Comments on

Non-Standard Monetary Policy Measures, Monetary Financing and the Price Level

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The views expressed are solely the responsibility of the discussant, and should not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or of any other person associated with the Federal Reserve System.

Overview

-- Consider the quasi-fiscal implications of nontraditional monetary policies such as liquidity provision, asset purchases, and other forms of "quantitative easing" or "credit easing."

-- Analyze sustainable policy regimes in a stylized DSGE model that explicitly incorporates the central bank's balance sheet .

-- Identify key policy issues on which further research is needed.

Key Findings

-- The central bank's seigniorage is characterized by a Laffer curve; that is, there is a seignoriage-maximizing inflation rate (SMIR).

-- The set of sustainable policy regimes includes a "no man's land" in which inflation is low but money demand is distorted, because the interest rate that the central bank pays on reserves is below the prevailing level of short-term nominal interest rates.

-- "Institutional safeguards may be required to support the necessary separation of the central bank and government balance sheets, which is at particular risk as times of financial stress."

Links to the Theoretical Literature (contd.)

"The systematic analysis of the sources of central bank revenue or seigniorage is part of a tradition that is both venerable and patchy. It starts (at least) with Thornton (1802) and includes such classics as Bresciani-Turroni (1937) and Cagan (1956). Friedman (1971), Phelps (1973), Sargent (1982, 1987) and Sargent and Wallace (1981) have made important contributions....Modern advanced textbooks/treatises such as Walsh (2003 and Romer (2006) devote considerable space to the issue."

Willem Buiter, "Seigniorage (2007)

Cf. Bewley (1983), Lucas and Stokey (1983), Woodford (1990), Cooley and Hansen (1991), Eckstein and Leiderman (1992), Guidotti and Vegh (1993), Chari, Christiano, and Kehoe (1993), Correia and Teles (1997), Mulligan and Sala-i-Martin (1997).

Links to the Theoretical Literature (contd.)

-- Specification of money demand via preferences, cash-in-advance requirements, or explicit transactions technology

Baumol/Tobin, Cagan (1956), Sidrauski (1967), McCallum and Goodfriend (1987), Lucas (2000)

-- Non-separability of money, credit, and the real economy

Kimbrough (2006), Damjanovic and Nolan (2008)

-- Timing assumptions may be crucial for determinacy as well as in analyzing welfare implications of alternative policy regimes.

Talk to Chris Sims and Eric Leeper about this!

Links to the Empirical Literature

-- The seignorage-maximizing inflation rate appears to be quite low for industrial economies.

Cagan (1956), Lucas (2000), Kimbrough (2006)

-- However, as one might suspect from the Lucas (1976) critique, the semi-elasticity of money demand is *not* invariant to the average level of inflation.

-- Indeed, empirical evidence points to a much higher SMIR (perhaps even infinite) for emerging market economies.

Easterly, Mauro, and Schmidt-Hebel (1994), Fry (1998)

INFLATION PATTERN IN ELEVEN HIGH-INFLATION COUNTRIES (ANNUAL INFLATION RATES, %)

1. Chronic Stable Inflation

	Moderately High
Uruguay (3)	56 (1960–90)

2. Chronic Moderate Inflation with High- (Hyper-) Inflation Bursts

	Low	Moderate	High	Hyper	Moderate
Bolivia (4)	6 (1960–70)	22 (1971–81)	312 (1982–83)	4,229 (1984–85)	25 (1986–90)
Chile (5)	8 (1960–61)	29 (1962–71)	294 (1972–76)	—	26 (1977–90)
Ghana (4)	5 (1960–62)	16 (1963–76)	77 (1977–83)	—	17 (1984–90)
Israel (7)	5 (1960–69)	29 (1970–78)	170 (1979–85)	—	18 (1986–90)
Mexico (2)	3 (1960–72)	22 (1973–81)	91 (1982–87)	—	33 (1988–90)
Zaire (3)	7 (1964–65)	22 (1966–75)	61 (1976–90)	—	—

3. Chronic and Explosive Inflation

	Low	Moderate	High	Hyper
Argentina (14)	—	28 (1960–74)	234 (1975–88)	2,593 (1989–90)
Brazil (9)	—	40 (1960–80)	170 (1981–87)	1,435 (1988–90)
Nicaragua (6)	2 (1960–72)	23 (1973–84)	507 (1985–86)	5,760 (1987–90)
Peru (7)	8 (1960–72)	52 (1973–82)	112 (1983–87)	3,337 (1988–90)

PANEL ESTIMATIONS: VARIOUS SPECIFICATIONS

Model	Variable	Estimated Coefficient	Standard Error	R^2A	DW	Obs	$\left(\frac{p - p_{-1}}{p_{-1}}\right)_{max} \equiv \pi_{max}$
Equation (a): $\ln(m/y) = \lambda\pi\gamma$ + *country dummies*							
linear	γ	1					
	λ	−1.420	0.124	0.79	0.40	331	238%
nonlinear	γ	1.586	0.234				
	λ	−1.526	0.152	0.79	0.40	331	134%
Equation (b): $(\ln(m/y) - \rho_D^* \ln(m/y)_{-1}) = \lambda(\pi^\gamma - \rho_D^* \pi_{-1}^\gamma)$							
linear	γ	1		0.29	1.66	320	∞
	λ	−0.760	0.105				
nonlinear	γ	2.275	0.477	0.33	1.75	320	252%
	λ	−0.943	0.196				
Equation (c): $\ln(m/y) = \lambda\pi^\gamma + b \ln(m/y)_{-1}$ + *country dummies*							
linear	γ	1		0.95	1.82	321	∞ (sr)
	λ	−0.643	0.062				42% (lr)
	b	0.816	0.031				
nonlinear	γ	1.672	0.269	0.96	1.88	321	1010%(sr)
	λ	−0.704	0.081				51%(lr)
	b	0.809	0.030				

Interest on Reserves

Financial Services Regulatory Relief Act of 2006

"authorized the Federal Reserve to begin paying interest …beginning October 1, 2011."

