FURTHER THOUGHTS ON THE BANKING IMPUTATION IN THE NATIONAL ACCOUNTS*

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The banking problem in the National Accounts arises because interest rates paid by banks on deposits are generally lower than the rates charged for loans and service charges levied by banks are generally less than the cost of the banking services provided.

This paper offers two explanations for such observations: first there is the new neo-classical theory of private banking and central banking which suggests that they arise because of distorting "taxes" levied by regulating central banks. Second there is the Keynesian theory which accounts for the observations by the fact that the public good services of monetary stabilization supplied directly by the central banks and indirectly by private banks cannot be priced.

Both theories account for the empirical observations giving rise to the banking problem. Neither theory lends support to the banking imputation currently carried out in most National Accounts.

"The development of a proper theory of banking seems to me to be one of the top priorities for future research in monetary economics." Douglas Gale, *Money: In Equilibrium* (Cambridge: Cambridge University Press, 1982), 6.

I. INTRODUCTION

Two issues have unfortunately become confused in national accounting: (i) what is the correct treatment of interest payments and receipts in the National Accounts, and (ii) what is the best way of measuring the output, intermediate inputs and income originating or value added for financial intermediaries in modern monetary economies? Since many of the interest payments and receipts are connected with or flow through financial intermediaries it is not easy, of course, to keep the two matters separate. Nonetheless, they are different problems. Section IV of this paper shows that, regardless of what treatment of interest payments and receipts is followed, a satisfactory measurement of the outputs and inputs of financial intermediaries, in particular banks, without a theory of the role and significance of central banks or Monetary Authorities in determining the different levels of interest rates on loans and deposits and service charges will

not be forthcoming. An understanding of the fundamental rôle central banks play from two points of view, the neo-classical and the Keynesian theories of banking, is set out in Sections II and III of this paper. In short the problem of the banking imputation and the treatment of banks in the National Accounts cannot be understood without reference to the theory of central banking.

A brief word on the treatment of interest receipts and payments problem is necessary. At present, economic theory and most national accountants[1] regard interest payments by firms to bondholders as a transfer, a method of the distribution of the returns to capital from the firms, where the capital goods are owned, to the individuals who have provided the "waiting", to use Alfred Marshall's phrase,[2] which permits the firms to carry and maintain their capital stocks and have them grow and which results in the individuals having claims such as bonds on the firms. Interest and dividend payments by the firms are different methods for the distribution of returns to capital to bond and shareholders with the bondholders having more immediate claims on the returns to capital than do the shareholders with, in fact, a full continuum existing from very senior to very junior claims. This treatment encounters no difficulties when interpersonal loans are made between individuals or between individuals and their governments. (Hence, interest on the National Debt is usefully regarded by economists and national accountants as a transfer from individuals, acting collectively, to themselves, acting privately, with the taxes levied to meet the interest payments being regarded as a reverse transfer from individuals, acting privately, to themselves, acting collectively. An alternative treatment, recently suggested,[3] would see interest paid as part of an industry's intermediate inputs, the interest paid would be treated as the rent paid[4] for the use for a contracted period of time of the bondholders' money while interest receipts of an industry would be regarded as part of the industry's gross output, i.e. the rents it receives from its activity (most industries would thereby become, even more than they are now, multiactivity industries composed of multiactivity enterprises since it is difficult to see the measurement of such interest intermediate inputs and outputs at the establishment level in industry statistics). Dividend payments would continue to be treated as part of the distribution of the returns to capital in the alternative scheme, apparently on the grounds that shareholders own the capital stock of the industry while bondholders do not—or that "... it is perhaps more legitimate to define the capital of an enterprise in terms of the net equity owned by the enterprise rather than the assets actually owned".[5]

[1]See the paper by the late Dr. Simon Goldberg, "The Treatment of Interest in the National Accounts—A Review", written for the Nineteenth General Conference of IARIW.

[2]A. Marshall, *Principles of Economics*, Ninth (Variorum) Edition with annotations by G. W. Guillebaud (London: Macmillan & Company for the Royal Economic Society, 1961), I, Text. Book VI, Chapter VI, Interest of Capital.

[3]Preetom S. Sunga, An Alternative to the Current Treatment of Interest as Transfer in the United Nations and Canadian Systems of National Accounts, *Review of Income and Wealth*, 30, December 1984, 385–402, and Richard and Nancy Ruggles, Integrated Economic Accounts for the United States, 1947–1980, *Survey of Current Business*, LXII, May 1982, Annex 1.

[4]P. Sunga, The Treatment of Interest and Net Rents in the National Accounts Framework, *Review of Income and Wealth*, 13, March 1967, 26–35.

[5]I had written a note "Is interest rent on money?" and sent it to the Ruggleses on 9 September 1985. They were kind enough to reply and I quote from R. and N. Ruggles, Comment on Rymes's note of September 9, 1985, page 1.

