

The Bank of Japan's Experience with Non-Traditional Monetary Policy

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Despite the Adoption of Non-Traditional Monetary Policy Measures,

- Japan is still in deflation.
- Must mean:
 - Those measures are not quite effective.
 - The BOJ used them in sub-optimal ways.
 - Abnormally large negative shocks.

Table 1 Policy Options near the ZLB
 (usable at positive interest rates as well)

Strategy 1	Forward Guidance	
intended effect	today's medium- and long-term rates will be affected	
Strategy 2	Targeted Asset Purchases	without
	(may include lending against non-traditional assets)	sterilization
intended effect	portfolio rebalancing	QE2
	liquidity premiums in dysfunctional markets will be reduced	QE1
Strategy 3	Quantitative Easing (purchase TBs to raise excess reserves) QE0	
intended effect	inflation expectations may rise?	

ZIRP (Feb/April 1999-Aug. 2000)

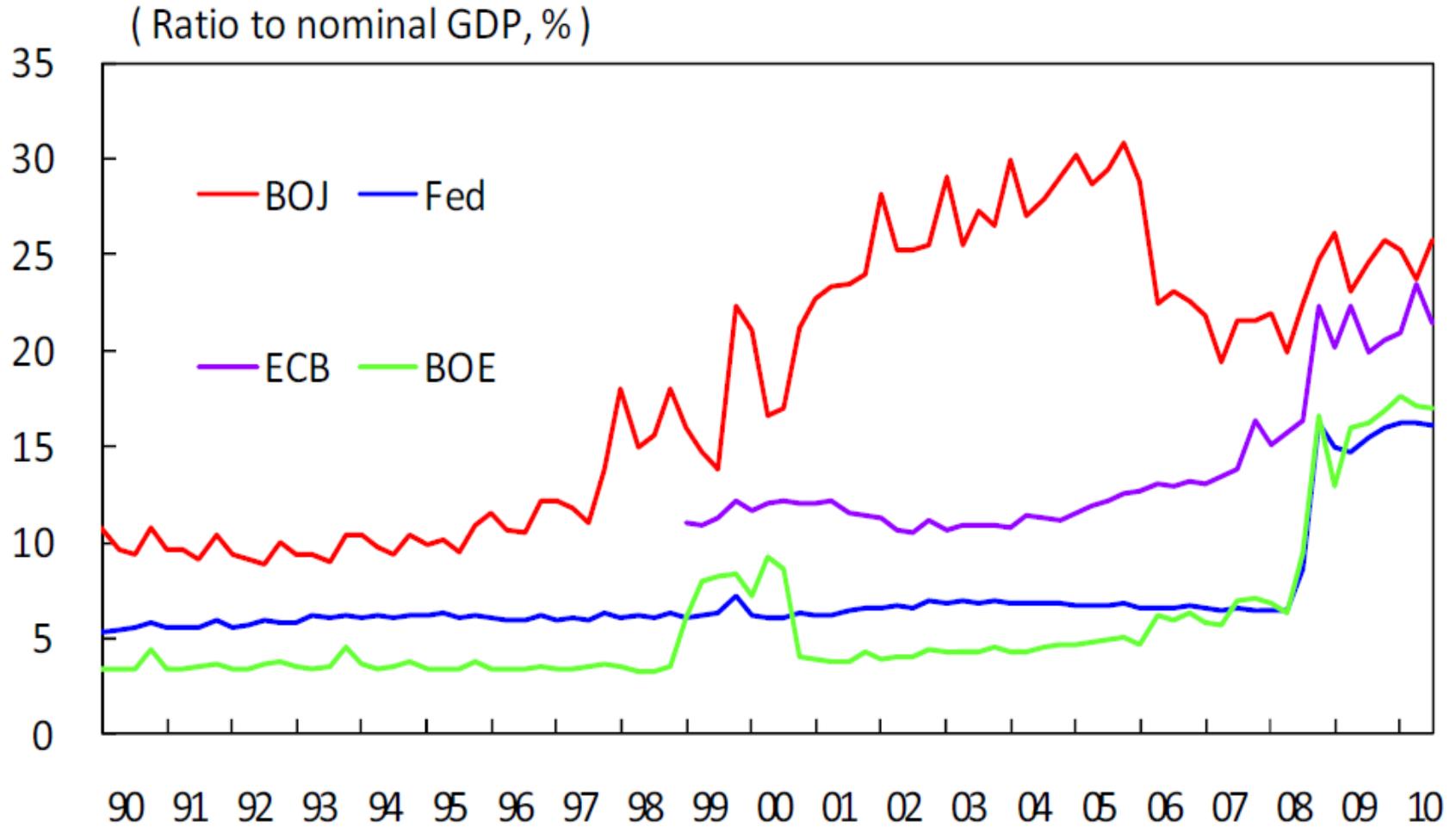
- The O/N rate was between 2 and 3 bps.
- The commitment to maintain the zero rate until deflationary concerns were dispelled (April 13, 1999)—strategy 1.
 - In a sense, the strategy was favored over control of term rates.

QE (March 2001-March 2006)

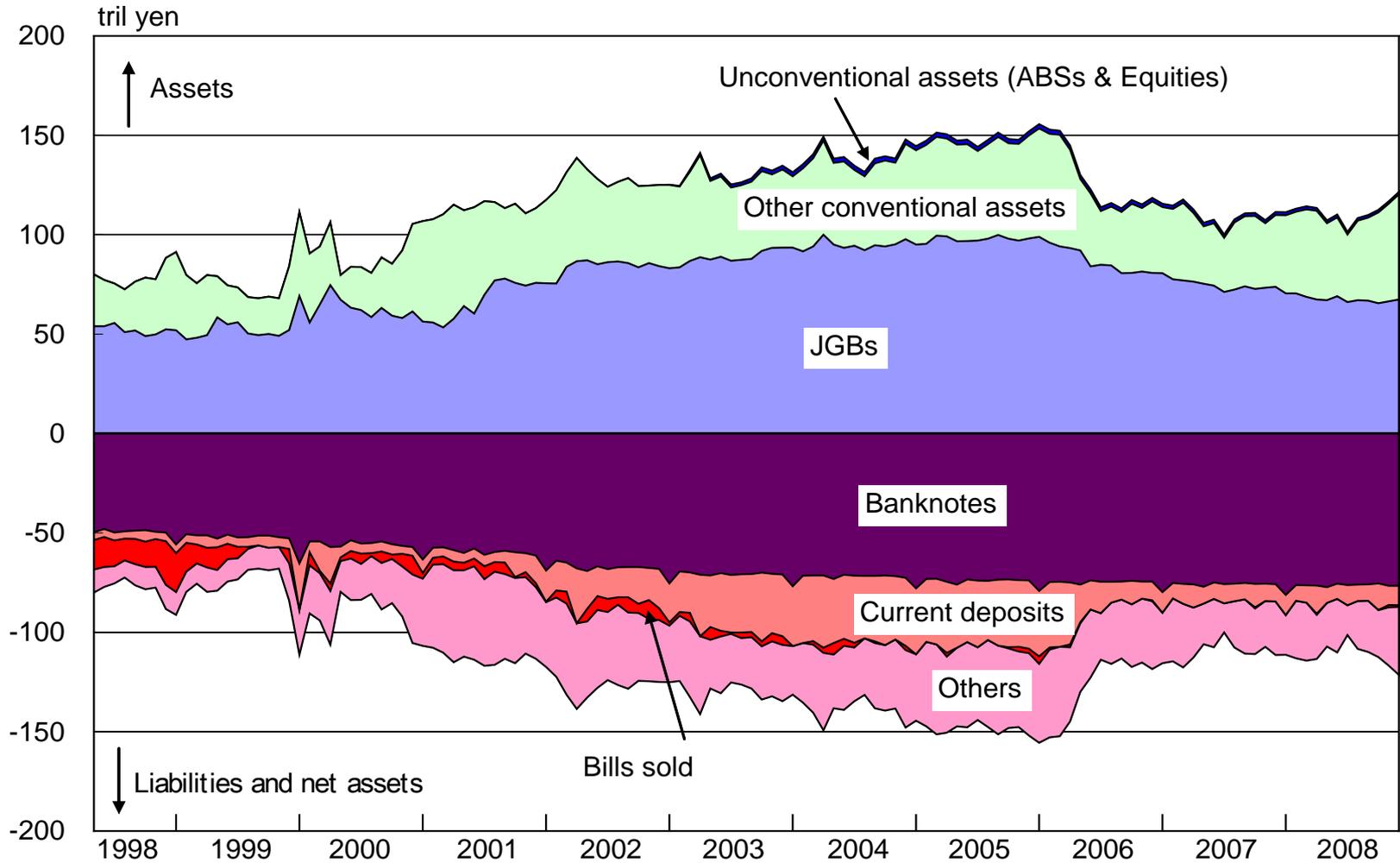
- The operating target was changed from the O/N call rate to the current account balances at the BOJ and ample provision of excess reserves were expected—strategy 3 (QE0).
- The commitment to maintain the framework (which effectively included a zero rate) until CPI inflation became stably positive—strategy 1.
- Increase the purchases of JGBs to hit the QE target—strategy 2 (QE2).

Central Bank Balance Sheet Size

Relative size of central bank balance sheet to nominal GDP expanded most significantly in Japan from 1995 to 2006.



BOJ's Balance Sheet



The BOJ used strategy 2 (QE1) extensively.

