



## Twenty-Ninth Meeting of the IMF Committee on Balance of Payments Statistics

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# **The Statistical Treatment of Negative Interest Rates**



## The Statistical Treatment of Negative Interest Rates<sup>1</sup>

*To boost private expenditure and support price stability, a number of central banks have introduced negative interest rates on deposits in recent years as part of their toolkit of unconventional monetary policy measures.<sup>2</sup> The sixth edition of the Balance of Payments and International Investment Position Manual (BPM6) and other macroeconomic statistics manuals provide no explicit guidance on the treatment of negative interest rates. Given the increasing size of deposits earning negative interest, compilers have raised questions about the statistical treatment of negative interest rates in macroeconomic statistics, including in balance of payments statistics. This paper makes proposals for the recording of negative interest and associated concepts, and raises some questions for the consideration of the Committee.*

### I. INTRODUCTION

1. Within the last four years, some advanced economies have introduced negative interest rates on deposits. Denmark's Nationalbank was the first to introduce negative deposit rates in recent years followed by the European Central Bank,<sup>3</sup> central banks of Sweden,<sup>4</sup> Switzerland, Hungary, Norway, and most recently Japan.<sup>5</sup> Table 1 provides an overview of central banks with negative interest rates on deposits.

2. At present, negative deposit rates are applied mostly to the excess reserves held by the commercial banks in the respective central banks of these countries and are not passed on to the deposits of households and corporations. However, there are instances where banks have passed on the negative rates to other customers in the recent times. For example, in Switzerland, bank groups—UBS Group AG and Credit Suisse AG—applied negative rates to some corporate and other institutional accounts. In Denmark, the deposits of some insurance corporations and pension funds receive negative interest.<sup>6</sup> According to an estimate, foreign banks have deposits of around 17 billion Swiss francs at the Swiss Central Bank at a rate

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<sup>1</sup> Prepared by Venkat Josyula, Balance of Payments Division, STA.

<sup>2</sup> See IMF Blog on negative interest rates at <https://blog-imfdirect.imf.org/2016/04/10/the-broader-view-the-positive-effects-of-negative-nominal-interest-rates/>

<sup>3</sup> For the 19 countries in the euro area, the deposit rate was cut to -0.1 percent in June 2014, followed by further cuts to -0.2 percent, and then -0.3 percent and -0.4 percent (current standing).

<sup>4</sup> In fact, Sweden implemented a negative deposit rate of -0.25 percent between July 2009 and September 2010. Additionally, Sweden's central bank is the first central bank to lend at a negative rate to commercial banks (the repo rate, the main lending rate to banks, was cut down to -0.5 percent in February 2015).

<sup>5</sup> The ECB and other central banks (Denmark, Switzerland, and Sweden) moved their marginal policy rates to below zero, while the central banks of Norway, Japan, and Hungary lowered only their deposit rate to negative for excess reserves and kept the main policy rate positive.

<sup>6</sup> Rogoff, K.S., 2016. *The Curse of Cash* (Princeton: Princeton University Press).

of -0.75 percent.<sup>7</sup> Similarly, HSBC is charging other banks deposits in euros, Swiss francs, Danish krone, and Swedish krona at its UK, German, and Hong Kong operations.<sup>8</sup>

**Table 1: Central Banks with Negative Deposit Interest Rates**  
(as on September 1, 2016)

Country/Region	Deposit facility rate (%)	Date of introduction
Denmark	-0.65	July 2012–April 2014 September 2014
Euro Area	-0.40	June 2014
Hungary	-0.5	March 2014
Japan	-0.10	February 2016
Norway	-0.50	September 2015
Sweden	-1.25	February 2015
Switzerland	-0.75	January 2015

Source: Jobst, Andreas, and Huidan Lan “*Negative Interest Rate Policy: Implications for Monetary Transmission and Bank Profitability in the Euro Area*,” IMF Working Paper No. 16/172 (2016); and websites of central banks

3. For the typical case of positive interest rates on deposits, institutional units earn investment income on them. This is applicable to all types of deposits, i.e., deposits of different institutional units with commercial banks, and commercial banks’ deposits (mandatory and excess reserves) held with central banks. In contrast, with negative interest rates on deposits, the investment income flow is reversed as institutional units pay banks to safe keep their funds.

