

## prologue

October 28-29, 2014 FOMC Minutes

“Finally, the [System Open Market Account ] manager reported on potential arrangements that would allow depository institutions to pledge funds held in a segregated account at the Federal Reserve as collateral in borrowing transactions with private creditors and would provide an additional supplementary tool during policy normalization; the manager noted possible next steps that the staff could potentially undertake to investigate the issues related to such arrangements.” (page 2)

## prologue

### *Market commentary*

**Wrightson** *For the short end of the market, the big news in the October FOMC minutes was the reference to a proposal to create segregated Fed accounts that banks could pledge as collateral for secured funding... We think this could give the Fed much greater influence over the short-term money markets.*

**JPM** *We see this as a way to tighten the link between IOER and the FF's by removing some of the balance sheet penalties incurred by banks that borrow in the FF's market.*

**BofA Merrill Lynch Global Research** *SCAs could mark a regime shift for fed funds.*

Others: **Goldman Sachs, Citi, Morgan Stanley, RBC, Stone  
McCarthy,...**

# Segregated Balance Accounts

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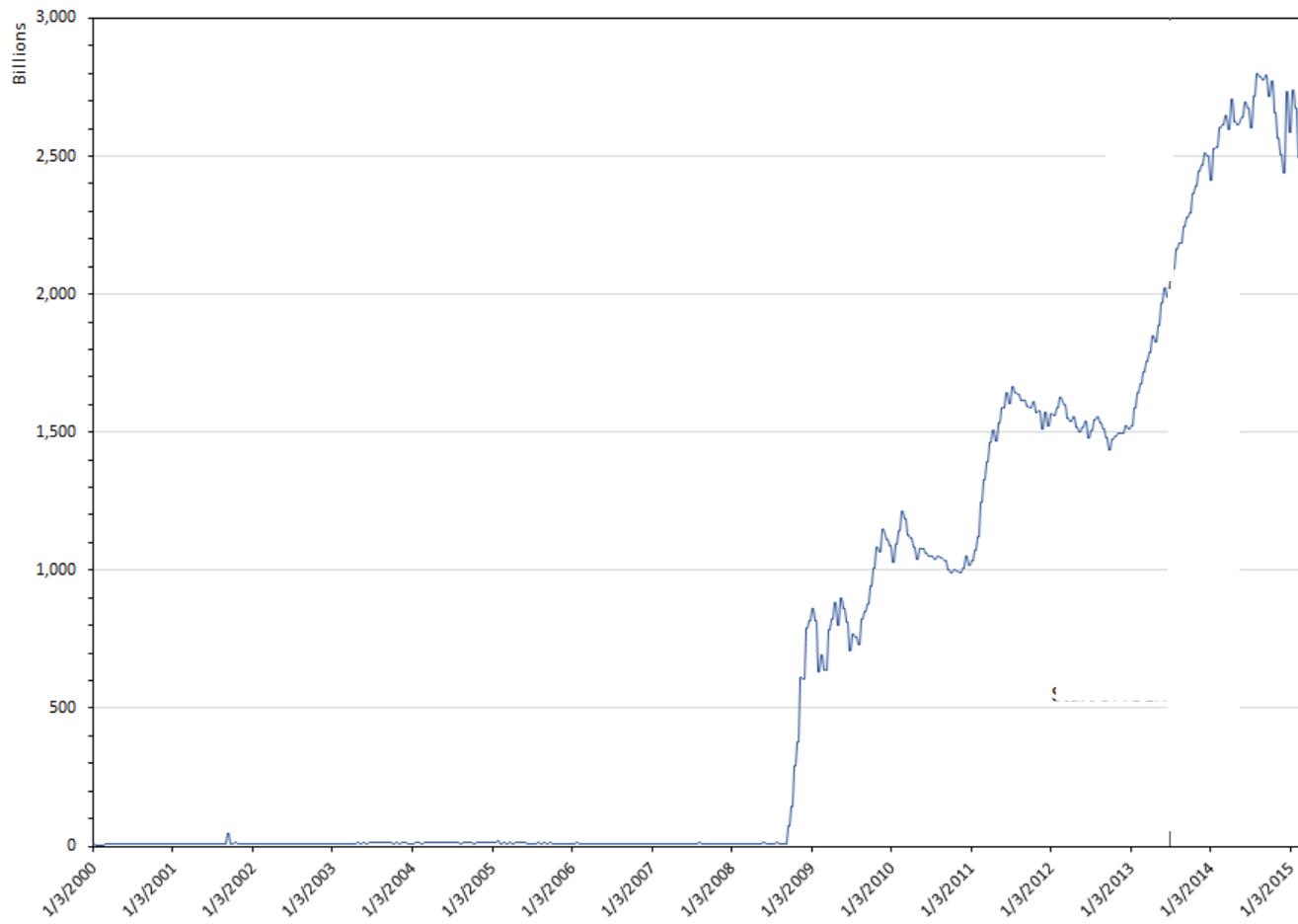
8 December 2015

The views expressed in these slides are mine and do not necessarily reflect the views of the Federal Reserve Bank of New York or of the Federal Reserve System.