The long Cambridge Capital Controversy demonstrated that the relevant capital concept in economic theory and measurement is capital owned. In modern market economies capital goods, as produced means or factors of production, are owned by firms, unincorporated enterprises, governments, and individuals. Bondholders and shareholders own different claims on the firms. Bondholders do not rent money to the firm but supply the finance for the firm to acquire ownership of capital goods. In return for the recognised contractual liability the firm has to pay interest and, if necessary, arrange for the sale of the capital goods standing, if so, as collateral behind the finance (some bondholders are like mortgagors) should the firm not be able to make the interest payments. The bondholders give up to shareholders the ownership of the firm. Shareholders own the firm in exchange for the risk finance provided. Bondholders, in the event of bankruptcy, may have powers to dispose of the firm's assets (including its produced capital goods), shareholders may agree to the whole sale of the firm (including its produced capital goods) and the claims the bondholders and shareholders have on the capital goods take the form of different types of claims on the returns to capital goods owned by the firm, those different claims arising from the finance supplied by them, permitting the firm to acquire ownership of the capital goods of production. Firms rent capital goods *owned* by other firms and rents paid are based on the combined use of the services supplied, in conjunction with the leased capital goods, by the owning industry. Firms do not rent money from bondholders in the sense of continuing to hold money owned by bondholders; they use the money to acquire and own capital goods and it is part of the returns to capital goods, owned by the firm, that bondholders receive.

While there are other objections to the alternative treatment of interest in the National Accounts, the economic theory lying behind it is most unclear. Further discussion, however, remains warranted and will no doubt profitably take place. Yet while the alternative treatment should in principle have nothing necessarily to do with private banking or central banks, it is often put forward as a solution to the banking problem in the national accounts. As indicated, not only is the alternative treatment of interest not well founded from the viewpoint of economic theory, it is, as well, not a solution to the banking problem.

II. The Banking Problem

A variety of financial intermediaries perform the principal banking functions of providing fiat circulating notes and coins on demand and a wide spectrum of chequing privileges which ensure that the intermediaries' main liabilities are close substitutes for notes and coin for exchange or transactions services. Such intermediaries include not just banks but as well trust companies, credit unions, even investment and stock brokers—to give them their Canadian names.[6] As well as

[6]The latest review of the great increase in the variety of financial intermediaries which provide banking services in Canada is in the Government of Canada's Green Paper, *The Regulation of Canadian Fiancial Institutions* (Ottawa: Ministry of Supply and Services, April 1985). In the light of two recent bank failures in Canada, the first since the Home Bank went under in 1923, it is not clear that the Government of Canada will remain so convinced of the advantages of deregulation expressed in the Green Paper.

the banking function, these institutions perform the portfolio or interme-diary function. They assemble supplies of money from households, firms and governments and make a wide variety of loans to different households, firms and governments. While these two functions (the banking and port-folio or intermediary functions) are intertwined, their analytical separation is mandatory.

The intermediaries can pay out to those who supplied funds to them the whole amounts they collect from those to whom they in turn supply funds. The payments and receipts can take many forms but we shall assume that they take the form of interest payments and receipts—payments and receipts, that is, that are in some way contractual and which failure to make on the part of the intermediary involves insolvency, the exercising of insurance contracts and penalties arising from the limited liability on the part of the ultimate owners of the intermediaries. Assuming that the banking and portfolio activities are costly, the intermediaries would then levy service charges. Alternatively, the inter-mediaries could pay out less in interest payments than they receive in interest receipts, levy lower service charges and show the same profitability on their operations. In the limit some supplier of monies to a financial intermediary could receive no interest payments at all and pay no service charges (e.g. demand deposits liabilities of banks may be "free" of chequing and other service charges if the supplier of the funds agrees to maintain minimum non-interest bearing balances with the intermediaries).

Given the traditional national accounting view that interest payments are an outward transfer or distribution of (part of) the returns to capital earned in the activity making the payment and that interest receipts are an inward transfer or distribution of the returns to capital earned in some other activity, in the case of financial intermediaries, the income or domestic product originating with them will be lower and lower, even becoming negative, the greater and greater is the spread between interest receipts and payments and the lower are service charges. If it were the case that the interest receipts and payments were the same, then the service charges, treated as part of the gross outputs of financial intermediaries, would be the same as the value of intermediate and primary inputs used. The current price income or output of the financial intermediation activity would be measured without problem. If it were the case that the interest payments were lowered by exactly the same absolute amounts as the service charges, then income originating within the financial intermediaries would be lowered, potentially becoming negative.

The profit of a financial intermediary would be identically equal to

Interest receipts – interest payments

+ Gross output (in the form of service charges)

– Intermediate inputs – Wage payments

(– Capital consumption allowances).

In standard national accounting terms the gross (net) domestic product of

financial intermediaries is then

$$Y(Y_N) = \text{Service Charges} - \text{Intermediate Inputs}$$
$$(-\text{Capital consumption allowances})$$
$$= \text{Wages payments} + \text{Profits (net)}$$
$$+ \text{Interest payments} - \text{Interest receipts.}$$

Thus, if service charges are lower along with interest payments, domestic product will be lower, potentially becoming negative. This is the "anomalous" result of the application of the current treatment of interest payments and receipts as transfers to financial intermediaries in the measurement of output and income originating by activity and generates the need for the so-called "banking imputation".

The problem would not arise for purely non-banking activities or industries. To the extent, however, that such activities are "impure" in the sense of jointly providing banking and non-banking activities, the problem (to a limited extent) re-emerges and is contained within the estimates of income originating for activities deemed largely outside banking. The more important the banking activity becomes for any particular industry or economy[7] the more important the anomaly and the banking imputation discussion becomes. Even within the activity of financial intermediation, it is clear that not all institutions will be engaged in the banking activity. Thus a mutual fund where the policy or sharehoders are the owners, where the interest and dividends receipts of the fund, less the interest and dividend payments of the fund to the policy or shareholders, less service charges, is positive, the difference between the receipts and payments of interest and dividends is treated correctly in the National Accounts as the cost paid by ultimate entities such as households for the portfolio services rendered by the funds.

