

Banking Crisis and Liquidity in a Broad Perspective

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Introduction

What is banking crisis?

Focus: Mismatch between assets and liabilities

Abstract from issues like social control/decontrol of banks, small banks, open economy issues

Can additional liquidity be provided? Through line of credit (LOC)? At what cost?

Role of deposit insurance (DI) in 1930s? At present? Hypothetically under Gold Standard?

Assume a policy regime of (a) irredeemable base money, (b) inflation targeting, and (c) extended fiscal policy. Under some conditions, there exists a market for liquidity. Under other conditions, we have a market failure. This can be corrected by a subsidy.

I Pre-1983 and post-1983 literature

Pre-1983 literature - deposits as money.

Thornton (1802), Bagehot (1873), and

Friedman and Schwartz (1963) [FS].

Post-1983 - deposits for consn smoothing.

Bryant (1980) and Diamond and Dybvig (1983)

[DD]

‘Bank liabilities function as a medium of exchange. This basic observation leads to ideas and models concerning “liquidity” that are quite distinct and perhaps more natural than viewing bank liabilities as allowing consumption smoothing.’ (p. 453, Gorton and Winton, 2003)

‘There is, of course, a large literature on the theory of banking. But for most of this literature, the term bank can be replaced with intermediary.’ (Andolfatto and Nosal, 2009)

Bank run, scarcity of medium of redemption (MOR)

MOR - goods in the formal model in DD

MOR - currency in pre-1983 literature

Scarcity of goods, and deposit insurance

Scarcity of currency, and central bank

II Two types of lines of credit

Line of credit - Type A (hold cash), and

Line of credit - Type B (issue cash).

‘... [corporations] must hoard liquidity either directly ... or indirectly ...’ (Tirole, 2008)

Type A - Sufi (2009), Kashyap, et al. (2002), and Gangopadhyay and Singh (2001).

Type B - Allen and Gale (1998), and Goodfriend and King (1988)

Our analysis, and Gatev and Strahan (2006)

III Broad policy framework

(a) Irredeemable base money

(b) Efficient public body

Public body to correct market failure

Efficient public body - min net costs

Net costs may be positive or negative

Efficient public body - max profits

Maximise π^C subject to $P = \bar{P}$,

Choice: selling and not selling an LOC.

(c) Extended fiscal policy

Fiscal policy and output gap

Extended fiscal policy, macro-financial stability

Prices of 5Fs (food, fuel, foreign exchange, funds, and financial assets), and real estate (MSS and Recapitalize TBTF bank)

Interest rate, monetary policy and fiscal policy

Maximise $W = W(T_1, T_2, \dots, T_n)$

subject to $c_1T_1 + c_2T_2 + \dots + c_nT_n \leq G_1,$

Flexible budget, initial corpus and inter-temporal balance, and market borrowings in a crisis

Systemic bank runs

Representative commercial bank

	Assets	Liabilities
Before	L^A R^A	D K^A

	Assets	Liabilities
After	$L^A - \Delta L^A$ $R^A - \Delta R^A$	$D - G$ $\epsilon K^A \geq 0$

$$M = C + D$$

After systemic bank runs, $dD, dM < 0$

$dP < 0$, and $dY < 0$ [DD] and [FS]

Systemic bank runs, loan from central bank

Representative commercial bank

	Assets	Liabilities
Before	L^A R^A	D^A K^A

	Assets	Liabilities
After	L^A R^A	$D^A - F$ Loan from bank $C (= F)$ K^A

The central bank

	Assets	Liabilities
Before	L^C R^C	H K^C

	Assets	Liabilities
After	L^C R^C Loan to bank $A (= F)$	H $\Delta H = F$ K^C

Intermediation process in amount F

Before

Hhs \rightarrow Banks \rightarrow Firms

After

Hhs \rightarrow Central bank \rightarrow Banks \rightarrow Firms

**LOC (type B) from the central bank (C)
to representative commercial bank (A)**

$$\pi^A = \begin{cases} i'_L L^A - i_D D^A - p - V & \text{with LOC,} \\ \max[i_L L^A - i_D D^A - Z^P, 0], & \text{without LOC,} \end{cases}$$

$$\pi^C = \begin{cases} i_I I^C + p - S + V, & \text{with LOC sold,} \\ i_I I^C, & \text{without LOC,} \end{cases}$$

π^i is profit of bank i , p is price of LOC,

i_L is normal interest rate on loans,

i'_L is interest rate on loans when LOC is bought,

i_D is interest rate on deposits,

S is cost of supervision,

V is interest on loan by bank C to bank A ,

Z^P is cost to bank A due to a run,

Z^S is cost to society due to a run.

$S - V$ is net cost (private and social),

$\min[i_L L^1 - i_D D^1, Z^P] - (i_L - i'_L) L^1 - V$ is
net private benefit (PB).

$\min[i_L L^1 - i_D D^1, Z^P] + Z^S - (i_L - i'_L) L^1 - V$ is
net social benefit (SB).

Market price if $\text{cost} < \text{PB} < \text{SB}$.

Subsidy if $\text{PB} < \text{cost} < \text{SB}$.

Systemic runs and price level stability

$$M = C + D$$

Consider a shift from D to C .

$$dD = -dC$$

$$dM = 0$$

Ceteris paribus, $dP = 0$.

LOC and possible central bank lending to commercial banks are not in conflict with price level stability.

Seller of LOC - capital adequacy and monitoring.

Hypothetical LOC of type A under Gold Standard (GS)

$$\pi^A = \begin{cases} i'_L L^A - i_D D^A - p - V & \text{with LOC,} \\ \max[i_L L^A - i_D D^A - Z^P, 0], & \text{without LOC,} \end{cases}$$

$$\pi^G = \begin{cases} i_I I^G + p - S + V - N, & \text{with LOC sold,} \\ i_I I^C - i_D D^G, & \text{without LOC,} \end{cases}$$

π^i is profit of bank i , p is price of LOC,

i_L is normal interest rate on loans,

i'_L is interest rate on loans when LOC is bought,

i_D is interest rate on deposits,

S is cost of supervision,

V is interest on loan by bank C to bank A ,

Z^P is cost to bank A due to a run,

N is cost of inventory of gold.

Market for LOC under Gold Standard exists if

$$S - V + N < \min[i_L L^1 - i^D D^1, Z^P] - (i_L - i'_L) L_1 - V.$$

Market for LOC now can exist if

$$S - V < \min[i_L L^1 - i^D D^1, Z^P] - (i_L - i'_L) L_1 - V.$$

Fractional reserve banking was inherently unstable *under Gold Standard*.

Market failure under Gold Standard?

Deposit insurance (DI) - past and present

Possible role for DI under Gold Standard but it was not used then.

DI in 1930s, given the conditions then.

It is not clear if DI is needed, given capital adequacy, LOC, and appropriate legal-regulatory framework.

Conclusion

Important prices: P , 5 F s, real estate.

Only P is 'indeterminate'. So price level targeting, or inflation targeting (IT).

Other prices are determinate but too volatile. There are other macro objectives. So we need an extended fiscal policy (EFP).

Within the policy framework of IT and EFP, under some conditions, market for LOC exists. Under other conditions, it fails.

Correction possible with a subsidy on LOC.