4. The current methodological guidance provided in *BPM6* and other macroeconomic statistics manuals does not distinguish between positive and negative interest rates.<sup>9</sup> Most of these manuals were published or updated when the phenomenon of negative interest rates on deposits was not an issue. Therefore, the concepts and definitions associated with interest implicitly assumed that interest rates are positive. Given the increasing size of deposits earning negative interest, national compilers have raised questions on the statistical treatment of negative interest rates in macroeconomic statistics, including the balance of payments statistics.

<sup>7</sup> Information is available from the website of PIMCO at <http://europe.pimco.com/EN/Insights/Pages/Why-the-Bond-Market-Is-Yielding-Negative-and-What-Negative-Yields-Mean-for-You.aspx>.

<sup>8</sup> Information is taken from the Financial Times and available through internet at <http://www.ft.com/cms/s/0/6ad3f99a-fe16-11e4-8efb-00144feabdc0.html#axzz4KeiuFrf2>.

<sup>9</sup> Negative interest rates are recognized much earlier in the national accounts. See *OECD, 2003, Inflation Accounting: A Manual on National Accounting under Conditions of High Inflation*

5. From the perspective of the external sector statistics, this paper intends to:  
 (i) clarify the concepts/definitions associated with interest; and (ii) provide guidance to users and compilers on the recording of interest resulting from negative interest rates.

## II. INTEREST

6. According to *BPM6* (para. 11.48), “interest is a form of *investment income* that is *receivable* by the owners of certain kinds of financial assets, namely deposits, debt securities, loans, and other accounts receivable, for putting the financial assets at the disposal of another institutional unit.”

7. It is further mentioned in paragraph 11.49 that “the interest is recorded on an accrual basis; that is, interest is recorded as accruing continuously over time to the *creditor* on the amount outstanding. Under the accrual basis, *as interest accrues, the amount outstanding increases*; that is, accrued interest not yet paid is a part of the amount outstanding. What are commonly referred to as *interest payments, therefore, are financial account transactions that reduce the debtor’s existing liability*. The amount initially advanced or borrowed is also known as initial principal. Periodic coupon payments may cover part or whole of the interest accrual during that period as well as payments that reduce the initial principal.”

8. Pure interest (excluding FISIM) is discussed in *BPM6* paragraphs 11.74 and 11.75. In the balance of payments, the primary income account records the so-called “pure interest” by eliminating the FISIM component from “actual interest” and recording FISIM in the goods and services account. FISIM is estimated by subtracting the “pure interest” component from actual interest for loans, and by subtracting actual interest from “pure interest” for deposits. The “pure interest” is calculated by using the reference interest rate. FISIM is discussed in *BPM6* paragraphs 10.126–10.131 and in Box 10.5.

9. The above definition of interest and accompanying discussion on interest accrual in the next paragraph, seemingly assumes (see the words in bold italics) that the interest definition and related concepts are based on positive interest incomes (i.e., resulting from positive interest rates). Regarding FISIM, while it is not explicitly mentioned, the numerical example in *BPM6* Box 10.4 uses positive interest rates (on loans, deposits, and interbank rate).

10. In this context of application of these guidelines, data users and compilers have raised questions along the following lines:

- Can investment income (interest income) be negative? If yes, how should the negative investment income (interest income) be recorded in the balance of payments?
- Do negative interest rates affect the calculation of FISIM, namely can the reference rate for the calculation of “pure interest” be negative?

- Does the same treatment apply to all the financial instruments with negative interest rates (loans, debt securities and other accounts receivable/payable)?
- What about the consistency of the suggested treatment across macroeconomic statistics manuals?

