Monetary Policy Alternatives at the Zero Bound:
Lessons from the 1930s U.S.   Christopher Hanes   March 2013

Last resorts for monetary authorities in a liquidity trap:

1) Replace inflation target with target for price level or nominal GDP

In standard NK models, credible announcement *immediately* boosts Δp,
 lowers real interest rates while we are still trapped at zero bound.
            "Expected inflation channel"

2) "Quantitative easing" or Large-Scale Asset Purchases (LSAPs)

Buy long-term bonds in exchange for bills or reserves
to push down on term, risk or liquidity premiums through "portfolio effects"

Can 1) work? Do portfolio effects exist?

I look at 1930s, when U.S. in liquidity trap.
      1) No clear evidence for expected-inflation channel
      2) Yes: evidence of portfolio effects

Expected-inflation channel: theory

New-Keynesian Phillips curve: $\Delta p_t = E_t \Delta p_{t+1} + \dfrac{\beta}{\gamma}(y - y^n)_t$

a distant horizon T $\Delta p_t = E_t[\Delta p_{t+T} + \dfrac{\beta}{\lambda} \displaystyle\sum_{\tau=0}^{T} (y - y^n)_{t+\tau}]$

To hit price-level or \$AD target, authorities must boost future $(y - y^n)_{t+\tau}$

For any given path of y in near future, while we are still in liquidity trap,

that raises *current* Δp_t, reduces r_t, raises y_t, lifts us out of trap

Why it might fail:
- expectations not so forward-looking, rational
- promise not credible

Svensson's "Foolproof Way" out of liquidity trap: peg to depreciated exchange rate

"a conspicuous commitment to a higher price level in the future"

Expected-inflation channel: 1930s experience

Late 1920s:

International gold standard, authorities exchange currency for gold at fixed values

- fix exchange rates (within gold points)

- country with BOP deficit loses reserves, must deflate

- country with BOP surplus must inflate *or* buy up reserves, force losers to deflate.

       "Rules of the game" say inflate

- U.S. doesn't follow rules: instead buys up reserves (sterilizes). End game?

March 1933-January 1934: devaluation; FDR pledges "reflation"

June 1934-July 1936: unsterilized gold inflows boost high-powered money supply

July 1936-April 1937: $RR\uparrow$, sterilization to prevent future inflation

April 1937-April 1938: unsterilize, Fed buys bonds

O.M.W. Sprague: *"Doubtless, given time, a depreciated dollar or a devalued dollar will*

(November 1933)   *yield a higher price level"*

THE BUSINESS WEEK

Inflation Begins

Definite abandonment of the gold standard the first step. Roosevelt commits the Administration to managed money, and a higher price level. Asks dictatorial powers to control value of the dollar.

WASHINGTON—Inflation has begun. The Administration is definitely committed to reducing the purchasing power of the dollar. It is opposed to "printing press money"; it wants a managed currency plus credit control. Just how a controlled price level is to be achieved is not made clear; it is doubtful, in fact, if, the details of any plan have been worked out.

But a first step has been taken. Washington has served notice on the world that no attempt will be made to keep the dollar at its old exchange value. There will be no gold shipments to "defend the dollar." Instead, the dollar will be allowed to find its natural level, based on demand and supply.

This may help prices of export commodities—as cotton—or so the Administration hopes. It may also put us in better position to compete in world markets. One thing it certainly does; it puts us in an entirely new and much more advantageous position with respect to forthcoming international conferences.

Federal Reserve's Job

As a second phase of an inflationary program, the Federal Reserve authorities gathered in Washington for a meeting to discuss thawing out closed banks and getting into circulation some of the emergency currency that was authorized at the time of the bank holiday. But most pointedly of all, it is safe to guess, the Federal Reserve talked about a forthcoming $2 billion bond issue for public works. The Reserve must so manipulate its own and its member banks' affairs that such issues can be absorbed.

Further inflationary steps cannot be forecast. They will depend upon developments, particularly in the markets. One thing seems pretty clear; the Administration conceives it possible to have a great expansion of currency and credit on the present gold base, and without direct assault upon the gold weight of the dollar, or resort to bimetallism.

However, the President is not unalterably set against making the gold dollar lighter. He wants from Congress complete authority to control the value of our money—to reduce its gold content, add silver to the base, even to issue greenbacks. This does two things—it puts a powerful bargaining weapon in his hands for the world economic conferences, and it forestalls any impulsive Congressional monetary measure.

There is more than a hint that the President feels there is nothing sacred or mystic about the figure "40"; our present gold reserve requirement is 40%. It might be lowered.

To get the expanded currency into the hands of consumers who will spend it and thus start business going is the real heart of a recovery program. Here, the government will concentrate upon work which can be done immediately, without long preliminary planning and

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Inflation

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elaborate engineering. As many jobs as possible right now, is the idea.

It is doubtful whether the Administration program for inflation—rather obviously being delayed as part of the maneuvering preliminary to the international conferences—will move fast enough to suit a Congress which wants inflation and is going to have it.

Bimetallism can count on 40 votes in the Senate; the proposal to cut the gold content of the dollar can muster even more votes than silver.

