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## Credit Markets and Narrow Banking

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Credit Markets  
and  
Narrow Banking

by

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**In reality, the ‘miracles’ performed by credit are fundamentally comparable to the ‘miracles’ an association of counterfeiters could perform for its benefit by lending its forged banknotes in return for interest. In both cases, the stimulus to the economy would be the same, and the only difference is who benefits.**

**Maurice Allais [1984]**

**Maurice Allais’s view, shared by others, that the credit created by fractional reserve banking is the equivalent of counterfeiting has led to recommendations for reform of the financial system to separate the depository and lending functions of banks. This proposal was presented most notably by Irving Fisher, Henry Simons, and others in the 1930s and called variously the Chicago plan for banking reform or 100% reserves, or 100% money. Both Allais and Milton Friedman have long advocated this reform [Allais 1948; Friedman 1960].**

**Recently, James Tobin [1985,1987] and others [Litan 1987, Spong 1989, Burnham 1991] have advocated the establishment of “narrow banks” to enhance the safety of the payments system and eliminate the costs associated with the present system of federal deposit insurance. Tobin’s proposal, like the 100% reserve plan, entails the creation of two distinct types of financial institutions: those that sell transactions balances subject to 100% reserves in safe assets [deposited currency] and those which lend on the basis of an issue of equity [investment trusts]. Since Tobin’s proposal differs little from either the Simons or Allais proposals, it would**

seem that economy-wide narrow banking implies a similar view of credit.

In order to understand the criticism of the credit mechanism, it is necessary to analyze money from the point of view of the maturity structure of assets and liabilities. The purpose of this paper is to set forth Allais's analysis of the credit mechanism and evaluate his proposal for reform.

### The Credit Mechanism

The credit mechanism must be understood within its historical context. There are two crucial steps in the development of the credit mechanism: the bank loans funds not owned by the bank and the bank loans money it does not hold [Allais 1984: 494-496]. In the first instance, a depositor places \$100 (perhaps in gold) on deposit with the bank and the bank subsequently loans out \$90, holding only \$10 in reserve. At one time this activity was regarded as criminal and punishable by death. This activity led to the collapse of the Bank of Amsterdam after operating for 182 years [Allais 1984: 497]. The second step is where instead of loaning funds deposited with it, the bank opens a creditor account under which the customer may draw up to the amount of his promise to pay. The bank has committed itself to pay on request funds it does not hold. Allais refers to this as "loans make deposits" [Allais 1984: 495].

The essence of banking is that banks borrow short and lend long. The argument in favor of banks engaging in this activity is that due to asymmetric information, depositors do not have the knowledge which bankers have an incentive to know. The bankers monitor the loans for the depositors. If they do not do this, then, in the absence of deposit insurance, depositors will withdraw their funds. Though these arguments may be valid, Allais points out that the situation

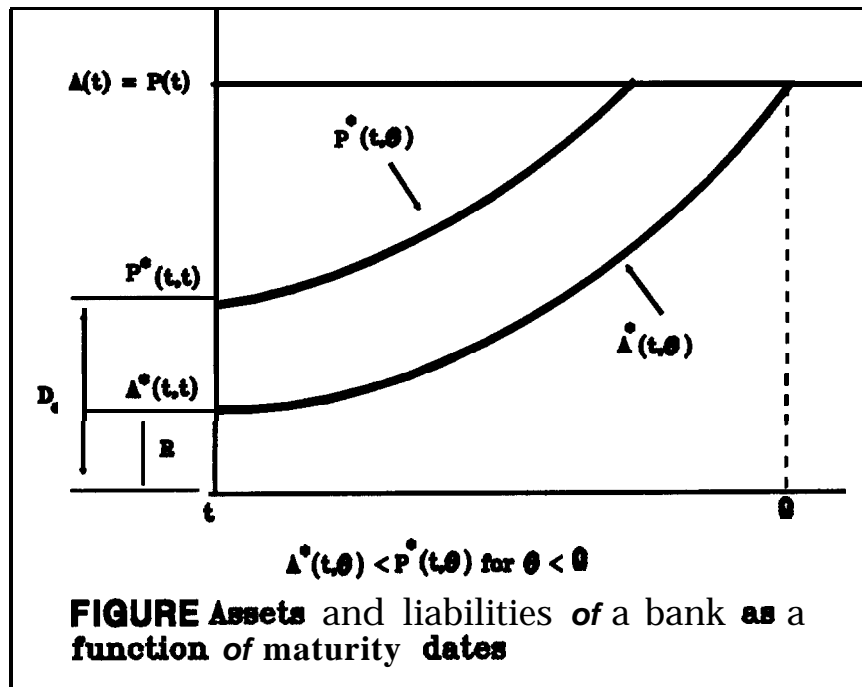
is potentially unstable. It is unstable precisely because a banker who makes a 15 year loan when his deposit maturity is 3 years, must continually renew the deposits. The banker may be successful in doing this in which case real savings are mobilized to finance the loan.

