The twin objectives and instruments of the modern central bank:

The pursuit of price stability and financial stability through interest rate policy and liquidity management

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Subject of the lecture

- Interest rate policy and liquidity management by the Central Bank
- What is the financial stability role of the central bank?
- Should the central bank act as lender of last resort and/or as market maker of last resort?
- It the central bank is either the LoLR or the MMLR, how does this affect the practice and institutional implementation of interest rate policy?

Subject of lecture:

- Part of a wider class of 'mechanism design problems', approached not just from an efficiency but also from a political economy perspective.
- Robust assignment of policy objectives and instruments to institutions
  - Performance in terms of objectives (output legitimacy)
  - Political acceptability of the assignment (input and process legitimacy)

Objectives

1. Macroeconomic stability
   a) Sustainable price stability
   b) Sustainable full employment /zero output gap
2. Financial stability
   a) Well-functioning infrastructure of payment, clearing and settlement systems at retail and wholesale levels ('plumbing')
   b) No asset bubbles in key financial markets

Objectives continued

c) Orderly conditions in key financial markets and institutions
   i. Market liquidity (for assets)
   ii. Funding liquidity (for institutions)

Institutions

- Central bank/monetary authority
- Regulator/supervisor of financial markets and institutions
- Treasury/ministry of finance

Instruments

1. Monetary policy instruments
   a) Short nominal risk-free interest rate or nominal exchange rate
   b) Liquidity policy instruments
      i. Discount window operations for institutions facing funding liquidity problems
      ii. OMOs targeted at assets suffering market illiquidity
         - Outright purchases or sales
         - Repos & reverse repos (collateralised loans)

For both i. and ii. the following are key:

1. Maturity of loans/assets
2. Eligible securities
3. Eligible counterparties

Instruments continued

2. Fiscal policy instruments
   - Public spending
   - Taxes
   - Financing using non-monetary instruments
3. Regulation
   - Capital adequacy
   - Deposit insurance
   - Liquidity requirements
   - Limits on leverage

Instruments continued

- Margin requirements
- Ceilings to loan-to-value ratios
- Restrictions on short sales
- Reporting obligations
- Governance requirements
- Constraints on remuneration

- When everything is interdependent, why assign (primary responsibility for) specific objectives and instruments to specific institutions?
  - Decentralisation may make technical/efficiency sense
    - Local (private) information
    - Commitment mechanism (Lohman's 'audience theory')
    - Decentralisation for political economy reasons (checks & balances; prevention of concentration of power)
    - Mundell: instrument should have 'comparative advantage' vis-à-vis objective it is assigned to.

Liquidity

- Liquidity central to financial stability
- Monetary authority, by setting short nominal risk free rate, is inevitably deeply involved in managing market liquidity
- DSGE models with complete frictionless markets cannot address either issues of insolvency or of illiquidity

Market Liquidity & Funding Liquidity

- Market liquidity measures the ease with which an asset can be traded. It is a property of assets.
- Funding liquidity measures the ease with which an agent/institution can obtain outside finance. It is a property of agents and institutions.

- ML & FL are not independent
  - Traders and other market makers provide market liquidity.
  - The funding liquidity of traders and other market makers depends on market liquidity (ability to sell assets; ability to borrow secured and unsecured & issue equity).

ML in somewhat more detail:

- Multidimensional
- Matter of degree
- Degree of ML of an asset is higher
  (1) the faster a given quantity of it can be sold, at a price close to its fair or fundamental value;
  (2) the lower the transaction costs;
  (3) the smaller the effect of the speed of the sale on the price of the asset

(A market is any matching device for buyers and sellers that abide by the principle of voluntary exchange)

Liquidity and solvency

- Goodhart: without default risk there would be no funding liquidity risk (not clear about market liquidity).
- Reasons for illiquidity
  - Fear of default
  - Incomplete contracts and incomplete or costly contract enforcement
    - Legal restrictions on the sale of some assets
    - Asymmetric/private information

Liquidity and the central bank

- Central bank cash is perfectly, unconditionally & intrinsically liquid (being legal tender helps). Ultimately this is an implication of the coercive power of the state (the unique repository of the legitimate use of force and coercion).
- No private security has unconditional liquidity. Always relies on trust & confidence.

Liquidity as a public good

- Liquidity is subject to an intertemporal network externality: the likelihood of my asset being liquid today (of someone else being willing to buy it promptly and at predictable today) depends on the would-be buyers' perceptions of the likelihood they will be able to sell the asset again tomorrow, should the need arise, promptly and at a predictable price that does not involve a large loss.

- There is strategic complementarity between would-be sellers & buyers today and tomorrow in asset markets (supermodularity)
- Multiple equilibria with different levels of liquidity are possible
- Private insurance against illiquidity is possible but inefficient. Banks should borrow short & lend long, borrow liquid (under normal circumstances) & lend illiquid.
- Role for central bank as provider of funding liquidity (LoLR) and of market liquidity (MMLR)

Example of funding liquidity crisis

- Dybvig-Diamond (1983) classical bank run model. Traditional banks. Liquid liabilities, withdrawable on demand & subject to sequential service constraint
  - Solutions
    - LoLR: lend freely, at a penalty rate, against collateral that would be good in normal times
    - Deposit insurance
    - Suspension of payments (standstill)

Example of market illiquidity

- Liquidity crunch faced by shadow banking sector in 2007 (short term liabilities, liquid during normal times; long term often illiquid assets); Northern Rock. Wholesale markets, e.g. ABCP markets dried up; interbank market very disorderly. Note: there *was* an increase in perceived default risk
  - Solutions
    - pray & wait
    - Central bank acts as MMLR; accepts illiquid collateral at a punitive price & subject to appropriate haircut.

- Moral hazard (bad incentives) possible but not unavoidable with both LoLR & MMLR
  - Value collateral aggressively (reverse Dutch auction) for both LoLR & MMLR.
  - If issue goes beyond liquidity & a systemically important institution has to be rescued by the tax payer make sure that
    - Shareholders get nothing
    - Management gets fired without a golden parachute

Ineffective policies for dealing with market /funding liquidity crisis

- Cuts in the official policy rate: inappropriate (Fed is prone to this)
- Cuts in the spread between the discount rate and the official policy rate: perverse (Fed did this in August).

Effective policies for dealing with market/funding liquidity crisis

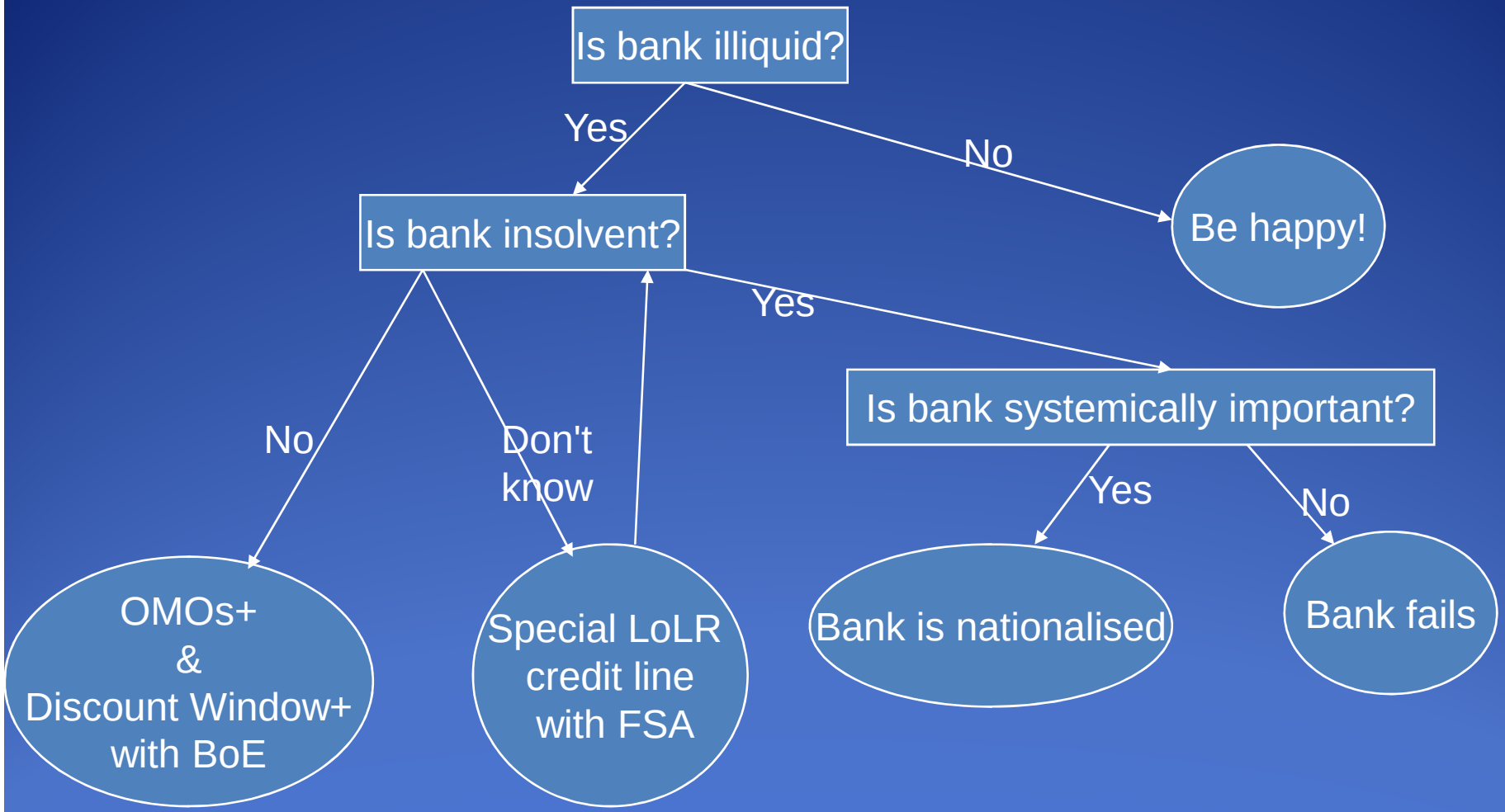
- Liquidity policy
  - Enhance set of eligible collateral in repos (and at the discount window): effective
  - Extend the maturity of the loans at the discount window: effective
  - Increase scale of repos at longer maturities
  - Enhance set of eligible counterparties in repos and at discount window

