A Lesson from the Great Depression that the Fed Might have Learned: A Comparison of the 1932 Open Market Purchases with Quantitative Easing, by Bordo and Sinha

Discussant: Annette Vissing-Jorgensen, UC Berkeley

Summary:

- Event study: The 1932 program lowered medium-term Treasury yields by 14 bps with little effect on long-term Treasury yields.

- Simulation of general equilibrium model borrowed from Chen, Curdia and Ferrero (Economic Journal 2012).
  - Some households hold both long and short bonds, but face a "transactions cost" of holdings long bond.
  - Others hold only long bonds: They have a preferred habitat for long bonds.
  - The "transactions cost" is increasing in ratio of long to short bond supply.

  Following Vayanos-Vila and Greenwood-Vayanos, the most reasonable interpretation is that the transactions cost is not literally a transactions cost, but a utility cost of taking on more duration risk.

A $1B Fed purchase of long bonds held for 1 quarter
→ Long yield down 12 bps, output growth up 0.07%.

A $1B Fed purchase of long bonds held for 2 quarters
→ Long yield down 23 bps, output growth up 0.5%.

"…the significant degree of financial market segmentation in this period made the historical open market purchase operation more effective than QE in stimulating output growth."

- Posterior mean for fraction of preferred habitat households is 24% (7% in Chen et al.)
- Chen et al. estimated that QE2 (which was about twice as big as the 1932 operation relative to GDP) increased GDP growth by only 0.13%.

So what is the lesson the Fed might have learned?

- That they should expect QE to be less effective for stimulating output in the 2000s/2010s because there are now less preferred habitat investors.

- Note, however, that the paper provides no direct data on the prevalence of preferred habitat investors such as insurance companies and pension funds over time. Can some data be added on this to support the argument?

In general, I'm not sure we need the comparison with QE.

- It's a bit confusing that in the empirical part the 1932 program is compared to QE1 but then in the theory it's compared to QE2.