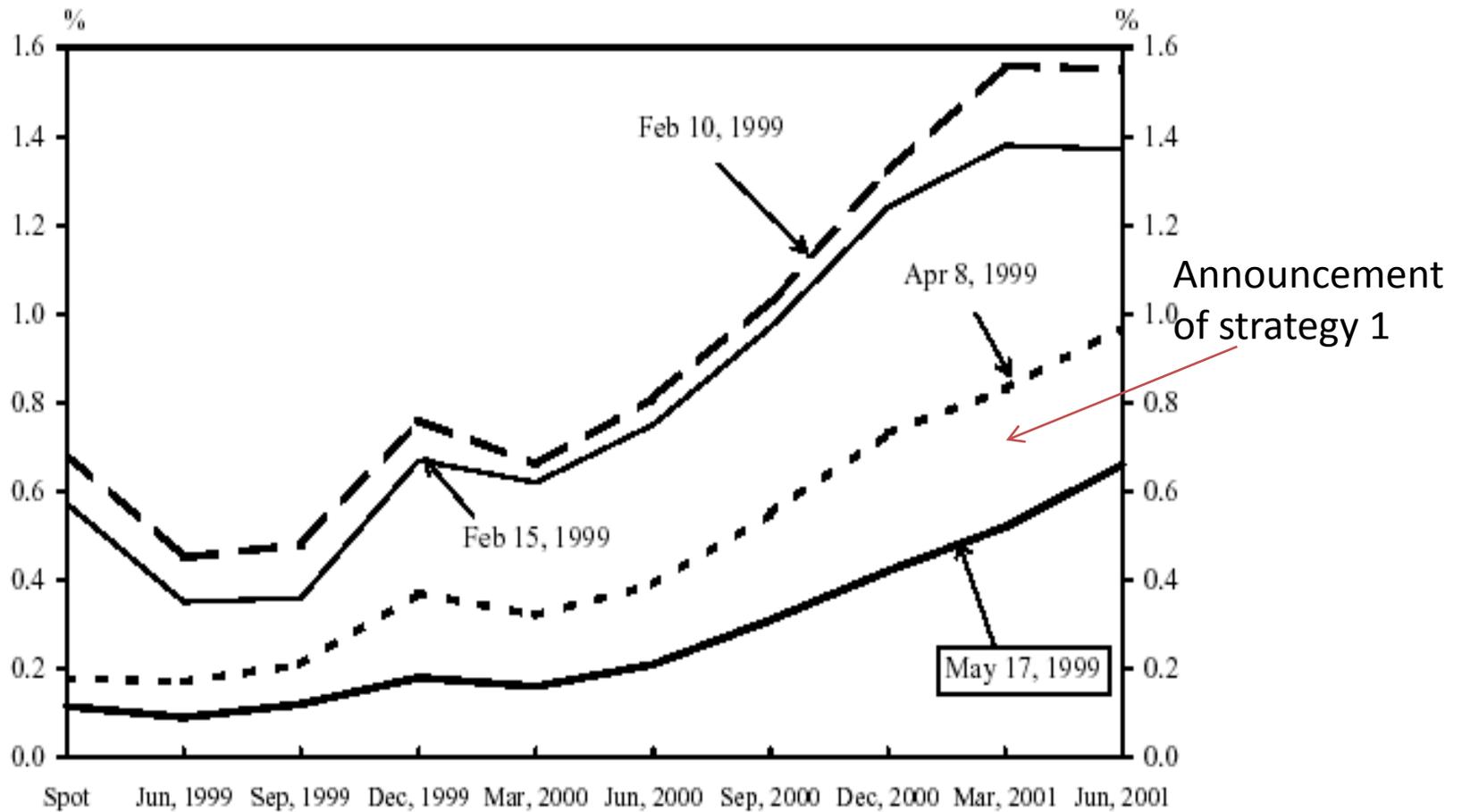
- CP, corporate bonds, ABS operations: initially as repo or collateral, later, outright purchases.
- Back-financing bank lending at a subsidized rate.
- Purchase of equities from banks.
- Unusually long-dated bill purchasing operations (average= 9 months in 2005).
- Mostly directed at revitalizing the bank channel of financial intermediation.

Table 2 The BOJ's Non-traditional Operations during 1999-2006

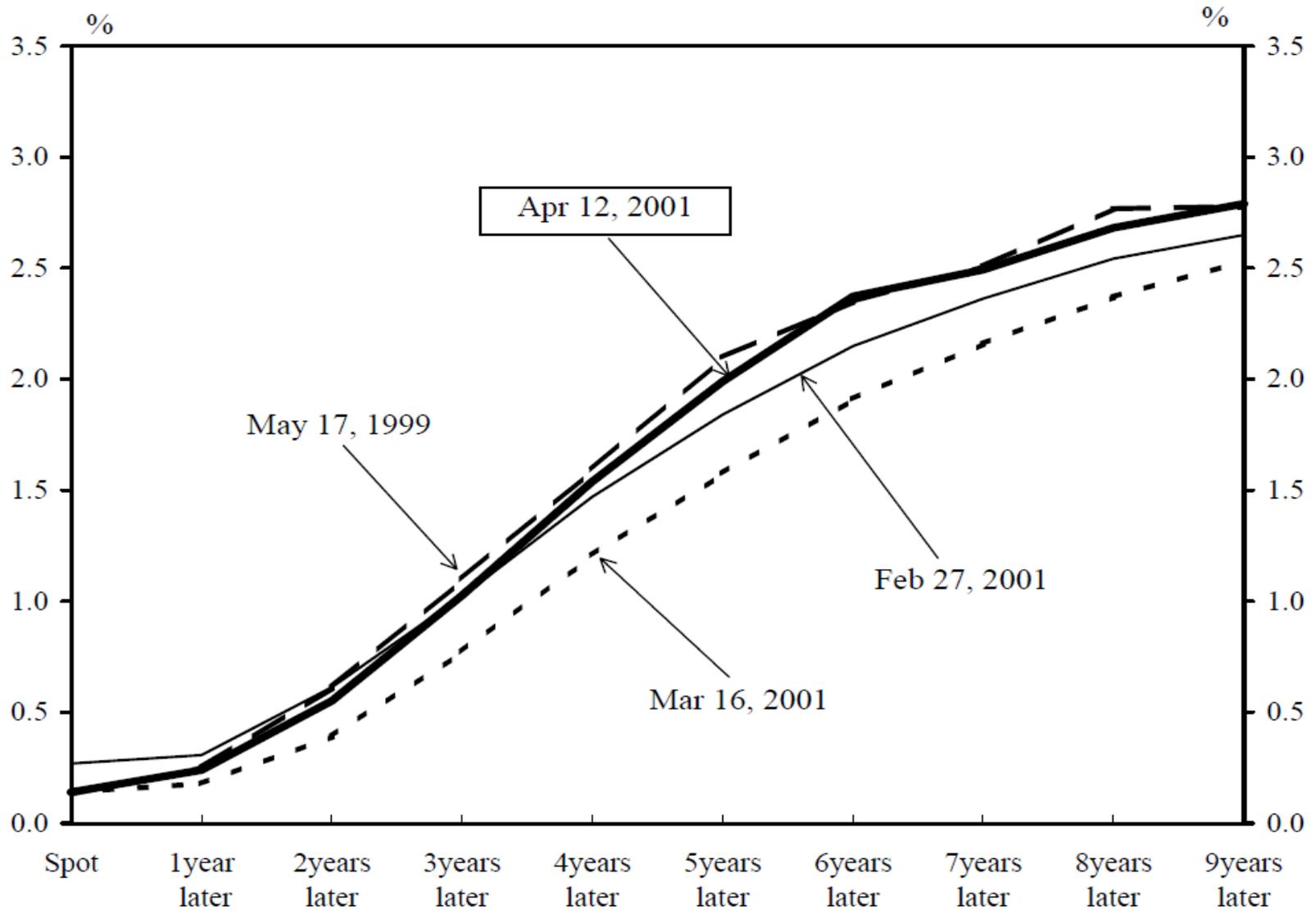
Strategy 1	zero rate until deflationary concerns are dispelled (April 1999-August 2000) zero rate until CPI inflation becomes stably above zero (March 2001-March 2006)	
Strategy 2	purchases of equities from banks	
	unusually long-dated fund supplying operations CP repo purchases of ABCP/ABS	QE1
	purchases of JGBs	QE2
	Strategy 3	Quantitative Easing (target on the banks' current account balances)
		QE0

Strategy 1 (April 1999) led to a downward shift of yield curve.

Euro-Yen Interest Rates Futures (3-Month)

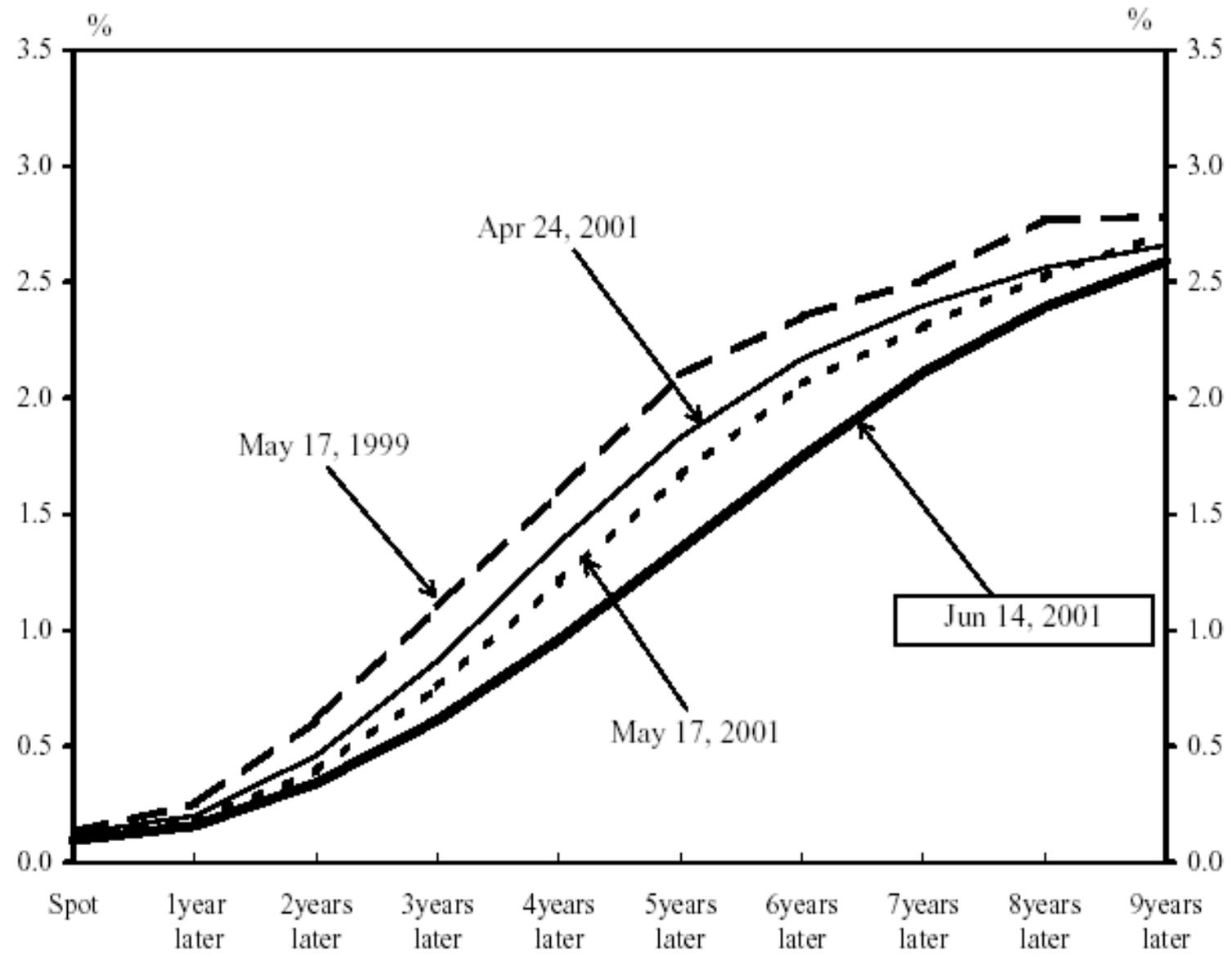


QE (March 2001) led to increases in forward rates (calculated from swap rates) except at the short end.



