Beyond Endogenous Money, Toward Endogenous Finance

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I Introduction.

Post Keynesian economists have long been interested in the endogenous nature of finance. However, formal interest has thus far been largely restricted to the money supply implications of the banking sector's ability to endogenously accomodate expansions of loan demand. This exclusive concern with "endogenous money" can be interpreted as a residue from classical monetarism, in which only money matters, and in which money supply fluctuations cause the business cycle. The cuurent paper seeks to broaden the Post Keynesian approach so as to include forms of credit other than just bank loans. In doing so, it transcends the monetarist parameterization of monetary theory, and begins the process of exploring the implications of what may be termed "endogenous finance". By abandoning an exclusive concern with the banking system, we escape the fixation with money.

Consideration of wider forms of credit introduces a distinction, not present in traditional monetary economics, between the "medium of exchange" and the "means of settlement".[1] The medium of exchange refers to the transaction arrangements at the actual time of transacting. Amongst other things it may include the issue of I.O.U.s, the transfer of cash, or the transfer of title to bank liabilities (checkable deposits). The means of settlement refers to the medium by which debts are discharged, and in general this will be through the transfer of money balances. Within current monetary theory the medium of exchange and the means of settlement are conflated, but in practice the two are frequently separated. Indeed, given the direction of current developments in transaction technologies (for example the growth of credit cards), a system in which the medium of

[1]. My thanks to Ed Nell for this terminological distinction.

exchange and medium of settlement are completely different may well characterize future monetary arrangements.[2] From the standpoint of Post Keynesian monetary analysis, the economic significance of the distinction between medium of exchange and means of settlement is that it generates a potentially enormous elasticity in the economic systems' capacity to finance transactions. It is this feature that gives the subject importance.

II Endogenous money: Accommodationism vs. Structuralism

Before turning to the issue of endogenous finance, we begin with an examination of the current state of endogenous money theory. Here there is an important difference between what may be termed "accommodationism" and "structuralism".[3] The essential difference between these approaches rests on the manner in which the banking sector accommodates changes in the level of loan demand. For accomodationists this process is independent of the private initiatives of banks, and instead depends on the stance taken by the monetary authority. Contrastingly, structuralists emphasize the private initiatives of banks in arranging loan finance, while at the same time retaining a critical role for the monetary authority. The wider significance of this debate lies in the fact that the structuralist approach incorporates elements of nascent endogenous finance. If Post Keynesians are to adopt this perspective, it is important that the debate be resolved in favor of the structuralist position.

An accommodationist model.

[2]. Under such a system credit cards are not used for purposes of obtaining extended credit, but are used simply as the medium of exchange. Thus agents pay off their credit balances in full at the end of each period.

[3]. The terminology is attributable to Pollin(1991).

The accomodationist position can be illustrated by the following model. The model represents a formalization of descriptive models of the money supply process presented by Rousseas (1985) and Moore (1989). The equations of the model are as follows

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(1) $L^d = L(i_L, ...)$

(2) $i_L = (1 + m)i_F$

(3) $L^s + R^d + E^d = D + T^d$

(4) $T^d = tD$

(5) $R^d = k_1D + k_2T^d$

(6) $E^d = eD$

(7) $C^d = cD$

(8) $H^d = C^d + R^d + E^d$

(9) $H^s = H^d$

(10) $L^s = L^d$

(11) $M = C^d + D$

where L^d = demand for bank loans

L^s = supply of bank loans

i_L = bank loan interest rate

m = bank mark-up

i_F = federal funds rate

D^d = demand for checkable(demand) deposits

C^d = demand for currency

T^d = demand for time deposits/bank cerificates of deposit

R^d = required reserves

E^d = demand for excess reserves

H^d = demand for base

c = currency/demand deposit ratio

t = time deposit/demand deposit ratio

k_1 = required reserve ratio for demand deposits

k_2 = required reserve ratio for time deposits

e = excess reserve ratio

H^s = supply of base

M = M1 money supply

Signs above arguments represent assumed signs of partial derivatives. Equation (1) is the loan demand schedule. Equation (2) is the loan pricing equation under which the loan rate is a fixed mark-up over the exogenously set federal funds rate. Equation (3) is the banking sector balance sheet identity, while equations (4) - (8) represent the demands for time (non-checkable) deposits, required reserves, excess reserves, currency, and total reserves. The assumption that these demands are fixed proportions of the demand for checkable deposits is a simplifying assumption that facilitates the graphical exposition: it can be relaxed without changing any of the conclusions. Equations (9) and (10) represent market clearing conditions, while equation (11) is the definition of the money supply.

