Working Party on National Accounts

Results on the FISIM tests on maturity and default risk

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Results on the FISIM tests on maturity and default risk
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Results on the FISIM tests on maturity and default risk

Executive summary

In the context of the revisions of SNA and ESA, it was agreed that FISIM methodology should be further investigated, on issues related to: currencies, maturities, risks, and price and volume measures in FISIM.

This led to establishing the European Task Force on FISIM 2010-11 that made the following recommendations agreed by the CMFB at its meeting on 30 June 2011:

- FISIM should be calculated by at least two groups of currencies, and FISIM in real terms should be calculated using deflated stocks on loans and deposits, following the principles described in ESA2010, chapter 14;
- FISIM by maturity based on an alternative Reference Rate should be tested by the EU Member States (MSs), and
- FISIM calculated excluding default risk should also be tested by MSs.

The recommendations on FISIM tests on maturity and default risk required Eurostat to send questionnaires to MSs in order to collect their statistical data and information on their sources and methods.

On the test on maturity, 22 MSs and ECB (on Euro Area aggregates) returned completed questionnaires. The results of FISIM test on maturity for a slight majority of the countries analysed showed that FISIM calculated using Internal and External Weighted Average Reference Rates weighted by the level of short- and long-term stocks of loans and deposits can be considered, in most cases, as a slight improvement compared to the method currently used according to the EC Regulation 448/98. This is mainly determined by solving the issue of continued occurrence of negative FISIM on deposits significantly impacting the FISIM contribution to GDP around and in the aftermath of the recent financial crisis in some cases. In addition, the proposed new method tends to reduce the volatility of FISIM estimates impacting GDP in 10 countries, while increasing the volatility in 7 countries, in particular in the euro area.

The test also showed that in some countries their Internal Reference Rates defined by the Regulation 448/98 currently used in FISIM calculations were not necessarily short-term, as it would be expected. Hence, the proposed use of the Weighted Average Reference Rate should also be considered an improvement of cross-country comparability in calculating FISIM.

On the test on risk, 20 MSs and ECB (on Euro Area aggregates) returned completed questionnaires. The results on the FISIM test on default risk eliminated from the calculations of FISIM margin proved to be inconclusive at this stage, due to limitations of reliable source data on write-offs and provisions for bad and doubtful loans.
1. The FISIM test on maturity

1.1. Background

The current approach in measuring FISIM uses interbank transactions to calculate Internal and External Reference Rates, which are short-term and comparable 3-month maturity published rates, like EURIBOR, LIBOR, STIBOR, PRIBOR.

Several members of the European Task Force on FISIM 2010-2011 indicated that in the wake of the financial crisis, the short-term nature of the reference rates resulted in rather surprising outcomes, including occurrence of negative FISIM on deposits and high volatility in FISIM allocated into GDP components.

FISIM measures the financial services provided on short-term as well as long-term loans and deposits. Hence, it seems appropriate to expand the coverage of the (internal and external) reference rates to also reflect long-term operations.

The large majority of the Task Force members confirmed that matching benefits and term premium (concepts that reflect maturity transformation) should not be eliminated from the measure of FISIM. The Task Force stated that channelling funds from borrowers to lenders is a fundamental function of banks, and maturity transformation is inherent to Financial Intermediaries (FIs).

However, for completeness of the analyses on FISIM test on maturity, in accordance with the Task Force report, Eurostat provides some analysis using the two Reference Rates for some countries (where sectorial data were broadly available), using government security rate for one other country. These analyses were performed in order to assess the possible impact on GDP and the variability of the FISIM estimates, and are presented in the sections 1.4.

In addition, most of the MSs indicated that they were not in position to implement such a method, due to the limited data available on short- and long-term interest and stocks data broken-down by user sectors.

Following the recommendation of the European Task Force on FISIM, Eurostat assessed the results of the test on maturity taking into account the following criteria:

a) Continued occurrence of negative FISIM on deposits is solved;
b) Better reflects exposure to financial shocks/crisis;
c) Reduction in the volatility would be welcomed.

and comparing the two following methods:

1. The method currently used, defined by the Regulation 448/98, where:
   - Internal Reference Rate (448/98) is calculated based on interest and stocks on loans and deposits between resident FIs, and applied to FISIM calculations between residents.
   - External Reference Rate (448/98) is calculated based on interest and stocks on loans and deposits between resident FIs and non-resident FIs, and applied to cross-border FISIM calculations.

2. An alternative method based on a single Weighted Average Reference Rate calculated using EURIBOR 3-month for short-term operations and ISDAFIX 5-year for long-term
operations\(^1\), weighted by stocks of loans and deposits. This method is best explained by the following formula:

Weighted Avg. Ref. Rate = (EURIBOR \(\times\) short-term weight) + (ISDAFIX \(\times\) long-term weight)

Where:

- \(\text{short} - \text{term weight} = \frac{\text{short-term} (<1 \text{ year}) \text{ stocks of loans and deposits}}{\text{total stocks of loans and deposits}}\)

- \(\text{long} - \text{term weight} = \frac{\text{long-term} (>1 \text{ year}) \text{ stocks of loans and deposits}}{\text{total stocks of loans and deposits}}\)

To illustrate this calculation, if short-term stocks of loans and deposit are 400 and long-term stocks are 600, then: Weighted Average Reference Rate = (EURIBOR \(\times\) 0.4) + (ISDAFIX \(\times\) 0.6).

Similarity to the methods based on the Regulation 448/98, two Internal and External Weighted Average Reference Rates should be used:

- Internal Weighted Average Reference Rate is calculated based on EURIBOR and ISDAFIX\(^2\) weighted by stocks on loans and deposits between resident FIs and resident user sectors, and applied to FISIM calculations between residents.
- External Weighted Average Reference Rate is calculated based on short-term rate and long-term rate\(^3\) weighted by stocks on loans and deposits between resident FIs and non-resident user sectors, and applied to cross-border FISIM calculations. The short- and long-term rates should be calculated using currency composition in cross-border operations (see recommendation 4 of the European Task Force on FISIM).

This method using the single Internal and External Weighted Average Reference Rates presents the advantages of not leading to the elimination of term premium, and of being less data intensive requiring only totals (unsectorised) short- and long-term stocks of loans and deposits.

The choice of ISDAFIX rate as the Reference Rate for long-term operations was determined by the following facts:

- It is the leading benchmark rate in interbank operations;
- It is analogous to EURIBOR or LIBOR for long-term operations;
- It is the rate that the banks take into account in developing the rates for charging their customers on loans and deposits;
- It is similar in terms of liquidity to loans and deposits operations (government bonds have liquidity constrains);
- It reflects interbank risk (government bonds reflect sovereign risk);
- It is available in a number of maturities and in a number of currencies.

