The Evolution of a Pure Credit Monetary System *

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Abstract

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This paper places a new interpretation on the traditional evolutionary account of money and banking institutions. This allows the development of a new conceptual framework for a monetary model called the *Loans Standard*. The Loans Standard has an institutional structure that minimizes the transaction costs of using exchange credit (i.e. money). Developments within the existing system are interpreted as evolutionary steps in the direction of the Loans Standard model.

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I Introduction

Goldschlager has proposed a new conceptual framework for a monetary and banking system called the *Loans Standard* (Goldschlager 91). The Loans Standard (LS) model is based on two theoretical insights into the traditional logical evolutionary account of money and banking development. These insights are described in the next section. Briefly, the first insight is that money is a representation of a widely accepted IOU and the second is that money facilitates production as an efficient instrument for deficit spending.

The LS model contains only credit money. Credit money is created by bank loans, and is represented by currency and bank demand deposits. Credit money serves as the lowest-cost medium of exchange instrument in the payments system. The LS model segregates the monetary role of banks, as supervised by the central bank, from the provision of other financial services. The LS model is specified in section III. The model contains desirable features not present in the existing system. These include the removal of the dichotomy between currency and bank demand deposits (and hence the motivation for banking panics), improved control on base money growth and the payment of interest on currency. We will argue that the existing monetary and banking system is developing towards a pure credit monetary system, with similar characteristics to those of the LS model.

There is a long history in the literature of calls for monetary analysis in which money and credit are present at the start, and not tacked on to 'real analysis' (Lawlor 92,p180). Early monetary theory is suited to explaining exogenously fixed commodity or fiat money, but has little correspondence to bank credit economies (Schumpeter 34). We claim that even a gold coin is the representation of ownership of a generic IOU. Rogers has recently extensively commented on the modern monetary theory literature and the difficulties it has dealing with the links between credit and money (Rogers 89). Our contribution is to re-examine the traditional evolutionary account of money and to identify the omission of the credit aspects of early money. We interpret the money and banking developments of recent times using the LS model framework.

The growth of the importance of bank money has produced costs in terms of greater instability (Rogers 89,p173;Minsky 82). Faced with this some would return to a 'monetary' system where transactions occur via exchanges of financial claims to real assets, using a book-keeping system, as exemplified in the models proposed by adherents to the New Monetary Economics (Harper 91). However the forces of reduced cost and increased

efficiency suggest that the evolution of bank money is irreversible.

The issue is then to find the institutional framework producing a relatively stable credit system. This is best done if one's analysis relies upon credit theories of money, rather than the usual money theories of credit (Schumpeter 54,p717). The LS model is put forward here as a possible framework for a credit system, utilising a credit theory of money. Even if ultimately it were not considered for implementation, its contribution in describing the link between money and credit remains. This link provides guidance for credit money management.

II   Early Development of Money

Logical evolutionary accounts of the development of money and banking have previously been given by Menger (Menger 1892), Selgin and White (Selgin and White 87), and others. These accounts provide an explanation, consistent with anthropological evidence, of how a basic medium of exchange and unit of account arose in early economies. The economy evolved, as the individuals in it found new ways to reduce the transaction costs incurred by trade and so allow more effort for other activities. The standard analysis proceeds with the assumption that the first exchanges took the form of barter. It then notes that trading by barter had a high transaction cost because of the 'coincidence of wants' problem. To ease the trade, people began accepting commodities which they did not need, provided they believed that other people would take those goods in later exchanges.

Various candidates emerged as the medium of exchange commodity, but traders found it more efficient to eventually settle on only one per market. Consensus on a money commodity reduced the danger individuals had of being stuck with an unwanted commodity. Units of the money commodity naturally became the common units for pricing other commodities. Other transaction cost reductions were achieved by the judicious choice of the money commodity (Einzig 49).