The difficulty arises, however, when the liabilities of such financial intermediaries providing the pure portfolio service begin to function not only as stores of wealth or deferred payment but as media of exchange as well. At that stage, the intermediaries are then providing two services, the banking and portfolio services, and those who hold the liabilities of the intermediaries derive those two services—i.e. the liabilities of the financial intermediaries provide a mechanism whereby owners of the liabilities are thereby able to tap simultaneously and jointly the two services, the portfolio and banking services, provided by the financial intermediary. The question remains: Why are some of these services seemingly priced directly in the market place—e.g. the service charges on bank deposits, the service charge levied on mutual fund accounts—and why does it appear that a charge for such services is being implicitly made by paying out lower (than receipts) interest payments to those holding the various liabilities of the banks and funds? Why are the services all not explicitly priced in terms of service charges? There would seem to be no satisfactory explanation of why some

[7]See H. W. Arndt, Measuring Trade in Financial Services, *Banca Nazionale del Lavoro Quarterly Review*, 149, June 1984, 197–213.

financial intermediaries, primarily involved in banking, make relatively low interest payments compared to their receipts and levy low service charges for the services provided, whereas other financial intermediaries, primarily involved in portfolio management, make relatively high interest payments and levy high service charges. Starkly, the question is: Why *might* financial intermediaries *purely* engaged in banking pay out no interest to those holding their liabilities and levy no service charge for the banking service while those *purely* engaged in portfolio management *might* pay out all the interest received and levy cost-covering service charges for the portfolio service?

The "banking imputation" is needed for those financial intermediaries primarily engaged in banking whereas no such imputation would be required for these intermediaries *solely* performing the portfolio services.

This paper attempts to provide answers to the question as to why there is this difference in interest flows and pricing policies. Only by offering some explanation can we offer some justification, rationale or criticism of the existing "banking imputation" and some satisfactory assessment of alternatives being considered.

In Section III the neo-classical theory is considered. A Keynesian theory of banking and central banking is set out for examination in Section IV. It is vital to understand that the microeconomics of the private banks and the non-bank public set out applies to both the neo-classical and Keynesian theories. Where those theories differ is with respect to their treatment of central banks and this difference is fundamental.

III. The Neo-classical Theory of Banking

In the neo-classical theory,[8] banks are assumed to be competitive and provide both banking and portfolio services to those who hold their liabilities, deposits and shares. We shall concentrate mainly on the banking service. Many factors determine the profitability of banking but we start by assuming that banks are required to hold reserves[9] either in the form of circulating fiat money or deposits with the Monetary Authorities which can earn little or no interest.[10] Banks earn

[8]See, for instance, Fischer Black, Banking and Interest Rates in a World without Money, *Journal of Bank Research*, Autumn 1970, 9-20; Fischer Black, Active and Passive Monetary Policy in a Neo-classical Model, *Journal of Finance*, XXVII, September 1972, 801-814; L. B. Yeager, What are Banks?, *Atlantic Economic Journal*, VI, December 1978, 1-14; Eugene F. Fama, Banking in the Theory of Finance, *Journal of Monetary Economics*, VI, 1980, 39-57; Robert E. Hall, Monetary Trends in the United States and the United Kingdom: A Review from the Perspective of New Developments in Monetary Economics, *Journal of Economic Literature*, XX, December 1982, 1552-1556; S. Fischer, A Framework for Monetary and Banking Analysis, *Economic Journal Conference Papers*, Supplement to the Economic Journal, March 1983, 1-16; Robert L. Greenfield and Leland B. Yeager, A Laissez-faire Approach to Monetary Stability, *Journal of Money, Credit and Banking*, XV, August 1983, 302-315; Lawrence H. White, *Free Banking in Britain: Theory, Experience and Debate* (Cambridge: Cambridge University Press, 1983); and Anthony M. Santomero, Modelling the Banking Firm: A Survey, *Journal of Money, Credit and Banking*, XVI, November 1984, 576-602.

[9]Banks are required to hold reserves, in these days of depositor insurance such as that provided, for example, by the Canada Deposit Insurance Corporation, because "Government monetary and credit policy operates mainly through the commercial banking system ...". See James Tobin, The commercial banking firm, a simple model, *Scandinavian Journal of Economics*, LXXIV, 4, 1982, 495.

[10]For simplicity, I am not providing a full and satisfactory treatment of circulating currency in this paper.

the going competitive real rate of return on their other assets (the loans they make and the real capital they own), levy service charges on deposits and pay out interest on deposits. Let the reserves and real capital of the banks equal their net worth and their loans equal their deposits. If the interest rate on deposists equals the competitive rate earned on loans then clearly the service charges levied on depositors through their holdings of bank deposits must be sufficient to cover the costs of providing banking services. If the banks can pay lower interest rates on their deposits, they can retain their profitability unchanged by levying lower service charges. Why should they?