Emergency Economic Stabilization Act of 2008

"accelerated the effective date to October 1, 2008."

Federal Reserve Press Release, 05 November 2008

"The rate on required reserve balances will be set equal to the average target federal funds rate over the reserve maintenance period....The rate on excess balances will be set equal to the lowest FOMC target rate over the reserve maintenance period."

Federal Reserve Press Release, 15 December 2008

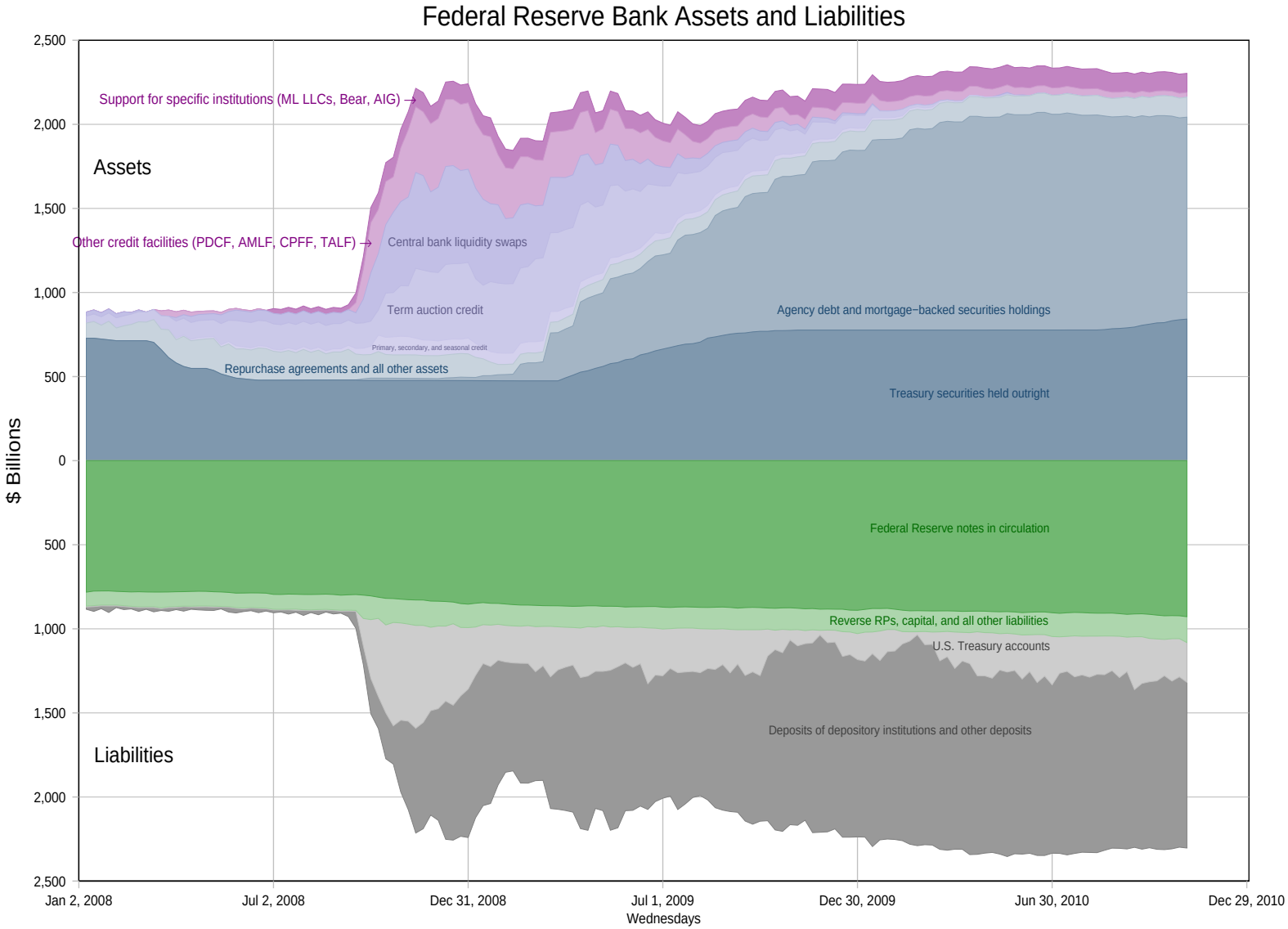
"...interest rates on required and excess reserve balances of one-quarter percent."

TABLE 2. ESTIMATED BUDGETARY IMPACT OF PAYING INTEREST ON RESERVE BALANCES

	(By Fiscal Year, In Millions of Dollars)										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
CHANGES IN REVENUES											
Revenues from Federal Reserve:											
Interest on Required Reserves	0	-299	-298	-313	-328	-343	-359	-375	-395	-416	-437
Profits from Increased Reserves	0	43	42	44	46	48	36	38	40	25	27
Net Effect on Revenue from Federal Reserve	0	-256	-256	-269	-282	-295	-323	-337	-355	-390	-410
Income and Payroll Tax Offsets	0	64	64	67	71	74	81	84	89	98	103
Net Effect of Allowing Interest on Reserves	0	-192	-192	-202	-212	-221	-242	-253	-266	-293	-308

The Evolution of the Federal Reserve's Balance Sheet
(share of nominal GDP in percent)

	2006	*2007*	*2008*	*2009*	*2010*
Currency Held by the Public	**6.0**	**5.8**	**6.2**	**6.5**	**6.5**
Bank Reserves at the FRS	**0.1**	**0.1**	**5.6**	**7.5**	**6.7**
Total Liabilities	**6.6**	**6.5**	**16.0**	**15.9**	**15.9**


Federal Reserve Bank Assets and Liabilities
2,500
2,000
1,500
1,000
500
0
500
1,000
1,500
2,000
2,500
$ Billions
Support for specific institutions (ML LLCs, Bear, AIG) →
Assets
Other credit facilities (PDCF, AMLF, CPFF, TALF) →
Central bank liquidity swaps
Term auction credit
Primary, secondary, and seasonal credit
Repurchase agreements and all other assets
Agency debt and mortgage−backed securities holdings
Treasury securities held outright
Federal Reserve notes in circulation
Reverse RPs, capital, and all other liabilities
U.S. Treasury accounts
Deposits of depository institutions and other deposits
Liabilities
Jan 2, 2008
Jul 2, 2008
Dec 31, 2008
Jul 1, 2009
Dec 30, 2009
Jun 30, 2010
Dec 29, 2010
Wednesdays
Last updated November 5, 2010.

