

Measurement and Allocation of central bank service output*
— insight into current issues and problems for the 1993 SNA rev.1—

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<Summary>

The AEG (Advisory Expert Group) for the 1993 SNA rev.1 has made the following recommendation on measuring methods for central bank service outputs: *“In principle, the FISIM method should be employed for the calculation of central bank service outputs, but as an alternative method, output could be measured at cost as for non-market producers”*.

The AEG’s recommendation has been found to be inappropriate for adoption in the 1993 SNA rev.1. It lacks consistency with the content of the *“Central bank services”* defined in CPC 1.1 and the AEG’s Recommendations (SNA/M1.04/15) concerning economic activities of financial institutions. Also, there is a logical problem in the concept of employing two methods to measure a single central bank service output.

This paper gives alternative suggestions to the Recommendations. Central bank service output should be measured at cost as for non-market producers. The content of the services measured under this method should be given the same definition as *“Central bank services”*, in CPC1.1.

Also, the AEG Recommendations (SNA/M1.05/16) does not provide any suggestions on the appropriate way to allocate central bank service output; the issue needs to be discussed from the theoretical and practical aspects. This paper introduces three ideas and their problems that would hopefully aid future discussions.

1. Record all central bank service outputs as intermediate consumption by financial intermediaries, under the hypothesis that financial intermediaries consume all central bank service outputs.

* This paper provides an insight into the theoretical and conceptual points on the measurement and allocation of central bank service output. The views expressed herein are those of the author, and do not necessarily reflect those of the Bank of Japan or of the Research and Statistics Department . In Japan, the SNA is under the jurisdiction of the Cabinet Office and practical points on specific measuring methods should be discussed around the Office.

2. Record all central bank service outputs as intermediate consumption by the general government sector, under the assumption that the general government consumes all central bank service outputs.

3. As a principle, record central bank service output in relating sectors if the economic body that made the consumption is apparent.

The assumptions made in ideas 1. and 2. carry a mutual problem of assuming that only one sector (financial intermediary, general government sector) consumes all central bank services, and the question arises as to whether the assumptions accurately recognize central bank economic activities.

Likewise, idea 3. has two problems. One is the feasibility of allocating central bank service output into individual sectors. Another expected issue is the interpretation of central bank service that are difficult to allocate to individual sectors.

These problems indicate areas that need further discussions in order to qualify as options for allocation methods of central bank service outputs.

1. Measurement of central bank service output under the 1993 SNA and its drawbacks

The current SNA recommends the central bank service output to be measured in the same way as other financial intermediaries, i.e. ‘difference between interest receivable less interest payable’ (hereafter, FISIM method)¹.

However, this method has caused concern for some countries. The output values for their central banks (as a result of difference between interest receivable less interest payable) have varied by large amounts according to monetary policies or the governments’ economic policies. Some developing countries have obtained extremely large or small values, sometimes even negative values.

2. Discussions amongst countries

At present, revision of the 1993 SNA is being discussed under the leadership of the United Nations, and this group considers the measurement of central bank service output as one of the key topics. As a solution the AEG (Advisory Expert Group) recommends, in 1993 SNA rev.1², the adoption of the following method: *“In principle, the central bank service output should be measured by the FISIM method, but as an alternative method, output could be measured at cost as for non-market producers.”*

3. Appropriateness of measuring central bank service output by FISIM method

3.1 The consistency of the content of central bank services, as explained in AEG Recommendations (SNA/M1.05/16), and “Central bank services” in CPC1.1.

There is reason to believe that the 1993 SNA intends to treat central bank service output in the same way as service output of other financial intermediaries. It defines central bank service output as ‘difference between interest receivable less interest payable’, a sign that the SNA recognizes the central bank service output as service within the production boundary – just like service output of other financial intermediaries. Another sign is that the SNA plans to adopt the FISIM method – used to measure service output of other financial institutions – for measuring central bank service outputs.

Also, the AEG Recommendations (SNA/M1.05/16) for the 1993 SNA rev.1 seems to have followed the 1993 SNA by recognizing the content of central bank service as

¹ In reality, charge income is added to the equation, but here, it will be omitted from the text unless stated otherwise.

² See “Recommendations on the measurement of the production of central bank” (SNA/M1.05/16) <hereafter, AEG Recommendations (SNA/M1.05/16)>.

“financial intermediation service”. This can be speculated from the fact that it recommends the usage of FISIM method used in 1993 SNA to measure central bank service output.

