BANK OF JAPAN

Comments on "Did the Crisis Affect Inflation Expectations?" by G. Galati, S. Poelhekke, & C. Zhou

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Shigenori SHIRATSUKA

Institute for Monetary and Economic Studies

Bank of Japan

Disclaimer: The views expressed are solely the responsibility of the presenter, and should not be interpreted as reflecting the official views of the Bank of Japan.

Summary

- Question: The crisis affected long-term inflation expectations?

- Two Indicators for Long-term Inf. Exp.:
  - Survey: Consensus Forecasts
  - Market: Inflation-indexed bonds, Inflation swaps

- Three Major Economies:
  - USA, Euro area, UK
  - Japan NOT included   (presented at the BOJ)

Summary (Cont'd)

- Econometric Analysis on Mkt-based INF-EXP Indicators:
  - Reaction to news about Inf. & other macro var.
  - Controlling Mkt-conditions
- Conclusion: Less firmly anchored after the Crisis
  - More responsive to news after the crisis than before

Overall Comments

- An Important Question for CB Policymakers:
  - Did aggressive unconventional monetary policy affect public expectations on long-term INF-EXP?

- Nice Trial by Using High Frequency Mkt Data:
  - Real time assessment of policy performance

- Conclusion: Still Inconclusive
  - Destabilized F-Mkt in the Crisis → Noisy Mkt data
  - Difficult to get robust empirical evidence
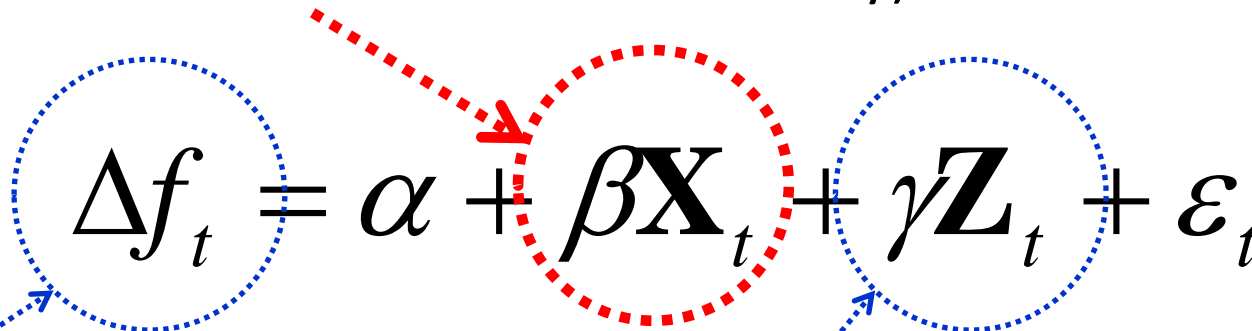 - Important: Design of empirical analysis

Empirical Framework

- One-year forward rates ending ten-year ahead as a Mkt-based long-term INF-EXP.

