FINANCIAL INTERMEDIATION SERVICES INDIRECTLY MEASURED: ESTIMATES FOR FRANCE AND THE U.K. BASED ON THE APPROACH ADOPTED IN THE 1993 SNA

BY IAIN BEGG

South Bank University

JACQUES BOURNAY

INSEE

MARTIN WEALE

National Institute of Economic and Social Research

AND

STEPHEN WRIGHT

University of Cambridge

The 1993 SNA proposes a revised treatment of the output of financial intermediaries which treats intermediation services in part as a component of final demand, so that GDP is higher than the 1968 SNA suggests. In this paper we present the results of attempts to estimate FISIM (Financial Intermediation Services Indirectly Measured) for France and the U.K. The French study uses a reference rate calculated to ensure that no imputation is made with respect to own funds, while the U.K. study relies on a market interest rate. Both studies present an allocation of intermediation services by industry as well as by category of demand. The adjustments to GDP are of similar magnitudes in both countries.

1. INTRODUCTION

The 1993 SNA proposed changes in the treatment of the output of financial intermediaries, as compared with the standard set by the 1968 SNA (United Nations, 1968 and 1993), in order to reflect the view that intermediation margins charged by such intermediaries reflect the sale of services. This paper brings together the results of two separate studies, carried out in France and the U.K., which have investigated the estimation of financial intermediation services indirectly measured (FISIM).[1] The studies were carried out with the aim of investigating the feasibility of the revision and indicating the likely magnitude of the

[1]The work on France was reported in Bournay (1993), and the article by Begg, Weale and Wright (1993) presents a summary of the work on the U.K.

consequent changes relative to GDP. The two studies also identified aspects of the new treatment which are not discussed in the SNA proposals, but which need to be addressed in order to make the 1993 proposals workable.

The next section of the paper looks at FISIM in the light of the difficulties in measuring the output of financial intermediaries. This is followed by a discussion of the practicalities of the 1993 SNA approach. The fourth section presents estimates for FISIM in France and the U.K., showing how it is allocated by sector and the impact of this allocation on GDP. An allocation by industry is also presented, although data deficiencies make this a less reliable means of estimating GDP. The concluding sections discuss these estimates, assess their implications for the national accounts and appraise the feasibility of incorporating the new treatment of FISIM fully in published accounts.

2. MEASURING THE OUTPUT OF FINANCIAL INTERMEDIARIES

As is the case for many other service industries, measuring the output of credit institutions poses a number of methodological problems (Triplett, 1991 and 1992). Although various solutions have been adopted to alleviate these problems for the service industries (for a summary, see Griliches, 1992), the fact that banks and other financial intermediaries do not charge directly for all the services they provide compounds these difficulties, especially in the construction of national accounts. For this reason, the output of financial intermediaries has been the subject of special treatment in successive versions of the SNA, an approach that has long been criticised on the grounds that it does not adequately portray the activities of banks (for example, see Brown, 1949; Rymes, 1986).

2.1. *FISIM in the SNA*

As noted above, in the 1968 SNA, the convention was adopted that all of the imputed intermediation earnings calculated from the difference between borrowing and lending interest flows are allocated exclusively to intermediate demand. These intermediation services are not allocated out by industry, but are, instead, allocated to a dummy industry which is deemed to purchase the entire output from intermediation as intermediate demand, with an equivalent negative value added. This treatment means that the charge imputed for financial intermediation does not contribute to GDP. The adjustment includes income flows to financial intermediaries from securitised assets (such as dividends and bond interest) in addition to the other interest earned by credit institutions from lending activities. The proposed change has only a minor impact on the level of FISIM, but it is the new method of allocation that gives rise to the increase in GDP.

The proposed treatment of FISIM in the 1993 SNA (Inter-Secretariat Working Group on National Accounts, 1993) is very straightforward, and is clearly stated in paragraphs 6.125 and 6.126:

> "The total value of FISIM is measured in the System as the total property income receivable by financial intermediaries minus their total interest payable, excluding the value of any property income receivable from the

454

investment of their own funds, as such income does not arise from financial intermediation. Whenever the production of output is recorded in the System, the use of that output must be explicitly accounted for elsewhere in the System. Hence, FISIM must be recorded as being disposed of in one or more of the following ways—as intermediate consumption by enterprises, as final consumption by households or as exports to non-residents.

In principle, the total output should, therefore, be allocated among the various recipients or users of the services for which no explicit charges are made. In practice, however, it may be difficult to find a method of allocating the total output among different users in a way which is conceptually satisfactory from an economic viewpoint and for which the requisite data are also available."

In this new approach, the sectoral allocation of FISIM is to be in line with the extent of intermediation supplied—as captured by the difference between the rate earned (paid) on assets (liabilities), and a "reference" rate of interest, which is intended to be a so-called "pure" cost of borrowing, with no allowance for any risk premium or for intermediation services. The SNA does not stipulate which interest rate is to be used for this purpose, although the inter-bank rate or the central bank lending rate are suggested. It is also stated that if the information to make the necessary calculation is not available, different measures, such as proportions of assets and liabilities of various users of financial services, might be used to allocate FISIM.

As paragraph 6.130 notes, the effect will be "equivalent to reclassifying certain parts of interest payments as payments for services." This will "affect the values added of particular sectors and industries, and also gross domestic product (GDP). There are also implications for the flows of interest recorded in the primary distribution of income accounts. However, the savings of all the units concerned, including the financial intermediaries themselves, are not affected. Nor is the financial account affected."

2.2. *Measuring the Output of Financial Intermediaries: Previous Studies*

The fundamental problem with measuring the output of financial services in current prices arises because much of their output is not sold in a conventional way, but is charged for by offering low interest rates on deposits and imposing high rates on loans. The intermediation services of the industry are paid for out of these margins. The problem is identifying the value of intermediation bought by a depositor or a borrower. A number of studies have investigated the question of the measurement of the output of the financial services industry, and OECD (1986) provides a valuable overview of some of the issues and perspectives.