However, according to the Central Production Classification version 1.1 (hereafter CPC 1.1³) that follows the definition of goods and services produced by the economic activities within the ‘boundary of production’ of the SNA (see Table 1), *“central bank services”* consists of four services.

Table 1. Content of central bank services according to CPC 1.1

Category	Content of services
Central banking services	<ul style="list-style-type: none"> • services which support the country’s systems for clearing and settling payments and other financial transactions. • services of maintaining deposit accounts for major financial institutions and for the central government. • services of implementing monetary policy • services of managing the government’s foreign exchange reserves. • services of influencing the value of currency
Central bank currency issue services	<ul style="list-style-type: none"> • currency issue services provided by the central bank, including designing, arranging production of distributing, and replacing currency
Central bank public debt advisory and administrative services	<ul style="list-style-type: none"> • fiscal agent services including advisory services for the government on matters relating to the public debt, issuing debt, maintaining bondholder records and making payments on behalf of the government for interest and debt redemption
Other central bank services	<ul style="list-style-type: none"> • other central bank services n.e.c. • supervisory activities with regard to banks and/or non banks if undertaken by the central bank

From table 1, it is clear that defining central bank services of 1993 SNA rev.1 as FISIM has a problem from the aspect of maintaining consistency with *“central bank services”* specified by the CPC 1.1.

Even if the AEG Recommendations (SNA/M1.05/16) were to recommend central

³ “CPC presents categories for all products that can be the object of domestic or international transactions or that can be entered into stocks. It includes products that are an output of economic activity, including transportable goods, non-transportable goods and services. The CPC in general follows the definition of products within the SNA.” (CPC 1.1 para. 18)

bank service output to be measured by FISIM method, under the assumption that the AEG Recommendations (SNA/M1.05/16) does not recognize central bank services as financial intermediary services, it does not give assurance that the “difference between interest receivable less interest payable” accurately measures “central bank services” of CPC1.1.

Central banks produce a kind of service by accepting deposits and lending them to others (or issue banknotes and raise funds). However, if this service is the only object used for measuring the whole central bank service output, it would mean only part of the services produced by central banks has been measured.

3.2 Consistency with AEG Recommendations concerning economic activities by financial institutions

The suggestion in the AEG Recommendations (SNA/M1.05/16): *“The services of financial intermediation provided by central banks should be measured in the same way as those of other financial intermediaries”* seems to be logically inconsistent when considering the whole SNA structure.

The AEG Recommendations concerning economic activities by financial institutions for the 1993SNA and 1993SNA rev.1⁴ has added a substantial change to the 1993SNA on the definition of economic activities of financial institutions (other than central banks). The AEG Recommendations (SNA/M1.04/15) suggests the change in the definition of economic activities of financial institutions from *“Intermediation activity”* to *“Risk Management”* and *“Liquidity transformation activity”*. On the other hand, the AEG Recommendations (SNA/M1.05/16) recommends that the definition of central bank service output value in 1993SNA rev.1 should follow the definition suggested in 1993SNA: *“The services of financial intermediation provided by central banks should be measured in the same way as those of other financial intermediaries”*.

The two recommendations have several theoretical problems in relation to the SNA structure.

First of all, the content of financial institutions’ economic activities and those of central banks differ according to the definitions set by the recommendations. According to AEG Recommendations (SNA/M1.04/15), the definition of financial institutions’ economic activities changes from *“Intermediation activity”* to *“Risk*

⁴ See “PROVISIONAL RECOMMENDATIONS OF THE MEASUREMENT OF THE PRODUCTION OF (NON-INSURANCE) FINANCIAL CORPORATIONS” (SNA/M1.04/15) <hereafter, AEG Recommendations>.

Management” and *“Liquidity transformation activity”*. As for the definition of economic activities of central banks, AEG Recommendations (SNA/M1.05/16) suggests the following: *“The services of financial intermediation provided by central banks”*. The discrepancy in the definitions indicates that central banks produce services through financial intermediation, while other financial institutions do not even recognize the concept of financial intermediation as part of their economic activities.

Another problem can be found in the AEG Recommendations (SNA/M1.05/16). The recommendation suggests that central bank service output should be measured *“in the same way as those of other financial intermediaries”*, but this does not seem feasible as the definition of financial institutions’ economic activities (as mentioned in AEG Recommendations (SNA/M1.04/15)) has been changed from *“Intermediation activity”* to *“Risk Management”* and *“Liquidity transformation activity”*. The change in definition implies that the 1993SNA rev.1 has economic actors called *“financial corporations”*; but not those called *“financial intermediaries (other than central banks)”* that are expected by the AEG Recommendations (SNA/M1.05/16).

