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THE IMPUTED OUTPUT OF BANKS

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1. This note briefly describes and comments on work carried out by the Department of Applied Economics, University of Cambridge (DAE) for the United Kingdom Central Statistical Office (CSO) to measure some aspects of the contribution of financial institutions to gross domestic product. A summary of the research project published in the CSO journal Economic Trends in March 1993 is attached.

2. A stimulus for the work was the possibility that the revised UN System of National Accounts (SNA) would recommend changes to the treatment of the output of financial intermediaries for which no explicit charge is made which would, in effect, be equivalent to reclassifying certain parts of interest payments as payments for services. This would affect the values added of particular industries and also total GDP. It also appeared likely that this change of approach would lead to corresponding changes in the balance of payments accounts.

3. The research project was aimed at devising a method for implementing the proposed SNA in the UK and illustrating the methodology using available data. The project team also had some consultations outside the UK in the hope that any method devised would have the potential for application in other countries.

BACKGROUND AND SUMMARY

4. A major and well-known problem in measuring the output of banks and many other financial institutions is that their contribution to GDP on otherwise conventional national accounts practices - measured as the excess of receipts from the actual sales of goods and services less expenditure on the purchases of goods and services - is small or more often negative. Banks derive much of their income from the margin of interest on loans and deposits rather than on charges for specific financial services. The 1968 SNA recognised this anomaly and recommended that it be dealt with by imputing a service charge in addition to charges actually paid. This imputed value (called the

imputation for financial intermediation service charges - IFISC - in the attached paper) was allocated in its entirety in the 1968 SNA as intermediate consumption of a dummy industry because it was not then regarded as feasible to allocate the charge to users. As a consequence, while the net interest earned by financial institutions contributed to the output of that industry, there was no contribution to total GDP.

5. The recommendation in the draft revised SNA was that the IFISC should be allocated to users who might be considered to be "paying" the imputed charges. Such allocation to categories of final demand would change total GDP and, via changes in intermediate demand, the contributions of other industries. It was also recommended that the imputed service charge was best measured and allocated according to the margins between actual interest rates paid or offered by financial institutions and a reference rate.

6. In the event, in adopting the draft SNA, UN accepted a proposal of the Inter Secretariat Working Group on National Accounts for flexibility in presentation and agreed that further work should be carried out to aid full implementation of the SNA proposals.

7. The work by Begg, Weale and Wright of DAE established that in the UK, although there were various conceptual and practical problems, especially at finer levels of allocation, the draft SNA proposals could broadly be implemented for the major part of banks' activities. However, their view, which also represents that of the CSO, was that the various doubts, in particular their implications for international comparability, suggested that for the time being supplementary provision on the new basis (that is, via satellite accounts) for the presentation of IFISC was preferable.

COMMENTS

8. The stimulating and useful DAE paper itself raises many points for discussion. A number of other possible points follow.

It should be made clear that this covering note is written from the viewpoint of one with limited knowledge of the intricacies of banking and does not necessarily represent the views of the CSO. It is hoped, however, that it will encourage some contribution to the discussion from any who share this limitation.

(i) The contribution of financial institutions to GDP, if the draft SNA proposals were to be implemented, depends on the choice of reference rate (primarily through its effect on allocating banks' imputed services between users.) More work could be done on the sensitivity of estimates to the choice of rates. However, does the lack of a strong theoretical underpinning for that choice and indeed the methodology cause concern?

(ii) The DAE work is concerned with the non-securitised lending and borrowing of banks and building societies. Extensions of the principle of an imputed service charge to all activities of banks and building societies and to the activities of other financial intermediaries, and even to the, admittedly limited, financial intermediation activities of industrial and commercial companies, would create progressively more difficult conceptual and data problems. Is this a valid criticism of the more limited approach envisaged in the SNA and explored in the UK research? More generally, a departure from conventional national accounts views of output could raise questions as to the appropriate treatment of foreign exchange dealings or dealing in shares both of which may cover an imputed as well as explicit service charge. Would the widening of the definition of the contribution to GDP leave some uncertainty as to where it should stop?

(iii) The paper acknowledges the extra uncertainty in compiling constant price estimates. It proposes generally that changes in interest rate margins should

be regarded as price changes and that a constant price measure should be obtained by multiplying constant price stocks of assets or liabilities by base year margins. This approach does seem to raise problems. Apart from the use of fairly general deflators to arrive at constant price stocks, the underlying philosophy of the approach is that the margin is a measure of the implicit service provided. If the volume of service (relative to stock) changed one would therefore expect a change in the margin reflecting that quantity change. However, the suggested procedure would suppress this change in the constant price series. In theory, a more appropriate deflator would seem to be based on margins for intermediation where it was evident that no change in service had taken place. But it seems difficult to identify such a deflator in practice. An alternative approach might seem to be to allow in some way the "price" movements in the changing margins to be amended to reflect changes in pure quantity and quality of services provided. But such an approach would seem close to arguing that direct measurement of the services is possible and indeed suggesting that imputation is unnecessary.

(iv) The DAE work presents a methodology for measuring the contribution to expenditure of intermediation earnings. There need not be major problems in ensuring that a changed approach does not lead to a lack of coherence or consistency in the overall national accounts if the imputed service charge is handled consistently. But it is interesting to note that the UK at least relies heavily on deflated gross output indicators for non-financial industries and hence the assumption of constancy of their net/gross ratios in calculating movements of constant price output. It would perhaps expose the weakness of the assumption to continue to do so when defining intermediate demand differently. Whether the wider

definition of intermediate demand makes constancy of the ratio more plausible is an interesting question.

(v) The level of disaggregation by the DAE project was inevitably limited and, in practice, with improving data sources, more might be achieved although with weaker data at a disaggregate level. There must therefore be some concern about the extent to which the estimates that can be made are sensitive to the lack of disaggregation (although that is not a problem unique to the banking field.) In particular while the aggregate approach may reasonably deal with the problem from the overall point of view of financial institutions does it do so for individual sectors and industries?