The next section of this report describes the results the FISIM test on maturity by country based on the single Internal and External Weighted Average Reference Rates.

\(^1\) Appropriate rates should be used for other currencies
\(^2\) Ibid.
\(^3\) These rates are based on currency composition of loans and deposits granted and received from the rest of the world.
Eurostat also collected additional information on government security rates (see section 1.4.1).

The European Task Force on FISIM did not consider testing other methods, because during the work of the FISIM Task Force in 1998-2002, the MSs tested a number of difference reference rates for FISIM, as a follow-up of the EC Regulation 448/98 of 16 February 1998. Among others a method using Reference Rate calculated as a mid-point between loans and deposits was tested, but it was not retained. Australia and Canada that participated in the recent European Task Force on FISIM, had been calculating FISIM using the mid-point reference rate, however Canadian delegate presented a new method to calculate FISIM where mid-point rate was replaced with a calculated reference rate. It should also be stressed that the mid-point as a Reference Rate is not in line with 2008 SNA, paragraph 6.166, which states that the Reference Rate cannot be calculated as a simple average of the rates on loans and deposits, because there is no necessary equality between the level of loans and deposits.

1.2. Results of the FISIM test on maturity

According to the report of the European Task Force on FISIM, the test on maturity would be considered an improvement of the currently used method for FISIM legislated by the EC Regulation 448/98, if the following criteria are met:

a) Continued occurrence of negative FISIM on deposits is solved;
b) Better reflects exposure to financial shocks/crisis;
c) Reduction in the volatility would be welcomed.

In the section 1.2.1, the analyses of FISIM test are provided by MS, taking into the account the criteria mentioned above. The analysis concentrated mainly in comparing the calculation of FISIM using the Internal and External Weighted Average Reference Rates (explained in section 1.1) and the Internal and External Reference Rates according to the EC Regulation 448/98 (sometimes referred in this paper as the Reference Rates 448/98).

In the section 1.2.2, the analyses concentrated on comparing the Internal Reference Rate 448/98 with other relevant market rates.

Analysis on impact on GDP and volatility analysis are provided in section 1.3.

Further analysis using Government Security Rate and Two Reference Rates approaches is presented in section 1.4.

Finally, the analyses on FISIM test on maturity are concluded in section 1.5.

1.2.1. The Weighted Average Reference Rates tested

In this section the analysis by user sectors is best illustrated by the chart below, which shows:

a) the implied rates on loans (in blue) and deposits (in purple);
b) the reference rate according to the Regulation 448/98 (in red), the new developed Weighted Average Reference Rate (in green); and

c) the government security with 5-year maturity was also presented
Other charts were also presented showing the FISIM estimates and its impact on GDP or other statistics, measures using:

- the reference rates according to the Regulation 448/98 (in red),
- the new developed single Weighted Average Reference Rate (in green)
Belgium: The Internal Weighted Average Reference Rate fitted relatively implied rates on loans and deposits for some sectors, like Other Financial Institutions as users and NPISH.

In case of households as consumers the Internal Weighted Average Reference Rate fitted relatively implied rates on loans and deposits until the period of the financial crises, after which some continued (although modest) occurrences of negative FISIM were observed. This issue, however, could be solved by further improving the calculations for the weighting scheme, where at present the short-term weight dominates.

The dynamics of government security rate showed in the charts fits very well between the implied rates on loans and deposits. Thus, further improvement could be applied by blending the government security rate into the weighted rate. (see section 1.4)
When the financial crises hit the markets the interbank rates in the euro area increased significantly, while the loan rates in Belgium remained broadly unchanged resulting relatively modest (short-lasting) negative FISIM on loans of the non-financial corporations sector and on dwellings in 2008 Q2-Q3.
Some exceptions, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits were observed in FISIM allocated to:

- General government (S.13) – where the Weighted Rate was higher than the rate on loans around 2003, resulting in negative FISIM. This however, is an acceptable side effect as S.13 may obtain preferential rates, and its contribution to FISIM output is modest;
- Exports - where External Weighted Reference Rate would need to be recalculated using improved weighting scheme by currencies.

In summary, the test results of FISIM showed that the Weighted Average Reference Rates may be seen as a modest improvement compared to the method currently used, but further work is required to improve the weighting scheme. FISIM calculated with the Weighted Rates in some cases generated sporadic occurrences of negative FISIM. It must, however, be stressed that FISIM calculated using the Weighted Rates and allocated to GDP was more stable compared to the method using the Reference Rates 448/98.
Czech Republic:
The Internal and External Weighted Average Reference Rates fitted rather well between implied rates on loans and deposits.
In case of FISIM exports, although, the External Weighted Average Reference Rate fitted well between the implied rates on loans and deposits in most of periods, only of-off modest negative FISIM on deposits was observed in 2008q4. This is the known side effect of the financial crises.

An exception, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits was observed in FISIM allocated to Other Financial Institutions as users, where the implied rate on loans was very volatile, and in early period the loan rate was lower than the deposits rate. Thus, it was difficult for any reference rate in well-fitting between the two implied rates, which may be caused by high participation of loans and deposits with fixed rates. However, the contribution of these consumers to FISIM output is modest.
In summary, the test results of FISIM test showed that the method using the Internal and External Weighted Average Reference Rates provided similar results, as the method currently used. It should be noted, that although the Weighted Average Reference Rate is slightly less volatile compared to the Reference Rate 448/98. FISIM calculated using Weighted Rate allocated to GDP is more volatile, this is mainly due to volatile loan rate of household consumers.

Denmark:
In the calculations of the Internal Weighted Average Reference Rate, Eurostat used swap 5-year rate available at the National Central Bank of Denmark for the long-term rate.

The Internal Weighted Average Reference Rate fitted well between implied rates on loans and deposits for most resident user sectors.

http://nationalbanken.statistikbank.dk/statbank5a/SelectVarVal/Define.asp?MainTable=DNRENTM&TabStrip=Select&PLanguage=1&FF=2
Some exceptions, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:

- General government (S.13) – where the Weighted Rate was higher than the rate on loans with some occurrences within a short period (2006-2008), resulting in negative FISIM. This however, is an acceptable side effect as S.13 may obtain preferential rates, and its contribution to FISIM output is modest;

- Exports - where External Weighted Reference Rate fitted rather well for most periods, but during the financial crisis eruption the Weighted Reference was lower than the
deposit rate, resulting in negative FISIM. This, however, may be an acceptable side effect, caused by the crisis.