4. Problems in employing both ‘FISIM’ and ‘Sum of Costs’ methods as measuring methods of central bank service outputs.

In principle, the AEG Recommendations (SNA/M1.05/16) for the 1993 SNA rev.1 recommends the usage of FISIM method for measuring central bank service output, but in cases where the central bank service output appears exceptionally large, small or as a negative figure, it suggests measurement to be made at cost as for non-market producers.

However, employing both the ‘FISIM’ and ‘Sum of Costs’ methods as measuring methods of central bank service output has problems as explained below.

4.1 Whether the contents of services measured by FISIM method and sum of costs method are the same

The content of the central bank service output measured by the FISIM method has a theoretical difference with that of the sum of costs method.

Out of convenience, here, the paper assumes that a central bank output appears as a negative figure as a result of *“difference between interest receivable less interest payable”*; in this case, market output of the FISIM output is ‘zero’⁵.

⁵ Under the SNA, *“difference between interest receivable less interest payable”* may appear as negative, but it does not mean that FISIM, as a market output, appears as negative. In this case,

The AEG Recommendations (SNA/M1.05/16) recommends the usage of the sum of costs method when central bank service output appears as a negative. According to the recommendation, the originally negative central bank output (as a result of the “*difference between interest receivable less interest payable*”) would change to a positive figure by using the sum of costs method.

The 1993SNA and the AEG Recommendations (SNA/M1.05/16) both recommend the FISIM method as the principle measuring method for central bank service output. This suggests that they may have expected the content of central bank service output to be: “*financial intermediation services*”.

However, the content of the positive figure compiled by the sum of costs method is not equal to ‘zero’ central bank service output obtained by FISIM method. If the market value for central bank service output (“*financial intermediation service*”) appears as ‘zero’ (negative) when using the FISIM method, and that figure changes to a positive figure using the sum of costs method, the content of the two figures are clearly not the same. In which case, the content of the positive figure needs to be explained.

4.2 Interpretation of the possibility of obtaining different central bank service outputs in a particular period, as a result of different measuring methods.

Usually, measurement of the value of central bank service output in a particular period produces one figure, and it would be peculiar to find several output values.

However, if the 1993SNA rev.1 adopts the AEG Recommendations (SNA/M1.05/16), it employs two measuring methods for central bank service output, and two different values may be obtained for the same central bank service output.

There would not be a problem if the two measuring methods intend to measure two central bank service outputs of different contents as the difference in the range of each measuring object would produce separate central bank service output values.

However, the AEG Recommendations (SNA/M1.05/16) does not refer to differences in the contents of central bank service outputs, implying that it expects the two methods to measure two service outputs of the same contents.

5. Opinion on measuring methods of central bank service outputs

The AEG Recommendations (SNA/M1.05/16) should not be adopted in 1993SNA rev.1. Its recommendation: “*in principle, the central bank service output should be measured by the FISIM method, but as an alternative method, output could be measured at cost*”

FISIM output should be treated as ‘zero’.

as for non-market producers” lacks consistency with the content of “*central bank services*” as defined in CPC1.1 and the *AEG Recommendations (SNA/M1.04/15)* concerning economic activities of financial institutions. Also, its recommendation to employ two measuring methods has theoretical problems.

This paper suggests an alternative recommendation on measuring methods of central bank service outputs and their contents. The above passage of AEG Recommendations (SNA/M1.05/16) should be rewritten as: “*the central bank service output should be measured at cost as for non-market producers*”. The content of the central bank service outputs should be defined as “*Central banking services*” of the CPC1.1.

6. Allocation method of central bank service outputs

The allocation method of central bank service outputs needs to be examined together with the measurement of central bank service outputs⁶.

The 1993SNA gives a vague explanation on this matter and the AEG Recommendations (SNA/M1.05/16) does not refer to the issue.

In hope to help future discussions in this area, some basic ideas have been provided below.

6.1 Record all central bank service outputs as intermediate consumption by financial intermediaries

Under this method, all central bank service outputs are recorded as intermediate consumption by financial intermediaries, under the hypothesis that all central bank service outputs are bought by financial intermediaries (as a result, domestic final consumption expenditure does not recognize central bank service output).