- If the QE1 comparison is kept, then I'd suggest removing the discussion of what Treasury maturities were purchased from Nov 25, 2009 to March 18, 2009 since QE1 purchases of Treasury securities only started *following* March 18, 2009.
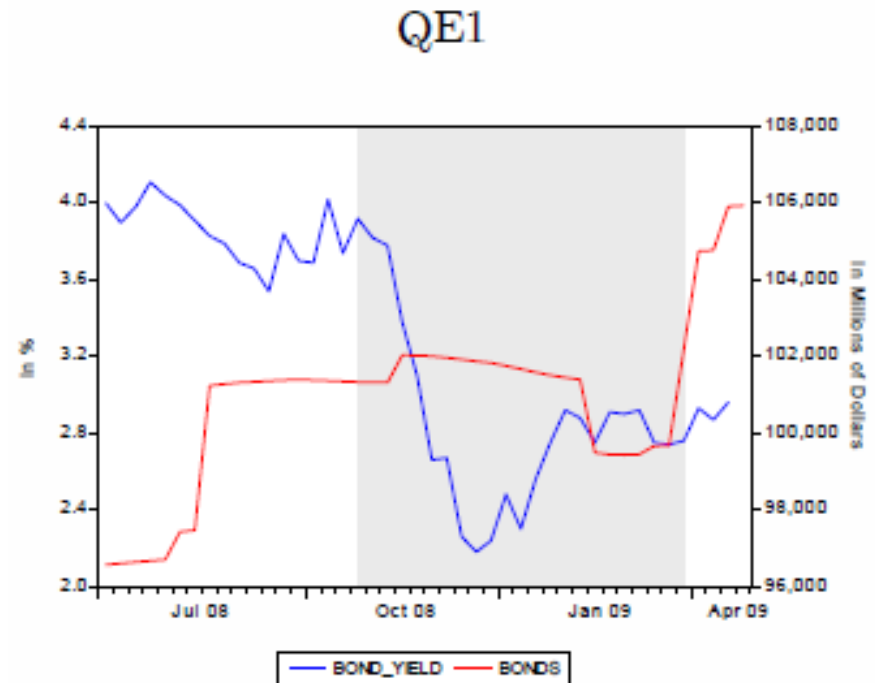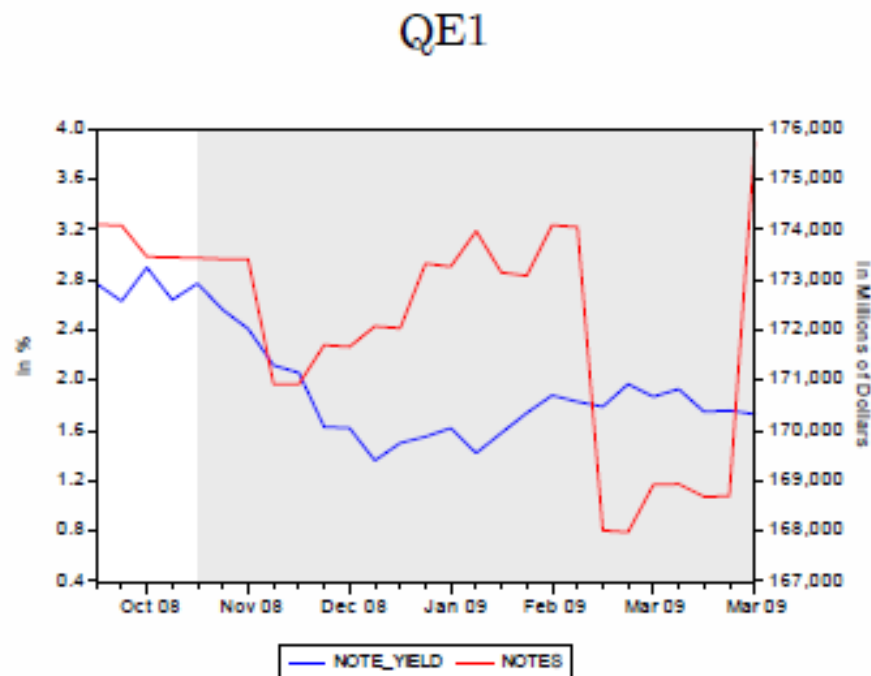
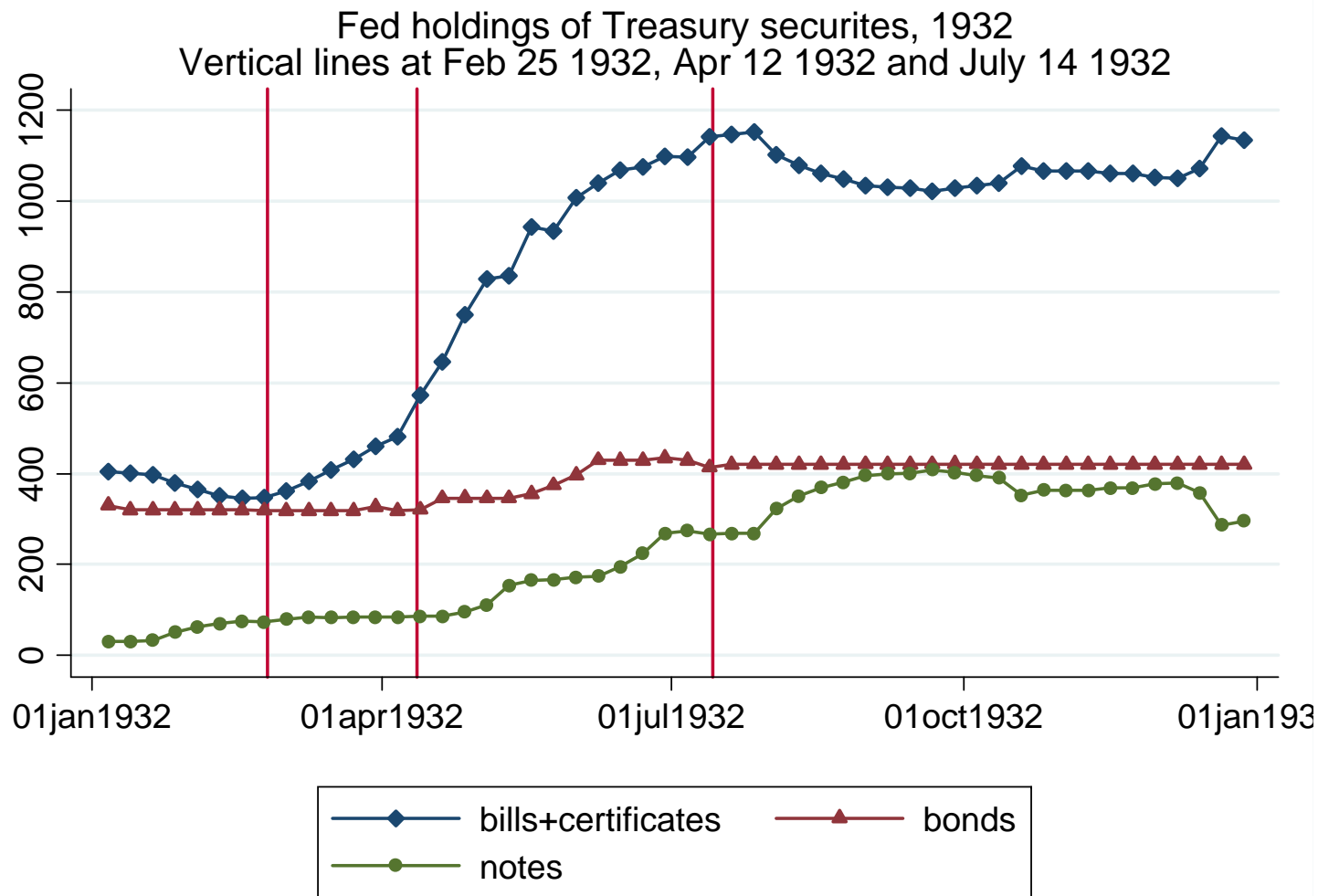## Description of the 1932 policy, from Hsieh and Romer (2006):

- **Feb. 24-25, 1932 Open Market Policy Conference (what's now called FOMC meeting):** Authorized purchase of $200M Treasuries at a rate of about $25M/week.

  This was made possible by the Glass-Steagall Act of 1932.

In February, Congress passed the Glass-Steagall Act, which effected a substantial change in collateral requirements for the Federal Reserve. Under the original Federal Reserve Act, the Federal Reserve had to hold gold as backing for 40 percent of notes, and eligible (private-sector) securities for the remaining 60 percent. Because the Federal Reserve typically did not hold enough such private bills, it ended up using gold to back substantially more than the statutory minimum. The Glass-Steagall Act allowed the Federal Reserve's large holdings of government securities to be used as collateral for Federal Reserve notes, thus freeing up large quantities of gold to back increases in the money supply.

- **April 12, 1932 Open Market Policy Conference:** Authorized purchase of an additional $500M of Treasuries and recommended "that these purchases, at least in the initial weeks, should be at a rate as rapid as may be practicable."

- **July 14, 1932 Open Market Policy Conference:** …the OMPC indicated that "except in unusual or unforeseen circumstances purchases should not exceed 15 million dollars a week."