Allais also points out that banks are never in a position of having all of their loans paid off--they continually make loans. In doing so, the problem which arises is that an individual who receives a loan considers that he holds money balances, while at least part of these loaned money balances are considered money balances by the depositor. Henry Simons said of this problem:

**There is likely to be extreme economic instability under any financial system where the same funds are made to serve at once as investment funds for industry and trade and as the liquid cash reserves of individuals. Our financial structure has been built largely on the illusion that funds can at the same time be both available and invested--and this observation applies to our savings banks (and in lesser degree to many other financial institutions) as well as commercial, demand-deposit banking. [Simons 1948: 320] (emphasis in original)**

To fully understand the problem, it is necessary to define the money supply from the point of view of the maturity structure of bank assets and liabilities. The figure below is a representation of a bank's balance sheet according to the maturities of assets and liabilities. Such data is not routinely collected and the actual function would be step wise and not continuous as depicted in the diagram. Let  $A^*(t, \theta)$  be the amount of a bank's assets at time

$t$  which mature at or before time  $\theta$ . Similarly, let  $P^*(t, \theta)$  represent the amount of liabilities at time  $t$  which will mature at or before time  $\theta$ .



Let  $\Omega$  represent the furthest maturity date. We thus have

$$A(t) = A^*(t, \Omega) = P^*(t, \Omega) = P(t)$$

The reserves of basic money (Federal Reserve bank liabilities) are:

$$R(t) = A^*(t, t).$$

and demand deposits are

$$D(t) = P^*(t, t)$$

Letting

$$p^*(t, \theta) = \frac{\partial P^*(t, \theta)}{\partial \theta}$$

then the amount of fixed term deposits maturing during the period  $\theta$  to  $\theta + d\theta$  is

$$P^*(t, \theta + d\theta) - P^*(t, \theta) = p^*(t, \theta)d\theta$$

Similarly, with assets

$$a^*(t, \theta) = \frac{\partial A^*(t, \theta)}{\partial \theta}$$

and the assets maturing during the period  $\theta$  to  $\theta + d\theta$  are

$$A^*(t, \theta + d\theta) - A^*(t, \theta) = a^*(t, \theta)d\theta$$

The essence of banking is that at any given instant  $t$ ,

$$a^*(t, \theta)d\theta < p^*(t, \theta)d\theta \text{ for any value of } t \text{ and } \theta < \Omega$$

This means that at any time before the final maturity date, the assets maturing are less than the liabilities maturing [Allais 1984: 500].

