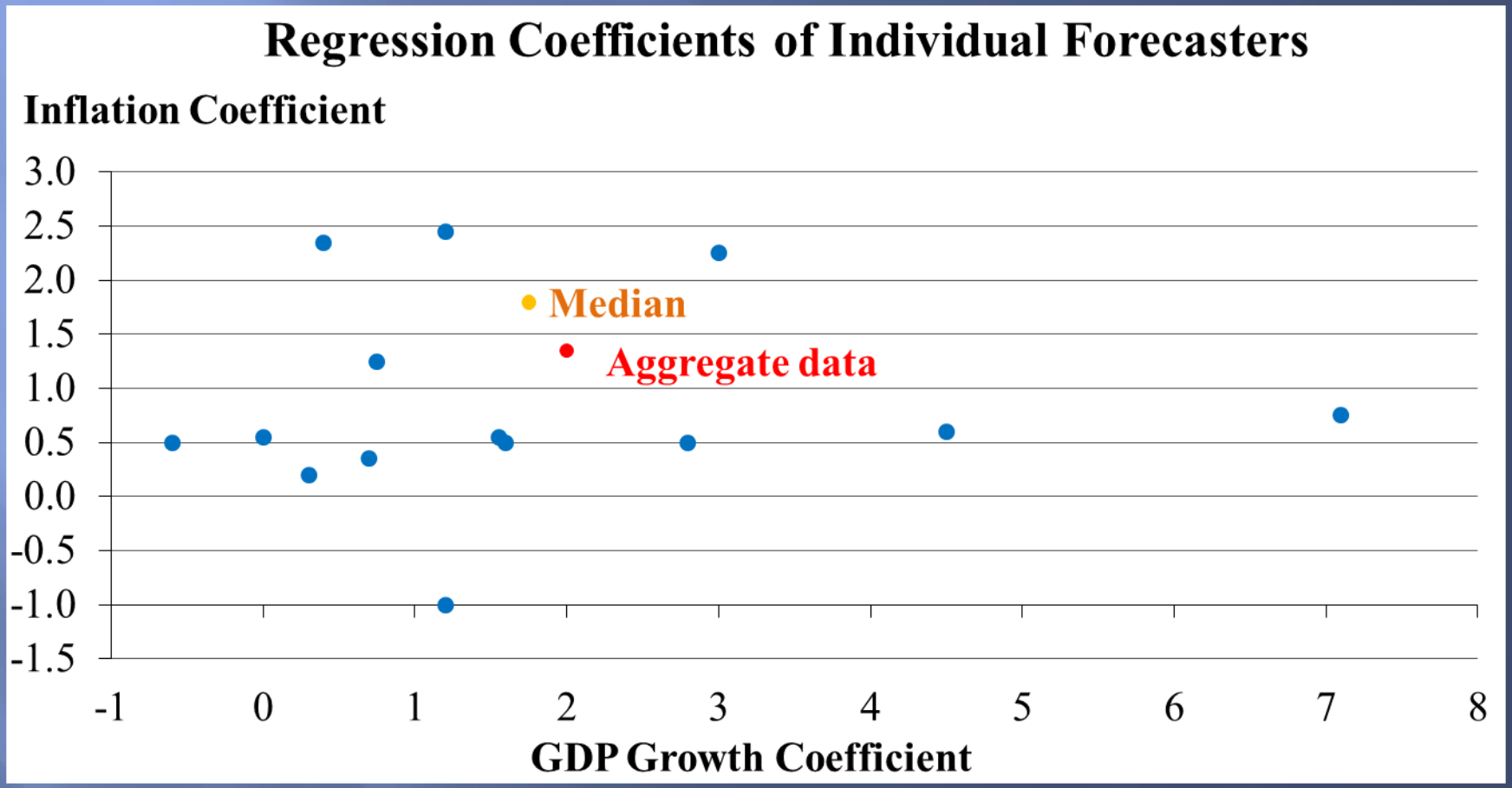
	---------- Output Gap ----------		---------- Unemployment Gap ----------	
	(1) Level	**(2) First Difference**	**(3) Level**	**(4) First Difference**
C	**-1.87**	**0.05**	**-1.13**	**-0.02**
	(4.38)	*(0.66)*	*(5.24)*	*(0.36)*
B_YGAP	**0.72**	**0.4**		
	(2.38)	*(2.45)*		
B_URGAP			**-1.59**	**-0.82**
			(5.47)	*(-2.77)*
B_PGAP	**1.71**	**1.84**	**3.16**	**1.56**
	(2.09)	*(4.27)*	*(7.40)*	*(3.88)*
R2	**0.34**	**0.33**	**0.77**	**0.32**
S.E.	**0.94**	**0.25**	**0.56**	**0.25**
F-stat	**8.16**	**6.70**	**52.79**	**6.23**
N	**35**	**30**	**35**	**30**

Note: All equations use the Newey-West estimator. T-statistics of coefficients are in parentheses.

