INTERWAR HOARDING AND LIQUIDITY TRAPS AND THE 2008 SOLVENCY TRAP

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Abstract

Given the recent turmoil in financial markets and the economy, and the possibility of a 2008 liquidity trap (see graphs of borrowed reserves, excess reserves, and the monetary base on the St. Louis Fed website) there is be renewed interest in what happened in the 1930s. To aid others in such research we have previously unpublished quarterly NIPA tables (GNP and components, real and nominal) from NIPA pioneer Professor Harold Barger of Columbia. We also have demand deposit, M1, bank loan, and bank investment data.

A brief analysis of the 1920-1 mini depression, the slide into depression 1930-3, and the 1937-8 recession within a depression are made. The most interesting observations concern the recovery period 3Q33-2Q40. From 2Q38 to 2Q40, 40% of the increase in the monetary base went into excess reserves, what we call a partial liquidity trap. Excess reserve hoarding also occurred 3Q33-2Q36 but it was offset by public dishoarding. From 2Q36 to 2Q38, 87% of increases in the base went into reserves led by the doubling of reserve requirements 3Q36-2Q37, triggering the 1937-8 recession. Part 3 concludes with a preliminary analysis of the liquidity trap of 2008, which may actually be a solvency trap.

Part 4 presents quarterly bank financial data 1933-40 in an effort to explain bank hoarding during that period with a comparison to 2008.

PART 1: QUARTERLY GNP DATA 1921-41

A problem of analyzing the interwar period has been the lack of quarterly data. Annual observations are too infrequent. In 1942 Professor Harold Barger of Columbia published initial quarterly estimates in Outlay and Income in the U.S. 1921-38 (1). The Appendix Part 1 contains his unpublished extended (to 1941) quarterly GNP and components, real and nominal. They were given to Carlson (2) by Professor Barger in 1974 for thesis research purposes. Until the current situation, there did not seem to be much interest in this period. But now that there is some interest, a goal is to share this information with other researchers who believe that the 1921-41 period may contain lessons for today.

The Federal Reserve Bank of St. Louis has a number of financial series on its website, especially the monetary base, total reserves, excess reserves, and required reserves. But neither St. Louis nor the Federal Reserve itself has M1 and components or components of the Brunner-Meltzer money stock formula for the period 1921-41. Appendix 2 contains these series. Also, there are series on bank loans, bank investments, and total bank deposits gathered from individual Federal Reserve Bulletins in Appendix 3. All data in this paper are in the Appendices or online from the St. Louis Federal Reserve Bank, the Federal Reserve itself, and NIPA from the BEA.

Banking and Monetary Statistics 1914-41 from the Federal Reserve (1943) is online from FRASER which can be accessed from the St. Louis Fed website. Data from this source is labeled BMS.

Orphanides (3) has a number of graphs relevant to this study, available on the web. Specifically:

Figure 1 Short term Treasury rates

2 Industrial Production, Unemployment rate

4 TBill Rates, Excess Reserves

See Athanasios Orphanides, 2004 “Monetary Policy in Deflation: The Liquidity Trap in History and Practice,” Finance and Economics Discussion Series 2004-01, Board of Governors of the Federal Reserve System (Downloadable). THISGOESTOTHE BIBLIOGRAPHYAT END

SYMBOL LIST	SOURCE
A = borrowing from the Fed	BORROW St. Louis
Ba = monetary base = Cp + Rt + VC	SBASENS St. Louis
Bah = Ba – hoarded cash	
CIC = currency in circulation = Cp + VC	CURRCIR St. Louis
Cp = currency held by the public = CIC – VC	
Dp = demand deposits	Appendix 2
GNPn = nominal GNP = Cn + In + Gn + X - M	Appendix 1
GNPr = real (1939 base) GNP	Appendix 1
i = interest rates, various series	St. Louis
M1 = Cp + Dp	
M1h = M1 – hoarded cash	
Re = excess reserves	EXCRESNS St. Louis
Rr = required reserves	REQRESNS St. Louis
Rt = total reserves	TOTRESNS St. Louis
SUS = suspended deposits	Appendix 2

T = time deposits

VC = vault cash Appendix 2

a = A/Dp k = Cp/Dp m = millions re = Re/Dp rr = Rr/Dp

rt = Rt/Dp vc = VC/Dp rerrvc = re + rr + vc

ANALYTICAL TOOL: The Simplified Brunner-Meltzer Money Stock Function. This function makes it easy to understand what happened in the interwar period, particularly 1929-41. M1 = Cp + Dp. The monetary base Ba = Cp + Rr + Re. Dividing the functions M1/Ba = Cp + Dp / Cp + Rr + Re. Dividing the numerator and denominator of the right hand side by Dp and then multiplying both sides by Ba yields M1 = (!+k / k+rr+re) Ba. Rr = Rr/Dp, the required reserve ratio controlled by the Fed (granted in the Bank Act of 1935); re = Re/Dp, the excess reserve ratio controlled by the banks but normally near zero: and k = Cp/Dp, the currency demand deposit ratio controlled by the public, normally stable and determined by spending habits but rises when bank runs are feared. Ba is controlled by the Fed's open market operations. Borrowing from the Fed, A, and the borrowing ratio A/Dp were significant during the 1920-1 minidepression but insignificant since so it has not been included in the formula (a is an offset to rr).

The major simplification is ignoring the reserve requirement on time deposits (3% 1917-35) The term .03 x T/Dp is only about $1/25^{th}$ the size of K+rr+re so its influence is small. Time deposits in the thirties were about 40% of demand deposits. See the HSOP data base of the FDIC. Time deposits are much more important in 2008 so adjustment is made in the 2008 analysis.