Institutionally unbundling LoLR & MMLR

- Important because operational independence of CB requires minimalist monetary authority. LoLR function is too 'political'.
- Assume deposit insurance regime is OK
- Assume insolvency regime for banks is OK

How to handle illiquid banks

when there is effective deposit insurance



Note: discount window ≠ LoLR ; FSA as LoLR needs uncapped, open-ended credit line with BoE, guaranteed by Treasury

The Tripartite Arrangement with a minimalist central bank

	Financial Stability			Macroeconomic Stability	
	Solvency	Liquidity		Nominal anchor	Real economy
		Funding Liquidity (LoLR)	Market Liquidity (MMLR)		
Regulator	X	X			
Central Bank		X (discount window only)	X	X	
Treasury	X	X (solvency only)			X

X stands for ‘responsibility for’, not ‘influence on’

Tripartite Arrangement with c central bank with responsibility for LoLR

	Financial Stability			Macroeconomic Stability	
	Solvency	Liquidity		Nominal anchor	Real economy
		Funding Liquidity (LoLR)	Market Liquidity (MMLR)		
Regulator	X				
Central Bank		X (discount window & LoLR)	X	X	
Treasury	X	X (solvency only)			X

X stands for ‘responsibility for’, not ‘influence on’

Institutionally unbundling monetary policy & management of funding liquidity

- Essential when there is an operationally independent Monetary Policy Committee/Council charged with setting interest rates to pursue price stability
- *"The Bank's objective is for overnight market interest rates to be in line with the official Bank Rate so that there is a flat money market yield curve , consistent with the official Bank Rate, out to the next MPC decision date, with very limited volatility in market interest rates out to that horizon. But the Bank is not seeking to control credit risk premia or the cost of collateral in the market. Unsecured overnight market interest rates may, therefore, be somewhat higher than the official Bank Rate. Similarly, secured market rates may differ from the official Bank Rate as they are based on bundles of collateral different from the population of securities eligible in the Bank's OMOs and standing lending facility." (BoE Redbook (2007))*

Existing methods of Fed, ECB and BoE for targeting overnight interbank rate are bizarre

- Variable rate tenders, where the amount offered by CB is expected to meet the overnight target. Corridor (at the limits set by the discount & deposit facilities) prevents excessive divergence. Banks are required to meet reserve targets 'on average' over the maintenance period
- Clear example of trying to set both price and quantity
- Obscures task of the rate-setting committees (FOMC, Governing Council, MPC).
- Solution: peg the overnight repo/reverse repo rate. Stand ready continuously to (reverse) repo at the official policy rate (fixed rate auctions)

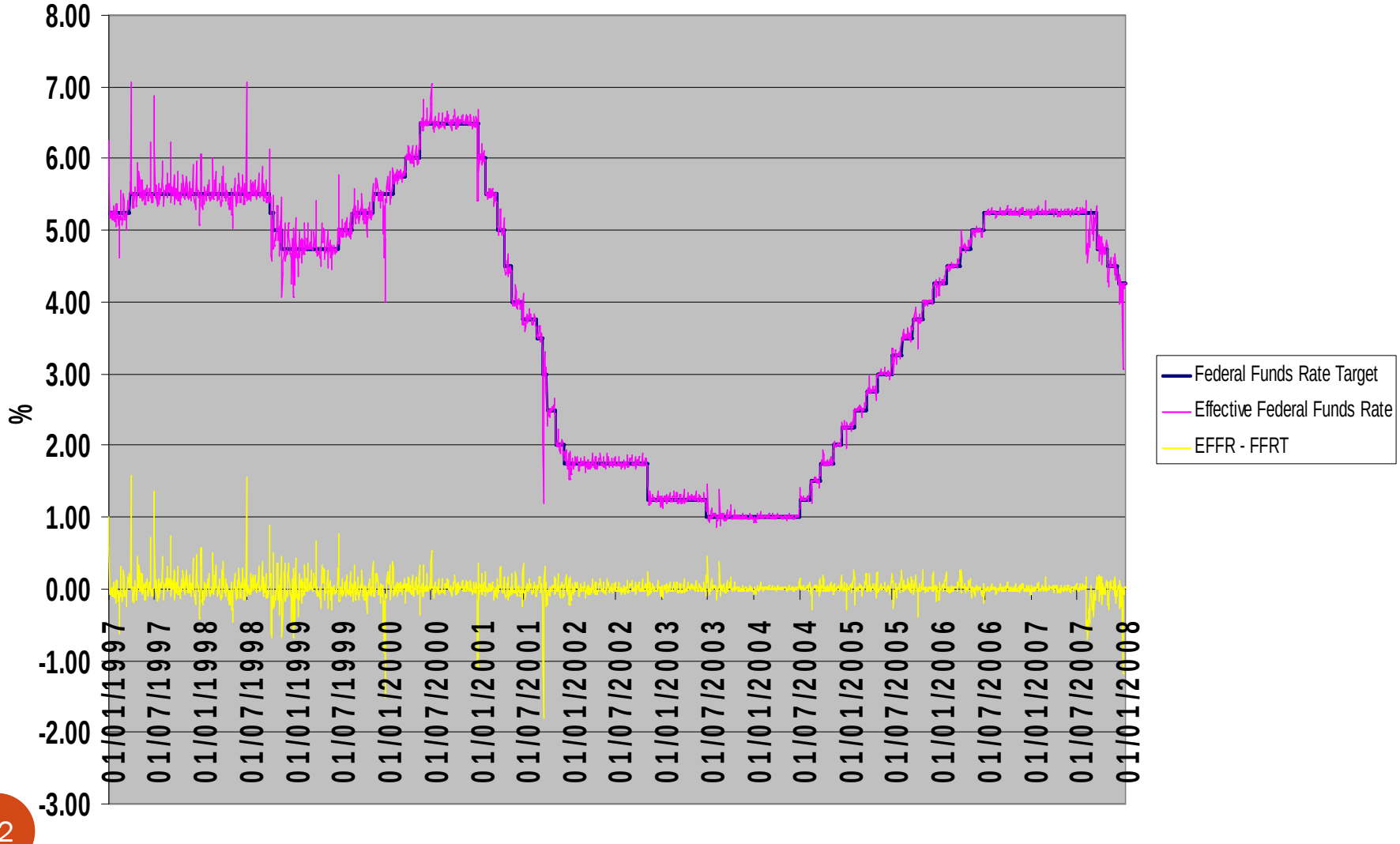
Rules for operationally separating interest rate policy from liquidity management

1. Fix the overnight repo and reverse repo rates at the official policy rate
   A. Do only fixed rate repos/reverse repos
   B. Meet all demand/supply at the policy rate
   C. Be present whenever the markets are open
   D. Do not require banks to hold overnight reserves with CB for liquidity purposes
   E. Effectively narrows the corridor for the overnight repo/reverse repo rate to zero
   F. Overnight interbank rate (unsecured) will be higher than repo rate because of default risk
   G. Could cause overnight interbank market to effectively disappear
   H. If (G) worries you, do limited fixed-rate repo/reverse repo and supplementary variable rate repo/reverse repo with very narrow corridor (just a little wider than the normal private interbank bid-ask spread)

How well did the North Atlantic Three do as regards overnight rates?

