

# Measuring FISIM in the euro area under various choices of reference rate(s)<sup>1</sup>

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**Abstract:** Financial intermediation services indirectly measured (FISIM) relate to those services that banks provide on loans and deposits, and whose payment is bundled with the offered interest rates rather than being directly charged for. Traditionally, most countries have imputed this output by comparing interest rates offered by banks to a single reference rate which represents the average rate on the interbank market (typically short-term and with low-risk attached). A lot of research has recently been dedicated by academics and statistical institutions to the topic. In particular, two task forces have been set up (respectively at European and international level) with the aim to discuss, and possibly improve, the current methodological framework. This paper reviews FISIM estimates for the euro area as a whole under the various approaches that the Task Forces have decided to test, with a particular focus on the treatment of the term premium. The impact of these approaches on GDP is also discussed.

Key words: Bank output, FISIM, risk, loan interest rates, deposit interest rates.

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## 1. Introduction

Financial intermediation services indirectly measured (FISIM) relate to those services that banks provide on loans and deposits, and whose payment is bundled with the offered interest rates rather than being directly charged for. The idea underlying any approach to measure FISIM is rather simple: borrowers are charged an interest rate which is higher than the one financial intermediaries would charge should their services be directly invoiced; similarly, depositors receive an interest rate which is lower than what they would be entitled to should financial intermediaries charge for their services directly. However, the various approaches differ on the identification of the *reference value* which represents the interest rate financial intermediaries would charge or offer in case their services were charged directly.

Rather than entering into conceptual discussions on the appropriate methodological approach for measuring FISIM, this paper starts providing in Section 2 a historical review of the different approaches to FISIM measurement, from the *SNA 1993* to the *ESA 2010*. Besides the work of statistical institutions in the context of the definition of statistical standards, the increasing contribution of FISIM to GDP has also determined a growing interest by academics to the topic. These rising discussions recently led to the set-up of two task forces (at European and international level respectively) with the main aim to possibly enhance the current methodological framework proposed by the international statistical standards. Section 3 briefly reviews the main recommendations of the two task forces, with a focus on the treatment of the term premium. With this respect, both task forces agreed on the necessity of a testing exercise; the various alternative approaches proposed for testing are reviewed in Section 4. Section 5 then presents the resulting FISIM estimates for the euro area as a whole. The impact of these approaches on GDP is also discussed.

## 2. FISIM measurement: from *SNA 1993* to *ESA 2010*

The *SNA 1993* first tried to provide a comprehensive general framework for the allocation of FISIM: financial intermediaries indirectly charge their services by applying interest rates which in the case of borrowers are higher than a *reference interest rate* while in the case of depositors are lower than a *reference interest rate*. Those indirect charges can thus be indirectly measured by comparing loan and deposit rates with this *reference interest rate*, a pure market rate which is free of all elements of charges for services provided by financial intermediaries. Against its logical simplicity, this approach raises (among others) a number of questions as regards the choice of the reference rate (interbank lending rate vs. endogenous calculation; the treatment of default risk and term premium; unique vs. multiple reference rates, also in conjunction with balances in foreign currencies), the reference rate to assess FISIM imports, the derivation of volume measures of FISIM.<sup>3</sup> In particular, countries went in different directions concerning the choice of the reference rate(s) when implementing *SNA 1993*.

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<sup>3</sup> See also Vanoli (2005) for a detailed historical review of FISIM calculation.

In the European Union (EU), a FISIM Task Force was set up to discuss and test a number of methods, and agreed on a methodology which resulted into Council Regulation (EC) No. 448/98 (the FISIM Regulation), amending the *ESA 95* text on FISIM. The methodology specified the selection of two reference rates, to be used by countries to allocate FISIM on domestic loans and deposits (the *internal* reference rate) and on imports and exports (the *external* reference rate), without distinction by type and maturity of the instrument. Both rates would represent the average (interbank) interest rate, reflecting the domestic lending activity among financial intermediaries and the lending activities between resident and non-resident financial intermediaries respectively.<sup>4</sup> By construction, the *ESA 95* methodology implies that the reference rates reflect a short-term maturity and typically have low risk attached. As discussed, for instance, by Colangelo and Inklaar (2009, 2012) and Colangelo and Mink (2010), this approach treats compensation for term premium and default risk as part of financial services output and, to some extent, GDP. In addition, it leads to an inconsistent treatment of alternative funding means in national accounts (e.g. between issuing a debt security or taking a loan)<sup>5</sup>. Further to conceptual considerations, there are also practical concerns, as including the compensation for risk-bearing as part of banks' output can lead to changes in output that are unrelated to changes in input and technology.<sup>6</sup> Furthermore, the method has sometimes led to some implausible negative FISIM.

The methodology of calculating and allocating FISIM was further discussed during the preparation of the *SNA 2008*, and in the context of the following review of the *ESA*. In particular, *SNA 2008* follows widely the *ESA 95* FISIM methodology, but it also opens the possibility to take into account the maturity structure and the default risk of deposits and loans. Similarly, Chapter 14 of *ESA 2010* follows essentially the approach of *SNA 2008* (and thus of *ESA 95*).

In recent years, a lot of research has been dedicated by academics and statistical institutions to the topic. For instance, Wang *et al* (2008) have proposed a methodology based on the identification, for each category of deposits and loans, of the opportunity cost of funds. The reference rate for each category would then take into account the risk of default and the term spread which would thus be excluded from the service component. This methodology has been applied for US commercial banks in Basu *et al* (2011), and by Colangelo and Inklaar (2012) in the case of the euro area. The ECB has also supported the adoption of this approach (in a simplified version) in official statistics.<sup>7</sup> These discussions determined the set-up of two task forces, with the main aim of further discussing these aspects and possibly enhance the current methodological framework proposed by the international statistical standards. At European level, the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB) established the

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<sup>4</sup> The *ESA 95* framework also allows using different reference rates for balances in different currencies when appropriate.

<sup>5</sup> Consider two firms with similar characteristics that need to borrow to finance their operations. The first firm borrows from the financial markets and pays the market interest rate which includes the term spread and the default risk premium, while no services are paid to the holders of the securities. The second firm borrows from a bank and pays the interest rate charged by the bank. Under the current approach, the second firm is assumed to pay only the interbank rate, while the remainder of the payment is bank output.

<sup>6</sup> Particularly during periods of financial distress (like in the recent financial turmoil) output measures would increase as a result of higher credit default risk.