### III. INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS)

11. The issue of negative interest rates and implications for presentation in the statement of comprehensive income has been under consideration of the IFRS Interpretations Committee since September 2012. The Interpretations Committee discussed this issue in January 2015 and issued the following agenda decision.<sup>10</sup>

The Interpretations Committee noted that interest resulting from a negative effective interest rate on a financial asset does not meet the definition of interest revenue in IAS 18 *Revenue*, because it reflects a gross outflow, instead of a gross inflow, of economic benefits. Consequently, the expense arising on a financial asset because of a negative effective interest rate should not be presented as interest revenue, but in an appropriate expense classification<sup>11</sup>.

The Interpretations Committee noted that in accordance with paragraphs 85 and 112(c) of IAS 1 *Presentation of Financial Statements*, the entity is required to present additional information about such an amount if that is relevant<sup>12</sup> to an understanding of the entity's financial performance or to an understanding of this item.

### IV. TREATMENT OF NEGATIVE INTEREST RATES

12. In the absence of explicit guidance in *BPM6* (and other macroeconomic statistics manuals), a parallel can be drawn from another type of primary income: **reinvested earnings**. As clarified in the *BPM6* paragraph 11.46, reinvested earnings can be **negative** when a direct investment enterprise has a loss on its operations or the dividends declared payable in a period are larger than the profits recorded in that period. If direct investment abroad generates negative earnings, the **entry should be shown as a negative income**

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<sup>10</sup> Agenda decision and related discussion papers are available through internet at the following link: <http://www.ifrs.org/Current-Projects/IASB-Projects/IAS-39-negative-yield/Pages/IAS-39-negative-yield.aspx>

<sup>11</sup> IFRS staff clarified that IAS 1 is a principle based standard that requires an entity to present items of income and expense in a way that is most relevant, without being too prescriptive about subtotals that an entity might present to meet that requirement.

<sup>12</sup> Staff clarified that the relevance could be affected by a number of factors including the magnitude of the amount to the specific entity, its business, and whether it presents the line items by nature or by function. It is judged based on the usefulness of the information to the primary users of the financial statements.

**receivable by the direct investor.** Similarly, the economy of the direct investment enterprise should record the losses as negative income payable.

13. Another instance of a negative return identified in *BPM6* relates to index-linked bonds (indexed to a broad based index, e.g., a consumer price index or nominal GDP). *BPM6* paragraph 11.61<sup>13</sup> admits two possible methods for recording accrued income on such instruments: one would fix the interest rate of accrual at the time of issue and record the difference between such interest and the actual value of the underlying index (including if it turns negative) as holding gains and losses. Conversely, the other one would record as accrued interest income the interest resulting from the movement of the underlying instrument (i.e., it would admit the possibility of negative interest<sup>14</sup> (see paragraph 11.62 and Box 11.3)).

14. It is noted, as per the *BPM6* paragraph 3.113, gross recording is prescribed for the current and capital accounts. This implies that investment income credits (e.g., reinvested earnings and interest credits) are aggregated separately from investment income debits. However, associating investment income (either positive or negative) with a related investment (e.g., direct investment, portfolio investment, other investment, and reserve assets) in the balance of payments presentation may better serve analytical and policy needs. From this standpoint, as admitted for reinvested earnings and interest on index-linked bonds, extending the possibility of recording negative interest on deposits could also be considered. In contrast, if negative investment earnings were recorded as an expense (or debit), then the link between income and the related financial instrument would be lost and could thus hamper the possibility of robust rate of return analysis. That is, the ratio between income receipts with the corresponding value of assets, and the ratio of income debits to the corresponding liabilities can't provide appropriate estimates of returns.