This evolutionary account of early economies is well-known and it provides a rationale for the text-book roles of money. However the above account has been argued by Wray (Wray 90) to ignore the existence of credit money in early societies. Its assumption of markets involving barter with exchange using commodity money conflicts with previously disregarded anthropological evidence of the prevalence of individuals and institutions issuing credit in primitive economies. Markets were a place for settling debts,

rather than for barter (Heinsohn and Steiger 89,p195). Arguably, commodity money developed from the need for tokens to represent ownership of IOUs and so enable settlement of debts.

We also suggest that the story is not complete by making two further observations. Firstly, the medium of exchange commodity is used to balance the exchange of a physical commodity for each transaction and so it continually circulates among the traders (see figure **??**). In the economy illustrated, corn is the medium of exchange commodity. The baker sells bread to John and accepts $10 worth of corn in exchange, not because corn is needed in the bakery, but because the baker knows that others will accept the corn. The baker can then give $10 worth of corn in exchange for the potatoes. Finally the greengrocer gives the $10 worth of corn back to John in exchange for the computer program. Note that the sack of corn started and ended up with John and had no purpose other than as a balance to the real exchange of useful commodities. Its transfer acts as a record of the physical transaction. The medium of exchange transactions do not need to be physical transactions. The physical transfer of the corn could be replaced by transfer of an IOU note. The later use of gold coins, instead of corn, represents a technical development, but does not change the underlying credit instrument. Representing this IOU by a note or electronic book-keeping entry (i.e. electronic funds transfer (EFT)) reduces transaction costs further. The inefficiency of transporting and setting aside a medium of exchange commodity is avoided.

This step (see figure **??**) in reducing transaction costs has only been taken relatively recently, because the infrastructure required for its implementation is more complex. The use of an IOU requires enforceability of the promise associated with it. Initially traders faced lower costs in transporting and weighing the corn (or coins etc), than the total costs of checking and enforcing an IOU of another trader. An account of the development of transferable instruments by banking firms is given in Selgin and White (Selgin and White 87). The use of credit money as a means of payment removes the need for commodities in representing money.

The lesson for modern banking and monetary systems is the need to ensure the integrity of the IOUs used in transactions. The banks' economic role is to minimize the cost of exchange credit, by managing the payments system. Monetary inflation is one cost of using money IOUs and the banks must be supervised to minimize this cost also.

The second observation is of what happens when some individuals produce more than they consume and other individuals demand more than they have. They can still get together and trade. The lender trades his excess

Figure 1: A sack of corn as a medium of exchange

Figure 2: IOUs as a medium of exchange

commodities, but what can the borrower offer him? The borrower offers him a promise to pay the loan back later along with a little extra. Now, to relate this to the first observation, money is created when the resulting credit instrument is the most widely accepted one. The institutions today which facilitate net deficit spending by making loans and monitoring their progress are the banks. We hasten to distinguish banks from other financial intermediaries who issue credit. Banks can create the credit money *ab initio* for use in the payments system, whereas NBFIs merely allow the temporal transfer of credit money from one entity to another.

The implications of these insights are now further explored using the LS model and comparing it to the direction of development in the banking and monetary system.

III   The LS Model

In the LS model, bank loans create credit money and their repayment destroys credit money. Real economic transactions which then occur in relation to those loans have matching 'medium of exchange' transactions. The medium of exchange transactions result in bank deposits for those trading with the borrowers. The deposits and currency automatically balance with the original loans. At any time, we have

$$Bank\ loans = Bank\ deposits + currency \tag{1}$$

over the whole monetary and banking system. This is not necessarily true for individual banks. This can be considered an abstraction of the present system, with capital and owner equity removed from the banks' balance sheet (Moore 88,p382). However, currently banks do need to balance loans and deposits. Since the 1960s, they have achieved this with greatly increased flexibility using the interbank market in CDs. The existing monetary system has developed this market to put in effect the LS model's feature of removing the individual bank constraint of balanced deposits and loans.