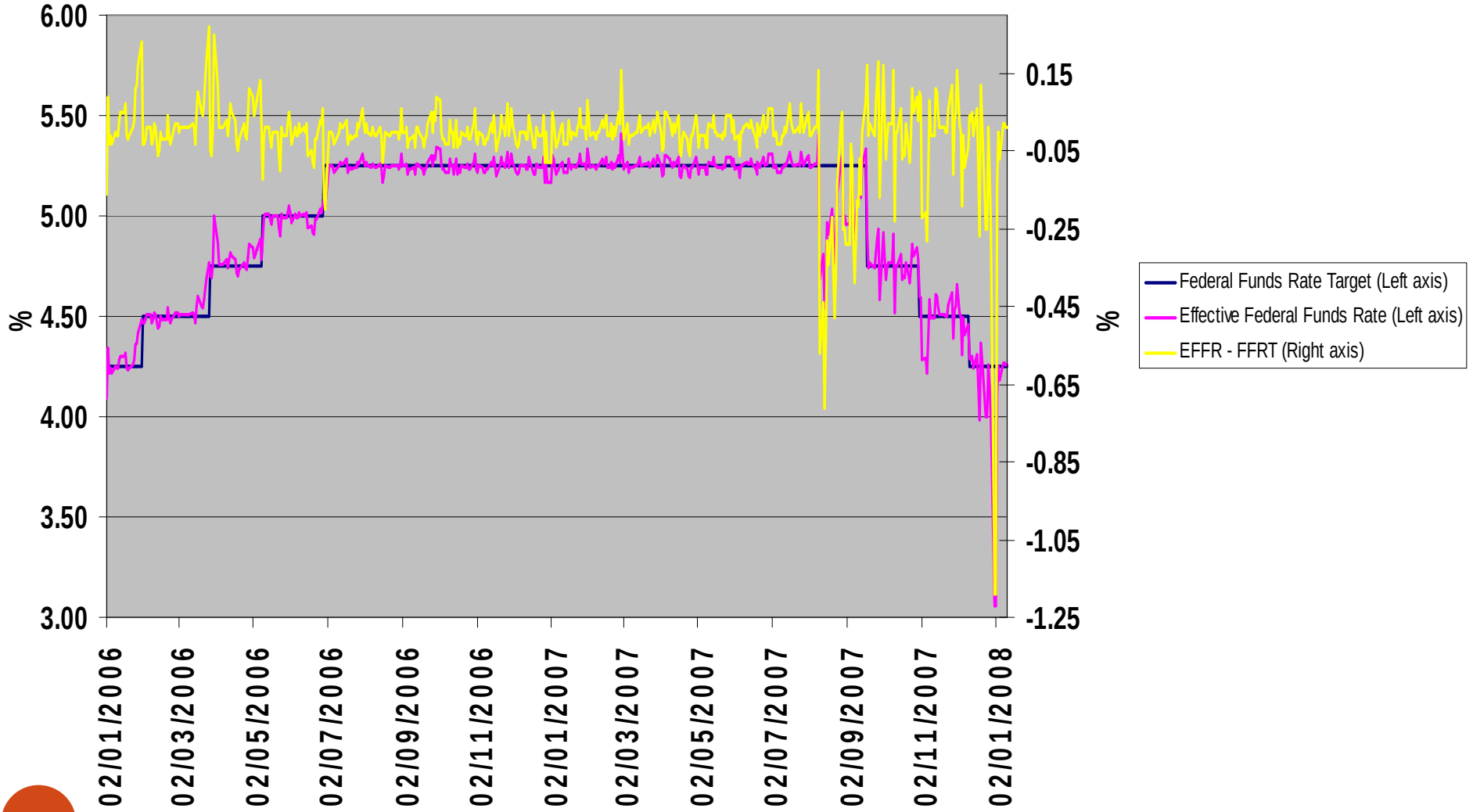
Federal Funds Target Rate and Effective Federal Funds Rate

01/01/1997 - 10/01/2008



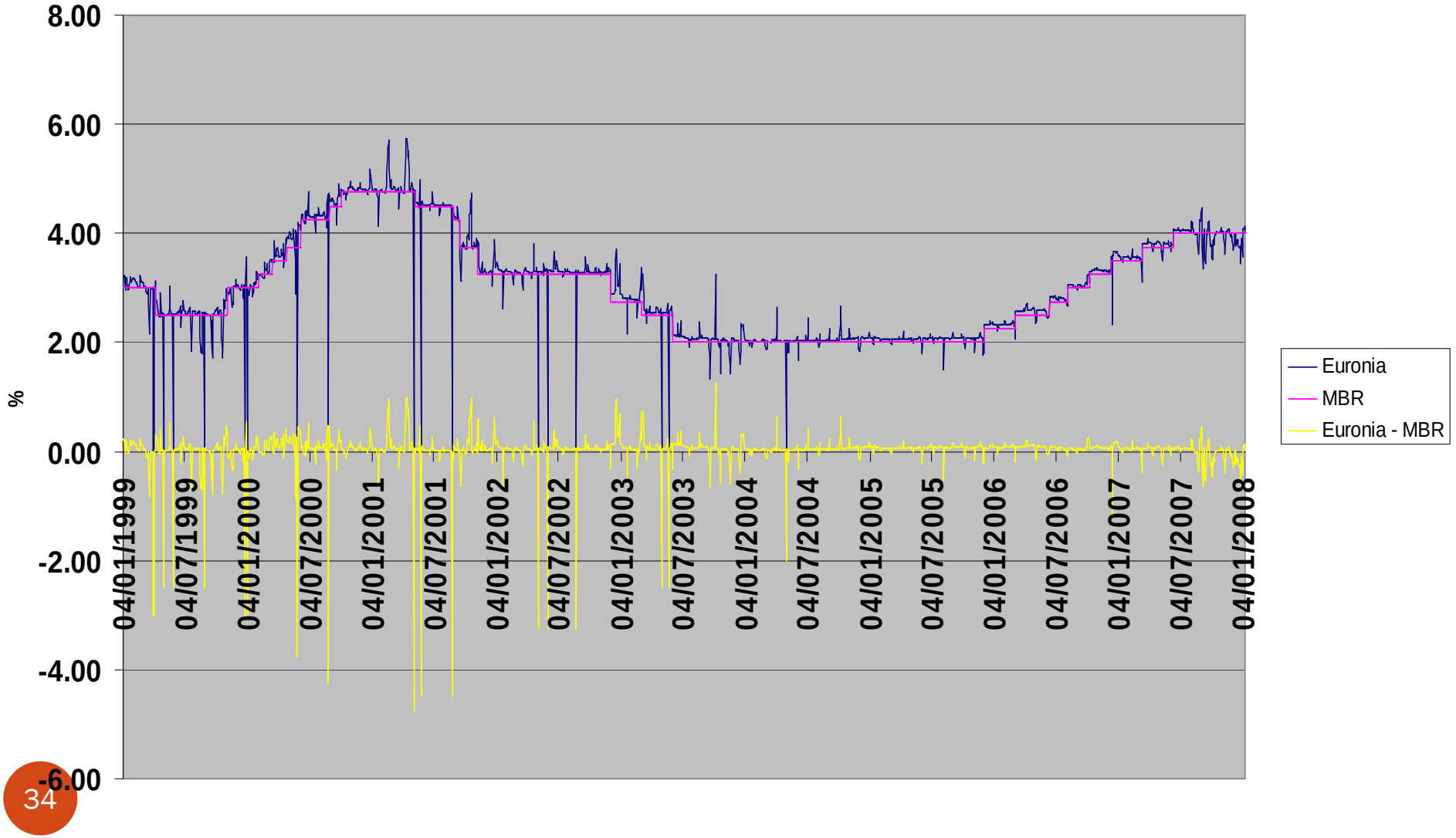
Federal Funds Target Rate and Effective Federal Funds Rate