PART 2: BACKGROUND EVENTS

THE MINI DEPRESSION OF 1920-21. Real GNP as listed in the National Income and Product Accounts of the US 1929-76 Statistical Tables Table 1.22 (1972 dollars) was for 1919-1922; 229.0, 214.3, 199.9, 229.5. The decline of 12.7% might have been expected to cause a banking panic a la 1873, 1884, 1893, and 1907 (which led to the J.P. Morgan rescue of Knickerbocker Trust, the Aldrich Commission, and the Federal Reserve as the lender of last resort). But the Fed made massive loans to member banks equal to 10.4% of demand deposits in 1919 and reaching 14.76% in 4Q20. See Table 1.

That action was 4 times greater than any pre 2008 number (the borrowing ratio reached .0332 in August 1984 connected with the Continental Bank of Illinois failure). While it would be nice to have suspended bank deposit figures (SUS) for 1920, the 1921 figures show suspensions were normal as the mini depression bottomed in 1921 (see Table 1). 1928 is considered to be a normal year for comparison. Note the lack of lending by the Fed in the disastrous year of 1931.

Table 1: Fed Lending to Stop Bank Runs 1920-1. SUS in Feb. 1937 F.R.Bulletin.

	3Q20	4Q20	1Q21	2Q21	3Q21	4Q21	1Q22	1928	1931	1938
A	2.658	2.708	2.305	1.811	1.432	1.182	.637	.901	.351	.009
Dp	19280	18353	17400	17133	16820	17200	17100	22390	19166	24727
a	.1379	.1476	.1325	.1057	.0851	.0687	.0373	.0402	.0183	.0004
SUS	na	na	47	35	22	54	42	36	422	4
GNPr	14077e	12377e	13411	13192	13286	12181	14204	19948	18280	20705

A lesson is that timely massive aid can forestall bank runs and maintain confidence. Regarding 2008, in January the borrowing ratio broke the 1920 record with a ratio of .153 (45/294). On

Dec. 1 the ratio was .798 (653.6/806.8). Because time deposits are much more significant in 2008 perhaps a more appropriate to use the borrowing to Dp+T ratio which was .0899 (653.6/7329), still high by historical standards.

DESCENT INTO DEPRESSION. From the recovery in 1922 to 3Q29 there were two mild recessions in 1923-4 and 1927. Then came the depression. From Barger's quarterly series of GNP, (millions of 1939 dollars), the economy bottomed in 3Q32 at 14,447 from a top of 21,441 in 3Q29, a drop of 32.62%. But the drop from 3Q29 (21441) to 3Q30 (20,006) was only 6.69%. Then the first wave of bank failures occurred in 4Q30 highlighted by the Bank of United States failure. Quarterly deposit suspensions (SUS) jumped from the 3Q29-3Q30 average of $78m to $572m. See Table 2. The Fed should have done then what J.P. Morgan did for Knickerbocker Trust in 1907, but it did not. 4Q30 real GNP dropped 8.16% to 18,373 (an annual compound rate of decline of 28.86%) making the decline to that point equal to 1920-21.

The economy seemed to level off in the first 9 months of 1931 going from 18,373 in 4Q30 to 18,385 in 3Q31. But then came the second wave of bank suspensions of .454 billion in 3Q31 and .816 billion in 4Q31. The opportunity to stabilize the economy in 1931 was lost. The top half of Table 2 shows the failure of the Fed to prevent bank runs and failures in 4Q30 and 1931.

Table 2: Turning a Recession into a Depression.

3Q30	**4Q30**	**1Q31**	**2Q31**	**3Q31**	**4Q31**	**1Q32**	**2Q32**	**3Q32**	
74	572	144	275	454	816	280	199	92	**SUS**
.0091	.0161	.0087	.0095	.0148	.0445	.0456	.0317	.0251	**a=A/Dp**
20006	18373	18422	18738	18385	17573	16884	16290	14447 (bottom)	**GNPr**
-	-8.16	% drop	-	-	-4.42	-8.16	-11.40	-21.42	**%drop 3Q31**

-2.58	2.03	1.81	4.41	9.61	3.49	5.14	6.85	3.66	**Ba growth**
-7.43	-7.33	-3.86	-6.51	-5.07	-10.85	-15.25	-14.25	-11.87	**M1 growth**
.1626	.1687	.1738	.1805	.2056	.2547	.2884	.2849	.3049	**e**
24066	24505	23792	23411	22847	21846	20164	20076	20134	**M1**
24066	24322	23513	23005	21982	20198	18154	18125	17899	**M1h**

Hoarding by the public. Normally the money stack M1 and the base Ba move together, but here they diverged. The explanation is easy in terms of the Brunner Meltzer money supply function developed above. M1 = (1+k / k+rr+re) Ba. Because k is proportionally larger in the denominator M1 and k are inversely related. During bank runs people withdrew funds from banks driving Cp up, Dp down, and the k = Cp/Dp ratio up. As public hoarding drove k up it drove M1 down, overpowering the modest rise in the base Ba. In turn the drop in M1 led to dropping GNP. See Appendix 4.

Adjusting M1 for Hoarding. The public hoarded out of fear of bank failures and lost deposits of which there were many, not for transactions. By subtracting hoarded cash the hoard adjusted measure of M1, called M1h, can be found.

During the 16 quarters of 1927-1930 k averaged .160. In 4Q30 k was .169 and rose steadily to .305 in 3Q32. M1 is adjusted for hoarding as follows using 4Q31 as an example. In 4Q31 M1 = 21846, Cp = 4434, Dp 17412, and k = 2547. If k had remained at the normal .160 Cp would have been .160 (17412) = 2786. Hence M1 would have been 17412 + 2786 = 20198 instead of 21846 assuming other factors constant. The 20198 figure is called the hoard adjusted money stock M1h.