The pressure on Congress is enormous. The farm states are solidly for direct currency inflation, though not agreed as to technique. But anyone who supposes the demand comes solely from the rural sections is blind. There is strong Wall Street support for inflation, and advocates are not scarce in the ranks of Big Business. Nor does it pass unnoted that intellectuals—including the moderate-liberal Walter Lippmann—are saying the United States cannot avoid and should not try to avoid cheapening the dollar.

Originally there were only a handful of senators who favored marking down the gold content of the dollar as the intelligent method of inflation. Their number has been growing. So has the number of senators advocating doing something for silver. From 18 in January, the number voting for bimetallism jumped by Apr. 17 to 33, with 6 more paired for it, making 39.

Diverting Mr. Borah

Particularly amusing in this connection was the vote of Senator Borah, who voted, for the first time in his life, against silver. He even voted for Bryan in 1896. But Borah had said he would vote for no form of inflation not favored by the Administration, within 10 minutes of the vote on the Wheeler 16-to-1 amendment. Senator Robinson said the Administration opposed all pending amendments. So Borah voted against it! Hence the strength of the 16-to-1 proposal in the Senate today is actually 40—only 9 short of a majority.
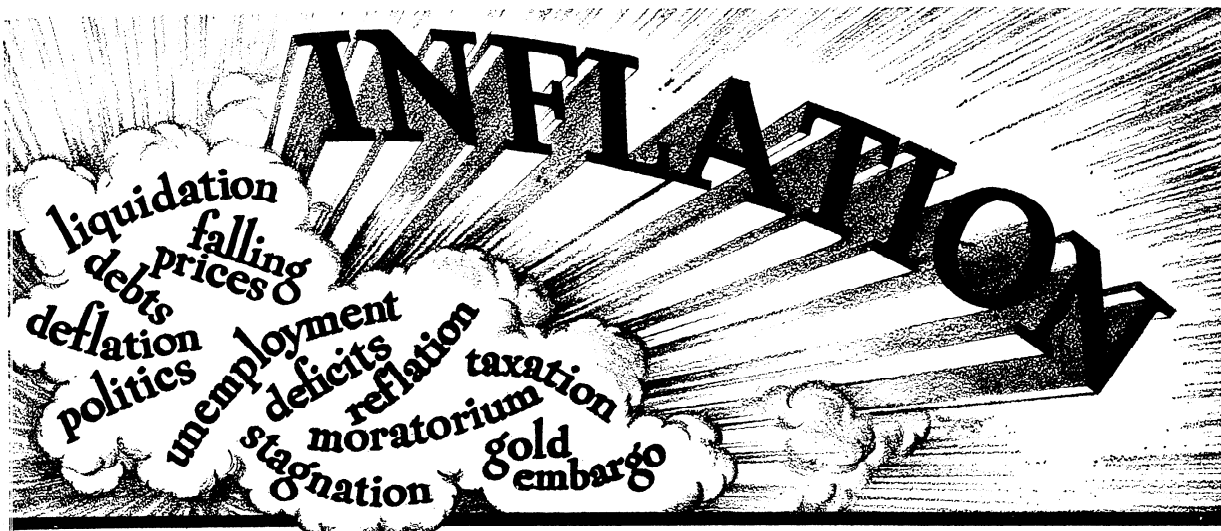
Wheeler enthusiastically predicted right after the vote that, unless times improve tremendously in the next 5 weeks, the silver amendment will pass.

This is unlikely, for the reason that there are more votes at the moment to mark down the gold value of the dollar than there are for any form of bimetallism. And if the silver advocates continue to gain, that mere fact will drive senators who otherwise might oppose any form of inflation, save perhaps through the bond-selling route, to vote for devaluation as the lesser of evils.

Predicted Sequence

So inflation is very apt to take the following course. First, sale of bonds, including baby bonds. This will force a stream of money into circulation by the public works route. Then, after a valiant but losing fight on the part of the silver advocates, devaluation of the dollar. And meanwhile, a hurrying up of liquidation, if possible, of the closed banks, so as to release frozen money.

As a clue to Administration policy, great importance is attached to the announced decision not to call the $6 billion Fourth Liberty Loan Apr. 15, for refunding or redemption Oct. 15. It is apparent the call was postponed because

INFLATION

liquidation falling prices debts deflation politics unemployment deficits reflation taxation moratorium gold embargo stagnation

The Giant Force Emerges!

It comes with a rush and with irresistible force—its effects cannot be evaded.

Already its threat alone is playing pranks with the securities and commodities markets. As it gets under way and gathers force—

How will it affect *your* investment portfolio? Your company's investments? Will you act in time to avoid inflation's worst consequences?

Some stocks will go up; some may go down. Certainly all will not act in the same way. And bonds? All bonds will not act in the same way. Some will recover; some will lose ground. Nor will it be safe to generalize about high grade bonds going down and others going up. During the inflation era in Germany several years ago, some high grade bonds went up as much or more than many stocks.

WHAT ABOUT inflation itself? Inflation is a chameleon, a thing of many colors. Credit inflation is one thing, currency inflation quite another. Sometimes one merges into the other. Abandoning the gold standard in the United States is not necessarily the same thing as abandoning it in England,—in fact, there are important differences. You cannot go by precedent.