02/01/2006 - 10/01/2008



Official Policy Rate and Effective Overnight Interbank Rate, Eurosystem

04/01/1999 - 10/01/2008



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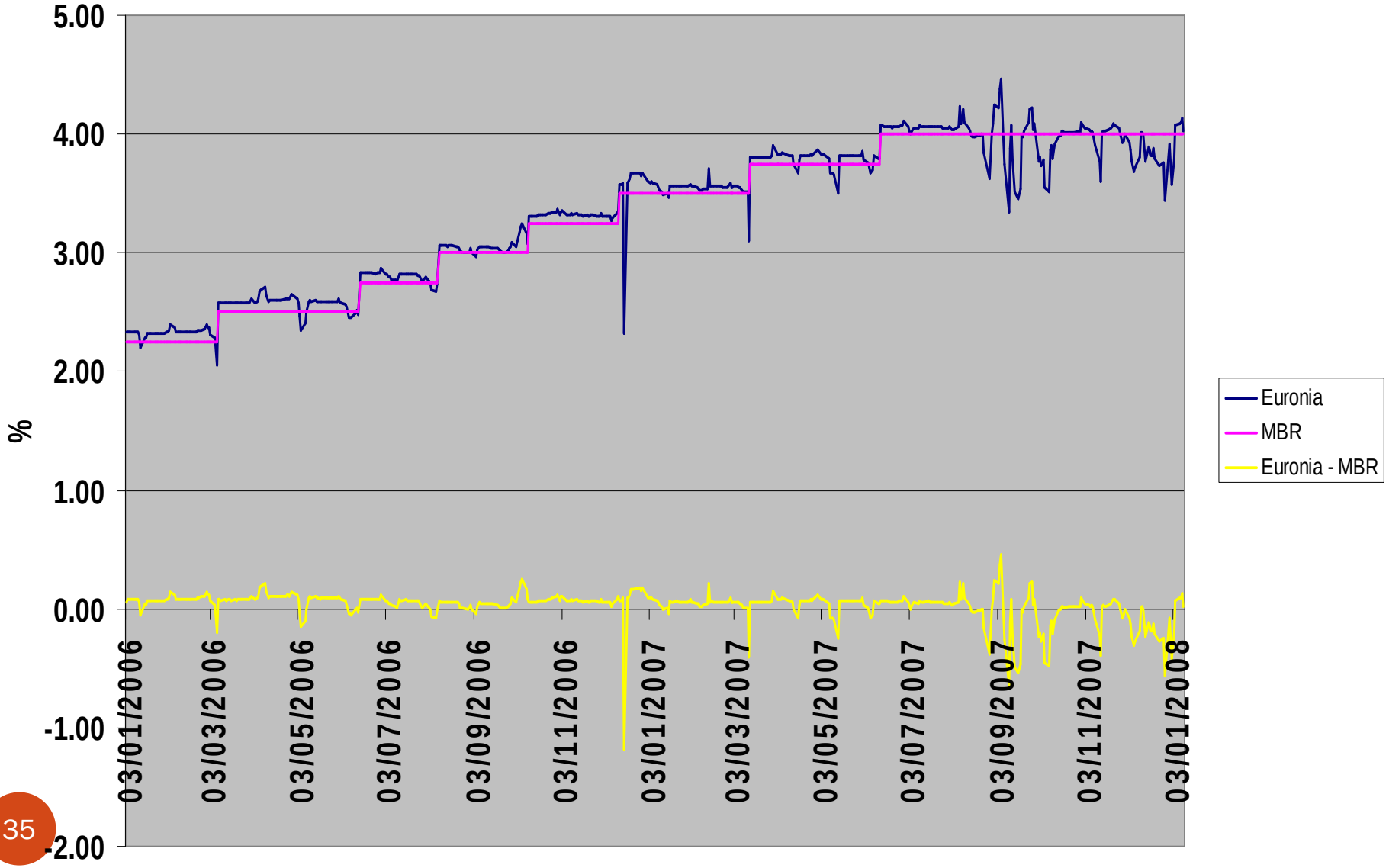
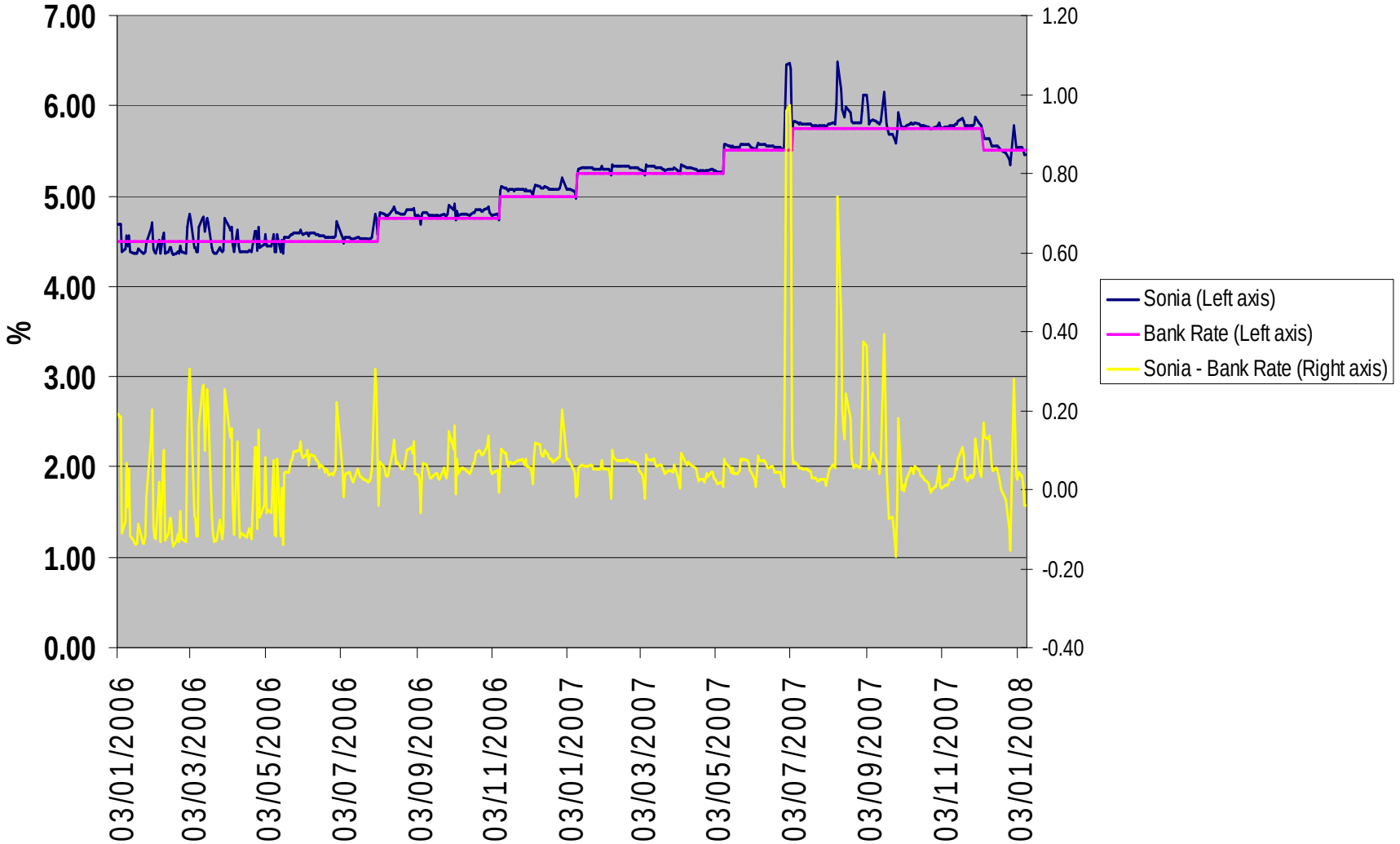
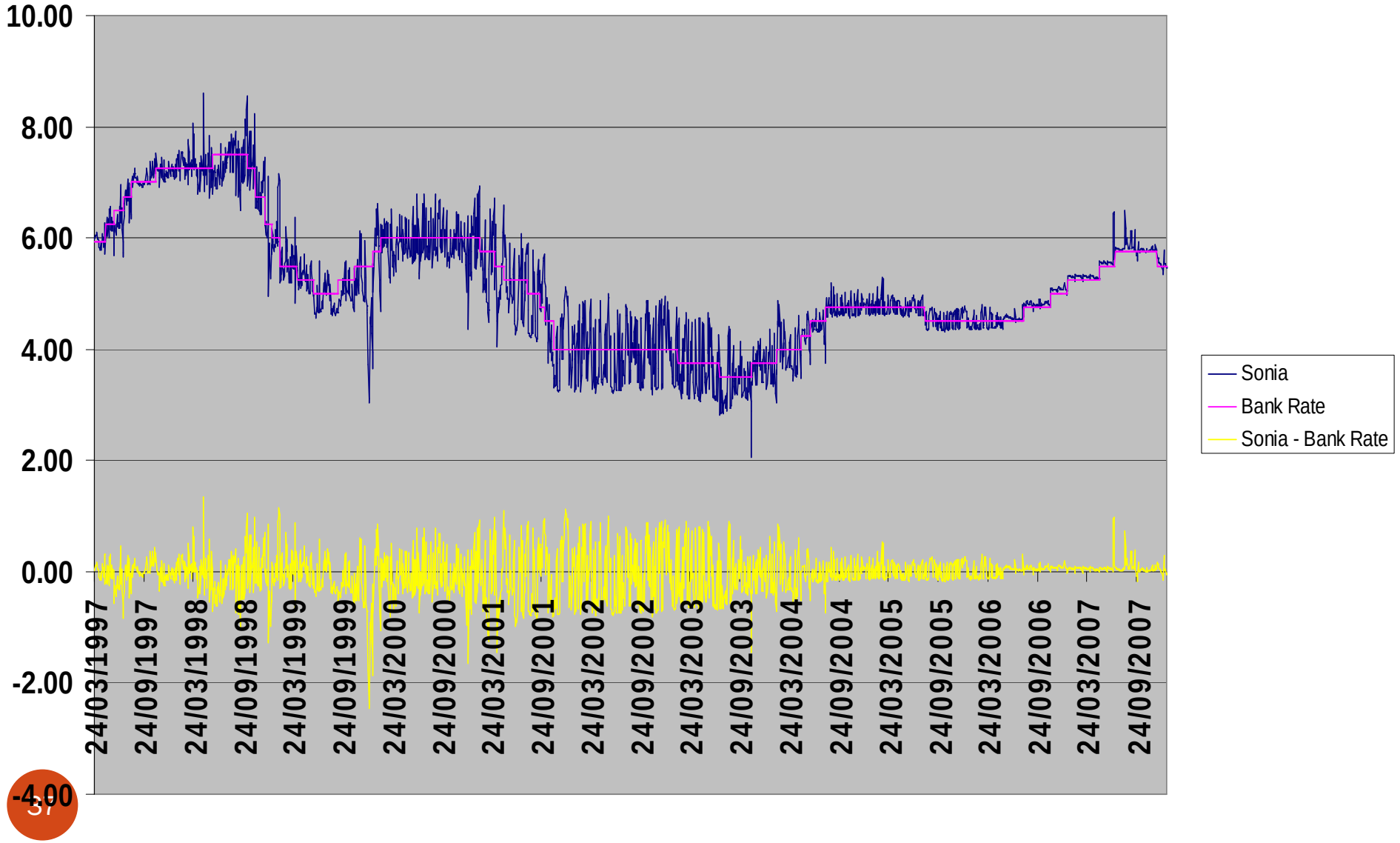


