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Allocation of the output of central banks

**OUTPUT OF CENTRAL BANKS**

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This issues paper is for discussion. The views expressed in this paper are those of the authors and do not necessarily represent those of the IMF or IMF policy.

## EXECUTIVE SUMMARY

This issues paper proposes alternatives for measuring and allocating the output of central banks. The *System of National Accounts 1993 (1993 SNA)* recommends using the difference between property income received and interest paid to estimate the value of the services that financial intermediaries provide without direct charge. The application of this method to central banks sometimes causes unlikely high or low (even negative) values of output. To overcome these problems, the Inter-Secretariat Working Group on National Accounts (ISWGNA) adapted the *1993 SNA*'s recommendations in 1995. As a second-best approach, countries were allowed to use costs as the basis for output measurement. However, no further guidance was provided on the implications of this method for the accounts. Specifically, it was not made clear which units would consume the services thus estimated. This paper explores the consequences of the 1995 decision, both for the measurement and allocation of the services central banks provide.

The main conclusions from this paper are the following:

- Central banks perform many roles, including as providers of monetary policy services, producers of financial intermediation services by functioning as banker to the government and other units, producer of supervisory services, as well as a range of other services.
- It is inappropriate to use one single method to measure central bank output. Instead, a differentiation should be made between services that are nonmarket and those that are market: nonmarket services should be measured at costs, and market services from receipts.
- Because central banks often do not charge explicitly for their services, the distinction between market and nonmarket output has to be made on the inherent character to the service. Using this distinction,
  - Monetary services and other services with a collective character are nonmarket and as such should be measured following the cost approach.
  - Financial intermediation services are market and their measurement should use receipts from explicitly charged fees and the reference rate approach for services indirectly measured.
  - Some services, such as supervisory services, could either be market or nonmarket depending on the view one takes on the nature of these services.

In estimating central bank output, it would be useful to distinguish between establishments providing different types of services, broken down in those that are typically nonmarket and those that are typically market.

- Central banks should remain classified in the financial corporations sector, even if some of them may predominantly produce nonmarket services. This reflects their close association to financial markets and separates their responsibilities clearly from those of general government.
- The most satisfactory way of allocating the use of nonmarket services produced by central banks is to record them as government final consumption expenditure. This entails introducing an imputation and offsetting transaction in the System.
- A main reason why the traditional SNA method for measuring central bank output generates unacceptable results is that central banks may set their interest rates higher or lower than market conditions would indicate. These deviations distort the estimates of output from intermediation services indirectly measured and should be removed from the calculations. The accounts could deal with this by recording the amounts involved as implicit taxes/subsidies or as current transfers.

## **RECOMMENDATIONS**

- The national accounts should measure central banks' collective services, such as monetary services, using the cost approach and allocate them to government as government final consumption expenditure.
- The national accounts should measure central banks' individual services, such as financial intermediation services, from receipts and allocated to the units that pay for these services.
- For a few services like supervisory services it may not be obvious whether they are nonmarket or market.
  - If they are nonmarket, they should be measured at cost and allocated to government as government final consumption expenditure.
  - If they are market, they should be measured from receipts and allocated to financial corporations, the government, non-financial corporations, and the rest of the world as intermediate consumption and exports, respectively.
- Implicit transfers resulting from central banks using off-market interest rates for policy reasons cause distortions in measuring financial intermediaries' output and value added and therefore should be removed from the calculations.
  - Because these transfers are made for policy reasons the national accounts could record them as taxes ("other taxes or subsidies on production" if the counterparts are producers). This method requires that offsetting transfers between government and the central bank be recorded.

- The second option to deal with these deviations would be to record them as current transfers from or to the central bank without rerouting through government.

### **Questions to the AEG**

- Does the Advisory Expert Group agree with the recommendations?
- Are supervisory services of the central bank nonmarket or market services depending on whether they are explicitly paid for?
- Should off-market interest rates for policy reasons be recorded as taxes/subsidies or as current transfers?

## I. INTRODUCTION

1. The *System of National Accounts 1993*<sup>1</sup> (1993 SNA) recommends to measure the services of central banks in the same way as for financial intermediaries in general. Financial intermediaries provide many of their services without a direct charge by applying different interest rates to borrowers and lenders. The preferred recommendation for measuring these implicit services was as the difference between property income accrued and interest payable.<sup>2</sup> Because of the unique roles central banks perform, applying this method sometimes results in unusually large, or small, or even negative estimates. For this reason, the Inter-Secretariat Working Group on National Accounts (ISWGNA) introduced in 1995<sup>3</sup> an adapted recommendation for measuring the output of central banks. If the traditional approach leads consistently to inappropriate results, countries were allowed to measure output, as a second best, at cost as for other nonmarket output.