Comment 1. 1932-QE was not like QE1/QE2/QE3:
The majority of purchases were Treasury bills and certificates

Fed holdings of Treasury securites, 1932
Vertical lines at Feb 25 1932, Apr 12 1932 and July 14 1932

Legend: bills+certificates — bonds — notes

Purchases, Feb 24-July 13: Bills+cert's $793M, Notes $193M, Bonds $95M, Total $1.08B.
(Total is about 2% of GDP for 1932. QE1 of 1.75T was about 12% of GDP).

Why does that matter?

- **The Fed didn't buy $1B of medium/long-term Treasuries, only about $300M.**
  - Presumably that would make the model simulation say that the note/bond part of the policy was only a third as effective.

- **Any observed effect on medium/long yields could be driven by the bills purchases.**
  - Think of bill/certificate purchases as standard OMOs that lower the short rate.
  - That affects longer rates via the expectations hypothesis.
  - Effect of purchases of notes/bonds are therefore smaller than what's observed.

  This is a bit like a signaling channel of QE but not exactly since the short rate effects like came from the bills/certificate purchases.

  In that sense **it's hard to use the 1932 policy to think about what the Fed should have expected from QE1/QE2/QE3 which didn't involve bills purchases.**

- **Any effect on economy could be driven by bills purchases**, as in standard OMOs.
  - The simulation should account for the changing short rate, if the objective is to assess how the overall policy package affected the economy.

Comment 2. There was no announcement after the April 12, 1932 Open Market Policy Conference, but the NY Fed president testified in Congress on April 13, 1932 and there were leaks to the press of policy details.

This is essential for how to set up an event study.

Hsieh and Romer (2006) also argue that the public was well aware of policy early on.

WSJ, April 14, 1932:

More and Cheaper Money
Wall Street Journal (1923 - Current file); Apr 14, 1932;
ProQuest Historical Newspapers: The Wall Street Journal
pg. 8

More and Cheaper Money

Federal Reserve Board policy, as Governor Harrison of the New York Reserve Bank disclosed before a House sub-committee yesterday, has within the past few days reverted to the liberality in open market operations which it followed without practical results in the spring of 1931. The Reserve banks will now purchase Government securities on a decidedly more liberal scale than in the immediate past. While the measure of increase is not disclosed, more or less informed rumor declares that acquisitions will run at something like $75,-000,000 a week, compared with approximately $25,000,000 weekly during the past seven weeks.

New York Times, front-page, April 14, 1932:

RESERVE BANKS ACT TO STEM DEPRESSION BY SPURRING CREDIT

Purchases of Government Securities to Be Increased to 75 or 100 Millions Weekly.

HARRISON REVEALS POLICY

Opposes Before House Committee Bill Calling on Board to Raise Level of Prices.

SAME AIM NOW ATTEMPTED

Washington and Wall Street Expect System to Use Its Facilities to Fullest Extent.

Special to THE NEW YORK TIMES.

WASHINGTON, April 13.—A bold policy to broaden credit facilities and check the decline in prices has been embarked upon by the Federal Reserve system, the decision having been reached that the time is ripe for the system to throw its vast resources into a counter movement against the business depression.

An agreement by Governors of the twelve Federal Reserve Banks, who met here with the Federal Reserve Board last night, to increase purchases of government securities by reserve banks, was revealed today by George L. Harrison, Governor of the Federal Reserve Bank of New York, in testimony before a House Banking and Currency sub-Committee.

Mr. Harrison declined to comment on a report that the Federal Reserve purchases of government securities may be increased to $75,000,000 weekly, instead of $25,000,000.

The new policy was interpreted as meaning that the banks will use their facilities to the fullest extent under authority of the Glass-Steagall bill, which gave the reserve banks authority to use government bonds as partial backing for currency and placed them in a freer position so far as foreign withdrawals of gold are concerned.

"What will the weekly purchases be from now on?" asked Representative Goldsborough, chairman of the subcommittee considering his bill. He explained that $75,000,000 was the figure generally reported.

"I can't say," replied Mr. Harrison. "Perhaps I have said too much." [....]

to combat the depression. In contrast to reports from Washington, the understanding here was that the undertaking will involve the purchase each week by the Reserve Banks of about $100,000,000 of United States Government securities. Today's weekly report of the system, to be published after the close of the markets, will show that the first week's quota on such a basis has already been bought.

Wall Street has heard reports of the campaign for several days, and the market for United States Government securities has soared in anticipation.

I would consider the key event period to be from about a week before April 13 to a bit after (perhaps a week after to get one more week of purchase data).

Comment 3. Using my suggested event weeks, the effect of the policy was much larger than the authors' event study suggests.

We have weekly average yields for weeks ending April 9, 16 and 23. The two week changes from the April 9 avg. to the April 23 avg. were:

- Bonds: **-20 bps!**
- Notes: **-133 bps!**
- Prime banker's
  acceptances, 90 days: **-113 bps!**

From April 23 to the end of the program on July 14, yields were basically flat.

This is all consistent with the testimony+leaks working just like an announcement.

And the numbers are huge – the policy had a much larger effect on yields that the authors concluded.