(vi) Finally, the DAE work was directed, by its terms of reference, to devising methods to implement the SNA. The SNA in a sense implies an answer to the question - what do banks do? In particular, the SNA approach implies that the provision of finance, as opposed to the services accompanying it, is not to be recognised as a part of the output of financial institutions. While such an approach may be required in the economy - wide considerations needed for the SNA, it is not obvious that it fully meets the requirements of all those interested purely in the measurement of the activity of financial institutions. There will no doubt remain a debate on concepts despite the agreement on the SNA.

9. The DAE paper is seen within the UK as a helpful and positive contribution to the national accounts approach to the problem of banking output. That there remain uncertainties and scope for substantial further development is clear. These confirm the view that the best way forward, as background and stimulus to further development, is the use of supplementary estimates in a satellite account. It is important that development of internationally accepted methodology draws on the

work being carried out in various countries. It is for consideration how appropriate a topic this is for the Voorburg Group to play a role in taking forward.

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MEASURING THE CONTRIBUTION OF FINANCIAL INSTITUTIONS TO GROSS DOMESTIC PRODUCT

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Introduction

This article presents the findings of a research project carried out by the Department of Applied Economics, University of Cambridge (DAE) for the Central Statistical Office (CSO) to measure the contribution of financial institutions to gross domestic product[1].

In the national accounts, banks and other financial institutions are assumed to earn some of their income from charging higher interest rates to borrowers and paying lower rates to depositors than they would need to if they charged explicitly for all their services. This 'hidden' charge is known as the imputed service charge. Under proposals discussed in the review of the UN System of National Accounts (SNA), this imputed service charge would be allocated to sectors of the economy deemed to be paying the charge, in order to arrive at a measure of the contribution of intermediation services to final demand. The objective of the research was to devise a method for doing this.

For simplicity, the acronym most commonly used to denote the imputed charge is used throughout this article. This is IFISC, derived from *imputation for financial intermediation service charges.*

In the current (1968) SNA, the convention adopted is that all of the imputed intermediation earnings in the interest spread are treated, like the remainder of interest payments, as transfers, with no impact on final demand. This treatment means that *IFISC* has no impact on the level of GDP. In the production accounts, accordingly, intermediation earnings are allocated exclusively to intermediate demand. The services are not allocated out by industry, but are allocated to a dummy industry which is effectively deemed to purchase the entire output from intermediation as intermediate demand, with an equivalent negative value added. In table 2.1 of the *Blue Book* this allocation is dealt with by showing it as a single line in the accounts labelled 'Adjustment for Financial Services' (CSO variable code GIJI).

The proposed revised treatment of *IFISC* under the SNA would abandon the convention that all of *IFISC* should be allocated to intermediate demand. Where intermediation services are provided as a component of final demand this element of *IFISC* would represent an upward adjustment to the expenditure measure of GDP. The counterpart adjustment on the income side would add to the operating profits of financial institutions - in contrast with the present system, in which UK financial institutions are deemed to make continuous losses at the operating level, since their revenues are incompletely measured, whilst their costs are measured in full. That part of *IFISC* which does not feed into final demand would continue to be treated as intermediate consumption: but the new treatment also proposes an allocation of intermediate consumption by industry.

The existing 'Adjustment for Financial Services' includes income flows to all financial intermediaries from securitised assets (such as dividends and bond interest) in addition to the net interest earned on bank and building society lending activities. It was however agreed between CSO and DAE at the outset that this study would focus on the 'M4 sector' of financial services - ie, the lending and deposits of banks and building societies - and would therefore exclude all securitised instruments. This was justified on the grounds that the imputation is concerned, at heart, with the interest payments associated with lending and borrowing activities of financial intermediaries, rather than with investment activity or dealing in securitised assets. In addition, much of the profit gained by financial intermediaries in dealing with securitised assets arises from capital gains which the new SNA rules out of the calculation of *IFISC*.

Main Results and Conclusions

The research suggests that the proposals for *IFISC* discussed as part of the SNA review could, by and large, be applied in the UK in the main context in which it is thought relevant, that is, to the non-securitised lending and borrowing of banks and building societies. Despite the trend towards securitisation by financial intermediaries[2], the categories of financial assets covered in this article represent a sufficiently large share of the activity of banks and building societies to warrant efforts to measure *IFISC* better.

DAE estimates of the impact of the proposed reforms on the GDP figures for 1991 are shown in the Table below.

Estimated Allocation of *IFISC* in 1991 (£ billions)

Adjustment to GDP	10.5
of which:	
Consumers' Expenditure	9.9
Net Exports	0.6
plus	
Net intermediate output of Banking & Finance Industry	13.6
equals	
Total Adjustment for *IFISC*	24.1

[1] The DAE wishes to record its thanks to the members of the Steering Group constituted to guide the research, to CSO and Bank of England staff who have helped by providing advice and supplying data, and to others who have been consulted in the course of the work. The recommendations put forward in this article are the responsibility of the authors and do not necessarily reflect the views of CSO, who are considering what actions to take in the light of this study.

Copies of the full report, which includes estimates of quarterly data, are available on request from Elizabeth Hofmann [071 270 6181] at CSO.

[2] See, for example, OECD (1992)

The estimates imply an adjustment to gross domestic product which rises from 1.5% of GDP at current factor cost in 1980 to 2.1% in 1991 (detailed figures are given in Table 1). By the new measure, GDP at constant prices has grown an additional 0.07% p.a. over the period 1980-1991. The bulk of the change is, as the table above shows for 1991, due to the adjustment to consumers' expenditure.

The main difficulties in producing the estimates related to the calculation of net exports of *IFISC*, especially on the import side, because of a lack of detailed data; and to the industrial allocation of intermediate consumption. Extending the methodology to other financial intermediaries or other classes of financial assets and liabilities would raise additional problems, and would be likely to be a much more demanding exercise.