<sup>7</sup> Among others, see Keuning (2008).

European Task Force on Financial Intermediation Services Indirectly Measured (FISIM) under the responsibility of Eurostat. At worldwide level, the Intersecretariat Working Group on National Accounts (ISWGNA) established the ISWGNA Task force on FISIM under the lead of the UN and the OECD.<sup>8</sup>

### 3. The work of the European and international task forces on FISIM

The task forces concentrated their work on four aspects, respectively related to the treatment of foreign currency denominated balances, how to reflect term and credit default risk premiums, and volume measures of FISIM, and came to similar conclusions. This paper limits the discussion to the treatment of the term premium, which is its main focus.<sup>9</sup>

Most members of both task forces expressed the view that the term premium should be included in FISIM measures, while recognising the appropriateness of reflecting long-term operations in the definition of the reference rate.<sup>10</sup> The discussion mainly focused on two approaches proposed by *Banco de Portugal*. Both approaches are simple to implement, and were proposed *trying* to integrate the various views expressed in the discussions. Under the first approach, deposits and loans would be distinguished according to their maturity (i.e. short vs. long-term operations), and FISIM output would then be derived comparing bank interest rates to the Euribor for short-term operations, and to the interest rate swap rate for long-term operations.<sup>11</sup> Hence, two reference rates would be used, but no distinction would be made according to the type of the instrument (i.e. the same reference rate would be used for short-term deposits and loans). In this sense, the method could be viewed as a simplified version of the methodology favoured in the discussion by the Bank of Japan, the German statistical office (Destatis) and the ECB, where different reference rates would (possibly) be applied for deposits and loans, with a distinction between short and long-term operations. The second proposed method relies on a unique reference rate, which is the average

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<sup>8</sup> In the context of the International Task Force on FISIM, Zieschang (2011) proposed a new cost of funds approach where the reference rate is an endogenous factor to the accounting framework of enterprises. This method, however, has not been included among the options under testing, also in light of its data limitations. Agendas, reports, papers and presentations of the meetings of the International FISIM Task Force are available on the UN website at <http://unstats.un.org/unsd/nationalaccount/RAmeetings/TFjuly2011/lod.asp>.

<sup>9</sup> Regarding FISIM calculations for balances in foreign currencies, the task forces underlined the opportunity of using appropriate reference rates for each relevant currency. The need for international cooperation was stressed as regards coordinating information on FISIM imports using mirror statistics on the exports of FISIM. The task forces also agreed that despite the methodological appeal of FISIM volume measures based on quantity indicators, such approaches would be too data intensive and therefore methods based on deflated stocks on loans and deposits remain the only practical solution. Concerning the compensation for credit default risk, the task forces noted that, in principle, it should be excluded from FISIM, although there was no agreement on the methodology to be followed in practice, mainly due to data limitations. The European Task Force concluded setting up a testing exercise which would analyse the exclusion of default risk from FISIM measures based on data on write-offs/write-downs and provisions for bad and doubtful loans, evaluating the results against market developments (Colangelo and Geli-Manzano (2011) review how financial market data could be used in this context). The International Task Force, however, decided to not test this approach due to the data limitations, but awaits the results of the European initiative.

<sup>10</sup> Various critical considerations can be drawn on the contradictory flavour of this statement. We will come back to this point in Section 4, when reviewing the implications of the various methodologies under testing.

<sup>11</sup> The maturity of the reference rates would be chosen to match the average maturity of the instruments they relate to. It should also be underlined that several task force members proposed to use the government bond yield as the relevant reference rate for long term operations. The increasing (and highly volatile) level of credit default risk embedded in government bond yields observed in several euro area countries, however, argues against their use as a reference rate (e.g. in the case of loans the resulting FISIM margin would be too low as the government credit default risk would also be deducted).

of the relevant Euribor and interest rate swap rates, weighted by the outstanding amounts of short and long-term deposits and loans.

The European Task Force concluded that tests should be run by EU Member States in the course of 2012 based on the methods proposed by *Banco de Portugal*, benchmarking them against the current European FISIM methodology.<sup>12</sup> The International Task Force went beyond the exercise proposed by the European Task Force suggesting that, in addition to the options tested by the latter, the so-called *matched reference rate* approach favoured by the Bank of Japan, the German statistical office and the ECB (different reference rates for deposits and loans, also distinguishing between short and long term operations) and the *mid-point reference rate* approach<sup>13</sup> should also be tested. Countries we also invited to test additional approaches if deemed appropriate.

Based on these reflections, Eurostat and the OECD set up at the end of 2011 the testing exercises. The approaches would be evaluated based on three criteria: i) more limited occurrence of negative FISIM on deposits<sup>14</sup>; ii) more meaningful behaviour of FISIM margins during the financial crisis; and iii) lower volatility of the results. The two institutions will compile summary reports and report back to the NAWG (for the European Task Force) and the ISWGNA (for the International Task Force), with the final aim of possibly taking the necessary steps to include a new FISIM methodology in the *SNA* and *ESA*.

#### **4. Term-spread adjustment: the options under testing**

Overall the two task forces suggested the testing of five different methods in the context of term-spread adjustment (plus possible alternative approaches on a voluntary basis). The five approaches are presented next, limiting the discussion to business with domestic residents (i.e. the choice of the reference rate for FISIM imports and export (the so-called *external reference rate*) is omitted here for the sake of simplicity):

##### a) *ESA 95 methodology*

A unique reference rate is chosen, without distinction by type and maturity of the instrument. The rate represents the average (interbank) interest rate, reflecting the domestic lending activity among financial intermediaries (excluding central banks). By construction, the *ESA 95* methodology implies that the reference rate reflects a short-term maturity and typically has low-risk attached. In the euro area, for instance, according to the ECB Euro Money Market Surveys<sup>15</sup> most interbank lending operations traditionally have maturities below one week with a predominance of secured lending

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<sup>12</sup> In contrast, the method supported by the Bank of Japan, the German statistical office and the ECB was dropped from the testing exercise.

<sup>13</sup> Under this approach, which is currently used by several countries around the world, the reference rate represents the mid-point between the average interest rate that banks charge on loans and the average interest rate that banks pay on deposits; see Section 4 for further details.

<sup>14</sup> The plausibility of negative FISIM on deposits is further discussed in Section 4.