Exhibit 1 shows GNPr, M1, and M1h for 1929 32 indexed to 1Q29. The decline in M1h matches the decline in GNPr more closely than M1. Robert H, Rasche also has estimates of M1 in the St. Louis FRED data base beginning in January 1929. His M1 adjusted for hoarding matches the decline in GNPr almost exactly as shown in Table 3:

Table 3

	3Q30	3Q32	% Decline
GNPr	20006	14447	-27.79%
M1	24066	20134	-16.34%
M1h	24066	17899	-25.63%
M1 Rasche	24615	20044	-18.57%
M1h Rasche	24615	17661	-28.25%

THE END OF THE DECLINE. There is no clear bottom to the depression. GNPr bottomed in 3Q32 with a secondary bottom in 3Q33. Industrial production bottomed in July 1932 (FRASER) with a secondary bottom in March 1933. Financially there is a definite bottom. The banking system collapsed in February 1933. Roosevelt was inaugurated on March 4, 1933 and on March 5 he declared a bank holiday closing all banks and then reopening only those banks that were sound (it would be interesting to apply that standard today). There were no bailouts then nor near worthless Level 3 assets such as CDOs.

The Bank Act of June 1933 (sometimes called Glass-Steagall for its provision which separated commercial banking from investment banking) and the Securities Exchange Acts of 1933-34 (founding the SEC which stopped naked short selling and put in the "uptick" rule and was responsible for accurate financial reporting – issues that now exist in 2008) put a "straight jacket" on the financial industry. Note: a series of bank acts in 1980 (Depository Institutions Deregulation and Monetary Control Act), 1982 (Garn-St. Germain), and administrative changes took the jacket off culminating in the 1999 Graham Lench Bliley Act repealing Glass Steagall.

Due to the chaos of the bank collapse 1Q33 is not used as an analytical starting point for the recovery. And because banking statistics of 2Q33 are compromised by a Federal Reserve Bulletin footnote that only licensed bank statistics are reported, 3Q33 is used as the base for the analysis of the depression recovery which from 3Q33 to 3Q37 had a real GNP growth rate of 9.47% and brought the unemployment rate down to 14% from 25% (Orphanides Figure 2).

THE RECOVERY: OVERVIEW. The recovery period of 3Q33-2Q40 has three stages. After 2Q40 the effects of WWII distort the analysis. The first stage was the initial brisk recovery featuring a substantial rise in the bank excess reserve ratio (re rising) and public dishoarding (e falling). The second setback stage featured the doubling of reserve requirements and the recession of 1937-1938. The third stage from 2Q38 to 2Q40 featured a resumption of double digit growth despite even higher excess reserves.

THE RECOVERY 1932-2Q36 (Pre reserve requirement increases). Orphanides (2) called the recovery "incomplete and erratic". This was due to the recession of 1937-8 which should not have happened. Meltzer (3. p, 416) has a more positive view. "Until 1937 recovery from the depression proceeded rapidly

1932	1933	1934	1935	1H36	
62448	62301	67276	71903	40811	GNPr
	-.24	7.99	6.88	17.76	Ann.growth
.2942	.3297	.29669	.2332	.2192	e
.0187	.0401	.0959	.1219	.1150	re
.1187	.1222	.1274	.1259	.1258	rr
	-2.78	16.63	16.81	14.51	M1 growth
	3.73	18.11	20.79	9.95	Ba growth

The growth of M1 and Ba match fairly closely but for an odd reason. While banks were hoarding excess reserves until leveling off in 1H36, the public was dishoarding (e falling). So, in a rough sense the two effects cancelled. The lesson here is that the economy can grow even if the banks hoard. The dishoarding by the public cancelled the hoarding of the banks. Given that there

is massive bank hoarding in 2008, perhaps it can be cancelled by expanding the Cp portion of the monetary base to counter the frozen reserves.

THE SETBACK: RESERVE REQUIREMENT INCREASE AND THE RECESSION OF 1937-1938. The increase in excess reserves in 1933, 1934, and 1935 were of major concern to the Fed. Normally banks want excess reserves to be near zero because they earn no interest (except now, in Oct. 2008 the Fed is planning to pay interest on excess reserves-could this discourage lending?). Excess reserves were miniscule in 1920-1921 as the Fed did its job and remained so until 1932 (see App. 2). If e is stable and re near zero the Fed has control over the money stock and bank credit. But if the banks have substantial excess reserves they, theoretically, can increase or decrease money and credit in the economy by decreasing oro increasing re. Perceiving the excess reserves as a threat to its control and to unleash inflation the Fed wanted to eliminate this threat by raising reserve requirements which would reclassify excess reserves as required.

A problem was that reserve requirements had been fixed by the 1917 Amendment to the Federal Reserve Act at 7% for country banks , 10% for reserve city banks, and 13% for central reserve city banks (also 3% on time deposits). To get the legal power to change reserve requirements the Fed needed a new law. Accordingly the Fed lobbied for the power to change reserve requirements to regain monetary control and got the power to double the 7, 10, 13 limits to 14, 20, 26% in the Banking Act of August 23, 1935.

Why the banks increased their excess reserve is examined in Part 4. A quick explanation is that banks had been made wary by bank runs, the Fed's failure to do its job as lender of last resort, and unsure about the temporary FDIC (made permanent in the Bank Act of Aug 23, ,1935), banks found a way to self insure against potential trouble spaces - accumulate excess

reserves. Other potential reasons explored in Part 4 are low interest rates, low loan demand, low deposit growth, inadequate capital (a 2008 problem), and increased fear of default (also a 2008 problem).