The amount of reserves can also be expressed. Let

$$r^*(t, \theta) = \frac{\partial R^*(t, \theta)}{\partial \theta}$$

and let  $\mu^*(t, \theta)$  represent the reserve coverage effectively observed at time  $t$  corresponding to

the maturity  $\theta$ . Thus the volume of reserves held against deposits maturing between the dates  $\theta$  to  $\theta + d\theta$  are

$$r^*(t, \theta) = \mu^*(t, \theta) \cdot p^*(t, \theta) d\theta$$

The condition  $a^*(t, \theta) d\theta < p^*(t, \theta) d\theta$  for any value of  $t$  and  $\theta < \Omega$  does not necessarily lead to the conclusion that money is created *ex nihilo*. As stated above, it is possible, for example, that a bank which has made a fifteen year loan uses a series of 5 time deposits of maturity of 3 years. In this case, there is no creation of money, though the system is unstable if the 3 year time deposits are not renewed. It is clear that what is crucial to the creation of money *ex nihilo*, is how depositors view the degree of substitutability of their time deposits for basic money (cash). In the case of demand deposits, the substitutability is perfect and the amount of money created is

$$X(t)_{DD} = [1 - \mu^*(t, t)] \cdot P^*(t, t)$$

For time deposits, the degree of substitutability,  $\sigma^*$ , is less than unity and as the transition is made from demand deposits to time deposits maturing at successively later dates, the ratio  $\sigma^*$  declines to zero.

Correspondingly, the coefficient of money creation, for an infinitely renewed loan, is  $\sigma^*(t, \theta) - \mu^*(t, \theta)$  for a time deposit renewable at date  $\theta$  [Allais 1984: 505]. The total amount of money created by the credit mechanism is thus

$$X(t) = [1 - \mu^*(t, t)] \cdot P^*(t, t) + \int_0^{\theta} [\sigma^*(t, \theta) - \mu^*(t, \theta)] \cdot p^*(t, \theta) d\theta$$



The total money supply should thus be defined as currency, demand deposits, and a portion of time deposits that are considered as substitutes for basic money (cash). Thus

$$M(t) = M_1(t) + \int_i^{\theta} \sigma^*(t, \theta) \cdot p^*(t, \theta) d\theta$$

This could also be expanded to include other assets which may be viewed to some degree as substitutes for basic money [Allais 1984: 508].<sup>1</sup>

Allais's reform proposal is to require that deposits banks be subject to a 100% coverage of deposits by basic money and would be forbidden to make loans. Lending institutions would be managed on the principle that all lending for a given term would be financed by borrowing of at least the same term. Whereas now banks borrow short and lend long, Allais would require that they borrow long and lend short [Allais 1984: 525]. Using his notation, the requirement would be

$$a^*(t, \theta) d\theta \geq p^*(t, \theta) d\theta \text{ for any value of } \theta \text{ and } \theta < \Omega.$$

Allais has six fundamental objections to the system of fractional reserve banking: (1) the creation and destruction of money by private banks; (2) sensitivity of the credit mechanism to short-term economic fluctuations; (3) the basic instability engendered by borrowing short and lending long; (4) the distortion of income distribution by the creation of 'false claims;' (5) the impossibility of control over the credit system; and (6) efficient control of the aggregate money supply is impossible. The two fundamental principles guiding reform are (1) the creation of money should be the business of the state, and of nobody else, and (2) no money should be created outside the monetary base, so that no one would be entitled to the benefits that attach to the creation of bank money [Allais 1984: 525].

## **The 100% Reserve Plan**

**The development of fractional reserve banking is largely an historical accident born out of the public's desire for a convenient circulating medium, the government's need to borrow, and the profit motive of bankers [Tobin 1985; Allais 1984]. The system of fractional reserve banking, Simons believed, was particularly susceptible to nationalization because of its instability. Simons noted: "If we could isolate the lending and investment business from deposit banking, we might eliminate a real danger of government control or socialization in an area where it is most important to avoid it" [Simons 1948: 319-320]. Simons describes the separate institutions as follows:**

**First, there would be deposit banks which, maintaining 100 per cent reserves, simply could not fail, so far as depositors were concerned, and could not create or destroy effective money. These institutions would accept deposits just as warehouses accept goods. Their income would be derived exclusively from service charges--perhaps merely from moderate charges for the transfer of funds by check or draft. ... Incidentally, a good case could be made for extending the facilities of the postal savings system for the provision of something like checking accounts.**

**A second type of institution, substantially in the form of the investment trust, would perform the lending functions of existing banks. Such companies would obtain funds for lending by sale of their own stock; and their ability to make loans would be limited by the amount of funds so obtained. Various types of agencies, for bring together would-be borrowers and lenders, would of course**

appear. In a word, short-term lending would be managed in much the same way as long-term lending; and the creation and destruction of effective circulating medium by private institutions would be impossible. [Simons 1948: 64-65.]