Suppose interest rates, though lower than competitive rates paid by borrowers from the banks, on reserves held by the banks with the Monetary Authorities were increased. Banks would compete more aggressively for reserves whose nominal amounts are, however, determined by the Monetary Authorities. Since individual banks obtain additional reserves by acquiring bank deposits, and since total nominal bank deposits cannot in general be elastically expanded, the increased demand for monies to be deposited with the banks would cause the interest rate on bank deposits to rise. To depositors, a higher rate of interest on bank deposits makes the *banking* services provided by the banks, obtainable only[11] by means of holding and using bank deposits, more attractive. On the part of depositors, therefore, there will be an increased demand for the services of banking provided by the banks appearing as an increased demand to hold bank deposits. The service charges associated with bank deposits would rise as depositors bid up the price of banking services provided by the banks through their deposit liabilities.

In the argument so far the payment of higher interest rates on reserves by the Monetary Authorities is a reduction in tax rates levied by the Authorities on reserves. The result is to make reserves and the provision of banking services more attractive, which results in higher interest rates being paid on bank deposits and higher prices for banking services appearing as higher rates of service charges on bank deposits. Yet so far there is nothing to suggest how service charges rise relatively to interest rates on bank deposits. If they rise together then (a) the rate of return on bank deposits net of service charges will not have increased and (b) the enhanced profitability of the banks, arising because the government is paying a higher interest rate on the reserves of the banks, will not have been competed away.

Banks will still compete for reserves and private citizens would still compete for bank deposits, whose nominal amounts are relatively fixed, determined by the Monetary Authorities, but whose real amounts would increase as competitive agents sought to hold more bank deposits in exchange for the holding of goods in general. The overall price level would tend to be lower, increasing the "real" value of the reserves of the banks and the bank deposits held by the non-bank public. *The crucial point can now be seen.* If banking services are part of goods in general, even while they are becoming relatively more attractive than all other produced goods, they will be part of the general excess supply of goods matching

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[11]Banks provide many services (e.g. rental of safety deposit boxes, the making up of payrolls, etc.) all for which prices are charged and have little to do with the provision of pure banking services.

the excess demand for bank deposits and the services charges for the banking service, expressed as a negative component of the rate of return on bank deposits, will not rise by the same extent as the rise in interest rates. The enhanced pecuniary rate of return on bank deposits and bank reserves will be offset by the fact that as the overall price level stands at a lower level, the real good value of reserves and bank deposits will be increased and hence their marginal non-pecuniary yields will be reduced.

The analysis is reflected in two equal rates of return conditions for overall portfolio equilibrium,[12]

(III-1) $$R_H = \frac{\partial D/P}{\partial H/P}(H/P, K) + i_H - \delta_H - p$$

$$R_D = \frac{\partial C}{\partial D/P}(D/P, K) + i_D - \delta_D - p$$

where R_H is the net real rate of return on bank reserves, $(\partial D/P)/(\partial H/P)$ is the gross marginal non-pecuniary yield of the "real" value of bank reserves (or the services provided by the Monetary Authorities), i_H is the nominal interest rate paid on reserves by the monetary Authorities, δ_H is the service charge expressed as a rate which the Authorities *might* charge for the provision of their services, p is the expected steady proportionate rate of change in the overall price level, R_D is the net real rate of return on bank deposits, $\partial C/(\partial D/P)$ is the gross marginal non-pecuniary yield of "real" bank deposits (or the banking services provided by the banks), i_D is the nominal interest rate paid on bank deposits, and δ_D is the service charge expressed as a rate which competition dictates will be paid for the supply of banking services. The gross marginal non-pecuniary yields of "real" reserves and bank deposits are a function of such reserves and deposits and capital stock (and with greater detail the capital stock would be disaggregated between the banks and the non-bank public). The more "real" reserves banks hold, the lower the non-pecuniary yield but the higher the marginal product of the capital. The more "real" bank deposits members of the public hold—i.e. the more they tap the services of banks, the lower the non-pecuniary yield of such deposits—i.e. the lower the non-pecuniary product of banking services.

The service charge δ_H the Monetary Authorities might charge for their services could well be, for example, the premia banks pay as a proportion of their deposits and therefore as a rate on their reserves for insurance against the risk of insolvency which their depositors incur. The Monetary Authorities, in the administration of such insurance schemes such as the Canada Deposit Insurance Corporation, will use resources for administration of the schemes (e.g. policing against the moral hazard problem by scrutiny of bank loans by Authorities such as, in Canada, the Inspector General of Banks). All of *that* service provided by the Monetary Authorities might be priced by δ_H. Whether or not it is possible

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[12]The theory behind this paper is from the references in footnote 8 and J. M. Keynes *The General Theory of Employment, Interest and Money, Collected Writings of John Maynard Keynes* (Cambridge: Macmillan for the Royal Economic Society, 1973), VII, Chapter 17 The Essential Properties of Interest and Money.

to price *all* of the services rendered by the Monetary Authorities is the point which separates the neo-classical and Keynesian theories.

The two net real rates of return must, in temporary equilibrium, be equal and equal to the competitive real rate of return earned by banks on their loans.[13] In neo-classical monetary theory, p, the overall rate of inflation will be determined, given the real rate of growth of the economy, by the overall proportionate rate of growth of the nominal reserves of the banks. We take p as given. Similarly the Monetary Authorities will set i_H and δ_H so we may take them as predetermined as well.[14]

To phrase the argument differently, let us take an initial situation such that the nominal supply of bank reserves, H, is predetermined at a certain level H_0 and i_H, δ_H and p are all zero.

