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Addendum To: Measuring Banking Output,
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The purpose of this addendum is to relate the approach proposed in my paper to several recent papers on measuring banking output that have been circulated as part of the current SNA revision.

None of the materials considered in the SNA revision group's examination of banking is conversant with the large literature on bank production and cost functions, and with the implications of that literature for measuring the output of banks. Some of the proposals reviewed by the SNA group, however, may reflect it indirectly, in that they have proposed that loans of banks constitute outputs (see below, item I). However, all of these SNA proposals (i.e., those that propose treating loans as outputs), in common with bank production and cost function literature (as I pointed out in my paper), simply ignore the problem of imputing for bank services, or argue explicitly that no problem exists.

In view of the central position of the imputation problem in the entire literature on measuring banking in National Accounts, it is certainly reasonable to reject the view that no imputation problem exists. However, the "loans are outputs, deposits are inputs" view of banking has been rejected by the SNA review group, mainly, one gathers, because that view is incomplete without a method for evaluating unpriced services. By rejecting the "loans

are outputs, deposits are inputs" view, the SNA review group has also rejected a useful framework that would be valuable for resolving some of the issues the group has unsuccessfully wrestled with, and which cannot be resolved a conceptual framework that says "net interest of banks is equal to their unpriced services."

Based on my review of the literature, none of the materials consulted by the SNA review group contains a proposal to use hedonic methods to compute the value of unpriced services. Since this is such an obvious use of the hedonic technique, I find it surprising that it has not so far appeared in the literature on measuring banking, but that probably reflects the reluctance of most statistical agencies to consider hedonic methods.

The following three sections comment explicitly on three review papers on measuring banking.

I. Howell Zee, "Determination of the Output of the Banking Industry in National Income Accounts: A Critical Survey of Concepts" (unpublished paper, August 5, 1981, Washington, D.C.: International Monetary Fund; also circulated to the SNA expert group with the date 18 February 1988 on the cover).

I agree with much of the analysis in Zee. In particular, his criticism of the present treatment of banking, and the view that the primary output of banks is what they "sell" (i.e., their loans) is consistent with the view expressed in my paper. The following passages may be quoted:

"...Banks exist not because bankers would like to create deposits for depositors, but because of the profit motive of bankers. Banks derive profits by making loans and investments, using funds from depositors. To attract deposits, banks 'pay' depositors with services in much the same way as wages are paid to labor, interest to capital, and rent to land. Considered in this light the imputation method [in the present SNA] confuses the input for the output of the banking industry."

Going on, Zee states:

"If the view that banks are no different from other profit maximizing enterprises is accepted, then the total amount of interest received by the banking industry can, in reality, only be interpreted as receipts from its productive activities." (Both quotations from Zee, 1981 p. 10).

Zee also correctly notes, in my opinion, that some proposals that have been made to impute bank net interest to borrowers commit an identical conceptual error to the present treatment, only changing the sign and direction of the error (Zee, 1981, p. 14).

The weakness of the Zee paper is in its positive proposal, which appears only in one paragraph of the paper (page 14) and in an appendix. Zee credits this proposal to an unpublished dissertation, and it is unfortunately not explained very comprehensively, but it involves assigning a value to "free" services on the basis of information on bank operating cost or by arbitrarily assigning an interest cost to demand deposits where no interest is earned (e.g., the rate paid on time deposits). If nothing better could be done, one or the other of those two proposals would be superior to the present imputation. However, as noted in my paper, I believe the hedonic imputation is practical and superior.

II. "The Imputation for Bank Service Charges: Measurement and Allocation" (discussion paper prepared by the OECD, December 1988.

This paper summarizes discussion on measuring banking within the deliberations on the revision of the SNA. The document reports (paragraph 6) that "the best way to measure imputed bank services is by reference to 'interest received less interest paid' [that is, the treatment that has been used in the past]." It cites as "relevant" to this decision, the paper by Zee, discussed above (which, of course, presents a very strong case against this definition). Given the decision to stay with the present definition of unpriced services, the paper goes on to consider a list of questions that arise from the basic decision, such as: How should the measure treat income from investment of bank owned funds? How should it treat capital gains and losses? Can bank services be imported? And so forth.