Through a process of substitution the model can be solved for the level of demand deposits, monetary base, and money supply. These magnitudes are given by

(12) $D = L((1+m)i_F ,...) / (1+t-k_1-k_2t-e)$

(13) $H^d = (c+k_1+tk_2+e)L((1+m)i_F,...)/(1+t-k_1-k_2t-e)$

(14) $M = (1+c)\ L((1+m)i_F,...)/(1+t-k_1-k_2t-e)$

The equilibrium of the model is shown in figure (1). The upper left panel describes the federal funds market in which the supply of reserves is perfectly elastic at the ruling federal funds rate which is set by the monetary authority. The upper right panel shows the market for bank loans in which the loan supply schedule is perfectly elastic at a rate determined by the mark-up over the federal funds rate. The lower left panel imposes the banking sector balance sheet identity from which is derived the level of demand deposits associated with any given level of bank lending. The lower left panel then determines the needed level of reserves associated with this level of demand deposits, and this can be linked to the upper left panel to determine the actual supply of reserves. Variations in the federal funds rate then cause variations in the level of bank lending and the money supply, with the supply of reserves adjusting automatically to fully accommodate the expansion in deposits. Expansionary shifts of loan demand increase the level of bank lending, and thereby increase the level of demand deposits ("loans create deposits") and the money supply. The reverse holds for contractionary shifts of loan demand.

The primary implication of the model is that the money supply is endogenous and credit driven. This outcome is facilitated by the assumption of a perfectly elastic supply of reserves schedule, but this is not critical. For instance if the supply of reserves were positively sloped, then in the event of an expansionary shift of loan demand there would be less than full accommodation, and the expansion of the money supply would be smaller. Such an effect could be achieved by adding the following equation to the model

$$(15)\quad H^{s} = H(i_F)^{+}$$

Now there is a positive relation between the supply of reserves and the federal funds rate, and the federal funds rate is in turn positively related to the level of bank lending. Effectively the Fed "leans against the wind", raising the funds rate as bank lending increases. This modified representation is shown in figure (2). The significant implication is that the loan supply schedule is now positively sloped, so that there is less than full accommodation of shifts of loan demand.

Since the accommodationist model can incorporate a positively sloped loan supply schedule, this reveals that the dispute between "structuralists" and "accommodationists" does not hinge on the slope of the loan supply schedule as has been claimed by Palley (1991).

A structuralist model:

The above accommodationist model can be contrasted with a structuralist model.[4] The significant difference between the two models concerns the behavior of banks, and their relevance to the process of loan accomodation. Whereas in the accommodationist model this process depends exclusively on the rate stance of the monetary authority, in the structuralist model it depends on the private initiatives of the banking sector, as well as the monetary authority's rate stance.[5]Thus, if the monetary authority sets a rising supply

[4] . The structuralist model developed below is derived from Palley (1987) .

[5] . A second less significant difference concerns the modelling of the demand for checkable deposits. The accomodationist model assumes that the demand for checkable deposits is infinitely elastic at the going interest rate, so that demand expands and contracts *pari passu* with any expansion or contraction in the supply. Consequently, banks can create an unlimited quantity of demand deposits, and have no incentive to engage in liability management. In a structuralist model, demand is not perfectly elastic so that increases in supplies of bank liabilities induce adjustments that make the non-bank public willing to hold the additional liabilities. These adjustments may take the form of a rise in nominal income caused by spending of undesired balances, or a fall in bond interest rates caused by an attempt to purchase bonds. They may also take the form of a reduction in checkable (demand) deposits, and an increase in non-checkable (time) deposits if agents choose to convert checkable into non-checkable deposits.

price of reserves, increased demands for reserves provide an incentive for profit maximizing banks to engage in active asset and liability management. This in turn has significant implications for the adjustment process that follows an increase in bank lending.