The project raised some doubts about the availability and quality of data to make the adjustment at the level of detail needed for the *Blue Book*. Although some potential difficulties are likely to be diminished as new data already in the pipeline become available, full implementation of the SNA revisions will require some additional data collection. In addition, because it only proved possible to construct new estimates from 1979 onwards, there may be general questions of continuity of data series which might affect users' views on the desirability of any change. Furthermore, it would not be sensible for the UK to change before there is an agreed European system of methodology.

For all these reasons, a satellite account presentation of *IFISC* may be preferable until the data and methodology have been sufficiently developed, rather than an immediate move to implement the new proposals on *IFISC* in full.

Proposed Reforms to the Treatment of *IFISC* in the new SNA

The proposal on how to treat *IFISC* in the draft revised SNA is clearly stated in paragraphs 133 and 134 of Chapter 6 of the new draft:

> *The total output of financial intermediaries for which no explicit charge is made is measured in the System as their total property income receivable minus their total interest payable, excluding the value of any property income receivable from the investment of their own funds, as such income does not arise from financial intermediation.*
>
> *In principle, the total output should be allocated among uses of the services for which no explicit charge is made. When the requisite information is available, it is recommended that estimates of the following should be calculated and used to allocate the total output:*
>
> *(1)For those to whom the intermediaries lend funds, both resident and non-resident, the difference between the interest actually charged on loans, etc. and the amount that would be paid if a reference rate were used;*
>
> *(2)For those from whom the intermediaries borrow funds, both resident and non-resident, the difference between the interest rate they would receive if a reference rate were used and the interest they actually receive.*

The reference rate is intended to be a so-called 'pure' cost of borrowing, with no allowance for any risk premium or for intermediation services (see Mamalakis, 1987). The draft SNA text does not stipulate which interest rate to use, 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 the total *IFISC*.[3]

As paragraph 137 of Chapter 6 explains, 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.' At the time of writing, objections voiced from a number of sources have led the Inter-Secretariat Working Group on National Accounts (ISWGNA) to propose that the change should not, at least for the time being, be mandatory and that the 1968 SNA methodology can continue to be used until further studies of the new methodology have been completed.

The main visible effect of the proposed change would be to reclassify what was previously defined as a transfer between sectors as the sale of a service. Because sales to the overseas sector and the personal sector represent an increase in final demand, the change to the method of dealing with *IFISC* will increase GDP.

Issues to be addressed in implementation of the new SNA

Although the aims of the proposed SNA revisions in the treatment of *IFISC* are clear enough, there are several issues which need to be addressed in order to arrive at a practical methodology for implementing the changes. These include the coverage within banking and finance (both in terms of institutions, and in terms of financial instruments); the choice of reference rate; how to estimate exports and imports; the separation of price and volume components in *IFISC*; and the availability and reliability of suitable data and possible alternatives to the approach embodied in the SNA revisions[4].

Coverage

As noted above, the analysis presented here is limited to the 'M4 sector'. The question of treatment of 'own funds' of financial intermediaries is, however, one that could cause difficulties (Pettigrew, 1989; Bournay, 1991; and Bournay et al 1992). In principle, any interest earned on lending of these should be regarded as property income rather than an implicit charge for a service. Similar questions arise about the treatment of dividends paid by them. However, it can equally be argued (for example, by Pettigrew, 1989) 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 proposed SNA revision, argue 'that a distinction should be drawn between the function of financial intermediation performed by financial intermediaries and

[3] The DAE study did however identify difficulties with alternative allocation methodologies. These essentially stem from problems relating to the treatment of sectors of the economy which are net debtors, or net creditors, of the banking system. However, once allowance is made for the costs to the banks of providing intermediated funds to net debtors, or the opportunity for intermediation earnings from onlending the net deposits of creditors, these alternative allocation methodologies can be shown to be identical to the reference rate approach.

[4] For a description of other approaches to measuring the contribution of financial intermediaries to GDP interested readers are referred to the papers by Triplett (1991) and Pettigrew (1989), and the work by Berger and Humphrey (1992).

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'.

Choice of reference rate

The gap between the reference rate and the rate either charged to borrowers, or paid out to depositors, reflects two components: the level of service provided (including risk-bearing services); and a profit margin. In practical implementations, the questions about the reference rate are whether to adopt a single rate or multiple rates, and how to choose an appropriate rate. Any reference rate should ideally be regularly and consistently measured, bear a reasonably close relationship to market rates, and be characterised by there being unconstrained borrowing and lending activity at spreads close to it, since such a rate will approximate most closely to the notional 'pure' market interest rate. As the draft SNA notes, the three-month sterling interbank rate meets these criteria, and is used in the empirical work which follows as the reference rate for most of the components of the *IFISC*.

For the UK, however, this measure of the reference rate was felt to be inappropriate in two important areas. First, because interest rates differ for different currencies, it is more appropriate, in the case of foreign currency transactions between banks and both domestic and overseas residents, to use an average of currency-specific short-term market rates, weighted by the currency composition of the asset or liability in question.

The second problem area was the building societies sector. In principle, and also in practice over the longer term, the societies are subject to the same competitive pressures as the banks, implying an identical reference rate. However, they are to a considerable extent insulated from the necessity to match market-related rates *in the short term*, by virtue of the structure of their balance sheets.[5] This relative insulation of the societies is reflected in the fact that there have been a number of instances of negative interest margins between the societies' mortgage or deposit rates and the interbank rate. In constructing the reference rate used for the empirical estimates which follow, it was accordingly assumed that, whilst, *on average*, the reference rate for building societies should equal the reference rate used for other sterling activities, short-term changes in the intermediation margin should reflect the actual margin between deposit and mortgage rates. Thus, the reference rate for building societies was constructed as a weighted average of societies' own mortgage and deposit rates, such that the weight implied that *on average* the rate so constructed should equal the average three-month inter-bank rate. Using this approach implies that, on average, 40% of societies' intermediation earnings are made on deposits, and 60% on mortgage lending, relative to the 'true' market reference rate.