Our two conditions are (since D_0 is linked by required reserves to H_0)

$$\text{(III-2)} \qquad R_H = \frac{\partial D_0/P}{\partial H_0/P}(H/P, K)$$

$$R_D = \frac{\partial C}{\partial D_0/P}(D/P, K) + i_D - \delta_D.$$

Therefore there must be a price level, P, such that real reserves, H/P, or the real flows of the services of the Monetary Authorities, are such that as an input into the supply of private banking services the gross marginal non-pecuniary yield of real reserves equals the competitively determined real net rate of return. Similarly, the level of nominal interest rates paid on bank deposits, i_D, and service charges, δ_D, must be such that the net *pecuniary* rate of return on bank deposits, $i_D - \delta_D$ plus the gross marginal non-pecuniary yield of real bank deposits, or the real flow of the banking services provided by banks and obtained by non-bank agents through the holding of real bank deposits, is also equal to the competitively determined real net rate of return. The crucial questions are: *What determines* i_D, δ_D *and* $i_D - \delta_D$? In words, what determines the relation of interest rates on deposits to interest rates on loans, the service charges expressed as a rate and the *net* pecuniary nominal rate of interest, $i_D - \delta_D$, on bank deposits compared to the marginal *non-pecuniary* yield on bank deposits, $\partial C/(\partial D/P)$?

For the National Accounts, the determination of $i_D - \delta_D$ is vital for the understanding of the "banking imputation" problem. Suppose i_D equals R_D—i.e. the nominal interest rate and (since p is zero) the real interest rate on bank deposits equals the real rate on bank loans. Then P and δ_D must be such that $\partial C/(\partial D/P) - \delta_D$ is zero, the price of bank services (the service charges expressed as a rate on bank deposits) must be equal to the value of the gross marginal yield of banking services, which is equal to the unit costs of production of banking services. If this were so, there would be no banking imputation problem. The

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[13]To the set III-1, one adds $R_K = \partial C/\partial K\,(K, D/P) - \delta_K$ where R_K is the real rate of return on capital or loans so that in temporary equilibrium the price level, P, must be such that the three rates of return will be equalized (i.e. $R_H = R_D = R_K$) for any relation between reserves and deposits as determined by the Monetary Authorities.

[14]In the neo-classical literature, i_H and δ_H must be accompanied by lump sum taxes in order for the nominal reserves to be determined independently of i_H and δ_H.

service charges for the banking service produced by the banks would be just sufficient to cover the costs of operation of the banks. In national accounting terms, the value of the gross output of the banks would be equal to the value of the primary and any intermediate inputs employed by the banks so that no negative nor non-reasonably low value added would be observed in the banking statistics.

Suppose, however, i_D is less than R, i.e. interest rates on bank deposits are lower than interest rates on bank loans. Portfolio equilibrium requires

$$R_D - i_D = \frac{\partial C}{\partial D / P} - \delta_D > 0,$$

i.e. the service charge expressed as a rate must stand below the value of the gross marginal yield of banking services and below the unit costs of such banking services. The need for the "banking imputation" would arise. It is clear that it is the relationship between R, i_D and δ_D which matters but the relationship cannot be ascertained independently of the determination of P or the general *level* of prices.

A fundamental tenet of early neo-classical monetary theory (e.g. monetarism) is that the Monetary Authorities determine H_0, the *nominal* supply of fiat money but the private sector, banks and non-banks, determine the *real* supply of fiat money, H/P.

The relationship between interest rates and service charges on bank deposits cannot be ascertained without taking account of the relationship between those variables and the overall level of prices. *Thus, the National Accounting "banking imputation" problem cannot be understood without a basic comprehension of traditional monetary theory.*

The higher the real rate of interest paid on banks' reserves by the Monetary Authorities, two forces of opposite influence will be operating on service charges levied by banks on bank deposits. First, as banks increase their demands for reserves because reserves are now more profitable to hold, interest rates paid on bank deposits will be higher. For the non-bank private sector bank deposits and the services obtained from using bank deposits are now more attractive and the increased demand for such bank deposits and services will result in higher service charges. At the same time, however, there is an increased demand for bank deposits (money in general) and a decreased demand for goods in general. The price level would stand at a lower level to satisfy the private sector's greater demand for *real* money balances. For our immediate purposes, it is important to reiterate that the general excess supply of goods will pertain partially to banking services and though the relative price of banking services in terms of goods in general will be higher, the absolute price of banking services will share to some extent in the general level of prices being absolutely lower. The higher pecuniary rates of interest on bank deposits will therefore not be offset by correspondingly higher service charges, expressed as a rate, and the non-pecuniary component of the real rate of return on bank deposits will be reduced. The rise in the service charge, expressed as a rate, relative to the non-pecuniary marginal yield of real bank deposits or banking services means that service charges are closer to covering the unit costs of providing the banking services. The closer are such service

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charges to covering the unit costs of providing the banking services, the less and less important is the banking problem for the national accounts.

The neo-classical monetary theory would immediately suggest then that if the Monetary Authorities would set $i_H = R$ (and assuming that the efficient price for the services of the Monetary Authorities, δ_H, is zero), then the non-pecuniary component of the rate of return to bank reserves $(\partial D/P)/(\partial H/P)$, would be equal to zero. That is, the price level, P, would be such that the marginal non-pecuniary yield of real reserves in the provision of banking services would be reduced to zero. Competition by the banks for such reserves would result in higher pecuniary rates of interest on bank deposits being equal to the rates charged on loans, higher (though less than proportionately to the pecuniary rates of interest) service charges and lower non-pecuniary marginal yields on "real" bank deposits to the point where the service charges and marginal yields are equated.[15] The banking problem and the need for the banking imputation would have vanished.