The logic of the structuralist model is as follows. As the spending of loans generates new deposits, an incipient aggregate scarcity of reserves is created. Unless the monetary authority is being fully accomodative, banks will engage in asset and liability management to obtain liquidity, and this then affects interest rates. Note that even if the monetary authority refused to supply any additional reserves (i.e. targeted the monetary base), per the structuralist model banks would still be able to accomodate some of the increased loan demand, since their asset and liability management actions generate additional liquidity.[6]

The above arguments can be illustrated through the following model, the equations of which are as follows

$$\overset{\quad - \quad - \quad - \quad +}{(16)\ C^d = C(i_D, i_T, i_B, Y)}$$

$$\overset{\quad + \quad - \quad - \quad +}{(17)\ D^d = D(i_D, i_T, i_B, Y)}$$

$$\overset{\quad - \quad + \quad - \quad +}{(18)\ T^d = T(i_D, i_T, i_B, Y)}$$

$$(19)\ H^d = C^d + kD^d$$

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[6] . Even if the monetary authority is being fully accomodative, there are still differences between the accomodationist and structuralist models. This is because, in the structuralist model, the creation of additional bank liabilities brings about non-bank portfolio adjustments that affect the extent of changes in the "narrow" and "broad" money supplies.

$$(20)\ H^s = \underset{+}{NBR}(\underset{+}{i_F}, \underset{+}{A_1}) + BR(i_F - i_d)$$

$$(21)\ H^d = H^s$$

$$(22)\ L^d = \underset{-}{L}(\underset{+}{i_L}, \underset{+}{i_B}, A_2)$$

$$(23)\ MR_B = i_B$$

$$(24)\ MR_L = i_L - c_L - p$$

$$(25)\ MR_F = MC_F = i_F$$

$$(26)\ MC_{BR} = \underset{+}{i_d} + v(BR) \qquad v' > 0,\ V'' > 0$$

$$(27)\ MC_D = (i_D + c_D)/(1 - k)$$

$$(28)\ MC_T = i_T + c_T$$

$$(29)\ MR_B = MR_L = MR_F = MC_F = MC_{BR} = MC_D = MC_T$$

$$(30)\ \underset{+}{Y} = Y(L^d)$$

$$(31)\ L^s + S + kD^s + = D^s + BR + T^s$$

$$(32)\ L^s = L^d$$

$$(33)\ D^s = D^d$$

$$(34)\ T^s = T^d$$

where i_D = interest rate on deposits

i_B = interest rate on bonds

i_T = interest rate on time deposits

NBR = non-borrowed reserves

BR = borrowed reserves

i_d = discount rate

A_1 = expansionary open market operation variable

A_2 = expansionary loan demand shift variable

MR_j = marginal revenue for banks from asset j

MC_j = marginal cost to banks of liability j

p = illiquidity discount on loans relative to bonds

c_L = constant marginal cost per dollar loaned of monitoring loans including provision for expected defaults per dollar loaned.[7]

c_D = constant marginal cost per dollar deposited of administering deposit accounts.

c_T = constant marginal cost per dollar deposited of administering time deposits

Y = nominal income

S = bank holdings of secondary reserves

Signs above all functional arguments represent assumed signs of partial derivatives. Equations (16), (17), and (18) represent the demands for currency, demand deposits, and time deposits. These demands are assumed to be characterized by gross substitutes, and depend positively on own returns and negatively on other asset returns. Equation (19) is the demand for reserves, and it is assumed for simplicity that time deposits have no reserve requirement. Equation (20) describes the supply of reserves which consists of a non-borrowed and borrowed component. The shift factor A_1 captures one off expansionary open market operations, while the slope of the NBR function with respect

[7]. In the current model banks are assumed to have constant marginal costs of administering deposits and monitoring loans. This implies that the wedge between deposit rates and loan rates is constant. If marginal costs rose with the level of deposits and loans, the wedge would increase with the level of intermediation. This would cause the banking sector loan supply schedule to be positively sloped for reasons completey independent of non-bank public portfolio preferences,

to i_F captures the feedback behavior of the monetary authority. Equation (22) describes the demand for loans which depends negatively on the loan rate, and positively on the bond rate. If loan rates rise relative to bond rates some borrowers switch to bond financing. Equation (29) determines nominal income which is a positive function of the level of loan demand. Finally, equation (31) is the aggregate balance sheet identity from which federal funds advances and borrowings cancel out.

