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Hyman P. Minsky Ph.D.

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11 The Endogeneity of Money

H. P. Minsky

One cannot conceive of the short rate being 'determined' in any other way than through the discount rate, or the open - market policy, of the central bank. Indeed, it is only through their power to control the whole range of short term interest rates that the monetary authorities can be said to 'control' the supply of money in its broader sense.¹

1 INTRODUCTION

It was uncharacteristic of Nicholas Kaldor to take an ambiguous stand on any issue, but in the above it is not clear where he stood on the question of the endogeneity or the exogeneity of money, or whether he believed it to be of importance. In his later writings on money he viewed the attempt to control the path of nominal aggregate demand by controlling the path of an arbitrarily defined money supply - the fundamental policy posture of monetarism - as a 'scourge'.² If monetarism was a 'scourge' then the authorities by operating on interest rates could determine the supply of money (money supply is exogenous), but the overall impact of such policies was so adverse that it was not wise to do so. Once the price of monetarism became evident the authorities would have to accommodate the markets (money supply is endogenous).

We, with hindsight, know that Kaldor was correct in viewing attempts to determine the 'supply' of money by the central bank as ill advised. The price in the late 1980s of both theoretical and practical monetarism, as advocated and practiced in the United States and Britain in the early 1980s, was high.³

The monetarist experiments of the 1980s produced two types of evidence supporting the view that the supply of money is ultimately endogenous. One centers around the development of conditions in financial markets that are interpreted as threatening a financial disaster: the fear is that a debt-deflation process as described by Irving Fisher may be set off.⁴ This threat forces the authorities to intervene and refinance the institutions and market participants who are at risk. This process supplies banks with reserves and therefore with the wherewithal to expand the money supply at a rate determined by the needs for financial stability.⁵

The second route to endogeneity of the money supply focuses on bankers and other players in financial markets as entrepreneurs who seek profits by innovating, by developing new ways to finance positions in existing assets and investment (the creation of new assets). Financial innovation also involves the creation of new assets for the portfolios of both individuals and institutions. These new portfolio assets may well take on the characteristics of money.

This second route emphasizes the changing nature of what passes for an economy's money supply. It leads to an emphasis upon the credit or asset side of the balance sheets of financing institutions. The demand for credit takes the form of proposals to finance that bankers first promote and then either accept or reject. Those proposals that meet the banker's standard of the time will be financed and the funds for this financing will be pulled out of the existing stocks of short term financial assets. Furthermore financing leads to the generation of new types of financial instruments that are accepted into portfolios.

There are periods in history and economic conditions where the money supply was mainly endogenous and other periods and conditions where the money supply was largely exogenous. Understanding what conditions makes money endogenous or exogenous is of vital importance for the authorities who guide monetary, fiscal and institution structure policies. Typically the money supply is in part endogenous and in part exogenous. It is necessary to recognize that interventions that are apt in one set of circumstances may well be inept in another set.

As a consummate economic theorist Kaldor instructed us on the complex interdependencies that characterize economic systems. Complex interdependencies imply that if a policy instrument is used to force a particular alignment of a targeted set of economic variables, variables other than those targeted will be affected. As a result the outcomes and the resulting distribution of the costs and benefits from the policy interventions may well differ, typically adversely, from what the policy makers had in mind when they initiated their operations. The United States' experiment with practical monetarism is an example of a policy posture that led to unanticipated undesirable outcomes.

When Kaldor linked the control of the supply of money by the monetary authorities to 'their power to control the whole range of short term interest rates' he was recognizing that there are markets in which the various instruments that enter into any measure of the supply of money are brought into being and that the monetary authorities can affect the outcome in these markets only as its operations impact upon these markets.