2. However, the ISWGNA did not provide further guidance on the implications of the cost based valuation on the recording of other transactions in which central banks are involved, such as interest payments and receipts. Neither did it indicate which statistical unit or units are using the output of central banks thus valued. The purpose of this paper is to investigate these issues and make proposals for a consistent application in the accounts. It will argue that central banks perform a number of quite different roles. These roles influence the way their services should be measured and allocated to using sectors.

3. Section II will consider the principles and practices of measuring financial intermediary services. First, it will consider the methods used for estimating the financial intermediation services provided by financial enterprises. Second, it will consider the specific features of central banking services. To provide a context to the discussion this section will also discuss the roles of a central bank according to the 1993 SNA and the *Monetary and Financial Statistics Manual 2000 (MFSM)*.<sup>4</sup> Section III will discuss which method of measuring output is suitable in various circumstances, and the allocation of the use of output will be the subject of section IV. Section V discusses the question of how distortions due to the application by the central bank of off-market rates for policy reasons could be removed from the calculation of output.

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<sup>1</sup> United Nations (UN), International Monetary Fund (IMF), World Bank, EUROSTAT, and Organisation for Economic Co-operation and Development (OECD), 1993.

<sup>2</sup> In the mean time, consensus has been reached to modify this method slightly. This paper assumes that the modified approach has been adopted.

<sup>3</sup> SNA *News and Notes* N° 3, January 1996, Statistics Division of the United Nations, New York: United Nations. The Advisory Expert Group on National Accounts (AEG) in its meeting of February 2004 confirmed the decision on measuring total output of central banks or at least part of it at cost.

<sup>4</sup> IMF, 2000.

## II. HOW TO MEASURE OUTPUT OF CENTRAL BANKS

4. Because the *1993 SNA* recommends that measuring the services of central banks should be the same as for financial intermediaries in general, we will first consider measuring methods for these institutions. Subsequently, we will discuss the applicability of these methods to central banks.

### A. Financial intermediation services

5. The *1993 SNA* defines financial intermediaries as institutions incurring liabilities on their own account on financial markets by borrowing funds, which they lend on different terms and conditions to other institutional units. Thus, these institutions intermediate between lenders and borrowers by channeling funds from one party to another, while putting themselves at risk. Some financial intermediaries raise most of their funds by taking deposits; others do so by issuing bills, bonds or other securities. They lend funds by making loans or advances, or by buying bills, bonds, or other securities.

6. Financial intermediaries may provide services for which they charge directly through fees and commissions. They may also charge implicit fees and commissions, for instance, by selling and buying foreign currency at different rates. In many countries, financial intermediaries provide a large portion of their services without charging direct fees or commissions. The national accounts convention is that they cover these services implicitly through the margin between property income received and paid. Financial intermediaries may also cover their costs from realizing holding gains on their assets, but the national accounts do not recognize holding gains as output or income. The national accounts dub the property income margin as the value of “financial services indirectly measured” (FISIM). Total output of financial intermediaries includes both FISIM and receipts from services for which they charge a fee or commission.

7. The *1993 SNA*'s approach to measuring FISIM is as property income receivable minus interest payable. Consensus is emerging on a slightly revised approach that uses a reference interest rate as its starting point. For the traditional method, interest on loans and deposits is the main source of FISIM, for the new method it is the only source.<sup>5</sup> In the traditional method, the *1993 SNA* recommends excluding the value of any property income receivable from investing the agency's own funds, because such income does not arise from financial intermediation. However, it has been proposed that returns from investing own funds should

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<sup>5</sup> Including property income receivable other than from interest receipts is debatable, since such income may not result from intermediation. See Anders Nordin, OECD Statistics Directorate, *The Production of Financial Corporations and Price and Volume Split of Financial Services and Non-Life Insurance Services*, Update of the 1993 SNA, Issue N° 6a SNA/M1.05/26.

be counted as output of financial services, given that banks could lend these funds to other institutional units.<sup>6</sup>

8. The new reference rate approach—although also facing some problems—has gained preferred status. A major advantage is that it integrates a methodology for allocating FISIM over users, which the traditional method does not. The reference rate method estimates FISIM as the difference between factual interest flows and flows that would result from a theoretical reference rate. Possible problems with this method are that choosing the reference rate and the choice of the assets and liabilities relevant for the calculation is sometimes arbitrary.<sup>7</sup>

### **B. Roles and sectoring of the central bank**

9. Central banks perform various roles, which mostly concern monetary policies and regulating financial institutions. The *1993 SNA* and the *MFSM* consider central banks to be separately identifiable institutions that are subject to varying degrees of government control. These manuals include them as a special subsector dubbed “central bank,” which is part of the financial corporations sector.