Official Policy Rate and Effective Overnight Interbank Rate
UK 03/01/2006 - 10/01/2008



Official Policy Rate and Effective Overnight Interbank Rate, UK
24/03/1997 - 10/01/2008



Rules for operationally separating interest rate policy from liquidity management

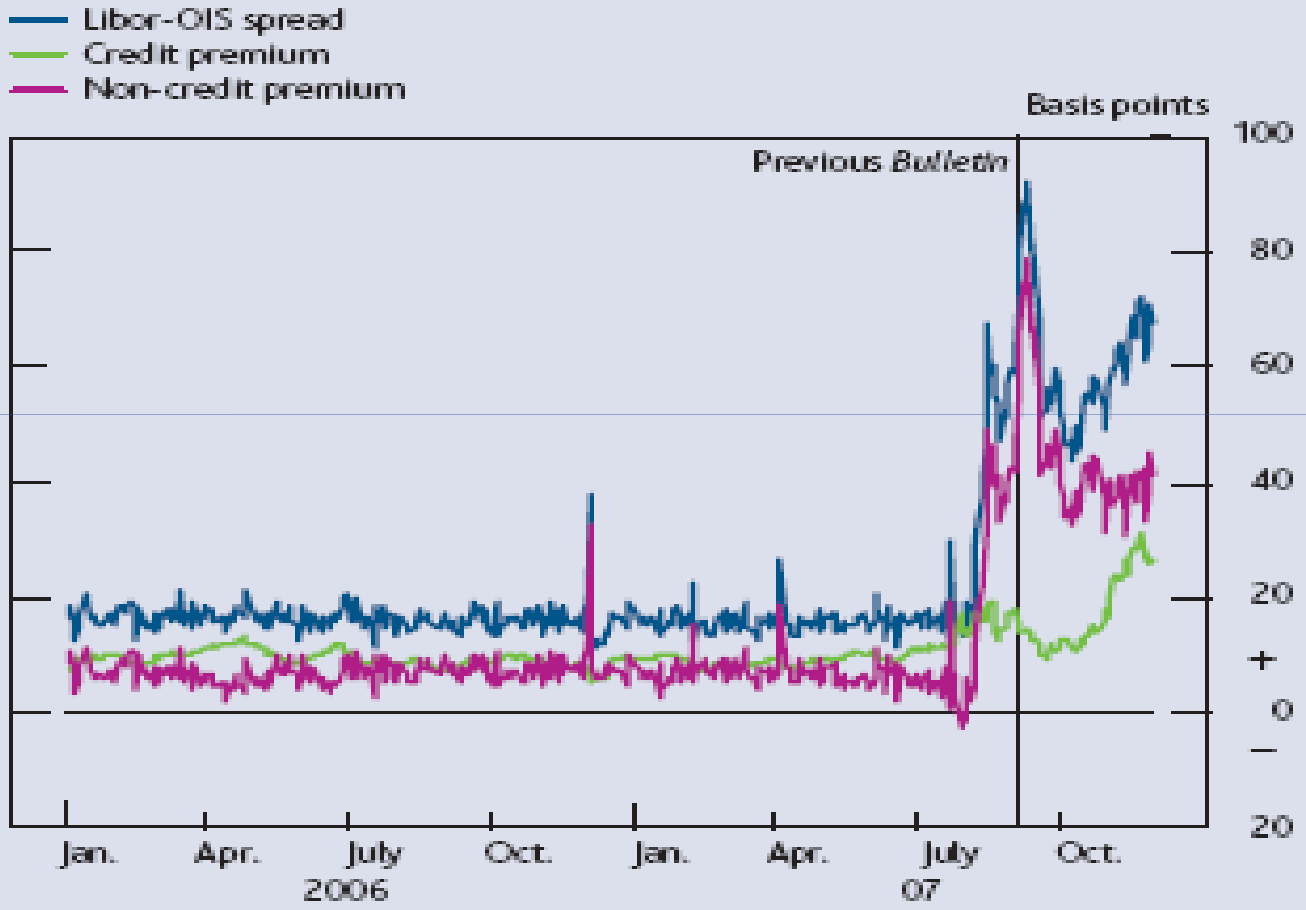
2. For repos at longer maturities, do not try to influence market rates when markets are orderly
3. For repos at longer maturities, try to eliminate the liquidity risk spread when markets are disorderly

How hard is it to decompose, say, spread of 3-month Libor over 3-month OIS rate into liquidity risk premium and default risk premium?

Bank of England decomposition of 3-month Libor-OIS spreads

- Based on credit default swap (CDS) data
- Assumes independence of liquidity risk and credit risk (other assumptions could be made; some assumption has to be made!)

Decomposition of Sterling twelve-month Libor-OIS spread(a)

