

9. FISIM: Calculation, allocation and impact on GNI

Introduction

The FISIM calculation is defined in Council Regulation (EEC) no. 448/98 of 16 February 1998 and implemented by Council Regulation (EC) No 1889/2002 of 23 October 2002. The regulation of 16 February 1998 aims at allocating FISIM to consumers, so that it is possible to distinguish between final use of FISIM and FISIM as intermediate consumption. All EU member states are obliged to implement an allocation of FISIM in the National Accounts. However, this allocation should not have an impact on GNI own resources until the Council so decides.

Statistical sources

The following sources are used for the FISIM calculations:

Money and banking statistics:

- accrued interest flows of the balance-sheet statistics
- average balances as of the end-of-quarter of the balance-sheet statistics
- zero-interest loans, compiled on a quarterly basis.

Money and capital market statistics: Stocks of loans and deposits with a breakdown by resident branch.

Financial accounts of the Rest of the World, which cover resident sectors loans and deposits from/to RoW.

Total modules are used when allocating FISIM to industries. Total modules show final balanced national accounts values by sector and industry for transactions in products and distributive transactions etc.

A distribution key for wages and intermediate consumption is used for allocation of FISIM at the most detailed level (843 industries) for general government sectors: S.1311 (general government), S.1313 (local government), and S. 1314 (social security). The distribution key is produced as part of the compilation of general government.

The FISIM calculation

FISIM is exclusively produced by financial corporations, which engage in financial intermediation of loans and deposits for which the rate of interest is controlled by the financial corporations (and thus the interest margin and the earnings that they want to achieve in this way). A majority of the FISIM production takes place in banks, which continuously account for a dominant share of Danish loans and deposits. In addition to the more conventional dissemination of loans and deposits by banks and saving banks, FISIM is produced by financial corporations intermediating consumer credit and financial leasing.

In accordance with the Council Regulation, the FISIM calculations are based on the reference rate method. I.e. the consumption of FISIM by each individual unit (sector or industry) is estimated as the difference between interest receivable on deposits/paid interest on loans and interest compiled

using an interest reference rate. The reference rate is regarded as a 'pure' economic rate of interest i.e. exclusive any kind of risk premium or direct payment for the financial service delivered. The consumption of FISIM is estimated as the sum of FISIM on deposits and FISIM on loans:

$$\text{FISIM} = \text{FISIM on deposits: (deposits*interest reference rate) - paid interest on deposits} \\ + \text{FISIM on loans: (interest receivable on loans) - (loans*interest reference rate)}$$

Only the major financial institutions (the largest 95 pct. of all financial institutions) fully report to the Money and banking statistics. In order to calculate FISIM production for all financial institutions a grossing procedure is carried out. Money and banking statistics already include a breakdown of interest flows and balances into sectors.

Import of FISIM is based on resident FISIM producers' outstanding amounts with residents. Financial accounts for the Rest of the World are used as the basis for calculations of FISIM import. They cover resident sectors deposits and loans abroad. There is some uncertainty whether financial institutions abroad are solely FISIM producers, but it is assumed to be the case (a majority of outstanding amounts will probably relate to larger financial institutions).

The Rest of the World's outstanding amounts with resident S.14 are assumed to solely take place in households in their capacity of consumers and unincorporated enterprises and not as dwelling loans. An allocation is calculated using the shares calculated for resident financial institutions' outstanding amount with resident households in foreign currency.

Information about stocks of loans and deposit for non residents (*FISIM export*) is included in the Money and banking statistics, which is the reason, why any further delimitation is not necessary.

Reference rate calculation

The interest reference rate is calculated in accordance with Council Regulation (EC) No 448/98. The interest reference rate is based on inter bank rates, which are estimated as the ratio between interest receivable on loans and stocks of loans between the financial corporations producing FISIM. The external reference rate is estimated in a similar way on the basis of inter bank outstanding amounts between resident and non-resident financial intermediaries. The following specifications are made:

Internal interest reference rate: A pure delimitation of inter bank outstanding amounts is complicated, since it is difficult to separate FISIM producers from non-FISIM producers. The internal interest reference rate is therefore calculated on the basis of financial institutions' outstanding amounts with other financial institutions and outstanding amounts with 65.21.00 (financial leasing) and 65.22.60 (financing companies). Financial institutions' outstanding amounts with possible FISIM producers in 65.22.40 (other credit institutes) and 65.22.95 (other lending activities) are not included in the calculations, since it is assumed that units in 65.22.40 (other credit institutes) and 65.22.95 (other lending activities) are primarily not FISIM producers. Financial institutions are clearly the most important FISIM producing institutions, which is the reason behind the assumption that inter bank outstanding amounts are satisfactorily covered in the calculation of the internal interest rate.

The *external interest reference rate* is calculated on the basis of resident financial institutions' outstanding amounts (*both loans and deposits*) with non resident financial institutions and with non

resident other credit institutes. This corresponds to a situation, where the external interest reference rate is calculated on the basis of outstanding amounts between resident financial institutions and non resident other monetary financial institutions. As in the case of the calculation of the internal interest rate, financial institutions' outstanding amounts with foreign countries seems satisfactory covered.

In order to further delimit the interest reference rate a split between financial institutions' outstanding amounts with other monetary institutions (S.122) and other financial intermediaries (S.123) is conducted. The split takes place using the industry breakdown of financial institutions' loans and deposits from money and capital market statistics. The industry breakdown covers the major financial institutions' outstanding amounts with residents, both in domestic and foreign currency. Balances can therefore not be directly used. Outstanding amounts are distributed by industry by adjustment of the shares of deposits and loans that industries have in S.122 and S.123.

The results of the calculations of interest reference rates and the inter bank rate are shown in table 9.1.