**In summary**, the Internal and External Weighted Average Reference Rates seem that it fitted well between implied rates on loans and deposits, and it leads to modest improvements in most of the periods. It should be noted that both the Weighted Rates and the Reference Rate 448/98 currently used were similar. It should be noted that volatility of FISIM allocated to GDP calculated using the Weighted Average Reference Rates was reduced compared to the Reference Rates 448/98 (see section 1.3).
Germany:
Although the internal weighted Reference Rate seems to rather well fit between implied rates on loans and deposits, the currently used internal Reference Rate is already a weighted rate of overnight, 3-month and long term interbank rates. The level of the weighted average rate is lower that the Reference Rate currently used, as a result FISIM calculated with the weighted average rate reduced the impact on GDP.

For households as consumers and NPISH, occurrences of negative FISIM on deposits were observed in 2009.
Some exceptions, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:

- General government (S.13) – where the Weighted Rate was higher than the rate on loans with some occurrences within a short period (2006-2008), resulting in negative FISIM. This however, is an acceptable side effect as S.13 may obtain preferential rates, and its contribution to FISIM output is modest;

- Non-financial corporations (S.11) – where in 2007-2008 the rate of deposits was higher than the rate of loans, therefore whatever the reference would be, negative FISIM would be observed;

- Exports – where in most periods, the implied rates on loans and deposits are close one to another, thus it is difficult for the Weighted Rate in well-fitting between the two implied rates, which may include some inter-FIs flows.
In summary, it appears that the Internal and External Weighted Average Rates were too low, especially in 2009 as compared to the rate of deposits. However, the Weighted Average Rates fitted well in the ten previous years and in 2010-2011. Compared to the method currently used, the Weighted Average Rates have slightly disadvantage from the point of view of the occurrence of negative FISIM, and of the volatility.
Estonia:
The Estonia interbank market was characterised by strong relationship with Euro (Estonia joined Euro Area on 1 January 2011) over the tested period. Due to the specific characteristics of the Estonia interbank market, the short-term was calculated using TALIBOR and EURIBOR with 3 month maturity, whereas the ISDAFIX 5 year was used for the long-term rate.

The Internal and External Weighted Reference Rates fitted rather well between implied rates on loans and deposits. The rare occurrences of negatives FISIM, mainly on loans, were solved when using the Weighted Reference Rates.
Some exceptions, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:

- General government (S.13) – there were a number of cases where the Weighted Rate was higher than the rate on loans resulting in occurrences of negative FISIM. In addition in the aftermath of the financial crises deposit rate was higher than loan rate. Thus, it was very difficult for the Weighted Rate in well-fitting between the two implied rates. This
however, is an acceptable side effect as S.13 may obtain a preferential deposits rates, and its contribution to FISIM output is modest;

- Other Financial Institutions as users - where in the aftermath of the financial crises the implied rates on loans and deposits are very close one to another, with cases where deposit rate was higher than loan rate. Thus, it was very difficult for the Weighted Rate in well-fitting between the two implied rates. However, the contribution of these consumers to FISIM output is modest.

![Graphs showing Estonia: General Government (S.13) and Estonia: Other Fin.ins. as users]

**In summary,** the results of FISIM test showed that the method using Internal and External Weighted Average Reference Rates may be seen a modest improvement compared to the currently method according to the Regulation 448/98. This is mainly determined by solving the issue of occurrence of negative FISIM, and reduction of volatility (see the chart below).
Spain:
The Weighted Average Reference Rates fitted rather well between implied rates on loans and deposits. Although the continued occurrence of negative FISIM on deposits was not necessary solved, it was reduced and in some case only one-off occurrence of negative FISIM remained in 2008. This may because by inaccuracy of the weighting schemes, which is based on assumptions and data from different sources.
In summary, the Internal and External Weighted Average Reference Rates seem that they fitted well between implied rates on loans and deposits. There were still negative FISIM on deposits occurring when using the Weighted Average Reference Rates in the aftermath of the financial crisis, but the negative values were reduced. The volatility of FISIM was improved on both deposits and loans.

France:
The Internal and External Weighted Average Reference Rates fitted rather well between implied rates on loans and deposits.

It is interesting to note that the Internal Reference Rate 448/98 is higher that the Internal Weighted Average Reference Rate. In some periods, the Internal Reference Rate 448/98 is higher that the loans rates resulting in negative FISIM on loans, e.g. in 2001 Q3, 2008 Q3, and 2008 Q4.
Some exceptions, where the Internal and External Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:

- **General government (S.13)** – where the weighted rate is higher than the rate on loans for a short period (2009-2010) resulting in negative FISIM. This however, is an acceptable side effect as S.13 may obtain preferential rates, and its contribution to FISIM output is modest;

- **Dwelling Loans** – where the weighted rate is higher than the rate on loans for a short period (2008 Q2 and 2008 Q3) resulting in negative FISIM. This however, is improvement compared to the Reference Rate 448/98, although it would require some further improvements;

- **Exports** - where only some sporadic occurrence of negative FISM on deposits was observed, except the recent periods. This could possibly be solved further using ISDAFIX rate weighting by currencies.
In summary, the test results of FISIM showed that the method using the Internal and External Weighted Average Reference Rates may seem as a modest improvement compared to the method currently used. FISIM calculated using the Weighted Average Reference Rates well fitted between implied rates on loans deposits, and solved or reduced some concurrences of negative FISIM on loans. The volatility of FISIM calculated using Weighted Average Reference Rates increase slightly, while FISIM share to GDP modestly reduced.
Italy:
The Internal and External Weighted Average Reference Rates fitted rather well between implied rates on loans and deposits.
The exception, where the External Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM Exports - where only some sporadic occurrence of negative FISM on deposits was observed. This could possibly be solved by improving the weighting scheme by currencies.
In summary, the Internal and External Weighted Reference Rates well fitted between implied rates on loans and deposits. There was no issue with occurrence of negative FISIM on deposits in the aftermath of the financial crisis, thus FISIM calculated using Weighted Average Reference Rates leads to modest improvements with reduced volatility of FISIM allocated into GDP.

Latvia:
The Latvian interbank market was characterised by strong relationship with Euro over the tested period. Due to the above, the short-term was calculated using and weighted average of RIGIBOR and EURIBOR with 3 month maturity, whereas and weighted average of RIGIBOR 1-year\(^5\) and ISDAFIX 5-year was used for the long-term rate.

The Internal and External Weighted Reference Rates fitted rather well between implied rates on loans and deposits for most of the periods before 2009. Due to data provided for limited time span of 2007-2011, it was difficult to perform analysis with conclusive outcome. It is worthwhile noting that, in 2009 the rate on loans of the users sectors decreased sharply almost matching the rate on deposits; hence the reference rate could not fit between the rates on loans and on deposit. This is best illustrated by the graphs given below.