<sup>15</sup> See <http://www.ecb.europa.eu/stats/money/mmss/html/index.en.html>.

activity. The reference rate, however, also reflects operations between banks and other financial intermediaries, which often have a longer-term.

b) *Two reference rates*

Deposits and loans vis-à-vis FISIM consumers are split in two broad categories according to their average maturity. Two reference rates would be chosen, respectively for short and long-term deposits and loans, without distinction by instrument. The task forces proposed to use a money market rate (unsecured lending) for the short term business, and an interest rate swap rate for the long-term maturity, selecting the maturities of the rates to reflect the average maturity of the loan and deposit categories they relate to. The 3-month Euribor and the 5-year interest rate swap rate are used in this paper as the relevant reference rates.<sup>16</sup>

c) *The weighted average reference rate*

The reference rate under this approach is the average of the reference rates in b), weighted by the corresponding amounts of short and long-term deposits and loans vis-à-vis FISIM consumers. By construction, the reference rate under this approach always lies between the two reference rates in b).

d) *The matched reference rate approach*

Four reference rates are identified, respectively for short and long-term deposits vis-à-vis FISIM consumers, and for short and long-term loans. By analogy with b), money market rates (unsecured lending) and interest rate swap rates are selected for the short and the long-term business respectively, with maturities reflecting the average maturity of the loan and deposit categories they relate to. This paper uses the 5-month Euribor for short-term loans, the 2-month Euribor for short-term deposits, and the 5-year interest rate swap rate for long-term deposits and loans.

e) *The mid-point reference rate*

The unique reference rate under this approach represents the mid-point between the average interest rate that banks charge on loans vis-à-vis FISIM consumers and the average interest rate that banks pay on deposits vis-à-vis FISIM consumers.

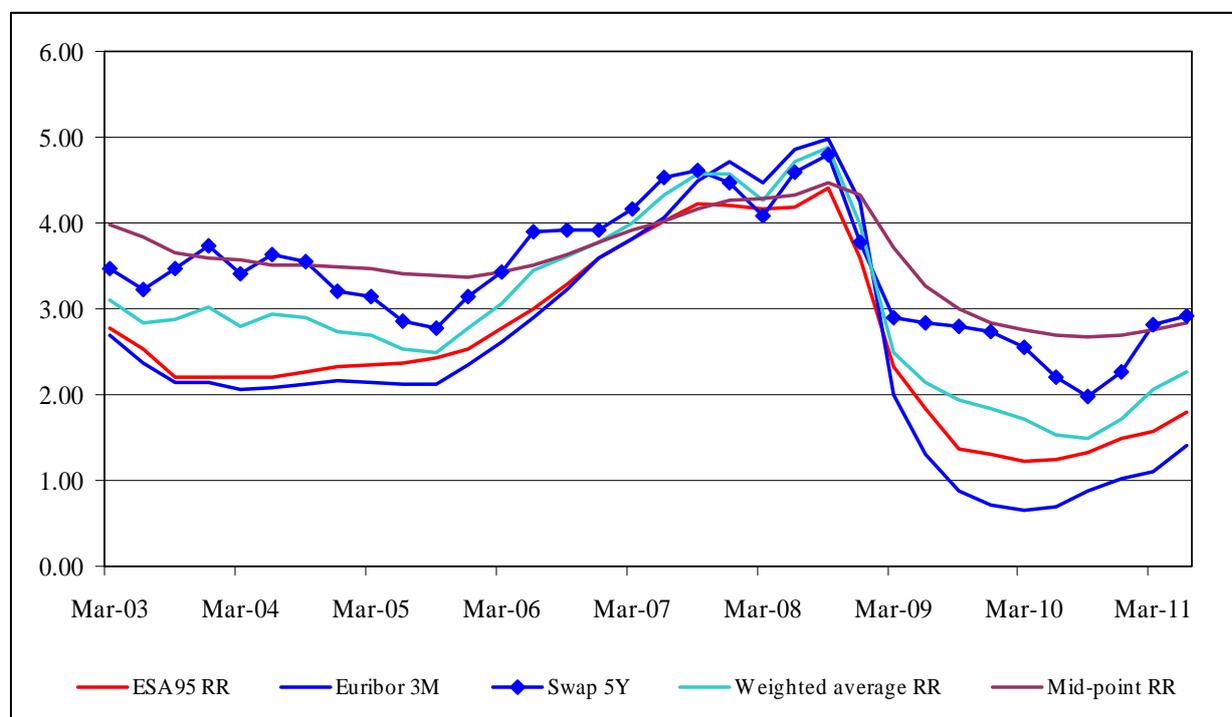
Figure 1 below reviews the reference rates under the various approaches. In particular, only the 3-month Euribor and the 5-year interest rate swap rate are shown; hence while the reference rates under method b) are shown, not all those referring to the matched reference rate approach are

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<sup>16</sup> Previous research highlighted the fact that in the euro area short-term MFI deposits should have an average maturity of about two months, while short-term loans should have an average maturity of about five months. In light of the large predominance of the former category, the 3-month Euribor looks like a reasonable assumption. Similarly, long-term MFI deposits should have an average maturity of about five years, while long-term loans should have an average maturity of about seven years. Although the latter category is predominant, there is no much information on the extent to which bank rates are fixed or flexible for the euro area as a whole. Therefore, the 5-year maturity looks like a reasonable assumption for the reference rate.

reviewed, with the aim to keep the chart simple. However, the message would not change as the behaviour of the 2 and the 5-month Euribor would be similar to the 3-month Euribor.

