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Loanable funds, liquidity preference: structure, past and present

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Abstract: We appraise the canonical Robertson-Keynes discussion from the structural axis of exogeneity/endogeneity of the interest rate. The interest rate is shown to be an exogenous variable. It is only with Keynes' contribution of liquidity preference and, specifically, the introduction of the liquidity preference of banks that no more than the *possibility* of endogenising the interest rate arises. Given the tenuousness of the resolution, we pose the ethical question: *should* the rate of interest be endogenised? On the other hand, Keynes' theorem that the rate of interest is a monetary variable is validated. Both money and the rate of interest are codetermined in a capitalist economy.

Keywords: money, the rate of interest

Introduction

Keynes challenged the theory that the rate of interest was a price that brought into equality the demand for and the supply of bonds. According to the classicals, the rate of interest would move so that saving supply equaled investment demand. Keynes argued, instead, that the equilibrium of the classical theory determined the level of activity leaving the rate of interest a variable without a theory. His theory of liquidity preference offered more, was yet another device to introduce the non calculable nature of probabilities into the determination of demand and supply functions. Indeed, the innovation started even earlier than the speculative motive for holding money. Although the specification of both the transactions and precautionary motives are believed to be free of Keynes' "dark forces of time and ignorance", according to the cognoscenti the volatile nature of the demand for money actually began with the precautionary component and percolated into the

speculative motive (Panico 2008). For Kahn and others, precautionary demand arose from financial operators that were highly uncertain about the future course of the rate of interest.

The division between Keynes and his contemporaries has mutated into a difference of opinion between followers of Keynes today. Put simply, either the rate of interest is endogenous à la the theory of liquidity preference and money is exogenous, or money is endogenous leaving the rate of interest a control variable. Radcliffe of the famous Committee Report that went under his name developed the idea of liquidity preference as applying to a spectrum of assets. Its many dimensions could not be captured in a suitable metric (Dow 1989). Hence, monetary policy should be directed at manipulating interest rate changes that altered the state of liquidity rather than controlling monetary aggregates.

Kaldor is credited with articulating the endogenous money approach in its modern guise (Dow 1989). The money supply is determined by the private sector. If the banking system responds to the demand for credit, given interest rates set by the authorities, then the central bank has to supply the required reserves so as not to disrupt the disbursement process. The process does not require a theory of liquidity preference. Some post Keynesians lament the jettisoning of the endogenous money of the *Treatise on Money* where the interest rate was exogenous (Bell 2003).

On the other hand, others hold that liquidity preference and endogenous money might not be mutually inconsistent when careful attention is paid to the distinction between the stock demand for money and the flow demand for credit. By considering the liquidity preference of banks the supply of credit can be seen to be a function of liquidity preference (Dow 1989, Bell 2003). Indeed, recent scholarship has unearthed continuity between the *Treatise* and the *General Theory* in this regard (Carlos & Silva 2008-9). The claim is that liquidity preference is richer in the former in the sense of a specification of the financial structure of the capitalist economy of the time. Keynes tore off the institutional fabric in favor of the terse, if opaque, theory of the latter. In the process the medley of commercial banks, investment banks, and broker dealers vanish. Most importantly for our purposes, the relationships between the Central Bank and financial institutions, and that between financial institutions and private nonfinancial institutions were abstracted from. This claim is appraised in what follows using the methodology of causal ordering. In the sections and subsections that end with Keynes' theory of liquidity preference the rate of interest is shown to

be an exogenous variable. It might be endogenised only, as conjectured, when the liquidity preference of banks schedule is included. Thereafter, the normative question is addressed: Should the interest rate be, indeed, an endogenous variable? A final section concludes.

The merit of a causal decomposition is that it helps distinguish the product of Keynes from the (neo)classical model. On a superficial reading, the present mainstream policy package is no different from the Post Keynesian case for endogenous money. The macroeconomic consensus today includes the endogeneity of money and the exogeneity of the interest rate. However, new Keynesian economics, structurally, is general equilibrium economics represented by a system where everything depends on everything else. The apotheosis of the theory is a vector of real prices not excluding the real rate of interest. The new consensus model has gone further in reducing money to a cipher. In the theory pioneered by Michael Woodford, for instance, money can be dispensed with. The task of the authorities is to use the market interest rate to track the real interest rate in Wicksellian fashion. In contrast, the economics of Keynes offers an array of models that are variously decomposable depending on the aspects of the capitalist economy to be captured. Money has to be mired in institutional detail. An engagement with methodology is indispensable. Thus, citing a cause will not suffice if the cause does not discriminate between the explanandum and other outcomes (Hausman 2009). Causal explanation here requires the offering of a mechanism: how did the cause give rise to the effect? Also, a causal ordering is superior if it is *deeper*: in other words, causes that can account for shades of meaning within a range of explanation are more attractive. In addition, the objective functions of the authorities in new Keynesian and Post Keynesian frameworks differ. In the case of what has otherwise been called Dynamic Stochastic General Equilibrium (DSGE) analysis, the interest rate is the instrument and the inflation rate the target. Keynesian policy makers are more complex with the level of unemployment being, in general, the centre of attention. Inflation enters above well-defined thresholds.