Fearing loss of control of money and credit the Fed pulled on the string. In July 1936 the Fed raised rr by 50% and to the 100% increase limit in two more stages in 1Q and 2Q37. The next table shows the increase in rr + re caused by the Fed's reserve requirement increase and the drops in money stock growth and GNP (see Appendix 4 for a graph of similar patterns regarding the recessions of 1960, 69-70, 74-75, 80, 81-82, and the mini recession of 1Q67). Also, the 1937-38 recession sent the unemployment rate back to 19% from 14%.

1Q36	**2Q36**	**3Q36**	**4Q36**	**1Q37**	**2Q37**	**3Q37**	**4Q37**	**1Q38**	**2Q38**	
.1274	.1242	.1846	.1814	.2098	.2369	.2396	.2433	.2446	.2114	**rr**
.1211	.1090	.0751	.0803	.0540	.0348	.0365	.0447	.0643	.1136	**re**
.2485	.2332	.2597	.2617	.2638	.2717	.2761	.2880	.3089	.3250	**total**
19752	21059	21234	21659	21333	21954	22847	20465	19837	20001	**GNPn**
13.98%	14.51	14.84	14.80	13.64	6.43	1.26	-4.46	-4.62	-3.17	**M1yoy Growth**

Exhibit 1 shows a plot of M1 and real GNP for the entire 1933-40 period showing the relation graphically.

In his Federal Reserve Staff Study, Orphanides (3) blames the 1937-1938 recession on the reserve requirement increases. We agree, but he also denies that there was a liquidity trap in the 1930's. We disagree. We think that the U.S. was in a 40% partial trap in 2Q38-2Q40, an 87% trap in 2Q36-2Q38, and that currently in 2009 we are in a 94% M2 trap.

PART 3: LIQUIDITY TRAPS

The Basic Idea of a Liquidity Trap. In a trap, base money injected into the economy through an open market has no stimulative effect because it is hoarded either by banks as excess reserves or as "under the mattress" precautionary or emergency balances by households or business (2008 companies drawing on lines of credit even though they do not need it). In a 100% trap, all increases in the monetary base are "hoarded" for whatever reasons and M1, M2, and bank credit are unchanged.. See the St. Louis Fed plots of total reserves, excess reserves, M1, Cp, and the monetary base for 2008 on the web. With no trap the base Ba, M1, and bank credit should change proportionally. In a half trap, Ba would have to expand twice as fast to counter the 50% hoarding effect. The easiest period to analyze is the second recovery period 2Q38-2Q40.

THE 40% PARTIAL LIQUIDITY TRAP OF 2Q38 – 2Q40. After the reserve requirement increases and the recession the banks redoubled their efforts to increase excess reserves (Orphanides (3) Figure 2). During this period Re went from 2762 to 6696 up 142.43% while Ba went up 49.49% and M1 only 29.84%. About half the increase in the base went into the buildup of excess reserves offset a bit by a small drop in e.

Whether reserves increase as excess, required, or as vault cash makes no difference from a hoarding aspect. To shorten Table 7 Re, Rr, and VC are combined.

Table 7: Liquidity Trap Worksheet for 2Q38-2Q40.

	2Q38	**2Q40**	**Constant e, rerrvc**	**Gross Hoard (3)-(2)**	**Net Hoard**	**Change**

M1	29,702	38,565				8,863 (29.84%)
Ba	14,336	21,431				7,095 (49.49%)
Cp	5,389	6,603	7,084	-481	-249	
e	.22165	.20659				
ReRrVc	8,947	14,828	11,762	3,066	3,066	
rerrve	.36799	.463526			2,187/7,095	39.70%
Dp	24,313	31,962				
Bah	14,336	18,614				4,278 (29.84%)

Explanation. Column 3 calculates what Cp would have been in 2Q40 if e had stayed constant at .22165: 7084. But Cp 2Q40 was only 6603. Hence there was public dishoarding of cash of 7084 – 6603 = 481. Similarly, comprehensive reserves (Re+Rr+VC) should have been 11762 if the combined (re+rr+vc) total had remained at .36799. But actual Re+Rr+VC was 1482 meaning 3066 was hoarded.

Column 5 adjusts for the fact that a dollar of public hoarding has less effect than a dollar of reserve hoarding. This is because e is in both the numerator and denominator of the money multiplier [1+e/e+re+rr+vc] whereas the reserve factors are in the denominator only. The relative strength can be found as the ratio of the derivatives. This ratio is [1–rerrvc / 1+e]. The net amount hoarded in 2Q38 – 2Q40 was 2817 which was 39.70% of the 7095 increase in the base, or about 40%.

Bah, the hoard adjusted base. The base itself increased from 14336 to 21431, an increase of 7095. But 2817 of that increase was hoarded so the effective change in the base was only 4278. Adding the 4278 to the original 14336 gives a hoard adjusted base of 18614 which has the same 29.84% growth rate as M1.

The trap fraction is related to the growth rates of M1 (gM1) and the base (gBa) by the equation: gBa = gM1 / (1 – trap fraction) = gM1/(1-.3970) = gM1 / .603. Suppose the target growth rate of M1 is 8%. Then the base has to grow at a rate of 8 / .603 or 13.27% to attain that rate of M1 growth. In a 95% trap the base would have to grow at a 160% rate (note: the base from 1 Sep. 2008 to 22 Dec. was up 103.01% in 113 days an annual rate of 884.70%!).