The so-called banking problem and the need for the "banking imputation" and any other suggested solutions of the problem arise because of the "taxes" being placed by the Monetary Authorities on competitive banking systems. The legal requirement that the banks hold cash reserves in the form of *non-interest bearing* deposits with the Authority is what, according to this theory, leads to

(i) interest rates on bank deposits being lower than interest rates on bank loans;

(ii) service charges, expressed as a rate on bank deposits, being less than the non-pecuniary yield of such deposits and banking service, and being lower than the costs of such banking services.[16]

Notice that the non-payment of interest on reserves is exactly the same as the Monetary Authorities "taxing" by inflation which reduces the real rate of return on reserves and would result in the same relative interest rates on loans and deposits and service charges not covering the costs of banking services.[17]

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[15]Monetary Authorities would be conducting an optimal monetary policy rule. See T. K. Rymes, Inflation, Non-optimal Monetary Arrangements and the Banking Imputation in the National Accounts, *Review of Income and Wealth*, 31/1, March 1985, 85–96.

[16]An arithmetic illustration will clarify:

	Interest on Reserves	
	Paid	Not Paid
R_D	10%	10%
$\partial C/\partial(D/P)$	4%	8%
i_D	10%	4%
δ_D	4%	2%

With no interest paid on reserves, banks only pay 4 per cent on bank deposits even through the going rate of return (e.g. the rate charged on bank loans) is 10 per cent, the non-pecuniary marginal yield on bank deposits and bank services is 8 per cent and the service charge as a rate is 2 per cent. With interest on reserves, nominal deposits fixed in supply, the price level is lower, real bank deposits are higher and the non-pecuniary yield is down to 4 per cent. The pecuniary rate of interest on bank deposits has risen to 10 per cent and the service charge has risen to 4 per cent, just equal to the non-pecuniary yield on bank deposits and the cost of the banking services.

[17]See T. K. Rymes, *op. cit.*

Neo-classical monetary and banking theory would suggest then that it is the "failure" of the Monetary Authorities to pursue what are called optimal monetary policies which is responsible for the existence of the banking problem and the apparent need for the banking imputation in the National Accounts. If the Monetary Authorities pursued the optimal policies then there would be no banking problem in the National Accounts, nor any need for the banking imputation nor any need, *on such grounds*, for any reconsideration of the treatment of interest in the National Accounts.

IV. The Keynesian Theory of Banking

Aside from the theory of central banking or the theory of the Monetary Authorities, the foregoing portfolio balance relations [which entail that there would exist temporary equilibrium spot prices for goods (e.g. the price level, P) such that all rates of return were equalized so that the actual proportions of real stocks of money and capital were consistent with desired proportions] used for the exposition of neo-classical theory were also used by Keynes. The micro-economics of the neo-classical and Keynesian theories of banking are similar in that respect. The foregoing analysis extends in three directions: (i) banks will have a range of liabilities from demand deposits to bank debentures from which holders of such assets can tap banking and portfolio services in varying degrees; (ii) banks will have competitors which offer on their liabilities a lower fraction of banking services and a larger fraction of portfolio services; and (iii) banks will be uncovering new ways of enhancing the efficiency of the use of reserves. Banks have deposits from which the non-bank public taps banking services with different degrees of immediacy. Both the neo-classical and Keynesian theories would predict, given the fact that banks are in general not required to hold the same fraction of reserves behind non-immediate deposits, that pecuniary rates of interest on demand deposits would stand below those paid by banks on savings, time or non-immediate bank deposits, up to the point where banks would be predicted to pay the going rate of interest on bank debentures. Financial intermediaries, which are close substitutes to banks, and which are called in Canada country-banks, *may* hold their reserves in the form of deposits with banks. Because the pecuniary rate of interest on these reserves is lower than the going rate of return if the Monetary Authorities are not paying the going rate of return on the reserves of the banks, then the service charges levied by the country-banks on their deposit liabilities will be less than the neo-pecuniary marginal yield on the banking services they in turn provide. The banking problem and the need for the banking imputation will extend through the banking industry to the country-banking industry—indeed, to all multi-activity industries wherein some banking activity is undertaken. This is merely a re-expression of the point that what is called a distorting tax has ramifications throughout a generally interdependent economy. In a given regulatory framework, banks may increase the efficiency with which they use reserves through, for example, the use of computers in reducing the float problem in the determination of deposits for which they must hold reserves. Both the neo-classical and Keynesian theories of banking would

predict that such innovations would be associated with a temporary equilibrium rise in the pecuniary rates of interest paid on deposits relative to those charged by the banks on loans and a rise in service charges while the real value of bank deposits and the bank-owned capital stock would be greater in the long run.

The most remarkable aspect of the modern neo-classical monetary and banking theory, however, is that no rôle can be found for the Monetary Authorities other than as a costly, distorting non-optimal happenstance.

"The new monetary economics views the quantity theory as nothing more than an artifact of government regulation."[18]

As indicated, much of the literature (see especially Fama, Greenfield and Yeager, and White) implies that, without central banks, monetary arrangements would be optimal and that therefore (i) service charges levied by financial intermediaries would, expressed as rates, be equal to the gross marginal yields of banking and portfolio services and would cover the costs of producing such services and therefore that (ii) there would be no banking problems in the National Accounts for such a economy. The literature arrives at this conclusion simply because it cannot account for central banks.[19]

Keynes attempted to provide a rationale for the existence and service of the Monetary Authorities. Although the essence of the Keynesian position, contrasted to the neo-classical position, would be that economies *may* not equilibrate at full employment, it can also be argued that Keynes, as a monetary theorist, was interested as well in the problem that monetary economies *may* not always evidence stability.