Fed Communication: Practice

- However, evidence from FRB Cleveland study based on data from the Survey of Professional Forecasters shows that using median forecasts to estimate policy reaction function provides little information about individuals reaction functions

Fed Communication: Practice



From "Do Forecasters Agree on a Taylor Rule?" by Charles Carlstrom and Margaret Jacobson, Federal Reserve Bank of Cleveland *Economic Commentary*, September 2, 2015

Empirical Evidence: Time-Based Forward Guidance Reduces Sensitivity to Macro News

- Swanson-Williams (2014) regressions

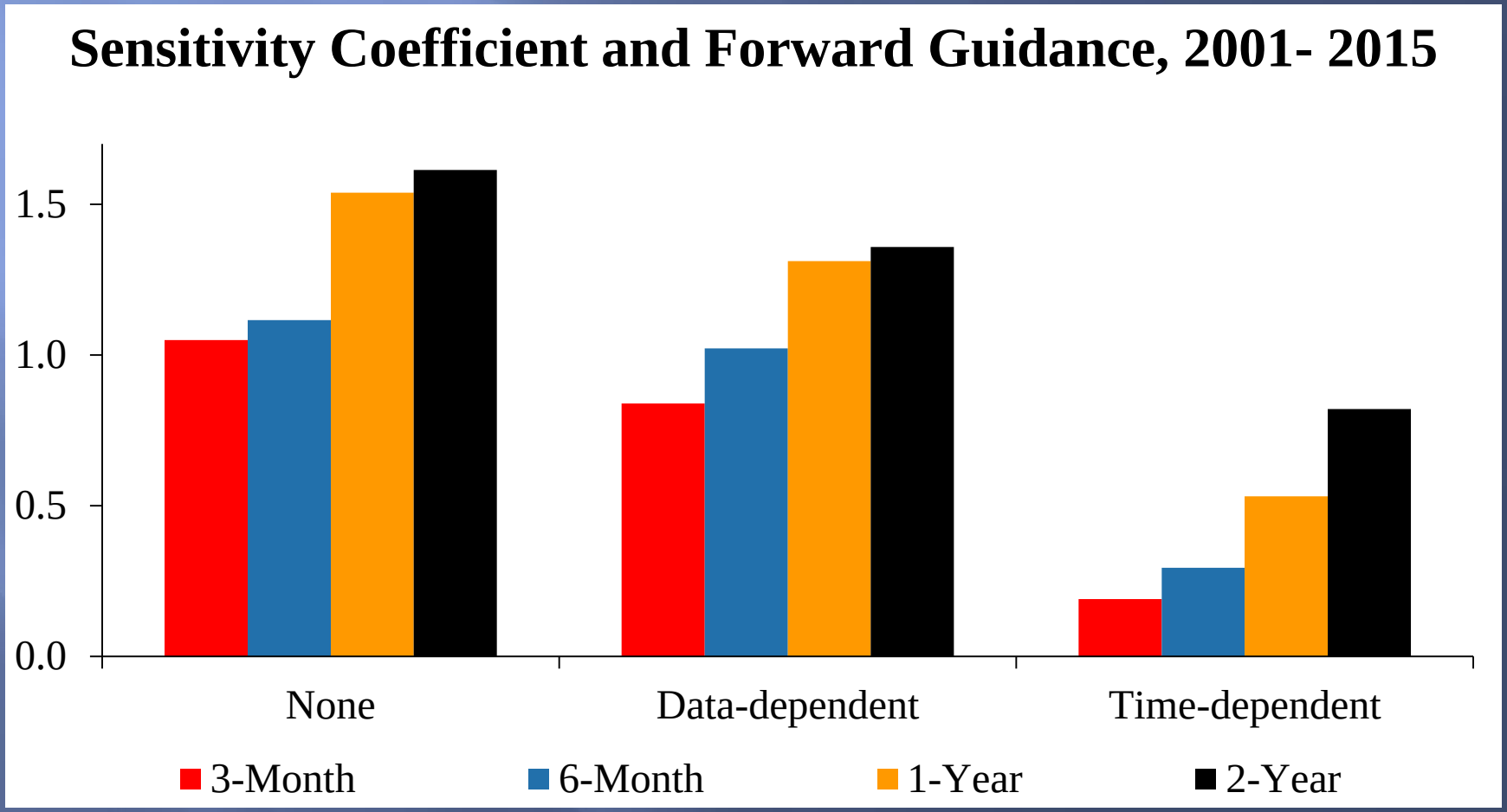
$$\Delta y_t = \gamma^{\tau_i} + \delta^{\tau_i} \boldsymbol{\beta} \boldsymbol{X}_t + \varepsilon_t \qquad (1)$$