## bank reserves

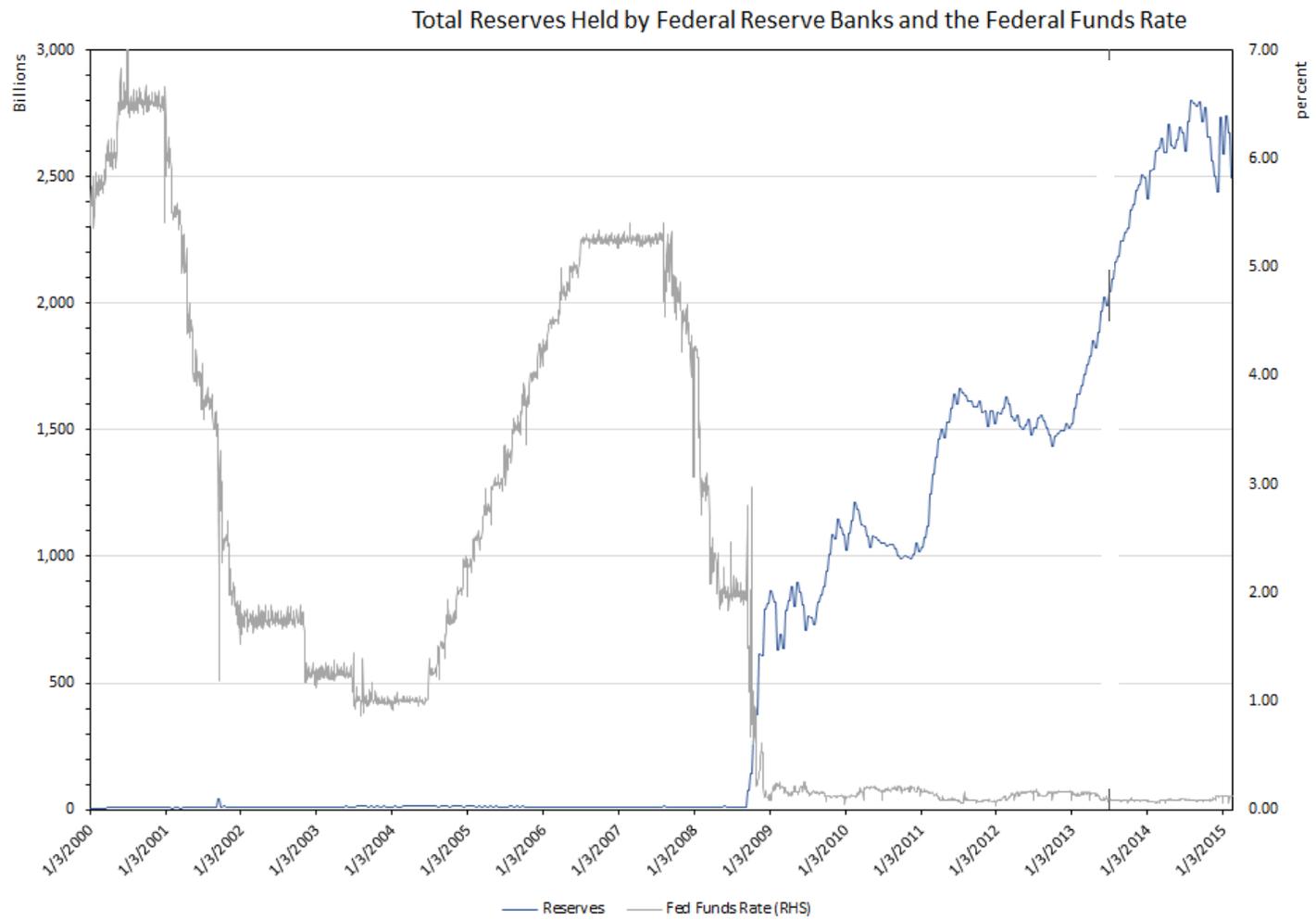
- The federal reserve responded to the 2007-08 financial crisis with a variety of monetary policy measures that dramatically increased the supply of reserves.

Total Reserves Held by Federal Reserve Banks



## federal funds rates

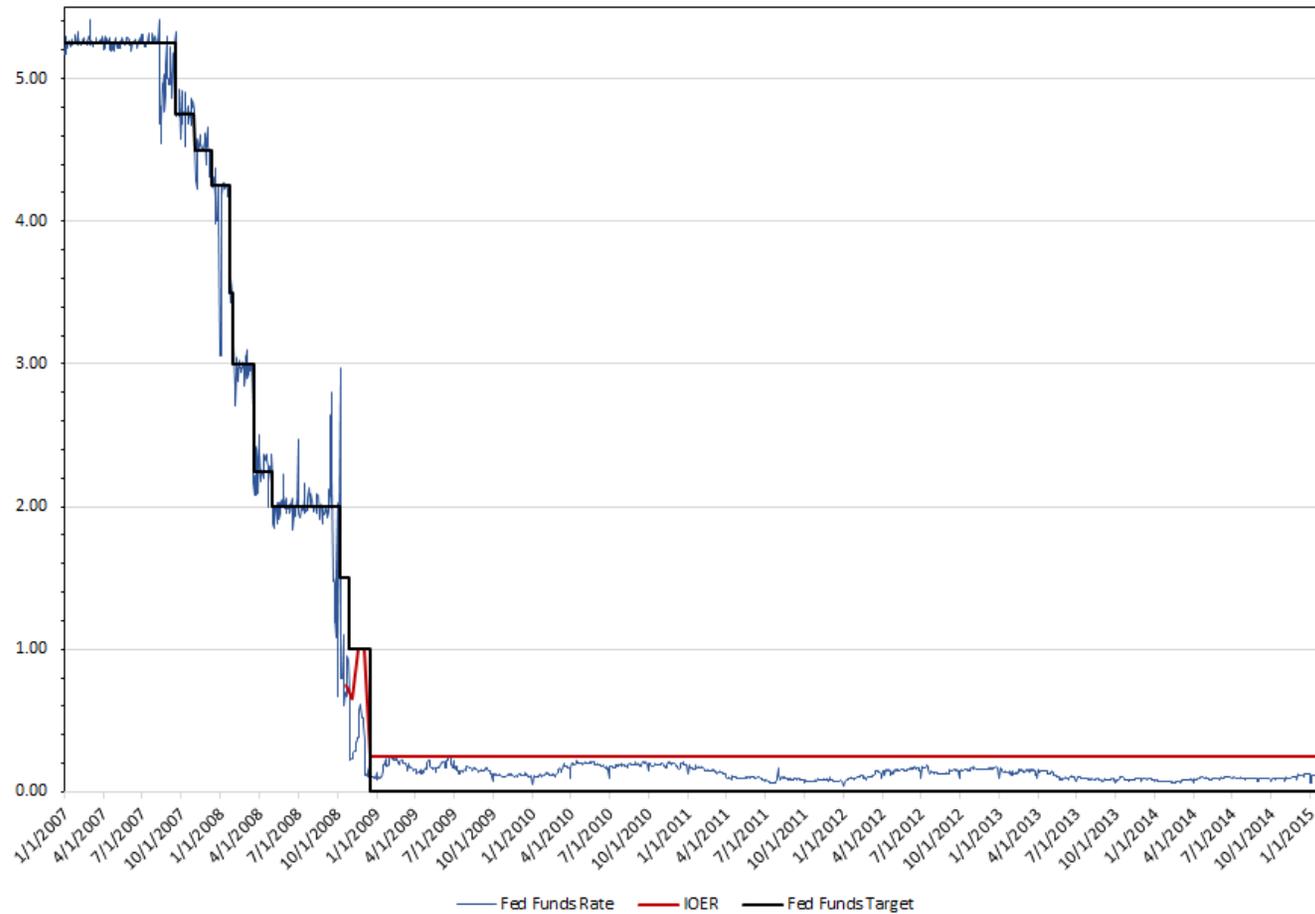
- Increase in reserves contributed to substantially lowering the federal funds rate and other overnight money market interest rates