The model has a number of significant features. Firstly, banks hold bonds as secondary reserves, and issue both checkable (demand) and non-checkable (time) deposits. This has important implications for the way in which banks accomodate increases in loan demand. Secondly, the model incorporates optimizing behavior on the part of banks through equations (23) - (29), which represent the first-order conditions for a representative multi-input (liabilities) multi-output (assets) banking firm. These conditions serve to incorporate asset and liability management by banks, a feature which is central to the dispute between accomodationists and structuralists, and bears importantly on the issue of endogenous finance. Additionally, the first-order conditions show how the activities of banks regarding acquiring and applying financial funds, link interest rates across markets.

By a process of substitution equations (16) - (34) can be reduced to a two equation system given by

$$\underset{-\ +}{C}(i_F, A_2) + \underset{-\ +}{kD}(i_F, A_2) = \underset{+\ +}{NBR}(i_F, A_1) + \underset{+}{BR}(i_F - i_d) \tag{35}$$

$$\underset{-\ +}{\ }\qquad\qquad \underset{-\ +}{\ }\qquad\qquad \underset{+\ +}{\ }\qquad\qquad \underset{+}{\ }$$

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and the need for banks to pay more to induce changes in the composition of holdings of bank liabilities.

(36) $L(i_F, A_2) = (1-k)D(i_F, A_2) + T(i_F, A_2) + BR(i_F - i_d) - S$

The endogenous variables are i_F and S: the exogenous variables are A_1, A_2, k, and i_d. The signing of the demand for checkable deposits with respect to i_F assumes that increases in the general level of interest rates reduce the demand for checkable deposits. This occurs despite the fact that the rate on deposits also rises, and it reflects the fact that the interest differential in favor of time deposits rises. Additionally, it is assumed that the shift factor A increases loan demand and income. Thus the direct impact of increased loan demand outweighs any subsequent interest rate crowding out effect. Totally differentiating equations (35) and (36) enables solution for the comparative statics. The jacobian is unambiguously negative.

The comparative statics are then given by

$di_F/dA_1 < 0 \qquad di_F/dA_2 > 0$

$dS/dA_1 < 0 \quad \text{if } L_{iF} - (1-k)D_{iF} - T_{iF} - BR_{iF} < 0$

$dS/dA_2 < 0 \quad \text{if } [(C_{iF} + kD_{iF} - NBR_{iF} - BR_{iF})][(1-k)D_{A2} + T_{A2} - L_{A2}]$
$- [(C_{A2} + kD_{A2})(L_{iF} - (1-k)D_{iF} - T_{iF} - BR_{iF})] > 0$

The signing of the change in i_F with respect to the exogenous variables is standard. Note, however, that interest rates rise in response to an increase in loan demand, as the induced expansion in demand deposits creates an incipient aggregate scarcity of reserves. This induces partial accomodation by the monetary authority, increased borrowing from the discount window, and asset and liability management transactions (discussed below) that end up economizing on uses of reserves. The effect of A_2 on S is ambiguous because of offsetting interest and income effects. For instance an increase in A_2 causes an initial tightening of the loan market which induces banks to sell secondary reserves to fund

increased loan demand, but the subsequent increase in income raises loan rates which in turn raises the demand for non-checkable deposits while reducing loan demand. The combination of these adjustments may ultimately make for enlarged bank holdings of secondary reserves.

So much for the technicalities of the model: what about differences from the accomodationist model? The critical difference is that the banking system undertakes active asset and liability management in response to a tightening of the federal funds market. Whereas, in the accomodationist model the sole source of reserves is the monetary authority, in the structuralist model not only do banks have recourse to the monetary authority through the discount window, but they can also obtain reserves from the non-bank public by undertaking asset swaps and inducing liability transformations. These latter methods of raising reserves include

(i) portfolio substitutions by banks between secondary reserves and loans. These substitutions are accomplished by selling secondary reserves to the non-bank public, which extinguishes deposits and releases reserves to support the new deposits created by bank lending. This process reveals an important buffer-stock role for secondary reserves: if there are unexpected deposit outflows banks sell secondary reserves to recapture liquidity, and if there is an increase in loan demand banks sell secondary reserves to finance the increase in lending. In a sense banks therefore perform their own open-market operations with the non-bank public, so that although the total stock of reserves remains unchanged, the banking system is enabled to finance more loans.