Emergency Liquidity and Credit Facilities

The Federal Reserve is facilitating the extension of credit to households and businesses and supporting the functioning of financial markets through a range of liquidity programs."

(FOMC Statement, April 2009)

Dec 2007: **Term Auction Facility *(TAF)***

Mar 2008: **Primary Dealer Credit Facility *(PDCF)***

Term Securities Lending Facility *(TSLF)*

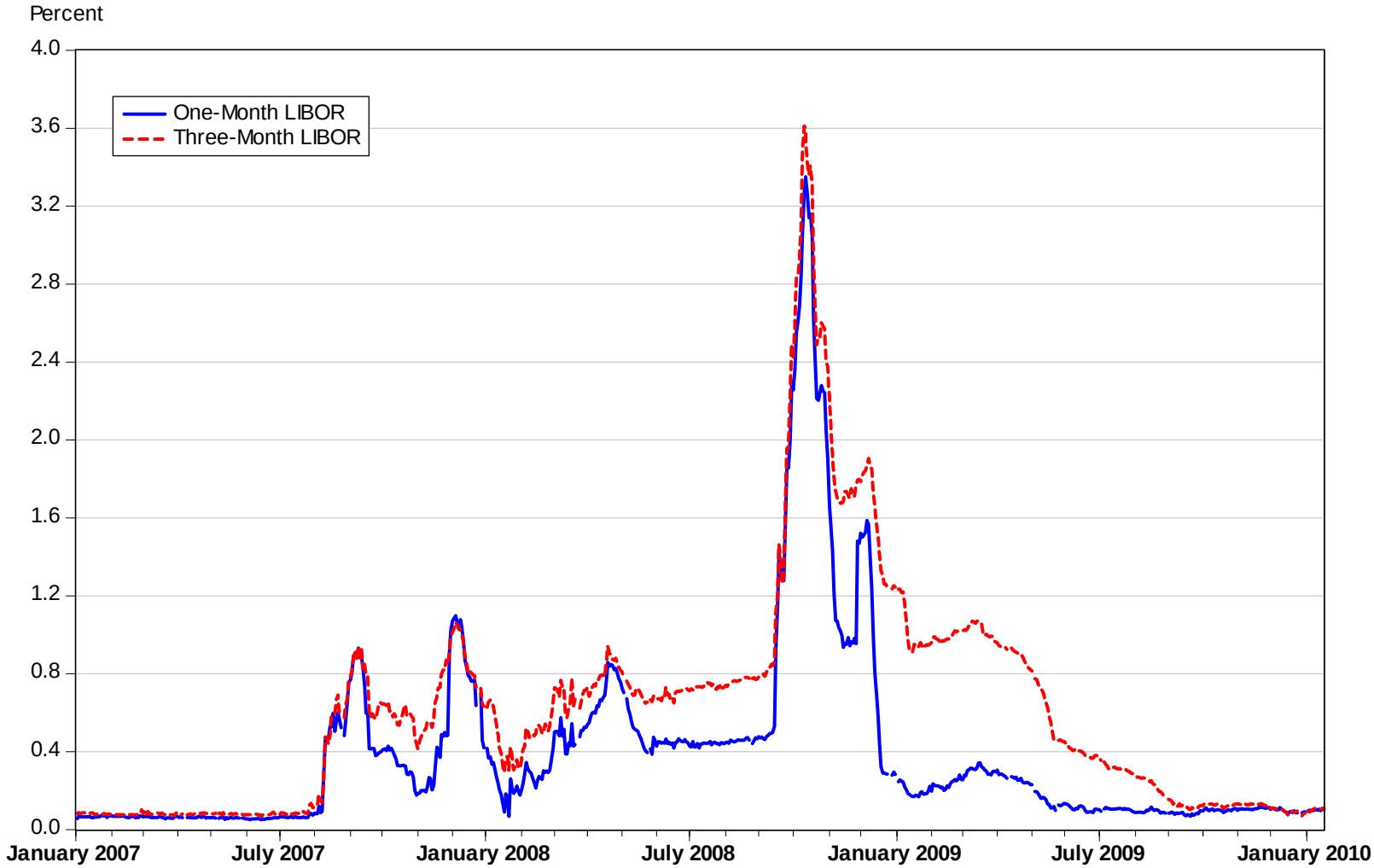
Sep 2008: **ABCP MMMF Liquidity Facility *(AMLF)***