The Recovery of 2Q38-2Q40. Despite the hoarding the growth rate of the base (49.49% or 22.27% annual) was great enough to let M1 grow 29.84% (13.95% annual). In turn nominal GNP went from 20368 to 24545 (20.51%, 9.78% annual) and real GNP went from 20001 to 24285 up 21.42% (10.19% annual). The lesson is that a trap can be overcome if Ba grows fast enough.

THE LIQUIDITY TRAP OF 2Q36-2Q38. In the classic bank based liquidity trap, if the monetary base goes up say, $2 billion, but all the increase goes into bank excess reserves, money and credit do not increase. Now suppose that the $2 billion goes into required reserves instead, due to a reserve requirement increase. In this case the $2 billion is trapped in required reserves rather than excess reserves, but the effect is the same, no increase in money and credit. Hence, in trapping terms there is no difference, except that future bank behavior may be affected if banks attempt to restore their excess reserves to prior levels.

Basically, this is what happened in the last half of 1936 through the first quarter of 1938. As described previously, the Fed doubled reserve requirements in three stages in 3Q36, 1Q37,

and 2Q37. A result of these actions (3) was the giant recession of 1937-8 which sent the unemployment rate from 14% to 19%. Technical note: The Federal Reserve – St. Louis Fed reserve numbers seem to have an error 1Q38 (March). Total reserves, Rt, should equal required reserves, Rr, plus excess reserves, Re (borrowed reserves were nil). An inquiry has been placed. 1Q38 data problem is solved, we end in 2Q38.

The condensed worksheet for 2Q36-2Q38:

	2Q36	**2Q38**	**Constant e, rerrve**	**Gross trap**	**Adjusted**	**Change**
M1	28,823	29,702				879(3.05%)
Ba	11,608	14,336				2,728(23.5%)
Cp	5,043	5,389	5,156	233	139	
ReRrVc	6,565	8,947	6,712	2,235	2,235	
Dp	23,780	24,313			2,374/2,278	87.02%
rerrve	.27607	.36799				
Bah	11,608	11,962				354 (3.05%)

The monetary base rose 2,728 but M1 rose only 879 because 2,239 of the base increase was trapped in reserve increase and another adjusted 139 was extra cash hoarded by the public (perhaps out of fear due to the recession). The % of the increase in the monetary base that was trapped was 2,374/2,728=87%. The hoard adjusted base, Bah, rose only 354 compared to the actual rise of 2,728. While the Fed might have thought that it was expansive, actually policy was restrictive. Note that in an 87.02% trap it took a 23.50% increase in Ba to generate a paltry 3.05% increase in M1. Economic and monetary performance is in Table 9:

Table 9: Economic Performance 2Q36-2Q38.

	2Q36	2Q38	Gain	Annual rate
Ba	11,608	14,336	23.50%	11.13%
Bah	11,608	11,962	3.05	1.51
M1	28,823	29,702	3.05	1.51
GNPr	21,059	20,001	-5.02	-2.54
GNPn	20,804	20,368	-2.10	-1.05
Loans	20,679	21,130	2.18	1.08
Investments	27,778	26,252	-5.49	-2.75
Total Deposits	51,335	52,195	1.68	.83
Cn	15,717	15,928	1.34	.67
capEx	1,757	1,736	-1.20	-.60
Gn	2,891	3,049	5.46	2.70

GOVERNMENT SPENDING: This paper has been written from a monetarist standpoint but fiscal policy should not be ignored. The following table shows the growth rates of real GNP, M1, and government spending (centered 3 quarter average to smooth fluctuations) for the three periods. As measured by government spending, fiscal policy and monetary policy had the same pattern in recovery 1 and the recession. Contrary to some popular opinion fiscal policy was not stimulative in a relative sense 2Q38-2Q40. Also it has been said that WWII effects got the economy out of the depression. But those effects began after 2Q40. Subtracting net foreign demand for exports does not change the result. Recovery 2 did nicely even after adjustment for net exports.

Table 10: GNP, Government Spending, and M1 during the Recovery.

	3Q33	2Q36	2Q38	2Q40	4Q41
GNPr	15909	21059 10.74%	20001 - 2.54%	24285 10.19%	
M1	19040	28823 16.27%	29702 1.51%	38565 13.96%	
Gr(3qtravg)	2236	2968 10.85%	3001 .15%	3309 5.01%	
Cr	13017	15717 7.09%	15616 - .32%	17644 6.30%	
GNPr-(x-m)	15902	21014 10.67%	19638 - 3.33%	23665 9.78%	

Roosevelt versus Hoover. There is a fear among some that Obama may spend like FDR. Actually it could be feared that the spending would be like that of Hoover. Table 11 shows government spending as a % of GNP along with investment spending.

Table 11: Government Spending/ GNP and Investment/GNP

		Gr/GNPr		Ir/GNPr
1931	Hoover	13.53, 18.72%		8.77, 6.18%

1932	Hoover	15.19, 20.79%	14.36	1.58, 1.79%
1933	Roosevelt	14.75, 20.33%		3.59, 2.68%
1934	Roosevelt	15.09, 20.69%		5.55, 4.36%
1935	Roosevelt	13.76, 19.52%		8.51, 7.42%
1936	Roosevelt	14.21, 20.16%	14.45	11.84, 8.41%
1937	Roosevelt	12.51, 18.36%		13.15, 10.00%
1938	Roosevelt	15.26, 20.48%		6.69, 6.84%
1939	Roosevelt	14.44, 20.62%		10.00, 8.14%
1940	Roosevelt	13.31, 19.49%	14.01	12.76, 10.43%
1941				
1949				
1954				
1958				

Compared to Hoover's last two years. Roosevelt's spending as fraction of GNP was about the same. Regarding investment in the recovery the 1936 to1940 levels of investment are comparable to the Eisenhower "normalcy" year of 1956 (256.2/2255.8 = .1120).