Smoothed FRs using N-S model

$$f_{t,10} = (1 + y_{10})^{10} / (1 + y_9)^9 - 1$$

Today   9-year   10-year
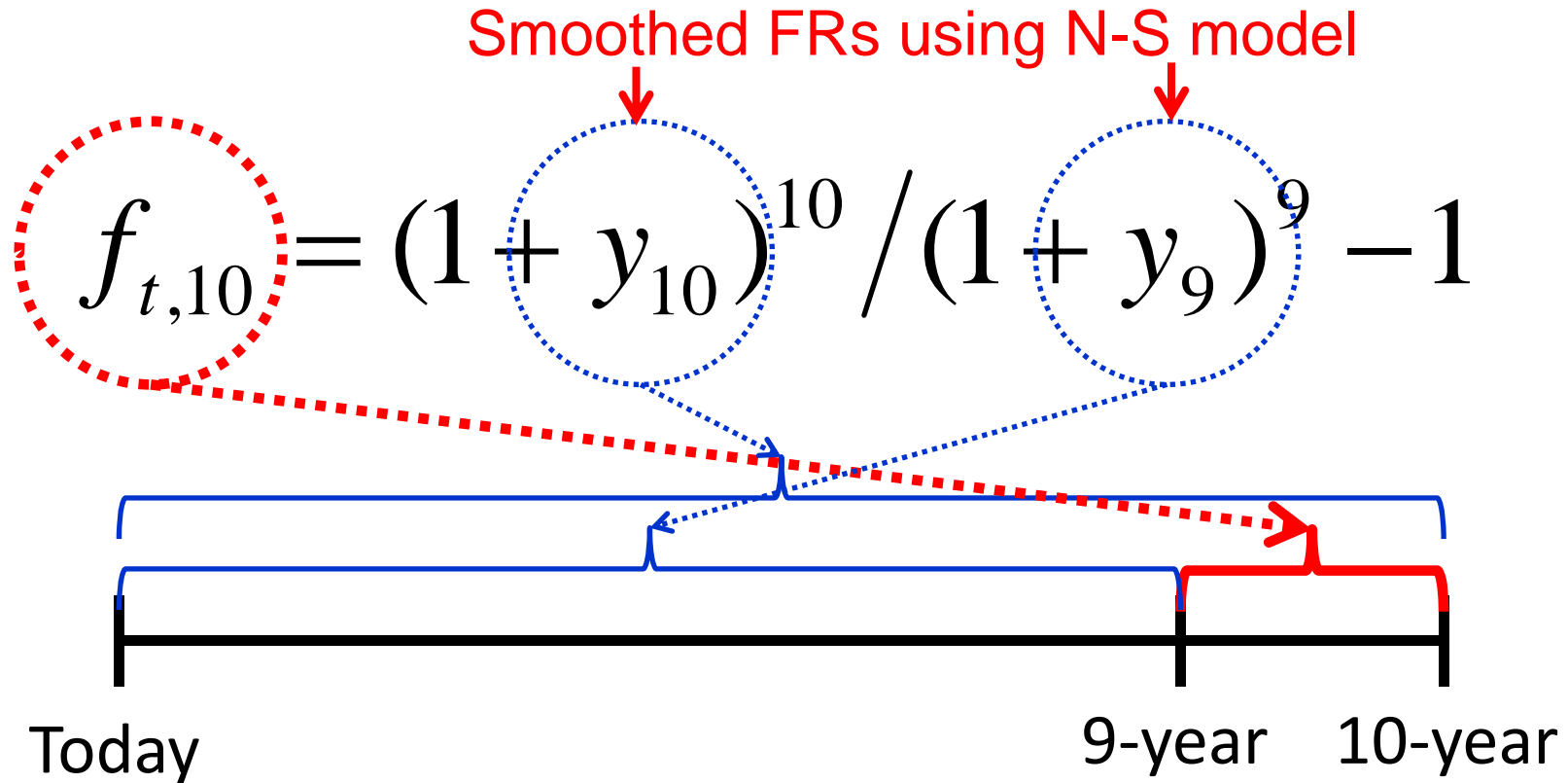
Empirical Framework (cont'd)

Explanatory variables: (but expected to be insignificant)