The OECD notes that in the 1968 SNA, FISIM is "the excess of the property income received by the banks and similar intermediaries on loans and investments made from the deposits they hold, over the interest they pay out on those deposits." This system has the merit of simplicity and requires only readily available data. However, because it assumes all demand to be intermediate, it allows for

neither the substantial final demand from households for financial services, nor for net exports.

Some researchers (for example, Sunga, 1984) have proposed that interest payments and receipts should be treated like purchases and sales of goods. Interest paid by households, government and non-residents would become final consumption, adding to GDP. There would also be big sectoral shifts: notably the fact that the personal sector, to the extent that it was a net recipient of interest, would be deemed to be creating value-added. A further effect is that the value-added of loan-financed firms would be lower than that of otherwise-identical equity-financed firms.

Contrasted with this, Rymes (1986) argues that national accountants cannot measure the imputation with any degree of accuracy. He suggests that, since the 1968 treatment only affects two lines in the production accounts, does not affect GDP, and reveals nothing about the analysis of banking activity, it is of little interest to users and should be dropped. Brodersen et al. (1989) apply a similar argument to the proposed change in treatment. They argue that these should be rooted in "theoretically justified approaches which are in agreement with the general philosophy of the System." They also counsel against rule of thumb methods of allocating FISIM, on the grounds that they represent measurements without any theoretical foundation and are, consequently, harmful to the analytical value of the system as a whole. This implies that unless the SNA revisions can be dealt with meaningfully, they are best not attempted.

Haig (1986), having studied the administrative costs of different financial intermediaries and compared these with differences in interest rates, concludes that administrative costs cannot be used to allocate FISIM. Instead, he suggests that banking output should be treated as a form of public good and advocates treating its production analogously to government output. Banks' gross value-added would, therefore, be defined as compensation of employees plus consumption of fixed capital: by implication banks would be treated—like the government sector, as non-profit-making institutions.

A paper by Mamalakis (1987) which builds on the work mentioned above, provides a possible bridge between the financial economics and national accounting approaches. He suggests that progress can be made in solving some of the problems surrounding FISIM by unbundling interest flows into three components. These are the pure interest rate element (a property income flow), payments for identified services and payments for any other unilateral transfers. Mamalakis argues that the SNA approach, by neglecting reserves for future losses (which he equates with unilateral transfers) may overstate the income generated by the financial sector.

Other work has looked at the question of allocating a measure of FISIM broadly similar to the 1968 definition across the different categories of intermediate and final demand. As noted in the introduction, reclassification leads to a change in the level of GDP because it changes the estimate of final demand. Fixler and Zieschang (1992), in the context of work on the financial services component for the U.S. producer price index, point out that the reference rate proposed for the revised FISIM is one of a number of ways of measuring the opportunity cost of money. Their paper goes on to propose a methodology for distinguishing between

financial products as to whether they are inputs or outputs, based on a "user cost." This is computed by taking the difference between such an opportunity cost and what the authors describe as the "holding cost" of the asset or liability in question. If the derived user cost is negative, the financial product is an output; if positive, an input. Clearly, the choice of the rate to represent the opportunity cost is crucial to determining which products are inputs and which outputs, and Fixler and Zieschang go on to suggest some criteria based, essentially, on the production function approach.

A natural development of this portrays financial intermediaries as portfolio managers (see summary in Triplett, 1991), who purchase securities (including loans) and sell deposits. Implicitly, viewing financial intermediaries in this way identifies liabilities as inputs and assets as outputs. As Berger and Humphrey (1992) note, however, "most banks do much more than purchase their funds— they also provide substantial services to depositors, but these services are not counted as output in the asset approach." They assert that the asset approach is most realistic in considering transactions between financial intermediaries. Triplett concludes that although the financial economics portrayal of what banks do has its merits, it is not "useful for measurement purposes."

This analysis leads directly to the need to identify the pure interest rate element, which can be interpreted as the opportunity cost identified by Fixler and Zieschang.

3. Implementing the Reference Rate Approach

Even though the reference rate approach has been accepted in principle in the SNA, there has been considerable debate about its implementation, a consequence of which is that it has been left to compilers of national accounts to choose whether or not to make use of the new approach. Among the questions that arise are whether there should be one or more reference rates and how these should be chosen. A related issue is whether FISIM should be estimated for all types of asset or only on some assets. In this regard, the distinction between the "own funds" of financial intermediaries and other assets is crucial.

The issue with own funds is that, in principle, any interest earned on lending of these should be regarded as property income rather than an implicit charge for a service. Pettigrew (1989) suggests that if own funds and lending of deposits are to be distinguished, it would be appropriate to subtract investments in tangible assets from total assets in calculating the relevant volumes for estimating FISIM. However, Pettigrew notes that it can equally be argued that own funds have in fact been obtained by raising capital and this can also be portrayed as intermediation. Bournay et al. (1992), while agreeing in principle with the SNA proposition, adopt a special treatment of non-deposit liabilities. They start with a global definition which includes long-term bonds, but advocate limiting the allocation of FISIM to borrowing and lending activities. This implies, in the authors' words, "that a distinction should be drawn between the function of financial intermediation performed by financial intermediaries and the function of production of services of financial intermediaries (currently called bank services). Both functions are closely related but they do not strictly cover each other."

457

On the other hand there is also a cogent argument for identifying intermediation charges as specific to particular types of financial instrument—those which are designed for retail markets. Any financial intermediation can be split into intermediation on the deposit-taking side and intermediation on the lending side. One can imagine a deposit bank which collects deposits from retail depositors and simply lends them out at wholesale rates in the money market. These funds may be lent to secondary banks which obtain their funds in the wholesale market and then lend them out to retail borrowers. Once this division is recognized, then it is clear that an intermediation margin can be earned on funds lent out to retail borrowers whatever their source, despite paragraph 6.125 of the SNA. This argument leads to the inclusion of own funds in the calculation of FISIM if those funds are lent to retail borrowers.

Some authors have argued that, if income from own funds is excluded, so too should be dividends, bond interest etc. paid out by financial intermediaries. Pettigrew considers, however, that deducting dividends paid out raises questions about the treatment of undistributed earnings, and that deducting these would unreasonably reduce FISIM and be undesirable.