Exports and imports

Disentangling the export and import elements of *IFISC* poses particular problems. Luxembourg, which has had to confront these questions because a high proportion of economic activity is in the financial services sector, has made particular efforts to devise new approaches to the measurement of output (see Als, 1988). The main problem that arises is that although it is generally possible to obtain information on 'exports' of *IFISC* based on data submitted by indigenous financial intermediaries, the corresponding 'imports' need, in principle, to be summed across all partner countries.

[5] At the end of 1992, wholesale funding, with market related interest rates, represented around 18% of societies' balance sheets; however since they also held some 16% of their assets in market related instruments, their *net* exposure to short-term market forces is limited. Until 1982, indeed, the societies had no wholesale funding at all.

Constant Price Estimates

Of the various possible ways of producing estimates in constant prices, the conclusion of the DAE project was that the most appropriate is to adopt a treatment similar to that currently used for the CSO'S constant price measure of the 'Adjustment for Financial Services'. Changes in interest-rate differentials are assumed to represent a change in the price, rather than volume of intermediation services. Volume movements are assumed to be proportional to changes in the real value of the relevant stocks of assets or liabilities. Given that base-year values are given by the interest differential multiplied by the relevant stock variable, the constant price measure is equivalent to multiplying stocks, expressed in constant prices, by the base-year interest differential.

Data availability and sources

Even if the merits of the approach to the *IFISC* proposed in the draft SNA are accepted, the case for implementing the SNA revisions is bound to be contingent on data availability and reliability (Pitzer, 1992). For the UK, this is not an insuperable problem in most areas. The data sources used in the empirical work which follows were mainly drawn from CSO series for banks' and building societies' interest payments and receipts, which currently feed into the dividends and interest matrix (for a description, see McIntyre, 1992). Additional data on banks' overseas activities were obtained from published series, and from the Bank of England.

Illustrative estimates of the adjustments to components of final demand

The total adjustment to final demand and its major components are shown in table 1.

Consumers' expenditure

The bulk of the intermediation services to the personal sector were assumed to be provided to final demand, and hence to represent a component of consumers' expenditure. Intermediation on loans for house purchase, and on loans to the unincorporated business sector, were excluded, however, as representing intermediate consumption.

In the reference rate approach, the wider the margin between the reference rate and the rate of interest paid or charged to lenders and borrowers, the greater is the 'hidden' service implicitly provided by financial intermediaries to their depositors and borrowers. These margins and the stocks of the different components of personal sector assets and liabilities with M4 institutions determine the relative contribution of each class of imputed service to the aggregate adjustment to consumers expenditure. Chart 1 shows the implied interest margins - as measured by the gap between the relevant interest rate and the reference rate - on the major components of the adjustment to consumers expenditure.

The largest contribution to the *IFISC* for consumers' expenditure (averaging at between a third and a half of the total adjustment) comes from bank sight deposits. Because the margin on sight deposits tends to widen as interest rates rise - particularly where such accounts pay no interest, it is, as expected, closely correlated with the nominal interest rate. This is not the case for any of the other margins. Some narrowing, over time, of the sight deposit margin has been offset by a widening of the time deposit margin, reflecting the

advent of interest-bearing current accounts. The stability of the margin on bank lending in recent years reflects an assumption made by the CSO in the absence of superior information. The building society margin (on deposits) is quite low - averaging around 0.8% over the period since 1984. This low margin is to some extent offset by the sheer size of the societies' deposit base; nonetheless the building societies' component averages only just over one tenth of the total adjustment to consumers' expenditure in recent years.

The calculations of the adjustment to consumers' expenditure at constant prices were produced by multiplying the base period margins by the relevant stock variable, converted into constant 1985 prices using the consumers' expenditure deflator, in line with the rationale outlined above.

Chart 2 shows the total adjustment, as a share of total consumers' expenditure, in current and constant prices. The current price share is considerably more volatile than the constant price share, reflecting movements in intermediation margins, which, as noted above, are treated as a change in price rather than volume. The constant price share displays a long-term upward trend reflecting the rise in M4 aggregates relative to GDP. This upward trend was particularly evident during the period of rapid growth of broad monetary aggregates in the late 1980s; whilst with the slowdown in growth of lending and deposits in the recent past the share has fallen back somewhat. The upward trend is broadly matched by the current price share, suggesting no long-run trend movement in the implied 'price' of financial intermediation.

Public Consumption

The adjustment to Public Authorities' current expenditure is estimated in the same way as the adjustment to consumers' expenditure. Since public consumption is calculated by adding up components of cost, no adjustment is made to the industries which produce public consumption; the whole of the imputed charge is seen as an extra input bought in. The amounts involved are very small, amounting to £53m in 1991.

Net Trade

The adjustment to net trade is dominated by intermediation flows between UK banks and the overseas sector. Financial intermediaries in the UK provide services to overseas residents, part of which constitute exports of *IFISC*, while services provided by overseas intermediaries to UK residents similarly constitute imports. The 'exports' add to final demand, whereas the 'imports' subtract from it. If, as in Luxembourg, there is a large net export (see Als, 1988), the new approach to *IFISC* will result in an increase in GDP. However any impact on GDP will be precisely offset by a fall in property income from abroad, thus leaving GNP unchanged.

The breakdown of the *net* exports of the UK banking sector into imports and exports presented some problems. Following the reasoning of Fixler and Zieschang (1992), the logic of the reference rate approach is that both the magnitude and the *direction* of any intermediation service can be inferred from the margin between rates banks actually pay, and the relevant reference rate. Thus if banks routinely paid *less* than the reference rate on their overseas liabilities, it would be inferred that an intermediation service was being provided to overseas agents (as occurs with banks' domestic liabilities). However, it was found that, almost all of the time, banks appear to pay out a higher rate than the reference rate on their liabilities, implying that the intermediation flow on liabilities is actually *towards* the banks, and accordingly these were deemed to be an import. However, the *net* export figure (ie exports *less* imports) is unaffected by the treatment of the gross flows.