News on macroeconomic variables (=difference between actual release and ex-ante survey)

$$\Delta f_t = \alpha + \beta \mathbf{X}_t + \gamma \mathbf{Z}_t + \varepsilon_t$$
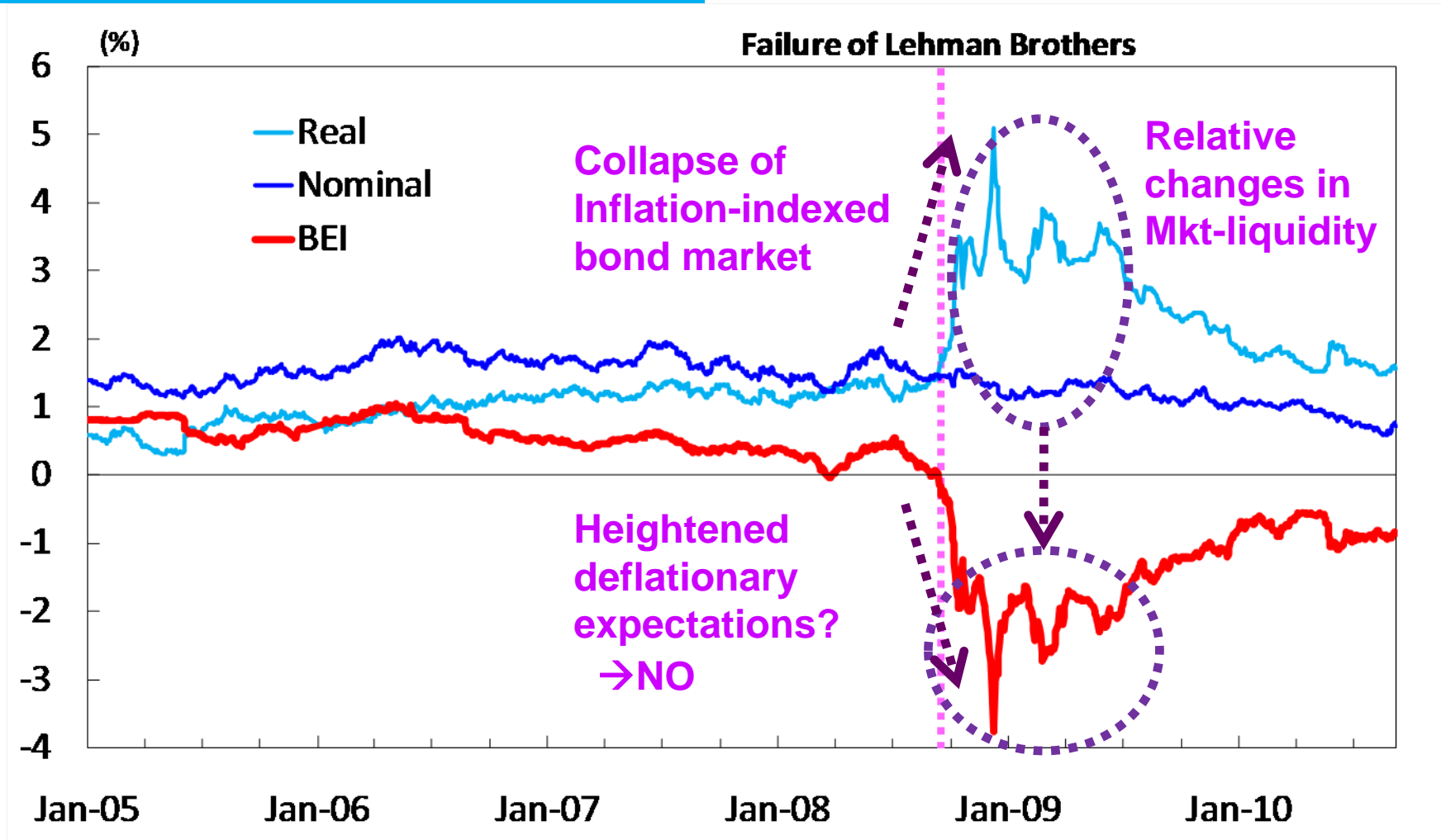
Dependent variable:
First differences of Mkt-based long-term INF-EXP indicators