**Figure 1, Reference rates under the various approaches (Jan 2003 - Jun 2011, %)**



Sources: ECB, Thomson Reuters, Thomson Reuters Datastream and ECB calculations

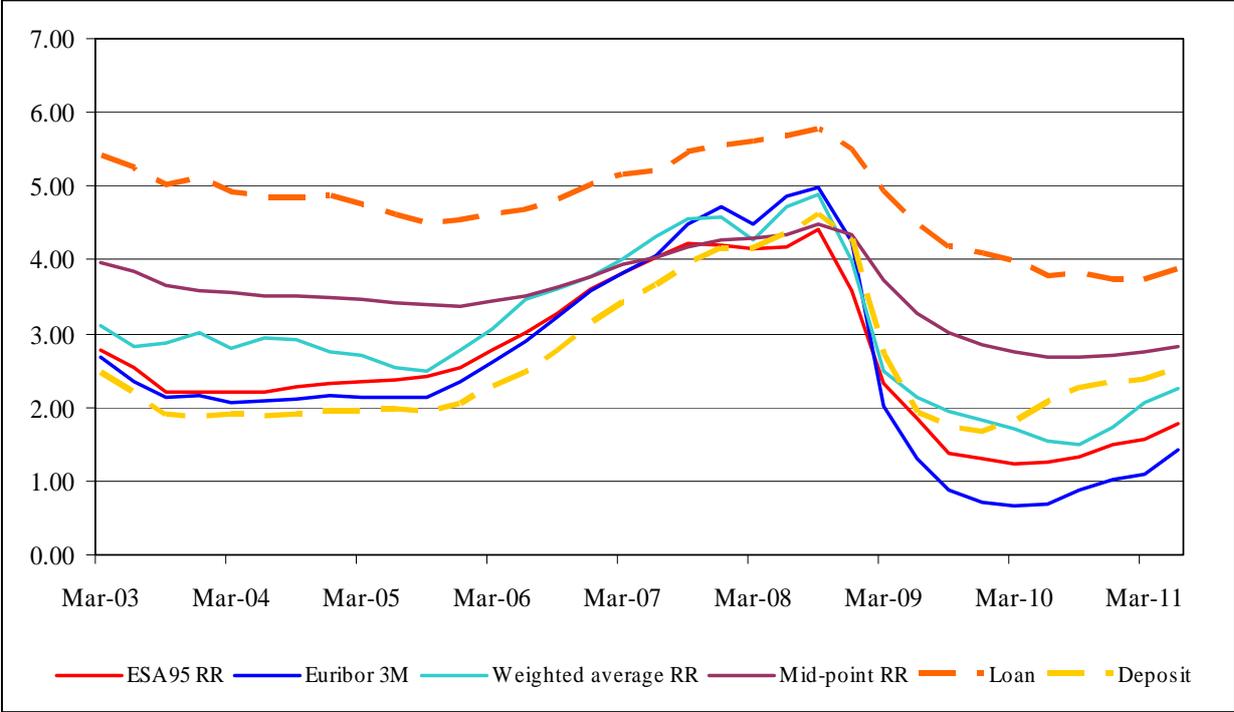
Notes: All reference rates relate to business with domestic residents (i.e. internal reference rates).

The first observation is that the *ESA 95* reference rate has a very behaviour similar to the 3-month Euribor, even though during the first part of the financial crisis (until the beginning of 2009) the high risk premium paid on the unsecured interbank transactions resulted into a (much) lower value of the *ESA 95* reference rate in the order of up to about 70 basis points (possibly reflecting the impact of secured interbank transactions). The relation switched in more recent periods, as a consequence of the higher interest rates on operations between banks and other financial intermediaries, as compared to the interbank transactions. Another interesting finding relates to the behaviour of the swap rate compared to the Euribor: interest rate swaps usually carry very low counterparty risk as there is no exchange of principal involved, and this determined the (possibly counterintuitive) result that the 3-month Euribor was for a number of periods higher than the 5-year swap rate. In addition, as expected, the *weighted average* reference rate always lies between the two reference rates of method b). It is worth stressing the behaviour of the *mid-point* reference rate, which reflects changes in money market rates in a sluggish way; in addition, its margins over the money market rates tend to be higher when those are low.

To understand the implications of the various methods on FISIM measurement, let us focus on two specific instrument types and study the corresponding FISIM margins. In particular, Figure 2 below considers two specific categories of short-term bank deposits and loans (deposits placed by households

with an agreed maturity of up to one year and loans to households for house purchases with a maturity up to one year).<sup>17</sup> Once again, we do not cover the matched reference rates method because it would deliver very similar results to method b), as also shown in Section 5 below.

**Figure 2, Bank retail rates compared to reference rates (Jan 2003 - Jun 2011, %)**



Sources: ECB, Thomson Reuters and ECB calculations

Notes: All reference rates relate to business with domestic residents (i.e. internal reference rates). The loan rate refers to loans to households for house purchase provided by euro area MFIs with a maturity up to one year (average interest rate on outstanding amounts). The deposit rate refers to deposits placed by households with euro area MFIs with an agreed maturity of up to one year (average interest rate on new business).

The loan rate lays well above all reference rates, implying that no negative FISIM margins take place in this case. It is worthwhile noting that the *mid-point* reference rates, in particular, implies a very smooth FISIM margin. The case of the deposit rate, however, is more complicated. Whereas for periods before the start of the financial crisis the deposit rate is lower than the *ESA 95* reference rate and the 3-month Euribor, resulting in positive and relatively smooth FISIM margins under both methods a) and b), negative FISIM margins regularly occur since. In turn, under the *weighted average* approach the reference rate is shifted upwards, limiting the occurrence of negative FISIM, but even in ‘normal times’

<sup>17</sup> An important observation here relates to whether to use rates on ‘new business’, categorised according to the initial period of rate fixation, or rates on ‘outstanding amounts’, categorised according to the original time to maturity of the loan, as the basis for comparison. While the estimated margin should be relevant for the entire portfolio of bank loans in that category thus arguing for rates on outstanding amounts, a drawback of this approach is that the correct reference rate is difficult to define as many such loans have interest rates that were agreed some years before. Ideally, the reference rate should then be a weighted average of past rates, where the weights reflect the share of loans from each period in the past that are still on banks’ balance sheets. For consistency with the testing exercises decides by the two task forces, we will rely on rates on outstanding amounts.

the implied FISIM margin would not be as smooth as under the Euribor, for instance. Finally, the *mid-point* reference rate is high enough to practically exclude negatives (except one single data point).

Figure 2 can help us reviewing critically the various methods based on facts:

- **If the term premium should be included in FISIM, the weighted average method is not the right choice**

It is often stated that term premium should be part of FISIM because maturity transformation is intrinsic to the functions that banks perform. This should be true at an aggregate level, and not at the level of the individual instrument types (loan/deposits, short/long-maturity). In practice, however, this is only true if a short-term reference rate is used in all cases. The *weighted average* reference rate, for instance, redistributes part of the FISIM margin from loans to deposits (it is higher than the short-term reference rate, lowering the margin on loans and increasing the margin on deposit by the same amount). This approach thus entails the (at least partial) exclusion of the term premium when considering individual categories. But the overall FISIM measure is also not neutral except in the specific case when the outstanding amounts of loans and deposits are equal. *Hence the contradiction with the statement that FISIM should include the term premium.*

- **FISIM and economic literature**

*Method b)* would have some methodological appeal and can be broadly framed within certain economic literature which suggests that the reference rate(s) should represent the opportunity cost of funds. The *weighted average* approach, however, is more difficult to frame in this context in light of the proposed weighting scheme, which is based on stocks of deposits and loans of the FISIM user sectors.