In the relation

$$R_H = \frac{\partial D/P}{\partial H/P}(H/P, K) + i_H - \delta_H - p$$

it was earlier pointed out that δ_H, the service charge levied by the Monetary Authorities, might cover the premia and costs of depositors' insurance programmes. It could also cover the costs of inter-bank clearing services provided by the Monetary Authorities. In the viewpoint of the new neo-classical monetary and banking theory such services could be provided privately, banks could hold reserves in the form of claims on each other, the different liabilities of many competing banks would come to function as media of exchange and the aggregate stock of money and the general price level as important variables in the quantity theory of money would cease to have any role to play. That topic, now on the forefront of monetary theory, is not our concern directly in this paper. What is of concern is that the modern neo-classical theory rests on the presumption that the economic system *must* be stable and that if Monetary Authorities continue to exist they should be governed by rules (for example, the setting of $i_H - p$ equal to R) and not engage in discretionary—i.e. distorting—policy.

[18]Robert E. Hall, *op. cit.*, 1552.

[19]The same problem arises in the context of modern general equilibrium theory which cannot account for an essential fiat money. See F. Hahn, *Money and Inflation* (Oxford: Blackwell, 1982), 1.

If the economy *may* exhibit instability of the saddlepoint equilibrium kind,[20] however, then a crucial role for the Monetary Authorities reappears: the *prospective* setting of pecuniary net rates of return on reserves such that the system will exhibit stability. This can easily be seen: if $i_H - \delta_H$ is initially set such that prices begin to rise at an accelerating rate then the banks and the general public know that the Monetary Authorities must at some time so increase $i_H - \delta_H$ so that the holding of real reserves and real bank deposits will become so attractive the accelerating inflation will be stopped. In any temporary equilibrium, with such beliefs the expected marginal non-pecuniary yield of "real" reserves must increase thereby preventing the initial rise in prices and preserving monetary stability. Similarly, if prices initially begin to fall and at an accelerating rate then the banks and the general public know that the Monetary Authorities must at some time so too decrease $i_H - \delta_H$ that the holding of real reserves and bank deposits will become so less attractive that the accelerating deflation will be stopped. The expected marginal non-pecuniary yield of "real" reserves must decrease preventing the fall in prices and preserving monetary stability. Since it is impossible to have the marginal non-pecuniary yield on real reserves being negative, this means that yield is always positive. The holding of "real" reserves by the banks and "real" bank deposits means that the private sector is tapping the monetary services provided by the Monetary Authorities, namely the provision of monetary stability.

The difference between the neo-classical and Keynesian monetary and banking theories then is that the former denies the possibility of instability (unless engendered by capricious Monetary Authorities) while the latter admits the possibility, *not* the necessity, of saddlepoint instability and therefore the need for discretionary action by the Authorities. The Authorities, as already indicated, will be able to price for some of the services they render (the service charge, δ_H, might meter deposit insurance premia and clearing charges) but it is not possible for the service charge on reserves to include a measure of the marginal non-pecuniary yield arising from the stabilizing discretionary actions of the Authorities.

Here, then, is the crucial difference between the neo-classical and Keynesian theories so far as the banking problem is concerned. In the neo-classical version, the failure of the Authorities to pay a pecuniary rate on reserves equal to the going rate of return means the non-pecuniary marginal yield on reserves will be more than the service charge. We have shown that such a state of affairs gives rise to the need for the banking imputation so far as the National Accounts are concerned. On further examination, we showed that the banking problem and the need for the banking imputation would only disappear if the Monetary Authorities pursued optimal policies or if the Monetary Authorities were themselves replaced by private arrangements. The Keynesian theory implies that the provision of monetary stability is not something for which the Monetary Authorities can price by means of service charges on the reserves of the banks. The provision of banking services by banks has as a necessary input the services

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[20]The instability discussed here is examined in David K. H. Begg, *The Rational Expectations Revolution in Microeconomics: Theories and Evidence* (Oxford: Philip Allan, 1982), and S. M. Sheffrin, *Rational Expectations* (Cambridge: Cambridge University Press, 1983), particularly Chapter 3 and especially p. 81.

of the Monetary Authorities. Some of these services the Monetary Authorities can levy charges for and in fact do. The provision of monetary stability is not something it is possible to price. The provision of monetary stability by the Monetary Authorities is an important part of their output but it is not something which can be metered and measured within the price system. The consequences for this paper, then, is that, from the Keynesian viewpoint, the net marginal non-pecuniary yield on reserves or the non-priced component of the services produced by the Monetary Authorities will always be positive (that is, $(\partial D/P)/(\partial H/P) - \delta_H > 0$). *The provision of monetary stability is a public good.* As a consequence, the real pecuniary rate of interest on reserves will always be below the going rate of return (that is, $R_H - (i_H - p) > 0$). The interest rate paid by banks on deposits will be below the going rate of return earned by the banks on loans, and the service charges the banks levy will always be lower than the gross marginal non-pecuniary yield on bank deposits because the banks are agents of the Monetary Authorities to some extent sharing the provision stable monetary arrangements through the requiring holdings of reserves.