In what she has christened Post-Macroeconomics, Célestin Monga (2009) has critiqued the epistemological monism of new consensus macroeconomics in the context of the writing of macroeconomics after the crisis. One instrument (the short-term interest rate), one target (the inflation rate) macroeconomics has become an embarrassment and received wisdom is swinging into uncharted territory with the central bank as lender of first resort. In order to fill in the

lending hole left by banks and Wall Street firms, Federal Reserve officers are scrutinizing the creditworthiness of industries like motor homes, rental cars, snowmobiles, farm equipment, and so on. In other words, they have leapt out of their role in the *LM* relationship to invade the *I* portion of the *IS* curve. New Keynesian wisdom was founded on a stable yield curve. The evidence does not support the theory. The global savings glut has disentangled the relationship between different short-term rates. Besides, as already illustrated, central banks are extending their historically unique mandate. They are stretching their lending operations through devising novel credit vehicles and extending the maturity of their loans. The Fed has extended credit lines to banks; The European Central Bank has guaranteed unlimited funds for up to six months; the Bank of Japan has purchased equities; the Bank of Canada is standing by to purchase government or corporate debt in order to increase the flow of credit.

The problematic connecting theory and practice goes back. Given the sway of general equilibrium macroeconomics since the efforts of Robert Lucas, Edward Prescott, and others, governments have shown no interest in the money stock for over twenty years (Howells 2009). For instance, the Thatcher regime was regarded as advocating hard-core monetarism. Yet, in 1981-'85, when the government introduced money growth targets, the control variable was the rate of interest designed to influence the demand for bank loans. Another bastion of exclusive monitoring of monetary aggregates, the Bundesbank, used the short-term interest rate as the policy instrument, a position that continues with the European Central Bank. The reason, for practicing central bankers, is not far to seek. Reducing the rate of increase of the base would require auction sales of government debt to the private sector. In that case, the overnight interbank rate must respond. Since the demand for reserves by banks is inelastic, the fluctuations in short term rates could be large. Consequently, bond sales are accompanied by price bound stipulations. In the pits of the financial meltdown in 2007, when the Federal Reserve introduced its Term Auction Facility, it set a minimum bid rate. In other words, the monetary authorities would rather control quantities sold than permit interest rate hikes beyond a point. At the level of foundations, the origins of monetarism provide interesting insights. The quantity theory of money, that money causes prices, is the quintessential mono-causal story and David Hume commonly regarded as its first narrator. Yet, he recognized that economists must appreciate an underlying causal order (Dow 2009). However, due to the problem of induction the scientist could never be certain of having excavated fundamental

causal mechanisms. The system of equations would have to crudely proxy that stratum. Thus, the causation between money and prices was not direct. It was heightened activity that drove up wages and prices, not money per se. Consequently, the policy prescription was not the crude quantity theory medicine but the grafting of institutions and procedures that would stimulate industry which would lead to an increase in money.

The interest rate is everywhere an exogenous variable

Real theories

The following description is drawn from Harris (1985). According to the pre-Keynes Quantity Theory tradition, in the long run, changes in the quantity of money cause an equiproportionate change in the price level. Money does not impact the interest rate which is determined by real forces. The supply of bonds, B^S, arises from firms' investment plans. Thus, the desired supply of bonds and planned investment are identical. The demand for bonds, B^D, depends upon the propensity to save of consumers. The notional demand for bonds, in like manner, is the same as planned saving. The interest rate is determined from the following equilibrium condition.

$$B^D = B^S$$

The condition is equivalent to

$$S = I$$

Bertrand Russell proposed that the notion of cause was unnecessary and that the scientist must begin with a system of simultaneous equations (Nordberg & Røgeberg 2003). His advice went unheeded because theory construction along those lines would need to be deduced from vast masses of data. It is not possible for people to massage huge collections of facts. They would quickly begin to impose structure and create meaning. The first step in the structural approach is to carve out a matrix from the welter of reality. Algebraically, the elements of the matrix map onto a system of simultaneous equations. The equations may be regarded as a network of counterfactual relations and transmit what Hume regarded as the necessary connection between things. Since the system of equations is believed to transmit causal efficacy, a basic step in identifiability is *idealization*. That is, a theory must pick out primary variables and set secondary elements to zero.