Oct 2008: **Commercial Paper Funding Facility *(CPFF)***

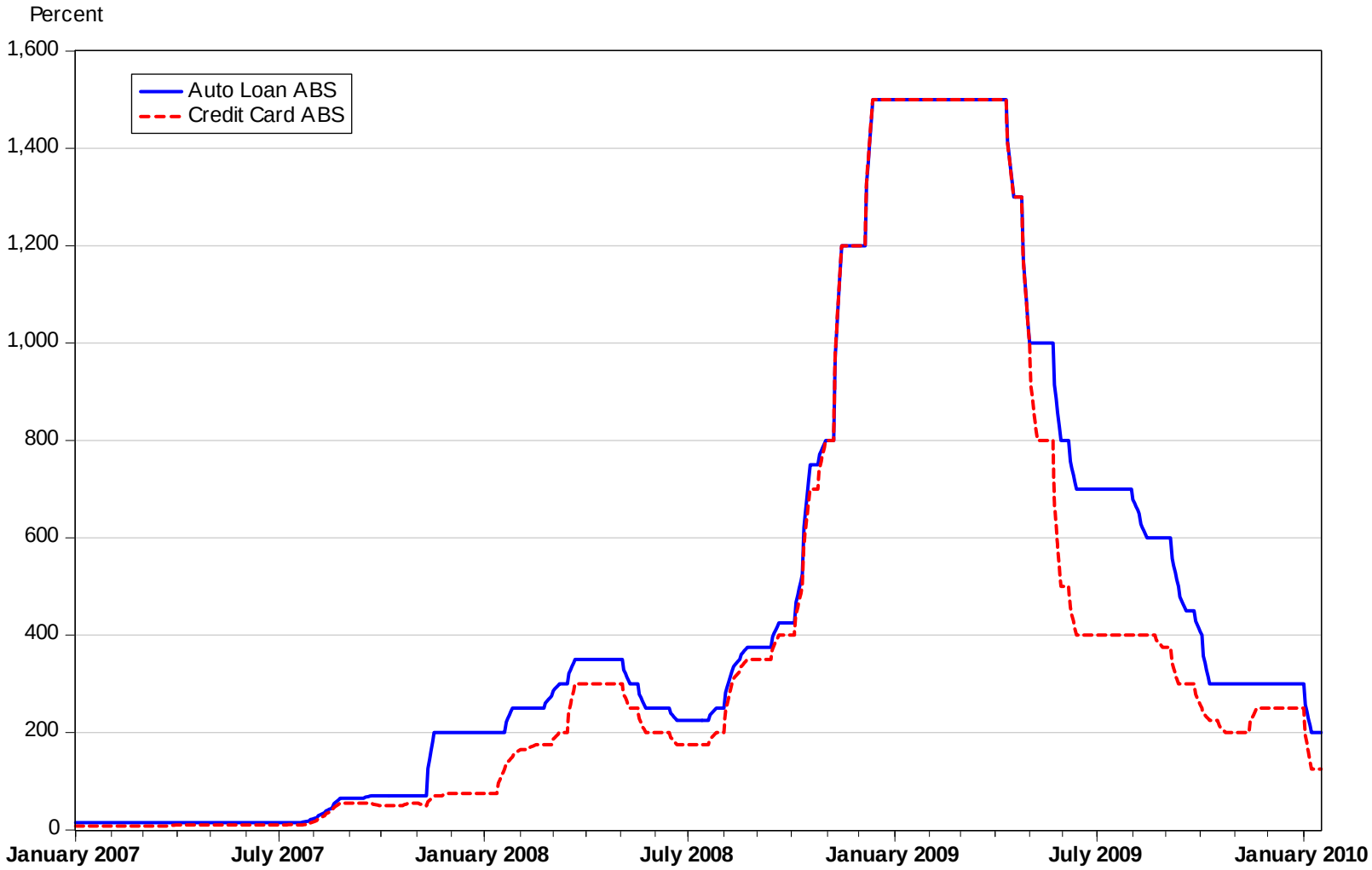
Nov 2008: **Money Market Investor Funding Facility *(MMIFF)***

March 2009: **Term Asset-Backed Loan Facility *(TALF)***

The Evolution of LIBOR-OIS Spreads



The Evolution of Spreads on Asset-Backed Securities



The Exit from Emergency Liquidity and Credit Facilities

"In light of improved functioning of financial markets, the Federal Reserve will be closing the AMLF, CPFF, PDCF, and the TSLF on February 1, as previously announced. In addition, the temporary liquidity swap arrangements between the Federal Reserve and other central banks will expire on February 1. The Federal Reserve is in the process of winding down the TAF....The anticipated expiration dates for the TALF remain set at June 30 for loans backed by new-issue CMBS and March 31 for loans backed by all other types of collateral. The Federal Reserve is prepared to modify these plans if necessary to support financial stability and economic growth."