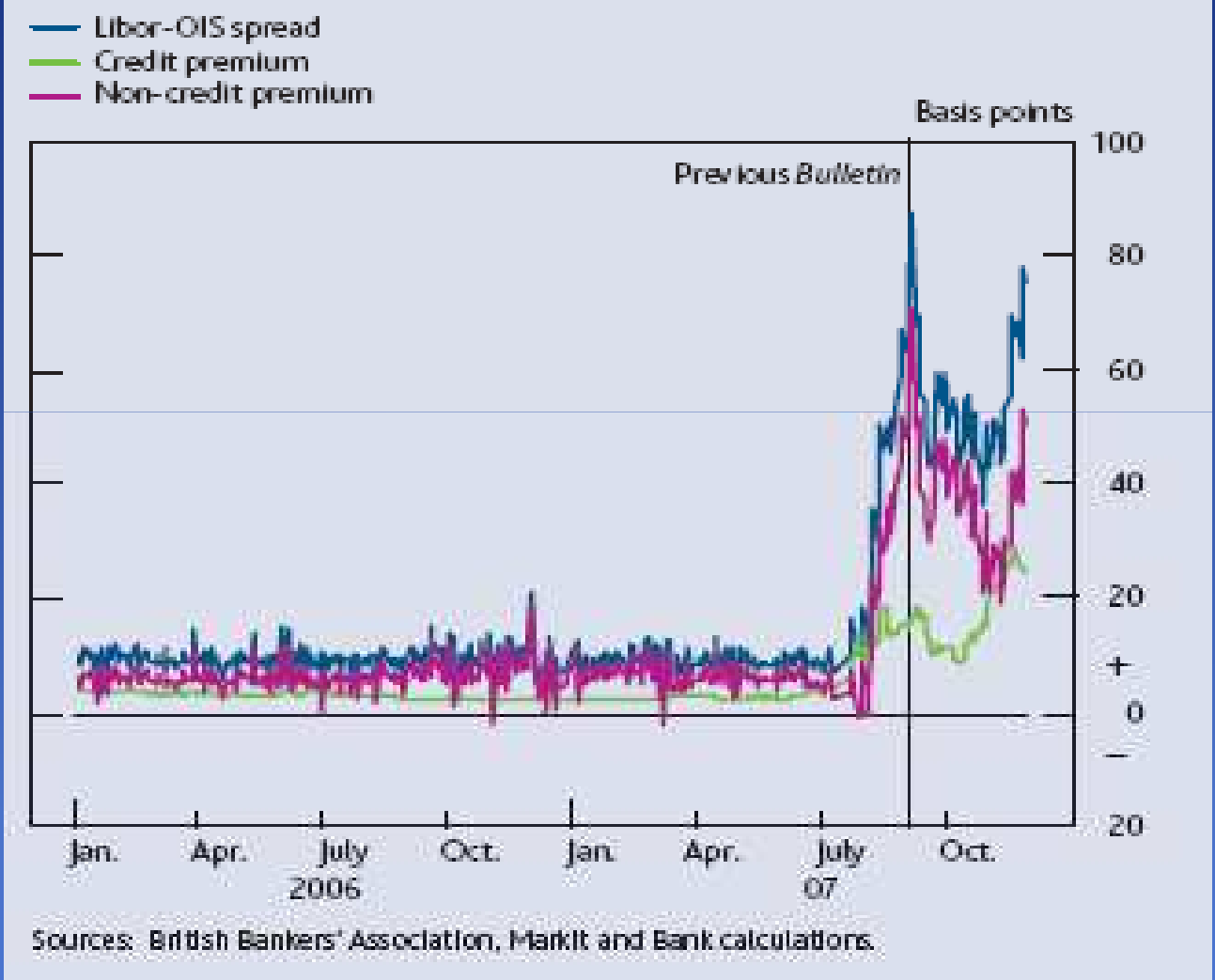


Sources: British Bankers' Association, Markit and Bank calculations.

(a) The decomposition adjusts for the ten-day moving average spread between overnight index swaps and secured rates.

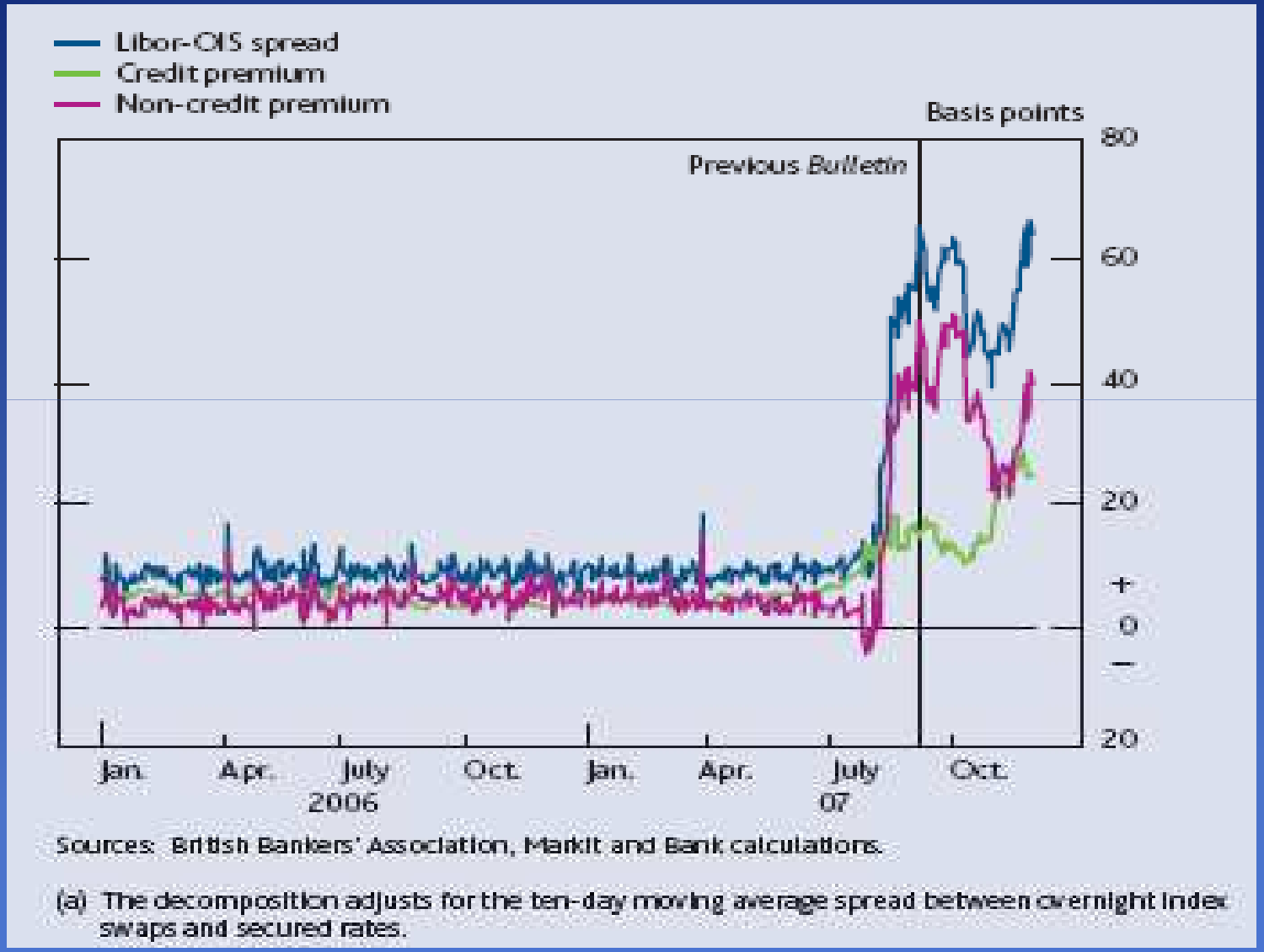
Source: BoE Quarterly Bulletin, 2007Q4

Decomposition of US dollar twelve-month Libor-OIS spread



Source: BoE Quarterly Bulletin, 2007Q4

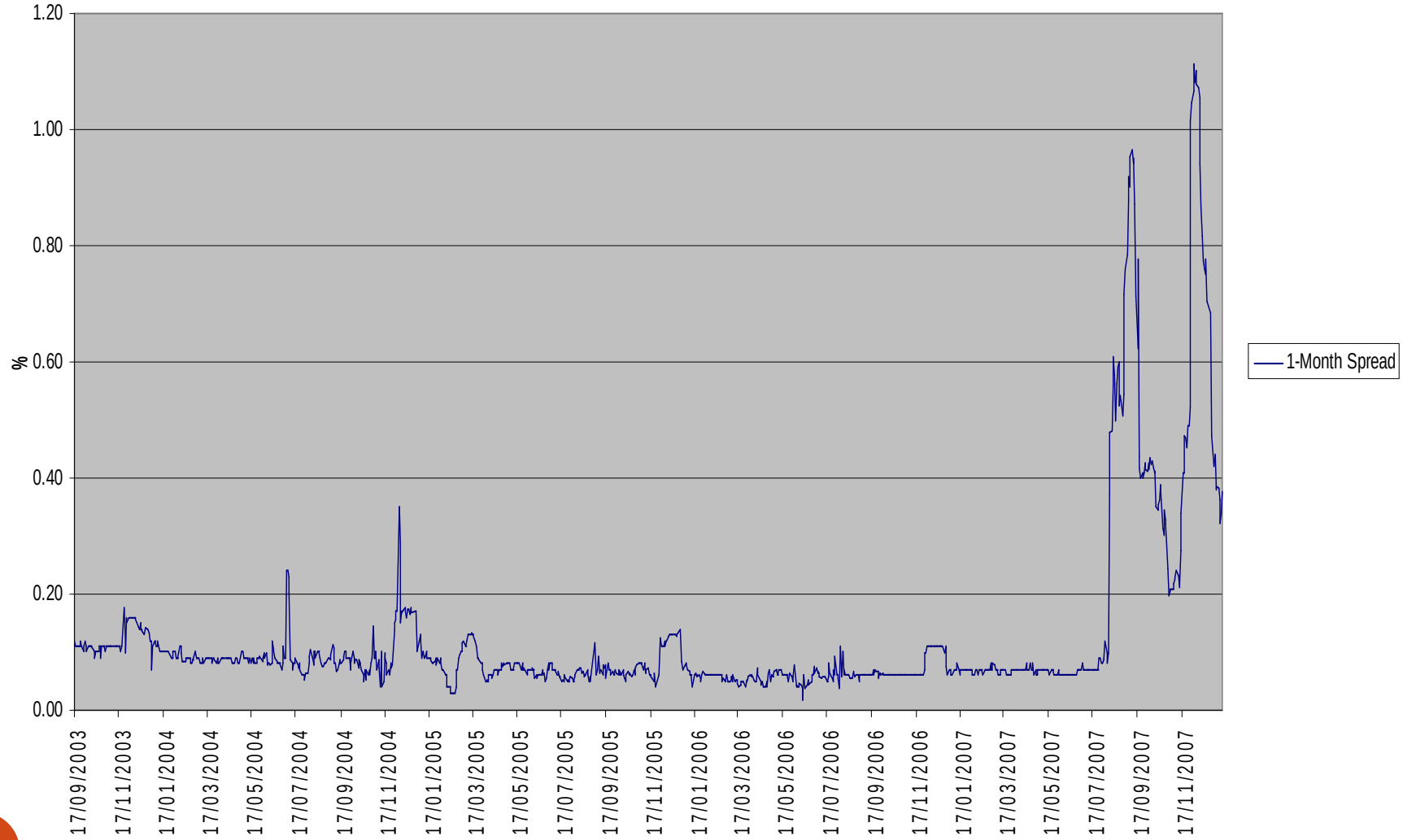
Decomposition of euro twelve-month Libor – OIS spread