- **Conceptual soundness vs. practical considerations**

By construction, method c) reflects in the reference rates longer maturities than the current methodology and negative FISIM margins on deposit are indeed more difficult to occur. But this consideration (or other similar empirical observations) cannot represent in itself a good reason to adopt this approach. *Any method should be first justified on conceptual grounds*, so to at least have a framework which could explain practical shortcomings (the current approach, with all its limitations, does possess such a framework).

- **Simplicity as a criterion**

Method c) is simple, but *method b)* is even simpler.

- **The concern of negative FISIM**

Statistical compilers tend to be concerned with negative FISIM margins on deposit, and probably rightly so as the highest FISIM contribution to GDP is typically related to deposits. It is also true that FISIM relates to services that banks provide and therefore their value should not be negative, but the general approach towards FISIM measurement (under all methods) relies on margins based on prices, and margins can be negative. The discussion should not aim at a methodology that excludes negative margins, but rather at *a method which can explain negative margins*. Such negatives may well reflect the economic reality. For instance, the fact that during the financial crisis (especially after the collapse of Lehman Brothers) many European banks were offering (and still do) deposit rates higher than money market rates to improve their liquidity positions is well known. In addition, this does not mean that banks would necessarily make losses on deposits as in many cases direct charges also apply on deposit accounts.<sup>18</sup>

## **5. Estimated FISIM output and its contribution to GDP**

### **5.1 Data sources and assumptions**

The euro area FISIM estimations presented in this paper draw, to a large extent, on statistical datasets compiled by the ECB. The main source for outstanding amounts is euro area MFI balance sheet statistics, collected under the reporting requirements laid down in Regulation ECB/2008/32<sup>19</sup>. The sectoral and maturity split available in this framework are in some cases sub-optimal for the purposes of the FISIM measurement, but overall these factors should only have limited impact.<sup>20</sup>

International investment positions and euro area accounts statistics, collected under Guidelines ECB/2004/15<sup>21</sup> and ECB/2005/13 respectively, were used instead to derive data on liabilities and claims of FISIM consumers on the rest of the world (related to FISIM imports). In the absence of maturity splits, all positions were allocated to the short-term maturity, reflecting the assumption which seems to have been used in the balance of payments to derive interest data.

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<sup>18</sup> For a comprehensive review of the economic literature hinting at reasons why margins can be negative, please refer to Colangelo and Inklaar (2012) and references therein.

<sup>19</sup> For a detailed discussion of the reporting and methodological framework of MFI balance sheet statistics, see also the “Manual on MFI balance sheet statistics.”

<sup>20</sup> The main issues are the following: i) non-profit institutions serving households (S15) are indistinguishably merged with households (S14) and therefore their FISIM-related contribution to GDP is not fully taken into account; ii) while financial auxiliaries (S124) are FISIM consumers, MFI balance sheet statistics indistinguishably merge them with OFIs (S123) and are thus excluded from the analysis; iii) the MFI balance sheet category ‘other loans to households’ consists of loans for purposes other than consumption and house purchase. It includes, for instance, loans for business to sole proprietors, loans for debt consolidation, for education.... This category is allocated entirely to S14 – unincorporated business; iv) MFI loans and deposits to non-euro area resident FISIM consumers are not available split between short and long-term. The split is estimated based on data for short and long-term positions with foreign residents (without sectoral split between banks and non-banks).

<sup>21</sup> As amended by Guideline ECB/2007/3.

Interest flows for deposits and loans vis-à-vis euro area residents are estimated mainly based on MFI interest rate data, collected under the reporting requirements laid down in Regulation ECB/2001/18, as amended by Regulation ECB/2009/7<sup>22</sup>. The dataset covers interest rates that MFIs resident in the euro area apply to euro-denominated deposits and loans vis-à-vis all households and non-financial corporations of any size resident in the participating Member States.<sup>23</sup> For deposits and loans with the rest of the world, flows are sourced from balance of payments statistics (collected under Guideline ECB/2004/15) and allocated to the various sectors based on assumptions and using the underlying outstanding amounts for the allocation to the individual categories.

Finally, it should be stressed that OFIs (S123) are not taken into account in the estimates as a FISIM producer sector due to lack of data on both balance sheet outstanding amounts and interest rates – i.e. the FISIM producer sector is confined to other MFIs (S122) in this exercise.

## 5.2 Results

This section reviews the FISIM calculations that are obtained under the various approaches. The FISIM contribution to bank output is first discussed based on Figure 3. This essentially includes FISIM on all loans and deposits of euro area FISIM user sectors with euro area MFIs, plus the exports of FISIM related to loans and deposits of non-euro area FISIM consumers with euro area MFIs. Results are presented only for the aggregated contribution; for a more detailed review of the individual instrument categories, the interested reader is referred to Annex 1. Deriving measures on FISIM contribution to euro area GDP, however, is more complicated as it affects both intermediate and final consumption and thus requires their bridging with the different types of loans recorded in the context of MFI balance sheet statistics. Services provided to corporations (as non-FISIM producers) are intermediate consumption, and do not affect GDP. However, services provided to households and to non-market entities (general government and non-profit institutions serving households) are final consumption and add to GDP. An important exception, though, is lending to households for housing purposes, which is an intermediate consumption input into the production of these services. FISIM exports and imports<sup>24</sup> also enter in the calculation. These considerations, along with the assumptions listed above, should be kept into consideration when reviewing the results shown in Figure 4.