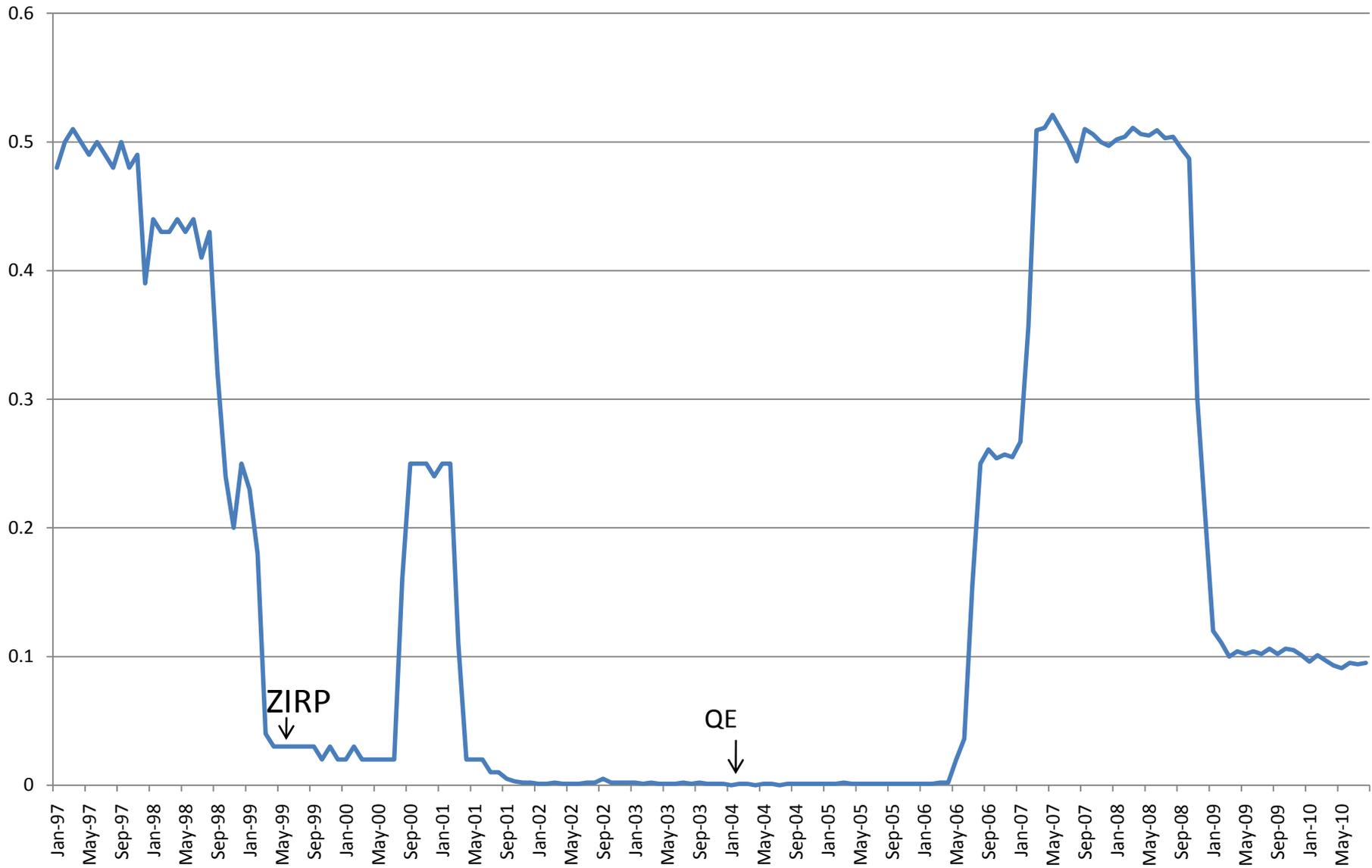
BOJ Monthly report, April 2001.

The effects, however, were very short-lived.

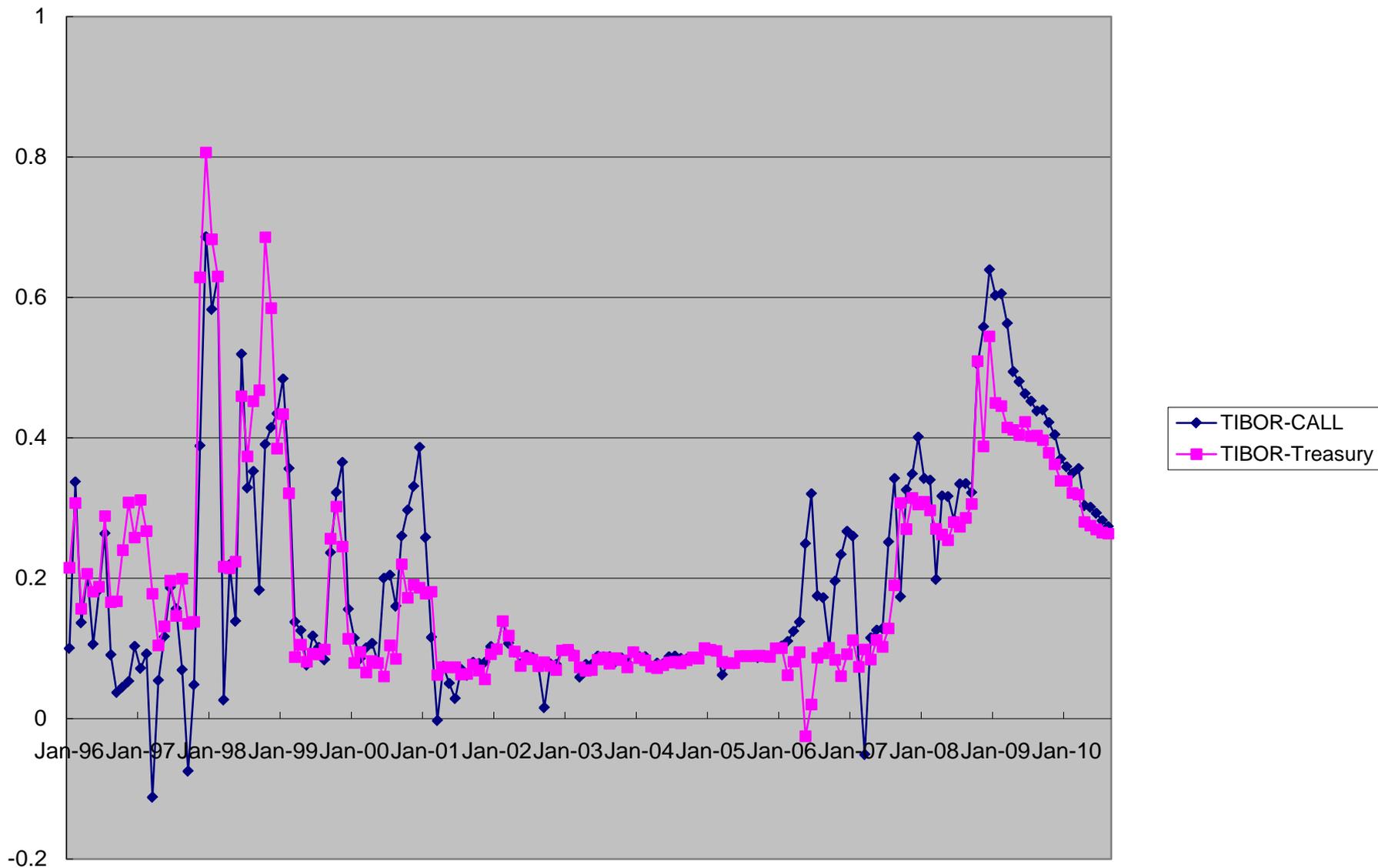


QE lowered the overnight rate!

O/N rate (monthly average)

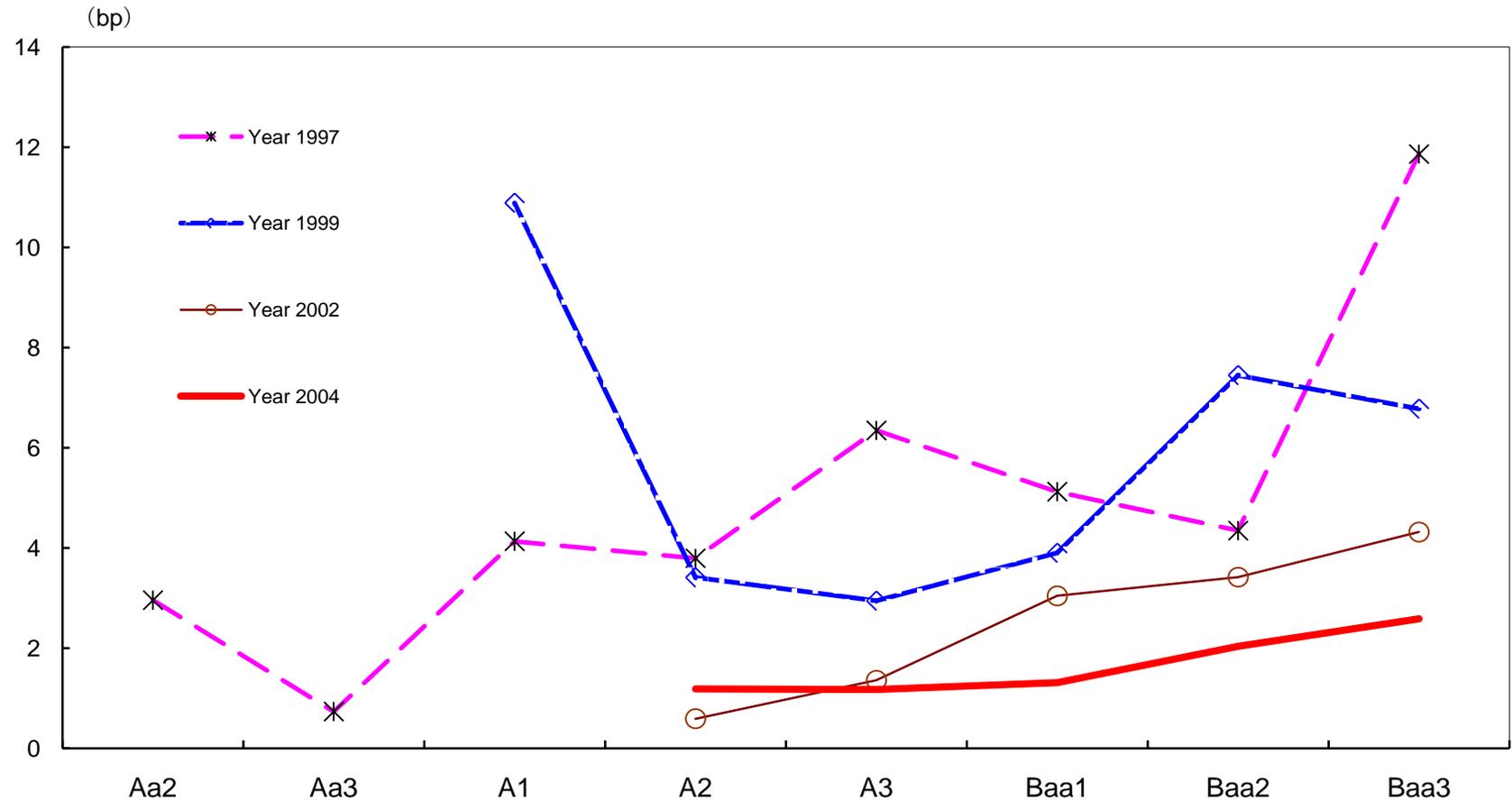


ZIRP & QE contained money market risk premiums.



An example of a more formal analysis.

Credit curves for NCD rates.



Baba, Nakashima, Shigemi & Ueda (2006)

$$\begin{aligned}
NCD_{it} = & (a_0 + a_1 ZIRP + a_2 QMEP + a_3 TRANS \\
& + a_4 CAB_t + a_5 BOND_{it}) * (A1) \\
& + (b_0 + b_1 ZIRP + b_2 QMEP + b_3 TRANS \\
& + b_4 CAB_t + b_5 BOND_{it}) * (A2), \\
& + \dots
\end{aligned}$$

NCD: spread of NCD rates over the average O/N rate.