There is only one sure thing about inflation,—it will have a vital, a profound influence on the value of your securities, of your inventories, of your plant and equipment, and even of your *cash balances*. It will influence, possibly determine the ultimate success or failure of your business, as well as your financial policies.

Fortunately, it does allow more scope for the application of sound investment knowledge than does a prolonged period of deflation. Consequently, it will quickly reveal, in vastly improved portfolios, management which is capable. Likewise, it will show up incapacity.

* * *

THERE IS, after all, really only one way to cope with inflation. That is to have available, dependable advice to show you how to meet the demands and the difficulties of the rapidly changing situation. The very essence of keeping ahead during an inflationary period is to *be ready*

before the majority are aware of what action must be taken. Speed and flexibility of action are vital. Every day's delay adds to the difficulty of avoiding losses and makes less certain the chances of gain and improvement in an investment portfolio.

Under the conditions which inflation produces, the conventional guideposts of statistical and economic indices of all kinds become valueless. Deep, basic principles alone can help. You need experienced, practical judgment, well grounded in practice and principle. This is no time in which to depend on outworn formulas or on general theories.

* * *

IN ALL this welter of confusion of the strange and new, one factor remains constant—technical market position and action—the laws governing price swings and trends. An organization which, for years, has been guiding its clients' investments and commodity policies by a correct understanding of the working of market action in securities and commodities, alone will have a sound basis for capitalizing future moves, whether up or down, in times like these.

When England went off the gold standard in 1931, our clients were advised two full weeks before the event what action to take to protect their investments. When

success at Lausanne was very uncertain in June and July of 1932, with pessimism running riot in every financial center of the world, our clients were advised to *buy* securities and accordingly participated in the great advance which culminated in September 1932. Our clients were advised to purchase commodities, securities and foreign exchange before the substantial rise in those markets which took place in March and again in April 1933.

These few striking evidences of the Wetsel method in capitalizing major economic events profoundly affecting security and commodity prices, are given to illustrate why Wetsel clients now look forward to the perils and uncertainties of inflation with a calm assurance that they will be guided correctly and profitably.

* * *

THE APPROACH to a solution of your investment problem is of necessity a special one. Glittering generalities and alluring half-truths will not do. You want the facts that apply to your case, and we shall be glad to supply the preliminary information without obligation—to cooperate in showing definitely how to meet the situation.

Inflation is an imperative call to action. Where it will ultimately lead, none can tell. What its near term effect upon security prices will be, *can* be foretold. Those desiring to protect their holdings and make them grow during this period may profit better through the use of this service.

As an individual investor or as a corporation official, you are invited to make inquiry about this Supervisory Service. If convenient, call at our offices. Talk over your investment problems with one of our officials. Or, if you prefer, send for a copy of our new folder, "Investment Procedure in a Period of Readjustment." This discussion, sent without obligation, may help you in making important decisions during the inflation period.
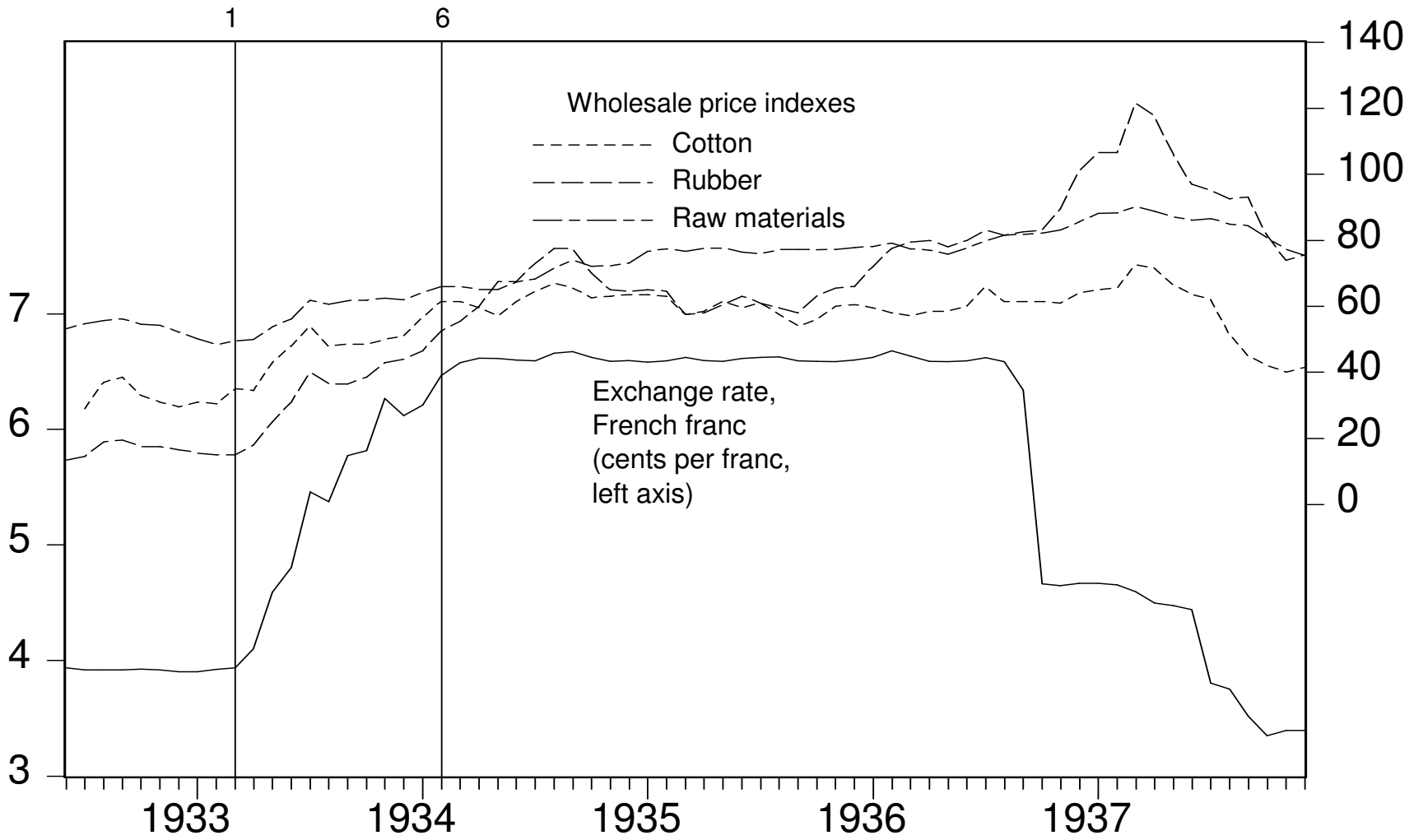
A· W· WETSEL
ADVISORY SERVICE, INC.
Investment Counselors
Chrysler Building   New York, N. Y.