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\(^5\) There is no swap 5-year type rate available in Litas, thus the longest maturity VILIBOR rate was used instead.
In summary, the results of FISIM test for the Latvia were inconclusive. The main difficulty was cause by erratic behaviour of the loan rates. This during the period of the financial crises resulted in negative FISIM allocated to GDP driven mainly by FISIM on loans (see the chart below).
Lithuania:
The Lithuanian interbank market was characterised by strong relationship with Euro over the tested period. Due to the above, the short-term was calculated using a weighted average of VILIBOR and EURIBOR with 3 month maturity, whereas an weighted average of VILIBOR 1-year\(^6\) and ISDAFIX 5-year was used for the long-term rate.

The Internal and External Weighted Reference Rates fitted rather well between implied rates on loans and deposits for most of the periods, and these weighted rates were much less volatile than the rates calculated according to the Regulation 448/98.

It should be noted that some sporadic occurrences of negative FISIM were observed in the household and in the non-resident sectors, which could be solved by reworking the currency weighting scheme.

- Negative FISIM on deposits allocated to household consumer was observed in early quarters of 2010;
- Negative FISIM on dwelling loans and on loans of non-financial corporations were observed in 2009q3;
- Negative FISIM exports were observed in 2003q2 and in 2008q2. Please note the very erratic loans rates.

\(^6\) There is no swap 5-year type rate available in Litas, thus the longest maturity VILIBOR rate was used instead.
Some exceptions, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:

- General government (S.13) – there were a number of cases where the Weighted Rate was higher than the rate on loans resulting in occurrences of negative FISIM. This however, is an acceptable side effect as S.13 may obtain preferential rates, and its contribution to FISIM output is modest.
In summary, the results of FISIM test for the Lithuania showed that the method using Internal and External Weighted Average Reference Rates would need some further reworking of the currency weighting scheme solving the sporadic occurrences of negative FISIM. Improvements of the long-term rate by replacing the VILIBOR 1-year with more representative 5-year swap type could also lead to better results. It is worthwhile noting that Internal and External Weighted Average Reference Rates were much less volatile than the Internal and External 448 rates, which results in modestly reducing of volatility of FISIM allocated to GDP (see the chart below).

The Netherlands:
The Internal and External Weighted Average Reference Rates fitted rather well between implied rates on loans and deposits. In the aftermath of the financial crises, some occurrence of negative FISIM on deposits was solved when using the Weighted Average Reference Rates.
Some exceptions, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:

- General government (S.13) – where in some cases the Weighted Rate was lower than the rate on deposits resulting in sporadic occurrences of negative FISIM. This however, is an
acceptable side effect as S.13 may obtain a preferential deposits rates, and its contribution to FISIM output is modest;

- Other Financial Institutions as users - where in the aftermath of the financial crises the implied rates on loans and deposits are very close one to another, with cases where deposit rate was higher than loan rate. Thus, it was very difficult for the Weighted Rate in well-fitting between the two implied rates. However, the contribution of these consumers to FISIM output is modest;

- Exports - where External Weighted Reference Rate fitted rather well for most periods, with exception of period prior to 2008, where the External Weighted Reference Rate was in same cases higher than the reference rate, resulting in negative FISIM. This may be due to the quality of the weighting scheme applied to the currency composition. It would be advice to calculate cross-border FISIM separated for each of the important currency groups (see recommendation 4 of the FISIM task Force).
In summary, the results of FISIM test for the Netherlands showed that the method using Internal and External Weighted Average Reference Rates may be seen a modest improvement compared to the currently method according to the Regulation 448/98. This is mainly determined by solving the issue of occurrence of negative FISIM on deposits, and modest reduction of volatility (see the chart below).

Austria:
The Internal Weighted Average Reference Rate fitted relatively implied rates on loans and deposits for most user sectors.
In case of households as consumers the Internal Weighted Average Reference Rate fitted relatively implied rates on loans and deposits until the period of the financial crises, after which some continued (although modest) occurrences of negative FISIM were observed. This issue, however, could be solved by further improving the weighting scheme, where at present the short-term weight dominates.

The exception, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM Exports, where External Weighted Reference Rate would need to be recalculated using an improved weighting schemes by currencies.
In summary, the Internal and External Weighted Average Reference Rates seem to well fit between implied rates on loans and deposits. Only a modest one-off negative FISIM on deposits to Households Consumers occurred in 2009 Q1 when using the Weighted Average Reference Rates. The volatility of FISIM allocated to GDP was very modestly decreased.

Portugal:
The Internal and External Weighted Average Reference Rates fitted rather well between implied rates on loans and deposits. Continued occurrence of negative FISIM on deposits was solved; and only one-off significant occurrence of negative FISIM remained in 2008;
Some exceptions, where the Internal and External Weighted Average Reference Rates do not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:

- General government (S.13) – where the Weighted Rate was higher than the rate on loans for a short period (1999-2000), and where Weighted Rate was lower than the deposit rate, resulting in negative FISIM. This however, is an acceptable side effect as S.13 may obtain preferential rates, and its contribution to FISIM output is modest;

- Exports - where External Weighted Reference Rate was lower than the deposit rate (from 2009), resulting in negative FISIM. However, the negative FISIM on deposit was reduced when using the Weighted Rate compared to the Reference Rate 448/98, which should be considered as improvement. Further improvements of the cross-border flows and weighting scheme of the External Weighted Average Reference Rate may be necessary.
In Summary, the method in calculating FISIM using the Internal and External Weighted Reference Rates leads to an improvement by solving the occurrence of negative FISIM on deposits, and to more stable FISIM allocated into GDP. It should be noted that the government security rate has rather peculiar dynamics from 2009 Q3.
Slovenia: Slovenia joined the Euro Area in 2007, thus STIBOR 3-months for short-term domestic operations and derived swap type rate of 5 year for long-term domestic operations were used until 2006 Q4, and from 2007 Q1 EURIBOR 3 month and ISDAFIX euro 5 year were used accordingly. For cross-border operation, EURIBOR 3 month and ISDAFIX euro 5 year were used accordingly, for short- and long-term operations.

The Internal and External Weighted Average Reference Rates fitted relatively well implied rates on loans and deposits for some sectors, like non-financial corporations (S.11), Households as owners of dwellings, ad non-resident consumers (related to FISIM exports). The Internal and External Weighted Average Reference Rates fitted better between the implied rates on loans and deposits compared to the rates 448/98 currently used in the FISIM calculations solving occurrence of negative FISIM on deposits in some periods before 2007.
In case of households as consumers the Internal Weighted Average Reference Rate fitted relatively implied rates on loans and deposits until the period of the financial crises, after which some continued (although modest) occurrences of negative FISIM were observed. This issue, however, could be solved by further improving the calculations for the weighting scheme, where at present the short-term weight dominates.