The resulting figures show a total adjustment made up of an adjustment on foreign currency activities on average around twice to three times as large as the adjustment on sterling, but with some considerable degree of volatility in the overall total.

The treatment of banks' net overseas intermediation earnings in this article differs from the measures of banks' intermediation earnings provided in the 'City' table linked to the balance of payments (in the *Pink Book* up to 1990 and subsequently in the press notice issued by *British Invisibles*). There are two differences. The City table looks only at 'exports' of intermediation earnings, i.e. those arising from lending to overseas residents. This is taken to be 'overseas interest receipts less that part of interest payments overseas corresponding to the same level of overseas liabilities as that of assets (assuming an average cost of funds)'. This gives a single net export figure, whereas the use of a reference interest rate as in this article would distinguish between an 'export' and a partly offsetting 'import' (although the net figure would be identical). However, this article also covers an element of intermediation services affecting overseas residents which is not covered in the City table (whose emphasis is on exports, not imports), that is, the element of intermediation services arising from UK banks' borrowing from abroad for on-lending to UK residents. Here the banks' receipts from these intermediation services from UK borrowers are domestic transactions, whereas the payments to those overseas providing the funds (including the intermediation element) appear as overseas transactions (that is, imports). Once this conceptual difference is recognised, it can be seen that the approach set out in this article complements that in the City table.

The only available information which can be used in constructing an adjustment to imports other than those to banks themselves is data on transactions by the UK non-bank private sector with overseas banks, which originates from data collected by the Bank for International Settlements and the IMF. The available information on the composition of the stocks involved was not sufficient to construct a reliable adjustment for other imports. An explanation for this can be drawn out of an examination of the most recent data: in 1991, UK non-banks had total net earnings of £316 million, on net *liabilities* of £9.2 billion. This feature of the data is only consistent with the non-bank financial institutions *providing*, rather than receiving, intermediation services to overseas banks (analogous to the way that, as noted above, UK banks appear to *receive* intermediation services on their liabilities).

Because of data inadequacies, the estimate of this element of the imports adjustment was of necessity very crude. Those non-bank property income flows not attributable to non-bank financial intermediaries, which were assumed not to relate to *provision* of intermediation services, were scaled by the estimated proportion of intermediation margin in *banking* flows for UK banks. Given the relatively low level of the initial flows, and the low estimated proportion of intermediation (averaging at 10% over all data, and significantly less in the recent past), the resulting figures are not very large: averaging around £500 million per annum in recent years.

This component of the imports adjustment was assumed to represent an intermediation service provided to intermediate, rather than final consumption. This needs to be borne in mind since, in principle, to the extent that intermediation services are provided to the personal sector by overseas banks, they should also be added to the consumers' expenditure adjustment (which only records the domestically provided component of the adjustment rather than the total), and hence have no impact on GDP. Only when these services represent *intermediate* consumption of non-banks will they have any impact on GDP.

The approach to converting both export and import adjustments into constant price terms differed from the approach used for the adjustment to consumers' expenditure. The current price adjustment was simply divided by the deflator for total final expenditure. The impact of using alternative deflators - for imports, and total GDP - was also examined; but compared to the volatility that arises in the current price measure due to the causes outlined above, the differences due to different deflators were relatively minor. The approach to deflation of trade flows was chosen for its simplicity, and for its similarity to the current treatment of net property income from abroad. It should be noted, however, that it is not consistent with the approach used for the adjustment to consumers' expenditure, whereby the real series was derived from real stocks, multiplied by the base year spread. Such an approach could, in principle, be applied to trade flows, but would require a breakdown of all flows into component currencies in order to convert stocks correctly into constant (local currency) prices. As noted above this breakdown was only partially available.

Estimates of the Adjustments to Intermediate Demand

The adjustments to final demand must be complemented by estimates of adjustments to intermediate demand in order to give a full picture of the magnitude of *IFISC* and in order to assess the importance of each industry in GDP as a whole. Adjustments to intermediate demand arise from imputed purchases of intermediation by the business sectors of the economy (unincorporated businesses, companies and public corporations) from the monetary sector institutions. An imputed charge is also made on the provision of mortgages, because the provision of housing services is treated in the national accounts as a business activity involving households. The imputed charge on mortgages is accordingly a debit against the conventional estimate of value added arising from ownership of dwellings.

The calculation of the adjustments to intermediate demand follows straightforwardly from the basic principles applied to final demand:

- an imputation is made only for transactions made by monetary sector institutions, and
- no imputed intermediation takes place on funds borrowed or lent through marketed securities, even if the rate of return on investments in some particular market security is different from the reference rate.

As in the calculation of the adjustments on sterling final demand, the 3-month interbank rate was used as the reference rate on sterling lending. The only exceptions to this were building society (but not bank) mortgages where the special building society reference rate was used; and foreign currency transactions for which the relevant foreign currency rate was used.

The full details of the adjustments calculated by sector on an annual basis are shown in table 2.

The adjustments to intermediate and final demand can now be brought together to calculate IFISC on the new basis. This measure is net of intermediation bought in by the financial services industry from its own suppliers in the M4 sector and from abroad.

Table 3 shows the financial adjustment as calculated on the new basis and the extent to which it is associated with an increase in final demand. The financial adjustment is calculated as the net supply by the banking and finance sector. This is the sum of total supply to final demand shown in table 1 and the total intermediate adjustment shown in table 2. From this is deducted the imputed intermediation bought in by the non-monetary financial institutions (shown in table 2) from domestic supply. This yields the total net supply of imputed intermediation by the banking and finance sector. The component of this which is sold to final demand and leads to an increase in GDP is also shown. The absence of information on imports and exports before 1979 means that estimates of the total *IFISC* cannot be calculated before 1979.