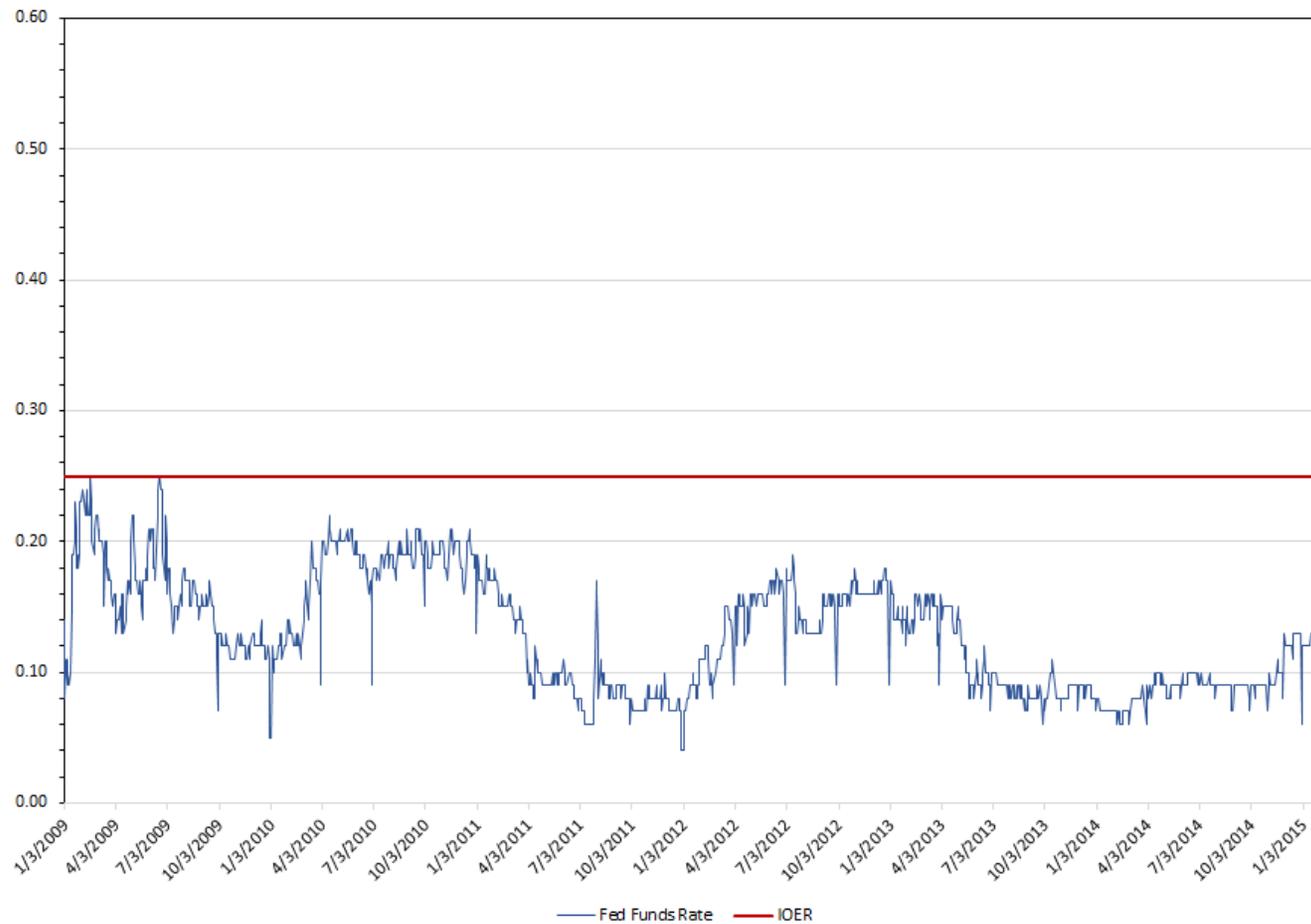
# IOER

- In october 2008, the federal reserve began paying IOER to banks.
- It was expected that the IOER rate would create a floor for overnight (unsecured) rates.
- This did not happen: overnight rates remained significantly below the IOER rate.

Short Term Money Market Rates 2009 - Present



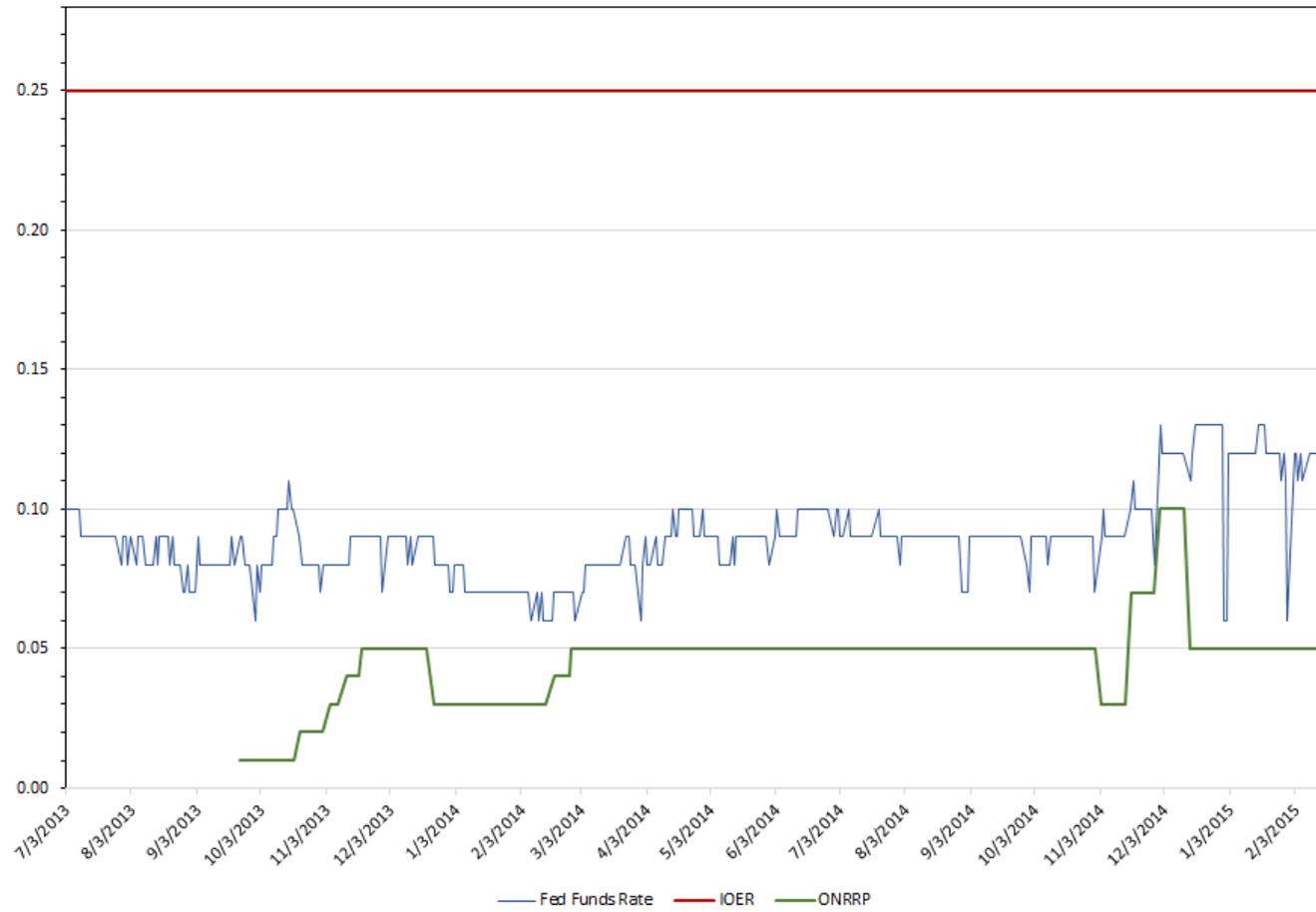
Short Term Money Market Rates 2009 -Present



## ON RRP

- In August 2013, the FOMC announced that an overnight ON RRP facility could be used as another potential tool.
- ON RRP creates a new interest rate floor that is directly relevant to small set of non-banks.