10. Central banks may go under various names, such as central bank, reserve bank, national bank, or state bank. In this paper, we will continue using the term central bank. Central banks also include currency boards or independent currency authorities that issue national currency fully backed by foreign exchange reserves. Further, they may be government affiliates that are separate institutional units and mainly perform central banks roles. Often, a country has one institutional unit (the central bank) performing these roles. However, some choose to assign these roles to several agencies. Paragraph 4.86 of the *1993 SNA* defines the central bank subsector of the central bank together with any other agencies or bodies that regulate or supervise financial corporations and that are themselves separate institutional units. When this paper refers to the “central bank,” it has in mind all institutional units that together make up the central bank subsector.

11. Some typical central bank functions may also be performed by central government and these should remain classified in the general government sector as long as financially integrated with government (that is, no separate institutional unit is formed). The national accounts, as well as the IMF’s *MFSM* and *Government Statistics Manual 2001*, classify the central bank itself outside the general government sector. This is done for reasons of

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<sup>6</sup> Paul Schreyer (OECD) and Phillippe Stauffer (SFSO, Switzerland), *Provisional Recommendations on the Measurement of the Production of Non-Insurance Financial Corporations*, SNA Revision Process, SNA/M1.04/15.

<sup>7</sup> See *Results of Implementing the FISIM Calculations by Member States (Council Regulation N° 448/98)*, Statistical Commission and Economic Commission for Europe, Joint ECE/Eurostat/OECD Meeting on National Accounts, Geneva, April 26-28, 2000.

monetary and economic analysis, in particular because any consolidation would provide a blurred picture of government's financial transactions and debt position. The 1995 ISWGNA decision even stipulates "Under no circumstances can it be construed that the central bank is part of the general government sector, regardless of how its output is measured," and the authors of this paper see no reason to question this decision.

12. Central banks may be involved in a large range of activities; their main role usually being to exercise control over key features of the financial system. The draft *International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4*, distinguishes the following tasks:<sup>8</sup>

1. issuing and managing the country's currency;
2. monitoring and controlling money supply;
3. taking deposits that are used for clearance between financial institutions;
4. supervising, regulating, and surveying banking operations;
5. holding and managing the country's international reserves;
6. acting as a banker to the government;

The *MFSM* further mentions as tasks that central banks sometimes perform:

7. performing transactions with the International Monetary Fund (IMF);
8. providing credit to other depository corporations;
9. accepting deposits and providing credit to nonfinancial corporations.

Even other activities that central banks may perform include:

10. clearing and settlement services;
11. international payments services; and
12. deposit insurance and guarantee functions.

13. The above list is by no means exhaustive. Some central banks may be responsible for a large variety of tasks, whereas others focus on a few core activities. Over the last decades there has been a tendency for central banks to shed commercial banking operations and concessionary and development-oriented programs. In many countries the function of supervising and regulating the financial system has moved from the central bank as a single institution to an independent agency.<sup>9</sup> Central banks forming part of a monetary union typically each have more limited specialized duties.

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<sup>8</sup> *International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4*, United Nations, Statistics Division, 2005 (draft).

<sup>9</sup> The Financial Supervisory Agency in the United Kingdom is a clear example. According to *1993 SNA* guidelines, this Agency would still be part of the central bank subsector.

14. Recognizing the various roles central banks perform, it is advisable to distinguish separate establishments, each focusing on one or a related group of functions. As shown below, this will be helpful in measuring output and allocating the produced services to users.<sup>10</sup> Distinguishing separate establishments should not be too difficult given that central banks usually have different departments to perform their various roles. Also, the administrative records of central banks are usually of excellent quality.<sup>11</sup>

15. Finally, it should be noted that while it is true that monetary policy is mainly conducted through financial intermediation, this does not get in the way of making the distinction between establishments producing monetary policy services and establishments producing financial intermediation services. As it will be argued in the next section, the value of monetary services is not dependent on proceeds related to financial intermediation. Monetary policy does, however, complicate the measurement of financial intermediation services because influencing interest rates is one of its main tools. This problem is discussed in section V.

### III. MEASURING CENTRAL BANKS' OUTPUT

16. The characters of the various tasks central banks perform define how they should be measured. The national accounts has two main approaches, namely, (i) market output that is measured at current market prices and (ii) nonmarket output, of which the value is estimated on the basis of cost.