(ii) raising interest rates on time and other non-checkable deposits, which encourages a substitution out of currency and demand deposits into these liabilities. This process of

substitution releases reserves which the banking system can use to back deposits newly created by increased lending.

Considered together, the above mechanisms illustrate the nature of the structuralist argument: the private asset and liability management initiatives of banks represent an integral part of the banking system's response to changes in the economy's financing requirements. Not only does this process apply to the financing of deposits created by expansions of bank lending, but it also applies to conditions of monetary policy tightening. Thus, whereas in an accomodationist framework banks passively accept a tightening of monetary policy, in a structuralist framework they take active steps to circumvent the tightening.

III Toward endogenous finance

The previous section highlighted the essential difference between the accommodationist and structuralist perspectives regarding the role of bank asset and liability management in the accomodation of loan demand. However, it is the argument of this paper that both approaches are flawed because of their exclusive attention to the banking sector. In a monetary economy banks represent one element in the financial system, and in principle there is room for substitution in the manner in which payments are arranged. This means that it is necessary to move the analysis beyond the confines of the banking system, and include other forms of financing. It is this feature that prompts the notion of moving beyond endogenous money toward endogenous finance. This section begins this process, and develops a model in which agents use trade credit as a medium of exhange, and money as the medium of settlement.

Imagine a pure credit card economy. In such an economy all goods are purchased exclusively with credit cards so that credit is the medium of exchange. However, the means of settling outstanding debts is money, so that money is the medium of settlement. If transactions per period for the representative agent are Y_i, and each period consists of T days, then the average daily cash balance of the representative agent is

(37) $M_i = Y_i/T$

The actual pattern of agent i's cash balances is shown in figure (3). During the course of the period the agent has no need for cash since all purchases are paid for with credit, but at the end of the period the agent needs to settle her outstanding debt, and this causes a spike in money balances.

Now consider an economy in which both money and credit are used as the medium of exchange. If Y is the total level of expenditures, and b is the proportion of expenditures paid for with credit, we have

(38) $E_C = bY$ $\quad 0 < b < 1$

(39) $E_M = (1-b)Y$

where E_C = value of expenditures paid for with credit

E_M = value of expenditures paid for with money

Adopting a Baumol(1952)-Tobin(1956) framework for determining money demand, total demand for money balances is diven by

(40) $D = D_C + D_M$

(41) $D_C = bY/T$

(42) $D_M = (t(1-b)Y/2i)^{1/2}$

where D = total money demand

D_C = money demand to settle debit balances

D_M = money demand to cover purchases for which money is the medium of exchange

t = transactions cost associated with converting non-checkable deposits into checkable deposits

i = oppurtunity cost of holding checkable deposits (i.e. the interest differential on checkable and non-checkable deposits)

Substituting (41) and (42) into (40), and differentiating with respect to b yields

$dD/db = Y/T - [(t(1-b)Y/2i)^{-1/2}]tY/4i < 0$

so that increases in the proportion of expenditures financed with credit unambiguously reduce the demand for checkable deposits.[8]

The significance of the parameter b for the economy's transacting capacity can be easily illustrated. Suppose the Fed exogenously controls the supply of reserves, H^s, and the required reserve ratio is k. Additionally, suppose that reserves are only used as required reserves. In this case equality of the demand and supply for reserves requires

(43) $H^s = kD$

$= k[bY/T + (t(1-b)Y/2i)^{1/2}]$

Equation (43) then traces out a relationship between b and Y that is positively sloped as shown in figure (4), so that increases in b enable the financial system to support a higher level of transacting. Increases in H^s and i both shift up this schedule. Furthermore, it is possible to introduce another parameter, z, which represents the proportion of credit

transactions that are settled with money: the balance, (1-z), are settled with transfer of title to other claims such as near monies. In this case equation (43) becomes

(43') $H^s = k[\ zbY/T + (t(1-b)Y/2i)^{1/2}\ ]$

Decreases in the parameter z therefore also serve to increase the economy's capacity to finance transacting, and also shift up the schedule shown in figure (4).