Yields estimate of $\widehat{\boldsymbol{\beta}}$ and $\hat{X}_t = \widehat{\boldsymbol{\beta}} \boldsymbol{X}_t$
Then estimate:

$$\Delta y_t = \gamma^{\tau} + \delta^{\tau} \hat{X}_t + \varepsilon_t^{\tau} \qquad (2)$$

where $\widehat{\delta^{\tau}}$ describes sensitivity of interest rates to macro surprises

Empirical Evidence: Time-Based Forward Guidance Reduces Sensitivity to Macro News



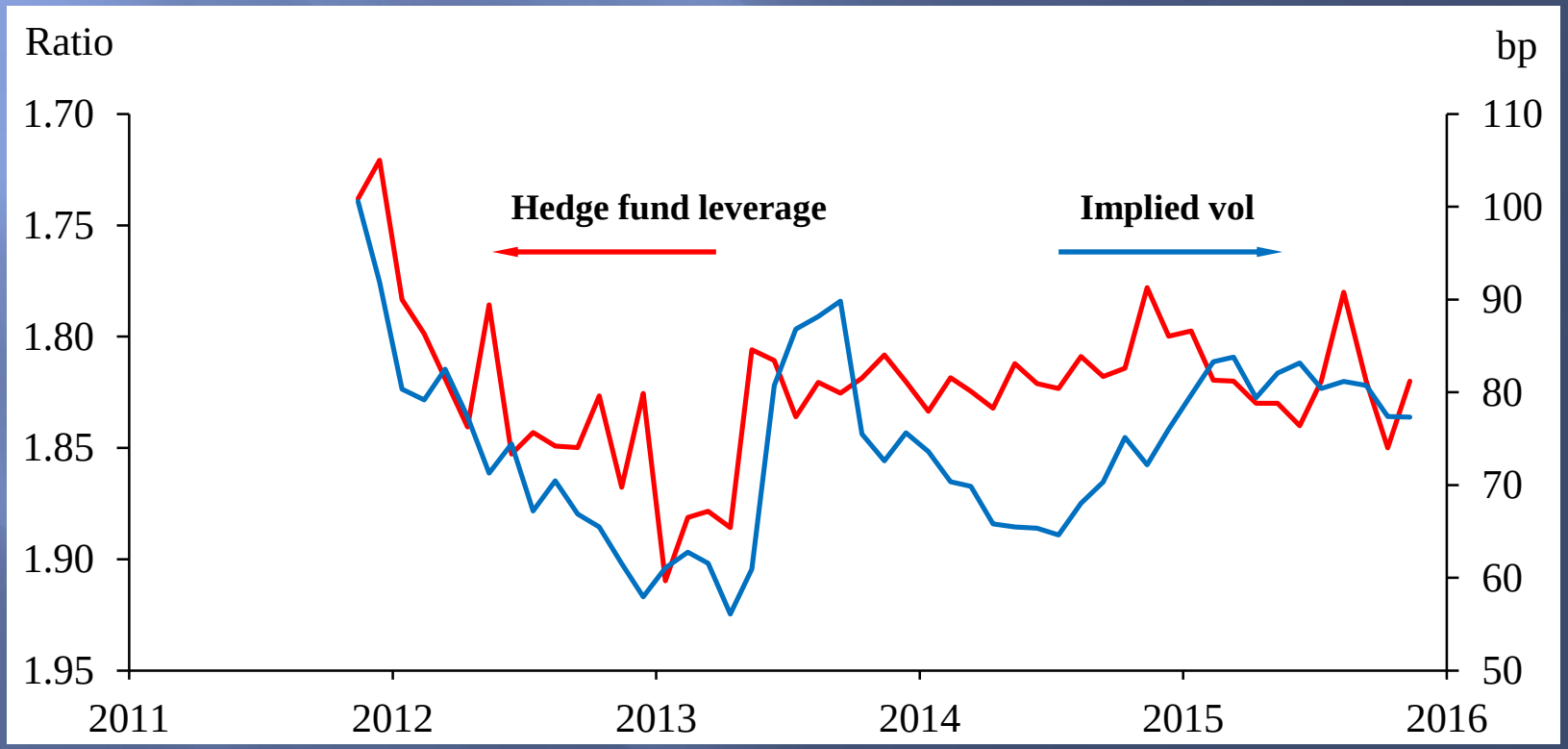
Empirical Evidence: Time-Based Forward Guidance Reduces Volatility