17. To distinguish market and nonmarket output, the *1993 SNA* uses the nature of the prices. For being classified as market output, the prices of the goods and services produced should be economically significant. Economically significant prices affect supply and demand. For central banks this is not a useful norm because direct payments are made for few of their services and it would be difficult to derive prices and judge whether they are economically significant.

18. Thus, another indicator is needed to distinguish between market and nonmarket. For this, we propose to use the character of the services, namely, whether they are collective or not. In paragraph 4.106, the *1993 SNA* refers to "collective services, or so-called "public goods," for which there is market failure. Paragraph 9.83 further explains "The characteristics of these collective services may be summarized as follows:

(a) Collective services can be delivered simultaneously to every member of the community

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<sup>10</sup> The recognition of several establishments within the central bank will not change the sectoral classification of the institutional unit.

<sup>11</sup> The specific purpose of distinguishing between various establishments is to facilitate the correct measurement of output. This does not contradict the fact that many transactions of the central bank are influenced by more than one single consideration. For instance, monetary policy services are typically undertaken through financial intermediation.

or to particular sections of the community, such as those in a particular region of a locality;

(b) The use of such services is usually passive and does not require the explicit agreement or active participation of all the individuals concerned;

(c) The provision of a collective service to one individual does not reduce the amount available to others in the same community or section of the community. There is no “rivalry in acquisition.”

19. Paragraph 9.84 further explains “All members of the community can benefit from such services. As the individual usage of collective services cannot be recorded, individuals cannot be charged according to their usage or the benefits they derive.”

20. In the following subsection we will consider for typical establishments whether they produce collective services or not. Answering this question will immediately decide whether they produce market or nonmarket services and, thus, whether we should use costs or receipts to measure output.

### **Which services are collective?**

21. When looking at the various tasks of central banks we listed in paragraph 12 above, it is obvious that some involve the production of collective services and others clearly involve individual services. For some activities it may not be clear cut whether they serve the community as a whole or individual units. Their classification may depend on the specific country circumstances.

22. For instance, establishments performing **monetary policy** (tasks 1, 2, 3, 5, and 7 mentioned in section II B above) serve the population at large and do not aim at any specific sector. Thus, these services are clearly collective in character.

23. On the other hand, establishments involved in **financial intermediation** (tasks 6, 8, and 9) provide these services to government and, in some countries, to public and private corporations. These services are clearly not collective services as they cannot be delivered simultaneously to all, are based on express agreement, and their use by one reduces the services available to others. The same is true for activities 10 and 11. Activity 12 (deposit insurance and guarantee functions) is also directed at individuals and therefore neither answers the definition of generating collective services, even if the prices charged may include implicit subsidies for policy reasons.

24. Establishments **performing surveillance** (task 4) are a common feature of central banks. They provide supervisory services overseeing the financial corporations. One could argue that this is for the benefit of society in general and the national accounts should record them as government final consumption. In support of this view (option A), one could draw a parallel with government performing market regulation policies, which it also may entrust to a specialized agency, or to government providing for roads, dams and bridges. From this view, surveillance services are collective services.

25. However, one could also argue that government's regulatory services are to the benefit of the financial intermediaries, because these services contribute to the functioning and financial performance of these institutions. From this view (option B), they are comparable to regulatory services of government such as quality control on food and drugs, which the national accounts record as intermediate consumption of producers. Financial intermediaries paying a fee for these services in some countries could support this view.<sup>12</sup> If one follows this reasoning, performing surveillance would not be a collective service.

### **How to measure the output of central banks?**

26. As it is the case for other institutional units, the overall output of central banks should result from adding up the output of its establishments. When looking at the establishments we discussed in the previous section, it becomes clear that for some we should follow a cost approach, while for others we should look at receipts. In this section, we will discuss how to measure output for each kind of establishment.

27. Establishments providing nonmarket services would include establishments providing monetary policy services and—possibly—establishments providing surveillance services (option A). As mentioned, for establishments providing nonmarket services measuring output should be using costs. Costs should include intermediate consumption, compensation of employees and consumption of fixed capital. If a consensus will emerge to include capital services in measuring government output, this should also apply to central banks.

28. Establishments providing market services include establishments providing financial intermediation services and—again possibly—establishments providing surveillance services (option B). As mentioned, for establishments providing market services measuring output should be from receipts. These receipts can be direct or indirect payments for services, including FISIM. Central banks may collect fees and commissions in cases where they act as financial intermediaries. Examples of such fees are payments for the use of bank checks and for holding deposit boxes. An example of a commission is the trade margin when buying and selling foreign currency. FISIM, being a market service, should always be computed using market interest rates as a basis for the calculations. Sometimes, central banks may deviate from market interest rates for policy reasons. These deviations should be removed to arrive at the correct value of FISIM output (see also section V).