The above analysis illustrates the significance of the structural parameter b. Increases in b reduce the demand for checkable deposits, and if the stance of the monetary authority remains unchanged, this will lower interest rates and expand bank lending. The logic is that as credit takes over the medium of exchange function, agents have less need for money (currency and demand deposits). They therefore shift from money into bonds and non-checkable bank liabilities. This in turn means that banks have more reserves than they require, which eases the federal funds rate, resulting in lower loan rates and expanded bank lending. Increases in b are tantamount to endogenously produced expansionary open market operations.

Clearly b is a parameter that is subject to medium- and longer-term influences. These influences represent changing transactions and accounting technologies, and current developments suggest we are in a phase of increasing b in which money is being partially replaced by credit as the medium of exchange. However, b may also be subject to cyclical influences, and it is this that makes the notion of endogenous finance important for business cycle and monetary policy analysis. In this case not only does the banking system have a capacity to respond to tighter monetary policy as described in the structuralist model, but the whole system of monetary transacting may also exhibit a

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[8]. The condition for $dD/db < 0$ is $D_M > E_M/T$ which requires that average money balances for

response. Thus for households, higher interest rates may cause a shift to the use of credit to take advantage of float, where this shift can include increased use of credit cards as well as delayed payment of other bills. The same may also be true of firms. Additionally, firms may change their practices regarding giving and taking of trade credit. For instance in a period of bank loan rationing suppliers may temporarily take over the role of lender. Indeed there is much to be said for this since a trading partner may have better information about the borrower than does the bank, so that the problem of asymmetric information is reduced. Finally, extension of lines of bank credit, which is highly pro-cyclical, is another source of variation in b. In this connection Bar-Ilan (1990) shows how the presence of overdraft facilities can reduce the transactions demand for checkable deposits. More importantly, overdraft facilities are likely to reduce the precautionary demand for checkable deposits since they are an almost perfect substitute. Both of these channels would make b pro-cyclical.

Another channel through which the effects of endogenous finance may operate is substitutions between indirect and direct finance. Bank loans represent indirect finance, while raising finance in capital markets represents direct finance. The latter is more expansionary because it by-passes the contractionary effect of reserve requirements. Thus funds deposited with banks by households are first subject to the leakage of required and excess reserves, and only the balance is available for lending to firms. Contrastingly if households lend directly to firms, then the initial transfer is not subject to this leakage as households own corporate liabilities rather than demand deposits. To the extent that

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money transactions exceed daily money expenditures.

activity in direct capital markets, particularly the equity market, is pro-cyclical this represents another example of endogenous finance.

Lastly, businness cycles tend to be marked by the adoption of "creative" financing, a process which may also be viewed as part of endogenous finance. Thus, as the financial system's ability to finance transactions becomes strained over the course of the upswing, there may even be shifts in the medium of settlement. For instance, when it comes to purchases of large real assets such as office towers, payment may take the form of transfer of title to notes and bonds rather than transfer of title to bank deposits. By taking transactions out of the banking system, this helps circumvent any emerging liquidity shortage that may characterize the banking system. Another part of this process is what Minsky (1982) terms "securitization". This involves the conversion of streams of earnings from real assets into securities which can then be packaged and re-packaged for resale. Securitization therefore confers liquidity on owners of earnings streams, and effectively allows these earnings streams to support deals that would not otherwise have been possible.

In sum, when all of these margins for substitution in the medium of exchange are taken into account, the picture that emerges is one of considerable financial flexibility. The wider financial system is therefore capable of accomodating both changes in the general level of economic activity, and policy induced changes in the banking system's ability to finance activity.

IV Other issues

Side-by-side with the Post Keynesian interest in endogenous money, there has developed a French school that is interested in what might be termed the dynamic circuit

of money. These two schools share much in common, particularly with regard to the endogenous nature of credit money. However, they also differ in a number of ways.

One difference concerns modelling approach. As evidenced in the previous section, Post Keynesian models continue to focus on markets, and continue to use the analytical tools of demand and supply. Though these demands and supplies are time dated, and the demand for transactions balances is specifically developed with respect to expenditures per period, this form of modelling can appear "frozen" in the manner of a photo snapshot. The circulationist emphasis on the circuit of money represents an alternative modelling approach that has more in common with the Fisher equation (MV = PY), in which the circulation of money is directly tied to the level of goods market transacting. However, unlike monetarists who have also made use of this framework, circulationists posit a reverse causality which runs from goods market transacting to the money supply.