15. In addition, Eurostat's recent *Manual on Government Deficit and Debt*<sup>15</sup> recommends the following for negative interest on short term government securities "*the total amount of negative interest should be seen as negative interest payable by government and as negative*

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<sup>13</sup> Paragraph 11.61 mentions that "When the amount to be paid at maturity is index-linked, the calculation of interest accruals becomes uncertain because the redemption value is unknown; Two approaches can be followed to determine the interest accruals in each accounting period: (a) interest accruing in an accounting period due to the indexation of the amount to be paid at maturity may be calculated as the change in the value of this amount outstanding between the end and beginning of the accounting period due to the movement in the relevant index. (see Box 11.3 for an example); (b) interest accruals may be determined by fixing the rate of accrual at the time of issue. Accordingly, interest is the difference between the issue price and the market expectation, at inception, of all payments that the debtor will have to make, which is recorded as accruing over the life of the instrument. ... Any deviation of the underlying index from the originally expected path leads to holding gains or losses that will not normally cancel out over the life of the instrument."

<sup>14</sup> Paragraph 11.62 mentions that "... If there is a large fluctuation in the index, this approach may yield negative interest in some periods even though market interest rates at the time of issue and current period may be positive." Box 11.3 provides an example to highlight this and mentions that "negative values of interest can arise in the periods when the index declines."

<sup>15</sup> Available through internet at <http://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-16-001>

*interest receivable with the investors. Therefore, negative and positive interest flows under these short term government instruments should be netted.”*

16. This paper proposes that both positive and negative interest earnings on deposits (excluding FISIM) be recorded in the primary income account. Even in the scenario of negative interest rates on deposits, banks’ output (which primarily consists of FISIM) would still record positive amounts. Banks continue to play the role of financial intermediaries essentially by paying lower (either positive or negative) rates on deposits and lending at higher interest rates. Further, interest rates are a crucial part of the central banks’ monetary policy toolkit, and the recent shift of these rates into negative territory evidences an economic reality that have a domestic and a cross-border impact, both of which ought to be measured.

17. The above proposed treatment is in contrast to the IFRS Interpretations Committee decision outlined in the Section III. It is argued that while the international statistical standards intend to provide a consistent macroeconomic picture covering all entities in an economy and their relationship with the rest of the world, the focus of IFRS is on the situation of an individual enterprise or a group of enterprises. It is also noted that the statistical standards already differ from the IFRS in some important instances to properly reflect the economic reality. For example, holding gains/losses and depreciation (which is referred to as consumption of fixed capital in statistical standards and differs conceptually from depreciation) are treated differently in these standards.

18. Given the growing size of negative-yielding deposits, showing supplementary information on negative interest earnings may be of analytical interest to users. In this regard, countries may consider the incorporation of an “of which” category showing this information separately in their national publications.

19. Regarding the reference rate to be used in the calculation of the “pure interest” component, the *BPM6* and *2008 SNA* suggest that the rate prevailing for interbank borrowing and lending may be a suitable choice. **There is no restriction in the *BPM6/2008 SNA* to use reference rates with a negative value.** For example, in Denmark, the interbank rate<sup>16</sup> is in negative territory for around two years and the latest rate is -0.19 percent. If the country uses the interbank rate as their reference rate, pure interest calculation will be based on this interest rate. The example in Appendix 1 presents a practical scenario of calculation of actual/pure interest and FISIM using a negative reference rate<sup>17</sup>.

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<sup>16</sup> In Denmark, the interbank rate is the rate of interest charged on short-term loans made between banks (see <http://www.tradingeconomics.com/denmark/interbank-rate> for additional details).

<sup>17</sup> While FISIM should be positive irrespective of whether interest rates are either positive or negative (since output cannot be negative), negative interest rates may cast doubts on the right reference rates to be used in the calculation of FISIM. Therefore, compilers shall carefully review the reference rates to be used with a view to avoiding negative FISIM.



20. This treatment can be extended for recording negative interest earnings for debt securities and other accounts payable/receivable resulting from negative interest rates. As there is no FISIM associated with interest on these financial instruments, the interest receivable/payable (positive or negative) is to be recorded in the primary income account.

21. It is proposed that a note be posted on the *BPM6* website to clarify the recording of interest resulting from negative interest rates and related concepts/definitions on the above lines.