3.1. *Coverage*

It is necessary to decide not only to which instruments any adjustment should be applied but also to which sectors. Lending to consumers is undertaken by retailers and insurance companies, as well as by deposit-taking financial institutions. This would imply extending the coverage of FISIM beyond credit institutions, but would also mean that the treatment of these industries would need to change. Similarly, the seigniorage earned on the note issue and on any reserve assets by the central bank ought, in principle, to be treated as a component of FISIM (an issue crucial to the critique of Rymes, 1986).[2] In the case of Bournay's (1993) estimates for France, the study limited itself to all financial institutions currently regarded as producing FISIM (this excludes intermediaries such as insurance companies and mutual funds); for the U.K., Begg *et al.*'s (1993) estimates were derived solely from the liabilities of the banks and building societies which comprise the M4 measure of the money stock and the corresponding assets.[3] This definition of FISIM as being earned only on monetary sector instruments has the implication that no estimate is made for own funds or for non-monetary lending and investment. However, it implies that some adjustment should be made for imports of intermediation arising from borrowing from and lending to non-domestic institutions by residents and this has been done for both France and U.K.

Since the Issue Department of the Bank of England is not part of the monetary sector but is instead treated as a part of central government, this approach leads to the exclusion of any imputation for banknotes from the U.K. study. However, in order to facilitate comparison with the French data we have indicated

---

[2]Indeed, paragraph 6.132 of the 1993 SNA stipulates that the financial intermediation services of central banks should be included in FISIM, although it also notes that "because of the unique functions which may be performed by central banks, the value of their output may sometimes appear exceptionally large in relation to the resources employed."

[3]Building Societies are credit institutions with mutual status that specialise in housing finance.

as a memorandum item the magnitude of the imputation which would be made with reference to banknotes held by the personal sector; it is this component of the overall imputation for the banknote issue which affects final demand and thus GDP.[4]

3.2. *Choice of Reference Rate*

If the reference rate is determined in competitive markets, the gap between this rate and the rate charged (paid) on assets (liabilities) should be a good measure of the value added by the bank. If the market for banking services is also competitive, it will also be a good measure of the service provided.[5] Thus, a current account, because it provides money transmission and various advisory services is, in principle, associated with a greater volume of service for a given flow of money than a syndicated international loan. In an ideal world, therefore, the reference rate should be the competitive market interest rate as close as possible to the form of loan or deposit that embodies the least service, and furthest from that which gives the most service.

In practice, because the market for banking services is imperfectly competitive, the actual rates on different sorts of accounts tend to be set on the basis of market conditions as well as implicit service levels; indirect measurement does not, however, distinguish between that proportion of the charge which is a pure service element and that which may represent monopolistic profit. Nor should it, since both are equally part of value added.[6]

The two studies adopted different approaches to the estimate of the reference rate. In the U.K. study, Begg, Weale, and Wright (1993) identified those financial assets on which intermediation charges are assumed to be levied. The imputed intermediation margin is then given by the difference between the interest rate actually charged and the market rate. This means that an intermediation charge may be calculated in respect of own funds if they are lent out on an asset on which an intermediation charge is deemed to be earned, and is a departure from the exact SNA principles for the reasons given at the start of this section. Bournay (1993), however estimated the reference rate indirectly. His approach ensures that no intermediation charge is measured indirectly for own funds, however they are lent out.

3.3. *A Schematic Comparison of the Two Approaches*

The implications of the two approaches can be understood by reference to the schematic balance sheet shown as Figure 1. In this figure, the entries for loans and deposits are in bold to indicate that they represent vectors of different types of assets or liabilities, whereas the other entries, indicated in normal type, are consolidated into single aggregates.

---

[4]Strictly speaking adjustments should be made for U.K. banknotes held abroad (exports) and foreign banknotes held in the U.K. (imports). No information is available on this.
[5]This service will, in the case of assets also reflect the credit risks home by the bank.
[6]This issue is however an important one in attempting to break down the flow of intermediation into volume and price changes (discussed further below).

FIGURE 1

SCHEMATIC BALANCE SHEET

Assets	Asset Stock	Interest Rate	Interest Received
Loans	$\mathbf{A}_C$	$\mathbf{R}_C^A$	Y_C^A
Bonds	$\mathbf{A}_B$	R_B^A	Y_B^A
Other Assets	A_0	R_0^A	Y_0^A
Total	A		Y^A

Liabilities	Liability Stock	Interest Rate	Interest Paid
Deposits (inc. net deposits from other financial institutions)	$\mathbf{L}_D$	$\mathbf{R}_D^L$	Y_D^L
Bonds	L_B	R_B^L	Y_B^L
Equities and net worth	L_w	R_w^L	Y_w^L
Total	L		Y^L

3.4. *The Approach Adopted by Begg, Weale and Wright*

Begg, Weale, and Wright (1993) calculate FISIM as

(1) $$\text{FISIM} = (\mathbf{R}_C^A - \mathbf{R}_C^*)'\mathbf{A}_C - (\mathbf{R}_D^* - \mathbf{R}_D^L)'\mathbf{L}_D$$

where $\mathbf{R}_C^*$ and $\mathbf{R}_D^*$ are vectors of appropriate reference rates on loans and deposit liabilities. Rates on assets are assumed to exceed the relevant reference rate and rates on deposits are assumed to lie below this rate. By implication, intermediation margins on all other instruments are assumed to be zero, hence interest rates paid or earned on these instruments are implicitly assumed equal to the relevant reference rate.

In principle, it might seem that, for financial instruments of equal maturity, there ought to be a single reference rate which is intended to represent the market rate of interest, so that both $\mathbf{R}_C^*$ and $\mathbf{R}_D^*$ would equal this rate, multiplied by unit vectors. Indeed, with two exceptions, this methodology was in fact applied, with the 3-month interbank sterling rate chosen as the appropriate indicator of a competitively determined market rate. However, there were two categories of instrument to which it could not readily be applied.