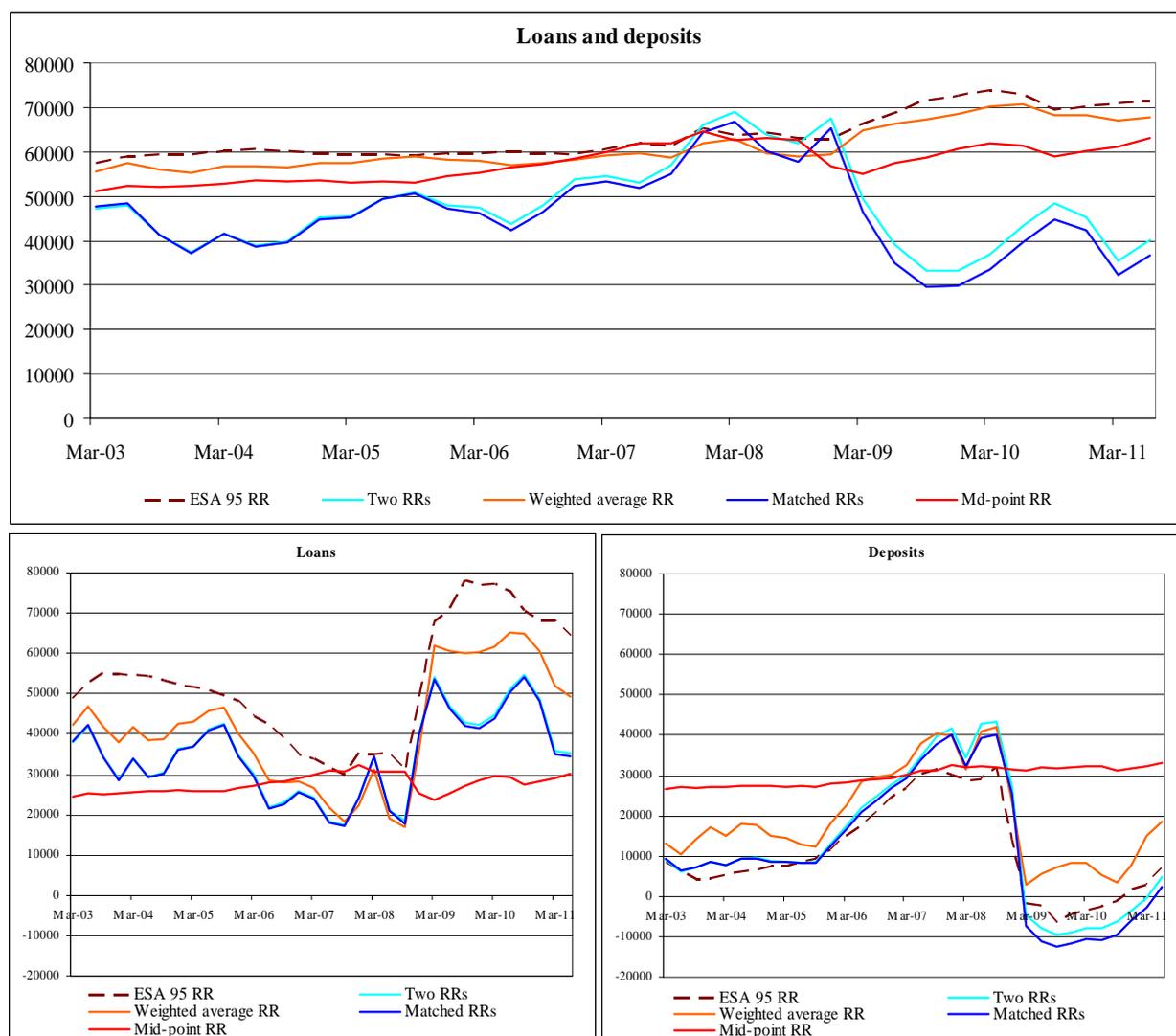
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<sup>22</sup> For a detailed discussion of the characteristics of MIR statistics, see also the “Manual on MFI interest rate statistics.”

<sup>23</sup> For euro area households and non-financial corporations, flows are estimated based on MFI interest rate statistics and the corresponding balance sheet outstanding amounts. All identified stocks categories could be matched with the appropriate rates, including the split according to the maturity of the instrument; for euro area government and ICPFs, flows are derived using MFI balance sheet stocks and interest rates estimated based on MFI interest rate statistics for euro area NFCs, adjusted (in the case of loans) for a spread reflecting the relative difference in credit default risk of the sectors (based on bond indices).

<sup>24</sup> Very little is known that would allow a reasonable estimation of FISIM imports. Detailed information is lacking both regarding outstanding amounts and interest flows (as noted in Section 5.1), and, more importantly, regarding the appropriate reference rates to be used. For the sake of simplicity, also in recognition of the limited impact they should have on the final results, FISIM imports are allocated based on the estimated external reference rates applicable under the various approaches.

**Figure 3, FISIM contribution to bank output (Jan 2003 - Jun 2011, %)**



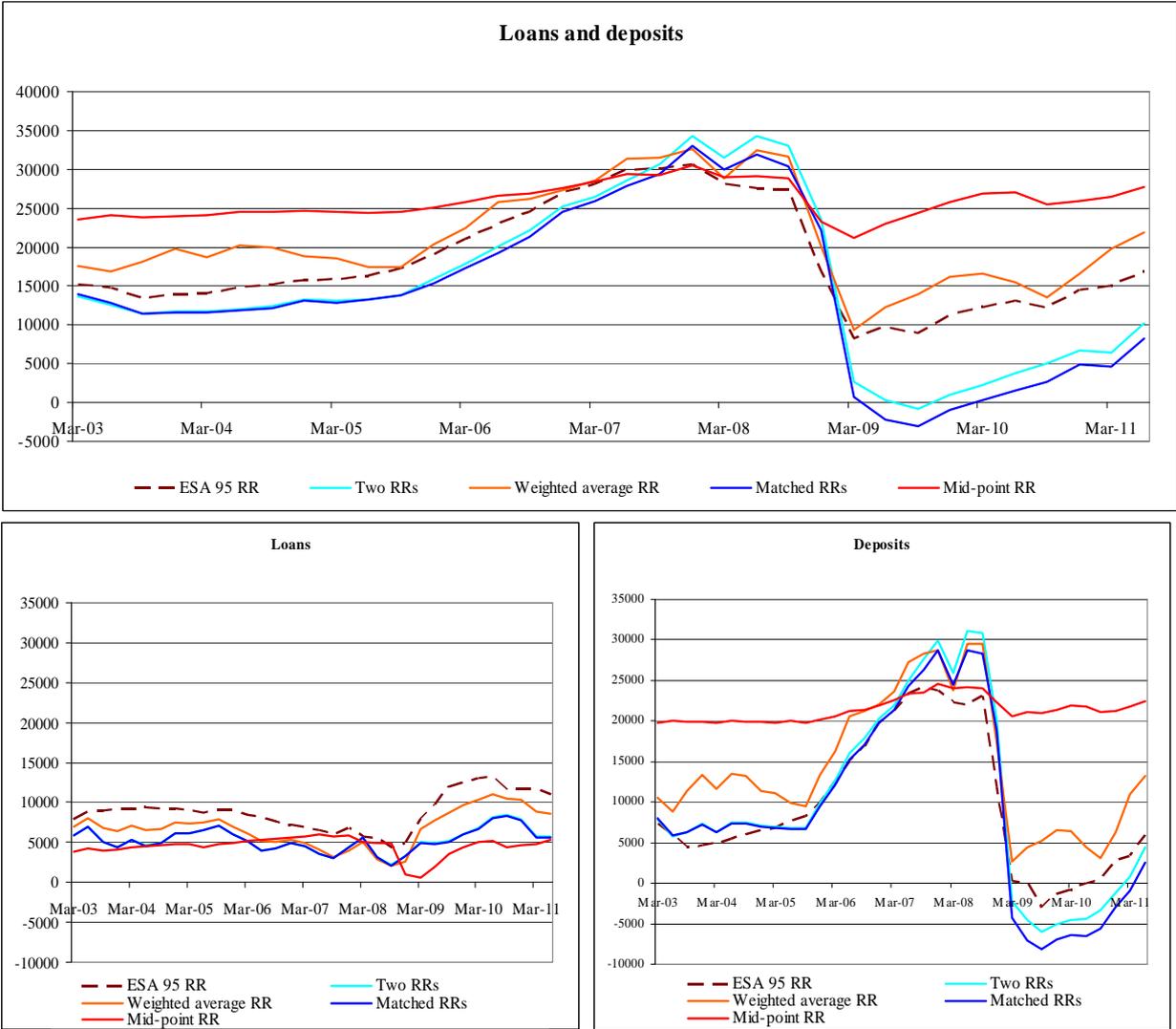
Sources: ECB, Thomson Reuters, Thomson Reuters Datastream and ECB calculations