In the LS model, the supply of the medium of exchange is directly related to the needs of the economy. Arguably this is not very different from the existing system, where the supply of currency is demand-driven and the supply of loans is argued to be demand-driven, although at a price (Blundell-Wignall 92,p20). However further elucidation of the detail of the LS model formulation reveals a number of other significant consequences.

i   Currency, Bank Deposits and Banking Panics

Firstly, currency and bank demand deposits are homogeneous. Currency is considered to be a physical representation of a bank deposit, and not a central bank liability as in the present system. This is consistent with our earlier observation that money is an IOU token and so represents both a private liability and private asset. One implication is that interest logically should be paid on currency. While this has been argued to be impractical due to transaction costs for all but the largest quantities (White 87,p452), we note that forthcoming technologies will make smart card based currencies possible and so remove this barrier. The deregulation of deposit interest rates is an example of the evolutionary trend recognising the credit nature of money.

Secondly, the LS model treats bank demand deposits as part of the money supply. Hence they belong to the monetary system (as currency presently does), although managed by private banks, and not as bank liabilities. If a bank becomes insolvent, its depositors are transferred to other banks without loss to depositors and with minimal disruption to the payments system.

The motivation for banking panics is removed in the LS model and so demand deposit security is increased. Concerns about bank solvency can currently lead to bank runs, even if the concerns are not objectively well founded (Diamond and Dybvig 83). Banking panics are a costly way to deal with bank insolvency and the present monetary system has searched for alternatives. However, central bank guarantees and/or deposit insurance to promote public confidence lead to moral hazard concerns for bank behaviour.

The social costs of bank closures have increased with the technological advances of EFT, since bank demand deposits act increasingly as the medium of exchange in the payments system (Wray 1992,p302). The security of bank deposits is even more important now, in order to maintain public confidence and also to allow the smooth running of the payments system and hence the economy. In subsection (iii), we describe the LS model's approach to bank insolvency.

In this subsection, we have argued that the payment of interest on exchange credit, both deposits and currency, and the principle of homogeneity of monetary exchange media, lead to a reduction in the cost of transactions. Money in the present system as transaction costs are reduced will develop these characteristics.

ii Bank Insolvency and Interest Rate Determination

We have already seen that the LS model treats the liabilities of the monetary system as being held by banks on its behalf. Turning to the asset side of the monetary system's balance sheet, we see that banks face a moral hazard if they can make loans on behalf of the monetary system without risk to themselves. The developments of the existing monetary system have seen the use of reserve requirements to constrain bank lending. Progressively reserve requirements have been reduced in the ever continuing effort to reduce transaction costs.

Capital adequacy constraints are the new means for attempting to ensure prudential bank lending by bank management (Eichberger 92). Although not specified by the LS model, one can envisage banks being required to use their owner's equity to recoup any shortfall in return on their loans due to bad debts. This would affect owner returns and so encourage prudential lending. However, the LS model suggests that theoretically the capital ratios are not needed and that they unnecessarily add to the transactions cost. Banks should be constrained by other means not affecting the transaction cost of the exchange media. We will briefly consider alternatives in the concluding section.

The deregulation of the financial system has led to calls for deregulation of present limits on banking investments. The motivation is the increased stability gained by a wider range of investments and the theory of the firm, where banks are relied upon to engage in risk-neutral behaviour (Fama 80). In contrast, the LS model suggests that banks are different to other firms, because they are agents for the monetary system. The banks' monetary functions should be isolated from banks' non-monetary investments and ventures, to avoid the possible conflict of interest between their responsibility to the monetary system and their own private interest.

Banks do not need to balance their deposits and loans, however the concept of insolvency remains. Banks still need to pay their debts. In the LS model, a bank's debts include payment of bL interest owing to the central bank, where b is the base interest rate paid on deposits and L is the total amount of loans outstanding made by this bank [1]. Actually, the bank owes $(\frac{b+D}{1-D})L$ to the central bank, where D is the risk of bank default. $(\frac{Db+D}{1-D})L$ is, in effect, an insurance premium paid by borrowers to protect lenders against loan default. In contrast to existing deposit insurance schemes,

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[1] The LS model specifies the borrowing rate as $(\frac{b+d}{1-d})L$, where d is the expected proportion of defaults of L.

which protect the whole banking enterprise, this one focuses directly on the deposit risk insured against, the risk of loans default.