Treasury yields, 1932
Vertical lines at Feb 25 1932, Apr 12 1932 and July 14 1932

Week ending April 9

Week ending April 23
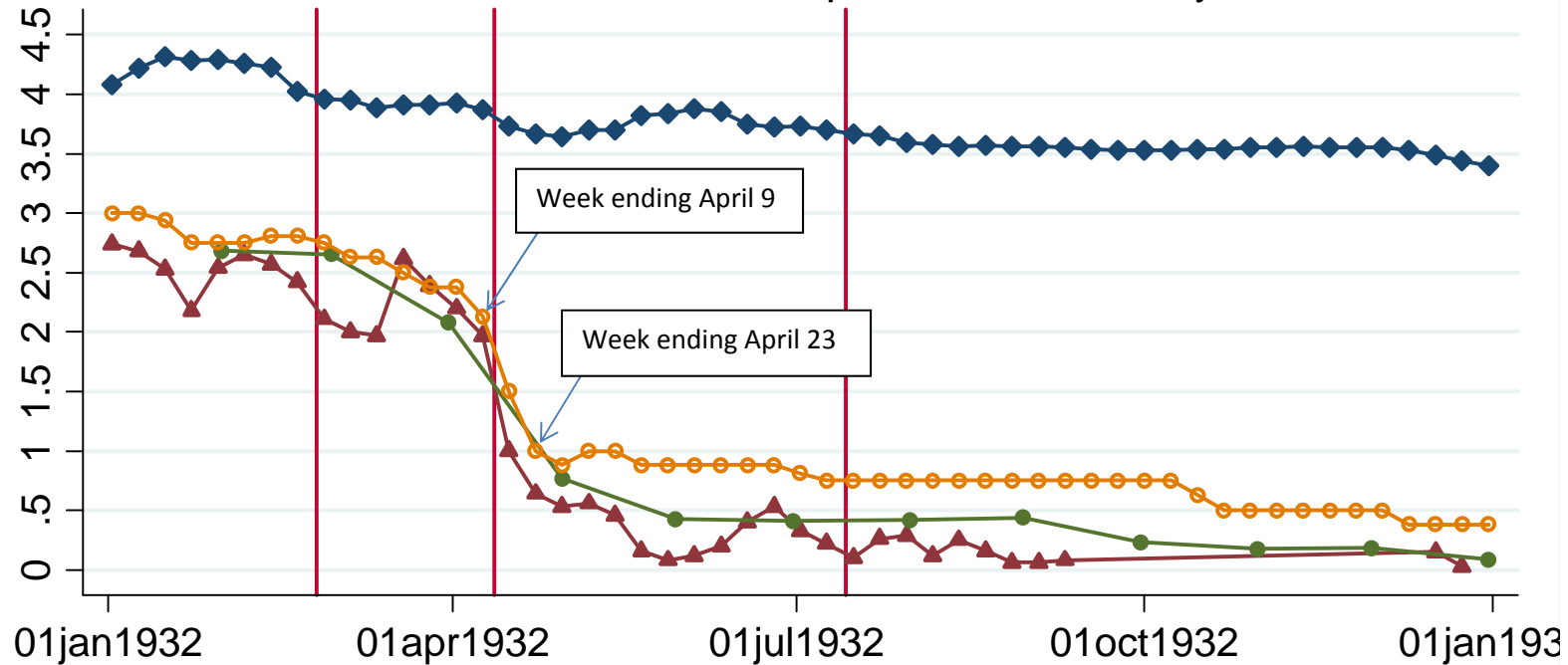
Yield on Treasury bonds, weekly avg.

Yield on Treasury notes and certificates, 3-6 months, weekly avg.

Yield on Treasury bills, monthly avg

Yield on prime bankers' acceptances 90 days, weekly avg.

There's a data break in the note series when it jumps on Mar. 19 1932.

- The authors' analysis of notes and bonds:
  - Only includes one of the 2 event weeks I picked
  - Includes a bunch of later weeks with large Fed purchases but for which yields went up a bit on average.

That's why they find smaller effects. (In total, -14 bps for notes, +2 bps for bonds)

Week	% change in Bill Holdings	% change in Note Holdings	Yields levels on 3-5 year notes	Changes in yields on 3-5 year notes (in b.p.)
April 27, 1932	15.9	11.7	0.64	-36
May 4, 1932	10.7	16.5	0.53	-11
May 11, 1932	0.7	38.2	0.56	3
May 18, 1932	12.8	7.6	0.46	-10
June 15, 1932	2.7	11.7	0.2	8
June 22, 1932	0.7	15.2	0.4	20
June 29, 1932	2.1	19.3	0.53	13
August 3, 1932	-4.3	20.3	0.29	3
August 10, 1932	-2.1	8.7	0.12	-17
August 17, 1932	-1.7	5.1	0.25	13
Cumulative change				-14

The week labeled April 27, 1932 seems to be the week ending on April 23, 1932 in underlying data.

Week	% change in Bond Holdings	Yields levels on Bonds	Changes in yields on Bonds (in b.p.)
April 20, 1932	7.8	3.59	-8
May 25, 1932	5.4	3.82	8
June 1, 1932	5.9	3.85	3
June 8, 1932	8.4	3.84	-1
Cumulative change			2

Comment 4. Using week to week variations in purchases is subject to endogeneity problems. The fact that there is effectively an announcement is a good thing for identification.

- Purchases vary from week to week, in terms of the total and in terms of which securities were purchased.
- We don't know why, but presumably, the Fed would purchase more aggressively in a given period/segment if yields started creeping up again.
- If the Fed reacts pretty fast and we only have weekly data, we could find that purchases have no correlation with yields even if the causal impact of purchases is to lower yields.
- We would also find no correlation if purchases were largely anticipated.