## **IV. ALLOCATING THE OUTPUT OF CENTRAL BANKS**

29. Allocating the output of central banks raises two issues. First, we need to discuss who are the users of the services, which will also decide how to classify this use. Second, we need to discuss what transactions the use of central banks services entail. As mentioned, these

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<sup>12</sup> Countries where financial intermediaries pay fees for supervision include several Latin American countries such as Peru, Guatemala, Honduras, Costa Rica, Nicaragua, and Venezuela.

transactions can be complex and for that reason we will first discuss transactions directly linked to allocating output, and discuss further effects in a following paragraph.

### **Users and uses of central banks' output**

30. Because establishments performing **monetary policy services** provide collective services, from the logic of the accounts it follows that these services are for the use of the economy as a whole. By convention only government provides such collective services, which it then—also by convention—also consumes. To fit with this convention, the best way to allocate the monetary policy services is to government.<sup>13</sup> Because government does not use these services in its production and does not transform them in any way, the national accounts should record them as government final consumption expenditure.

31. In principle, central banks' establishments producing market services, including **financial intermediation services**, can provide these to any sector of the economy. As for other financial intermediaries, if used for production purposes the national accounts record them as intermediate consumption, if used by households for consumption purposes as final consumption, or if used by nonresidents as exports.

32. Because one can see the services establishments **performing surveillance** provide either as collective or not, there are two alternatives for allocating them. Depending on the view one takes on who is receiving central banks' supervisory services, the national accounts should record these services either as government consumption expenditure (option A) or as intermediate consumption of financial intermediaries (option B).

### **Further effects**

33. Recording the use of central banks' services as we proposed will have further effects in the accounts. We use the same three types of establishments as examples: those producing monetary services, those producing financial intermediation services, and those involved in surveillance.

34. Recording the use of **monetary policy services as government consumption expenditure** has as an immediate effect that government savings decrease with a downward effect on net lending-borrowing. For the central banks, the effects would be the opposite. To avoid this effect, the national accounts should record an offsetting unrequited current transfer from the central bank to government.

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<sup>13</sup> According to national accounts conventions, the central bank, being classified as a financial corporation, cannot itself have final consumption expenditure. However, to obviate the effects of recording attributions to government and offsetting transfers such as they are described in this paper, an alternative approach could be followed. The decision could be to record collective services produced by central banks as final consumption expenditure in their own accounts. Such decision would recognize that, in some respects, central banks act similarly to government units.

35. Allocating central banks' **financial intermediation services as intermediate consumption, final consumption, or exports** depending on their use would be comparable to recording such services from any other financial intermediary. Thus, there would not be any specific recording issues.

36. If one takes the view the national accounts should record **the supervisory services as government final consumption expenditure** (option A), government saving and net lending-net borrowing would be decreased. As a result, there would be an imbalance between the current accounts and the financial accounts. For the central banks the effects would be opposite. To avoid this, the accounts should record an offsetting unrequited current transfer from the central bank to government equal to the value of the supervisory services.

37. A complication arises with this approach if central banks have receipts performing supervisory services in the shape of fees. The most appropriate treatment would be to reroute these receipts to government as an implicit tax. This fits the nature of supervisory services as a collective service, but calls for an offsetting transfer<sup>14</sup> to avoid imbalances in the accounts of government and the central bank.

38. Recording the use of **supervisory services as intermediate consumption of financial intermediaries** (option B) appears much simpler, because it would follow factual flows—either direct or implicit. One snag would be that receipts might not cover costs, in which case operating surplus might be negative. This, however, is a consequence of the underlying assumption of option B that supervisory services are market services. In case the receipts from fees are grossly falling short of the costs made by the central bank, one probably must conclude that option A is more appropriately describing the actual situation.

## V. POLICY MEASURES MIXED WITH FINANCIAL INTERMEDIATION

39. The proposals made in the previous sections are expected to improve the measurement of central bank output. However, the reasons why the original *1993 SNA* recommendation generated unacceptable results are very complex. Partially, they appear to be linked to issues regarding the basic structure of the SNA,<sup>15</sup> and it would go far beyond this paper to try and find a solution for this type of question. However, one source of problems is, at least theoretically, easily defined and this section proposes to remedy the accounts in this respect. For policy reasons, central banks may set their interest rates higher or lower than market

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<sup>14</sup> In fact, this transfer would diminish the value of the imputed transfer mentioned in the previous paragraph.