ZIRP: dummy taking 1 during the ZIRP period.

QMEP: dummy taking 1 during the QE period.

CAB: the amount of the current account balances.

BOND: spread of bank bond yield over JGB.

A1, A2..: credit rating dummies.

TRANS: dummy taking 1 after the BOJ strengthened its commitment

Standardized Overnight Call Rate

Number of Observations: 1,929 (October 5, 1998–May 9, 2005)

Variable	Coefficient	Standard Error
A1	0.056	0.204
A1*CAB	-0.001	0.006
A1*BOND	-0.051	0.261
A2	0.030	0.028
A2*ZIRP	0.032**	0.014
A2*QMEP	-0.047***	0.013
A2*TRANS	-0.014	0.012
A2*CAB	0.001*	0.000
A2*BOND	0.021	0.100
A3	0.047***	0.009
A3*ZIRP	-0.016*	0.009
A3*QMEP	-0.051***	0.009
A3*TRANS	-0.021**	0.008
A3*CAB	0.001***	0.000
A3*BOND	0.002	0.018
Baa1	-0.127	0.159
Baa1*CAB	0.004	0.005
Baa1*BOND	0.047	0.106
Baa2	0.060***	0.008
Baa2*ZIRP	-0.057***	0.009
Baa2*QMEP	-0.068***	0.009
Baa2*TRANS	-0.025**	0.010
Baa2*CAB	0.001***	0.000
Baa2*BOND	0.014***	0.002
Baa3	0.107***	0.003
Baa3*QMEP	-0.166***	0.012
Baa3*TRANS	0.003	0.017
Baa3*CAB	0.002**	0.001
Baa3*BOND	0.039***	0.003
Year-end dummy	0.045***	0.004
Fiscal year-half dummy	-0.004	0.005
Fiscal year-end dummy	0.020***	0.004
Adjusted R-squared	0.388	

Notes: Estimation is by OLS. ***, **, and * denote the 1, 5, and 10 percent significance level, respectively.

Credit ratings are the long-term ratings of Moody's.

Number of Observations: 1,515 (January 4, 2001–May 9, 2005)

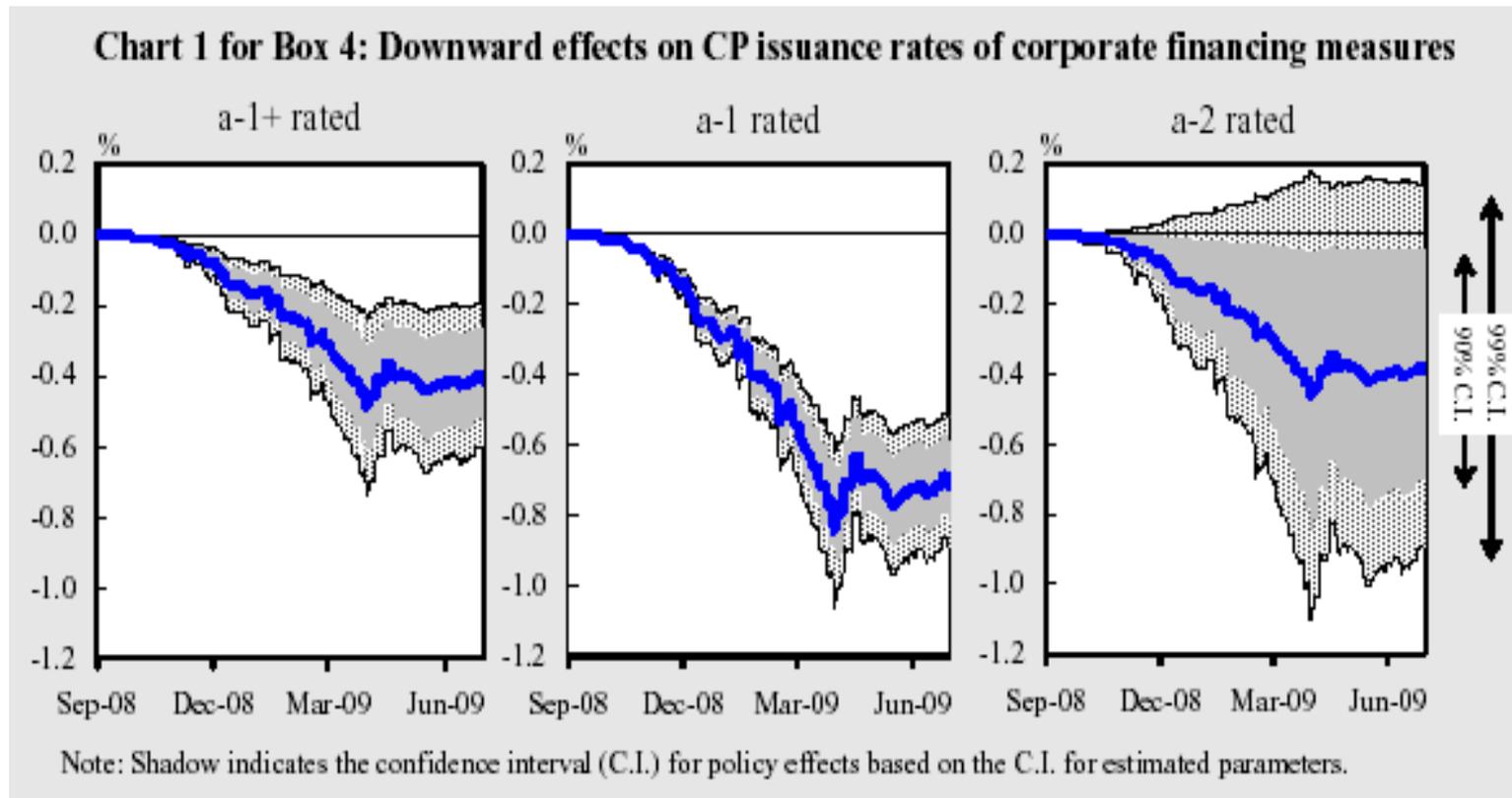
Variable	Coefficient	Standard Error
A1	-0.059	0.042
A1*TERM	0.010	0.007
A1*BOND	0.062	0.143
A2	0.018	0.014
A2*TERM	-0.003	0.002
A2*BOND	0.019	0.047
A3	0.028***	0.006
A3*TERM	-0.005***	0.001
A3*BOND	0.015*	0.009
Baa1	0.038	0.024
Baa1*TERM	-0.006*	0.003
Baa1*BOND	-0.020	0.061
Baa2	0.040***	0.007
Baa2*TERM	-0.007***	0.002
Baa2*BOND	0.013***	0.003
Baa3	0.048***	0.009
Baa3*TERM	-0.060**	0.002
Baa3*BOND	0.008***	0.002
Year-end dummy	0.002	0.002
Fiscal year-half dummy	-0.000	0.002
Fiscal year-end dummy	0.015***	0.002
Adjusted R-squared	0.167	

Notes: Estimation is by OLS. ***, **, and * denote the 1, 5, and 10 percent significance level, respectively.

...ratings of Moody's.

TERM: monthly average of the BOJ's bill purchasing operations

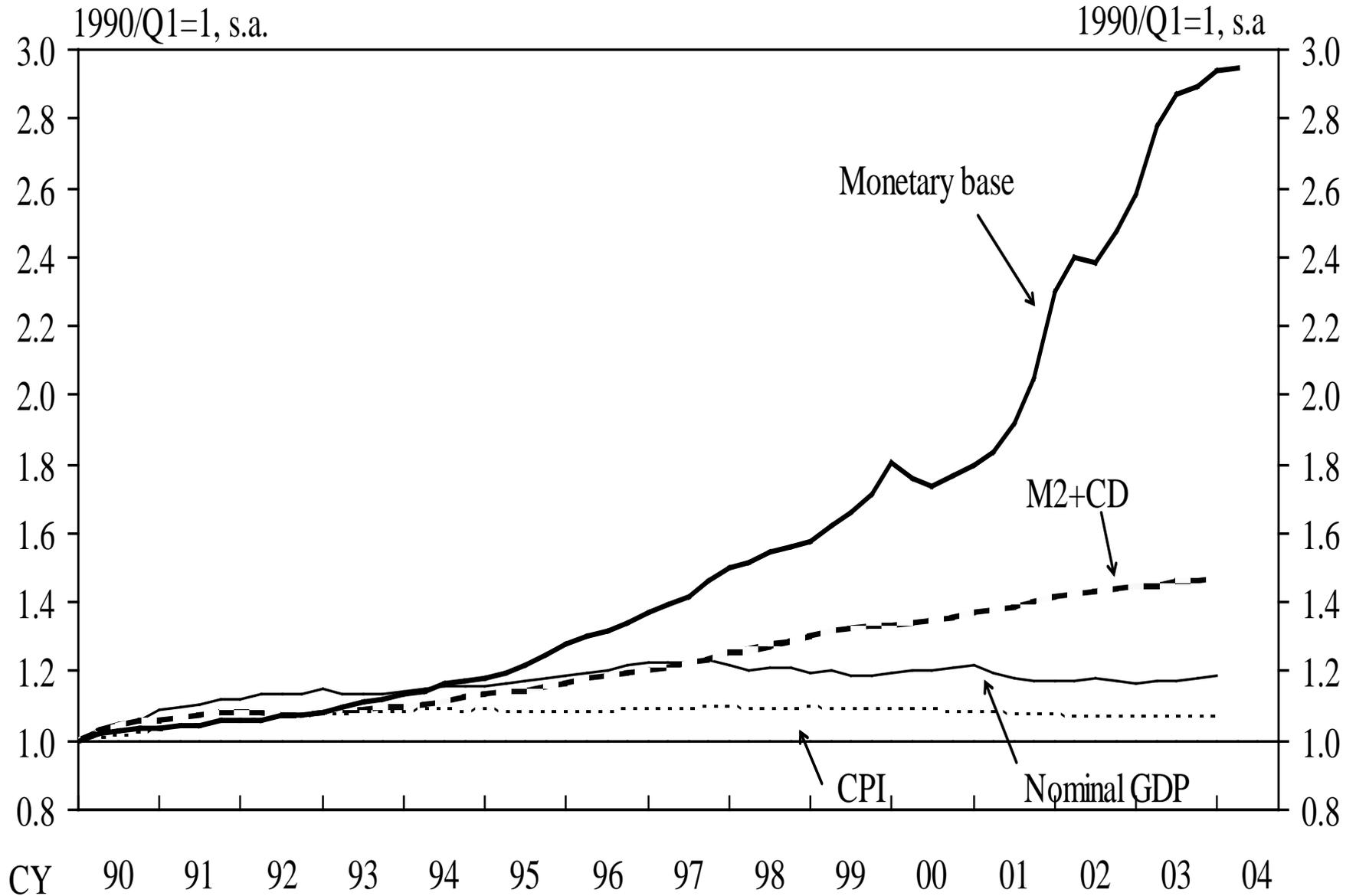
CP issuance rate= ..+a*(Implied stock market vol.)+b*(TIBOR-OIS)+c*(BOJ's fund supply through the corporate finance facilitating scheme/ CPs outstanding), daily data from 2008.9.