Plotting the numbers from the paper's Table 2, there is in fact no correlation between purchases (% change in Fed's note holdings) and yield changes:
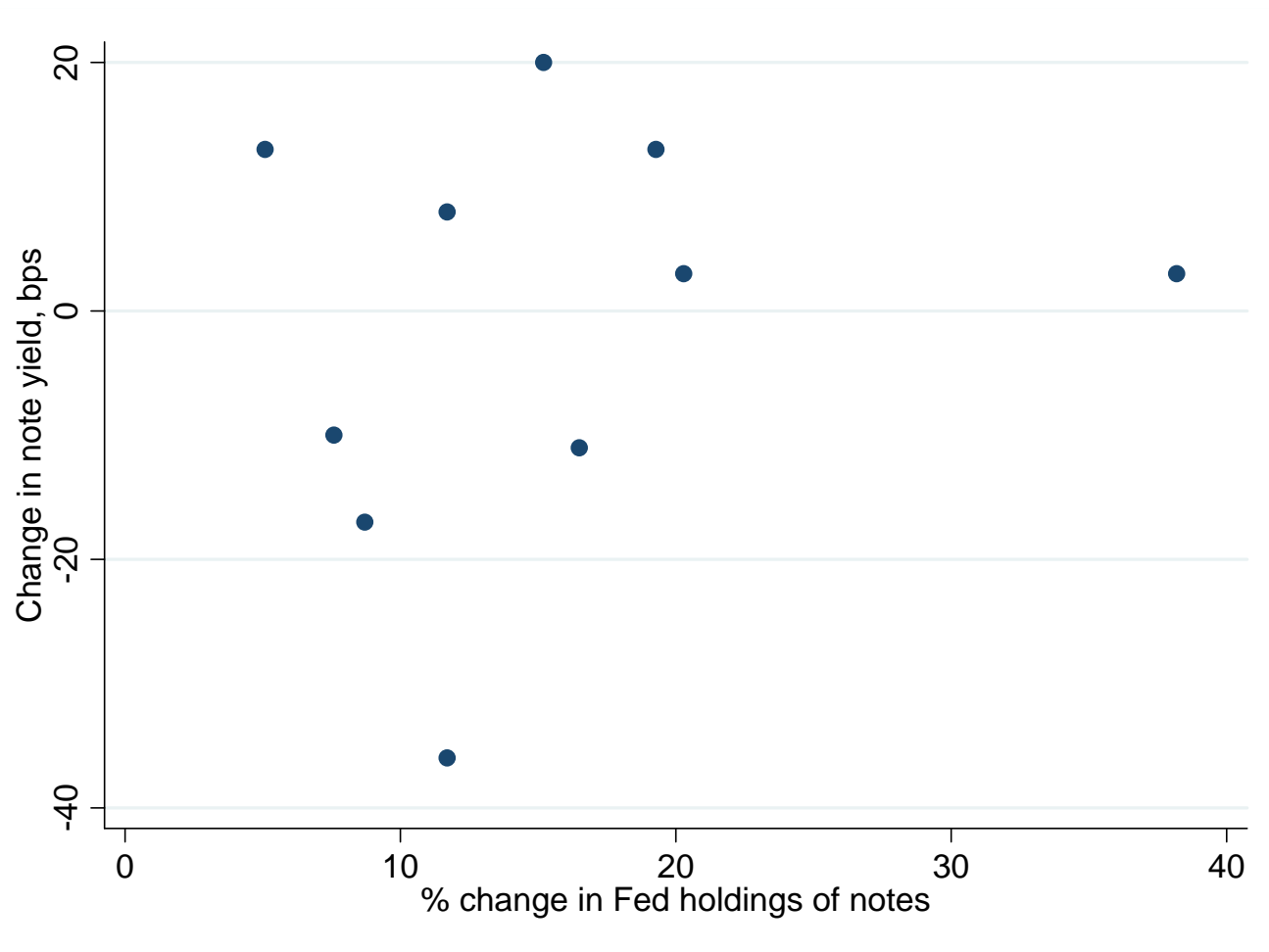
Comment 5a. Channel confusion

$$r_{risky,illiq,long\text{-}term} = E\left[i_{safe,liq,short\text{-}term}\right] - \pi^e$$

$$+ \, Duration \times P_{DurationRisk}$$

General channels

$$+ \, Illiquidity \times P_{Liquidity}$$

$$+ \, Lackofsafety \times P_{Safety}$$

Specific channels

$$+ \, DefaultRisk \times P_{DefaultRisk}$$

$$+ \, PrepaymentRisk \times P_{PrepaymentRisk^*}$$

(From Krishnamurthy and Vissing-Jorgensen, 2011)

Current paper focuses on one channel. It uses **"portfolio balance channel"** to refer to preferred habitat for particular maturities.

- It's a version of a duration risk channel (remember how in Greenwood-Vayanos, the arbitrageurs price assets based on duration risk).

The paper doesn't try to **estimate** the role of various channels.

The **arguments** given to rule out channels other than preferred habitat for particular maturities are not convincing.

Signaling channel:

"During the 1932 episode, the **sudden implementation** of the Federal Reserve asset purchase program, along with very few indications of how **long these were expected to remain**, implied that the signaling channel was, at best, very weak."

- The fact that it's a surprise policy does not imply that there is no signaling channel.
- The fact that it's unclear how long the policy will last does not imply that there is no signaling channel only that it's hard to precisely quantify it.
- We saw that short market rates plummeted during the three main event weeks.
- I'll try to quantify the signaling channel below.

Duration risk channel:

"During the 1932 operation, the purchases of the Federal Reserve were **concentrated on Treasury securities**, and there **were no significant assets of comparable duration and security that were available to investors**. Thus, this channel would not be significant during the 1932 episode."

- There were corporate securities and mortgages, no?
- Even if there wasn't, government bond yields could still be affected via this channel.

Safety channel:

"The Safety channel is a special case of the preferred habitat channel, but only in the space of safe bonds and assets. ... **due to the scant availability of comparable securities**, we conclude that this channel was not significant during this episode."

- At the short end prime banker's acceptances may have been close to short-maturity Treasuries in safety and liquidity.
- Even if they were not, government bond yields could still be affected via this channel.