Monetary authorities operate as banks. As such they either exchange their liabilities for assets (they lend or invest) or they guarantee some liabilities (they endorse). The terms on which the authorities operate set

the prices of particular assets and therefore the present price of some future assured or contingent cash flows. Arithmetically this is equivalent to setting particular interest rates. If the authorities back off from this limited view of what they can do and try to set something called a quantity of money then the impact on system performance and relative asset prices of the interest rate or exchange rate patterns that result are likely to force the hand of the authorities, if not immediately then in time, as undesired side effects become evident. The dramatic breakdown of Mexico and the Penn Square debacle in 1982 forced the Federal Reserve to abandon monetarist postures.

The issue of the exogeneity/endogeneity of money is therefore linked to how financial and banking markets are intertwined one with the other, the linkages of these markets to the rest of the economy and whether the financial market institutions and operators are mechanical reactors or whether they are entrepreneurial profit seekers. In addition the exogeneity/endogeneity of money issue is linked to the analyst's conception of the economic process. If the analyst's priors are that the monetary mechanism determines only the price level and the rate of change of the price level, then the view would be that the money supply is exogenous: the neoclassical vision and the exogeneity of money are linked. If the priors are that the monetary mechanism is a main player in the determination of investment and through investment the level of aggregate demand then the monetary supply is endogenously determined in the financing processes: the Keynesian vision goes along with the endogeneity of money. In a sense the linkages are

exogeneity <--> neutrality and
endogeneity <--> non-neutrality.⁶

2 CAPITALIST FINANCIAL PROCESSES

In Nicholas Kaldor's introduction to a collection of his papers, *Essays on Economic Stability and Growth*, Keynes's contribution is identified as providing 'a new way of approaching the economic problem - focusing attention on the relationships between a limited number of strategic aggregates - which proved extraordinarily potent in stimulating further speculation along paths that have brought economists progressively closer to understanding how capitalist economies work'.⁷

An implication of Kaldor's interpretation of Keynes's contribution is that *The General Theory* is misnamed, for as it is relevant only to capitalist economies it is *A Special Theory*. The special nature of *The General Theory* was recognized by Keynes in the much neglected short and deep first chapter of *The General Theory*, which in its entirety reads:

Chapter 1

THE GENERAL THEORY

I have called this book the *General Theory of Employment, Interest and Money*, placing the emphasis on the prefix *general*. The object of such a title is to contrast the character of my arguments and conclusions with those of the *classical* theory of the subject, upon which I was brought up and which dominates the economic thought, both practical and theoretical, of the governing and academic classes of this generation as it has for a hundred years past. I shall argue that the postulates of the classical theory are applicable to a special case only and not to the general case, the situation which it assumes being a limiting point of the possible positions of equilibrium. Moreover, the characteristics of the special case assumed by the classical theory happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience.⁸

This insight leads to a need to specify what exactly is 'the economic society in which we actually live'. As Joan Robinson was given to saying, Keynes wrote about capitalism. A generic capitalist economy is one in which private ownership of the means of production results in incomes to owners that in each case depends upon how a particular set of capital assets, organized in firms, performs in some markets. The particular capitalist economy that ruled in Keynes' time was a small government economy with a sophisticated and evolving financial structure that had Central Banks that were reluctant to intervene. Today's American and other rich capitalist economies are big government economies with even more sophisticated evolution prone financial structures which have Central Banks that are willing to intervene.

To Keynes a major misspecification by the classical economics of his time of the economic society in which he lived centered around the treatment of investment as being determined independently of the monetary and financial structure: to Keynes the observed variability of investment could not be explained by changes in productivity and thrift. Investment could not be divorced from portfolio preferences and financing possibilities. The banking system broadly construed had to be taken into account.