Furthermore, since our first step cannot be arbitrary, idealization is tied to a notion of *essence*. The essence of the theories to be presented below is the research agenda of coupling the real and financial in any economic structure. Practitioners of General Equilibrium Economics are untroubled by the above steps for the system is represented by an indecomposable matrix of coefficients and constants. Perversely, "Walras' is truly the Methodology of the philosophers" (Hoover 2009, p.309).

In causal terms, the model can be depicted in the following fashion, where i stands for the interest rate.

$i = r$
$B^D = B^D(r)$
$B^S = B^S(r)$
$B^D = B^S = B^*$

We have a *self-contained* or *complete structure*, a system of four variables in four equations (Simon 1997, p.15). Arraying the variables along a row, and the four *mechanisms* above in columns, we have the following matrix,

	r	B^D	B^S	B^*
1	1	0	0	0
2	0	1	0	0
3	0	0	1	0
4	0	0	0	1

The first equation is an *exogenous equation* (Simon 1997, p. 51). The interest rate is an exogenous variable that is an input into the next two equations. The equation is a *minimally self-contained subsystem of zero order* (Simon 1997, p.15). That is to say, it is self-contained and does not contain a self-contained proper set. All this means is that it is determined in a larger system of which the present structure is a *section*. Each of the demand function, the supply function, and the equilibrium condition that follow are a *derived structure of first order*.

$$\left.\begin{array}{l} r \rightarrow B^D \\ r \rightarrow B^S \end{array}\right\rangle B^*$$

The sources of causal asymmetry include *manipulability* and *prepotency* (Simon 1997, p. 21). When the interest rate can be manipulated by, say the monetary authorities, the variable can be regarded as exogenous to the system. Manipulability is close to *control* (Katzner 1983, p.128). An important trait of systems is the possibility of steering mechanisms to a particular output. The only way to do so is the manipulability of one or more inputs. For the purpose, the set of definitions would need to be extended to include a criterion function that evaluates the performance of the system according to some measure like social welfare. Prepotency emerges when the size and power of one variable far exceeds the dimensions of another variable. Since the purpose is to control events of particular kinds, the model must attach not just a spate of events to a cause but must be able to qualitatively arrange them (Hausman 2009). For example, government interventions in the case of superficial cause-effect loops would have limited impact. Policy regimes that depend on deep causes will, on the other hand, be more efficacious. In the present instance, structural power is at play in the following deontology (Hall 2008). While money emerges endogenously in the creation of credit by commercial banks, money is supplied exogenously by the central bank. A hieratic structural binary relationship 'money issuer/money user' is generated. This deontic power is operationalised by setting the price in the interbank market and expanding (or contracting) the supply of money so that the money market is in equilibrium at that price. In this instance, the structural binary subjectivity revealed is 'price setter/price taker'. Clearly, prepotency must be handled carefully. In a market system with powerful private interests, it might be that the central bank does no more than react to or endorse private signals. Or, the central banks might decline the demand for reserves coming from private banks. In a situation of tight money, the structural binary relationship between the central banks and commercial banks is 'credit refuser/credit supplicant'.

Alternatively, we can express the above system as a self-contained equilibrium structure of two equilibrium equations in two variables, B^* and r. The interest rate appears in the clearing condition for the bond market. For any arbitrary choice of r, the equation can be solved for B^*

$r \rightarrow B^*$

Real theories with money

According to Keynes, the marginal efficiency of money in terms of itself was unique in being independent of its quantity (Keynes 1973B). It differed from other capital assets in this respect. This was the legacy of the Quantity Theory. The money rate was indeterminate because the demand schedule was a function of given supplies. Keynes was concerned with changes in the demand for money as well as the demand for bank borrowing (Keynes 1973C). Ex ante investment may have to be provisioned for financially before the plans are on stream and the matching saving occurs. The bridge between the decision to invest and the resultant savings might be provided by the bond market and banks. However, the stock of cash the businessman enters the period with represents a special demand for money, what Bertil Ohlin called the 'finance' required by the inducement to invest. This 'finance', though, is not the only source of the demand for money.