First, the use of a home-currency reference rate for borrowing and lending in other currencies is inappropriate. The rate on three-month sterling is not an appropriate basis for calculating imputation margins on borrowing or lending in Deutsche Marks. For foreign currency assets and liabilities, accordingly, the relevant foreign currency interbank rates were used. An obvious rationalisation for this approach is to note that the market-determined riskless rate on foreign currency assets, expressed in sterling terms, will be the appropriate foreign currency interbank rate, adjusted for the forward premium/discount on sterling vis-a-vis that currency. This should be, and to a very close approximation in practice is, identical to the sterling interbank rate.

Secondly, the single rate may, and in the U.K., in initial investigations did, lead to unsatisfactory results for some financial intermediaries, some of the time.

460

Until the early 1980s, the building societies (the main source of residential mortgage lending), which hold a large share of retail deposits, were insulated from the wholesale financial markets. Governments had been keen to maintain this situation so that households with mortgages would be protected from the otherwise unpopular effects of high interest rates. In consequence, building societies borrowed from retail depositors and lent out to house-buyers at rates which followed the market only loosely and often with a lag. There were periods in which the rate on mortgages was lower than the 3-month interbank rate, with the implication that the intermediation margin on mortgages was negative even though the services provided to depositors and borrowers in this market segment are typically quite stable. Failing to allow for this peculiarity of the British financial system would, in turn, have introduced spurious volatility into estimates of quarterly GDP.

This was resolved by defining the reference rate for building societies to be a weighted average of the rate on building society deposits and advances. The weights were defined so that, over the sample period as a whole, the average building society reference rate was equal to the average reference rate used for other sterling intermediation. Thus, over sufficiently long time horizons, this approach is also equivalent to an assumption of a single reference rate.[7]

One further point to note about the U.K. approach is that no intermediation margin is directly associated with own funds on the liability side of the balance sheet, since these funds are implicitly treated as being lent to the institution at the reference rate. If they are then lent out at a different rate on the asset side of the balance sheet, an intermediation charge is, however, calculated. The logic of this is that funds are not hypothecated. Intermediation arises from the activity of lending at a rate above the reference rate, and the institution cannot be expected to distinguish own funds from deposits in this area of activity. An implication of this is that the value of FISIM is sensitive to the reference rates chosen. We can rewrite FISIM as

$$(2) \qquad \text{FISIM} = \mathbf{R}_C^{A\prime}\mathbf{A}_C - \mathbf{R}_D^{L\prime}\mathbf{L}_D + \mathbf{R}_D^{*\prime}(\mathbf{L}_D - \mathbf{A}_C) - (\mathbf{R}_C^* - \mathbf{R}_D^*)'\mathbf{A}_C$$

and it is clear that this is in general a function of the reference rates. However, if there is a single reference rate, the last term will be zero, and the third term will be also if $\mathbf{i}_D'\mathbf{L}_D = \mathbf{i}_C'\mathbf{A}_C$ (where $\mathbf{i}_D$ is a unit vector with the same number of elements as $\mathbf{L}_D$ and $\mathbf{i}_C$ is a unit vector with the same number of elements as $\mathbf{A}_C$ so that $\mathbf{i}'\mathbf{A}_C$ is the total value of assets held as loans), i.e. if the value of loans equals the value of deposits. With multiple reference rates, the condition will reflect the asset and liability mix. However, for institutions which acquire most of their assets by borrowing, the sensitivity of FISIM to the reference rate will not be very great (an estimate of the sensitivity of the estimates in this paper is given below). The sectoral distribution will, however, be affected by the choice of rate and it is this which determines the contributions of the financial institutions to GDP.

[7]It is worth noting that whilst the U.K. approach can be represented as assuming the same reference rate for all financial instruments of equal maturity, the same does not apply for other instruments. As noted above, the assumption of a zero intermediation margin on the remaining assets and liabilities of the banking system is equivalent to assuming that the rates charged or paid equal the relevant reference rate. In the case of instruments of longer liability, for example, the implicit reference rate will differ significantly from the short-term money rate, as indeed it should conceptually.

3.5. *The Approach Advocated by Bournay*

Bournay's (1993) approach can also be represented in terms of the balance sheet of Figure 1. On the liability side, own funds are defined as equities plus net worth (L_w). The complement is a definition of intermediated funds:

$$(3) \qquad L^* = L_B + i'_D L_D$$

and the same amount of intermediated funds should appear on the asset side. On the asset side, the items are presented in a certain order:

    (i) non-financial assets;
    (ii) other net financial assets;
    (iii) shares;
    (iv) long-term bonds;
    (v) loans;
    (vi) lending to other financial institutions.

Intermediated funds are assumed to finance assets in the reverse of this ordering. This sequencing means that there will be one category of assets financed partly out of own funds and partly out of intermediated funds. For the purpose of illustration, assume that intermediated funds are more than sufficient to finance loans, but do not cover the whole of bond holdings (A_B).[8] Hence:

$$(4) \qquad i'_C A_C < L^* < i'_C A_C + A_B.$$

In this case we can define:

$$(5) \qquad A_B^* = L^* - i'_C A_C$$

so that intermediated funds on the asset side are:

$$(6) \qquad A_B^* + i'_C A_C = A^* = L^*.$$

Accordingly, the interest earned on bond-holdings, Y_B^A, is allocated *pro rata* in order to identify the component earned on intermediated funds, Y_B^{A*}:

$$(7) \qquad Y_B^{A*} = Y_B^A \cdot A_B^*/A_B = R_B^A \cdot A_B^*.$$

The total indirectly measured service charge is equal to the difference between interest received on intermediated funds and interest paid out on intermediated funds:

$$(8) \qquad \text{FISIM} = R_B^A \cdot A_B^* - R_B^L \cdot L_B + R_C^{A'} A_C - R_D^{L'} L_D.$$

It therefore follows that global FISIM is independent of the reference rate and thus the question of the sensitivity of FISIM to the reference rate does not arise.