Comment 5b. Channels behind the yield reductions, bonds

Bonds: -20 bps, from April 9 to 23. Why? The data suggest that a signaling-type channel was important (i.e. an updating in the expected path for short rates, combined with the standard expectations hypothesis for bond yields).

**Quantifying the signaling channel:**

- Short rates moved down more than 100 bps and stayed low for years.
- How would that affect long bonds?
- The Treasury bond series used is based on 3 bonds with last redemption dates 1947, 1956, and 1954, i.e. an avg. maximum maturity of 20 years (as of 1932).
- Suppose the short rate drop made people think short rates would be 100 bps lower than previously thought, for 5 years.
- The expectations hypothesis would then imply a 25 bps reduction in the yield on 20 year bonds.

A signaling channel would be consistent with long corporate bond yields also dropping around April 13, 1932:

- Corporate bond *prices* based on index of 40 bonds from the WSJ increased by 1.24 percent from weekly avg. for week ending April 9 to avg. ending April 23, 1932.
- They increased 2.87 pct from April 9 to 23 in daily data.
- If avg. duration is 20 years, that's a yield decline of about -7 to – 15 bps.
- If avg. duration is 10 years, that's a yield decline of about -13 to – 31 bps.

Collecting data on Aaa bonds would enable us to pin this down more precisely.

BOND AVERAGES DAILY
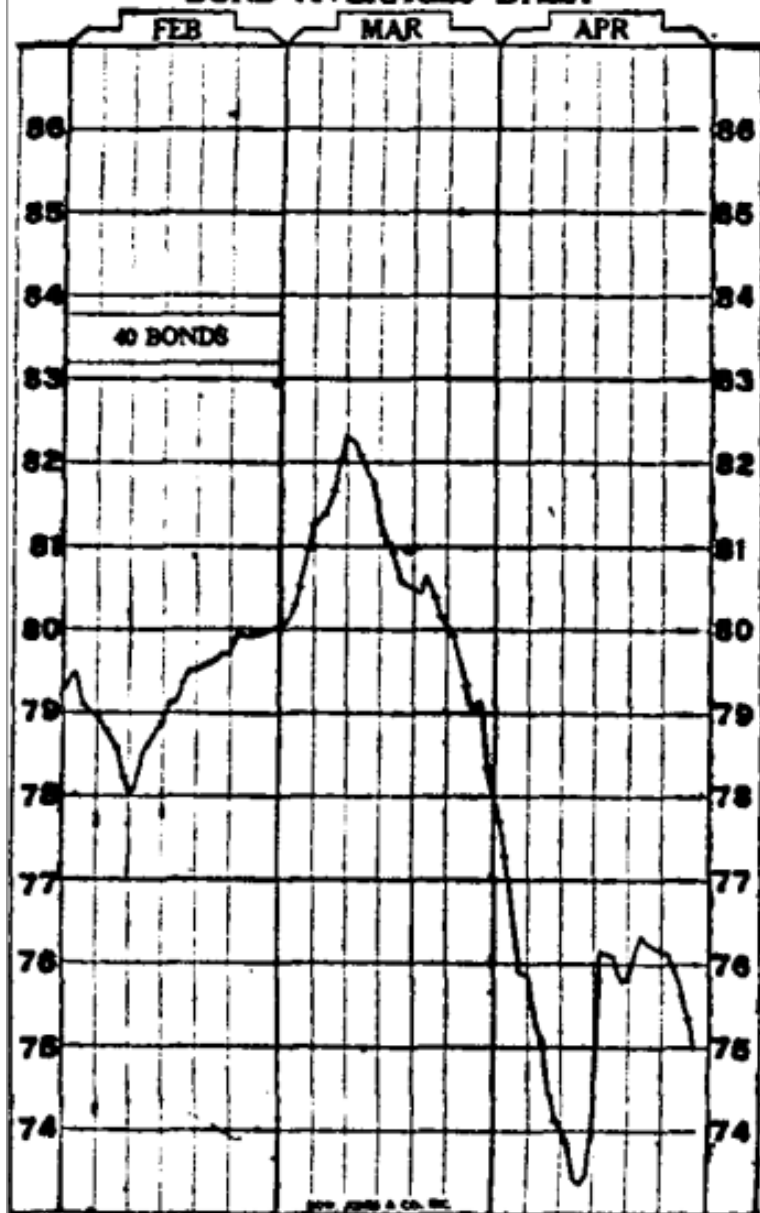
FORTY BONDS 1972			
	Average	Adv.	Dec.
Apr. 22	76.31	.18	..
Apr. 21	76.13	.31	..
Apr. 20	75.82	.03	..
Apr. 19	75.79	..	.30
Apr. 18	76.09	..	.07
Apr. 16	76.16	1.47	...
Apr. 15	74.69	1.24	..
Apr. 14	73.45	.11	..
Apr. 13	73.34	..	.08
Apr. 12	73.42	..	.44
Apr. 11	73.86	..	.24
Apr. 9	74.10	..	.35
Apr. 8	74.45	..	.62
Apr. 7	75.07	..	.21
Apr. 6	75.28	..	.62

Comment 5c. Channels behind the yield reductions, notes

Question: Is the large (133 bps) note yield reduction actually for 3-5 year notes?

- Underlying data source says: "U.S. Treasury notes and certificates, 3 to 6 months" Presumably that means notes with short remaining maturity and certificates (which are ≤1 year maturity)?
- In that case, the note yield results may say that Fed purchases of short maturity bills and certificates lowered short yields, as opposed to being informative about changes in medium-term rates.

I would suggest going to individual Treasury security data to better understand the week to week effects on the term structure.