The distinction between stocks and flows was an early bone of contention. It turns out that the debate was unnecessary. Both theories must be evaluated in a unit period. The period is defined as one in which the stock of money changes hands once in exchange for all goods and services (Tsiang 2008). That is, all gross incomes and proceeds of sales of goods and services that accrue in the current period cannot be spent until the next period. The definition includes the funds realised from the sales of financial assets. Idle balances in this context is the stock of money possessed by the representative agent at the start of the period as well as the stock she can borrow from the money market. Therefore, we introduce time subscripts to our variables above to denote the fact that they are flow magnitudes and that we are operating in the traditional period. Now, the sources of loanable funds comprise planned saving and any increase in the stock of money in the period. That is,

$$B_t^D = S_t + \Delta M^S$$

In like manner, the flow supply of bonds arises from the demand for finance plus the demand for loans to accumulate money balances. Formally,

$$B_t^S = I_t + \Delta M^D$$

Equilibrium in the bond market is assured by

$$S_t + \Delta M^S = I_t + \Delta M^D$$

The system is a *mixed structure* with equilibrium conditions including difference terms. Since money, in difference terms, does not depend on any other variable in the system, it is exogenous. If we assume that the initial endowment of money in the case of both supply and demand are equal, the flow equilibrium of the loanable funds theory and the stock equilibrium of the liquidity preference theory are equivalent (Tsiang 2008). The change in the stocks of money represents the adjustments of the previous stocks to their new equilibrium values. Adjustments in stocks are flows. The matter can be put thus, with cs given constants,

$$\Delta M^D \equiv M^D_{t+1} - M_t = c_1$$
$$\Delta M^S \equiv M^S_{t+1} - M_t = c_2$$

Assuming, as usual, the values of the initial conditions, including the value of the money stock at time t, the equations can be solved for all values of the money stock. Thereafter, a demand-equals-supply condition for the money market suggests itself. Denote the equilibrium level of the money stock as M^*. The causal arrows fly as follows.

$$\left.\begin{matrix} c_1, M_t \rightarrow M^D_{t+1} \\ c_2, M_t \rightarrow M^S_{t+1} \end{matrix}\right\rangle M^* \rightarrow S_t + \Delta M^S = I_t + \Delta M^D \leftarrow \left\langle\begin{matrix} S \leftarrow r \\ I \leftarrow r \end{matrix}\right.$$

Money is exogenous and the interest rate continues to depend on the real forces of productivity and thrift.

Keynes' liquidity Preference

For the money market to be in equilibrium, expectations must be such that the investors hold the current offerings of money and bonds willingly, given the structure of interest rates. The complex of rates will be determined by the stock demand for money relative to its stock supply. Given the money supply, the residual that does not satisfy the transactions and precautionary motives gratifies

the speculative motive, the stock demand for money. Keynes offered that the demand for money depended on the interest rate for a complex of reasons brought under the rubric of liquidity preference. That is,

$$\Delta M^D = f(r)$$

and little can be said of the function *f*. It would violate the economics of Keynes to assume, for instance, that it was linear. It appears that our model here is *a minimal complete subset*, consisting only of standard initial conditions, *with multiple variables*, which, in our case, are all the state variables (Simon 1997, p.53). After deleting c_2 and M_t, the derived structure consists of savings, investment, and money, which are not reducible. Consequently, there is no causal ordering between them. Graphically,

$$\begin{matrix} r \rightarrow \\ c_2, M_t \end{matrix} \Big\rangle \left[M_t, S_t, I_t \right]$$

Savings, investment, and money are mutually dependent due to some unknown feedback loop between them and there are no simple, acyclic causal relationships connecting them.

The liquidity preference of banks

For Keynes, the rate of interest was determined by the schedule of liquidity preference and the quantity of the liquid medium. At the same time, he appreciated that banks cause lending to come about by modifying the terms of contracts (Keynes 1973A). For instance, when the quantity of money is increasing, the banks respond by reducing the liquidity premium (or increasing it, depending on conditions) and augmenting/reducing the money supply thereby. In other words, we introduce a supply of liquidity function to complete our description of the market for liquid funds.

$$\Delta M^D = f(r)$$
$$\Delta M^S = g(r)$$

Harrod (1973) warned Keynes that demand and supply functions might have more than one solution when the nature of the supply function was not known. Yet, if we assume, strongly, that both the functions are invertible, then, for the first time we have a zero-order minimal self-contained subsystem which includes the interest rate. The rate of interest is endogenous. Even if the functions are too complicated to be specified, there are two equations in two unknowns, the money stock and the rate of interest. The payoff is the endorsement of another fundamental Keynes theorem: the rate of interest is a monetary variable. Along with the earlier equations we have a *Treatise-General Theory* model of monetary-financial capitalist economy.

To keep exogenous or endogenous?