Short Term Money Market Rates Start of IOER - Present



## why rates low? why IOER not a floor?

- two stories
  - (i) balance sheet costs: FDIC assessment, leverage ratios
  - (ii) noncompetitive frictions

# SBA

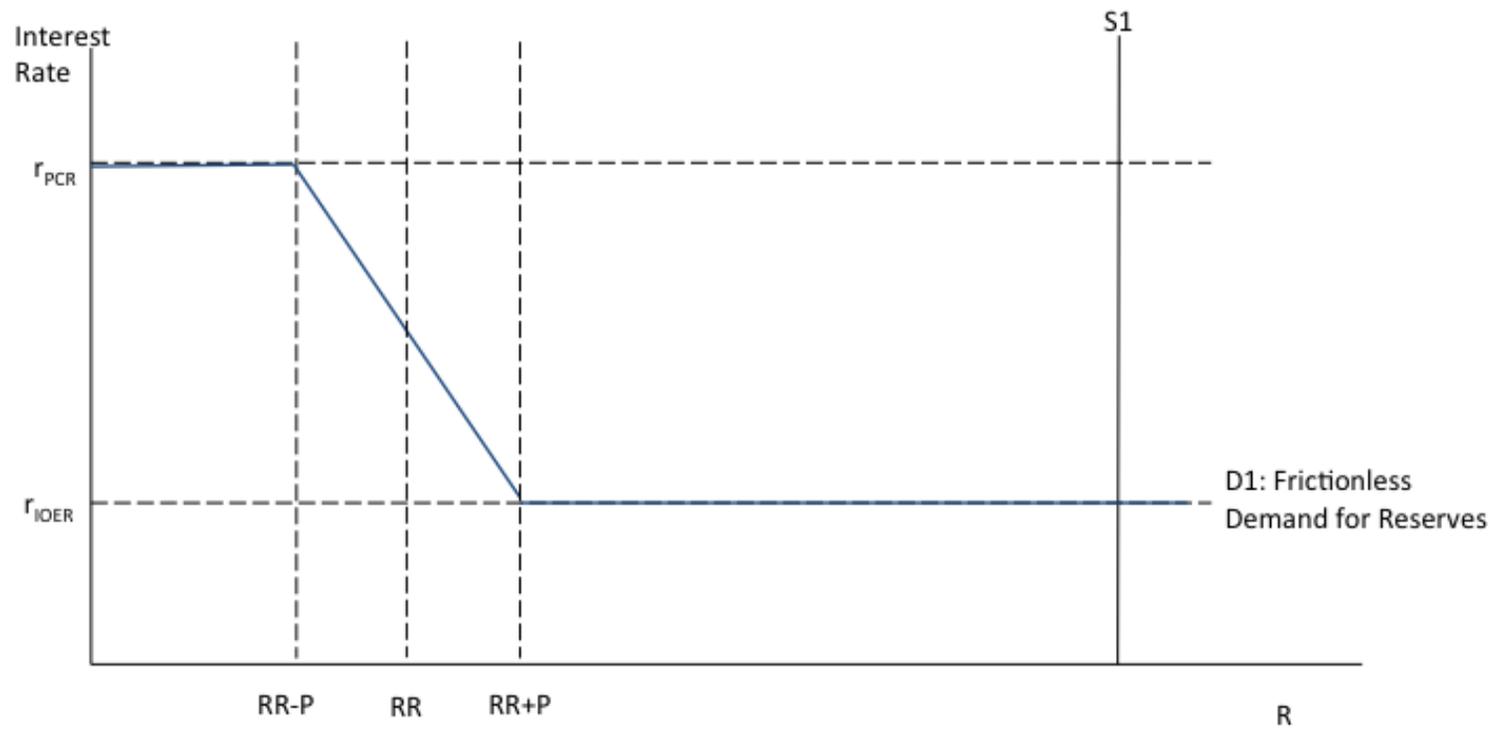
- ON RRP does not directly address noncompetitive frictions
  - adds another administered rate
  - relationship between two rates new policy issue
- we propose an alternative policy tool
  - fosters competition
  - reallocates reserves and lowers aggregate balance sheet costs
  - Improve transmission of monetary policy by facilitating greater pass-through of IOER

## model structure

- Focus on federal funds (ff) market
- Two submarkets: interbank (b2b) market and IOER arbitrage (g2b) market (Bech and Klee, 2011)
- Different motives for demanding federal funds
  - DIs have reserve requirements and earn IOER
  - GSEs do not earn IOER, but need to maintain positive balances
- g2b market meets first
  - lenders (FHLBs) lend to select group of counterparties and impose concentration limits
  - noncompetitive
- Outcome of trade partly determines supply of reserves in b2b market
  - competitive
- ff rate is weighted average of rates in two markets

## b2b market: Ennis and Keister (2008)

- $n$  identical banks (DIs)
- banks borrow and lend at market rate:  $r_{b2b}$
- reserves get paid  $r_{IOER}$
- required reserves for each bank:  $RR$
- payment shock after ff market closes,  $\varepsilon \in [-P, P]$ ,  $RR > P$
- if  $R + \varepsilon < RR$ , borrow at penalty rate  $r_{PCR}$



## intermediate case

- Bank has incentive to hold additional reserves to avoid having to borrow at discount rate
- Bank will have to borrow if  $R + \varepsilon < RR$ .
- Since payment shock is uniformly distributed on  $[-P, P]$  we have

$$\Pr[R + \varepsilon < RR] = \Pr[\varepsilon < RR - R] = \frac{RR - R + P}{2P}$$

$$\underbrace{r_{b2b} - r_{IOER}}_{\text{forgone return in b2b market}} = \underbrace{\left[ \frac{RR - R + P}{2P} \right]}_{\substack{\text{prob need to borrow} \\ \text{from} \\ \text{discount window}}} * \underbrace{(r_{PCR} - r_{IOER})}_{\substack{\text{net cost of borrowing} \\ \text{from} \\ \text{discount window}}}$$

- $R$  solves indifference condition that equates expected benefit with expected cost