Under all methods, loans contribute, on average, more than deposits to bank output. In addition, FISIM on deposits tend to be lower when interest rates are lower and, in particular, for periods following the collapse of Lehman Brothers (also in connection with the sharp cut in official interest rates) negative FISIM occur for a number of periods under all approaches except the *mid-point* method and the *weighted average* method. As noted above, this is in line with economic intuition in light of banks' behaviours during those periods (especially in southern European countries). Moreover, FISIM estimates returned to positive values in more recent periods, possibly also in connection to the liquidity provision operations of the Eurosystem, which lowered the interest of banks in raising deposits by offering high remuneration. As regards the plausibility of higher FISIM when interest rates are higher (which is observed under all methods but the *mid-point* reference rate approach), this is fully consistent with the economic literature, which is suggesting how sluggish deposit rates are when policy (and thus money market) rates increase.

FISIM measures based on two reference rates or on the more refined selection of reference rates under the *matched* approach are very similar, both in terms of level and in terms of series evolution, also when considering loans and deposits separately. In turn, the *weighted average* reference rate delivers very

different results from those two methods. The main reason for this is the maturity mismatch between deposits (mainly short-term) and loans (mainly long-term). Estimates obtained under the *weighted average* reference rate, in fact, are similar to those under the *ESA 95* method, especially in terms of series evolution; in a sense, the two approaches only entail a “redistribution” of FISIM from loans to deposits, with the implication that no negative FISIM occur on deposit in this case. Finally, the approach based on the *mid-point* reference rate delivers very stable results both on loans and deposits, thus reflecting the observations we had above regarding the behaviour of FISIM margins in this case.

**Figure 4, FISIM contribution to GDP (Jan 2003 - Jun 2011, %)**



Sources: ECB, Thomson Reuters, Thomson Reuters Datastream and ECB calculations

In terms of impact on GDP, as discussed above, the main contribution comes from households’ deposits. In particular, the use of two reference rates and the *matched* reference rate approach provide similar results, implying a sharp decrease in FISIM's contribution to GDP as from mid-2008. Under these methods, FISIM contribution to GDP is, on average, lower than under the current *ESA 95* methodology, and turned negative in certain quarters. In turn, using a *weighted average* reference rate such contribution is even higher than under the current *ESA 95* methodology, as a reflection of three facts: i) deposits

dominate the item; ii) deposits are mainly short-term; iii) the *weighted average* reference rate is higher than under the *ESA 95* method.

## 6. Conclusions

According to the international statistical standards, the measurement and allocation of FISIM is currently based on the comparison of retail interest rates with a reference rate which reflects activities on the interbank market, which are mainly short-term and (historically) have low risk attached. The rising concerns on this approach recently led to the set-up of two task forces (at European and international level respectively) aimed at enhancing the current methodological framework. Both task forces, in particular, agreed on the necessity of a testing exercise regarding the treatment of the term and default risk premiums. This paper has mainly focused on the term premium adjustment, presenting the various alternative approaches proposed for testing and their corresponding FISIM estimates for the euro area as a whole.

In particular, we have started by stressing how all methods alternative to the current approach imply, at least to a certain degree, the exclusion of the term premium from FISIM measures, both for individual instrument categories, and for overall FISIM contribution to bank output and to GDP. Overall, our preference goes to **the method based on two reference rates**, which is broadly equivalent but simpler than the *matched* reference rate approach, and **is conceptually sounder** than all other proposals other than being to some extent consistent with economic literature. Moreover, the approach based on a *weighted average* reference rate is not so different from the current approach, but delivers very different results from the method based on two reference rates. With this respect, our simulations draw a rather different picture compared to the estimates derived from *Banco de Portugal*, which showed that in the case of Portugal the method based on two distinct reference rates for short and long-term operations and the approach based on their (weighted) average result in similar FISIM calculations. A possible reason to explain the different conclusions could be the fact that in Portugal the maturity mismatch between the two sides of the MFI balance sheets is somehow limited. We would then expect that the experience may vary across countries, depending on the structure of the national MFI balance sheets.