Evidence on the effectiveness of the BOJ's policies

Strategy 1	The strategy lowered interest rates.
Strategy 2	QE1 contained liquidity/risk premiums, especially, in the money market. QE2 : No clear evidence that JGB purchases lowered JGB yields.
Strategy 3	QE0: Led to some declines in the o/n rate. May have strengthened the commitment in strategy 1. Allowed the MOF to get a US Treasury's OK for FOREX intervention?

The effects on output and prices have been small.



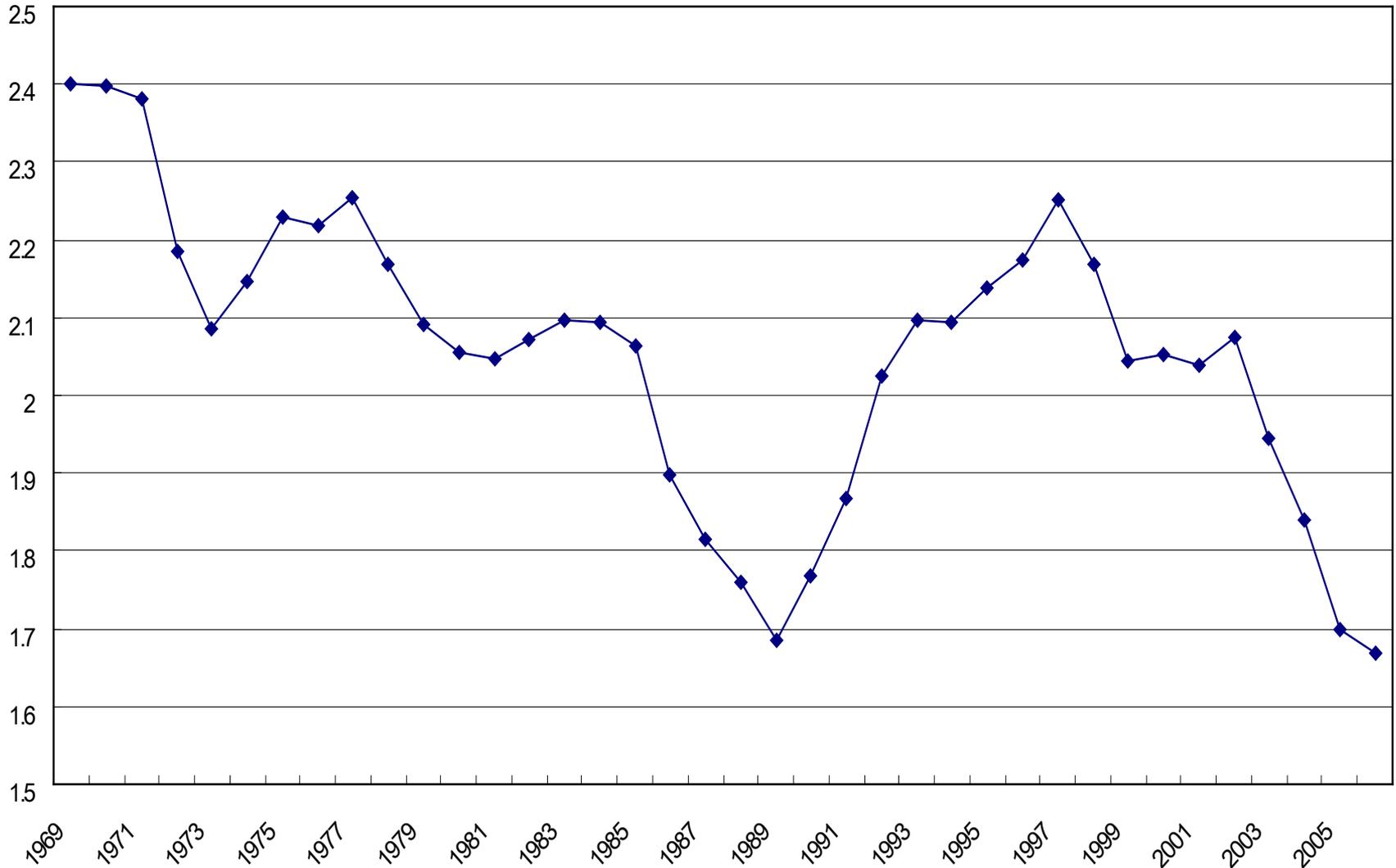
Why no evidence of QE2 effectiveness?

- It is difficult to disentangle the effects of QE2 on interest rates from those of strategy (i).
- The remaining maturity of JGBs bought by the BOJ has been fairly short.
- Does not mean that much larger purchases will also be ineffective.

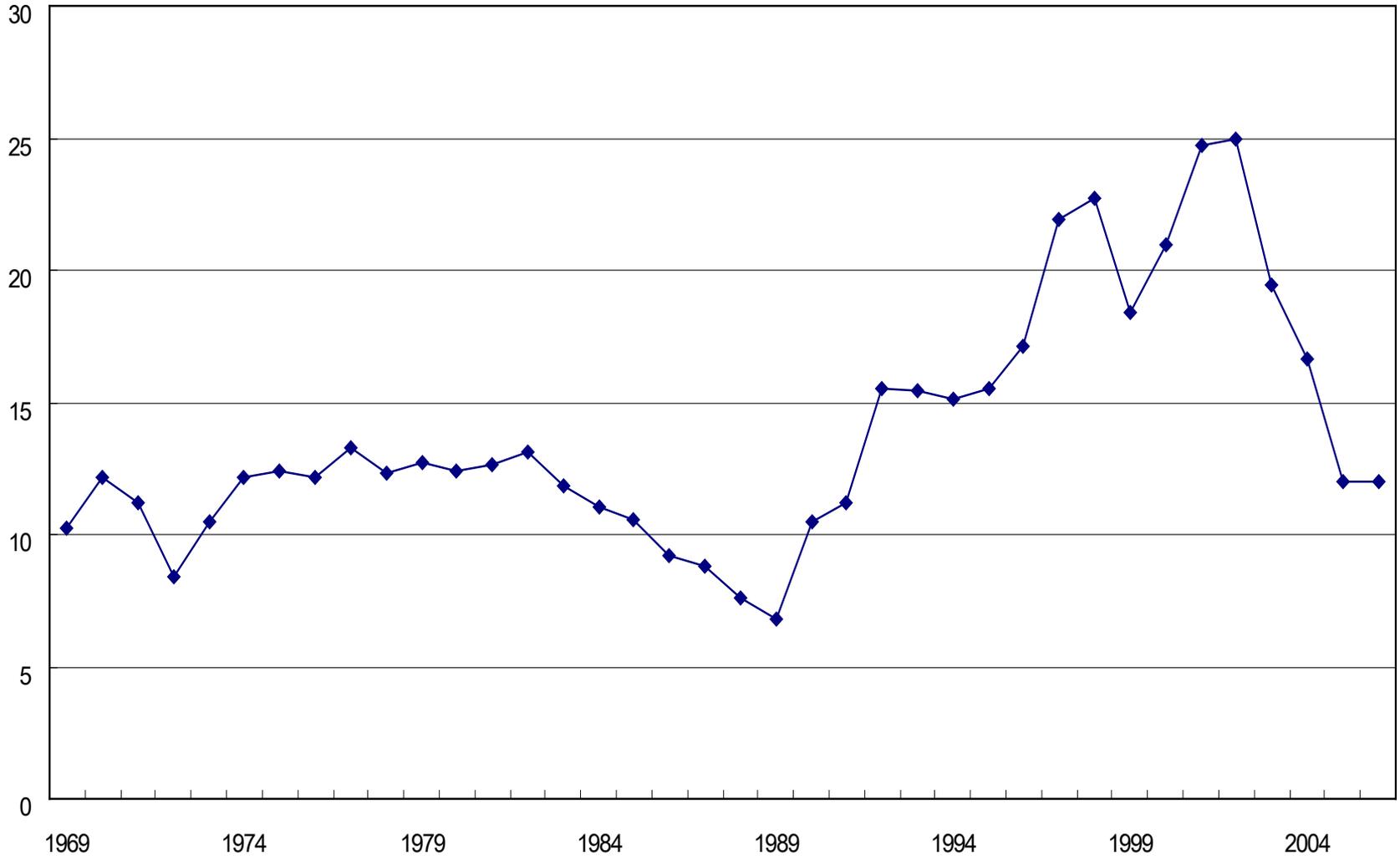
Difficulties faced by the BOJ

- Why not stronger effects on the economy?
 - Deleveraging by non-financials as well as by banks continued for 10 years.
 - Fiscal policy was tight.
- Should have been bolder?
 - Perhaps, a larger scale capital injection (say, purchases of bank loans) may have helped.
 - JGB purchases on a much larger scale?
- These would have required agreement with the fiscal authority regarding the size of the operations and possible loss sharing.
 - Can fix 10 year JGB at 0.5%, but require capital injection at the time of exit.

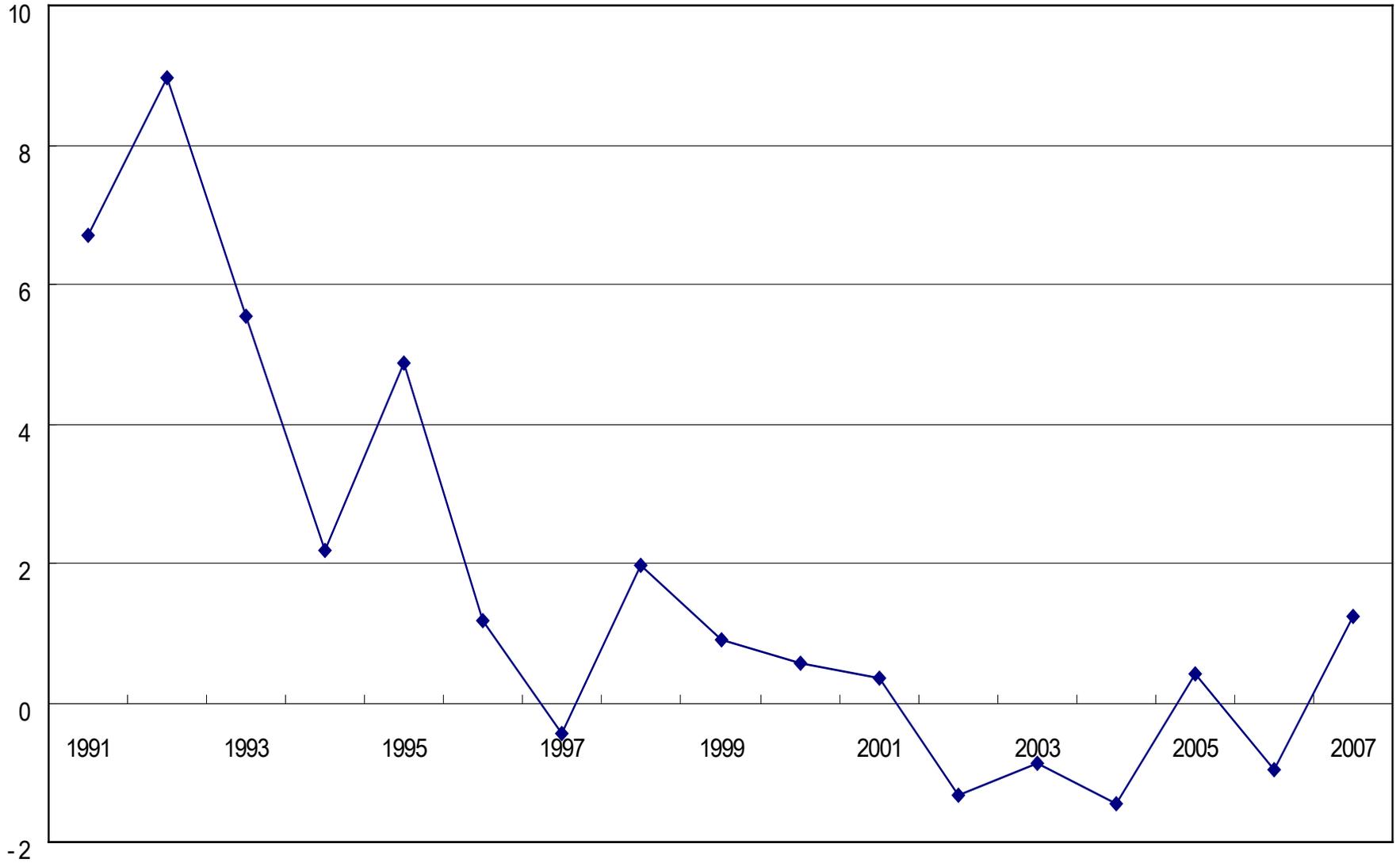
leverage Ratio fo Jap. Non Fin. Corp.