<sup>15</sup> An example is that a large portion of central bank assets is gold or is denominated in foreign currency whereas their liabilities are denominated in national currency. For countries experiencing persistent high inflation, the assets generate low interest returns (but considerable holding gains), whereas the liabilities give rise to relatively high interest costs. Therefore, the FISIM generated by the central bank may be very low, even though the central bank is generating substantial holding gains.

conditions would indicate. These deviations distort the estimates of FISIM output and thus should be removed from the calculations. There are two approaches which could be followed: classification of these deviations as implicit taxes and subsidies, or classification as current transfers.

40. The central bank's main responsibility is to formulate and carry out part of economic policy. It therefore often acts differently than other financial corporations and generally has received the authority from government to enforce its views. It therefore seems appropriate that, in cases where the central bank uses its special powers to oblige market participants to pay transfers without direct *quid pro quo*, to record the proceeds as implicit taxes. Conversely, in cases when the central bank makes payments that are clearly for policy rather than commercial purposes, it may be argued that implicit subsidies are paid. Two examples are (i) special interest rates that the central bank charges to or receives from other financial intermediaries and (ii) development bank activities of the central bank.

41. An example of special interest rates is the rates on **reserve deposits** with the central bank. These deposits serve among other things to protect savers and the financial intermediaries from runs on deposits that might cause a banking crisis.<sup>16</sup> In keeping such deposits, central banks may be able to dictate below-market rates, which would cause unusually high output with the central bank if actual interest rates would be used for the reference rate approach. In our proposals, FISIM should always be calculated using market conform rates.<sup>17</sup> The difference between the market interest rate and the below-market interest rate could be considered as an implicit tax on producers (other taxes on production).<sup>18</sup>

42. Recording this difference as a tax increases government's primary income, while decreasing the central bank's FISIM and thus its value added. As a result, government and the central bank would show an imbalance between the current and the financial account. To avoid this imbalance, the national accounts should record a transfer from government to the central bank. At basic prices, the implicit taxes on production would not affect the output of the financial intermediaries, and no further effects would result.

43. An example of monetary policy measures that result in the central bank providing subsidies to financial intermediaries is a situation in which the external value of the national currency is under pressure. To **defend the currency**, the central bank may raise deposit rates above market rates. In some countries, the result has been considerable losses for the central

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<sup>16</sup> Central banks may require reserve deposits both for prudential and monetary policy purposes.

<sup>17</sup> If the reference rate used to calculate FISIM is the interbank rate, the value of FISIM generated by the central bank on commercial banks' deposits would be zero.

<sup>18</sup> This situation is comparable with central banks running a multiple exchange rate system. In such a case, the 1993 SNA recommends treating the difference between transactions at the factual exchange rate and at the market rate as an implicit subsidy or tax (see paragraph 14.80 and Annex A of Chapter XIX).

bank, matched with sizeable profits for the commercial banking sector. The solution would be to identify the difference between the high interest rate the central bank pays and the market interest rates. The resulting benefit for the commercial bank should, in principle, be recorded as subsidies. To avoid distortions in the financial accounts, compensating transfers should be recorded from government to the central bank.

44. If a central bank acts as a **development bank**, it may provide loans at below-market rates to priority industries. Using the reference rate method to compute FISIM may suggest unusually small, or even negative, central bank output. However, the estimation method should make use of market interest rates. The difference between the actual and market interest is an implicit subsidy. Because this subsidy is granted to recipients in their function of producers, but not in proportion to their production volume, it is an “other subsidy on production.”

45. The immediate effect of this rerouting would be that interest flows from the recipient industries would increase in conformity with flows based on market rates, and that this would be offset by a subsidy on production received from government. For the industry receiving the subsidy, there would not be an impact on value added. Their primary income would not change, because the increase in interest payment would be offset by the subsidy on production. Thus, for the recipient industries there would not be further effects in the accounts. For the central bank, rerouting this subsidy would imply higher interest receipts, and thus higher FISIM. These effects would carry over to the other accounts and to total GDP. For government, imputing this subsidy would affect primary income. To avoid imbalances between the current account and the financial account for government, the accounts should include a compensating current transfer from the central bank to government. This transfer would at the same time resolve the imbalance that would otherwise result for the accounts of the central bank.

46. Conceptually off-market interest rates used for policy reasons by the central bank are appropriately classified as implicit taxes and subsidies, but an alternative would be to treat them as current transfers. Under the alternative approach, no additional taxes or subsidies would be recorded in the government accounts, and the offsetting transfers between the central bank and government would be omitted.