The links between money and investment occurred in two ways. Portfolios hold monetary assets, liabilities of financial institutions, as protection against contingencies, as well as assets, or claims upon assets, that enter into production. Secondly, investment spending has to be financed. The demand for money is a demand for assurance as well as for convenience in

transacting. Bankers who earn the trust of the community are able to give such assurance: bankers can provide customers with guarantees that funds will be available as needed. This enables customers to undertake projects that take time to mature into producers of cash flows. For a capitalist economy to function well financing and the money supply, which reflects the ability of bankers to create generally acceptable liabilities, have to be responsive to demand.⁹

The logic of Keynes' theory required money to be endogenous. The presentation in terms of a given supply was an expository device. Unfortunately the exogeneity of money became enshrined in the treatment of liquidity preference as a demand for money.

Kaldor gave pride of place in a volume of his collected essays to *Speculation and Economic Stability*, an article which first appeared in 1939.¹⁰ It is a great pity that this truly seminal piece, picking up from Chapter 12 of Keynes's *General Theory*, was half lost in the sweep of history that began in September 1939 and was not at the center of the discourse on what Keynes was about. This 1939 article could have served to anchor an alternative to the mainline Keynesian doctrines that took off from Hicks and Hansen.¹¹ The dichotimization of money and finance from income determination, that characterized the development of economics in the early post-war period and which gave rise to the now discredited IS-LM interpretation of Keynes, need not have occurred if Kaldor's 1939 paper had become one of the foundations of the main stream.¹²

In this article Kaldor quite properly identifies the essential characteristic of a capitalist economy as the existence of two sets of prices. One set, the prices of current output, embodies the method by which current operating (mainly labor) costs are recovered. The second, the prices of capital assets and financial instruments, are present prices of claims to future incomes which differ in their assuredness. This second set dances around more than the prices of current output. Asset prices therefore call the tune for the demand of the investment portion of current output.

This second set of prices emerge out of portfolio preferences. As Kaldor put it: 'Bonds and shares are perfect objects for speculation.' In Kaldor's view speculation is the phenomena of determining those prices which reflect the necessarily disparate current views about what conditions will rule in the future.¹³

Kaldor's emphasis upon speculation as determining the price level of capital assets is similar to the uses to which Keynes put the term 'speculation': 'Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a byproduct of the activities of a casino, the job is likely to be ill-done.'¹⁴ Keynes' distinction between speculation and enterprise dealt with the reasons for holding assets and the turbulence that can enter the

price system of assets when the weight of assets priced according to the stream of expected earnings declines relative to the weight of assets priced according to the expectation that their price will increase (or decrease) over a short holding period.

After the crash of 19 October 1987 and the failure of the market to function normally around noon of 20 October 1987 there is little need to remind us that the prices of assets that are purchased and held in anticipation of future price increases have no natural resting place once the expectation of further price increases diminishes or is transformed into an expectation of price declines.¹⁵ Of course expected dividends and retained earnings create an anchor for prices, but such an anchor depends upon the fall of current asset prices having little or no direct or indirect effect upon the aggregate of profit flows.¹⁶

As a first approximation of Keynes's theory could be interpreted as 'focusing attention on the relationships between a limited number of strategic aggregates'.¹⁷ On deeper analysis the monetary variable is institutionally determined. Its content changes even as the authorities act. Keynesian analysis uses the relationships among a limited set of variables as a method of focusing attention upon the facets of an economy whose historical development in response to market stimuli would tend to be similar. 'Money' stands for one such institutional sectoring, labor for another, etc.

3 THE NATURE OF MONEY

Keynes and Kaldor alike emphasize the actual characteristics of 'the economic society in which we happen to live'. In our type of capitalist economy money is a liability which emerges out of the financing that takes place in the economy. Money in such a construction is an endogenous variable, a creature of the functioning of a capitalist economy where positions in capital assets and ongoing investment need to be financed.

One of the oddities of both the standard version of Keynesian theory and the various forms of monetarism is the assumed exogeneity of money. Exogeneity has two senses. One is to define money as a simple multiple of a monetary base, which in turn is controlled by the central bank. The second meaning of exogeneity requires that profit seeking activity be removed from financial markets and institutions.