	Constant		Sensitivity Param.		CDX High Yield		Model
	Coef.	**T-Stat**	**Coef.**	**T-Stat**	**Coef.**	**T-Stat**	**R^2**
10Y Tails	2.478	9.261	0.700	6.138	0.006	19.426	0.524
5Y Tails	1.564	5.106	1.641	11.396	0.006	15.015	0.453
2Y Tails	0.234	0.905	2.634	19.518	0.005	13.569	0.587

Sample: January 2002 - November 2015

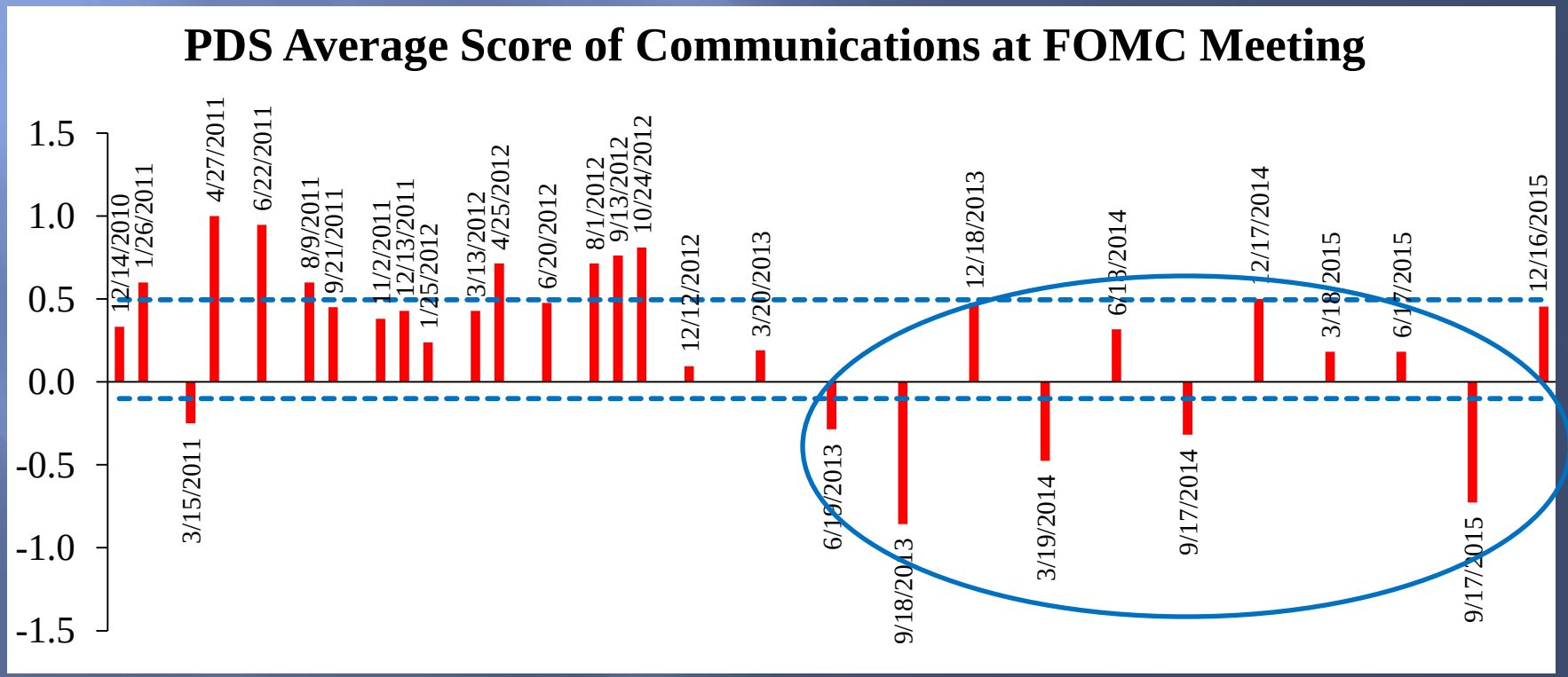
Empirical Evidence: Time-Based Forward Guidance Reduces Volatility