THE TRAP OF 2008-2009. A problem with papers is that they cannot keep up with fast moving events. The St. Louis Fed website can be checked for the latest observations of Ba, M1, M2, Rt, etc. Truly extraordinary things have been happening. The Sept. 1 – Dec 22 trap worksheet:

	1 Sept. 08	**22 Dec. 08**	**Constant e, rt**	**Gross Trap**	**Adjusted Net Trap**	**Change**
M1	1403.4	1591.5				1888.1(13.40%)

Ba	879.4	1785.3				905.9(103.01%)
Cp	776.8	813.3	964.74	-151.44	-56.54	
Rt	102.6	972.0	127.42	844.58	844.58	
Dp	626.6	778.2			788.04/ 905.9	(86.99%)
e	1.23971	1.04510				
rt	.16374	1.24904				
Bah	879.4	997.26				117.86(13.40%)

From Sep. 1 to Dec. 22 the monetary base more than doubled but M1 went up only 13.40%. 86.99% of the increase in the monetary base was trapped in rising reserves. While the rise in the base was 103.01% officially, on a hoard adjusted basis it rose only 13.40%.

REPLACING M1 WITH M2. In 1939 demand deposits were 72.82% of deposits, time deposits 27.18%. As the following table shows (FDIC – HSOB data, St. Louis) shows that the composition of deposits has changed radically with transactions demand deposits dropping to about 10% of total deposits. Potential reasons are the general increase in wealth and financial

Year	T	Dp	T/Dp	Dp%
1939	15.24	40.84	.37	72.82
1966	160.9	191.9	.84	54.39
1983	1137.0	297.1	2.86	25.88
2007	6070.6	608.8	9.97	9.11
1 Sep. 08	6265.0	626.6	10.00	9.09

22 Dec. 08	6526.3	778.2	8.39	10.65

innovation and deregulation (money market deposit accounts MMDAs, the demise of Regulation Q, interest on checking, etc.). The definitions of money have become blurred which is why we have M1, M2, M3, MZM, etc. M2 is the next logical step from M1. The M2 trap worksheet:

	1 Sept. 08	**22 Dec. 08**	**Constant e, rt**	**Gross Trap**	**Adjustment**	**Change**
M2	7668.4	8117.8				449.4 (5.86%)
Ba	879.4	1785.3				905.9 (103.01%)
Cp	776.8	813.3	823.34	-10.04	-8.89	
Rt	102.6	972.0	108.75	863.25	863.25	
T+Dp	6891.6	7304.5			854.36 / 905.9	94.31%
e	.11272	.11134				
rT	.014888	.133070				
Bah	879.4	930.94				51.54 (5.86%)

The M2 trap is 94.31%. It took a 103.01% increase in 113 days (884.70% annual rate) of the monetary base to get a 5.86% increase in M2 (20.20% annual rate). Suppose a target for M2 growth in 2009 is 10% which is the average after the recessions of 1960, 69-70, 74-75, 80, 81-82, 90-91, 00-01. Then the base should grow 10/(1 - .9431) =175.75%. This implies that the base should grow to 3.1736 trillion at the end of 2009 from the current 1.7853 trillion.

A SOLVENCY TRAP. In the next section bank hoarding and the condition of banks in the 1930s is analyzed. We find that the banks were profitable from 1935 on and had equity

capital approximating Basel I standards. In other words the banking system during the recovery was quite healthy. In contrast regarding the current situation we have viewed the reluctance of the banks to give transparency to their balance sheets (to explain exactly what they have) and the campaign against mark to market accounting as an implicit indication that the banking system as a whole has negative net worth. In his NBER Working Paper 14569, Michael Bordo (6) says, "Since the September 2008 crisis it has finally been realized that the deepest problem facing the financial system is solvency." Alan Greenspan on CNBC's High Net Worth program said that the banks don't have a liquidity problem, they have a solvency problem. Prof. Nouriel Roubini of NYU said on CNBC that banks are insolvent and estimated $1.5 trillion will be needed to fix them. Jan Hatzius of Goldman Sachs mentioned the Goldman Jan. 15, 2009 report estimating 1.1 trillion of mortgage losses plus another trillion of credit card, auto, commercial real estate, and corporate debt losses. The thought has reached local newspapers: the Jan. 21, Pittsburgh Tribune Review (p. 4) quoting Doug Roberts of Channel Capital Research, "Some believe the banking system already is insolvent."

While the banks in the 1930s had problems, the statistics of Part 4 show that banks were solvent and profitable. The losses of 1931-4 were exceeded substantially by profits before and after. Had the Basel I 8% capital requirement been in force in 1934-40 it would have been met easily given that half of the bank portfolio was in government securities.

The bank hoarding of 2Q38-2Q40 was overcome easily with Monetary base growth of 49.49% The Fed did not have to do anything special in 3Q33-2Q36 because public dishoarding offset the bank excess reserve increase. And the recession of 1937-8 was a self inflicted wound, a required reserve trap rather than an excess reserve trap.