## b2b market: balance sheet costs

- costs increase with size of balance sheet
  - FDIC assessments: approximately linear
  - cost of raising additional capital: increasing in amount of capital being raised
- assume cost of raising additional capital kicks in at  $R = RR + P$

## balance sheet costs

$$aR \quad \text{if } R < RR + P$$

$$aR + \frac{b(R - RR - P)^2}{2} \quad \text{if } R \geq RR + P$$

## willingness to borrow

- borrowing additional reserves will increase balance sheet costs if the bank's post shock reserve holdings exceed required reserves
- below  $RR-P$  there is no additional balance sheet cost to borrowing reserves
- above  $RR-P$  there are additional balance sheet costs that depend on where  $R$  lands after the shock
- these costs will include  $a$  if  $R + \varepsilon > RR$  and will include convex costs if  $R + \varepsilon > RR + P$

## willingness to lend

- if initial reserve holdings are less than  $RR + P$  then lending will increase balance sheet costs if payment shock results in need to borrow at discount window
- lenders need to be compensated for credit risk



## g2b market

- main lenders are the FHLBs
  - FHLBs provide funding for home mortgage loans to member institutions by issuing debt in financial markets
  - Sometimes they have extra cash
  - FHLBs do not earn IOER on reserves so they are willing to lend excess cash to banks
  - FHLBs account for large share of lending in ff market

## g2b market

- each FHLB deals with small set of counterparties
- place limits on each counterparty
- borrowing banks make take-it-or-leave-it offers to lenders
- rates offered to lenders in g2b market must exceed their “disagreement point” which is the overnight secured rate (ON RRP rate)

## FHLB behavior induces noncompetitive outcomes

- banks do not have to compete for FHLB funds
  - bidding up rates does not increase loan size

## g2b rate

- suppose lenders can always invest in ON RRP at  $r_{ONRRP}$ 
  - Evidence suggests FHLBs have plenty of cap room
- suppose borrowers in ff market have all of the bargaining power

$$r_{g2b}^* = r_{ONRRP} + k$$

- $k$  is the credit risk premium on g2b loans

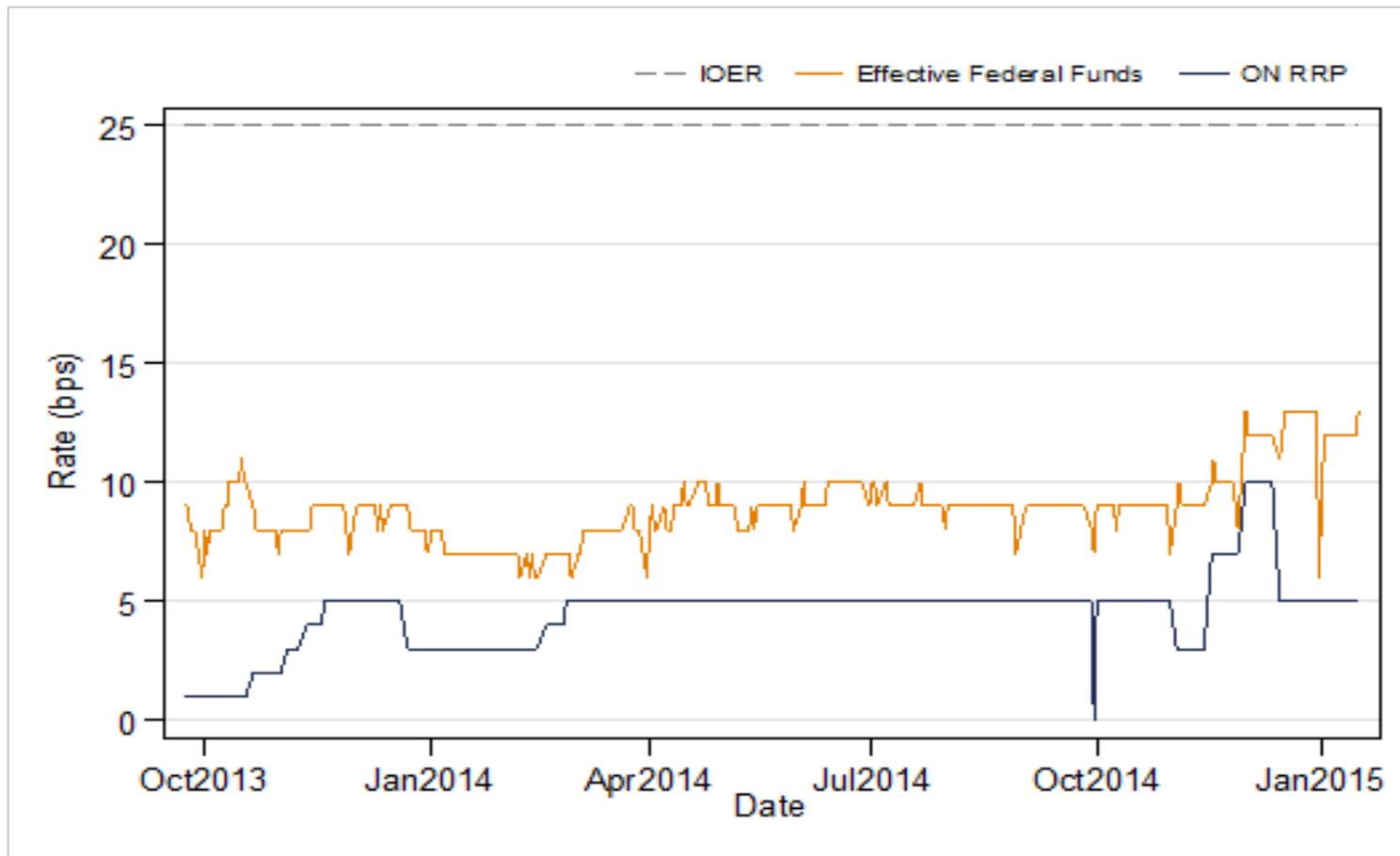
## ff rate

- Weighted sum of rates in b2b and g2b markets
- Suppose  $\lambda$  denotes share of transactions in b2b market

$$r^*_{FF} = \lambda r^*_{b2b} + (1-\lambda) r^*_{g2b}$$

- $\lambda$  is small

# ff rate



## contrast to Bech and Klee

- the rate in each market depends upon the division of bargaining power and the disagreement rates.
- $\beta$  is the bargaining power of the seller in the b2b market;  $\gamma$  is the bargaining power of the seller in the g2b market

$$r_{b2b} = (1 - \beta)r_{IOER} + \beta r_{PCR}$$

and

$$r_{g2b} = (1 - \gamma)r_{ONRRP} + \gamma r_{b2b}$$

- Depending on the bargaining powers and matching shares ff rate can be anywhere in between  $r_{PCR}$  and  $r_{ONRRP}$ .