iii   Value Theory and Monetary Inflation

Traditionally currency has value since the central bank will accept it in payment of private liabilities owed to the government or itself. Its value also partially depends on its relative scarcity. Parity of value is currently maintained between bank deposits and currency by the convertibility requirement. Bank deposits are currently backed by the assets of the private bank holding the deposit. Equation (1) has the deposits and currency of the monetary system backed by the aggregate of bank loans. The LS model explicitly has money being backed by loans. Money balance holders are the creditors, whilst borrowers with loans are the debtors. Concerns for the nominal value of loans is not due to a money illusion, because the loan repayments are fixed nominally, while the assets purchased may fall in value (Wray 90,p13).

Externally, the value of a unit of credit money is determined by the ratio of the quantity of credit money to the market value of the aggregate capital of the bank loans. We define monetary inflation as a drop in this ratio. Monetary inflation is distinguished from exogenous (to the monetary system) changes in the price level.

Monetary inflation occurs when loans are not repaid. To maintain the ratio, the LS model requires a component of the interest payments to be cancelled against unrepaid loans, thereby maintaining the balance between aggregate loans and deposits.

Monetary inflation is distinguished from Schumpeter's demand inflation (Schumpeter 54). He noted that bank loans increase aggregate purchasing power, while the goods and services available for purchase is constant, and so the value of existing money claims are temporarily reduced, until goods and services are produced with the loans' projects. This requires the assumption of an inelastic supply function for capital goods. However demand inflation leads to monetary inflation when speculation occurs in a particular area, such as real estate (Wray 91,p963). A speculative market is unstable and when the prices fall, the resulting loan defaults will cause monetary inflation.

One way to help minimize monetary inflation may be to monitor credit money growth, so that greatly increased purchasing power entering markets does not disrupt existing production plans. While developments in the existing monetary system already match many features of the LS model, this

is not so for handling monetary inflation. The present system has not yet developed mechanisms for handling monetary inflation.

IV   Conclusion

Monetary theory is concerned with the issues of determining what money is, its effect on macroeconomics and the best institutions for money's distribution and control. Traditionally general equilibrium theory has treated money only in terms of its role as a store of value (Ostroy 90). Monetary theorists then removed the Walrasian assumptions about trading logistics and market information, to examine new models in the theory of exchange. The result has been to incorporate money's role as a medium of exchange into monetary theory. However this is not the whole story. Too often monetary theory has been treated as a derivative of real analysis, as if money was a boardgame token of account (Stiglitz 88,p310). The contribution of this paper has been to present a bottom-up account of what money is and the implications for the institutional framework of the monetary system. We have used the LS model's to didactically specify money and its role in the modern capitalist economy.

A simulation of the LS model is currently being developed as an adaptation of Shubik's models (Shubik 90). This will be used to further test some of the claims made for the LS model. By following the evolutionary development of money and banking, we have argued that the LS system is a natural progression in the development of our monetary system. The remaining steps for its implementation are

- Identify banks participating in monetary system. Deposits and loans of these banks are then managed using the above principles.

- Deposits and currency to be uniformly paid the base interest rate. The base interest rate to be set by the central bank, perhaps using some of the considerations used to set the short-term cash rate in the present system.

- Banks charge interest on loans with components for paying depositor interest and for the risk premium. They pay the interest on the deposits they manage and pass any excess to the Central Bank for distribution. They make their profits from loan charges and transaction fees.

- Central Bank to supervise banks and minimize any loss to monetary system due to poor individual bank performance. Moves along these lines are already being initiated. A code of conduct for lending practices is being formulated (Grattan 92) and procedures for improved liaising with auditors in order to better assess a bank's loans portfolio have been approved (Editorial 92). Upon a bank closure, its deposits and loans are to be redistributed to other banks.

- Other financial services provided by banks are to be kept separate from the above monetary role.

The development of money and its institutions has been interpreted as an evolving effort to reduce the transaction costs of exchange credit, costs due to missed interest, banking panics, monetary inflation, reserve requirements, fraud and mismanagement. The LS model points to where transaction costs may further be reduced.

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