The analysis of the U.K. approach above reveals that this measure is equivalent to the reference rate approach with a single reference rate, if net intermediated assets are zero—which in Bournay's approach is imposed by construction. By implication, the reference rate itself is indeterminate without making further assumptions. In principle, therefore, this approach could be consistent with a (single) market-determined reference rate such as the interbank rate used in the

---

[8] In practice this is always true of France in the period studied.

U.K. approach. Bournay, however, takes an alternative approach. The single reference rate, R^*, is constructed so as to ensure that the margin earned on loans and deposits adds to the total value of FISIM, or equivalently, that the total margin earned on (intermediated) bond assets and liabilities is zero, thus:[9]

$$(9) \qquad (R_B^A - R^*)A_B^* + (R^* - R_B^L)L_B = 0$$

so that:

$$(10) \qquad R^* = \mu R_B^A + (1 - \mu)R_B^L$$

where

$$(11) \qquad \mu = A_B^* / (A_B^* - L_B) = (\mathbf{L}_B + \mathbf{i}_D' \mathbf{L}_D - \mathbf{i}_C' \mathbf{A}_C) / (\mathbf{i}_D' \mathbf{L}_D - \mathbf{i}_C' \mathbf{A}_C).$$

The reference rate is a weighted average of the rates on (intermediated) bond assets and liabilities, where the relative weight, μ, is a function of the relative size of bond liabilities and the gap between total loans and total deposits.

TABLE 1

THE REFERENCE RATE FOR FRANCE

Year	Reference Rate	Money Market Rate	Benchmark Government Bond Yield
1977	7.5	9.1	9.6
1978	7.5	8.0	9.0
1979	8.1	9.0	9.5
1980	8.6	11.8	13.0
1981	9.8	15.3	15.8
1982	9.8	14.9	15.7
1983	9.4	12.6	13.6
1984	9.3	11.7	12.5
1985	10.3	9.9	10.9
1986	9.5	7.7	8.6
1987	8.7	8.0	9.4
1988	8.6	7.5	9.1
1989	8.7	9.1	8.8
1990	8.8	10.0	10.0

A time-series of the reference rate is presented in Table 1. This shows that the constructed rate is generally more stable than either the short-term money rate, or the benchmark government bond yield.

Bournay's (1993) measure of FISIM is invariant to the reference rate, which follows the SNA assumption, while Begg, Weale, and Wright's (1993) measure depends on the reference rate. This invariance is achieved by a hypothecation of own funds which may not always accord with the financial institutions' perceptions

[9]Note that in the U.K. approach *both* elements would be assumed to be zero, leaving the reference rate still indeterminate. However, implicitly the U.K. approach would not necessarily constrain the two reference rates to be identical.

of the way in which they run their business. The sensitivity which Begg, Weale, and Wright (1993) identify is consistent with the view that intermediation takes place whenever funds are lent out at non-market rates (e.g. retail lending to consumers), but not when they are invested in marketed financial assets.

3.6. *The Adjustment to Gross Domestic Product in Both Approaches*

The discussion thus far has focused only on the measurement of the total value of FISIM. The scale of the adjustment to GDP, however, depends on the proportion of FISIM which represents sales to final expenditure. This implies a need for a decomposition of FISIM by sector. Only provision of intermediation services to the government, household and external sectors represents final expenditure; the remainder of FISIM is intermediate consumption. These latter components affect industry shares in GDP, but not the level of GDP itself.[10] A corollary of this is that, even if the total value of FISIM is insensitive to the reference rate (or entirely unaffected by it, as in Bournay's approach), the adjustment to GDP is not. This can be seen by referring to the schematic balance sheet given in Figure 1, above. For simplicity, defining A_I and L_i as total intermediated assets and liabilities, then if R_I^A and R_I^L are the respective interest rates, and there is assumed to be a single reference rate, R^*, the GDP adjustment using both approaches can be defined as:

$$(12) \qquad GAdj = (R^* - R_I^L)\Phi_I^L L_I + (R_I^A - R^*)\Phi_I^A A_I$$

where Φ_I^A and Φ_I^L are the respective shares of intermediate assets and liabilities which are associated with the provision of intermediation services to final expenditure. The sensitivity of the adjustment to GDP to the reference rate is then given by:

$$(13) \qquad \partial GAdj/\partial R^* = \Phi_I^L(L_I - A_I) - (\Phi_I^A - \Phi_I^L)A_I.$$

There are two separate effects here. The first is the impact of non-zero net assets, as in the case of total FISIM (noting, however, that this only applies to the U.K. approach, since in Bournay's approach net assets are zero by construction), scaled down by the share of intermediation services going to final demand. The second effect, however, is common to both approaches—here the sensitivity to the reference rate is driven by the differential between the shares of assets and liabilities associated with intermediation services provided to final expenditure. This differential is, in turn, driven in both cases by the respective shares in loans and deposits. This is clearly so for the U.K. approach, since all other instruments are excluded from FISIM, but Bournay also assumes that all intermediation services on bond assets and liabilities represent sales to intermediate consumption. In both approaches, the second term in this expression is of some significance. The

---

[10]Various alternative sectorisations have been suggested. Pettigrew (1989) reviews alternative simple approaches—e.g., sectorisation by shares of asset stocks, or by shares of net interest. The problem with all such simple approaches is that, depending on the sectorisation chosen, different sectors can appear to be providing services to, rather than receiving services from the banking system. A reconciliation of the different approaches is possible by allowing for the cost of intermediation services provided by the banking system on net sectoral assets/liabilities. This can be shown to be equivalent to applying the reference rate approach sector by sector.

assumed share of final expenditure for loans is considerably smaller than for deposit liabilities, since mortgage lending generates a sale to intermediate demand.[11]

4. ESTIMATES USING THE 1993 SNA PROPOSAL

To illustrate how the SNA proposition on FISIM affects GDP, this section presents estimates from the two studies, both of which implement the new method of allocation. In principle, there will be an impact on both the expenditure and output components of GDP. The former is calculated from a sectoral allocation and the latter from an industrial allocation of FISIM. However, because the data to enable an allocation by sector are more reliable, we start with this. An allocation by industry follows. Estimates in constant prices are also calculated and these are shown in the third part of this section. These are then brought together with the current price estimates to show the impact on GDP.