Though Allais agrees that the Chicago Plan was on the right track, it failed to fully take into consideration the development of other assets that could be used as money. The Chicago Plan was an attempt to define the money supply as currency and demand deposits--the monetary base and M-1 would be identical.' The Chicago economists failed to realize that the money supply is properly defined, in Allais's view, as basic money and the degree to which other financial assets are viewed as money by the holder. What the Chicago plan wished to do is make  $\sigma^* = 0$ . Allais, though he might view this as ideal, recognizes that it is a decision by individuals and therefore you can not make it zero without a great deal of restriction and regulation of individuals and financial institutions. However, Allais believes that empirical work could enable an estimation of the substitution ratios, and the reserve requirements would need to be approximately equal to those ratios in order to reduce the creation of credit by the private banking system. If the reserve requirement is 100% in basic money for demand deposits, then, for simplicity assuming only time deposits as alternatives to basic money, we have the amount of money created by the credit system as

$$X_{TD}(t) = \int_0^{\theta} [\sigma^*(t, \theta) - \mu^*(t, \theta)] \cdot p^*(t, \theta) d\theta.$$

Simons was aware of this problem, and it caused him the greatest concern about the 100%

reserve plan: how do you keep deposit banking from being reborn? In a letter to Fisher, he wrote:

Much is gained by our coming to regard demand deposits as virtual equivalents of cash; but the main point is likely to be lost if we fail to recognize that savings-deposits, treasury certificates, and even commercial paper are almost as close to demand deposits as are demand deposits to legal-tender currency. The whole problem which we now associate with commercial banking might easily reappear in other forms of financial arrangements. There can be no adequate stability under any system which permits lenders to force financial institutions into effort at wholesale liquidation, and thus to compel industry to disinvest rapidly -- for orderly disinvestment on a large scale is simply impossible under modern conditions. Little would be gained by putting demand deposit banking on a 100% basis, if that change were accompanied by increasing disposition to hold, and increasing facilities for holding, liquid "cash" reserves in the form of time-deposits. The fact that such deposits cannot serve as circulating medium is not decisively important; for they are an effective substitute medium for purposes of cash balances. The expansion of demand deposits, releasing circulating medium from "hoards", might be just as inflationary as expansion of demand deposits -- and their contraction just as deflationary; and the problem of runs would still be with us. [Simons to Fisher, July 4, 1934]

Allais's answer is that you cannot keep near monies from developing, but you can reduce the

creation of credit. In this regard, Allais and Fisher, not surprisingly have a similar view. Both Allais and Fisher felt the answer to the problem was empirical. Fisher replied to Simons's concerns about the development of close substitutes for demand deposits, especially savings banks:

As I see it, savings deposits turn over very slowly and are dislodged in any large volume only by some big force. Even during the depression many people kept on their systematic savings deposits. It seems to me quite preposterous to consider savings deposits as on all fours, or very similar to, deposits subject to check. I feel sure that a statistical study will convince you of this if you will take the trouble to make it. The statistical fact is that anything held for interest does not circulate as fast as what bears no interest. . . . When I see you we can iron this out further perhaps but I have not seen anything in any of your statements so far which would seem to me to justify your fears in regard to savings accounts. [Fisher to Simons, December 14, 1934]

Simons viewed the 100% reserve plan as an attempt to apply the principles embodied in Peel's Act of 1844 which divided the Bank of England into a lending department and an issuing department. Both Simons and Fisher viewed the Act as a correct guide for monetary reform if it had been applied to demand deposits as well as banknotes. However, the 100% reserve plan in the 1930s made the same mistake as in 1844. Peel's Act only applied to banknotes and demand deposits were a substitute, whereas the Chicago plan only applied to demand deposits when time deposits were a close substitute. Allais breaks out of this dilemma by his redefinition

of the money supply and his recognition that you can not legislate the definition of money. It remains an open question whether you can find reasonable estimates for the substitution ratios and then legislate those. Other than the political aspects of banking reform, this is perhaps the greatest difficulty in the implementation of Allais's reform.