From 2007, there were some exceptions, where the Weighted Average Reference Rates did fit slightly better than the 448/98 rates between implied rates on loans and deposits were observed in FISIM allocated to General government (S.13), NPISH (S.15) and to Other FIs consumers, where the implied rate on loans the deposits rate were very close one to another. Thus, it was difficult for any reference rate in well-fitting between the two implied rates, which may be caused by high participation of loans and deposits with fix rates or preferential rates in case of the S.13 sectors. It is worthwhile noting that in case of S.15, the occurrence of negative FISIM on deposits in the period of 2004-2007 was solved when using the Weighted Average Rate.
In summary, the test results of FISIM showed that for the periods before 2007, the Weighted Average Reference Rates may be seen as a modest improvement compared to the method currently used by solving some occurrences of negative FISIM on deposits.

From 2007, FISIM calculated with the Weighted Rates in some cases generated sporadic occurrences of negative FISIM, but this could be improved by further work to improve the weighting scheme after 2007. It should be noted, that FISIM calculated using the Weighted
Rates and allocated to GDP was slightly less stable compared to the method using the Reference Rates 448/98.

Finland:
The Internal Weighted Reference Rate seems to be more stable compared to the volatile Internal Reference Rate defined by the Regulation 448/98.

In the wake of the financial crises, the volatile Internal Reference Rate 448/98 resulted in occurrences of negative FISIM on loans allocated to mainly to non-financial corporations and dwelling loans.
Although no occurrence of negative FISIM on deposits was observed allocated to household final consumers calculated with the currently used 448/98, FISIM calculated with the weighted average rate can also be considered an improvement leading to more stable estimates of FISIM allocated household final consumers.

Some exceptions, where the Weighted Average Reference Rates did not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:
• General government (S.13) and Other FIs consumers – the implied rate on loans the deposits rate were very close one to another, thus it was difficult for any reference rate in well-fitting between the two implied rates, which may be caused by high participation of loans and deposits with fix rates or preferential rates in case of the S.13 sectors. It should be noted that the contribution of these consumers to FISIM output is modest.

• Exports - where External Weighted Reference Rate did not fit well for most periods, and thus further work is needed in developing a representative External Weighted Average Reference Rate (see recommendation 4 of the European Task Force on FISIM).
In Summary, the method in calculating FISIM using the Internal and External Weighted Reference Rates solved the sporadic occurrence of negative FISIM on loans, but most importantly leading to more stable FISIM allocated into GDP.

Sweden:
The Internal and External Weighted Average Reference Rates fitted rather well between implied rates on loans and deposits. It must be stressed, that Weighted Average Reference Rates was only slightly different from the 448/98 rate, which implies that the transactions in Sweden in loans and deposits are short-term oriented.
An exception, where the Weighted Average Reference Rates did fit well between the implied rates on loans deposits was in FISIM exports, where the implied rate on loans the deposits rate were very close one to another. Thus, it was difficult for any reference rate in well-fitting between the two implied rates.
In summary, the test results of FISIM test showed that the method using the Internal and External Weighted Average Reference Rates provided similar results, as the method currently used. It should be noted that the Weighted Average Reference Rates is more volatile compared to the Reference Rate 448/98, as a result FISIM calculated using Weighted Rate allocated to GDP is more volatile.

The United Kingdom:
The results of FISIM analysis in the UK refer to Monetary Financial Institutions (MFIs), which cover the substantial majority of FISIM output in the UK.

The Internal and External Weighted Reference Rates fitted well between implied rates on loans and deposits. Continued occurrence of negative FISIM on deposits is solved, expect for one-off occurrence of negative FISIM on deposits in 2008 Q4.
Some exceptions, where the Weighted Average Reference Rates do not fit very well between implied rates on loans and deposits are observed in FISIM allocated to:

- General government (S.13) and NPISH (S.15) – where the weighted rate is higher than the rate on loans for a short period (2007-2008) resulting in negative FISIM. This however, is an acceptable side effect as S.13 may obtain a preferential loan rates, and its contribution to FISIM output is modest;
- Other FIs consumers - where the implied rates on loans and deposits are close one to another, and it is very difficult for the Weighted Rate in well-fitting between the two
implied rates, which may be caused by high participation of loans and deposits with fix rates. However, the contribution of these consumers to FISIM output is modest;

- Exports - where the implied rates on loans and deposits are close one to another and volatile, thus it is difficult for the Weighted Rate in well-fitting between the two implied rates, which may include some inter-FIs flows. Further improvements of the cross-border flows and weighting scheme of the External Weighted Average Reference Rate are necessary.
In summary, the results of FISIM test for the UK showed that the method using Internal and External Weighted Average Reference Rates solved the issue of continued occurrence of negative FISIM on deposits, which significantly reduced FISIM contribution to GDP in the aftermath of the recent financial crisis (see the chart below). The volatility of FISIM was also improved, when using the Weighted Average Reference Rates on both deposits and loans.
ECB on Euro Area Member States

The Internal Weighted Average Reference Rate fits rather well between the implied rates on loans and deposits. The weighted reference rates solve the problem of continued occurrence of negative FISIM on deposits allocated to household final consumer between 2009 Q1 and 2010 Q2.
It is interesting to note that negative FISIM occurs on loans to general government sector. This could be due to preference loan rate received by this sector, which at the end of 2008 was lower than the deposit rate.

The Internal Weighted Average Reference Rate provided no solution to problems in measuring FISIM allocated to other Financial Institutions as users, as the deposit rates are quite high and fixed rates may mostly be applied.

Similarly, the External Weighted Average Reference Rate provided no solution to problems in measuring FISIM exports, as the rates on loans and deposits are very close one to another and volatile, which caused in some cases negative FISIM on loans and some other cases negative FISIM on deposits.
In summary, the test results of FISIM test showed that the Internal and External Weighted Average Reference Rates solved the issue of continued occurrence of negative FISIM on deposits. In general, the Weighted Average Reference Rates fitted well between implied rates on deposits and loans. The share and the volatility of FISIM allocated to GDP have modestly increased, when using the Weighted Average Reference Rates compared to the rate 448/98 currently used.
**Luxembourg:**
Some detailed data were provided with small exceptions, but according to the form provided, it would require a number of adjustments for feeding into the test exercise. Due to currency specific calculations the analysis will be performed after consultation with NSI.

**Malta**
Substantial number of variables could not be provided, and commented that was unsure about the reliability of the results obtained.