Comment 6. A bit of skepticism about how precisely we can assess output effect using simulated model

- The model has a **lot of moving parts**, including:
  - Households: 2 types of households each with habit formation preferences
  - Firms: 3 types (capital goods, intermediate goods, final goods)
  - A Taylor rule for the Fed
  - A fiscal policy rule

- **35 parameters** estimated with **monthly data for 1920-1934 and Bayesian methods**. In finance, we have a hard time estimating just household preference parameters even with 100 years of data.

- Are Bayesian methods a way of *not* **letting the data speak** (as much as in a maximum-likelihood estimation), so you are able to work with a complicated model despite short time series? To what extent does the result come from the assumptions, not the data?

- This is **a bit of an unfair criticism** – there are no obviously superior alternatives to models for getting output estimates (VARs have their own problems).

Comment 7. Perspective. What really increased money supply and got the economy back on track in the 1930s?

Fed balance sheet, 1928-1941

In billions of dollars

	Total assets	Gold and gold certificates	Treasury securities	Other (incl. priv. sec's)	Total liabilities	Federal Reserve Notes	Reserves	Other
1928	5.4	2.5	0.2	2.6	5.4	1.8	2.4	1.1
1929	5.5	2.8	0.5	2.2	5.5	1.9	2.4	1.2
1930	5.2	2.9	0.7	1.6	5.2	1.7	2.5	1.1
1931	5.7	2.9	0.8	1.9	5.7	2.6	2.0	1.1
1932	6.1	3.1	1.9	1.1	6.1	2.7	2.5	0.9
1933	7.0	3.5	2.4	1.1	7.0	3.1	2.7	1.2
1934	8.4	5.1	2.4	0.9	8.4	3.2	4.1	1.1
1935	11.0	7.6	2.4	1.0	11.0	3.7	5.6	1.7
1936	12.5	8.9	2.4	1.2	12.5	4.3	6.6	1.6
1937	12.9	9.1	2.6	1.2	12.9	4.3	7.0	1.6
1938	15.6	11.8	2.6	1.2	15.6	4.5	8.7	2.4
1939	19.0	15.2	2.5	1.3	19.0	5.0	11.7	2.4
1940	23.3	19.8	2.2	1.3	23.3	5.9	14.0	3.3
1941	24.4	20.5	2.3	1.6	24.4	8.2	12.5	3.7

1932 QE was small compared to what happened next: Large gold inflows from Europe had an *order of magnitude larger* effect on Fed's balance sheet and money supply

Romer (1992) argues that:

- The gold inflows were driven by the **devaluation of the dollar** (relative to gold) in 1933 and **capital flight from Europe due to political instability**.
- The large increase in the money supply **kept nominal rates close to zero** but **generated inflation**.
- The resulting **very negative real interest rates** drove a large increase in interest-sensitive spending (investments, consumer durables) and drove the strong recovery.
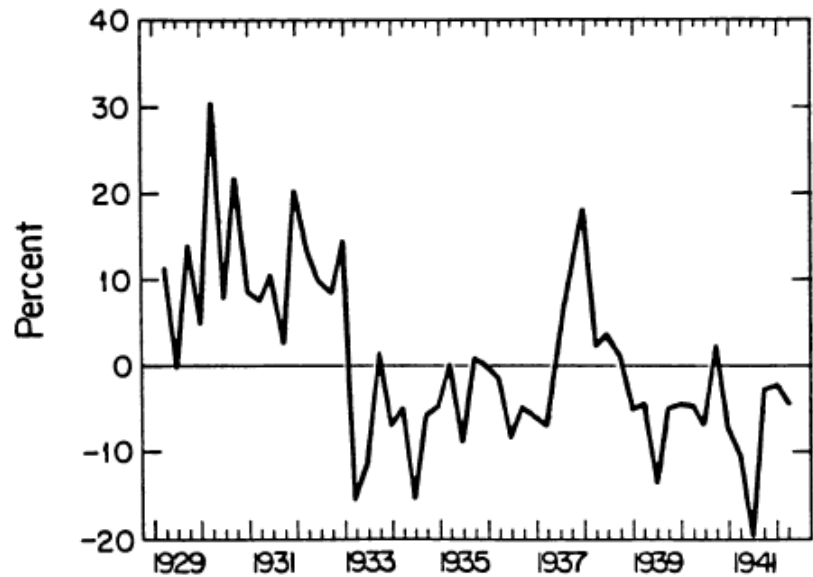
FIGURE 8

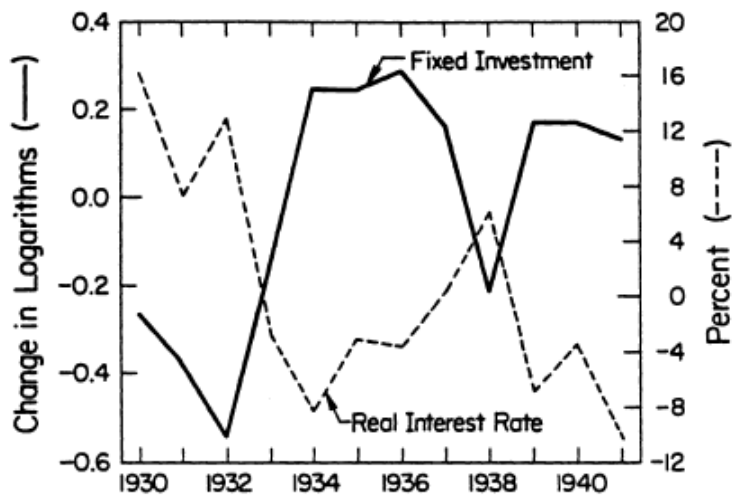EX ANTE REAL COMMERCIAL PAPER RATES, 1929–1942