4.1. *Allocation by Institutional Sector*

Once the appropriate reference rate has been established, FISIM has to be allocated across institutional sectors. This makes it possible to distinguish sales to intermediate demand from sales to final demand, and thus to identify the contribution of the financial sector to GDP. For each sector (household, company, government and foreign) information on asset and liability stocks was used to calculate how much of the indirect service charge arising on each asset should be allocated to each sector. Provided that the whole of each asset stock is allocated completely, the sectoral charges thus calculated will add to the total.

In making this allocation, some care is required in the treatment of the household/personal sector.[12] Intermediation charges on lending or deposits made by unincorporated businesses represent intermediate demand since they are inputs into the running of the businesses, while those made for non-business purposes represent sales to final demand. Intermediation charges on loans for house purchase represent, as mentioned in Section 3, an input into the ownership of dwellings industry and thus imply a reduction in its added value.

Sales to final demand arise from intermediation associated with the non-business activities of persons, with intermediation on behalf of general government on deposits by or loans to foreigners. The first two add to consumption and the last adds to exports. Separate and very rough estimates have to be made of intermediation charges levied by non-resident institutions in order to calculate imports.[13]

---

[11]An indication of the sensitivity of the GDP adjustment to the reference rate is given below, in Section 4.4.

[12]Note that in the U.K. figures, reference is made to the personal, rather than household sector. However, extra data were available which allowed us to distinguish bank assets and liabilities of households from those of the other components of the personal sector such as charities and unincorporated businesses.

[13]This relates to deposits by residents in other countries or loans to residents from other countries and not to intermediation by branches of foreign banks in the home country.

TABLE 2

THE ADJUSTMENT TO FINAL DEMAND: FRANCE
(bnFF)

Adjustments to Final Demand	1989	1990
Consumption	163.7	146.6
Exports	3.6	3.4
Total supply to final demand	167.3	150.0
Less imports	−6.8	−0.0
Equals increase in GDP	160.5	150.0

TABLE 3

THE ADJUSTMENT TO INTERMEDIATE DEMAND: FRANCE, 1989 AND 1990
(bnFF)

Intermediate Adjustment on Deposits	1989	1990
S42 Other financial institutions	4.6	−5.7
S50 Insurance enterprises	−5.7	−3.0
S60 General government	4.6	5.9
S70 Private non-profit institutions	0.0	0.0
S10 Corporate enterprises	44.9	46.8
S80 Households	52.1	53.8
Total intermediate adjustment	95.2	110.7

Purchases of intermediation by unincorporated businesses or the corporate sector represent sales to intermediate demand. Tables 2 and 3 show the adjustment for France, and Tables 4 and 5 show the equivalent figures for the U.K.

4.2. *Allocation by Industry*

The 1993 SNA treatment also changes estimates of value added by industry. In any full system of national accounts, FISIM must therefore be allocated by industry as well as by sector. This has to be done using balance sheet data for

TABLE 4

THE ADJUSTMENT TO FINAL DEMAND: U.K. 1989 AND 1990
(£million)

Adjustments to Final Demand	1989	1990
Personal consumption	8,393	9,860
Central Government	52	40
Local authorities	23	23
Exports	6,084	3,933
Total Supply to final demand	14,552	13,856
Less imports	−6,716	−2,929
Equals increase in GDP	7,837	10,927
Memorandum Adjustment for notes and coin	1,758	1,551
Increase in GDP including imputation for notes and coin	9,595	12,478

TABLE 5

The Adjustments to Intermediate Demand by Sector: U.K.
(£ million)

Intermediate Adjustment on Deposits	1989	1990
Unincorporated businesses	2,988	3,490
Industrial and commercial companies	3,294	3,883
Non-M4 financial institutions	1,270	1,572
Public corporations	9	7
Intermediate Adjustment on Lending		
Unincorporated businesses	1,139	1,381
Industrial and commercial companies	1,965	2,332
Non-M4 financial institutions	633	677
Public corporations	9	7
Mortgages	1,727	1,328
Total Intermediate Adjustment	13,036	14,678

enterprises classified by industry.[14] The British data on this are inadequate and it is clear that, in the U.K., one of the obstacles to the implementation of the new proposals on a regular basis is the development of a satisfactory classification of intermediate demand by industry.

Table 6 shows the effects of the reclassification on industrial value added for France and Table 7 presents similar data for the U.K.

TABLE 6

Value Added by Industry, 1990: France

	Value Added	New Definition	Standard Weight	New Weight
Agriculture	182.3	180.8	4.25	4.10
Energy	222.5	220.6	5.19	5.01
Food	144.1	142.8	3.36	3.24
Intermediate goods	276.0	271.6	6.44	6.16
Professional equipment	252.5	248.5	5.89	5.64
Household goods	10.3	10.1	0.24	0.23
Vehicles	65.7	64.3	1.53	1.46
Consumption goods	219.0	216.1	5.11	4.90
Construction	243.9	240.9	5.69	5.47
Commerce	501.6	491.2	11.70	11.15
Transport and communication	289.1	287.2	6.74	6.52
Other marketed services	711.9	695.6	16.61	15.79
Real estate	339.3	328.3	7.92	7.45
Insurance	46.5	42.5	1.08	0.96
Financial services	178.2	177.2	4.16	4.02
Non-marketed services	795.6	788.6	18.56	17.90
Financial adjustment	−192.3		−4.49	0.00
Total	4,286.2	4,406.6	100.00	100.00

[14]One objection has been raised that the calculation is based on financial structures which are associated with corporations rather than industries. However, other costs, such as head office expenses must be classified to industries by convention. We argue that FISIM should be treated in much the same way as these.

TABLE 7
VALUE ADDED BY INDUSTRY, 1990: U.K.