Leverage Ratio for Financial Institutions



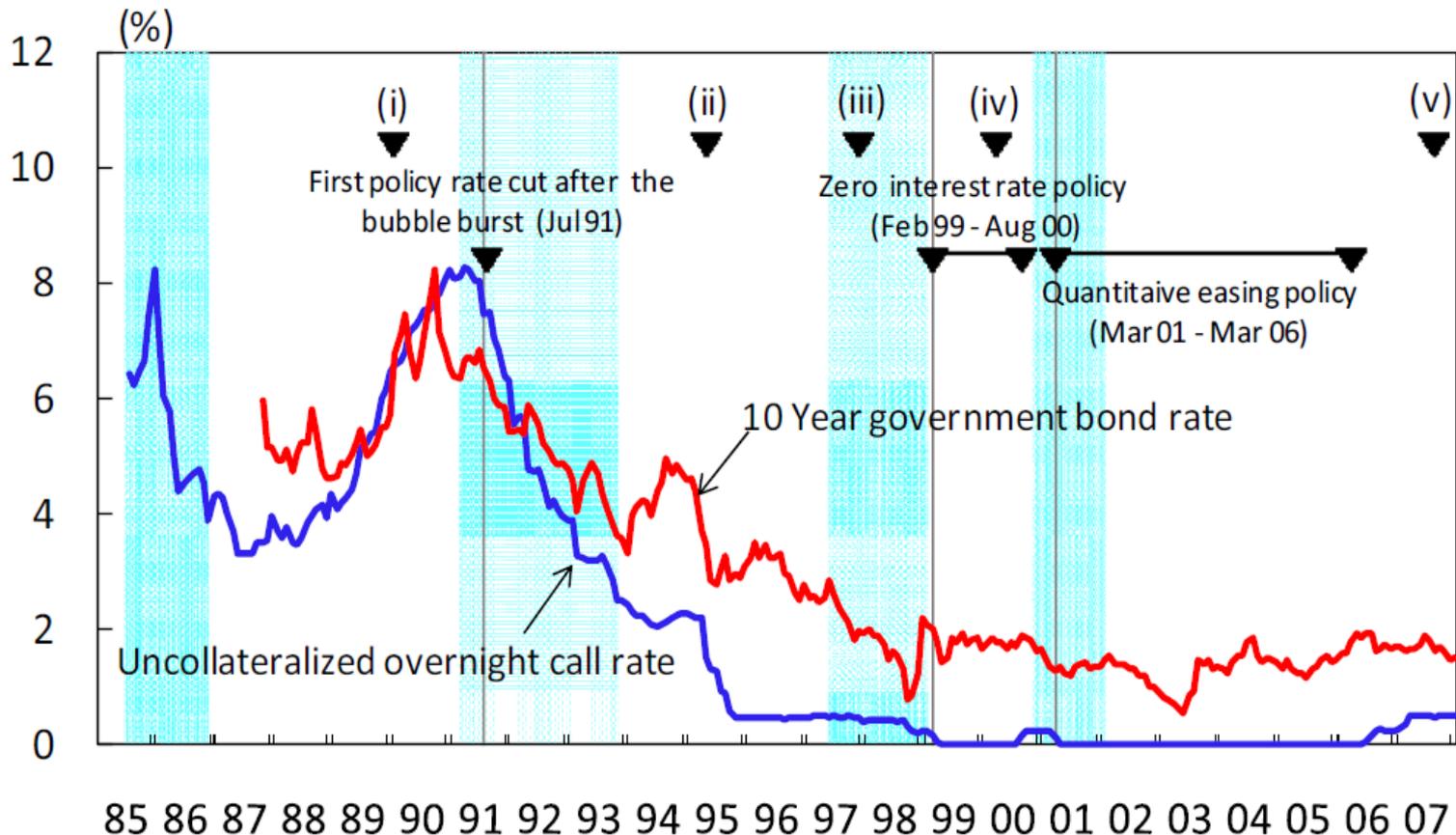
Growth of Nominal Government Spending on Goods & Services



The BOJ succeeded in lowering both short & long rates.

Monetary Policy Developments

O/N call rate has continued to stay at an extremely low level since the late-1995.



Notes: 1. (i) Peak of Nikkei 225 (Dec.89), (ii) Peak of Yen/Dollar rate (Apr.95), (iii) Collapse of Yamaichi Securities (Nov.97), (iv) Peak of NASDAQ (Mar.00), (v) BNP Paribas shock (Aug.07).

2. Shaded areas indicate business cycle contraction periods.

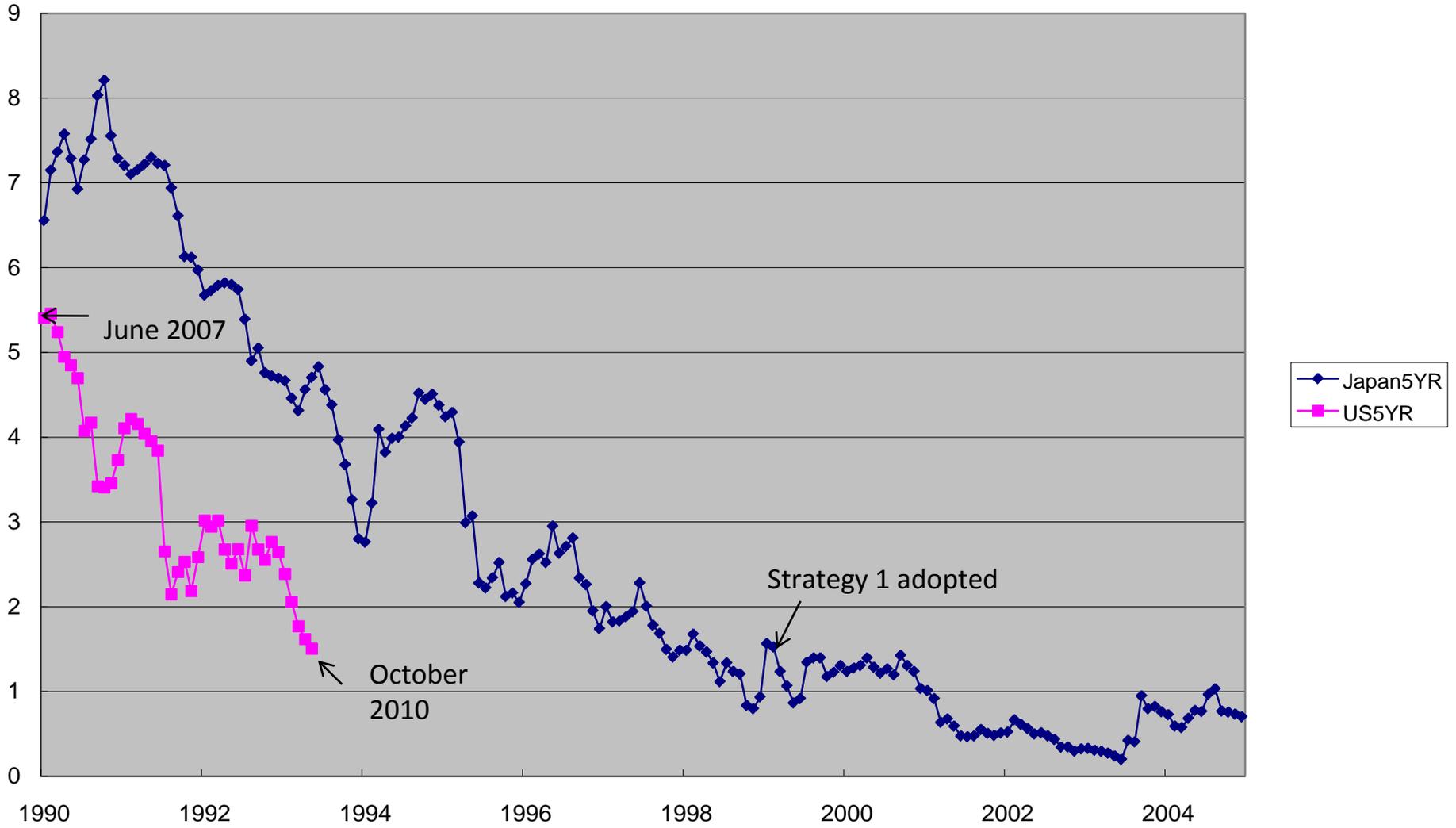
Sources: Bloomberg; Bank of Japan, *Financial and Economic Statistics Monthly*.