FIGURE 9

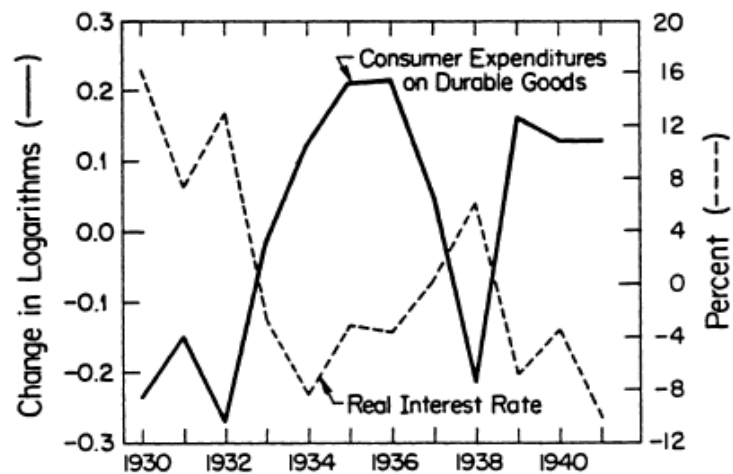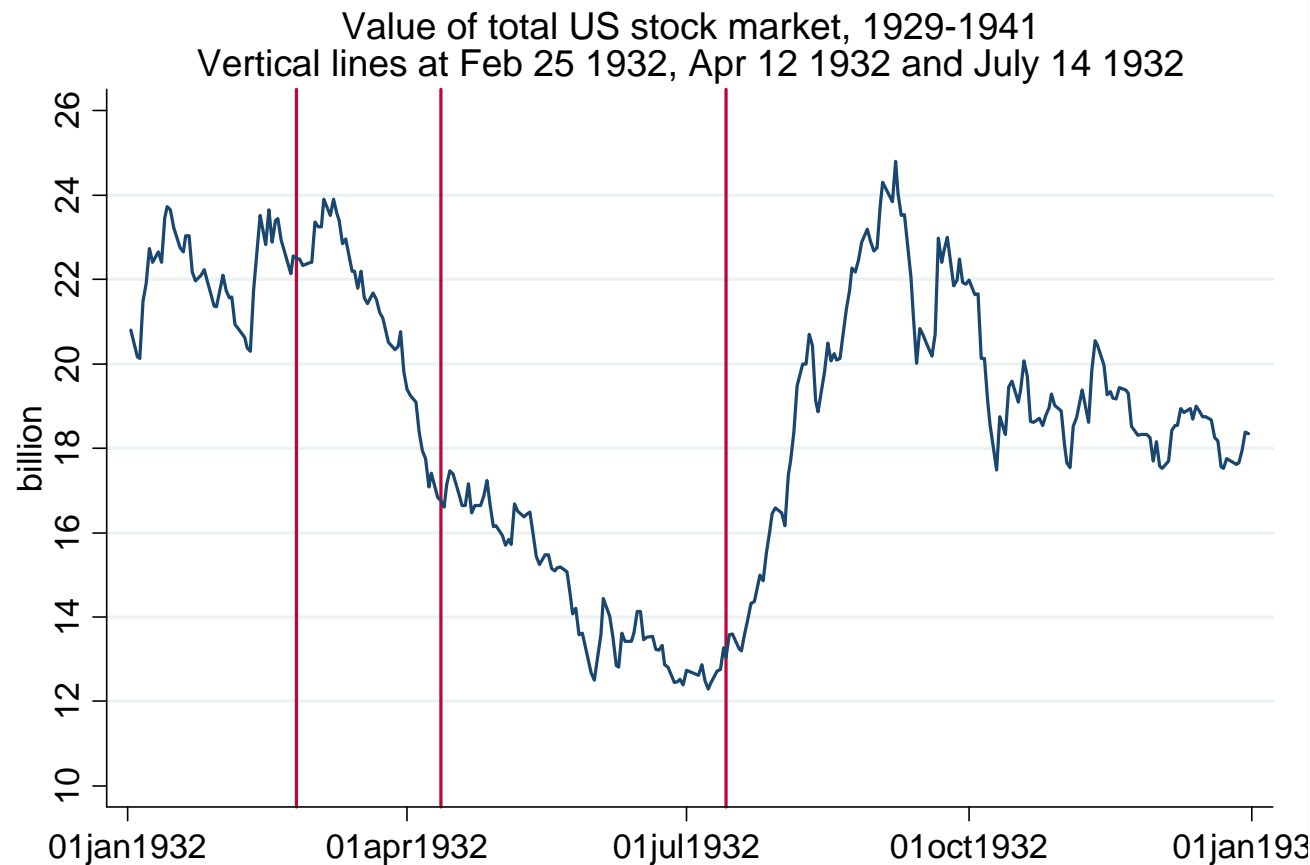REAL FIXED INVESTMENT AND EX ANTE REAL RATES, 1930–1941

FIGURE 10

REAL CONSUMER EXPENDITURES ON DURABLE GOODS AND EX ANTE REAL RATES, 1930–1941

If this is the correct interpretation of what drove the recovery, **then we would expect the "standard OMO" (bills/certificates purchases) part of the 1932 to have had some economic impact**, but it was **not a main driver of the recovery given the small scale**.

- The stock market rallied by about 6 pct in total on April 14, 15, 1932, consistent with some positive expected impact on the economy.
- But this is peanuts compared to the later rebound.

Value of total US stock market, 1929-1941
Vertical lines at Feb 25 1932, Apr 12 1932 and July 14 1932

Value of total US stock market, 1929-1941
Vertical lines at Feb 25 1932, Apr 12 1932 and July 14 1932