**Poland**
Data were provided for 2010 Q1 - 2010 Q4, thus it was not possible to make the necessary analysis.

**Romania**
Data provided were not complete, thus it was not possible to make the necessary analysis.

**Slovakia**
No data were provided on short- and long-term interest and stocks were not complete, thus it was not possible to make the necessary analysis.
1.2.2. The Reference Rates as defined by the Regulation 448/98 and the market rates

The results of the FISIM test on maturity showed that in some MSs the Internal and External Reference Rates calculated in line with the EC Regulation 448/98, are not necessary short-term. Two classes of such MSs were identified.

In the first class of MSs, the Reference Rates defined by the Regulation 448/98 have long-term tendency over the total tested period, and in some periods exceeding the 5 year swap-type rate (ISDAFIX 5-Year). This group included for example the following MSs: Germany, France, Austria, the Netherlands, Estonia, and to some extent Czech Republic and Lithuania.

The comparison between various rates for the above mentioned countries is best illustrated by the charts below.
In second class of MSs, the Reference Rates as by the Regulation 448/98 were, as expected, short-term, but mostly until end-2008. From of end-2008, the Reference Rates 448/98 increased showing long-term tendency. This group included for example the following MSs: Belgium, Spain, Italy, Slovenia, Finland, and Sweden.

The comparison between various rates for the above mentioned countries is best illustrated by the charts below.
Spain: reference and market rates

- Weighted Internal Reference Rate
- 448/98 Internal Reference Rate
- Government Security 5-Y rate
- EURIBOR 3-month
- ISDAFIX (euro) 5-year

Belgium: reference and market rates

- Weighted Internal Reference Rate
- 448/98 Internal Reference Rate
- Government Security 5-Y rate
- EURIBOR 3-month
- ISDAFIX (euro) 5-year

Italy: Reference and market rates

- Weighted Internal Reference Rate
- 448/98 Internal Reference Rate
- Government Security 5-Y rate
- EURIBOR 3-month
- ISDAFIX (euro) 5-year
1.3. The impact of the tested methods on GDP and volatility

To verify and compare the stability of the results of FISIM calculated using the Reference Rates 448/98 and using the Weighted Average Reference Rates, an Index of Volatility can be calculated according to the formula:

\[
\frac{\text{absolute (impact on GDP}_{\text{year n+1}} - \text{impact on GDP}_{\text{year n}})}{\text{impact on GDP}_{\text{year n}}}
\]

The analysis for the MSs analysed are best illustrated by Table 1 below. The table shows that the impact (share) of FISIM to GDP, calculated using the Internal and External Weighted Average Reference Rates decreased in most MSs.

The analysis of indices of volatility for FISIM calculated using the Weighted Average Reference Rates showed no substantial differences. In most MSs, the Index of Volatility decreased modestly.

Table 1: Average impact on GDP of FISIM calculated with Reference Rates according to the Regulation 448/98 and Weighted Reference Rates

<table>
<thead>
<tr>
<th>Countries</th>
<th>Share of FISIM to GDP 448/98 rate</th>
<th>Weighted rate</th>
<th>Index of Volatility 448/98 rate</th>
<th>Weighted rate</th>
<th>Time-Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>1.2%</td>
<td>1.1%</td>
<td>15.0%</td>
<td>10.8%</td>
<td>2003Q1 - 2010Q4</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>0.7%</td>
<td>0.8%</td>
<td>12.0%</td>
<td>15.6%</td>
<td>2004Q1 - 2011Q2</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.8%</td>
<td>0.9%</td>
<td>11.1%</td>
<td>9.0%</td>
<td>2003Q1 - 2011Q2</td>
</tr>
<tr>
<td>Germany</td>
<td>1.3%</td>
<td>1.1%</td>
<td>6.3%</td>
<td>8.6%</td>
<td>1999Q1 - 2011Q2</td>
</tr>
<tr>
<td>Estonia</td>
<td>0.9%</td>
<td>0.8%</td>
<td>10.7%</td>
<td>9.5%</td>
<td>1999Q1 - 2011Q2</td>
</tr>
<tr>
<td>Spain</td>
<td>1.0%</td>
<td>1.3%</td>
<td>17.9%</td>
<td>16.0%</td>
<td>1995Q1 - 2011Q2</td>
</tr>
<tr>
<td>France</td>
<td>0.9%</td>
<td>0.8%</td>
<td>8.5%</td>
<td>11.9%</td>
<td>1999Q1 - 2011Q2</td>
</tr>
<tr>
<td>Italy</td>
<td>1.2%</td>
<td>1.3%</td>
<td>6.7%</td>
<td>5.3%</td>
<td>2005Q1 - 2010Q4</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0.4%</td>
<td>0.5%</td>
<td>30.3%</td>
<td>28.7%</td>
<td>2001Q1 - 2011Q3</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>1.4%</td>
<td>1.4%</td>
<td>7.3%</td>
<td>7.2%</td>
<td>2005Q1 - 2011Q3</td>
</tr>
<tr>
<td>Austria</td>
<td>1.1%</td>
<td>1.2%</td>
<td>11.9%</td>
<td>11.7%</td>
<td>2004Q1 - 2011Q2</td>
</tr>
<tr>
<td>Portugal</td>
<td>1.2%</td>
<td>1.6%</td>
<td>11.2%</td>
<td>10.0%</td>
<td>1999Q1 - 2011Q2</td>
</tr>
<tr>
<td>Slovenia</td>
<td>0.9%</td>
<td>0.8%</td>
<td>12.5%</td>
<td>14.9%</td>
<td>2002Q1 - 2011Q2</td>
</tr>
<tr>
<td>Finland</td>
<td>0.6%</td>
<td>0.9%</td>
<td>19.7%</td>
<td>11.5%</td>
<td>2005Q1 - 2011Q3</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.8%</td>
<td>0.7%</td>
<td>7.2%</td>
<td>12.3%</td>
<td>2004Q1 - 2011Q3</td>
</tr>
<tr>
<td>The UK</td>
<td>1.1%</td>
<td>1.5%</td>
<td>11.7%</td>
<td>16.0%</td>
<td>2004Q2 - 2011Q2</td>
</tr>
<tr>
<td>ECB (euro area)</td>
<td>0.6%</td>
<td>1.0%</td>
<td>8.5%</td>
<td>10.2%</td>
<td>2003Q1 - 2011Q2</td>
</tr>
</tbody>
</table>

Summary

| No of decreases | 6 | 10 |
| No of increase  | 10 | 7 |
1.4. Other alternatives for calculating the Reference Rates

The alternatives, which are analysed and presented in this section were not studied in depth, as they did not correspond to the recommendations of the Task Force, although were discussed during the meetings in 2010-2011.