Shirakawa (2010)

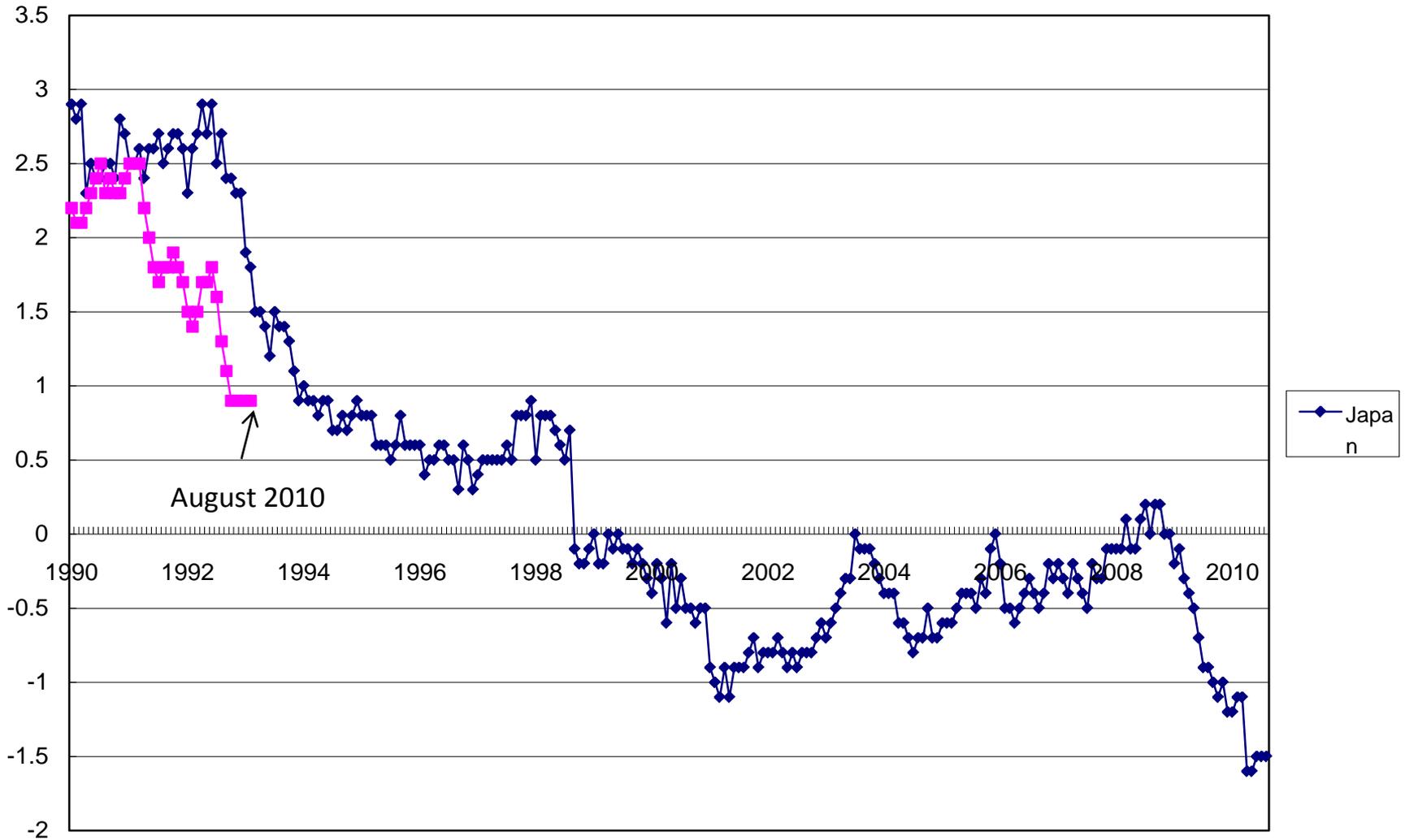
Timing of ZIRP/QE?

- The power of non-traditional monetary policy to lift inflation expectations and inflation must be higher at higher inflation rates.
 - 5 yr rates declined by at most 100 bps after the adoption of strategy (i).
 - Better to have adopted it in the mid 1990s.
- The U.S. today is close to where Japan was in 1999 in terms of 5yr rates.
 - But inflation is higher. Hence, the real rate is lower.
 - There is some hope. But the economy is at a critical point in terms of fight against deflation.

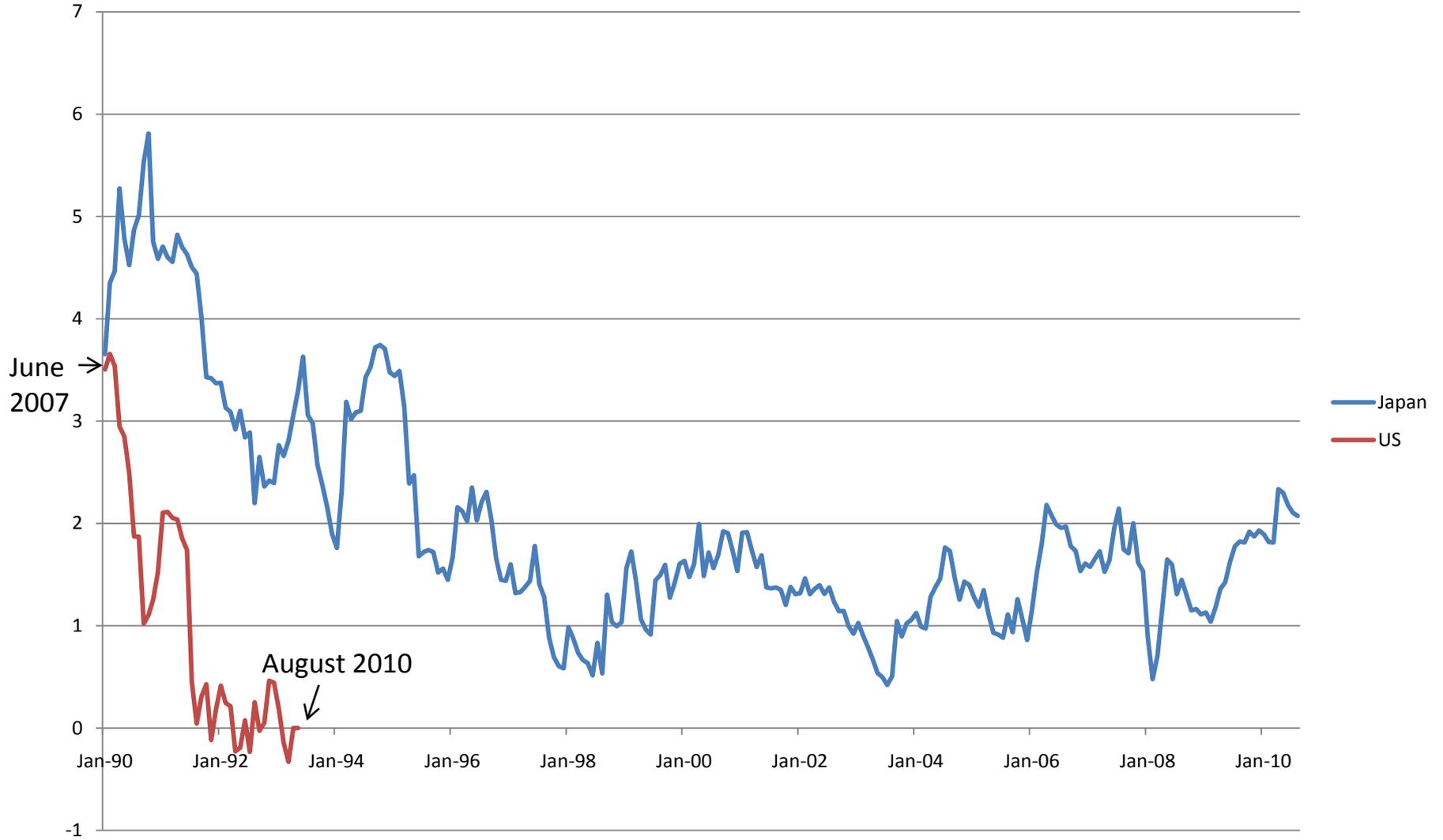
US-Japan Swap Rates



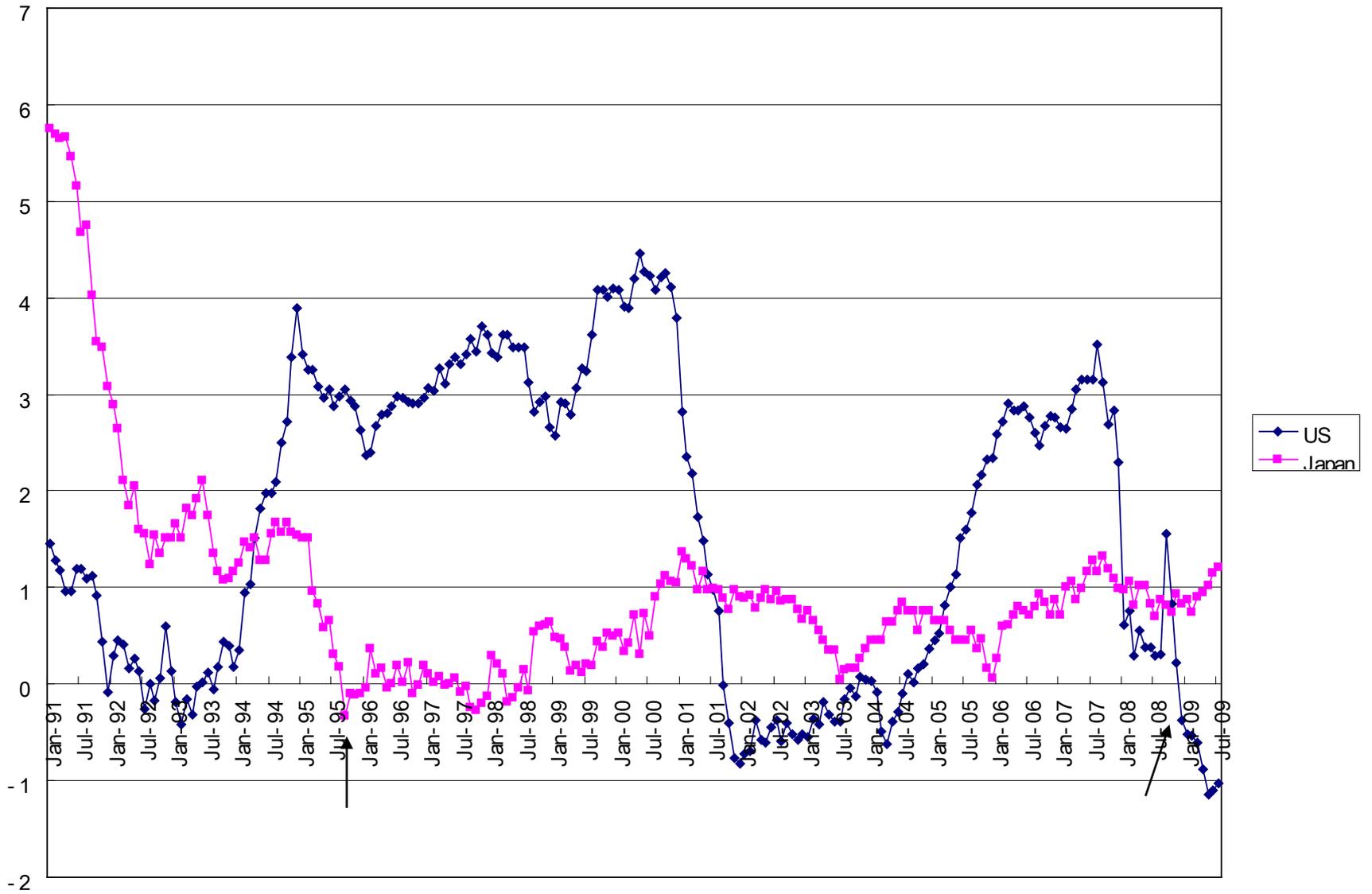
CPI (ex energy, food) Inflation Rates after the burst of bubble