Control variables for Mkt-conditions:
VIX, Nominal bond volatility,….
Flight-to-quality → Negative impacts

Com-1: Why Japan NOT Included?

Source: Bloomberg

Com-1 (cont'd)

- To Get Robust Empirical Evidence:
  - Controlling Mkt conditions: Crucially important
  - How successful this paper?

- Estimates for Control Variables:
  - Most: Less statistically significant after the crisis
  - Some: Wrong signs after the crisis
  - Reliable enough?

- Empirical Strategy: Appropriate?
  - Analysis for normal times, but **not for crisis times**?

Com-2: Tested Hypothesis

- How Firmly Are Inflation Expectations Anchored?

- Analyzing reactions of INF-EXP indicators to news about Inf. & other macro var.

  – Necessary condition

  – But sufficient condition?

- More Additional & Supplementary Empirical Analysis(?)

Com-3: Use of N-S Model

- Extended Nelson-Siegel Model (Soderlind and Svensson, JME 1997):
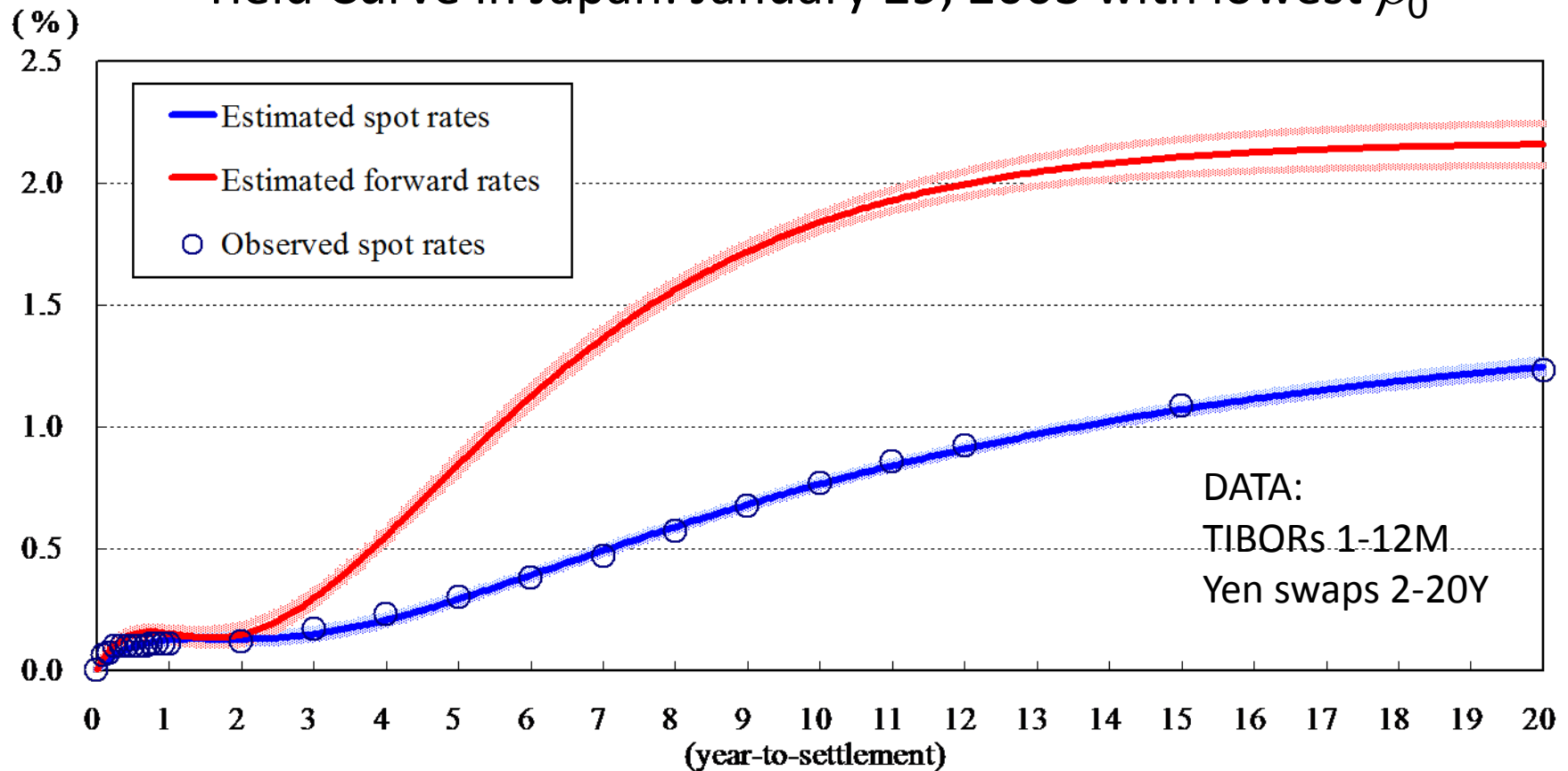 - Simple and parsimonious, but flexible enough