47. Given that the deviations from market rates could be relatively small in practice, it may not be worthwhile to try to remove them from the calculation of FISIM output in all cases. However, when the deviations are considerable, countries should be encouraged to identify them and remove them from the FISIM calculations to avoid significant over- or under-estimates of central bank output.

48. Finally, we would like to stress that, while central banks may use the net surplus from implicit taxes to finance their nonmarket output, such surpluses cannot be construed as payments for services provided. Implicit taxes and subsidies find their source in policy considerations and have no direct relation to services.

## APPENDIX

### NUMERICAL EXAMPLES

The following, highly stylized, tables illustrate the proposals made in this paper. They compare the entries made in the accounts under the 1993 *SNA* with the entries that would be made if the proposals are accepted. The examples refer to the following cases:

1. Collective services produced by the Central Bank are identified and measured at cost;
2. Subsidies hidden in below-market interest rates on loans provided by the Central Bank are made explicit; and
3. Taxes hidden in below-market interest rates on obligatory deposits with the Central Bank are identified.

#### **Example 1. Central Bank performing collective services**

According to the original *SNA* recommendation, the central bank produces only market output. The proposal recognizes that the central bank also produces collective services, which should be measured at cost. These services are classified, by convention, as government final consumption expenditure. Assumptions: the central bank's market output is exclusively FISIM; 90% of intermediate consumption and compensation of employees is used in the production of collective services ( $.9 * [100 + 400] = 450$ ). FISIM allocated to government (650) increases government output. To simplify the presentation, the values for paid and received "pure" interest are not shown.

**Table 1A – Original SNA entries**

Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors	Transactions	Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors
					Output (market)	1900		1800		100
					Output (nonmarket)	650	650			
1900	650	100	1000	150	Interm. consumption					
<b>650</b>	<b>0</b>	<b>1700</b>	<b>-1000</b>	<b>-50</b>	<b>Value added/GDP</b>	<b>650</b>	<b>0</b>	<b>1700</b>	<b>-1000</b>	<b>-50</b>
400		400			Comp. of employees					
<b>250</b>	<b>0</b>	<b>1300</b>	<b>-1000</b>	<b>-50</b>	<b>Operating surplus</b>	<b>250</b>	<b>0</b>	<b>1300</b>	<b>-1000</b>	<b>-50</b>
					Comp. of employees	400				400
*	*	*	*	*	Interest (pure)	*	*	*	*	*
<b>650</b>	<b>0</b>	<b>1300</b>	<b>-1000</b>	<b>350</b>	<b>Primary inc./GNI</b>	<b>650</b>	<b>0</b>	<b>1300</b>	<b>-1000</b>	<b>350</b>
					Current transfers					
650	650				Final consumption					
<b>0</b>	<b>-650</b>	<b>1300</b>	<b>-1000</b>	<b>350</b>	<b>Net lending</b>	<b>0</b>	<b>-650</b>	<b>1300</b>	<b>-1000</b>	<b>350</b>

**Table 1B – Adjusted entries**

Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors	Transactions	Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors
					Output (market)	1900		1800		100
					Output (nonmarket)	1100	650	450		
1900	650	100	1000	150	Interm. consumption					
<b>1100</b>	<b>0</b>	<b>2150</b>	<b>-1000</b>	<b>-50</b>	<b>Value added/GDP</b>	<b>1100</b>	<b>0</b>	<b>2150</b>	<b>-1000</b>	<b>-50</b>
400		400			Comp. of employees					
<b>700</b>	<b>0</b>	<b>1750</b>	<b>-1000</b>	<b>-50</b>	<b>Operating surplus</b>	<b>700</b>	<b>0</b>	<b>1750</b>	<b>-1000</b>	<b>-50</b>
					Comp. of employees	400				400
*	*	*	*	*	Interest (pure)	*	*	*	*	*
<b>1100</b>	<b>0</b>	<b>1750</b>	<b>-1000</b>	<b>350</b>	<b>Primary inc./GNI</b>	<b>1100</b>	<b>0</b>	<b>1750</b>	<b>-1000</b>	<b>350</b>
		450			Current transfers		450			
	1100				Final consumption					
<b>0</b>	<b>-650</b>	<b>1300</b>	<b>-1000</b>	<b>350</b>	<b>Net lending</b>	<b>0</b>	<b>-650</b>	<b>1300</b>	<b>-1000</b>	<b>350</b>

**Example 2. Central Bank acting as a development bank**

The central bank receives a low interest rate on its loans to nonfinancial corporations and households due to an implicit subsidy. Assumptions: the loan is \$100,000; interest charged is 3%; the reference rate is 4.5%; the market rate for loans is 5%.