## what is an SBA?

- an account, separate from a bank's master account
- a bank can establish an SBA at its federal reserve bank with borrowed funds
- funds deposited in an SBA are collateralized by reserves
- only the lender can initiate a transfer out of an SBA
- SBAs, like other bank reserves, get IOER
- rate on SBAs is negotiated between bank and lender

## why SBAs may be useful

- FHLBs currently lend to a small set of banks with tight borrowing limits
  - concerned with credit risk
- "large" number of banks that FHLBs do not deal with
- SBAs allow all these banks to offer "risk free" loans
- all banks can now compete for FHLB funding
  - potential for perfect IOER arbitrage

## SBAs in the model

- interpret the  $n$  banks as FHLB counterparties
- there is a very large number  $m$  of "less reliable" banks
  - do not face any meaningful payments shocks
  - hold reserves equal to required reserves
  - aggregate reserve holdings  $\hat{S}$
- "less reliable" banks too small to have leverage issues
  - constant marginal balance sheet costs,  $a$

## SBA's and less reliable banks

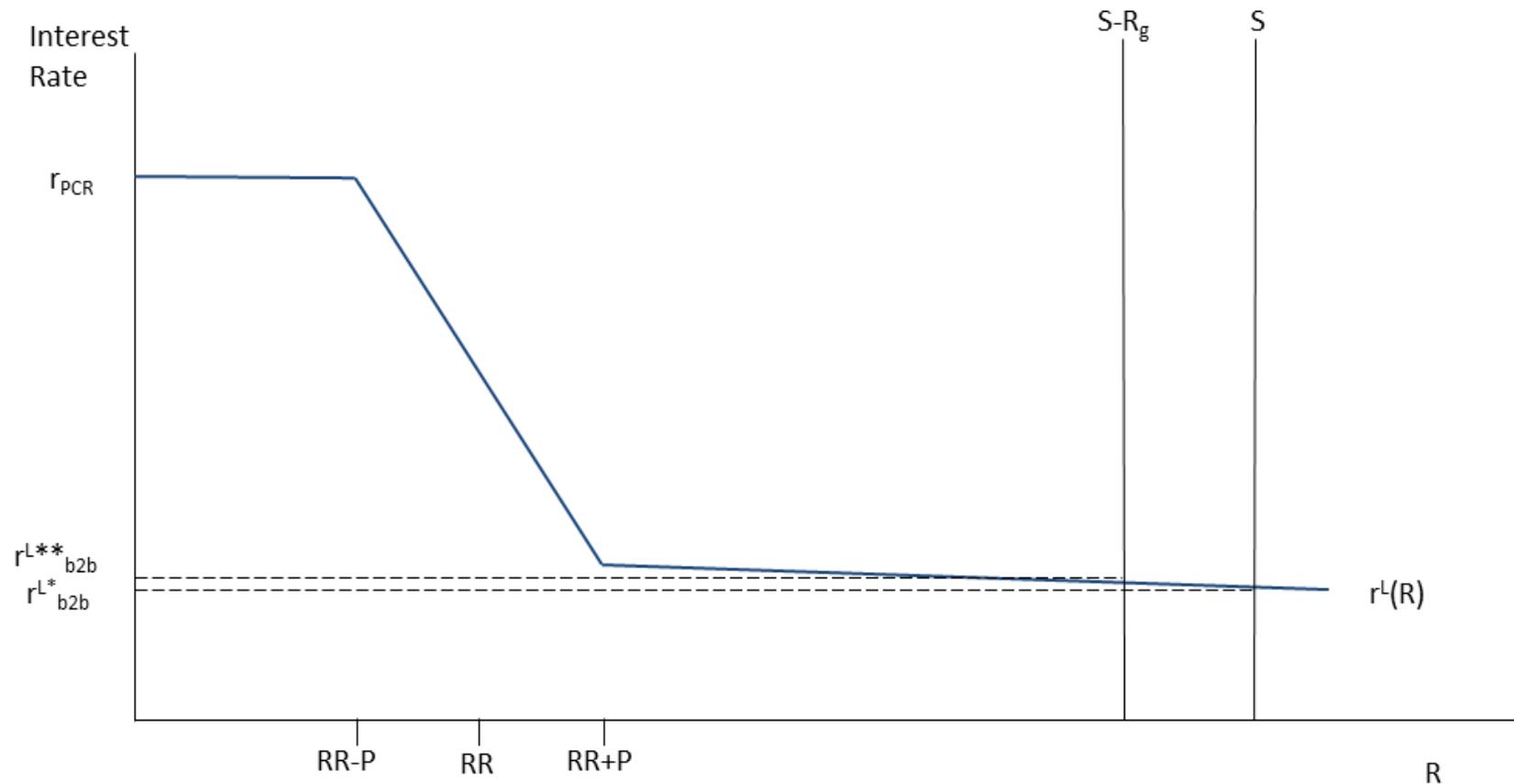
- less reliable banks can compete for ffs using SBA's
- competition among these banks imply