Forward rates starting m-period ahead:
$$r(m) = \beta_0 + \beta_1 \cdot \exp(-\frac{m}{\tau_1}) + \beta_2 \cdot (\frac{m}{\tau_1}) \cdot \exp(-\frac{m}{\tau_1}) + \beta_3 \cdot (\frac{m}{\tau_2}) \cdot \exp(-\frac{m}{\tau_2})$$

- Two Features:
  - $r(0) \rightarrow \beta_0 + \beta_1$ and $r(\infty) \rightarrow \beta_0$
  - Computing confidence intervals

Com-3 (cont'd)

Yield Curve in Japan: January 29, 2003 with lowest β_0

(%)

- Estimated spot rates
- Estimated forward rates
- O Observed spot rates

DATA:
TIBORs 1-12M
Yen swaps 2-20Y

(year-to-settlement)

Source: Kunio Okina and Shigenori Shiratsuka, "Policy commitment and expectation formation: Japan's experience under zero interest rates," *North American Journal of Economics and Finance* 15, 2004, pp. 75–100

Com-3 (cont'd)

- One-year forward rates ending ten-year ahead using NS estimates:

$$f_{t,10} = \frac{1}{1Y} \int_{s=9Y}^{10Y} r(s)ds$$
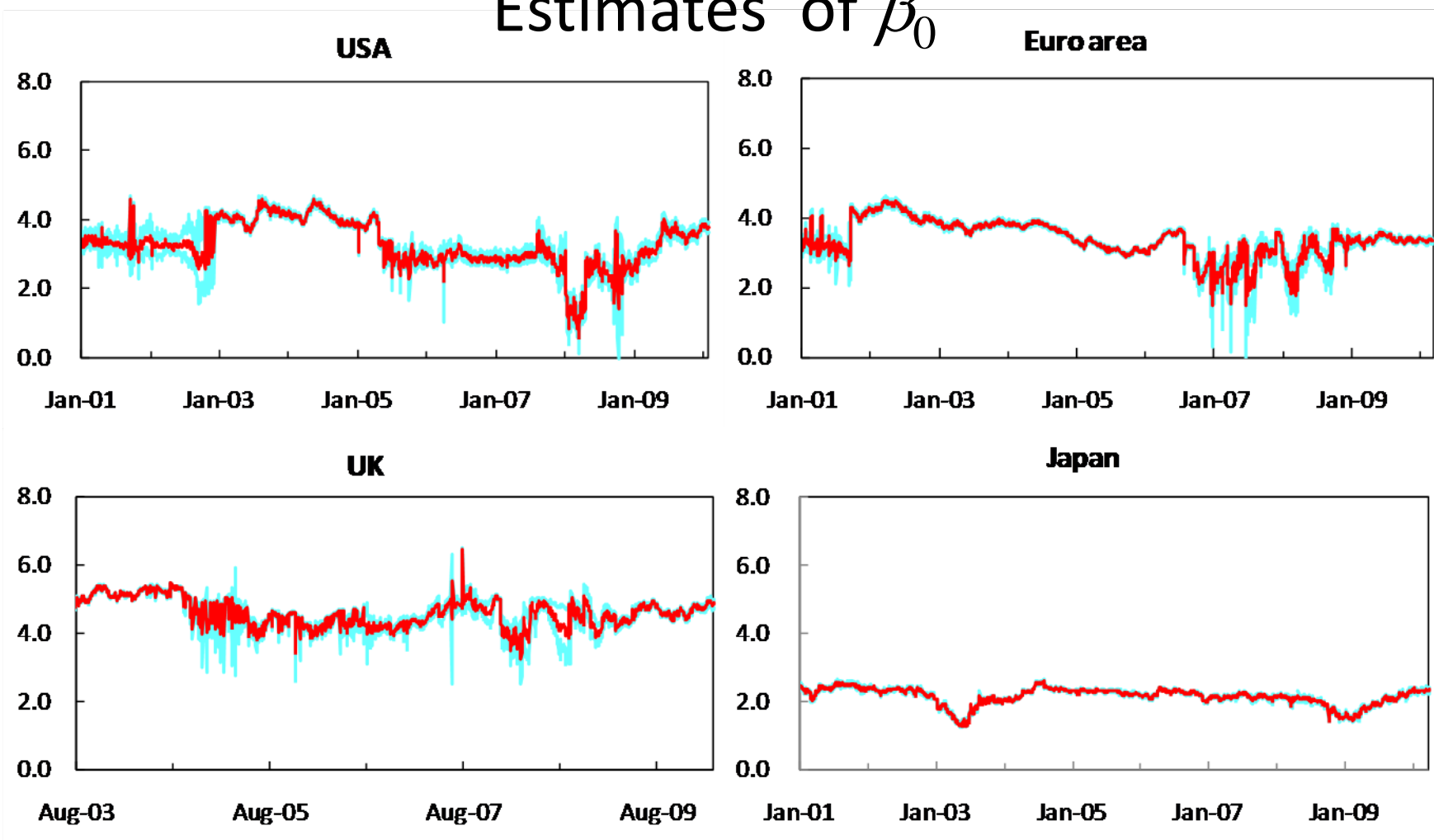
- Alternative Indicator:
    β_0 (long-term forward rate)
    →Better indicator for long-term expectations

- Compute confidence intervals

Com-3 (cont'd)

Estimates of β_0

Com-4: Term Structure of INF-EXP

- Inflation Swaps & Indexed Bonds:
  - Data at wide range of maturities
  - Term structure of INF-EXP

- Dynamics of Term Structure of INF EXP
  - Responses to news at different maturities
  - Interaction b/w INF-EXP at different maturities

- N-S Model: Very Convenient

Example: Japan's YC Analysis

- Effects of Policy Commitment on the Shape of a YC Over Time → **Policy duration effect**

- Two Episodes in Japan:
  - Zero Interest Rate Policy (ZIRP, from Feb 1999 to Aug 2000): Commit to zero rate until deflationary concerns are dispelled