However, Eurostat considered that it could be useful to present them in order to provide a better and somewhat more complete view on the FISIM test on maturity.

1.4.1. Government rates blending in the calculation of the Reference Rate

According to our simulations, the government security rate would fit quite well between the implied rates on loans and deposits in a number of countries, as presented in this section. It is worthwhile noting that in some non-EU countries the Government Security rate is blended into the calculations of the Reference Rate, like in the US.

The analyses of FISIM, using an alternative reference rate calculated as a simple average of EURIBOR 3-month rate and Government Security 5-year rate, are presented below for Finland. This method using the government security rate in the calculation of the reference leads to some improvement compared to the methods currently applied (Regulation 448/98).
Table 2: Average impact on GDP of FISIM calculated with Reference Rates according to the Regulation 448/98 and Weighted Reference Rates calculated with Government securities

<table>
<thead>
<tr>
<th>Countries</th>
<th>Share of FISIM to GDP 448/98 rate</th>
<th>Weighted rate with Gov. Sec.</th>
<th>Index of Volatility 448/98 rate</th>
<th>Weighted rate with Gov. Sec.</th>
<th>Time-Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>0.6%</td>
<td>1.0%</td>
<td>19.7%</td>
<td>8.6%</td>
<td>2005Q1 - 2011Q3</td>
</tr>
</tbody>
</table>

It must be stressed, however, in the erratic economic context, that the statistical data on government securities rates provided for this test by the EU MSs showed that these rates are not a good alternative for most of the European countries.

Clearly, the results showed that the government rates may not be considered a risk-free rate, as in many cases the government securities rates are volatile and erratic mainly in the aftermath of the financial crisis.
1.4.2. Two separate Reference Rates for short- and long-term operations.
In most countries, there is unavailability of sectorised interest data separately for short- and long-term operations. These countries used a number of assumptions to derive the required detailed interest data.

Furthermore, as noted by the European Task Force and the CMFB, liquidity transformation and term premia should not be eliminated from FISIM. The approach using separate Two Reference Rates for short- and long-term operations would lead to this elimination.

Eurostat tested this approach on 3 countries and it proved to be very data intensive.

The elimination of the term premia from FISIM lowers the impact of FISIM on GDP as compared to the results of the Weighted Average Reference Rate and the method 448/98 currently used. This is best illustrated by the following graphs.
The results, although subject to quality and assumptions used, shows that FISIM calculated using two Reference Rates is more volatile compared to the method 448/98 currently used.

<table>
<thead>
<tr>
<th>Countries</th>
<th>Share of FISIM to GDP</th>
<th>Index of Volatility</th>
<th>Time-Span</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>448/98 rate</td>
<td>Two rates</td>
<td>448/98 rate</td>
</tr>
<tr>
<td>Belgium</td>
<td>1.2%</td>
<td>0.9%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Austria</td>
<td>1.1%</td>
<td>1.1%</td>
<td>11.9%</td>
</tr>
<tr>
<td>UK</td>
<td>1.1%</td>
<td>1.4%</td>
<td>11.7%</td>
</tr>
</tbody>
</table>
1.5. Conclusions on FISIM test on maturity and the Weighted Average Reference Rates

This section summarises the analysis and finding on the FISIM test on maturity presented in this chapter taking into account the criteria given by the Task Force on FISIM, namely criteria are met:

a) Continued occurrence of negative FISIM on deposits is solved;
b) Better reflects exposure to financial shocks/crisis;
c) Reduction in the volatility would be welcomed.

The method using the Weighted Average Reference Rates produced results that were slightly better or similar compared to the current method based on the Regulation 448/98.

This can mainly be characterised by the Weighted Average Reference Rates that:

- well fits between the implied rates on loans and deposits,
- solves the continued occurrence of negative FISIM on deposits and sometime negative FISIM on loans,
- the FISIM allocated to GDP in majority of MSs was more stable.

The problems caused by recent financial crisis in measuring FISIM results in mainly in continued negative FISIM on deposits. This problem was largely solved by using the weighted reference rate, however, in end-2008 or in beginning-2009 (depending on the country) when the crisis erupted the negative FISIM on deposits still occurs. During this period the behaviour of the market rates was very erratic, e.g. short-term rates exceeded the level of the long-term rates, the gap between the central bank rates and the interbank rates widen. These phenomena affect the calculation of the weighted reference rates.

Although this one-off occurrence of negative of FISIM is an acceptable side effect of the calculations, it could be solved by further improving the short-/ long-term weights.

Some other alternatives for the Weighted Average Reference Rates were considered in the section 1.4.

It is worthwhile noting that the final report of the European Task Force on FISIM stated that the advantage of the method using the single Weighted Average Reference Rate is that it blends market rates of different maturities of loans and deposits used in the calculations of FISIM. This method meets the expectations expressed by various members of this Task Force, for example:

- It meets the expectations of those who criticised the current Reference Rate legislated in the Regulation 448/98 as being short-term oriented, as it relies on interbank relationship that by definition is mainly short-term.
- It meets somewhat the approach adopted in the US to calculate FISIM, where the Reference Rate blends an effective rate on government security;
- It somewhat meets the approach proposed by ECB, where they recommended variety of maturity matched reference rates, e.g. government bond rates for long-term operations, and EONIA and EURIBOR rates for short-term operations.

It must, however, be stressed that the method using a single Reference Rate for both loans and deposits does not lead to the elimination of the term premium and recognises the maturity transformation as inherent to FIs.
From a practical perspective, it should also be emphasised that this Weighted Average Reference Rate method appeared to be neither data-intensive nor complexity- increasing in calculating FISIM.
2. The FISIM test on default risk

2.1. Background

According to the report of the European FISIM Task Force, among various types and degrees of risks that could be excluded from the measure of FISIM, the exclusion of the risk that compensates for expected losses on loans going into default would a possible way forward.

The questionnaires distributed among the Task Force Members in April 2011 confirmed that source data on write-offs and provisions for bad and doubtful loans necessary to calculate default risk adjustments are mostly available. However, The Task Force recommended that the method to calculate the default risk should further be analysed in more detail.

2.2. Results of the test on default risk

The results showed that the test on default risk could not be carried out. This is because many countries reported no sufficient detailed level of their source data, and this was leading toward comparability problems between MSs.

The results could be summarised as follows:

Belgium

Data on write-offs and provisions are available from 2004Q1 onwards. For provisions there is only one global series, and for write-offs there is no distinction between households as consumers, producers and owner occupiers.

There is no distinction between write-offs and write downs. The latter are not definitively lost for the bank, and can lose (partly or completely) their "write down status" afterwards, which explains that the series can be negative.
Czech Republic
Data availability is very weak, where write-off includes not only loans, but also other receivable.