$$r_{g2b}^* = r_{IOER} - a$$

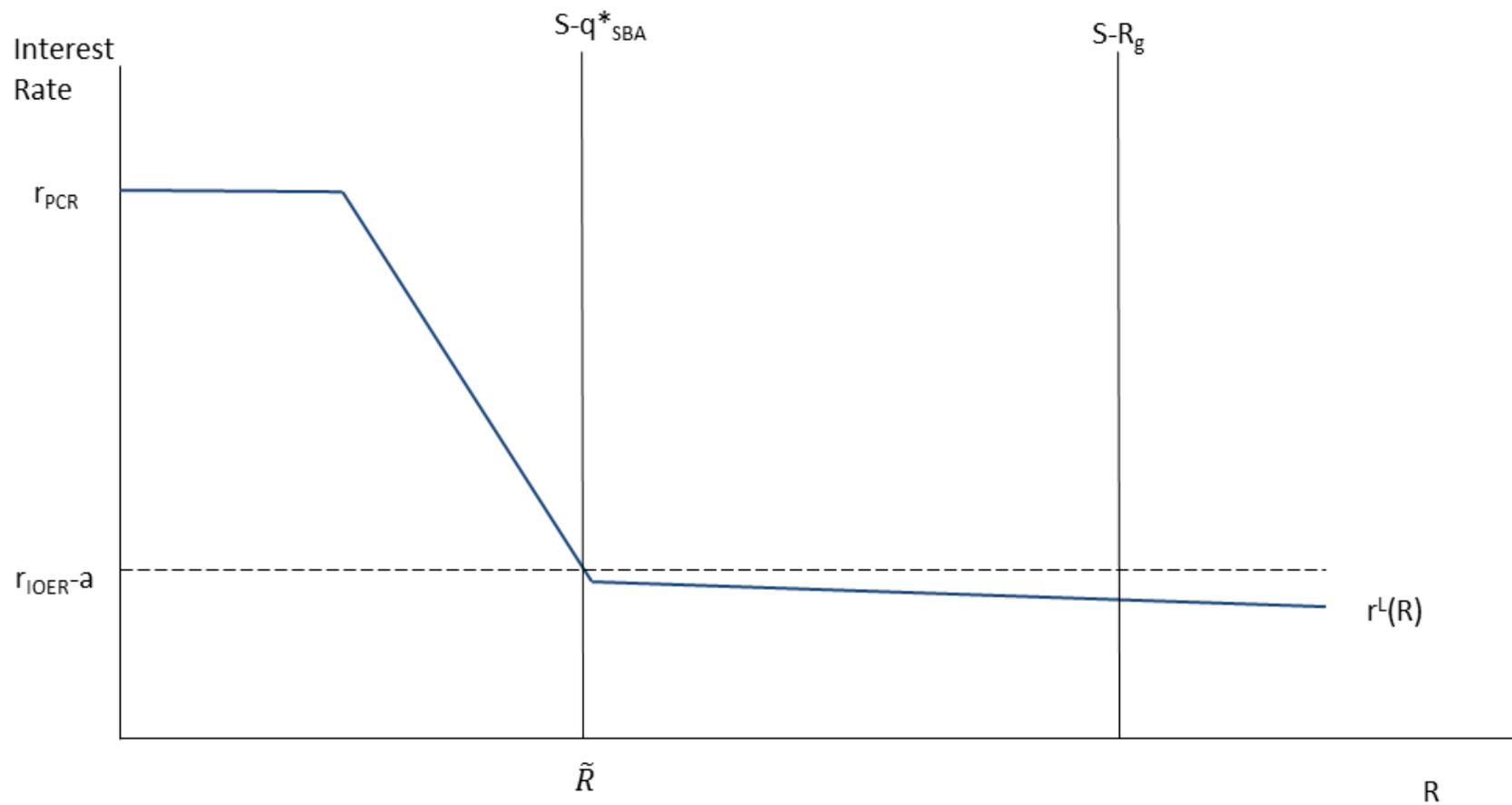
## ff market equilibrium with SBAs

- Two steps
  1. FHLB lending into SBAs reduces supply of reserves in b2b market
  2. Remaining excess reserves in b2b market move into SBAs

# ff mkt equilibrium adjustment with SBAs: step 1



# ff mkt equilibrium adjustment with SBAs: step 2

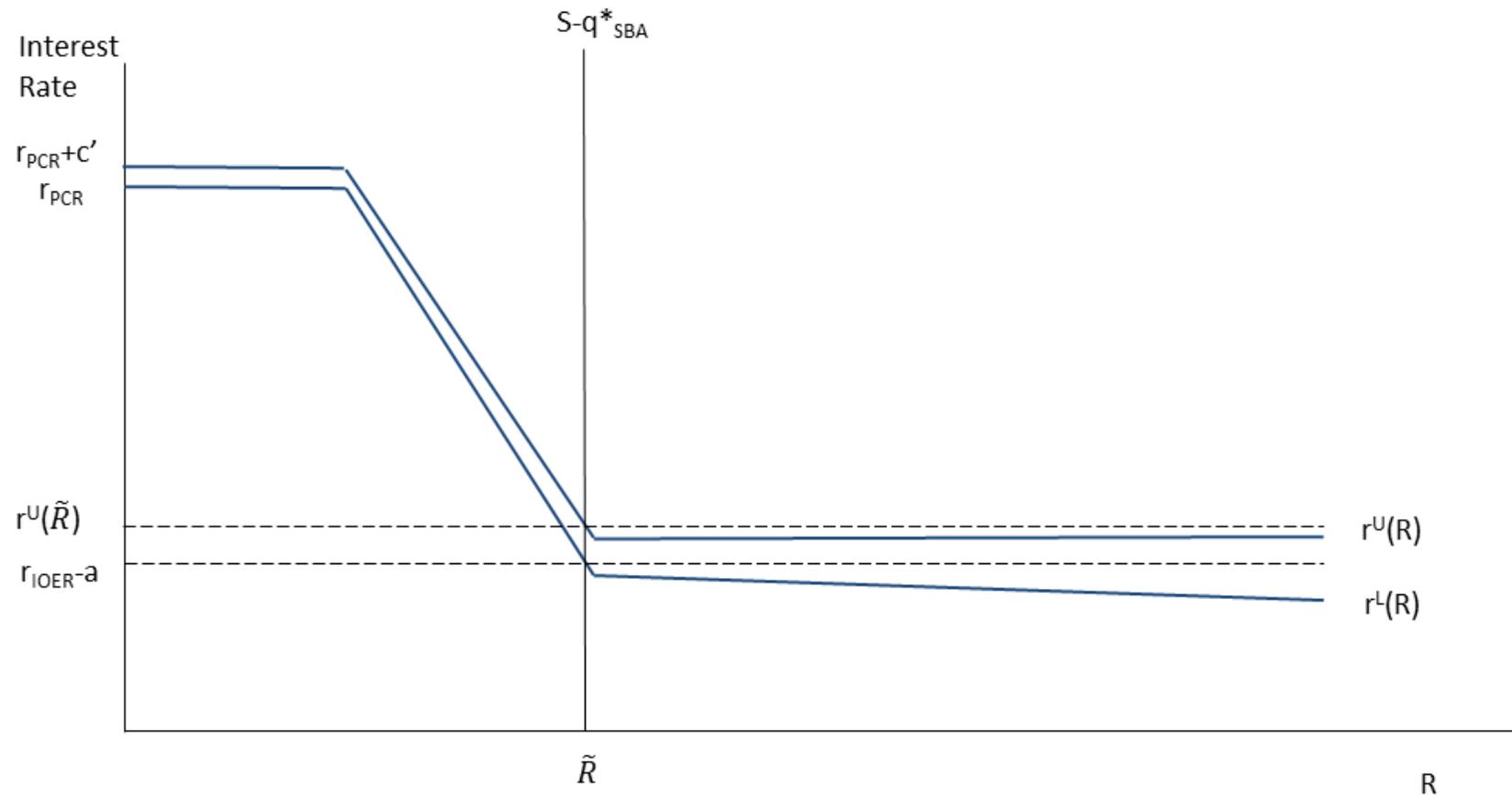


## equilibrium in ff market

- reserves decrease 1-1 with SBAs
- equilibrium aggregate SBAs:  $q_{SBA}^* = S - \tilde{R}$
- equilibrium ff rate:

$$r_{FF}^* \in [r_{IOER} - a, r^U(\tilde{R})]$$

# ff market equilibrium with SBAs



## aggregate balance sheet costs

- balance sheet costs w/o SBAs
  - $\hat{S}$  = total reserves held by less credit worthy banks