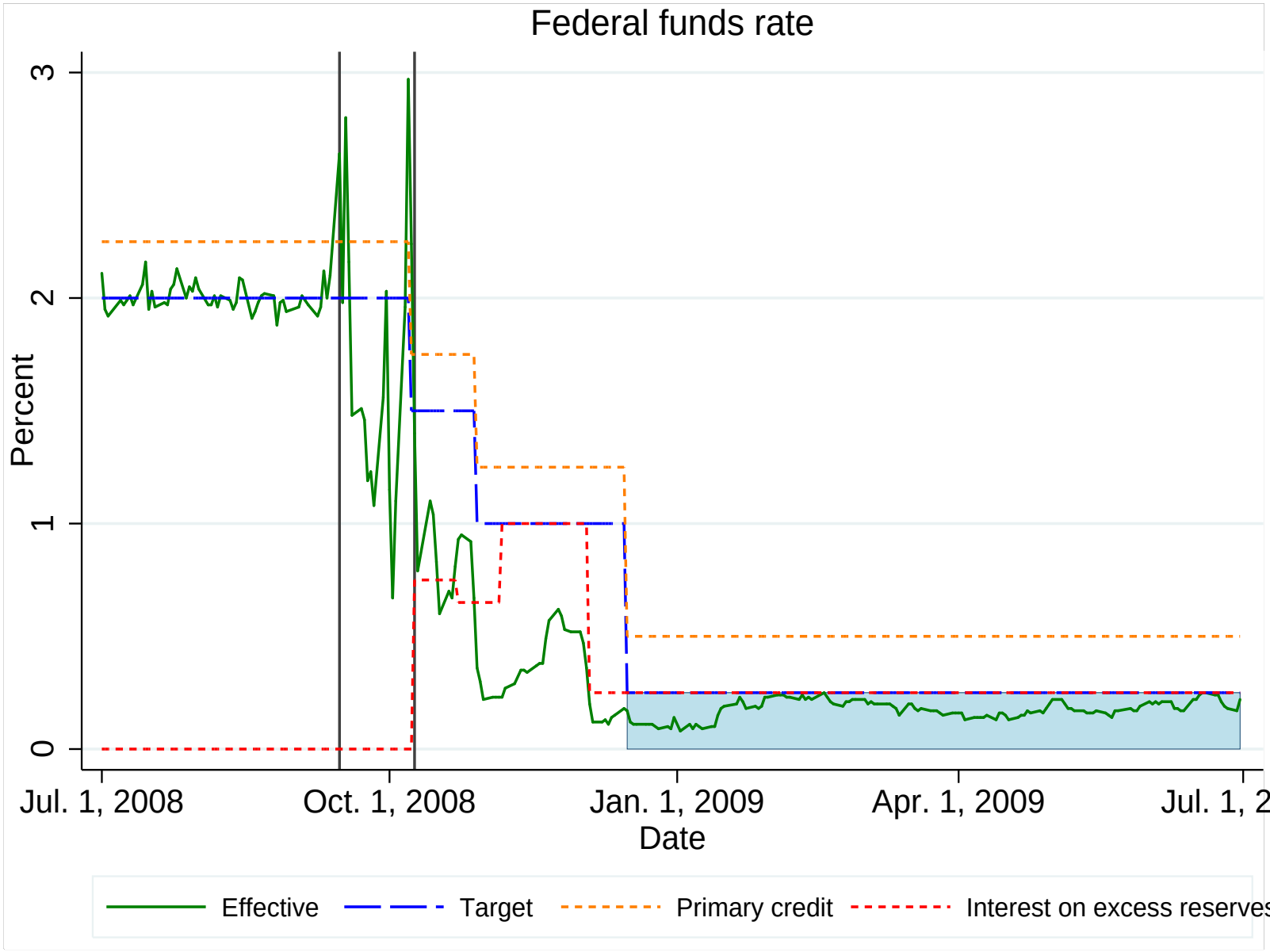
(FOMC Statement, January 2010)