This method has two features. It focuses on the central banks’ function as the ‘bank of banks’. It has high feasibility if the central bank service output is measurable as the only process needed is to allocate all output as intermediate consumption by financial intermediaries.

The method also has a drawback of not accurately recognizing central banks’ economic activities, a price it pays for assuming that financial intermediaries consume central bank service output, including service output that occur from central bank functions of ‘bank of the government’ and ‘issuing bank’.

⁶ Under the SNA, the concept of final consumption expenditure by the industry sector (businesses, financial institutions) does not exist.

If the central bank is categorized as belonging to the financial sector, it seems highly unlikely that the idea: ‘central banks consume the service they produce’ would be accepted.

6.2 Record all central bank service outputs as intermediate consumption by the general government sector

This method proposes to allocate all of the central bank service outputs as intermediate consumption by the general government sector, under the assumption that the general government sector consumes all central bank service outputs (under this method, central bank service output is recognized as domestic final consumption expenditure if other conditions remain unchanged because central bank service outputs recorded as intermediate consumption by the general government sector is included in final consumption expenditure of the government). It focuses on central banks' function as 'bank of the government', and their feature as a public good.

Like 6.1, this method has high feasibility if the central bank service output is measurable as the only process needed is to allocate all output as intermediate consumption by the general government.

The method has a similar problem to 6.1. It does not accurately recognize central banks' economic activities, as a result of its assumption that the general government consumes all central bank service outputs including service occurring from the central bank function as 'bank of banks'.

6.3 Record central bank service output in relating sectors if the economic body that consumed the service is apparent

This method records central bank service output, in principle, in relating sectors if the economic body that consumed the service is apparent (in this case, the domestic final consumption expenditure records the following: central bank service output allocated in consumption expenditure of household sector, non-profit institutions serving households and the rest of the world sector; central bank service output allocated as intermediate consumption by the general government)⁷.

The table below is an example of classification of central bank services and their allocation to relating sectors that follows the categorization of 'Central banking services' in CPC1.1.

⁷ For services that central banks clearly charge the institutional sector (customer), it is assumed that the amount paid would be recorded as service consumption expenditure of the relating sector.

Table 2. Allocation method of Central bank services according to CPC1.1

	Contents of services	Institutional sectors subject to allocation
Central banking services	Services which support the country's systems for clearing and setting payments and other financial transactions.	Participants of the payment system (main allocation standard: according to financial institutions, central government, the amount of transaction, and the number of transaction)
	Services of maintaining deposit accounts for major financial institutions and for the central government.	Financial institutions, central government (allocated according to deposit amount)
	Services of implementing monetary policy	Not subject to allocation
	Services of managing the government's foreign exchange reserves	Central government
	Services of influencing the value of currency	Not subject to allocation
Central bank currency issue services	Currency issue services provided by the central bank, including designing, arranging production of distributing, and replacing currency	Financial institutions, general government, non-profit institutions serving households, the rest of the world
Central bank public debt advisory and administrative services	Fiscal agent services including advisory services for the government on matters relating to the public debt, issuing debt, maintaining bondholder records, and making payments on behalf of the government for interest and debt redemption.	Central government
Other central bank services	Other central bank services n.e.c.	Not subject to allocation
	Supervisory activities with regard to banks and/or non banks if undertaken by the central bank	Financial institutions

From table 2., it is clear that this method recognizes central banks' economic activities with more accuracy compared to the methods in 6.1 and 6.2 as it shows, in detail, the variety of services produced by central banks, and the consuming institutional sector for each service (something the other two methods does not offer).

The method, however, has uncertainty from the practical aspect about the feasibility of allocating central bank service outputs to individual institutional sectors (whether it is possible to utilize basic data that allows such allocation).

Also, as shown in table 2., at this stage, some central bank services (in dark color) are not appropriate for allocation to any sector; for these services, the following solutions could be considered: use an alternative method to allocate such services to relating institutional sectors; assume that certain institutional sectors (financial intermediaries

or general government) consume all such services.

It is not easy to decide the better of the two solutions at this phase as they carry impediments. There is uncertainty whether the former solution could be used in practice, and the hypothesis of the latter solution may not accurately recognize the economic activities of central banks.

Here, the paper will go no further than to state that when recording central bank service output, in principle, it should be allocated to relating institutional sectors if the economic body that consumes the service is apparent.

However, the method may arouse the following issues. One example is limited basic data from the practical aspect. Another is the handling of central bank service outputs that are not subject to allocate among institutional sectors.