The question of an apt definition of money has taken up a great deal of time and attention since the quantity theory was revived in its monetarist-econometric form.¹⁸ Often the definition of money used in econometric research was circular. The logic went as follows: theory (the analyst's priors) tells us that money determines nominal aggregate demand, money concept m_i correlates best with the preferred measure of aggregate de-

mand, therefore money concept m_i is money. Furthermore the prior belief that money drives nominal income was so strongly held that evidence that the money concept that led to the best correlation changed over time was taken in stride. A definition of money that is consistent with the institutions and the mechanics of money creation and destruction is needed if economists are to get out of the circle. But any such definition need allow for changing mechanics of money creation and destruction. But this implies that the money supply depends upon profit seeking activity; i.e. money is endogenous.

In our type of economy, especially since gold was demonetized, money is always created in an exchange between a borrower and a lender. Recall the text book version of the multiple creation of money on the basis of an increase in reserves that results from some central bank operation. In each step of the geometric series that is summed to get the ultimate amount of money that is created, each bank is limited to acquiring assets that are $1-r$ times the clearing gain, where r is the legal or traditional reserve ratio. This argument rests upon the usually unstated assumption that there are customers to whom the bank can profitably lend or from whom the bank can safely buy assets equal to $1-r$ times the clearing gain. It is assumed that there are sufficient household, business or government borrowers whose promises to repay with interest warrant the bank's acquiring their liabilities. This assumption is not necessarily so, $$(1 - r)$ of acceptable deals may not be available.

In the aftermath of World War II, the analysis of banking and the nature of money was obscured by the existence of a great stock of short term government debt which enabled banks to always be fully invested. The existence of a quantity of short term government debt that was large relative to the assets that banks could hold meant that there never could be a shortage of bankable assets: banks would always be fully invested.

Furthermore when bank assets are mainly such government debt there was no need for banks to have a costly loan acquisition function. The overhead of banks could be small relative to the size of their assets: the mark up on the cost of money that would make a deal profitable was small.

Even in the case of banks that hold government debts the model of banking which assumes an automatic transformation of bank ability to acquire assets into bank monetary liabilities requires that a large stock of short term government debt be outstanding. Interest rate risk can act as a barrier to a bank being fully invested when long term government debt is the available asset.

It is a truism that each bank lends what it gets even though the banking system gets what it lends: this is an implication of the fractional reserve nature of banking. However each bank pays for its deposits, either in interest or in services. In today's environment, where assets are largely loans and banks compete vigorously for deposits, the mark up over the cost

of money may well have to be in the neighborhood of 400 basis point for a bank to be able to bring 1 per cent of assets down to its after tax profits. This is in contrast to the price of money – interest on asset relations that ruled when asset and liability acquisition were cheaper. At that time a 200 basis point spread was often adequate.

The spread between the interest rate on assets and the cost of money is not the only source of profits in banking: banks and other financial institutions also can earn fee incomes. One of the effects of the higher structure of non-money costs is that banks and other financial institutions actively pursue fee income. Inasmuch as fee income is often booked when new financing commitments are undertaken, the quest for fee income is often a quest for expansion.¹⁹

In a modern capitalist economy, which is characterized by a complex structure of financial markets and institutions money is an bearer instrument (negotiable without the permission of the debtor) which emerges out of financing relations. The money instrument states a commitment to make payments which is so believable that it is generally acceptable within a transacting group. Therefore the fundamental property of money is that it is a commitment to make payments on the behest of the holder which is believable because there are underlying cash flows that will enable this commitment to be carried out. This belief exists because financing relations are always cash today for cash later transactions. The instruments that the 'money issuer' holds, which are promises for cash later, are valuable only as the underlying economic situation makes these cash later promises believable. These instruments acquired in the past are generating cash flows to the banker; it is these cash flows that make the banker's promises believable.