Though superficially different, the Post Keynesian and circulationist approaches share common questions and common answers. For the circulationists the determination of the coefficient of proportionality (1/V) between the money stock and nominal income is a key issue. This amounts to explaining what determines the size of the "circulating fund" needed to support a given level of economic activity. This same issue is addressed by Post Keynesian structuralists through the transactions demand for money. However, the Post Keynesian approach is agent theoretic: it starts with the transactions needs of individuals, and then through a process of aggregation arrives at the size of circulating fund needed. The advantage of this approach is that it imposes a structure in which factors affecting the size of the needed fund can be examined. These factors include the level of interest rates, as well as the availability and costs of using other media of

exchange. Endogenous finance goes even further, and introduces structural factors which allow the composition of the circulating fund to adjust.

A second issue that concerns both schools is that of financial instability. The endogenous finance approach described above emphasizes changes in the spectrum of financial liabilities, and changes in the degree of general acceptability of financial liabilities. This potentially introduces many media of exchange and settlement. It also raises the question of what prevents destabilizing fluctuations in their relative prices. This is a long-standing problem that concerned Ricardo (.) in his discussion of the relation between gold and bank notes, the solution of which was fixed convertability. In a modern day context the question is why there are no fluctuations in the relative price of deposits at different banks: the answer is deposit insurance. This reveals a paradox: on one hand deposit insurance reduces instability by eliminating fluctuations in the relative price of monies, but on the other it makes agents willing to accept wider forms of money, thereby expanding the elasticity of the financial system. More generally, this illustrates the significance of institutional context for the operation of the endogenous finance perspective, since institutional arrangements affect the capacity for and pattern of financial accomodation.

IV Conclusion

This paper has argued for moving beyond the notion of endogenous money toward a theory of endogenous finance. The theory of endogenous money represents a significant advance in monetary theory, but its' focus on the banking sector ignores other financial arrangements for transacting. Within Post Keynesian monetary theory there exists a division between accommodationists and structuralists: the former emphasize the role of

the monetary authority in the loan accommodation process, while the latter include a role for the private initiatives of banks. The paper then argued that the structuralist approach is suggestive of a broader approach in which the entire financial system (not just banks) responds to changes in the level of economic activity, or policy induced changes in the liquidity of the banking system. At the heart of this process was the distinction between medium of exchange and means of settlement: in periods of liquidity shortage credit can replace money as the medium of exchange, thereby enabling the system to sustain a high level of economic activity despite the shortage.

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Figure (3): Shows the pattern of agent i's money holdings
in a pure credit card economy

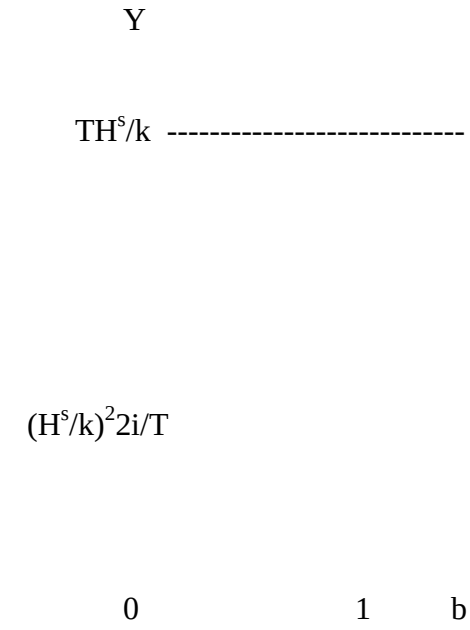

Figure (4): Shows the relationship between the parameter b and the financial systems ability to support transactions.

Abstract

The theory of endogenous money represents a significant advance in monetary theory, but its exclusive focus on the banking sector ignores other financial arrangements for facilitating transactions. This paper argues that the structuralist approach to endogenous money, which emphasizes the private initiatives of banks in responding to the financial needs of the economy, should be extended to the entire system of finance. This then gives rise to the notion of endogenous finance. At the heart of this process lies the distinction between medium of exchange and means of settlement. In periods of liquidity shortage in the banking system credit can replace bank money as the medium of exchange, though money remains the means of settlement, and this means that the system can continue to operate at a high level of activity.

JEL ref.: E0, E5

Keywords: Endogenous money, endogenous finance, medium of exchange, means of settlement