Table 4 shows estimates of industrial value added, calculated on the new basis. For each industry, value added is first shown on the present *Blue Book* basis. The intermediation bought in by each industry is shown broken down to intermediation associated with bank deposits, bank lending and the total attributed to public corporations on both borrowing and lending.

The amounts associated with the public corporations are small and are allocated between the four industries in which the public corporations operate (Energy, Manufacturing, Transport and Other Services) in equal proportions for want of better information.

The imputed charge associated with bank deposits was calculated by allocating the total for unincorporated businesses and industrial and commercial companies taken together in the proportions given by the stocks of cash in hand and bank deposits shown in the *Business Monitor MA3*. Since MA3 was discontinued after 1990, the 1990 proportions were used for 1991. This allocation probably puts too much adjustment in manufacturing at the expense of the other sectors.

The imputed charge associated with borrowing by unincorporated businesses and industrial and commercial companies is allocated in proportion to stocks of bank lending given in table 6.7 of *Financial Statistics*.

The adjustment to value added through ownership of dwellings assumes that all mortgage lending is used for house purchase. This assumption is manifestly not tenable, but is probably a tolerable approximation and it is difficult to envisage a more satisfactory approach.

The treatment of Banking, Finance, Insurance etc. is slightly more complicated. The industry is both a supplier and a user of intermediation. The supply represents additional value added, but the use of intermediation by non-monetary sector institutions must be debited. The balance is the estimate of *IFISC* or the new financial adjustment shown in table 3. It represents the net value added imputed to this industry as a consequence of financial intermediation.

The total for all industries shows the adjustment in aggregate. To the *Blue Book* figure is added the extra net value added supplied by Banking, Finance, Insurance etc. However, there is a deduction for the intermediation consumption of other industries. The balance is shown as the contribution to value added made by the margin on financial services.

Table 5 shows how the relative importance of the value added in the different industries is changed by the new definition. *IFISC* is not shown explicitly in the calculation of the new weights because it is fully allocated across the industries.

Although the new treatment appears to give a lower weight to Banking, Finance, Insurance etc. in total value added, this is only true because the *Blue Book* figures are presented gross of *IFISC*. Net of

IFISC, the share of this industry rises from 12.7% to 17.2% of total value added, with offsetting reductions in the shares of the other industries.

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Chart 1. Implied margins vs reference rates

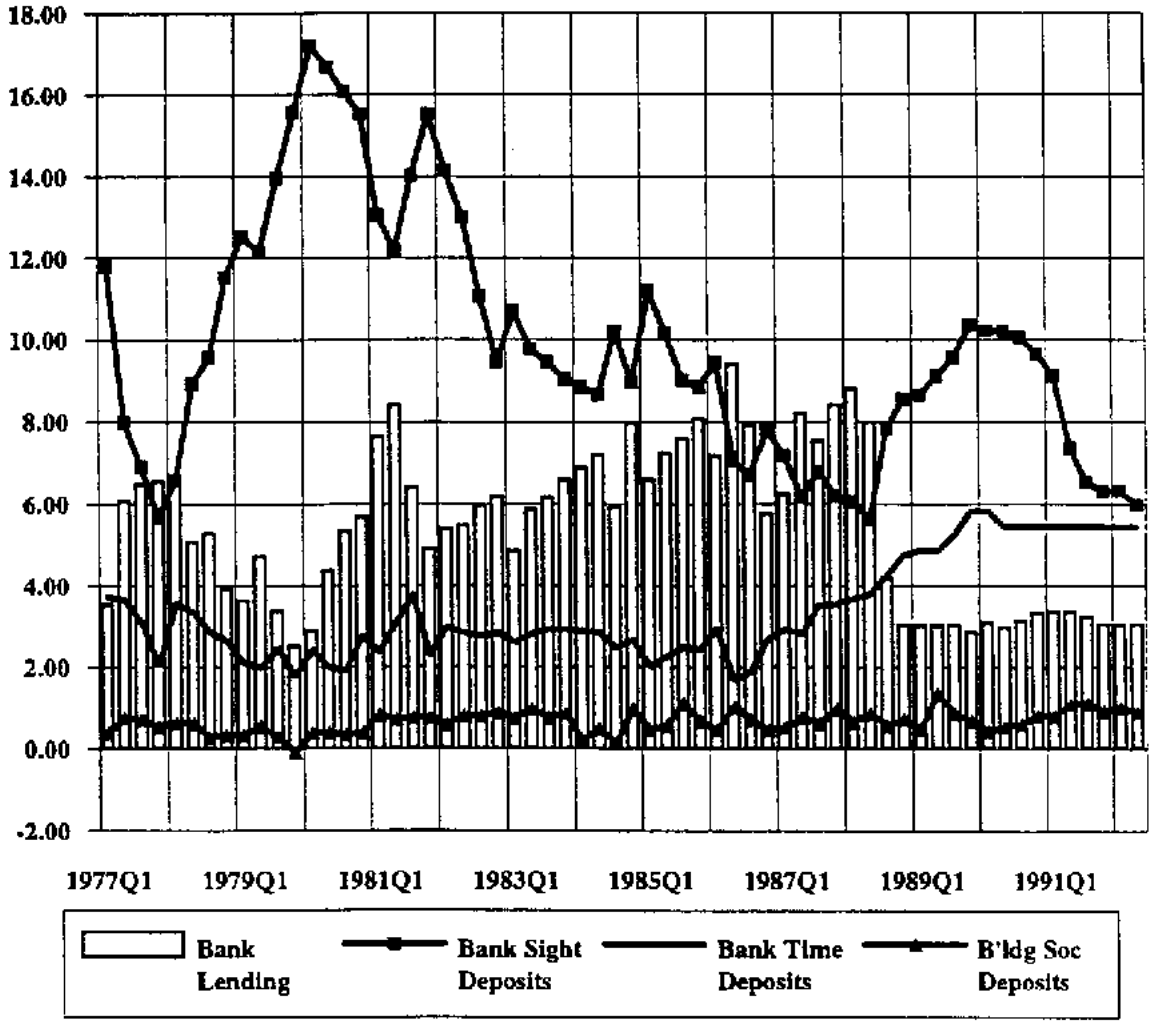

Chart 2. Adjustment for intermediation services as % of total consumers' expenditure, at constant and current prices