The legitimacy of a credit based monetary and financial structure rests upon the assumption that 'bankers' are qualified to select financing deals whose validating cash flows are likely to be forthcoming.

Furthermore bankers are rich: R. S. Sayers once commented that it is the duty of a banker to be rich. Bankers are rich because the expected cash flows to the banker are greater than the expected cash flows from the banker which take place as the owners of bank liabilities exercise their option to use their bank assets to make payments. The banker's being rich is what enables the banker to interpose a margin of safety between his assets and his liabilities. The combination of the purported banker's skill in selecting credits, the actuarial properties of a distributed portfolio, and the interposition of banker's wealth as a guarantee of performance by a bankers liabilities serve to enhance banker's liabilities. This credit enhancement makes it possible for bankers liabilities to cost less in either interest or the value of services rendered than what banker's assets earn: bankers therefore manage a fund and earn a fund income.

The financial structure based upon banker's skill, diversification, and

wealth which leads to banker's liabilities being very much greater than banker's balance sheet wealth is unstable for it is vulnerable to asset revaluations, shortfalls of underlying cash flows, and fraud. The modern banking process always includes some methods by which a bank can increase the cash flow in its favor by selling or pledging assets: money markets are the arena in which such cash flow management takes place.

Central banks exist to assure that such cash acquisition can take place even if asset revaluations and the underlying cash flows are adverse: central bank interventions have even taken place to paper over questionable behavior when it is believed that the consequences would be disruptive.

4 SECURITIZATION

Kaldor consistently argued that 'new forms of financial intermediaries or transactions will appear which will cause the situation continually 'to slip from under the grip' of the monetary authorities', whenever the authorities tightened controls.²⁰ The emergence of securitization of assets that previously were in institutional portfolios, in a regime where the asset carrying but not the paper originating capacity of financial institutions was constrained, illustrates the depth of Kaldor's comprehension of capitalist processes as integrating real and financial practices.

The late 1980s emergence of securitization is a phenomena that validates Kaldor's insights about the fundamental impotence of central banking in a capitalist economy with a sophisticated financial system.²¹

Securitization shows that banker's skills in selecting assets, banker's portfolio diversification, and banker's wealth are not the only way credits can be enhanced. Current markets, which are heavily influenced by the behavior of professional portfolio managers, accept *ersatz* equity, that is created by liability structures, as substitutes for banker's wealth in the enhancement of credit. Positions in assets and investment financing on terms that are competitive with what banks offer can be funded without recourse to banker's wealth and banker's liabilities.

Securitization, a financing process whose importance has been of increasing at an explosive rate over the past several years, illustrates both the endogenous nature of money and the way central bank controls are offset by market developments. It also shows that money is a financing vehicle and that financial markets and not the authorities determine the nature and the quantity of money. The thrust of ongoing financial market changes may very well lead to the development of fully private and even interest bearing currency.

Securitization involves steps and players. One fundamental prerequisite for securitization is that a large and sophisticated market for financial instruments is in place. Large blocks of managed money in the form of

pension funds, mutual funds, insurance reserves and managed trusts make up the environment in which the practice emerged. Once securitization had a base in sophisticated holders, the market for the liabilities created by securitization spread to include portfolios that were not professionally managed.

Households, businesses and governments are the issuers of basic financial paper in a closed economy. This paper is always a prior commitment of some income flow. Wages are typically the committed income flow that sustains household liabilities, profits sustain business liabilities, and taxes sustain government liabilities.

Derivative financial paper is issued by banks, insurance companies, thrift institutions, mutual funds, investment trusts, etc. Income supporting derivative paper is derived from portfolios that combine basic paper and derivative paper.²² The fund income profits of institutions that hold basic paper and issue derivative paper are derived from the differential between the interest paid on the derivative paper and the interest on the basic paper.