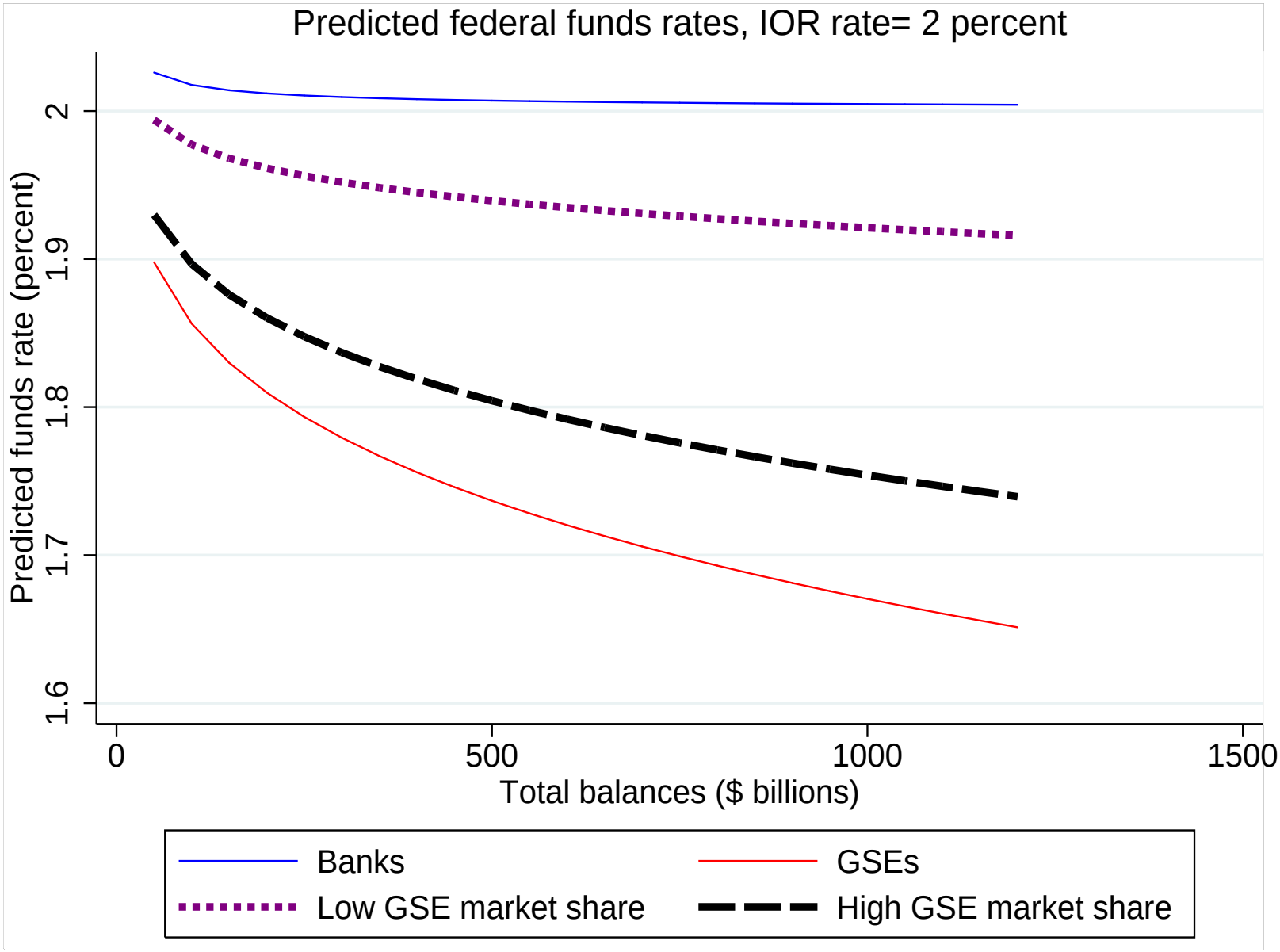
Large-Scale Asset Purchases

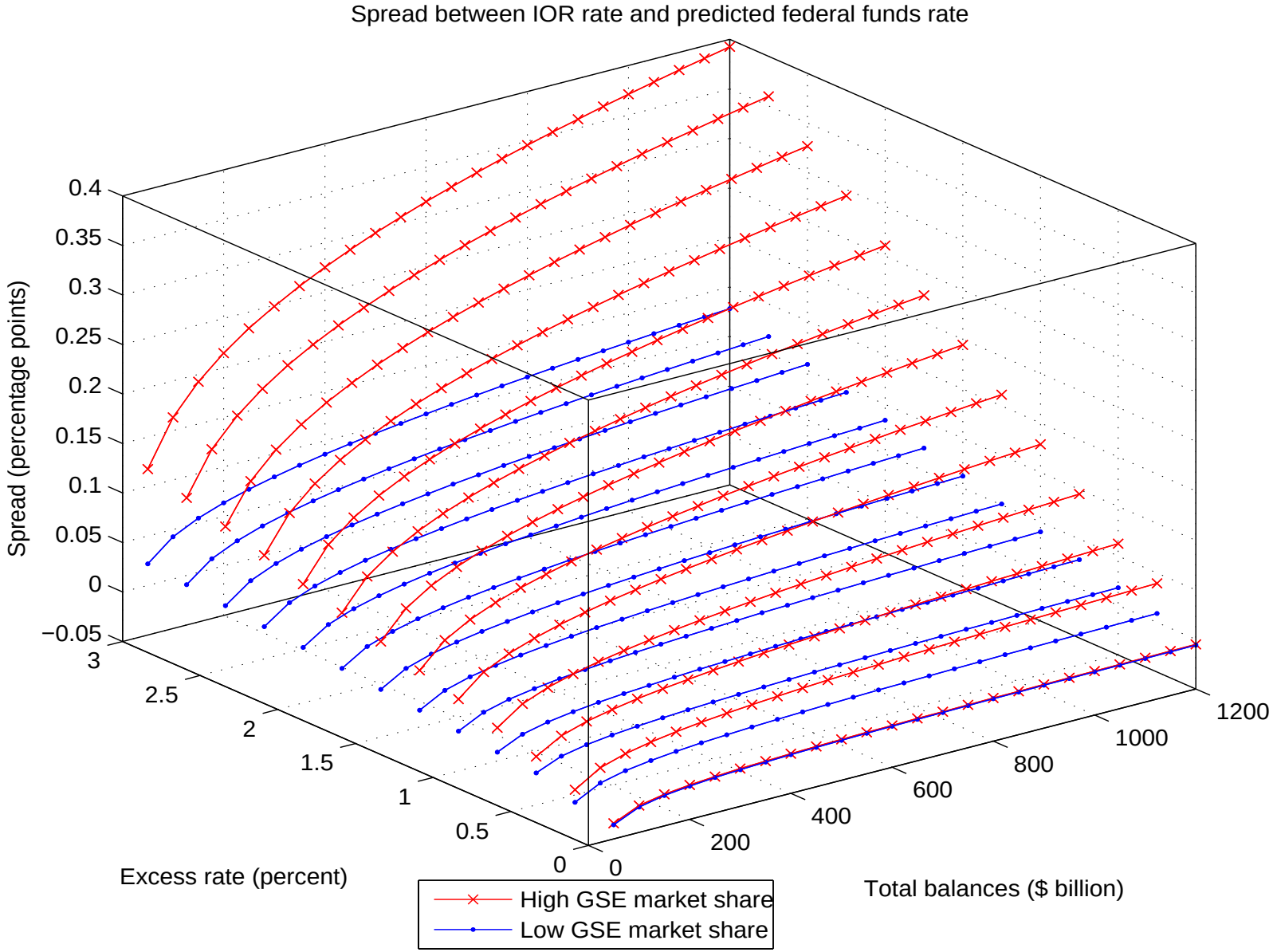
"The Federal Reserve announced today that it will initiate a program to purchase the direct obligations of housing-related GSEs and mortgage-backed securities (MBS) backed by Fannie Mae, Freddie Mac, and Ginnie Mae."

(FRB Press Release, November 25, 2008)

"To provide greater support to mortgage lending and housing markets, the Committee decided today...[on] purchasing up to an additional $750 billion of agency MBS, bringing its total purchases...up to $1.25 trillion this year, and to increase its purchases of agency debt...by up to $100 billion to a total of up to $200 billion. Moreover, to help improve conditions in private credit markets, the Committee decided to purchase up to $300 billion of longer-term Treasury securities over the next six months." ***(FOMC Statement, March 18, 2009)***

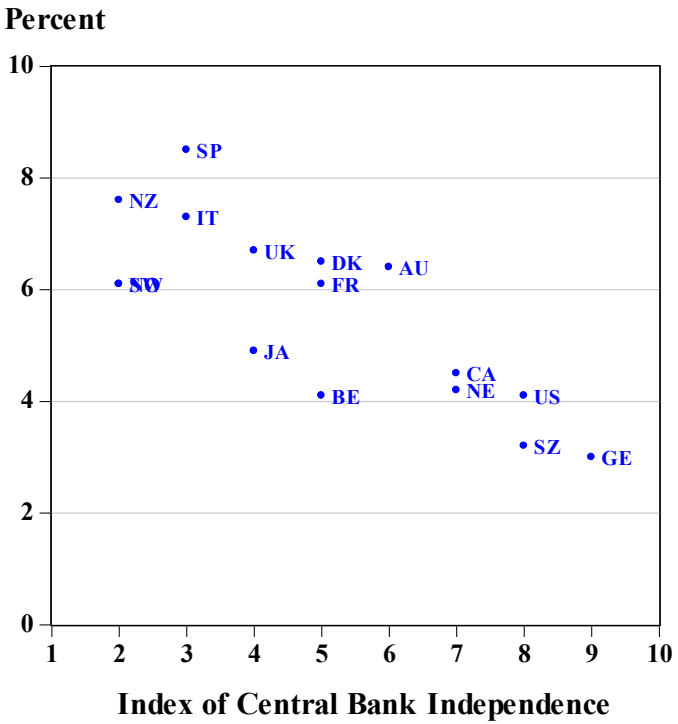

Federal funds rate
Percent
0
1
2
3
Jul. 1, 2008
Oct. 1, 2008
Jan. 1, 2009
Apr. 1, 2009
Jul. 1, 2009
Date
Effective
Target
Primary credit
Interest on excess reserves