The revised proposal would allocate the imputed bank services aggregate (computed as net interest received less interest paid, as it has been done in the past) among all bank activities, loans as well as deposits (and also, astonishingly, to bills and bonds issued by banks). The group is apparently none too happy with this proposal: "The least bad method of allocating imputed bank service charges is to do it in proportion to the sum of outstanding loans made by the financial institutions, deposits, bills and bonds issued by them..." (paragraph 30). The method does seem bad. Where the present imputation reverses the outputs and the inputs

of banks (that is, it makes banks to be agents of their depositors), this new proposal stirs outputs and inputs together in a grand amalgam. In this respect, it has the liabilities, but not the good points, of the "activity" branch of the bank production function literature, reviewed in my paper.

The proposal ignores components that are readily measured and priced (flows of loan payments from borrowers, interest payment on bonds for which the unpriced services component must be tiny indeed) in favor of an undifferentiated imputation that takes no account of the fact that unpriced services are a larger proportion of payments for some bank activities than for others (but see section III, below).

The documents notes (paragraph 88) that the SNA proposal admits no sensible price index. It is a truism that if one knows how to measure the output one knows how to measure the price, and vice versa. That no price index can be derived from the output measurement proposal is, in my view, a condemnation of it.

In summary, this ninety paragraph document has few if any points of agreement with my paper. I believe it represents a substantial step backward in the measurement of banking compared to the present unsatisfactory treatment, and that improving the present treatment is possible, conceptually and practically.

III. "Imputation for Financial Intermediation Service Charges" (C. W. Pettigrew, Bank of England, June, 1989).

This paper takes as a starting point the SNA proposal that unpriced services are equal to "the net interest earnings of banks," and that the net interest earnings should be allocated in some way across sectors. Pettigrew states: "Even if very detailed statistics were available to measure the volume of all services provided by banks, calculating an implicit charge for these free services would be a difficult and arbitrary exercise." (Page 1, par. 2.) No support for this statement is provided. The proposal for imputing free service charges in my paper is, I agree, difficult, but I do not accept that it is an arbitrary exercise.

Pettigrew proposes to subtract from actual bank receipts and payments a "suitable pure interest rate," which is taken to be the average rate for interbank deposits. The implication of this proposal is that if banks shift to (say) more risky loans, so that the average loan rate rises relative to the charge for interbank deposits, the measure would show this as an increase in the output of "free" bank services. Though I believe this is misleading, in my proposal I would treat a change in interest rates corresponding to differences in risk as an aspect of the "quality" of loans, and not as a change in the price of loans; thus, the total effect on the banks (nominal, undeflated) output would move in the same direction (I believe) as in Pettigrew's proposal. Pettigrew would execute this calculation for each sector separately, which is an improvement on the original SNA proposal (above, section II) because it does not simply spread the imputed service charge across all borrowers and lenders.

Because the Pettigrew proposal does not distinguish between a bank's financial inputs and its financial outputs (in common with the SNA approach from which it begins), it produces some analytical confusion in the treatment of interest rate term structures, risk premia, income from investment of banks' own capital, and it yields (page 13, par. 27) no proposal for constructing a price index for deflating the output of banks. I noted earlier (above, section II), that if one knows how to measure output one knows how to measure price; a proposal for measuring output that does not yield an output price index is on its face defective.

Otherwise, the Pettigrew proposal is an improvement on the OECD paper (section II, above), and it suffers mainly from having imposed on it the premise of the OECD paper--that banks' provisions of free services are equal to their net interest receipts, and that no alternatives exist either to separate financial inputs from financial outputs or to impute prices for free services from the values of actual transactions.