$$a(nS + m\hat{S}) + nb \frac{(S - RR - P)^2}{2}$$

- balance sheet costs with SBAs

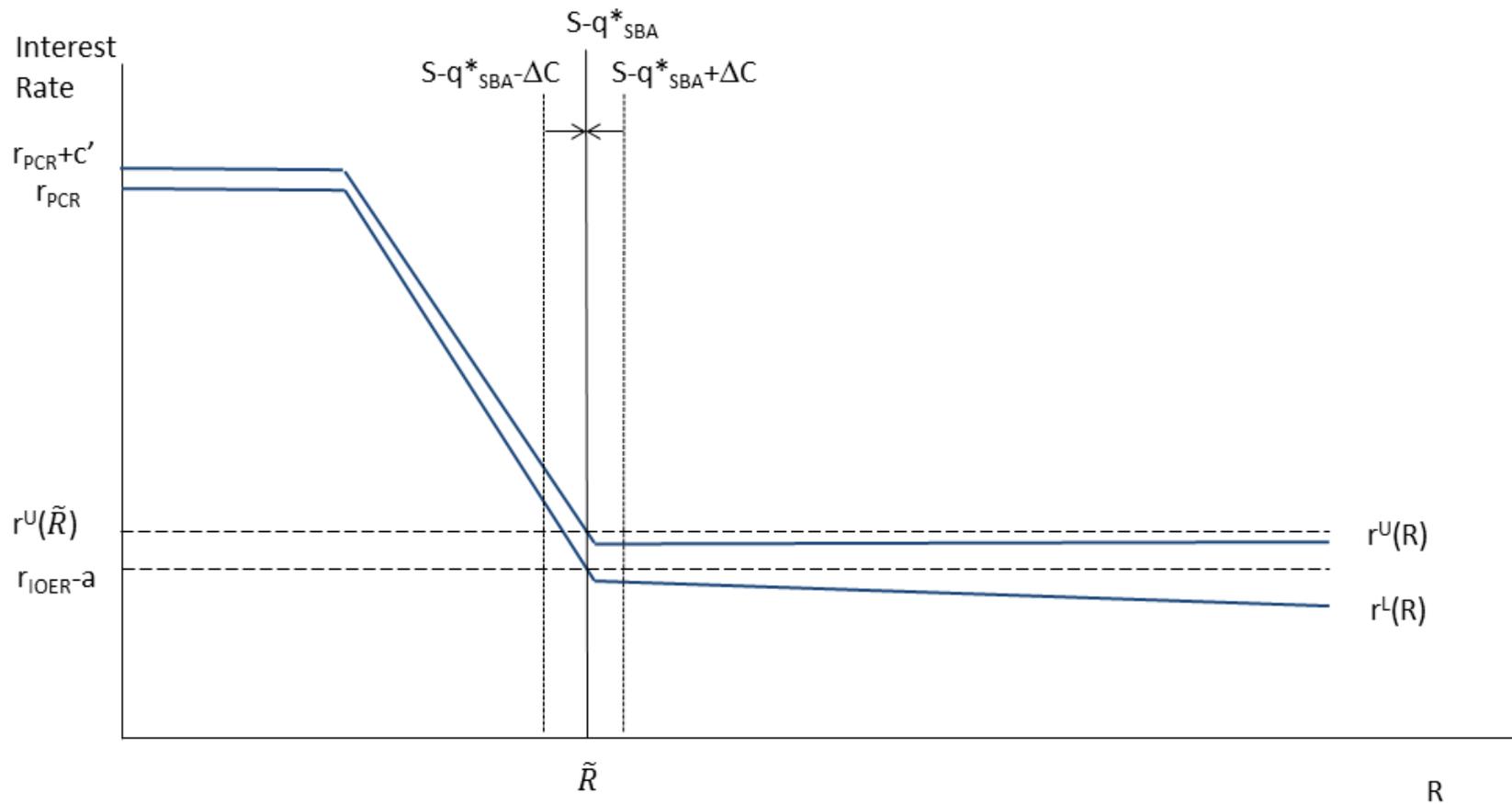
$$a(nS + m\hat{S})$$

- All costs associated with leverage ratio compliance are eliminated

## near complete pass through of changes in IOER

- increase IOER and pcr by  $\delta$ 
  - lower bound of equilibrium ff rates increases by same amount
  - upper bound increases by  $\frac{\delta}{1-q}$  where  $q$  is probability of default
- near complete pass-through of changes in the IOER rate into does not occur in the absence of SBAs.
  - need increase in ON RRP rate

# change in reserves or cash demand



## potential risks

- Flight to quality
- Effect on the ff market
- Effect on the FDIC
- Legal and regulatory issues

## summary

- SBAs are a concept for a new monetary policy tool that could
  - improve competition in money markets
  - strengthen the floor on overnight interest rates that is created by IOER.
- SBAs are fully segregated from the other assets of the bank -- in particular, from the bank's Master Account.
  - only the lender of the funds can initiate a transfer out of an SBA
- bank receives the IOER rate for all balances held in an SBA; interest rate bank pays the lender of the funds deposited in an SBA would be competitively determined

## summary

- SBAs could provide banks with a vehicle to borrow funds that is almost free of credit risk.
  - interest payment subject to credit risk
- near elimination of credit risk would level the playing field so all banks could borrow in the overnight money market on equal footing.
- could facilitate a more complete pass through of the IOER rate to the non-bank sector
- SBAs could result in a more favorable distribution of reserves across the banking system, which would reduce aggregate balance sheet costs.

## summary

- SBAs would be complementary to other policy tools
  - More direct, “market” solution
  - SBAs directly address the issue of competitive frictions.
  - ON RRP's affect the competitive frictions only indirectly
- SBAs would not have the same moral hazard problems that are associated with deposit insurance
  - narrow bank accounts that deliver the advantages of narrow banks without the disadvantages.
  - Tobin “Financial Innovation and Deregulation in Perspective” (Cowles Foundation Paper, 1985)

# epilogue

## December 16-17 2014 FOMC Minutes

“The [SOMA] manager also provided an update on staff work related to potential arrangements that would allow depository institutions to pledge funds held in a segregated account at the Federal Reserve as collateral in borrowing transactions with private creditors and which could potentially provide an additional supplementary tool during policy normalization. After further review, staff analysis suggested that such accounts involved a number of operational, regulatory, and policy issues. These issues raised questions about these accounts’ possible effectiveness that would be difficult to resolve in a timely fashion. It was therefore decided that further work to implement such accounts would be shelved for now.” (page 2)

## epilogue

This paper released as Staff Report in May 2015

[https://www.newyorkfed.org/research/staff\\_reports/sr730.html](https://www.newyorkfed.org/research/staff_reports/sr730.html)

McAndrews, Kashyap and Cochrane debate merits at recent Brookings event in Chicago

<http://www.brookings.edu/events/2015/11/10-13-trillion-question-treasury-debt-management>

Thank You