Tuesday, February 26, 2013.max

Expected-inflation channel: 1930s experience

Figure 3

Wholesale price indexes
- – – – – – Cotton
- – – – – Rubber
- – – – Raw materials

Exchange rate,
French franc
(cents per franc,
left axis)

Expected-inflation channel: what would evidence be?

Nonag wages (or price index for nonag domestic value-added)

$$\Delta w_t = E_t[\Delta w_{t+T} + \frac{\beta}{\lambda} \sum_{\tau=0}^{T} (y^d - y^n)_{t+\tau}] = E_t[\Delta w_{t+T} + \frac{\beta}{\lambda} \sum_{\tau=0}^{T} (y^d - \lambda n)_{t+\tau}] + \frac{\beta}{\lambda \gamma} \mu_t$$

output gap ↗   output deviation from trend ↗

μ : desired wage mark-up, reflects workers' bargaining power, efficiency wages etc.

Usually, $E_t y_{t+1} \approx \rho y_t$

$$\Delta w_t = E_t \Delta w_{t+T} + \frac{\beta}{\lambda} \frac{1}{1-\rho} (y^d - \lambda n)_t + \frac{\beta}{\lambda \gamma} \mu_t + z_t$$

z: expected-inflation channel
    wagesetters' forecast for cumulative future output
        deviates from usual relation with current output

Expected-inflation channel: how I look for evidence

1) Using postwar data, regress Δw on real activity and lagged wage inflation

2) Apply coefficients to 1930s real activity projecting forward from January 1929

     What to do with lagged-inflation coefficients? On and off.

3) Look at deviations of actual Δw from projected path

Are deviations consistent with operation of expected-inflation channel?

Yes: Δw anomalously high in 1933, 1934 (devaluation, inflation talk)

       falls back toward projections in 1936 ($RR\uparrow$, sterilization)

       up again in 1937 (desterilization, Fed buys bonds)

No: deviations easily explained by NIRA, unionization (recall μ)