Since World War II modern capitalisms, in which government deficits sustain aggregate business profits, have been successful in avoiding a serious depression. This has led to a large increase in aggregate wealth whose ownership is widely dispersed.²³ By and large the owners of this wealth do not individually own productive assets but they own positions in pension funds, mutual funds, insurance reserves, etc.

Securitization leads to the creation of derivative assets that are claims upon the cash flows generated by portfolios of financial assets that may be mortgages, automobile paper, mobile home paper, and credit card debts.²⁴ Securitization involves dedicating the cash flow from a specific set of assets to support a set of liabilities. The managed funds provide a market for the instruments that result from securitization.

Basic paper originates in a negotiation between a lender or investor and a unit, henceforth thought of as a debtor, that seeks financing. A generic name for the lender is banker. The banker may be able to fund the paper by issuing derivative paper or may market the basic paper. (Commercial bankers fund, investment bankers market.) The fundamental questions in the negotiations between a banker and a client being financed center around the debtor's prospects for getting the cash to meet the future payments that are being promised. In a world where information is often private, where knowledge is distorted by optimism and pessimism, and where the fundamental behavior of the economy is not known with confidence a banker, with a favorable reputation because of a track record of originating paper that was validated, is able to pay less on liabilities than he earns on assets, or alternatively to sell the assets he creates for more than he paid for them.

Whenever a unit's capacity to create viable paper is greater than it's

ability to fund it may lay off the paper. The great monetarist pressure of the early 1980s reduced the equity and therefore the ability to fund of many financial institutions. Their ability to create paper exceeded their ability to permanently fund paper. In this situation the separation of paper creation from funding required only the development of a technique for enhancing the perceived quality of financial instruments that did not depend upon the equity of a financial intermediary. In this situation the now limited ability to fund of the paper originating institutions would be used mainly for bridge financing.

The essential actor in the securitization process is an investment banker who brings together the various participants. Each securitization deal is in some measure unique. In addition to the investment banker the players are the paper originators, the servicer of the paper, a trustee, and the holders of the instruments. Securitization takes place when an investment banker makes a deal with one or more paper originators to acquire a portfolio of like debts, say mortgages, automobile paper, consumer credit obligations, credit card liabilities and even bank loans. The investment banker uses this paper as the source of cash flows that will validate some collection of liabilities which he markets. The proceeds of this marketing pays for the paper and serves as the source of the not inconsiderable banker's profits.

In securitization the underlying paper is turned over to a trustee who, once the deal is done, monitors the underlying assets, collects the monies due on the instruments, and distributes the monies the assets generate to the holders of the various securities. The trustee is mandated to act in the interest of the security holders whenever the instruments in the corpus of the trust do not perform, i.e. the contractual commitment to deliver cash to the trustee is not being honored.

The investment banker collects the funds to pay the originator of the paper by selling securities that are claims against the cash flow. The investment banker tailors the liabilities so that the sum of the commitments on the various types of liabilities is less than the expected receipts from the assets in the trust so that the servicing organization and the trustee can be paid. Furthermore, the various claims against the cash that the instruments in the trust generate are sold for more than the investment banker paid for the underlying securities.

This alchemy is achieved by holding assets in the trust that yield more than the prime rate even as a major part of securities that are sold as claims upon the cash generated by the securities in the trust yield the prime rate or the rate on the highest grade of marketable securities. In order to achieve these lower rates on the liabilities the investment banker needs to arrange for the credits in the trust to be enhanced. This may be done by insurance: the fee may be about 1 per cent of the funds guaranteed. Alternatively a hierarchy of securities with claims against the cash flows generated by the assets may be created. Instruments are issued that have a first claims on the

cash flows generated by assets in the trust along with instruments that only have a claim on the cash flows after the primary claimants are satisfied. The rating services have to be convinced that the first claim paper that results is virtually default risk free.