  - Quantitative Easing Policy (QEP, from Mar 2001 to Mar 2006):Commit to CAB targeting until CPI inflation becomes stably zero or above
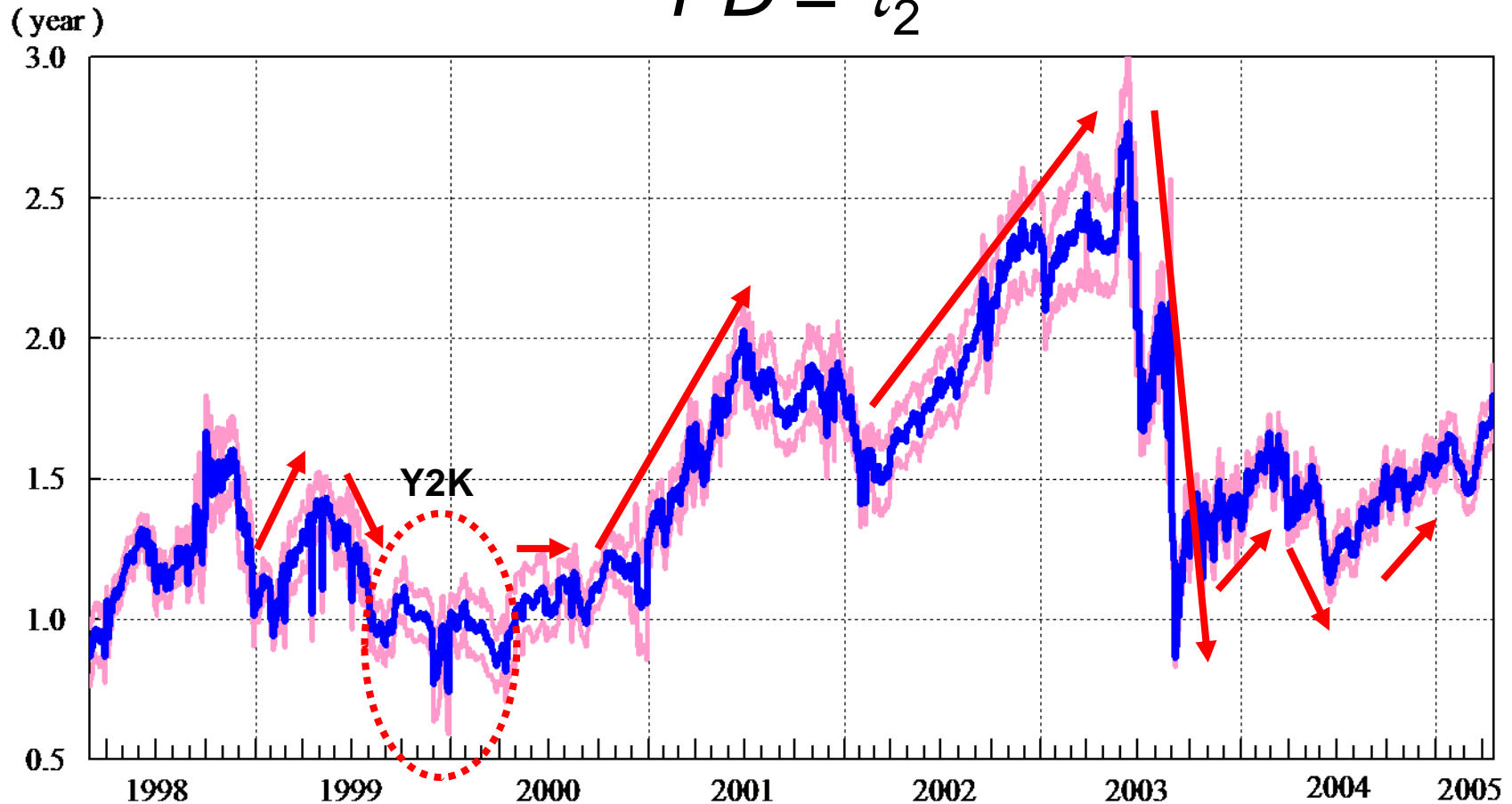
Example