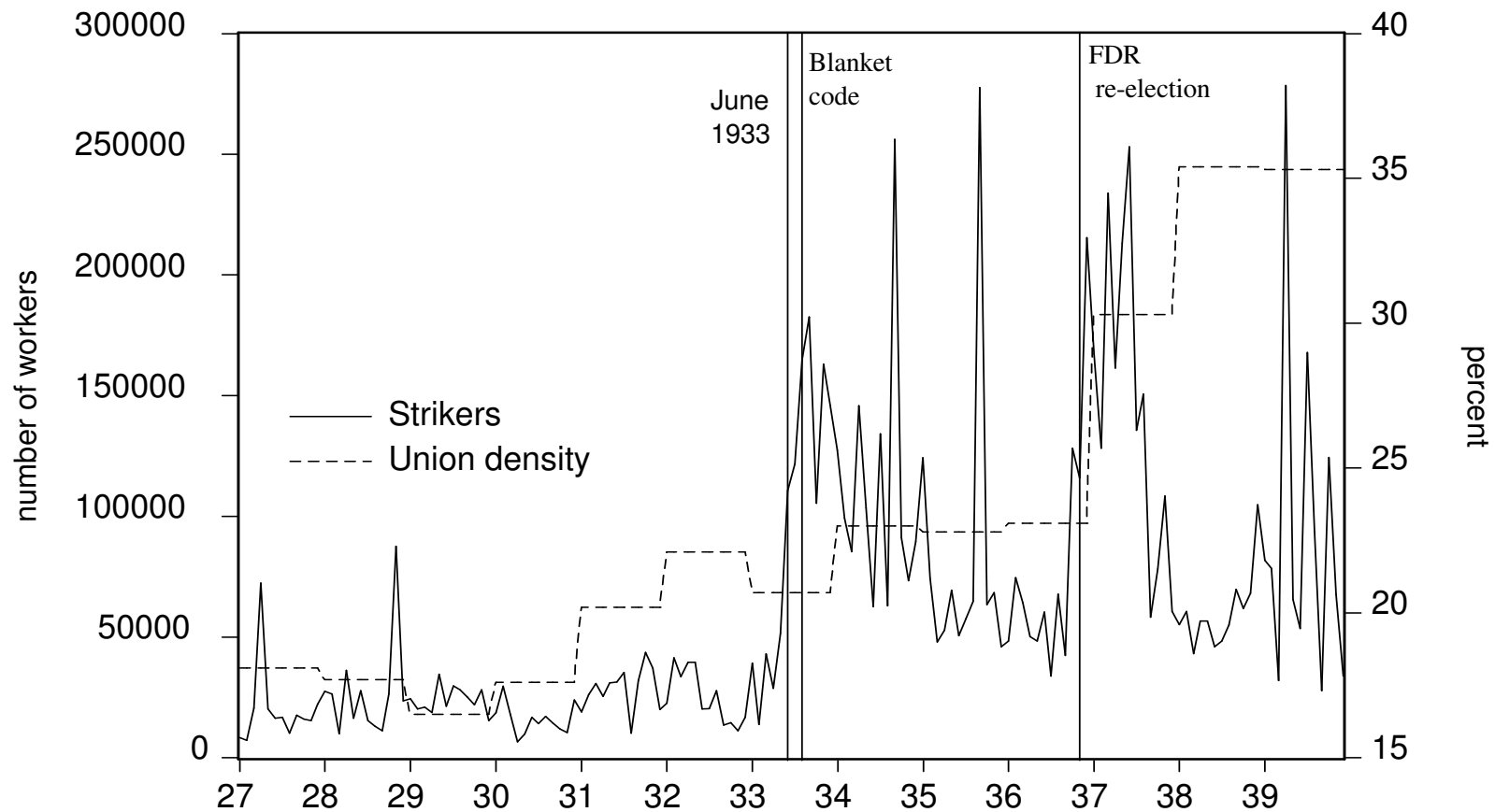# Expected-inflation channel: NIRA, unionization

Figure 6

June 1933: NIRA bars employers from firing strikers, union organizers

August 1933: Blanket code (President's Re-employment Act) with minimum wages

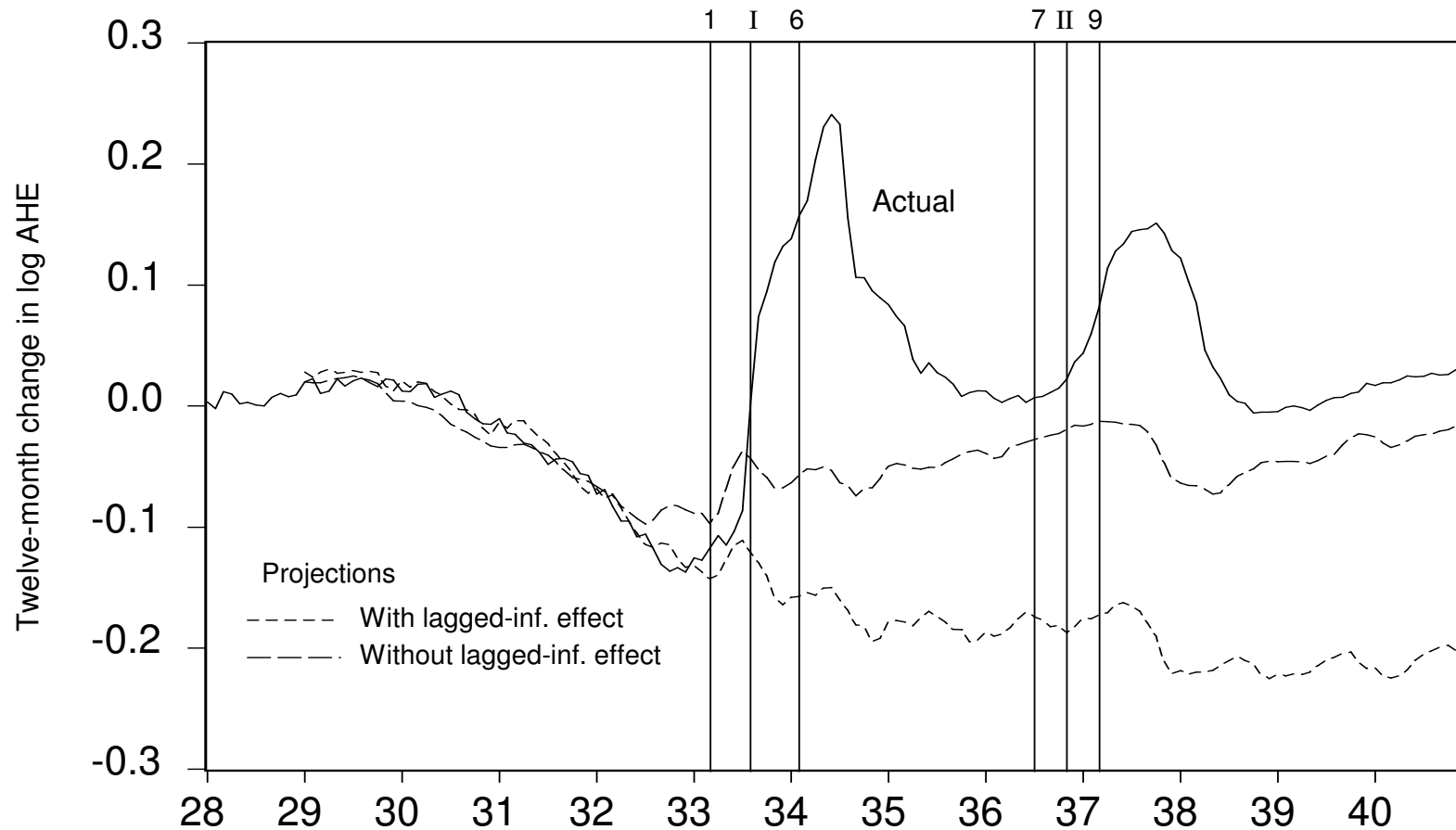August-December 1933: industry codes, further wage increases