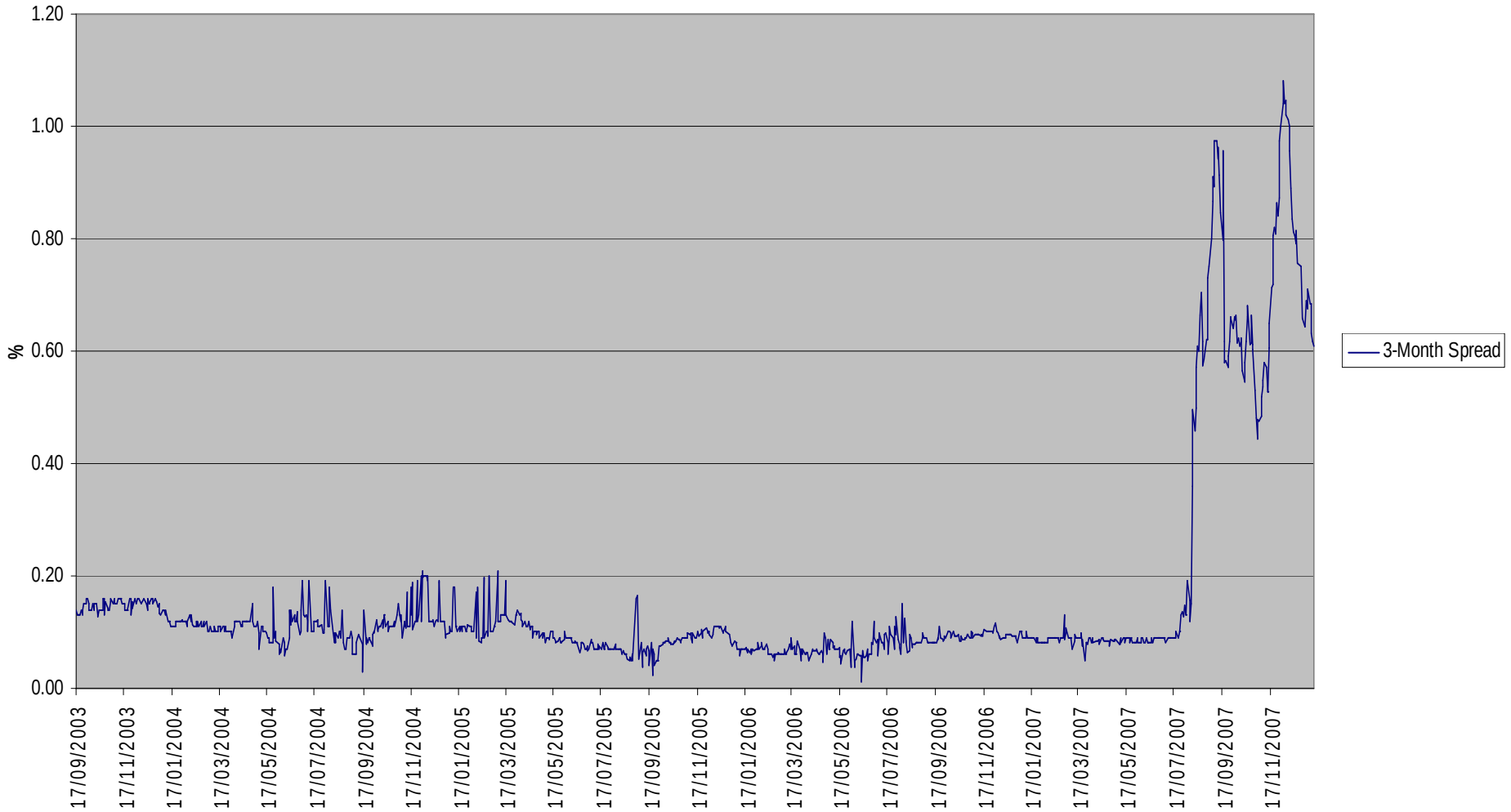
Source: BoE Quarterly Bulletin, 2007Q4

How well did the North Atlantic Three tackle the longer-maturity Libor –OIS spreads during the liquidity crunch?

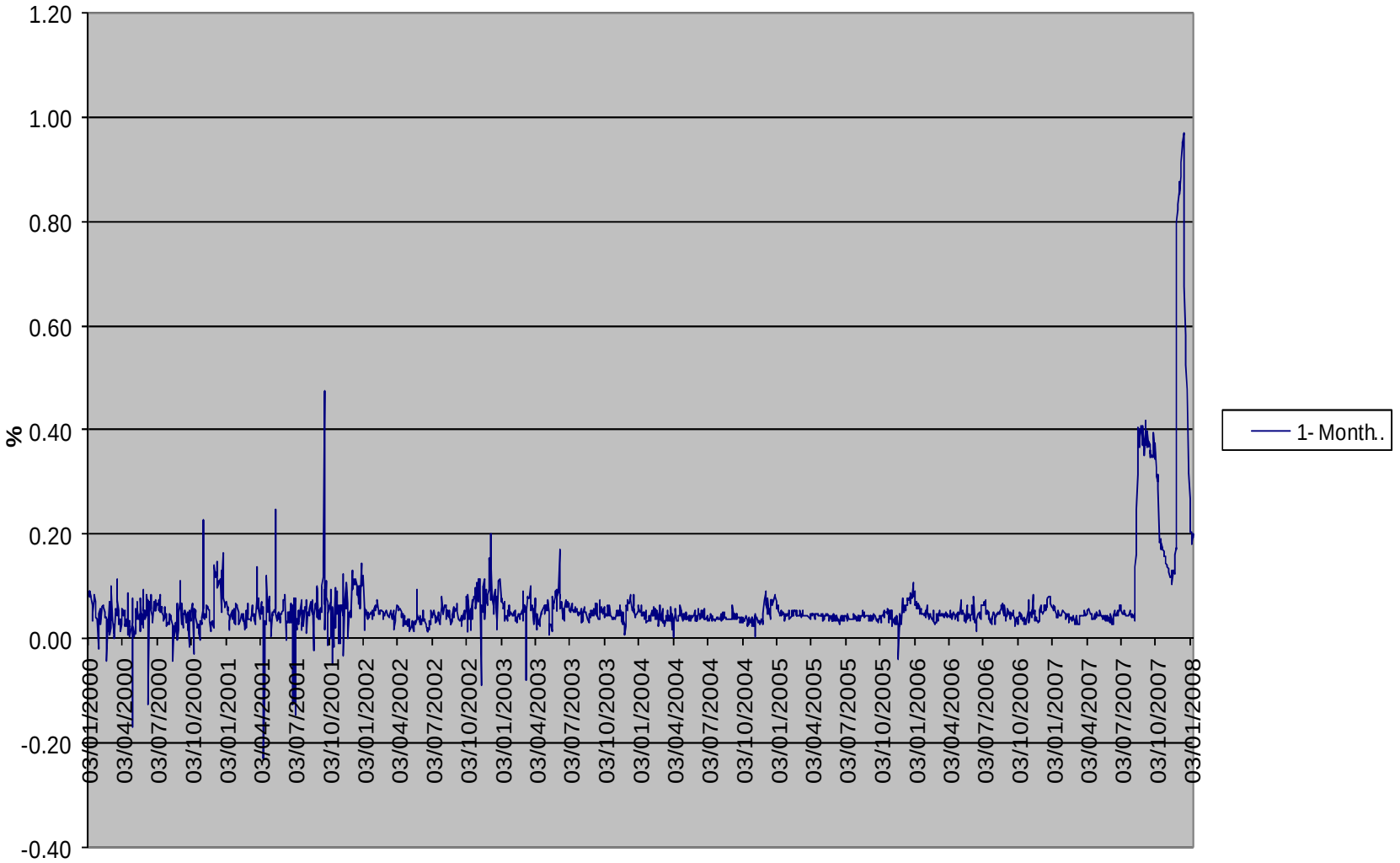
1-Month US$ Libor-OIS Spread
17/09/2003 - 11/01/2008