The current banking situation is much worse. In the 113 days ending Dec. 22, 2008 the monetary base increased 103.01% an astonishing annual compound rate of 885%. It has had little apparent effect in solving the overall problem. Initially, we thought that is doubling the monetary base does not solve the problem, double it again, and again if necessary. The idea was that an ordinary liquidity trap can be overwhelmed by throwing money at it. But this approach does not necessarily fix a solvency trap. If Bank A fears that Bank B is insolvent (Bank B may not be insolvent but with an opaque balance sheet who knows?) it will not want to have interbank relations. Hence interbank relations freeze and dysfunctional zombie and vampire behavior described in Mishkin and Eakins (5, p.488) poisons the system. We suspect the only way to get rid of the problem is to clean out the rot as done by the RTC in the S&L crisis. Note: the bridge bank procedure described by former RTC chair Seidman avoids the toxic asset pricing problem which has stymied the TARP plan. The RTC also threw out the managements and boards of directors that were responsible for the problems. It also avoids a difficulty with the Paulson modification of buying preferred stock from troubled institutions, that they may spend it on posh conventions (AIG) and bonuses and frivolities (John Thain and Merrill). The Paulson approach is similar to the "capital income" certificates authorized by the now defunct FHLBB in Sep. 1981 by the S&Ls to the now defunct FSLIC, and the "net worth" certificate program of the 1982 Garn St. Germain Act. Both were failures.

A last problem is the piecemeal approach. For nine years from the 1980 Depository Institutions Deregulation and Monetary Control Act to the 1989 Financial Institutions Reform Recovery Enforcement Act government tried piecemeal solutions to the S&L crisis. All failed including the capital injection programs mentioned above. It wasn't until the RTC and Seidman

authorized under FIRREA took over that the problem was eventually solved by taking over and shutting down the insolvent living dead institutions.

PART 4: HOARDING AND BANK STATISTICS

Public hoarding that started in 4Q30 due to bank runs and peaking with the March 1933 total collapse of the banking system is understandable. It ended with the bank holiday, the Banking Act of 1933 and making the FDIC permanent in the Act of 1935. The dishoarding by the public cancelled the increase in bank excess reserves and there was no liquidity trap in 3Q33-2Q36.

Bank hoarding, unlike the public which began dishoarding in 1933, started when banks began to build excess reserves (St. Louis: EXCRESNS) steadily from 1932 to the end of 1935. It peaked at .1395 and then dropped to .1090 in 2Q36. Why did banks hoard? Several reasons have been proposed:

a.) Near zero interest rates – T Bills at about .20%.

b.) There was no loan demand.

c.) Insufficient deposits or capital.

d.) There was a rising fear of default (should be shown by rising risk premiums - associated with the flight to safety idea).

e.) Fear of interest rate increases.

f.) Lack of confidence. Excess reserves are self insurance.

Appendix 3 has bank balance sheet data for all US banks 1933-40 culled from Federal Reserve Bulletins. The economic numbers are from App. 1. Some observations:

	3Q33/2Q40	Gain	Annual Rate
LOANS	22,303/22,341	.17%	.03%
INVESTMENTS	17,837/28,995	62.56%	7.46%
DEPOSITS	38,132/60,582	58.87%	7.10%
Cn	12236/17820	45.64%	5.73%
GNPn	14,814/24,545	65.69%	7.77%
GNPr	15,909/24,285	52.65%	6.47%

Investment	1933	1934	1935	1936	1937	1938	1939	1H40
	442	826	1355	2293	2931	1390	2263	2975

From the growth in consumption and investment it would appear that there was loan demand except for the recession. Also, there was growth in deposits but it went to investments (government securities) rather than loans

Capital Adequacy and Profitability. The FDIC has data on www2.fdic.hsob. Summary statistics with 1955, a “normal” year, for comparison

	OpInc	TA	Equity	ROE	Capital Ratio	Dividends	ROA	Equity Multiplier
1934	20	46448	6152	.03%	.1324	170	.04%	7.55
35	385	50296	6209	6.20	.1219	174	.77	8.10
36	379	56210	6329	5.99	.1126	189	.67	8.88
37	421	54212	6404	6.57	.1181	201	.78	8.47
38	334	56800	6435	5.19	.1133	209	.59	8.83

39	375	63147	6524	5.75	.1033	214	.59	9.68
40	404	70720	6673	6.05	.0944	219	.57	10.60
1955	2278	209145	14890	15.21	.0716	564	1.09	14.05

Note: ROE=ROA x Equity Multiplier (a Dupont relation). ROE 1955 is much greater than those of the 1930's because of the use of more leverage (a 2008 problem is how to delever) and a greater expense ratio. Comparing 1937 and 1955, 1937 interest and non interest income was 3.12% of TA (1955 with 3.06% was about the same). But 1937 expenses were 2.34% of TA vs 1.97%.

The banks in the 1930's had a capital ratio far in excess of the then nonexistent Base1 8% target. There was no need for a TARP. The banks were profitable and transparent.

Interest rates and risk premiums. The St. Louis Fed and Fed have TBill, 10 year Treasury, Aaa, and Baa rates. FDIC data allows estimations of lending rates (interest income on loans and leases divided by the amount of loans and leases i L+L) and time deposit rates. Rp is the risk premium equal to the category rate minus the 10 year Treasury rate.

	iTBill	i10yr	i LtL	i Aaa	RpAaa	i Baa	RpBaa	i T	Rp L+L
1934	.21%	3.10%	4.73%	3.96%	.86%	6.28%	3.18%	2.39%	1.63%
35	.16	2.80	4.37	3.58	.78	5.70	2.90	1.96	1.37
36	.17	2.67	4.15	3.20	.53	4.73	2.06	1.68	1.48
37	.29	2.75	4.24	3.27	.52	5.12	2.37	1.58	1.49
38	.06	2.61	4.40	3.19	.58	5.87	3.26	1.55	1.79
39	.06	2.42	4.30	2.95a	.53	4.91	2.49	1.41	1.88