July 1935: Wagner Act

November 1936: FDR re-elected, many companies give in to bargaining

Expected-inflation channel: projections and actual wage inflation

Figure 8

1. March 1933: Bank Holiday. Banks and U.S. Treasury cease gold payments
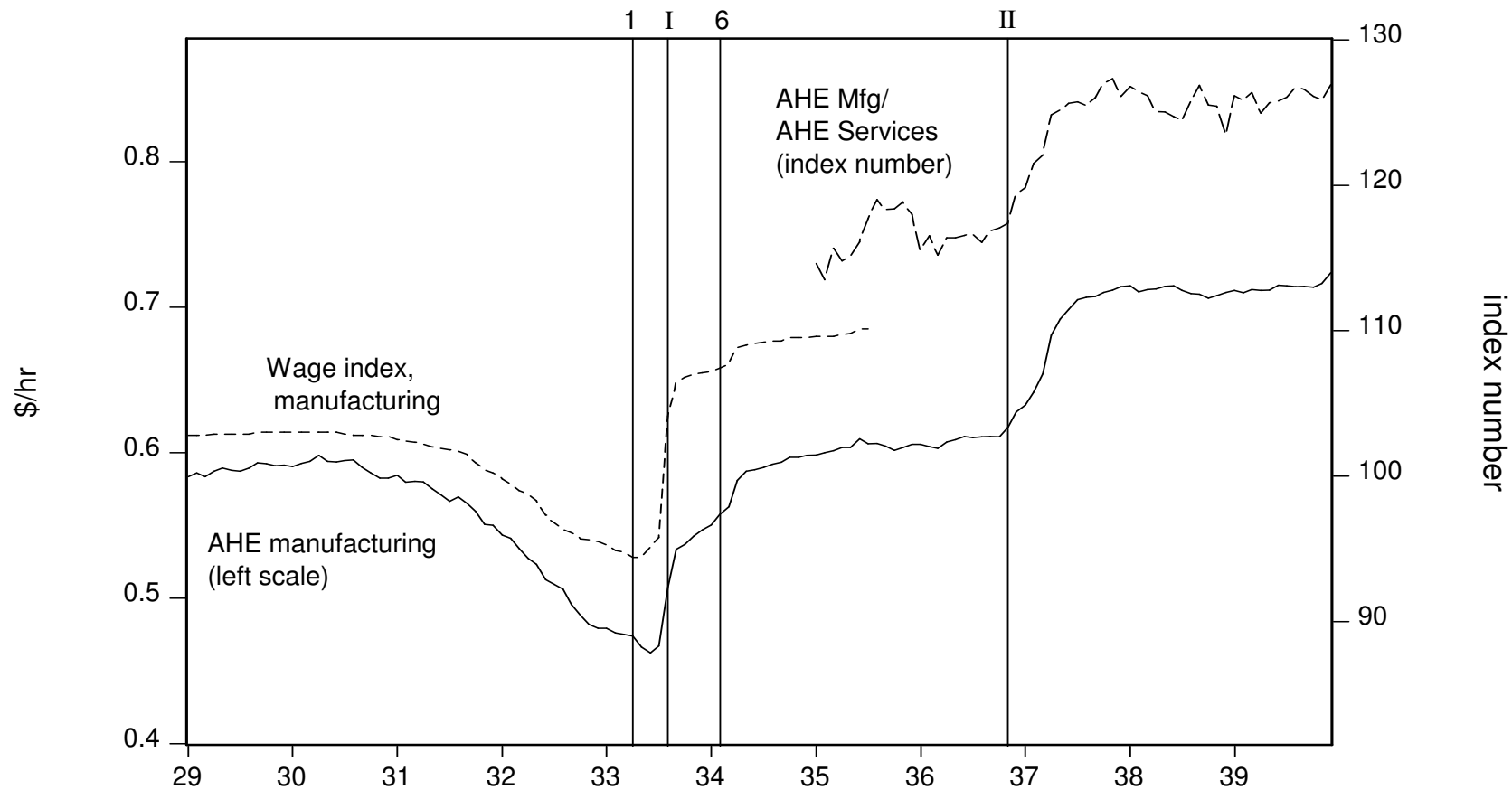6. End of January 1934: Gold Reserve Act sets new gold price