The proposition underlying the acceptance of credit enhancement by setting up a hierarchy of claims against the cash generated by a portfolio of assets that individually carry higher than the best available rates is the same as the junk bond proposition: the various layers of debts that are at the head of the Queue of claimants will accept a low enough return so that the secondary claimants can receive a prospective return that is high enough to more than compensate them for the greater default risk they accept.

If there was no fraud, once the deal is done both the originating 'banker' and the intermediary investment banker have no contingent liability. Each party in the hierarchy of claimants presumably has taken an informed position.

We can conceive of a portfolio of securities that is in part funded by notes that promise to pay say \$1000 or 1000 ECUs to the bearer on a particular date at a multitude of locations, and which will accrue value, at some discount to a well known market rate, after the initial redemption date. Such an instrument, initially issued at a discount from the face value, can function as an interest paying currency. This currency will not be the liability of any bank and will not carry any promise by a central bank or government to support its market value. Its value will rest solely on the expected cash flow to a well-defined bundle of assets. Securitization may well pose a threat to the central role that banks have played in the creation of money.

5 CONCLUSION

Banking is a pervasive phenomena in capitalist economies, and the richer the economy the more pervasive the phenomena. The nature and scope of derivative securities cannot be limited to those issued by banks or otherwise protected institutions. As markets develop we can expect derivative securities to emerge that take on attributes of money.

Kaldor well recognized the evolutionary characteristics of capitalism and in particular that financial markets are not frozen structures. He appreciated the importance of thinking in terms of a few well selected aggregates. He also knew that the composition and significance of these aggregates changed and that these changes may profoundly affect the behavior of the capitalist economy. Thinking in terms of aggregates is an initial step in the analysis of capitalism. The analysis of the evolution of markets in response to prospects for profits is a vital follow on to thinking in terms of aggregates. We are all indebted to Kaldor for showing us how to combine abstract and institutional analysis.

Notes

1. Nicholas Kaldor, *Essays On Economic Stability and Growth*, 2nd edn (New York: Homes & Meier, 1980, p. 6). (Citation from the Introduction, which is dated January 1960.)
2. Nicholas Kaldor *The Scourge of Monetarism*, 2nd edn (New York: Oxford University Press, 1985).
3. William Gildner, *Secrets of the Temple: How the Federal Reserve Runs the Country* (New York: Simon & Schuster, 1987).
4. Irving Fisher, 'The Debt Deflation Theory of Great Depressions', *Econometrica*, 1933. Volume 1, pp. 337-57.
Charles Kindleberger, *Manias, Panics and Crashes: A History of Financial Crises* (New York: Basic Books, 1978).
5. One aspect of liquidity preference is that the Central Bank can supply banks with reserves but the banks may not use these reserves to expand their liabilities.
6. W. Leontief, 'The Fundamental Assumption of Mr. Keynes' Monetary Theory of Unemployment', *QJE*, Nov. 1936.
J. M. Keynes, 'The General Theory of Employment', *QJE*, Feb., 1937.
The exchange between Keynes and Leontief in the Quarterly Journal of Economics of 1936, 1937 is instructive. Leontief criticized Keynes for constructing a theory that had the outcomes 'Homogeneous of degree zero in money wages'. Keynes pointed out that the orthodox theory had no problem with assuming 'Homogeneity of degree zero in the money supply'. A fundamental proposition of Keynesian theory is that money is almost never neutral, monetary changes affect real developments. But if money is deeply embodied in decision making and if money is created as a result of profit making activity then money, of necessity, is endogenous.
7. Nicholas Kaldor, *Essays on Economic Stabilization and Growth*, op. cit., ch. 1, p. 1.
8. John Maynard Keynes, *The General Theory of Employment Interest and Money*, New York, Harcourt Brace, 1936, p. 3. I have eliminated the footnote to this chapter in which Keynes explains his use of *classical*.
9. This was well understood by Schumpeter: Joseph Schumpeter, *The Theory of Economic Development* (Cambridge, Mass.: Harvard University Press, 1936) ch. 3.
10. Kaldor, *Essays*, op. cit. 'Speculation and Economic Stability' first appeared in *The Review of Economic Studies*, October 1939.
11. J. R. Hicks, 'Mr. Keynes and the Classics, A Suggested Interpretation', *Econometrica*, 5, 1937, 147-59.
A. Hansen, *Fiscal Policy and Business Cycles* (New York: W. W. Norton). 1941.
12. N. G. Manikow, *Recent Developments in Macroeconomics. A Very Quick Refresher Course*, Cambridge Mass. NBER Working Papers n. 2474.
H. P. Minsky, *John Maynard Keynes* (New York: Columbia University Press). 1975.
13. Kaldor, *Essays*, op. cit., p. 23.
14. Keynes, op. cit. p. 159.
15. *The Wall Street Journal*, 'Terrible Tuesday: How the Stock Market Almost Disintegrated A Day After the Crash', 20 November 1987, p. 1.
16. H. P. Minsky, 'Central Banking and Money Market Changes', *QJE* May 1957: Reprinted in H. P. Minsky, 'Can It Happen Again?' (Armonk New York: M. E. Sharpe 1982).
17. Kaldor, *Essays*, p. 1.