**Table 2A – SNA entries**

Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors	Transactions	Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors
					Output	-1500		-1500		
-1500				-1500	Interm. consumption					
<b>0</b>		<b>-1500</b>		<b>1500</b>	<b>Value added/GDP</b>	<b>0</b>		<b>-1500</b>		<b>1500</b>
					Net taxes on production					
					<b>Operating surplus</b>					
					Net taxes on production					
4500				4500	Interest (pure)	4500		4500		
<b>0</b>		<b>3000</b>		<b>-3000</b>	<b>Primary inc./GNI</b>	<b>0</b>		<b>3000</b>		<b>-3000</b>
					Current transfers					
<b>0</b>		<b>3000</b>		<b>-3000</b>	<b>Net lending</b>	<b>0</b>		<b>3000</b>		<b>-3000</b>
3000		3000			Loans (assets)					
					Loans (liabilities)	3000				3000

**Table 2B – Adjusted entries**

Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors	Transactions	Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors
					Output	500		500		
500				500	Interm. consumption					
<b>0</b>		<b>500</b>		<b>-500</b>	<b>Value added/GDP</b>	<b>0</b>		<b>500</b>		<b>-500</b>
-2000				-2000	Net taxes on production					
<b>2000</b>		<b>500</b>		<b>1500</b>	<b>Operating surplus</b>	<b>2000</b>		<b>500</b>		<b>1500</b>
					Net taxes on production	-2000	-2000			
4500				4500	Interest (pure)	4500		4500		
<b>0</b>	<b>-2000</b>	<b>5000</b>		<b>-3000</b>	<b>Primary inc./GNI</b>	<b>0</b>	<b>-2000</b>	<b>5000</b>		<b>-3000</b>
2000		2000			Current transfers	2000	2000			
<b>0</b>	<b>0</b>	<b>3000</b>		<b>-3000</b>	<b>Net lending</b>	<b>0</b>	<b>0</b>	<b>3000</b>		<b>-3000</b>
3000		3000			Loans (assets)					
					Loans (liabilities)	3000				3000

**Example 3. Low interest on obligatory reserve deposits**

The central bank pays interest to banks on their obligatory reserve deposits that is clearly lower than the market rate. The proposal is to see the difference as a tax. Assumptions: deposits \$50,000; interbank interest rate (= the reference rate) is 4.5%; the actual rate paid is 3%.

**Table 3A – SNA entries**

Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors	Transactions	Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors
					Output	750		750		
750		0	750		Interm. consumption					
<b>0</b>		<b>750</b>	<b>-750</b>		<b>Value added/GDP</b>	<b>0</b>		<b>750</b>	<b>-750</b>	
					Net taxes on production					
					<b>Operating surplus</b>					
					Net taxes on production					
2250		2250			Interest (pure)	2250			2250	
<b>0</b>		<b>-1500</b>	<b>1500</b>		<b>Primary inc./GNI</b>	<b>0</b>		<b>-1500</b>	<b>1500</b>	
					Current transfers					
<b>0</b>		<b>-1500</b>	<b>1500</b>		<b>Net lending</b>	<b>0</b>		<b>-1500</b>	<b>1500</b>	
1500			1500		Deposits (assets)					
					Deposits (liabilities)	1500		1500		

**Table 3B – Adjusted entries**

Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors	Transactions	Total economy	General government	Central Bank	Other Fin. Corp.	Other sectors
					Output	0		0		
0			0		Interm. consumption					
<b>0</b>		<b>0</b>	<b>0</b>		<b>Value added/GDP</b>	<b>0</b>		<b>0</b>	<b>0</b>	
750			750		Net taxes on production					
<b>-750</b>		<b>0</b>	<b>-750</b>		<b>Operating surplus</b>	<b>-750</b>		<b>0</b>	<b>-750</b>	
					Net taxes on production	750	750			
2250		2250			Interest (pure)	2250			2250	
<b>0</b>	<b>750</b>	<b>-2250</b>	<b>1500</b>		<b>Primary inc./GNI</b>	<b>0</b>	<b>750</b>	<b>-2250</b>	<b>1500</b>	
750	750				Current transfers	750		750		
<b>0</b>	<b>0</b>	<b>-1500</b>	<b>1500</b>		<b>Net lending</b>	<b>0</b>	<b>0</b>	<b>-1500</b>	<b>1500</b>	
1500			1500		Deposits (assets)					
					Deposits (liabilities)	1500		1500		