Indicators for policy duration effects
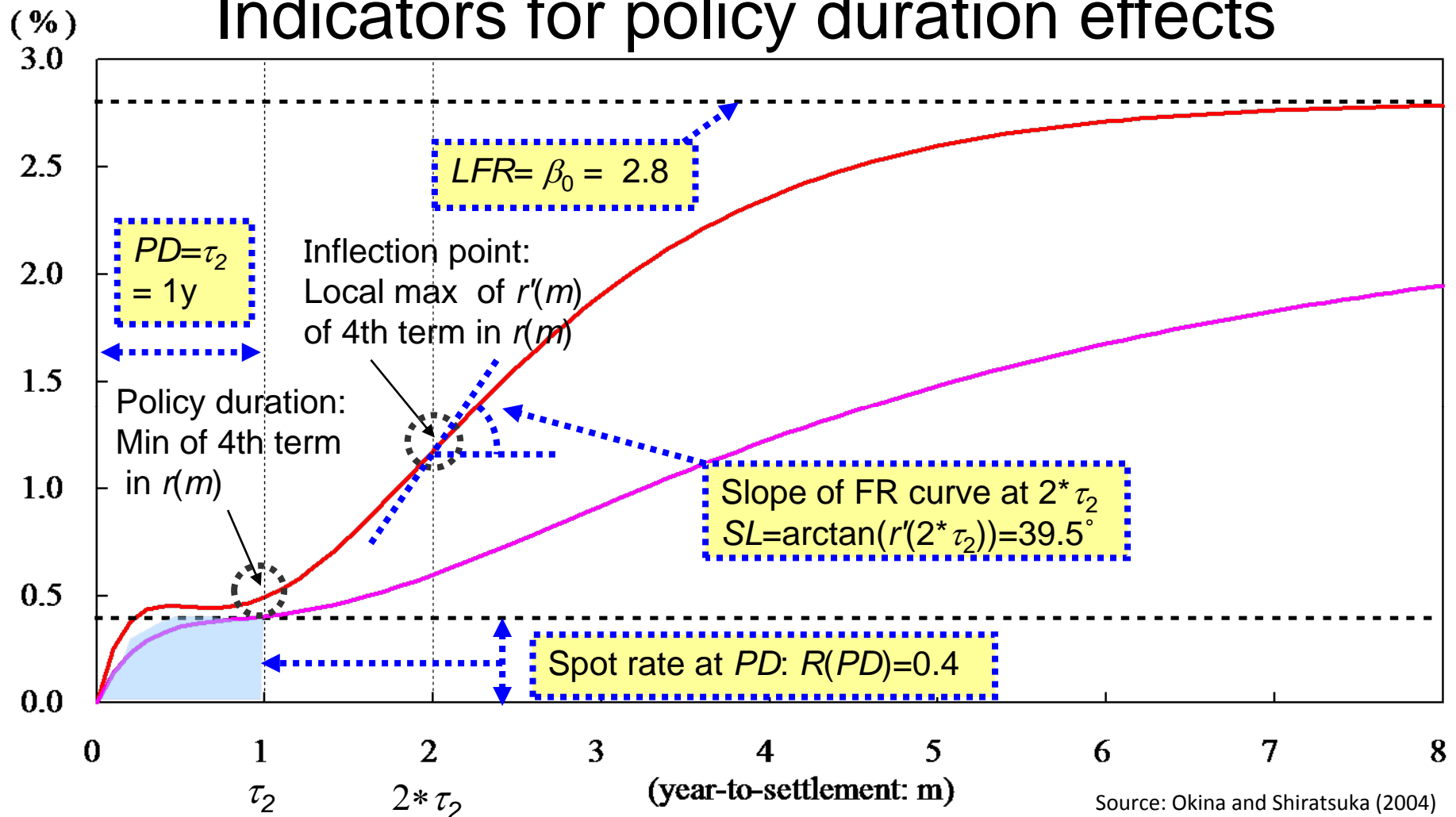
Source: Okina and Shiratsuka (2004)
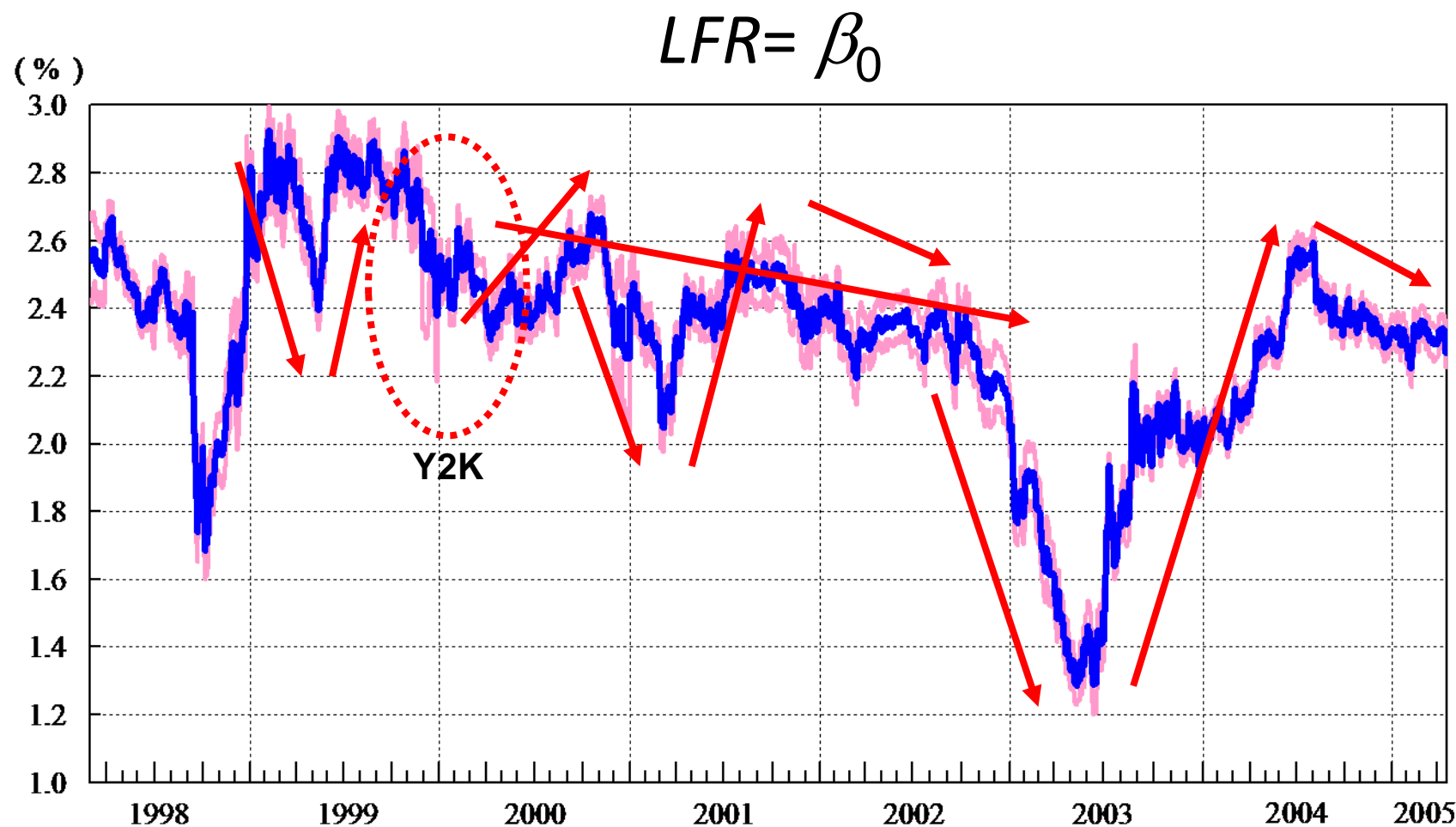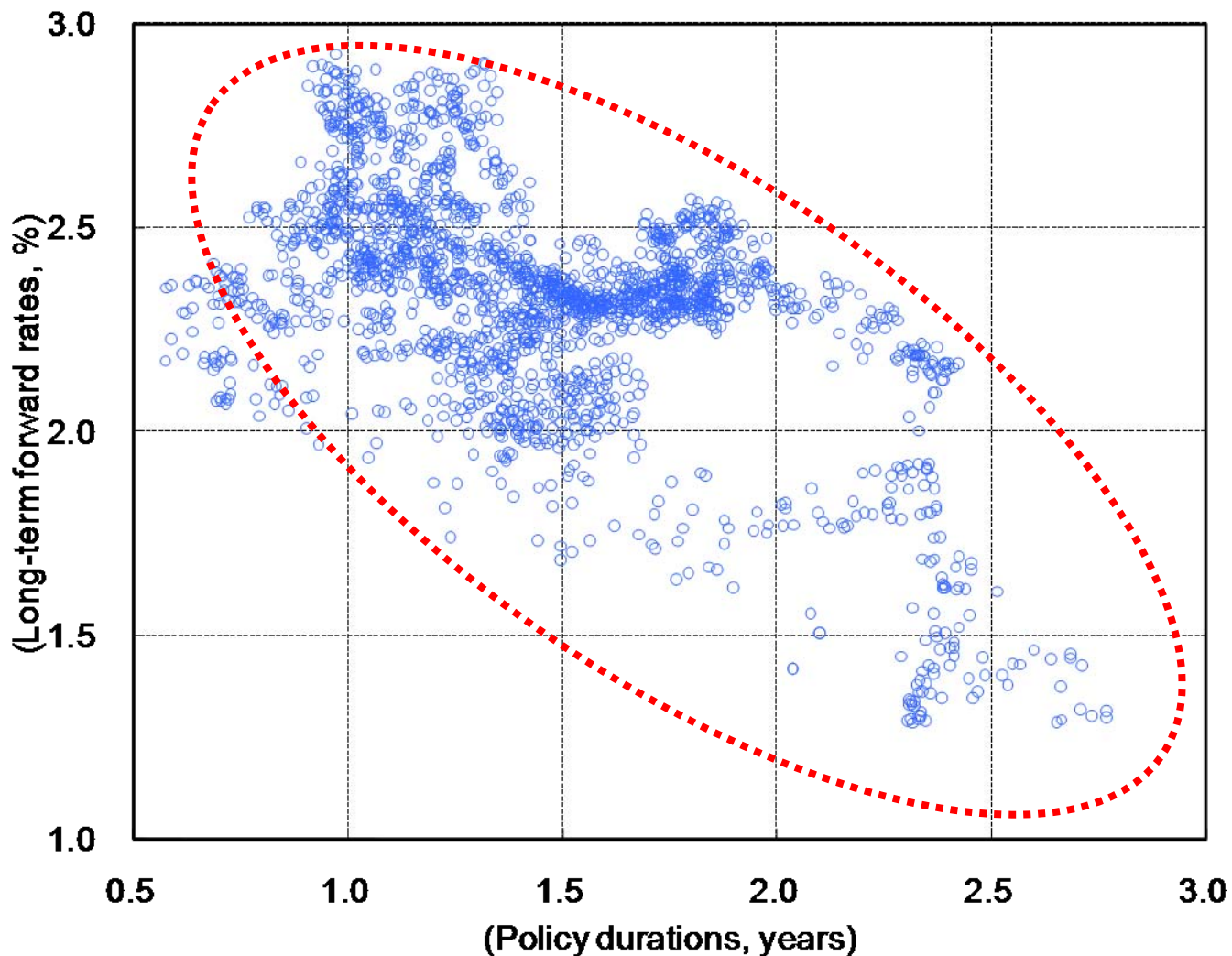
Example (cont'd):

$$PD = \tau_2$$

Source: Okina and Shiratsuka (2004)

Example (cont'd):

$$LFR = \beta_0$$

Example (cont'd):

Conclusion

- Tackled An Important Question for CB Policymakers:

  - Did aggressive unconventional monetary policy affect public expectations on long-term INF-EXP?

- Nice Trial by Using High Frequency Mkt Data, But Still Inconclusive

  - Alternative empirical strategy?

  - Designed for an analysis using data during a crisis?