18. David Laidler, *The Demand for Money: Theories and Evidence* (Scranton, Penn.: International Textbook Co., 1969).
19. Some of the roots of the S&L problems of the later 1980s were due to the pursuit of fee income.
20. Kaldor, *Scourge*, p. xiv.
21. Kaldor, *Scourge*.
22. Holding companies also issue derivative paper.
23. S. Jay and David Levy, *Profits and The Future of American Society* (New York: Harper & Row, 1983).
H. P. Minsky, 'Finance and Profits: The Changing Nature of Business Cycles' Chapter 2 of *Can It Happen Again?* op. cit.
24. In May 1987 the buzzword in the corridors of the annual Banking Structure and Competition Conference of the Federal Reserve Bank of Chicago was 'That which can be securitized, will be securitized'. The November 1987 stock market crash slowed the spread of securitization down but it has resumed as the 'crash' recedes in time.

12 On the Endogeneity of Money Supply

J. Tobin

1 KALDOR ON MONETARISM AND ON KEYNES'S MONETARY THEORY

Nicholas Kaldor gave superb testimony on monetarism to the Select Parliamentary Committee in 1980. There and elsewhere, he effectively criticized Milton Friedman's empirical claims that Money causes Nominal Income. One of his criticisms was essentially econometric, namely that Friedman was using as evidence correlations over periods when central bank policies were accommodative. That is, the authorities were deliberately allowing money stocks to respond to income variations. Such correlations could not indicate what would have happened if the central banks had not been accommodative.¹ Kaldor was surely right in making this econometric point. Of course, the fact that Friedman's correlations don't prove his case does not support any other proposition about the effects of non-accommodative policy.

Elsewhere, Kaldor has criticized Keynes for giving aid and comfort to monetarism by treating 'M' as an exogenous variable in *The General Theory*.² I have not been sure how to interpret this criticism. Kaldor might have meant simply that it was unfortunate as an expository device because it encouraged a misleading mind-set. He might have meant that it was an unrealistic depiction of monetary policies. He might have meant something more substantive – that Keynes's theory attributed to monetary policies too much power over output, employment, and prices. Kaldor in 1959 had been influential in bringing the Radcliffe Committee to its view that monetary policies and financial events were a sideshow to the main economic theater.

This last possible meaning seemed to me an unfair and inaccurate portrayal of Keynes's macroeconomics.³ In fact, the great advantage of Keynes's theory was to delineate the circumstances under which monetary policies and events would and would not affect macroeconomic performance. Moreover, Keynes's apparatus can easily be adapted and elaborated to handle any rule, any degree of accommodation, characterizing central bank policy, whether pegging the interest rate, fixing a monetary quantity, or something in between.