22. While the above proposed treatment does not seem to depart from that recommended in other macroeconomic statistics manuals (namely, *2008 SNA* and *GFSM 2014*), further contacts with the relevant bodies to ensure a consistent outcome seems to be warranted. From the perspective of consistency with other macroeconomic statistics manuals, guidance from the *GFSM 2014* is of considerable significance. See Appendix 2 for further details.

**Questions for the Committee:**

1. *Do Committee members agree with the proposed recording of negative interest on deposits?*
2. *Do Committee members agree that a note be posted on the BPM6 website to clarify the treatment of negative interest rates as outlined above?*
3. *Do Committee members agree that to maintain consistency among macroeconomic statistics manuals, further contacts with the relevant bodies should be initiated?*
4. *Do Committee members consider that, wherever significant for the economy, publishing separate information on negative interest rates in national publications may be useful for analysis?*

**Numerical Example of Pure Interest and FISIM Calculation  
(with Negative Interest Rates)**

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**DEPOSITS**

**Average value of deposits during the year = 1200**

Interbank interest rate (reference rate) = -0.2% per annum

Interest rate on deposits = -0.5% per annum

Actual interest (bank interest) receivable by households on deposits =  $-0.5\% \times 1200 = -6$

Pure interest (SNA interest) receivable by households on deposits =  $-0.2\% \times 1200 = -2.4$

FISIM payable by households to financial corporations = Pure interest – actual interest =  $-2.4 - (-6) = 3.6$

**LOANS**

**Average value of loans during the year = 1000**

Interbank interest rate (reference rate) = -0.2% per annum

Interest rate on loans = 0.1% per annum

Actual interest (bank interest) receivable by fin. corporation on loans =  $0.1\% \times 1000 = 1$

Pure interest (SNA interest) receivable by fin. corporation on loans =  $-0.2\% \times 1000 = -2$

FISIM on loans = actual interest – pure interest =  $1 - (-2) = 3$

**In this case, even though the actual interest rate on loans is positive, pure interest turned out to be negative as the reference rate is in the negative territory.**

Total FISIM receivable by financial corporations =  $3.6 + 3 = 6.6$

### Consistency Across Macroeconomic Statistics Manuals

The *GFSM 2014* paragraph 5.1 defines revenue as an **increase in net worth**<sup>18</sup> resulting from a transaction. Revenue transactions, as defined in GFS have counterpart entries either in an increase in assets or in a decrease in liabilities – thereby increasing net worth. Property income derived from the ownership of assets (includes interest income) is one of the types of government revenues. *GFSM 2014* paragraph 6.1 defines expense as a **decrease in net worth**<sup>19</sup> resulting from a transaction. Expense transactions, as defined in GFS have counterpart entries either in a decrease in assets or in an increase in liabilities—thereby decreasing net worth. Interest expense is an important component of expenses of government.

It is noted that the *BPM6* definition of interest and following explanation on interest income presented in section II are consistent with the *2008 SNA* and *GFSM 2014*. However, in the presentation of GFS, unlike the national accounts and balance of payments statistics, interest is not adjusted for the service charge related to FISIM (see *GFSM 2014* paragraph 6.62). The *GFSM 2014* paragraph 6.81 also clarifies that the interest expense payable to financial intermediaries recorded in GFS differs from the amount recorded in the *2008 SNA*.

Even though, gross and net presentation principles prescribed in the *GFSM 2014* are in general consistent with the *2008 SNA and BPM6*, the *GFSM 2014* paragraph 3.144 recommends gross presentation of interest revenue and expense rather than net interest revenue and expense.

Given these above differences in the *GFSM 2014*, it is proposed that the treatment of negative interest rates suggested in section III shall be discussed with other relevant committees. The basic questions that need to be addressed in this context are:

As negative earnings on deposits/debt securities assets reduce the net worth, can we record such earning as a revenue and negative interest income?

Similarly, the positive earnings on loan liabilities/liabilities of debt securities increase the net worth. Can we record such earning as an expense and negative interest expense?

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<sup>18</sup> & <sup>19</sup> presented in bold letters to emphasize the importance of these words.