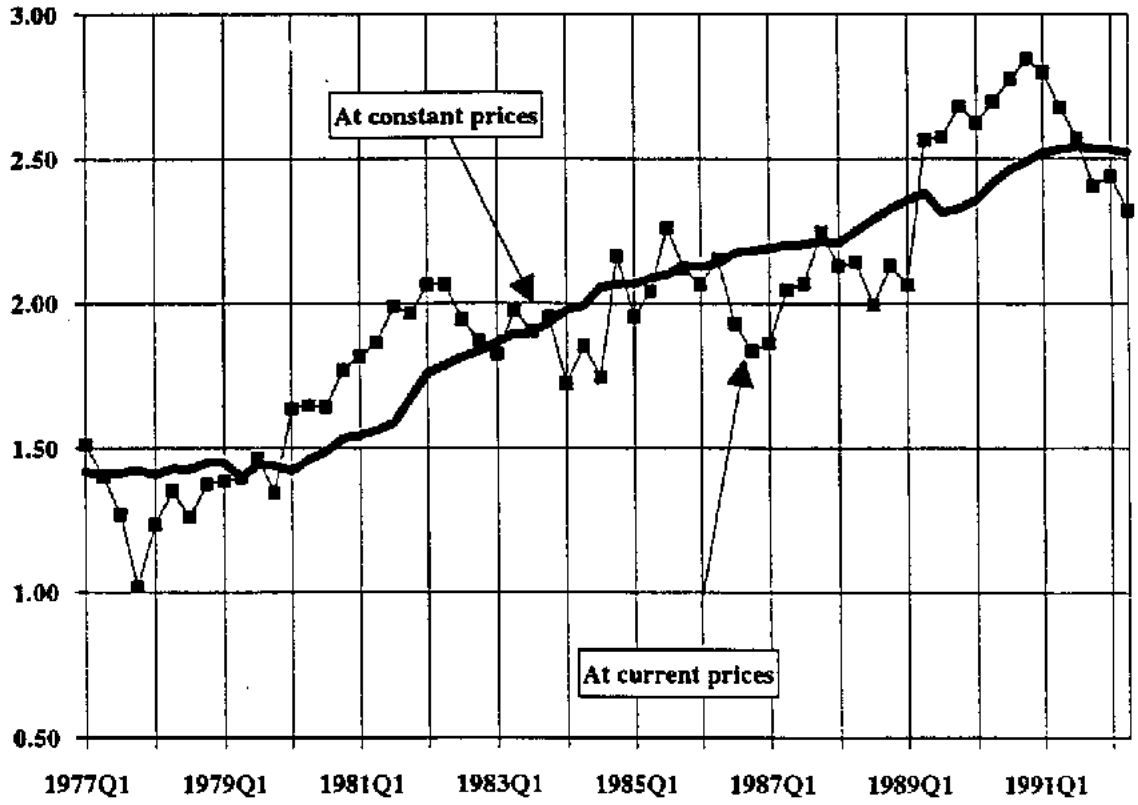

Table 1. Adjustments to Expenditure Measure of GDP

£ millions

	At current prices					At constant prices				
	Total of which, to:					Total of which, to:				
	Adjustment	Private Consumption	Public Consumption	Exports	Imports	Adjustment	Private Consumption	Public Consumption	Exports	Imports
1979	1426	1699	16	963	1253	2414	2840	26	1566	2018
1980	2932	2378	22	819	288	3679	2930	31	1183	465
1981	3961	3027	24	5828	4918	4347	3173	31	7340	6197
1982	4609	3451	40	3817	2699	4982	3627	47	4456	3149
1983	5032	3651	31	4631	3280	5540	4005	34	5148	3647
1984	5636	3810	24	6370	4567	6270	4341	25	6698	4795
1985	6632	4688	34	2268	358	6632	4688	34	2268	358
1986	6725	4943	37	3574	1828	6889	5133	36	3505	1786
1987	5986	5627	47	2854	2543	5881	5536	44	2687	2387
1988	6261	6471	59	6017	6287	5941	6129	53	5389	5629
1989	7837	8393	76	6084	6716	6077	6553	64	5130	5669
1990	10927	9860	63	3933	2929	7689	6846	50	3128	2335
1991	10487	9858	53	5592	5017	7462	6992	40	4261	3831

Table 2. Adjustment to Intermediate Demand by Sector

£ millions

	Total Adjustment to Intermediate Demand	Unincorporated Businesses	Industrial and Commercial Companies	Non-monetary Financial Institutions	Public Coporations	Mortgage Lending
1977	1724	400	1095	107	9	113
1978	1994	528	1212	182	8	64
1979	2541	815	1487	277	8	-45
1980	2747	984	1367	370	11	15
1981	3189	1019	1380	427	9	354
1982	3528	1078	1689	393	18	349
1983	3474	1182	1410	451	14	417
1984	4053	1410	1712	433	19	479
1985	5667	1942	2205	622	33	864
1986	6965	2215	2634	1073	21	1023
1987	7791	2332	2912	1136	19	1393
1988	10086	3010	3979	1477	24	1597
1989	13036	4127	5260	1904	18	1727
1990	14678	4671	6215	2249	15	1328
1991	15714	4620	6284	2119	12	2679

Table 3 The Net Supply of Financial Intermediation by the Banking and Finance Industry