Predicted federal funds rates, IOR rate= 2 percent
Predicted funds rate (percent)
1.6
1.7
1.8
1.9
2
0
500
1000
1500
Total balances ($ billions)
Banks
GSEs
Low GSE market share
High GSE market share

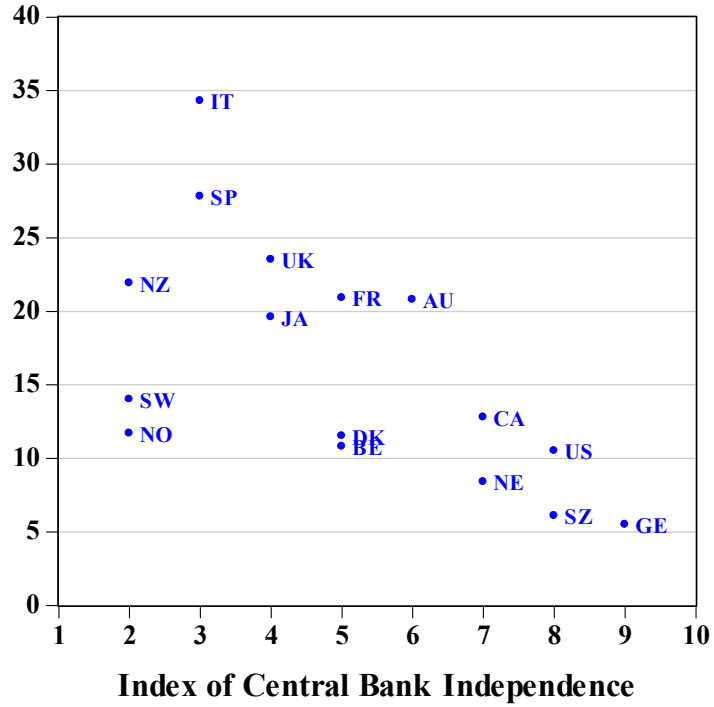

Spread between IOR rate and predicted federal funds rate
Spread (percentage points)
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
−0.05
Excess rate (percent)
3
2.5
2
1.5
1
0.5
0
Total balances ($ billion)
0
200
400
600
800
1000
1200
High GSE market share
Low GSE market share

Central Bank Independence and Macro Stability

Level of Inflation



Variance of Inflation



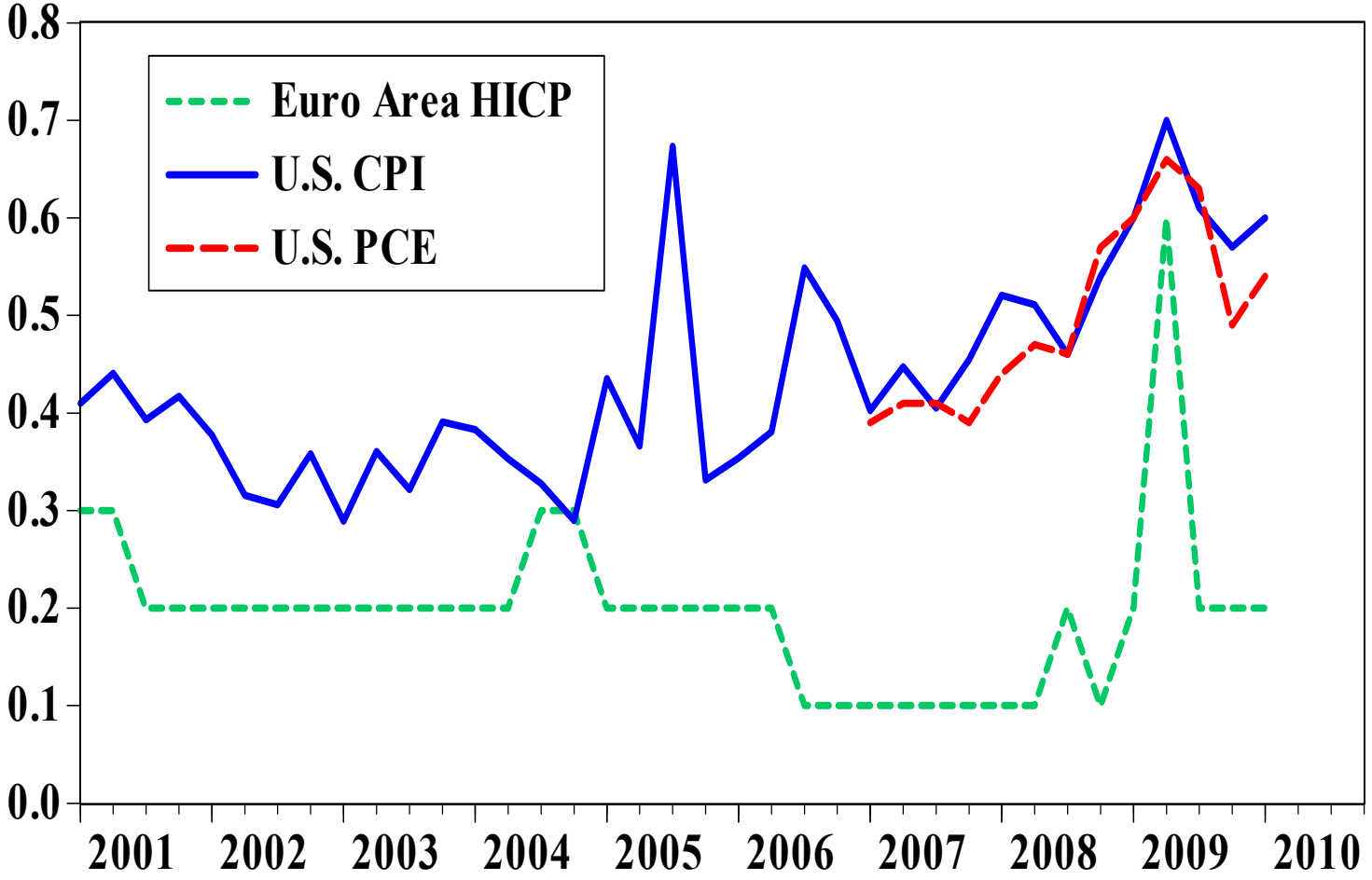
Note: This figure shows the relationship between an index of central bank independence prior to 1990 and macroeconomic outcomes for 16 OECD countries over the period from 1955 to 1988.