### Economy-wide Narrow Banking

We now have some insight into the narrow banking proposal: it can be viewed historically as a continuation of what Peel's Act intended for banknotes in England, what the National Banking Act intended for banknotes in the U.S. and what the Federal Reserve Act (through its various revisions) intended for demand deposits. To this extent, it does not solve for all time the problems of the financial system, but just raises it to the next level. Just as the use of banknotes declined and demand deposits became attractive substitutes, we now have attractive substitutes for demand deposits. The Federal Reserve controls banknotes, since it now has a monopoly, but it can not control demand deposits. With economy-wide narrow banking it could control M-1, but not broader definitions of the money supply.

Perhaps the strongest argument for narrow banking, however, is that it allows a way out of the federal deposit insurance mess. This is largely a political problem: can we abolish federal deposit insurance? If we adopt narrow banking and then guarantee other financial assets, then nothing would have been accomplished.

In the final analysis, Simons, Allais and other 100% reserve adherents would point out that the perceived benefits of fractional reserve banking must be weighed against the cost to society of inherent instability and the potential for future bailouts. As Simons noted:

**If legislatures and economists were more concerned about giving us good, small investment trusts and less concerned about making bank accounts and life insurance safe and salable, we might get a better structure of financial organization. [Simons 1948: 340]**

**This is the real problem: how to construct financial institutions which do not impede the development of the economy, yet are flexible enough to allow for technological innovation and market discipline. Narrow banking is not a panacea, but it does help clarify the basic issues involved.**

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### Endnotes

1. There is still the question of the creation of purchasing power. If the money is repaid and the loan not extended, as noted, no money is created. However, even if the loan is not renewed, interest is paid on the loan. For a deposit expansion  $\mathbf{AD}$ , even if the loan is not renewed, the bank will have collected the interest on the loan and the discounted present value  $\Delta V$  of whose purchasing power is

$$\Delta V = \Delta D \int_t^{\infty} i(u) e^{-\int_t^u i(\tau) d\tau} du$$

where  $i(t)$  represents the interest rate at time  $t$ . If the loan is permanently renewed then we have  $\Delta V = \mathbf{AD}$  since

$$\int_t^{\infty} i(u) e^{-\int_t^u i(\tau) d\tau} du = 1$$

This proof is given in the Appendix to Allais 1984, pages 529-530. The interpretation of this relation is that the present value of a perpetual flow of interest on one unit is equal to one unit whatever the level of future interest rates [Allais 1984: 519].

Reserves must also be taken into account. The volume of demand deposits  $\mathbf{AD}$  thus yields a profit to the bank equal to the interest earned on the sums lent corresponding to the creation of *ex nihilo* of money  $(1 - \mu)\mathbf{AD}$ . For a perpetually renewed demand deposit of unity, the capitalized

**value** of the interest yield on the indefinitely renewed loans it permits is  $1 - \mu$  [see Allais 1984: 519]. The total purchasing power created for total demand deposits is  $(1 - \mu)D$  which is equal to total deposits less the value of reserves held as coverage for demand deposits. Thus the creation of purchasing power is equal to the creation of money. A similar argument would hold for time deposits.

2. Irving Fisher thought that the 100% reserves should be in cash--non-interest bearing government liabilities. Later Chicago economists, such as Friedman [1960], proposed that government securities be counted as reserves. If one considered government securities as non-money, then there could be a difference between the monetary base and M-1. Allais avoids this problem by his definition of the money supply which takes into account the substitutability of assets for basic money.