40	.05	2.23	3.96	2.83	.60	4.75	2.52	1.29	1.73
1955	1.73	2.82	4.42	3.05	.23	3.53	.71	1.36	1.60
2008	1.86	4.10		5.68	1.58	7.07	2.97		
3008	1.13	3.69		5.65	1.96	7.31	3.62		
1Nov08	.19	3.53		6.15	2.62	9.22	5.69		
18Dec08	.00	2.08		4.72	2.64	8.11	6.03		

Interest rates were stable in the 1930's and similar to 1955 with the exception of the TBill rate and the Baa rate. The risk premiums over the 10 year Treasury are interesting. The Aaa premium is stable in the 1930's and the Baa premium stable with a blip in the 1937-1938 recession (Baa premiums tend to jump in recessions (see Mishkin-Eakins (5)). Premiums were very low in 1955. Aaa risk premiums in 2Q08 were about 100 basis points higher than the 1930's and now about 200 basis points higher. Baa 2Q-3Q08 were about equal to 1938 but now are about 275 basis points higher.

Except for the 1938 blip in the Baa risk premium there are no signs of fear in the 1930's recovery. In 2008 the trends of risk premiums are bad. A second sign of fear is the "flight to quality" which drove TBill rates to zero on Dec 18, and the 10 year rate to 2.08% which appears to be a record or near record low.

To summarize the bank hoarding of the 1930's, it was not due to the lack of funds (deposits grew), the lack of demand (C+I+G growth), fear of defaults (risk premiums dropped and stabilized, or the lack of equity capital or profits.

The Confidence Factor. In a sense it is easier to explain the loss of confidence that froze financial markets and the extraordinary increase of excess reserves in 2008 than it is to explain

the increase of 1933-40. Regarding 1933-36 the suspicion is that the banks were not convinced that the bank run problem had been solved. Accordingly they "self-insured" by increasing excess reserves until 1936 when re dropped to .109 in 2Q36 from the .122 average of 1935. Apparently re at about .11 was enough self insurance.

But then the Fed raised reserve requirements by 50% on July 14, 1936 and completed the other 50% in 1Q and 2Q37. We believe that the banks perceived this as an additional threat to their insurance fund and resumed the increase in Re.

Breaking the trap of 2Q36-2Q38. It was easy. Step 1 was the decrease in reserve requirements in 2Q38. The second was brisk 23% annual growth of the monetary base which with a 40% trap remaining still led to 10% real growth. With banks solvent and profitable the problems of 1937-1938 were easy to solve, compared to 2009.

2008. While this paper is about the 1930's some observations can be made about 2008. Financial fear as measured by risk premiums and the flight to Treasuries seems to be worse than in the 1930's. Another problem is the lack of equity (over leveraging) which did not exist in the 1930's. The lack of capital is why the TARP was changed to a program of preferred stock purchases by the Treasury. This action is analogous to the capital certificates issued by FSLIC (authorized by the FHLBB in Sept 1981) which were "loans" disguised as equity, and the analogous net worth certificate program authorized by the Gam-St. Cermain Act of 1982. These programs did not solve the SRL crisis.

A last problem is the lack of transparency today compared to the 1930's. Banks then did not have opaque Level 3 assets (CDOs etc.) that cannot be valued nor off balance sheet obligations hidden from view. It is possible that the banking system as a whole has negative net

worth. It seems clear that the banking system is in much worse condition than in the 1930's, and even the SRLs just before their collapse.

CONCLUSIONS

It appears that thee economy is in a liquidity trap. A potential lesson comes from 3Q33 to 2Q36 when public dishoarding cancelled bank excess reserve hoarding. To replace the dishoarding which is not available now the monetary base should be expanded at a rate fast enough to increase M2 at a rate of 6%. This would require the base to grow at a rate of 150% to counter the current 96% M2 trap. This is modest. On Sept 17 the St. Louis source base was 886.663. Dec. 17 it was 1680.177, an 89.49% increase in 3 months, an astounding compounded annual rate of 1189.39%. With the 3 month TBill rate at zero (and the 4 week at -.01) on Dec. 10 and 18 we believe the growth of the base is appropriate currently and that our 150% annual rate is too low.

Regarding the dysfunctional banking system, piecemeal solutions including net worth investments by the government did not work. What did work at a cost was the Resolution Trust Corp elimination of insolvent S&L's (whose "zombie" and "vampire" moral hazard behavior contaminated the system-see Mishkin and Eakins (s)).

The problem with the RTC solution is that some institutions are considered to be "too big to fail". Perhaps they are too big, unwieldy, and insolvent to be allowed to continue. The Fed is bigger than any "too big to fail" bank or combination of such banks. It has the power to do what the RTC did. It is already accepting risky assets as collateral and funding the commercial paper funding facility. Again piecemeal. The end result is that perhaps the Fed should take over the troubled banks as Roosevelt did in 1933 and clean the rot out of the system.

While this would be a new topic regarding housing, it might be possible that insurance against a mortgage going upside-down or "underwater" might help stop an overshoot to the downside of housing prices.

Series	St. Louis Symbol	Explanation
CIC	CURRCIR	Currency in Circulation
Ba	SBASENS	Monetary Base (CIC + Total Reserves)
Barradj	AMBNS	The Base adjusted for reserve requirement changes
Rt	TOTRSNS	Total Bank Reserves
Re	EXCRESNS	Excess Reserves
Rr	(deduced)	Required Reserves
VC		Vault Cash from Carlson
Cp		Currency held by the public = CIC-VC
Dp		Demand Deposits from Carlson
M1		M1 money stock = Cp + Dp
Barradj - Re		Barradj minus "hoarded" Re