The Keynesian monetary and banking theory would have it, then, that the banking problem will always be observed by National Accountants. This should occasion no surprise. In the National Accounts it is always admitted that the income originating within the Monetary Authorities will always be "underestimated" (consisting solely of the wages bill and any imputed capital consumption allowances with the Authorities) since one cannot impute a meaningful rate of return to the activities of the Authorities. This well-known national accounting problem carries over to the problem of measuring income originating in the banking industry because the banks are agents, through the requirement of reserve holdings, of the Monetary Authorities. It is therefore not surprising that just as standard interest reversal measures of income originating for the Monetary Authorities would be low or negative, so are the National Accounts estimates for income originating in the private banks. Indeed, the estimates will be "too low" for all industries in which the banking service is provided by being indirectly connected to the provision of monetary stability by the Authorities.

V. The Banking Problem: Some Conclusions

In this paper I have attempted, by examining two major theories of money and banking, to explain why in the National Accounts the so-called banking problem (implausibly low or even negative income originating in banking activities) arises.

Both the neo-classical and Keynesian theories would predict, considering banks as providing primarily banking rather than portfolio services, that the pecuniary rates of interest on bank deposits will tend to be lower than the rates charged by banks on their loans or the going competitive rate of return and that service charges, expressed as rates on bank deposits, would be less than the non-pecuniary component of the overall rate of return earned on bank deposits and the real reserves which banks are required to hold by the Monetary Authorities. *These predictions are, however, precisely the conditions which give rise*

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to the banking problem as observed by national accountants. While the predictions are similar, the reasons, however, are quite different. In the neo-classical case, the result stems from the supposed failure by the Monetary Authorities to provide for optimal monetary arrangements. In the Keynesian case, by the nature of the potential stabilization function the Authorities must perform, they cannot charge a price in the form of a service charge on the reserves of the banks and the marginal non-pecuniary yield on reserves will always stand above service charges. In the neo-classical case, it is as if the Authorities are imposing a distorting tax on the provision of banking services; in the Keynesian case it is the provision of the public good of monetary stabilization which rather than resulting in welfare losses associated with distorting taxes results in the welfare-enhancing provision of monetary stabilization.

The standard national accounting banking imputation, when examined in the light of these theories, would seem to have little foundation. That imputation essentially tries to correct the income originating estimates of the banking industry for the apparent fact that non-bank agents "pay" for the banking service by means of actual service charges which are below the cost of the services provided by accepting lower rates of interest on deposits as compared to the rates which the intermediaries charge on loans. Explicitly then that imputation attempts to replace the actual service charges found in the market place with "true" service charges.

The traditional imputation has not, in my judgement, ever been accompanied by convincing reasons why the service charges are below the "true" service charges. In the light of the two theories considered, it can be seen that the banking imputation is misplaced. In attempting to replace actual prices with "true" prices the standard imputation ignores the neo-classical argument which would imply the imputation is an attempt to correct for the distortion introduced into a monetary economy by Monetary Authorities which fail to pursue optimal monetary supply policies. It also ignores the Keynesian argument that since the private banks are agents, through the regulation of reserves (and other methods) by the Monetary Authorities engaged in the provision of monetary stability, the banking service irretrievably contains some of the public good being produced by the Monetary Authorities. The banking imputation attempts to attach private market prices to the provision of government output. In all other cases this is recognized both theoretically and in the national accounting literature to involve one in logical contradiction.[21] Either theoretical position provides no support for the standard national accounting banking imputation.

The alternative treatment of interest mentioned earlier appears to work because in the case of banks it is merely the same thing as the banking imputation in disguise. The banking imputation takes the measured income originating in

[21]Australian National Accountants have long emphasized this point. See H. P. Brown, Some Aspects of Social Accounting—Interest and Banks, *Economic Record*, XXV, Supplement, August 1949, 73–92; B. D. Haig, The Treatment of Banks in the Social Accounts, *ibid.*, XLIX, December 1973, 624–628, and Comment and Reply by A. W. Roche and Haig respectively, *ibid.*, LI, March 1975, 109–119. The Australian tradition is reviewed in Brian Haig, The treatment of interest and financial intermediaries in the national accounts of Australia, appearing elsewhere in this issue.

banks as

$$Y(Y_N) = \text{Service charges} - \text{Intermediate inputs}$$

$$(-\text{Capital consumption allowances})$$

$$= \text{Wages payments} + \text{Profits (net)} + \text{Interest payments}$$

$$- \text{Interest receipts,}$$

and merely, in effect, reverses the interest payments and receipts to obtain

$$Y(Y_N) = \text{Service charges} + \text{interest receipts} - \text{Intermediate inputs}$$

$$- \text{Interest payments} \ (-\text{Capital consumption allowances})$$

$$= \text{Wages payments} + \text{Profits (net)}.$$

The suggested treatment of interest payments and receipts as intermediate input and gross output flows achieves precisely the same results *vis à vis* the banking problem as does the banking imputation. Regardless of the general merits of reconsidering the treatment of interest in the national accounts, the alternative treatment does not solve the banking problem any more than the banking imputation does.

The theories considered in this paper raise grave doubts about the validity of the banking imputation in the national accounts. They show that the theoretical thinking and national accounting concepts of outputs and inputs developed for non-monetary economies require very careful reconsideration when we come to measure the banking service activity in monetary market economies.