- Danger that low volatility leads to increased leverage (Adrian and Shin, 2014)



Empirical Evidence: Time-Based Forward Guidance Weakens Fed Credibility

- Communication grades are lower in the post June-2013 period when Fed is moving toward normalization



Lessons

1. Data-based forward guidance has desirable expectations dynamics which allows markets to do heavy lifting for Fed
2. Time-based forward guidance has undesirable expectations dynamics which can amplify negative shocks
3. Empirical evidence supports weaker response to macro news when there is time-based forward guidance

Lessons

4. Empirical evidence finds that time-based forward guidance results in lower uncertainty. Although at times this can be desirable at ZLB, it can lead to higher leverage and financial instability in other periods
5. Summary of Economic Projections (SEP) provides information about Fed reaction function
6. Media and markets ignore conditionality of forward guidance

Lessons

7. Time-based forward guidance can put Fed in a box: either leading to inappropriate policy (2003-2006) or a view that Fed has flip flopped, weakening their credibility (September 2013 and September 2015)
8. Time-based forward guidance can lead to confusion and lower communication grades by the market
9. Time-based forward guidance does have a potential advantage in that it is more powerful because it is easily understood.

Recommendations

1. Time-based forward guidance should be used in only very unusual circumstances: (1) when the zero-lower-bound on monetary policy is binding and more expansionary monetary policy is required. And (2) when all other efforts to communicate the central bank's reaction function to markets have been unsuccessful. However, time-based forward guidance should not be used only because market forecasts of economic outcomes differ from the Fed's forecasts.

Recommendations

2. Data-based forward guidance in which there is a projected path of policy rates may be too hard to explain and make credible, so it might be better not to do this type of forward guidance at all and instead revert to weaker form of forward guidance
3. Make forward guidance more data-dependent by emphasizing the uncertainty around the policy path and how the path would change with economic outcomes.

Recommendations

4. The financial press and market participants should fixate less on dates, and more on the evolution of the Federal Reserve reaction function
5. The Summary of Economic Projections could be made more informative about FOMC participants' policy reaction functions by linking the dots to the economic forecasts of each (unnamed) participant.

Recommendations (#5 continued)

- For example, SEP could include a forecast grid, such as that shown here, which is currently made public with a 5 year lag (note: of course, current version of this table, which is not public yet, would include a column showing fed funds rate forecasts).

November 2010 Economic Projections (in percent)					
Projection	**Year**	**GDP**	**UR**	**PCE**	**Core PCE**
1	2012	2.6	8.7	2.0	1.8
2	2012	3.6	8.4	1.2	1.0
3	2012	4.6	7.7	0.6	0.6
4	2012	4.2	8.2	1.4	1.2
5	2012	4.5	7.9	1.0	1.0
6	2012	3.2	8.1	1.5	1.5
7	2012	4.0	8.0	1.5	1.4
8	2012	4.7	7.9	1.1	1.0
9	2012	4.2	8.1	1.2	0.9
10	2012	4.1	8.0	1.5	1.5
11	2012	4.5	7.0	1.8	1.6
12	2012	3.2	7.2	2.2	2.0
13	2012	4.3	8.4	1.1	1.0
14	2012	4.4	8.0	1.5	1.5
15	2012	4.0	8.0	1.5	1.4
16	2012	4.0	8.2	2.0	2.0
17	2012	4.4	8.0	1.4	1.1
18	2012	4.7	7.1	1.2	1.2

Source: FOMC transcript material for the November 2010 meeting

Conclusion

- Although the Fed has made substantial progress in communication, it is now too focused on time-based forward guidance
- Recommend that time-based forward guidance only be used in extremely unusual circumstances, when: 1) the zero-lower bound on monetary policy is binding and more expansionary policy is needed, or 2) other efforts to communicate the central bank's reaction function to markets have failed. Neither of these conditions holds currently.

Conclusion

- Data-based forward guidance is hard to do well, although this is not entirely the fault of the Fed
  - One alternative: abandon forward guidance with interest rate projections
  - Another alternative: Take steps to improve data-based forward guidance to make it less likely to be misinterpreted as time-based. We hope our suggestions help.