Table 2 Inflation by country characteristic (average annual percentages, 1972–95)

(1) Country characteristic	(2) low	(3) high	(4) difference
BoE questionnaire	18.3	20.6	2.2
Cukierman legal	24.0	39.6	15.6
Cukierman turnover	14.1	46.5	32.3
government deficit/GDP	10.1	42.9	32.8
Δ reserve money/GDP	8.1	46.6	38.5
reserves/deposits	6.8	43.7	36.9

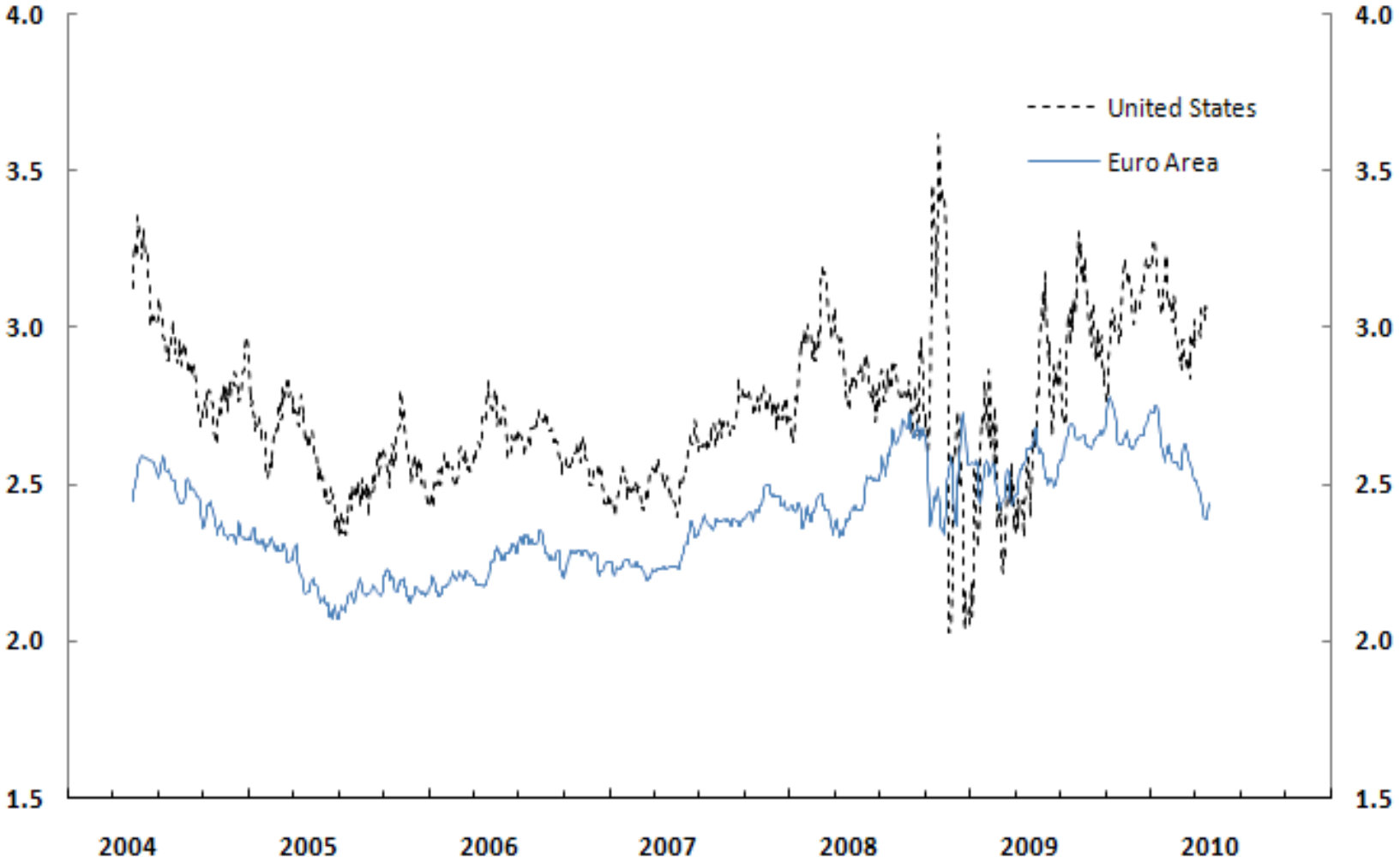
Cross-Sectional Dispersion of Long-Run Inflation Expectations

(standard deviation)



Source: Beechey, Johannsen, and Levin (2010)

Far-Forward Inflation Compensation



Source: Beechey, Johannsen, and Levin (2010)

Conclusion

-- The paper addresses an interesting and highly policy-relevant topic.

-- The analysis and discussion is very thought-provoking.

-- Further research on this topic will be very helpful.