The determinateness of the interest rate depends on differences or similarities among market participants about the prospects of that variable. The trail of the rate of interest partakes of a bootstraps character. If all investors are of a unanimous opinion about the fate of the variable, it will prevail. The 'average' level of the interest rate over the unit period is determined by the elements that affect the 'common opinion' about the rate expected to prevail in the future. Chief among these elements is the activities of banks and the monetary authorities (Panico 2008). Thus, the potential instabilities in the demand function above can be offset by the nicely-behaved supply of liquidity on the part of the banks and the monetary authorities delivering a determinate system. In modern terms, the absence of variety and the homogeneity of response is assured by the general equilibrium approach to macroeconomics. Rules have beaten discretion in that battle. No special status is to be attributed to policymakers. They are one among equals in the policy game looked to for their credibility and reputation. However, it is well known that the interest rate weapon is asymmetric, akin to pulling and pushing on a string. While it is efficacious in depressing activity, it is powerless in generating activity from a depression. The vaunted Taylor rule has been quietly sidelined in the present conjuncture when interest rates must enter the unfamiliar negative orthant of interest rate-employment space. At the international level, Basel I and II is another way to bring about well-behaved supply and demand functions in the monetary-financial subsystem. The objective is to emasculate uncertainty from the domain of functioning of banks and minimize risk. Yet, the funding of new projects, by definition, presents no statistics and, consequently, falls in no risk class. Many have protested, therefore, that the raison d'etre of

banks has been called into question. The well-documented outcome has been, expectedly, a sharp fall in lending activity for productive purposes worldwide.

If the terrain on which macroeconomic models are writ is believed to be suffused by novelty and surprise, we must allow for variety and heterogeneity of response. In that case, the monetary authorities must exert meaningful autonomous influence. Liquidity preference enters precisely when opinions between the mass of market participants and the banking system *diverge* (Hawtrey 1973). The speculative motive originates when, for instance, banks, prompted by signals different from the general public, buy securities on a large scale. People prefer to be liquid when the prospect of a huge capital loss far outweighs the interest receipts. This scenario typically applies when active open market purchases by banks pushes up the prices of bonds to what the average businessman regards as an unacceptable level. The bank may run in an opposite direction to the public siphoning off securities from the market at some price (Bibow 2006). Indeed, it is only to the extent that the banking system does *not* meet the requirements of the public will changes in the demands of the latter result in varying security prices. Furthermore, the banking system can even initiate such changes. The liquidity preference mapping for Keynes was neither unique nor stable precisely because it was possible that the state of expectations was generated by wrong signals. Energetic open market operations directed at the longer end of the liquidity spectrum, for instance, could lead to a change in the state of expectations along socially desirable lines. Thereby, the so-called liquidity channel (our supply function) could counterbalance any effects on interest rates coming from the expectations channel (our demand function) (Bibow 2006).

If the rate of interest is a control variable, it should be socially constructed (Smithin 2009). Under capitalism, profits are the returns to enterprise, wages the remuneration for work, while the function of the rate of interest is to preserve or enhance the value of accumulated financial capital which includes unspent past profits and wages. In that case, on ethical grounds, the real rate of return for rentiers should be nil. The real value of the existing stock of money representing past effort would be preserved but there would be no increase in real value arising from the mere possession of money. Further accumulation would only come about by fresh enterprise and work. The euthanasia of the rentier is not at stake since it is not the nominal rate of interest that is set to zero. Pasinetti's "fair rate of interest" is a variant. It equals the rate of increase in productivity of the total amount of labour required to produce basic goods and increase productive capacity.

The "fair" rate allows the owners of the existing financial assets a share in the rewards from the current increase in productivity. A null real rate would preserve or enhance the power of the original financial capital. The existing financial stock is regarded as representing the proceeds of past productive activity. Workers and businessmen today are engaged in ongoing production that will accumulate capital tomorrow. In that case, the "fair" rate is arguably superior in preserving the balance between the past, the present, and the future.

Conclusion

We evaluate the controversy between the liquidity preference and the loanable funds theories of the determination of the interest rate with structural criteria. The interest rate is a monetary variable and (almost) everywhere exogenous. Should it be endogenised? Since the monetary authorities have no small role to play in providing an anchor to the spectrum of interest rates in the economy, should their behaviour be perfectly predictable or should they exert significant outside control? It would appear that the first stance is dictated by a system in which prices and quantities move as per the dictates of a standard economic model. In that case, the central bank is at most a leader in the macroeconomic game, anchoring expectations toward a desirable social equilibrium. However, if the economy is chronically prone to malfunctioning, the planning approach to policymaking comes into its own. The central bank cannot be an insider and must hold the power to control the system. The rate of interest would be but one variable in its armoury.

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