£ million

	Total Adjustment to Intermediate Demand	Total Adjustment to GDP	Total Supply by Monetary Sector Institutions	Input to Non-monetary Financial Institutions	IFISC Net supply by Banking and Finance Industry
	1	2	3	4	5
1979	2541	1426	3967	277	3690
1980	2747	2932	5679	370	5309
1981	3189	3961	7150	427	6723
1982	3528	4609	8137	393	7743
1983	3474	5032	8506	451	8055
1984	4053	5636	9689	433	9256
1985	5667	6632	12299	622	11677
1986	6965	6725	13690	1073	12617
1987	7791	5986	13777	1136	12642
1988	10086	6261	16347	1477	14870
1989	13036	7837	20873	1904	18969
1990	14678	10927	25605	2249	23356
1991	15714	10487	26201	2119	24083

Note 1+2 = 3
3-4=5

Table 4 IFISC and Total Value-Added by Industry (£ millions)

	1989	1990	1991
Agriculture			
Value Added (Blue Book Definition)	**8139**	**8753**	**8772**
Imputed Charge on Bank Lending to Private Sector	-154	-168	-184
Imputed Charge on Bank Deposits to Private Sector	n/a	n/a	n/a
Value Added (after Adjustment for IFISC)	**7985**	**8585**	**8588**
Energy and Water Supply			
Value Added (Blue Book Definition)	**23771**	**25456**	**28273**
Intermediation charged to Public Corporations	-5	-4	-3
Imputed Charge on Bank Lending to Private Sector	-95	-104	-138
Imputed Charge on Bank Deposits to Private Sector	-282	-403	-368
Value Added (after Adjustment for IFISC)	**23389**	**24946**	**27764**
Manufacturing			
Value Added (Blue Book Definition)	**99702**	**105808**	**104283**
Intermediation charged to Public Corporations	-5	-4	-3
Imputed Charge on Bank Lending to Private Sector	-947	-1125	-1208
Imputed Charge on Bank Deposits to Private Sector	-4570	-5451	-4986
Value Added (after Adjustment for IFISC)	**94180**	**99229**	**98086**
Construction			
Value Added (Blue Book Definition)	**32084**	**35616**	**33686**
Imputed Charge on Bank Lending to Private Sector	-308	-388	-433
Imputed Charge on Bank Deposits to Private Sector	-182	-254	-232
Value Added (after Adjustment for IFISC)	**31594**	**34974**	**33021**
Distribution, Hotels and Catering			
Value Added (Blue Book Definition)	**64851**	**71865**	**73024**
Imputed Charge on Bank Lending to Private Sector	-816	-933	-1074
Imputed Charge on Bank Deposits to Private Sector	-817	-942	-862
Value Added (after Adjustment for IFISC)	**63019**	**69990**	**71088**
Transport and Communication			
Value Added (Blue Book Definition)	**31073**	**33487**	**34755**
Imputed charge to Public Corporations	-5	-4	-3
Imputed Charge on Bank Lending to Private Sector	-136	-165	-216
Imputed Charge on Bank Deposits to Private Sector	-432	-323	-295
Value Added (after Adjustment for IFISC)	**30500**	**32995**	**34241**
Ownership of Dwellings			
Value Added (Blue Book Definition)	**25915**	**30254**	**34839**
Imputed Intermediation on Mortages	-1727	-1328	-2679
Value Added (after Adjustment for IFISC)	**24188**	**28926**	**32160**
Banking and Finance			
Value Added (Blue Book Definition)	**82776**	**87151**	**88179**
Less Adjustment for Financial Services (Blue Book Definition)	-26052	-26159	-27171
Value Added excluding Intermediation Earnings	**56724**	**60992**	**61008**
Gross Intermediation Margin of Financial Sector	27589	28534	31217
less Imputed Intermediation to non-M4 Financial Institutions	-1904	-2249	-2119
less Imports of Intermediation Services (see note (1))	-6716	-2930	-5017
equals Adjustment for Financial Services (New Definition)	18969	23356	24082
Value Added (after Adjustment for IFISC)	**75693**	**84348**	**85090**
Public Administration and Defence			
Value Added (as Blue Book Definition: see note (2))	**28447**	**31647**	**34786**
Education and Health			
Value Added (as Blue Book Definition: see note (3))	**41156**	**44815**	**49643**
Other Services			
Value Added (Blue Book Definition)	**29474**	**30431**	**33915**
Imputed Charge to Public Corporations	-5	-4	-3
Imputed Charge on Bank Lending to Private Sector	-649	-830	-910
Imputed Charge on Bank Deposits to Private Sector	n/a	n/a	n/a
Value Added (after Adjustment for IFISC)	**28821**	**29597**	**33003**
All Industries			
Value Added (Blue Book Definition)	**441136**	**479124**	**496984**
Adjustment for Financial Services (New Definition)	18969	23356	24082
less Net Intermediate Output of Banking & Finance	-11132	-12429	-13595
equals Adjustment to GDP	7837	10927	10487
Value Added (after Adjustment for IFISC)	**448973**	**490051**	**507471**

Notes

(1) All imports are debited here, since most can be attributed to this industry and the remainder cannot be allocated.
(2) No adjustment is made here since value added is calculated as the sum of income from employment and imputed rent
(3) It has not been possible to calculate an adjustment to private sector value-added for this industry

Table 5 Value Added in 1990 on the Current and Revised Basis

	Blue Book £ million	New Definition £ million	Blue Book Weight	New Weight
Agriculture	8753	8585	18.27	17.52
Energy and Water Supply	25456	24946	53.13	50.90
Manufacturing	105808	99229	220.84	202.49
Construction	35616	34974	74.34	71.37
Distribution, Hotels and Catering	71865	69990	149.99	142.82
Transport and Communication	33487	32995	69.89	67.33
Ownership of Dwellings	30254	28926	63.14	59.03
Banking, Finance and Insurance	87151	84348	181.90	172.12
PAD	31647	31647	66.05	64.58
Education and Health	44815	44815	93.54	91.45
Other Services	30431	29597	63.51	60.40
Financial Adjustment	-26159		-54.60	
All Industries (income measure)	479124	490051	1000	1000