£ million	Blue Book	New Definition	Blue Book Weight	New Weight
Agriculture	8,753	8,585	18.27	17.52
Energy and water supply	25,456	24,946	53.13	50.90
Manufacturing	105,808	99,229	220.84	202.49
Construction	35,616	34,974	74.34	71.37
Distribution, Hotels and Catering	71,865	69,990	149.99	142.82
Transport and communication	33,487	32,996	69.89	67.33
Ownership of dwellings	30,254	28,925	63.14	59.03
Banking, finance and insurance	87,151	84,348	181.90	172.12
Public administration and defence	31,647	31,647	66.05	64.58
Education and Health	44,815	44,815	93.54	91.45
Other services	30,431	29,597	63.51	60.40
Financial adjustment (FISIM)	−26,159		−54.60	
All industries (income measure)	479,124	490,051	1,000	1,000

4.3. Estimates in Constant Prices

One of the more vexed issues in implementing the 1993 SNA is how best to obtain constant price estimates for FISIM. The new SNA does not offer any guidance on this and, as with many other service industries, it does not seem that there is any ideal solution. Does a change in intermediation margins represent a volume change or a price change? If someone takes out a loan at 2 percent over the reference rate, and the next year the margin rises to 3 percent over the reference rate, but no new transactions have taken place, it does not seem that the volume of intermediation has changed. In both Britain and France, the convention has been adopted that a change in margins represents a price change. Volume data are calculated using base-period margins applied to current asset stocks.

However, this is not sufficient to produce a genuine volume measure for FISIM. As the value of bank deposits is a nominal magnitude, it is also necessary to deflate the asset holdings to which the base-period interest differentials are applied. The choice of deflator is clearly going to be somewhat arbitrary. For the calculations of the estimates for the U.K., the consumers' expenditure deflator was chosen for the adjustment to consumers' expenditure, and the Public Authorities Current Expenditure (PACE) deflator for the adjustment to public consumption. The deflator for total final expenditure was used for net exports on the grounds of its wide coverage. All estimates for France were produced using the GDP deflator.

Our treatment of deflation has a clear parallel in the calculation of the financial services' adjustment in the 1968 SNA. One of the volume indicators used there is the deflated stock of bank deposits. The base-period interest rate differentials simply determine the weights to be given to deflated bank deposits in the calculation of the output index.

4.4. Effect on GDP

Time-series adjusted GDP in both constant and current prices are presented in Tables 8 and 9 below. In both countries, it has proved possible to calculate

estimates of the adjustment to GDP in constant and current prices since 1979. A comparison between them suggests that the adjustments to GDP are of similar magnitude in France and the U.K. A part of the gap between them is removed if an imputation for notes and coin is included in the U.K. data. However, the U.K. adjustment showed faster growth in the first half of the 1980s and a second spurt during the period of very high interest rates from 1989 onwards.

The adjustments measured in constant prices as proportions of GDP are more stable This is to be expected, since they are calculated using fixed margins over the reference rates. Nevertheless, the changes may be important in the calculation of year-on-year growth rates. For instance, in the U.K. in 1990, GDP would have fallen by 0.4 percent less if calculated from the treatment of FISIM proposed in the new SNA. The impact of FISIM on growth rates will also be affected by the trend within the financial services industry to charge explicitly for a larger proportion of services. When this happens, GDP attributable to FISIM using the 1993 SNA method of allocation will diminish, but will be offset by a rise in directly measured output of financial intermediaries. Over the period 1979–90, the French growth rate rises imperceptibly from 2.25 percent p.a. to 2.27 percent p.a. The impact on the U.K. is more marked. The growth rate rises from 1.93 percent p.a. to 2.04 percent p.a.

In the light of the discussion of the potential sensitivity of the adjustment to GDP to the assumed reference rate, it is of interest to note that, for the U.K., an increase in all reference rates by one percentage point would have raised the adjustment for 1990 by £758 millions in current prices, or 7.7 percent of the total adjustment to GDP. When the imputation for notes and coins is included the increase rises to £890 millions or 7.1 percent of the larger adjustment reflecting the additional imputation on the note issue. The French adjustment is more sensitive to variations in the reference rate. An increase of 1 percent to the rate in 1990 raises GDP by 180bnFF. This is 12 percent of the original adjustment.

Although these are substantial increases, largely reflecting the differential contribution to final expenditure of intermediation services provided on deposits compared to that on loans, it should be noted that increases in reference rates of this size, for *given* rates on assets and liabilities, would themselves be of considerable economic significance for the banking sector and would be likely to lead to offsetting movements in borrowing and lending rates. Hence, the increases in the adjustment do not therefore appear disproportionate.

5. CONCLUSIONS

There is no ideal way to measure the output of financial intermediaries and the approach adopted in the 1993 SNA is bound to attract criticism. Nevertheless, it is now the convention that is being adopted as an international standard, so that the practicability of the approach is a matter of public interest. Perhaps the most important conclusion to emerge from the work reported in this paper is that it is possible to generate plausible estimates of FISIM using the proposed new method. The fact that the estimates for two countries with similar economic structures are reasonably close in magnitude is also encouraging. Given that most of the change in GDP comes from revisions to consumers' expenditure, the method

TABLE 8
THE ADJUSTMENT TO GDP IN CURRENT PRICES

	France (FFbn)			U.K. (£m)		
	GDP	Adjustment	% of GDP	GDP	Adjustment	% of GDP
1979	2,481	57	2.30	198,221	1,459	0.74
1980	2,808	62	2.21	231,772	2,838	1.22
1981	3,165	72	2.27	254,927	4,280	1.68
1982	3,626	81	2.23	279,041	4,673	1.67
1983	4,007	96	2.40	304,456	5,070	1.67
1984	4,362	108	2.48	325,852	6,007	1.84
1985	4,700	138	2.94	357,344	6,775	1.90
1986	5,069	146	2.88	384,843	7,017	1.82
1987	5,337	144	2.70	423,831	6,406	1.51
1988	5,735	145	2.53	471,430	6,973	1.48
1989	6,159	168	2.73	515,957	9,855	1.91
1990	6,492	156	2.40	551,118	13,365	2.43