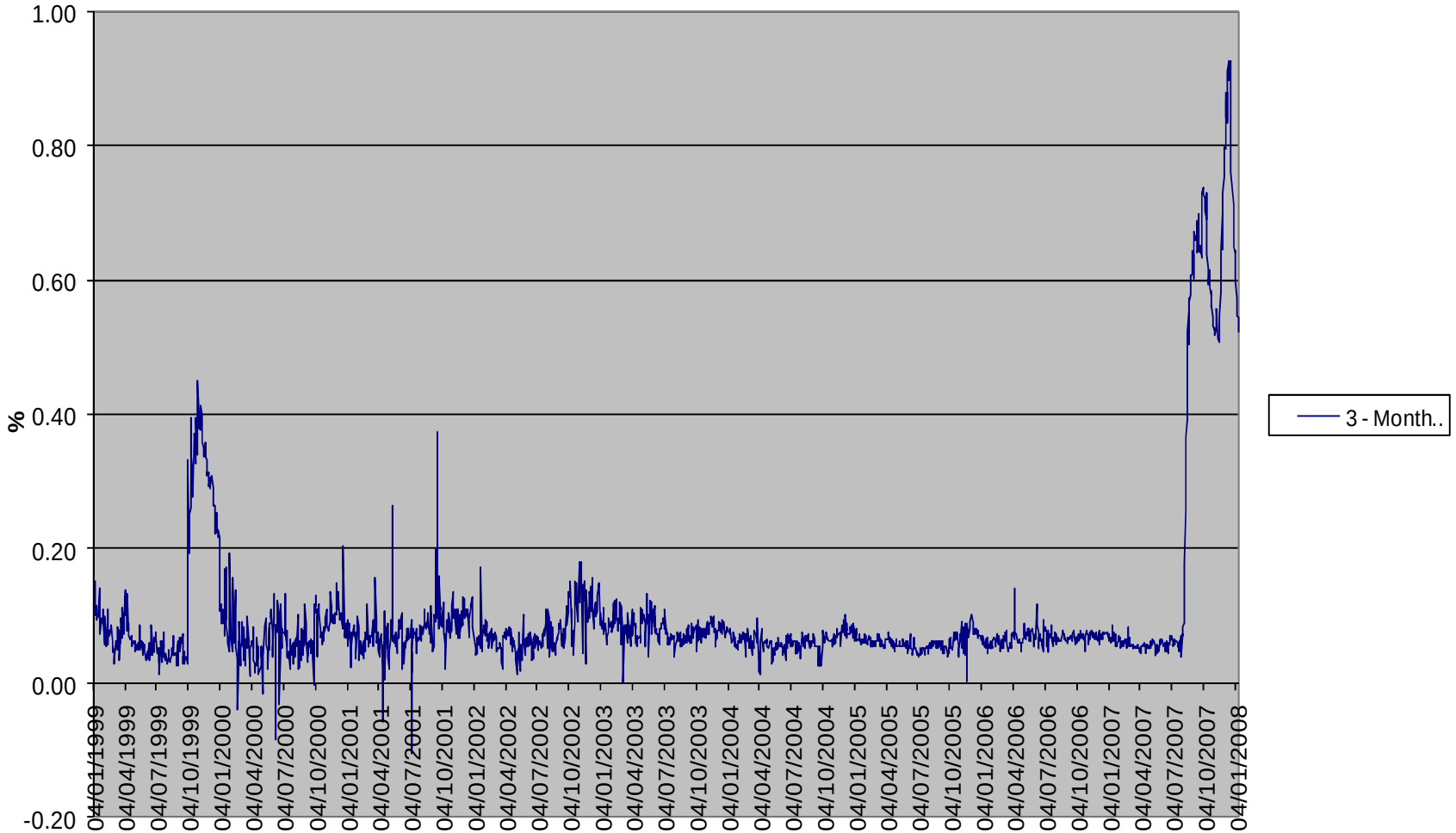
3-Month US$ Libor - OIS Spread
17/09/2003

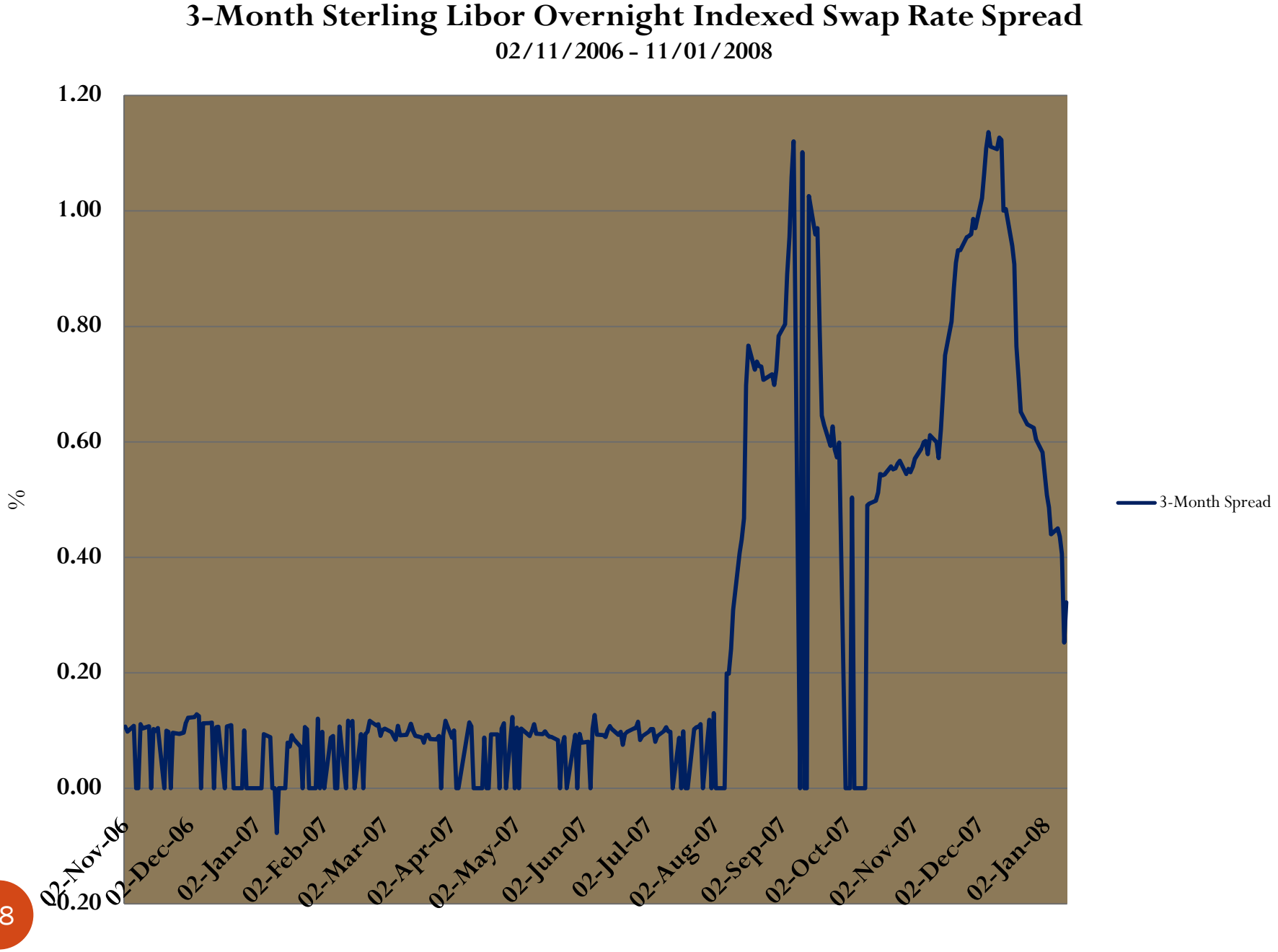


1-Month Euribor Overnight Indexed Rate Swap Spread
03/01/2000 - 11/01/2008



3-Month Euribor Overnight Indexed Rate Swap Spread
04/01/1999 - 11/01/2008




3-Month Sterling Libor Overnight Indexed Swap Rate Spread
02/11/2006 - 11/01/2008
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.20
%
02-Nov-06
02-Dec-06
02-Jan-07
02-Feb-07
02-Mar-07
02-Apr-07
02-May-07
02-Jun-07
02-Jul-07
02-Aug-07
02-Sep-07
02-Oct-07
02-Nov-07
02-Dec-07
02-Jan-08
3-Month Spread

Libor – OIS spreads

- Why did Libor-OIS spreads not come down more for ECB than for BoE or Fed, despite much larger volumes of injections of liquidity at longer maturities?
  - ECB always has larger repo operations (differences in market structure)
  - UK banks used ECB facilities through subsidiaries (Northern Rock could have!)
  - Not only spreads matter; activity in interbank market also important

Conclusion

- Central banks have an inescapable responsibility for managing the public good of market liquidity
- Central banks can be purely passive conduits of funds to a non-Central Bank Regulator/LoLR
- Modern monetary theory and the focus on inflation targeting and central bank operational independence has reduced the focus on and understanding of liquidity issues in all central banks, but especially in the Bank of England. This is a dangerous situation that needs to be rectified.