I August 1933: NRA Blanket code
II November 1936: Roosevelt wins re-election

Expected-inflation channel: looking for evidence

Figure 9

AHE Mfg/
AHE Services
(index number)

Wage index,
manufacturing

AHE manufacturing
(left scale)

$/hr

index number

1. March 1933: Bank Holiday. Banks and U.S. Treasury cease gold payments
6. End of January 1934: Gold Reserve Act sets new gold price

I August 1933: NRA Blanket code
II November 1936: Roosevelt wins re-election

Portfolio effects: theory

How do LSAPs affect bond yields?

1) They don't really, but financial market participants price in a *chance* they do

2) "Signalling channel": policymakers' intentions for future overnight rates

3) Portfolio effects
   - "Available local supply," "scarcity" or "market segmentation" channel
           Effects concentrated on securities with similar characteristics
   - "Duration" channel (Gagnon, Raskin, Remache, Sack 2011)
       LSAPs remove long-term bonds (subject to duration or interest-rate risk) from portfolios,
       replace them with zero-duration assets (bills or high-powered money).
       Term premiums must fall to make investors willing to hold new portfolio.

1) and 2) operate only if operations are *publicized*
3) operates even if financial-market participants are unaware of operation

Duration channel can be framed in terms of money demand (following Keynes; Tobin 1958)

Portfolio effects: duration risk and money demand Lessons from the 1930s U.S.

"Preferred-habitat" investors and "arbitrageurs" (Vayanos & Vila 2009)

Arbitrageurs hold M "money" (reserves, cash, zero-interest bills)

B bond portfolio

P unit price of bond portfolio

$E_t P_{t+1}$

σ_P^2 perceived variance of $(P_{t+1} - E_t P_{t+1})$

maximize $\quad E_t P_{t+1} B_t \; + \; M_t \; - \; \dfrac{q}{2} \dfrac{Var(A_{t+1})}{A_t} \qquad s.t. \quad A_t = M_t + P_t B_t$
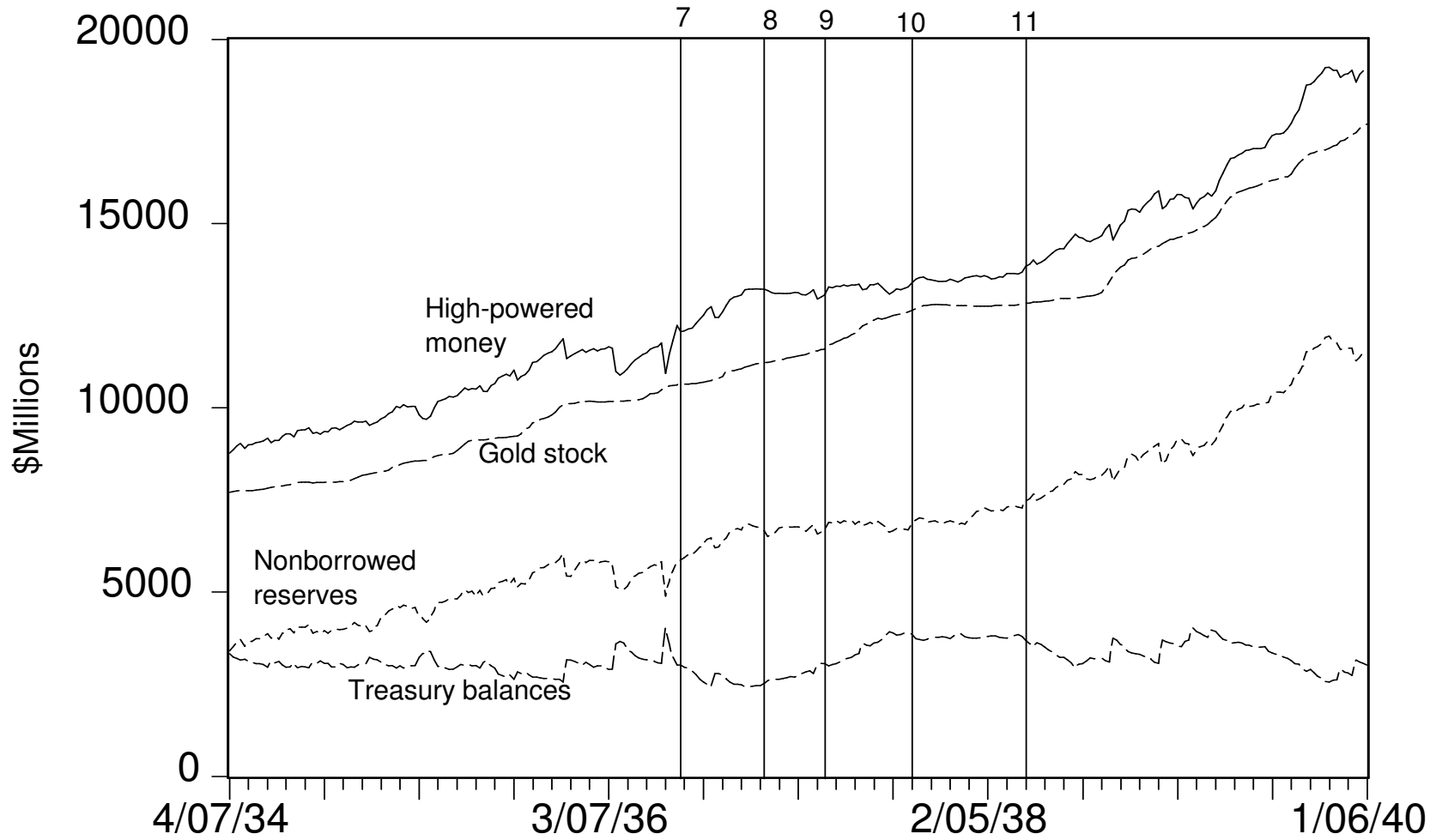
$\rightarrow \quad m_t^d \approx a_t - \dfrac{1}{q}\left(\dfrac{1}{\sigma_P/E_t P_{t+1}}\right)^2 \dfrac{\hat{i}_t}{(1+\hat{i}_t)^2} \qquad \partial \hat{i}_t/\partial m_t^d \approx - q\left(\sigma_P/E_t P_{t+1}\right)^2$