Table 9.1: Interest reference rate in Denmark

Pct.	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ext. ref. rate	4,31	4,80	3,88	4,99	4,09	2,95	2,06	1,93	2,16
Int.ref. rate	3,99	4,32	3,83	5,07	4,27	3,47	2,84	2,52	2,18
T/N rate (interbank rate)	3,52	4,12	3,10	4,37	4,70	3,48	2,44	2,16	2,15

Breakdown of output by user sectors

The breakdown to user sectors is made directly as part of the calculation of FISIM output. Information from the Money and banking statistics together with information from the financial accounts from the Rest of the World is used. The Money and banking statistics carries information which is used for the breakdown of stocks into user-sectors (S.11 Non-financial corporations, S.12 Financial corporations, S.13 General Government, S.14 Households and S.15 NPISH)

For households and NPISH, a further division into households as final consumers, households as owners of dwellings and households in their function of unincorporated enterprises is made. FISIM allocated to the latter two functions of households are treated as intermediate consumption, whereas FISIM allocated to households as consumers is treated as final consumption expenditure.

Money and banking statistics provide the necessary breakdown of stocks of loans/deposits and interest flows to calculate final and intermediate consumption of households as well as of non-financial corporations, financial corporations and general government.

Breakdown of output by industry

The allocation of FISIM to user industries is calculated by combining two methods which are described in Council Regulation (EC) No 1889/2002. It means that calculations are partly based on the stocks of loans and deposits for each industry and on the output of each industry. The breakdown of FISIM on loans and deposits initially takes place on the basis of the 27 industries, which is the industry split used in the Money and capital market statistics. However, there is no

direct connection between sectors and industries, which is the reason why a cross reference table is used. This is done by creating a cross table between sectors and 27 industries for gross value added.

The table for gross value added is created on the basis of the total modules from the national accounts. The total modules contain a link between sector, 130 industry and ESA95 codes.

- Initially, a cross table (sector/130 industries) for output values (P.11, P.12, and P.13) and intermediate consumption (P.2) is created.
- The cross tables are used for the breakdown of FISIM into 27 industries as far as FISIM consumed by S.11, S.13, S.14, and S.15 is concerned.
- In the breakdown to industries, it is assumed that the proportions in the cross table sector/27 industries for financial institutions' loans and deposits also apply to loans and deposits for other FISIM producers, both resident and non resident.

The breakdown of FISIM into 130 industries is generally carried out on the basis of output values. This means that the breakdown into 27 industries for S.11, S.13, S.14 and S.15 is divided further into 130 industries using the linkage between output values for 27 and 130 industries from the total module.

A different method is used for the financial industries. FISIM calculations already include a breakdown into 65.10.00 (financial institutions), 65.20.00 (mortgage credit institutions) and 67.00.00 (activities auxiliary to finance), as this split is necessary when calculating an accurate interest reference rate.

As regards branches 66.01.02 (life insurance and pension funding) and 66.03.00 (non-life insurance) a split of FISIM allocated to S.125 is made on the basis of a specification of the insurance sector into an industry breakdown as described by loans and deposits of major financial institutions in money and capital market statistics. This breakdown into 66.01.02 (life insurance and pension funding) and 66.03.00 (non-life insurance) is also applied to the import of FISIM consumed by S.125.

It should be added, that the described method used for the allocation by industry is not used for the allocation to industry 70.20.09 (dwellings). The reason is, that the FISIM calculations of loans/deposits to/from households are already made as part of the allocation by sector, and that households' function as owners of dwellings are part of this calculation.

The result of the Danish calculation of FISIM allocated to sectors is shown in table 9.2:

Table 9.2: FISIM-output and allocation by sector, mill. dkr.		2003
FISIM-output	1	33.028
FISIM produced in Denmark allocated to domestic units :	2	30.417
- Non-financial corporations	3	8.962
- Financial corporations excl. insurance and pension	4	2.048
- Insurance corporations and pension funds	5	14
- General government	6	342
- Households		
- as consumers	7	13.891
- as owners of dwellings	8	2.455
- as un-incorporated enterprises and NPISH	9	2706
Export of FISIM	10	2.611
Import of FISIM allocated to domestic units:	11	4.214
- Non-financial corporations	12	3.692
- Financial corporations excl. insurance and pension	13	474
- Insurance corporations and pension funds	14	4
- General government	15	4
- Households		
- as consumers	16	35
- as owners of dwellings	17	0
- as un-incorporated enterprises and NPISH	18	5
Total use of FISIM	19=1+11	37.243
- Non-financial corporations	20=3+12	12.654
- Financial corporations excl. insurance and pension	21=4+13	2.522
- Insurance corporations and pension funds	22=5+14	18
- General government	23=6+15	346
- Households		
- as consumers	24=7+16	13926
- as owners of dwellings	25=8+17	2455
- as un-incorporated enterprises and NPISH	26=9+18	2711
Export of FISIM	27=10	2.611
Total supply of FISIM	28=29+30	37.242
Domestic production	29=1	33.028
Import	30=11	4.214
FISIM effect on GDP	31=23+24+27-30	12.669
FISIM effect on GNI	32=23+24	14.272

Households in their capacity of consumers (7) account for the greatest contribution to the output of FISIM by financial corporations. The reason why households in their capacity of producers of services related to owner occupied dwellings do not consume a larger share of FISIM than those stated here, is primarily due to the circumstance that mortgage banks are not treated as producers of FISIM.

The allocation of FISIM affects GDP by 12,7 bill. DKK and GNI by 14,3 bill. DKK. The two effects are different because the effect of import and export of FISIM are offset by the effect on interest income and interest expenditure to/from the Rest of the World when calculating GNI. Hence, the effect on GNI is only from domestic final uses.