TABLE 9

THE ADJUSTMENT TO GDP IN CONSTANT PRICES

	France (FFbn 1980 prices)			U.K. (£m 1985 prices)		
	GDP	Adjustment	% of GDP	GDP	Adjustment	% of GDP
1979	2,763.4	64.9	2.35	330,499	2,754	0.83
1980	2,808.3	62.0	2.21	323,419	2,829	0.87
1981	2,841.3	64.3	2.26	319,193	4,901	1.54
1982	2,913.7	65.5	2.25	324,622	5,288	1.63
1983	2,933.9	70.7	2.41	336,503	5,887	1.75
1984	2,972.5	71.1	2.39	344,348	6,687	1.94
1985	3,028.4	84.0	2.77	357,268	6,775	1.90
1986	3,104.6	80.3	2.59	372,042	7,134	1.92
1987	3,174.5	79.5	2.50	389,946	6,152	1.58
1988	3,317.3	86.1	2.60	407,131	6,423	1.58
1989	3,453.4	94.0	2.72	415,730	6,853	1.65
1990	3,531.1	89.2	2.53	407,909	8,398	2.06

ought to be capable of being replicated in most other countries. The difficulties in estimating net exports may prove to be a problem for countries for which international transactions in financial intermediation represent a substantial share of economic activity, Luxembourg being an obvious example (Als, 1988; STATEC, 1992). There are problems about extending the coverage of FISIM, notably to include central banks' note issue. Clearly also, the different approaches of the two studies to the choice of the appropriate reference rate, and the treatment of own funds, raise issues which future studies may need to address.

Obtaining consistent estimates of FISIM also poses substantial data problems. In order to allocate FISIM, consistent tables of financial balance sheets and interest flows for all financial intermediaries have to be constructed. In both countries, statistics on assets and liabilities are adequate, although there are some problems about separating out unincorporated business from the rest of the household sector. In the U.K. the main problems arise in the calculation of imports

and with the classification of the adjustment by industry. In France, similarly, the allocation by industry poses problems and there are also difficulties in obtaining the matrix of interest flows. However, it is unlikely that resolution of these data problems would significantly alter the estimated values for the allocation of FISIM by sector. By contrast, the allocation by industry will require more refinement.

This raises the question of whether it would be appropriate for FISIM to be integrated fully into published national accounts using the reference rate approach, or presented as in the 1968 SNA, but with a sectoral allocation shown in separate satellite accounts (Teillet, 1988). Although early drafts of the SNA proposed the full integration of the new FISIM estimates, worries about the complexity of the estimates led to this being left as a choice for compilers in the final version.

For some countries, data problems may dictate that until the statistical gaps have been satisfactorily filled, the revision of FISIM is best dealt with in a set of satellite accounts. However, the 1993 SNA treatment does constitute a conceptual advance, suggesting that where there are enough data to construct reasonable estimates, these should be integrated into the accounts, rather than left to languish in a satellite. If nothing else, this may have the salutary effect of focusing attention on shortcomings in data collection in relevant areas.

REFERENCES

Als, G., The Nightmare of Economic Accounts in a Small Country with a Large International Banking Sector, *The Review of Income and Wealth* 34, 101–110, March 1988.
Begg, I. G., M. R. Weale, and S. H. Wright, Measuring the Contribution of Financial Institutions to Gross Domestic Product, *Economic Trends* No. 475, 146–155, May 1993.
Berger, A. N. (ed.) and D. B. Humphrey, Measurement and Efficiency Issues in Commercial Banking, in Z. Griliches (ed.), *Output Measurement in the Service Sectors*, University of Chicago Press, London, 1992.
Brown, H. P., Some Aspects of Social Accounting—Interest and Banks *Economic Record* 25 (supplement), 73–92, 1994.
Bournay, J., Financial Intermediation Services Indirectly Measured (FISIM), INSEE Discussion Paper, 1993.
———, P. Muller, and A. Vanoli, The Output and Uses of Financial Intermediation Services Indirectly Measured—Except Insurance and Pension Funds: Some Additional Comments, INSEE Working Paper, 1992.
Brodersen, S., E. Dalgaard, and B. Thage, On the Measurement and Distribution of Indirectly Paid Bank Services, paper prepared for an OECD Meeting of National Accounts Experts, June 1989.
Fixler, D. J. and K. D. Zieschang, Unit Costs, Shadow Prices, and the Real Output of Banks, in Z. Griliches (ed.), *Output Measurement in the Service Sectors*, University of Chicago Press, London, 1992.
Haig, B., The Treatment of Interest and Financial Intermediaries in the National Accounts of Australia, *Review of Income and Wealth* 32, 409–424, December 1986.
Griliches, Z. (ed.), *Output Measurement in the Service Sectors*, University of Chicago Press, London, 1992.
Inter-Secretariat Working Group on National Accounts *System of National Accounts 1993*, United Nations, New York, 1993.
Mamalakis, M. J., The Treatment of Interest and Financial Intermediaries in the National Accounts: The Old "Bundle" versus the New "Unbundle" Approach, *The Review of Income and Wealth* 33, 169–192, June 1987.
Pettigrew, C., Imputation of Financial Services Intermediation Service Charge, working paper for the Expert Group on SNA Co-ordination, 1989.
Rymes, T. K., Further Thoughts on the Banking Imputation in the National Accounts, *Review of Income and Wealth* 32, 425–442, December 1986.
Sunga, P. S., An Alternative to the Current Treatment of Interest in the United Nations and Canadian Systems of National Accounts, *Review of Income and Wealth* 30, 385–402, December 1984.

STATEC, *Bulletin du STATEC*, Vol. XXXVIII No. 6/7, 1992.

Teillet, P., A Concept of Satellite Accounts in the Revised SNA, *Review of Income and Wealth* 34, 411–439, December 1988.

Triplett, J., Measuring the Output of Banks: What do Banks Do? paper prepared for the Western Economic Association Conference, 1991.

————, Banking Output, in P. Newman, M. Milgate and J. Eatwell (eds.), *The New Palgrave Dictionary of Money and Finance*, Macmillan, London, 1992.

United Nations, *A System of National Accounts*, Studies in Methods, Series F, No. 2, Rev. 3, United Nations, New York, 1968.