Denmark
Data can only meaningfully be reported from 2006. Some institutes have made revisions to their data recently, while others are unable to revise although they believe that there are errors in the numbers. The negative and the very volatile data can only be explained by errors in the numbers. Hence, the figures must be interpreted with caution.

Germany
According to information given by the Deutsche Bundesbank no valid data are available in this respect.

Estonia
Report on overdue and/or impaired loans, and report on changes in claims written off the credit institution’s balance sheet were used. Write-offs and provisions from non-resident financial corporations were not possible to derive. Data are available from 2007 onwards only.

Spain
The available information is net write-off/write-down. When the amounts returned to the asset are greater than the amounts write-off/write-down, the net amount has negative sign. The source of this dataset is MFI balance sheet statistics.

The results in the calculations of the FISIM for Spain are that the risk-adjusted FISIM allocated to GDP is similar to the non-adjusted except from 2009, when risk-adjusted FISIM values are negative for the sum of loans and deposits.

The conclusion is that in period of crisis when the write-off increases we have ‘over-correction’ with the credit default risk adjustment.
France:
Sectorised provisions for bad and doubtful loans and write-offs are not available in the mandatory report from banks to the prudential authority. Only stocks of doubtful loans net from provisions by sectors are available.

Excluding risk from FISIM calculation results in slightly diminishing its level with a negligible impact on nominal GDP growth on the basis of reporting elements used for the compilation.

Italy:
Write-offs on loans are collected only are collected half-yearly since 2010 onwards with detailed enough sectorisation. Provisions (for bad and doubtful loans) are available without sectoral breakdown.

Latvia
Revaluation Adjustments are reported on Write-offs/Write-downs of Loans and Price Revaluation of Securities. The results presented were incorrect.

Lithuania
The detailed sectorised quarterly information on write-offs for loans is available from 2005. Breakdown of provisions by sectors was derived using that information and breakdown of write-offs for bad loans.

The value of FISIM on loans allocated to GDP, calculated according to the current method and the method that excludes default risk almost doesn’t differ in the period from 2000 until 2008. The impact of risk adjustment on FISIM on loans allocated to GDP occurs from 2008 (especially from 2010). Risk adjustment reduces FISIM on loans allocated to GDP by about 18 % in 2010.
Luxembourg
There are no sources for write-off of loans or provisions for bad or doubtful loans on a sector basis neither from the BCL nor from the CSSF.
The only information on this subject is collected by the CSSF and consists of the “depreciation” of certain assets regrouped as portfolios (ex: hold for transactions, hold until maturity etc.). However not all loans are considered in these “depreciation” portfolios and there is no ventilation by counterpart, not even a ventilation for domestic or non-domestic.

Malta
Data are not available on sources for write-off of loans, and data on provisions is not available by sector or by residency.

The Netherlands
The write-offs are available by resident user sectors, but the provisions cannot be partitioned into sectors.

Poland
No data on provisions. Some data exist on domestic write-offs from 2009 with limited sectorisation.

Portugal
Institutional sector and purpose breakdown is only available for write-offs. For provisions for bad and doubtful loans only total amounts are available.
Risk adjustments reduce the current FISIM estimates; the differences are relevant although not considerable. The conclusion on the lower values of default risk adjusted FISIM compared with
the FISIM estimates not adjusted for default was more or less expected, but surprisingly it has not differed significantly with the awake of the financial crisis.

Further thoughts are needed on this subject, given the results obtained. One relevant issue is a cost/benefit analysis on the possibility of adjusting FISIM for default risk.

**Portugal: FISIM on loans to GDP**

Romania
Some data provided, but further investigation is needed.

Slovenia
Data on write-offs and provisions were available for a limited period from 2005 onwards, not the whole period from 1995Q1 requested by the questionnaire.

The results in the recent period seem plausible; FISIM without the default risk are lower than original FISIM and much more so in the most recent period of increased risk. The quality of data before 2008 needs investigation.
Finland
It was stated the required data is available from Financial Supervisory data collection with the frequency of every 6 months. However, the results could not be analysed as FISIM adjustments were in many periods negative.

Sweden
The data from MFI statistics contains all the relevant information for domestic FISIM. The balance of payments data contain no information on write offs and provisions for bad and doubtful loans.

However, it was stated that probably there was not enough information for the model to work.

The UK
To risk adjust FISIM accurately we needed write-offs and provisions data by sector which is available on the BoE’s Form PL. We do not collect a further split of the household sector by consumers, dwellings and unincorporated business. We therefore used proportions calculated using data on the BoE’s Form WO to allocate total HH provisions and write-offs to each of these three sub-sectors.

Compared to the maturity adjustment, risk adjusting FISIM is a much simpler task. There is a risk that risk adjusting may push FISIM to be more negative. If the goal is to accurately reflect expected losses, the risk weighting is clearly higher in times of distress and therefore the risk adjustment looks to be doing the job.
ECB on Euro Area aggregates

The ECB made a general remark on credit default risk adjustment, stating that:

- Even in case an appropriate measure of credit default risk was found, a very important drawback of this overall approach relates to the fact that interbank unsecured interest rates are not really risk-free any longer since the abrupt of the financial crisis. Take a short-term loan to an NFC; the interest margin is the difference between the interest rate and the Euribor and therefore it excludes the default risk of the lender (the MFI). Suppose now that default risk adjustment is performed by deducting the default risk of the borrower (the NFC in this case); the margin will then be too small as it excludes both the default risk of the lender and the one of the borrower.

- This means that should default risk adjustment be performed, the default risk of the lender should be added back to the margins to avoid an 'over-correction'.

- Conditional to this consideration, the ECB would be in favour of default risk adjustment, provided the availability of relevant data in individual countries.
2.3. Conclusions on FISIM test on default risk

The results show clearly that there are considerable problems with the availability of detailed sectorised information in substantial majority of the MSs. Even though data on write-offs or provisions for loans were available for total economy in a number of countries, the sectoral breakdown was derived using alternative source data or assumptions.

There were cases where the information on write-offs on loans was bundled with write-downs on loans, and cases where write-offs information was collected for all bad and doubtful debts (loans and securities bundled together).

The results (see the charts above) showed very little comparability between MSs. In some MSs, the risk adjustments were modest and sometimes constant over time, and in some other MSs the adjustments were significantly reducing FISIM, sometimes leading to negative FISIM.

The results on the FISIM test on default risk eliminated from the calculations of FISIM margin proved to be inconclusive, in particular due to unavailability of sectorised source data on write-offs and provisions for bad and doubtful loans in most countries.