where $\hat{i}_t = E_t P_{t+1}/P_t - 1$

Portfolio effects: 1930s natural experiments

Figure 5

What should I observe in weekly data on bond yields?

"Money" (HPM, bills) demand: $m_t^d = -\nu \hat{i}_t + \varepsilon_t^{md}$

Gold flow from BOP: $\Delta g_t = \kappa \Delta(\hat{i}_t - i_t^* - E_t \Delta e_{t+1}) + \varepsilon_t - \Delta forres$

"Money" supply: $\Delta m_t = \Delta g - \Delta tres + \Delta \varepsilon_t^{ms} = \kappa \Delta \hat{i}_t - \Delta tres + \varepsilon_t^{bop} + \Delta \varepsilon_t^{ms}$

$$- \kappa \Delta(i_t^* + E_t \Delta e_{t+1}) + \varepsilon_t - \Delta forres \nearrow$$

➜ $\Delta \hat{i}_t = -\dfrac{1}{\nu} \Delta m_t + \dfrac{1}{\nu} \Delta \varepsilon_t^{md} = \dfrac{1}{\nu} \Delta tres_t - \dfrac{1}{\nu} \Delta g_t + \dfrac{1}{\nu} \Delta \varepsilon_t^{md} - \dfrac{1}{\nu} \Delta \varepsilon_t^{ms}$

$\searrow$correlated with Δg, Δm?

$$\Delta m_t = \frac{\nu}{\nu + \kappa} (\varepsilon^{bop} + \Delta \varepsilon^{ms} - \Delta tres)_t + \frac{\kappa}{\nu + \kappa} \Delta \varepsilon_t^{md}$$

$$\Delta g_t = \frac{1}{\kappa + \nu} \left[\nu \varepsilon^{bop} + \kappa(\Delta tres - \Delta \varepsilon^{ms}) \right]_t + \frac{\kappa}{\nu + \kappa} \Delta \varepsilon_t^{md}$$

$\Delta \hat{i}$ has bigger effect on shorter-duration bond

Portfolio effects: 1930s natural experiments

Regression results Table 2

Yields**:** weekly average ending Saturday

April 1934-July 1936

Money: weekly Wednesday

117 weeks Quadratic time trends included on RHS

| | Treasuries | | | | | | Corporate (BAA) | | |
| | Medium-term notes | | | Long-term bonds | | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\Delta Ln(HPM1)$	-1.016	-0.934		-0.190	-0.171		-0.801	-0.715	
[Robust SE]	[0.332]	[0.315]		[0.146]	[0.140]		[0.350]	[0.326]	
p-value	*0.00*	*0.00*		*0.20*	*0.23*		*0.02*	*0.03*	
Δg		-2.638	-3.524		-0.610	-0.774		-2.744	-3.422
		[1.907]	[1.984]		[0.796]	[0.821]		[2.163]	[2.088]
		0.17	*0.08*		*0.45*	*0.35*		*0.21*	*0.10*
$\Delta tres$			0.966			0.162			0.756
			[0.304]			[0.139]			[0.337]
			0.00			*0.25*			*0.03*
$\bar{R}^2$	0.03	0.03	0.03	-0.01	-0.02	-0.02	0.07	0.08	0.08

Portfolio effects: 1930s natural experiments

Percent yield to maturity — Log of high-powered money

Treasury bonds

Treasury notes

- ○ Notes April 34 - July 36
- △   July 36 - April 38
- □   April 38 - August 39
- ∗ Bonds April 34 - July 39
- ▽   July 36 - April 38
- ○   April 38 - August 39