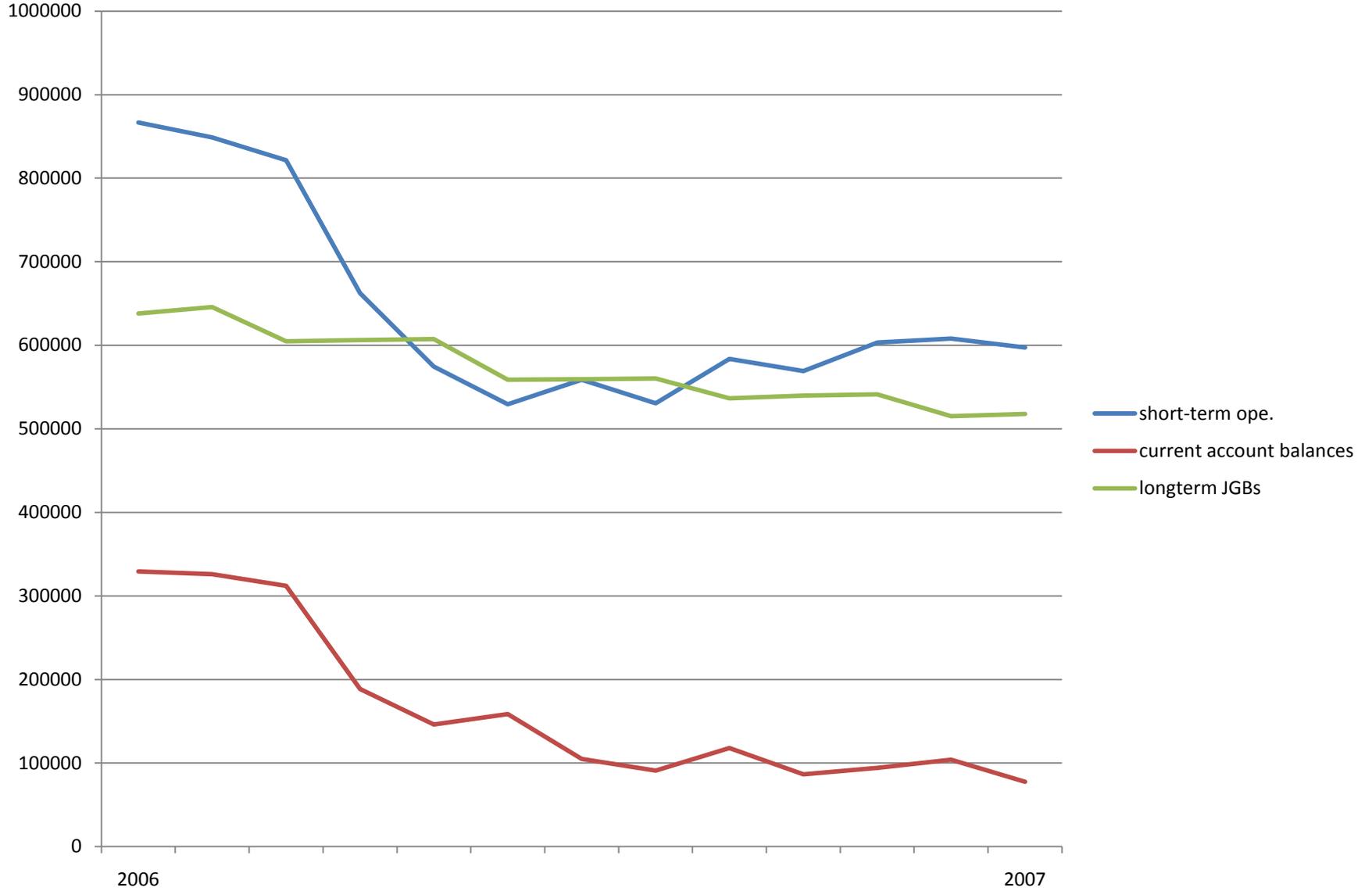
Real 5YR Swap Rates



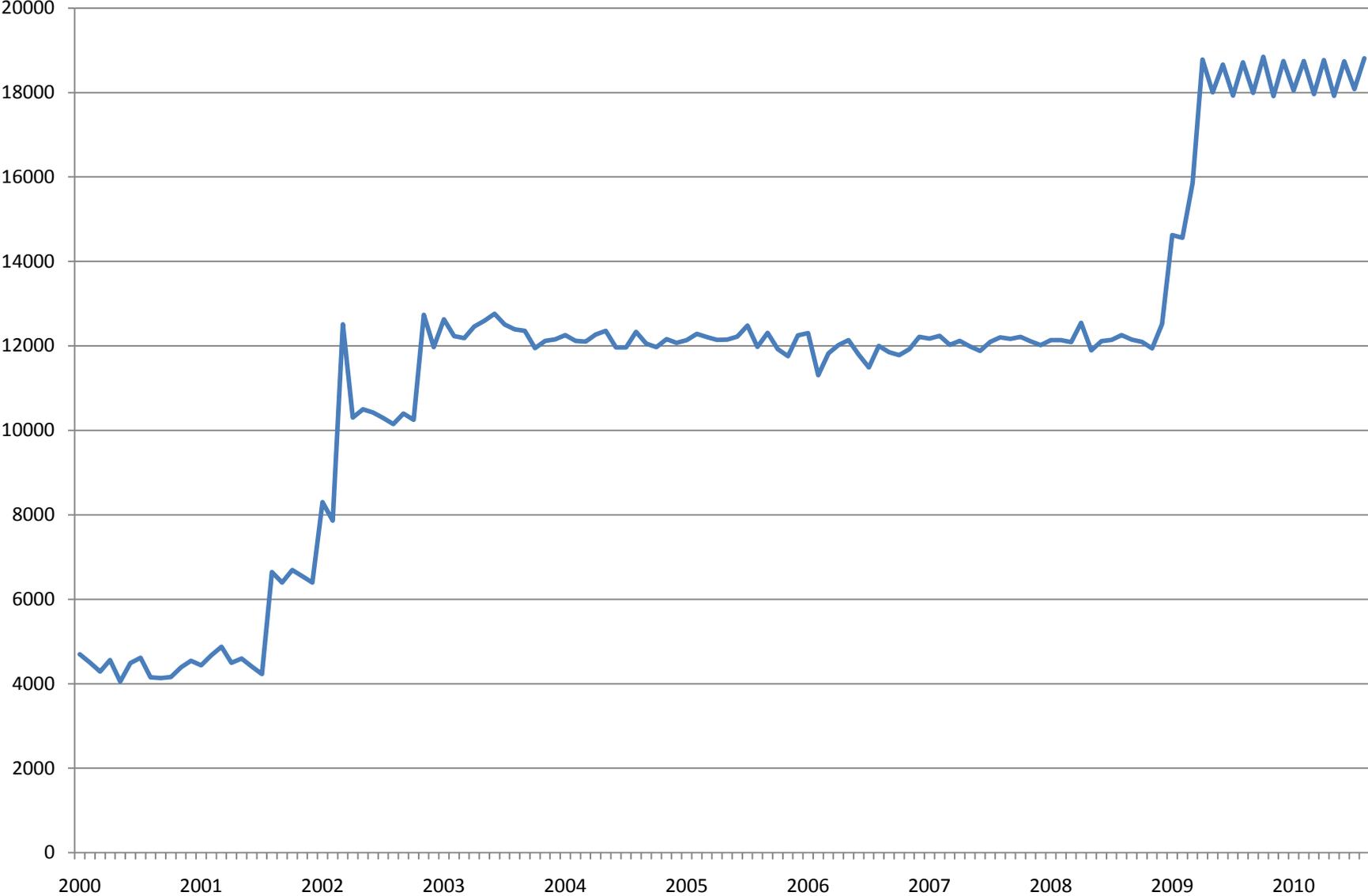
Real Interest Rates (3MLIBOR-CORE CPI)



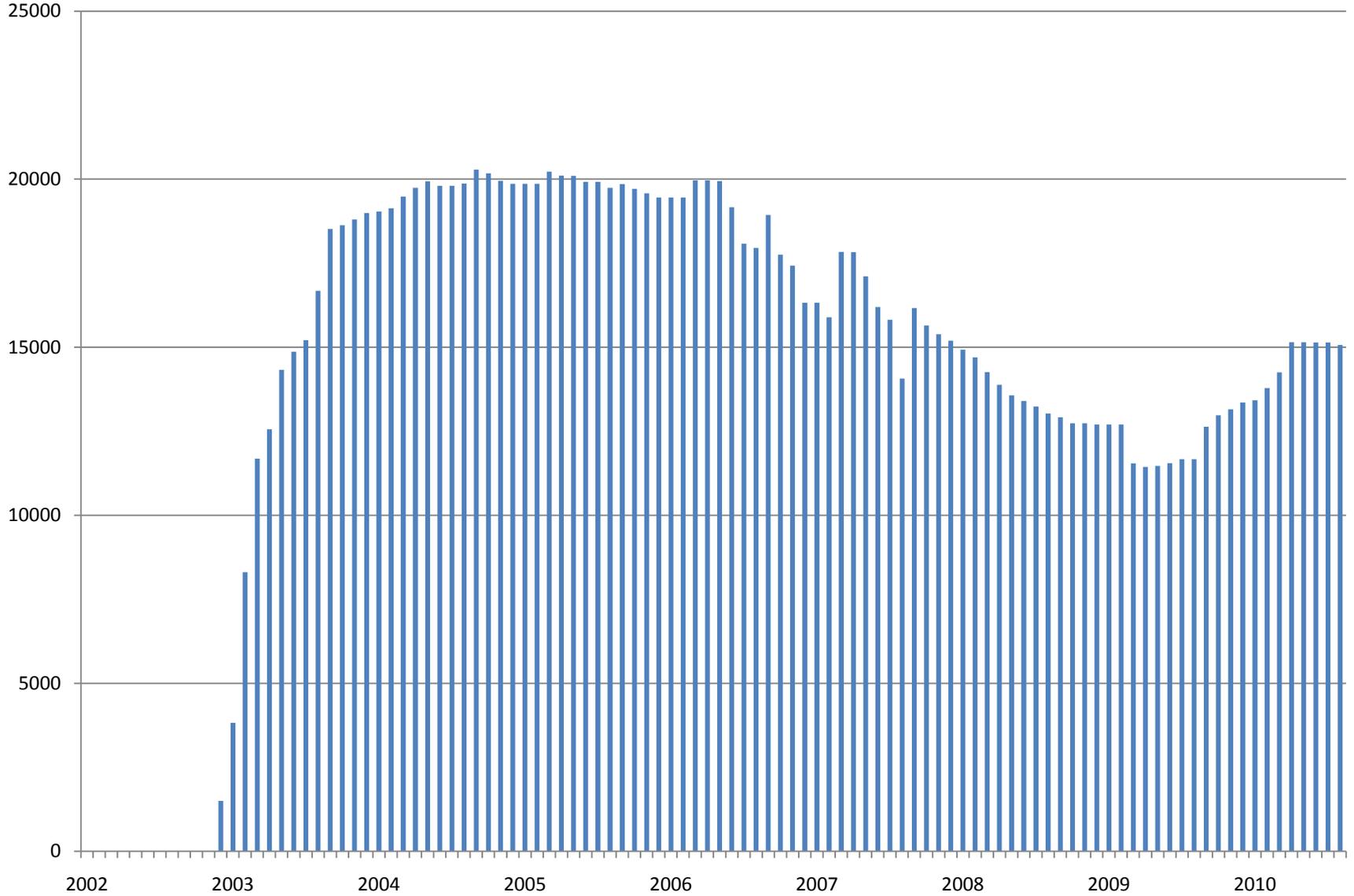
The BOJ's Exit from QE



The BOJ's monthly purchases of JGBs



The amount of equities held by the BOJ



The BOJ's CMP

(comprehensive monetary policy) October 5, 2010

- The o/n rate target is lowered from 10 to 0-10 bps.
- A clear statement of strategy 1.
- A 5 trillion yen fund to buy JGBs, ETF, REIT, CP and corporate bonds (QE2?).
- But the interest rate on bank reserves has been kept at 10 bps.
- Only JGBs with less than 2 years to maturity will be bought by this fund.