The argument often used that the approach based on a *weighted average* reference rate has to be preferred because it is less prone to negative FISIM margins on deposit is, in our view, not a good reason for its adoption. Any method should be first justified on conceptual grounds, and negative FISIM may reflect economic reality as recent experience in some euro area countries seem to hint at. **We don't need a method that avoids negative FISIM, but a method which can explain negative FISIM.**

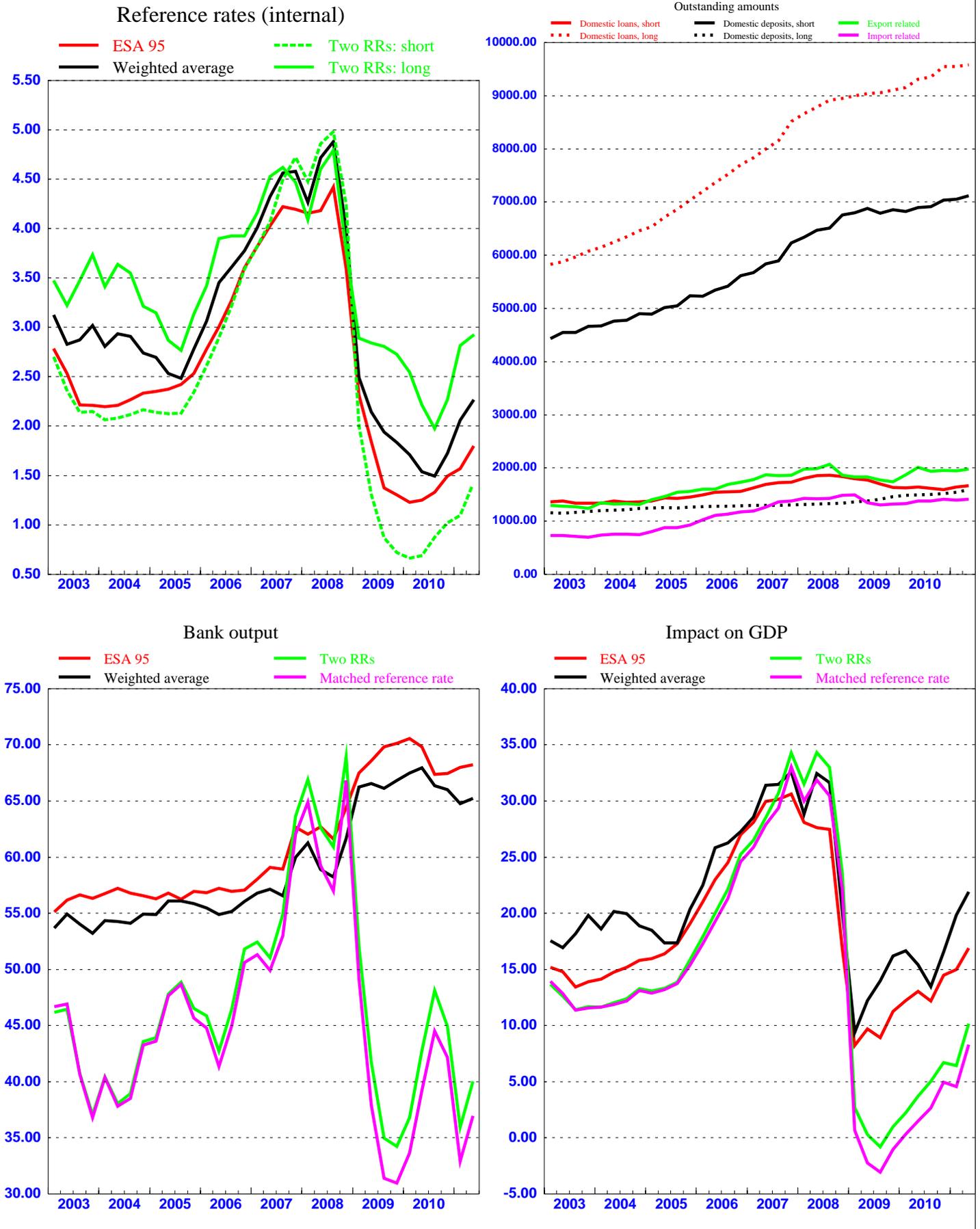
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# FISIM testing exercise on maturity adjustment

## Loans and deposits

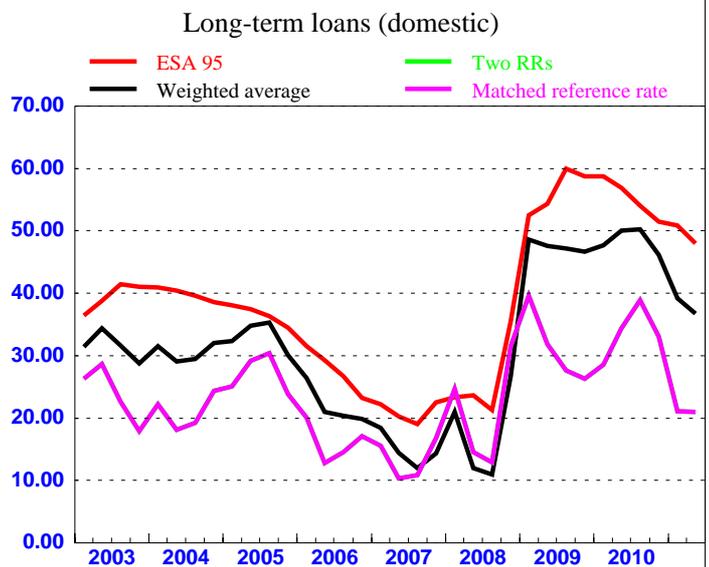
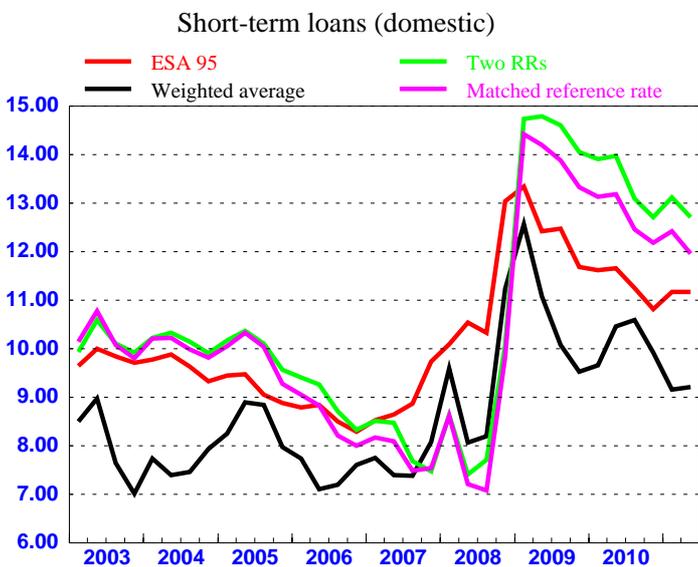
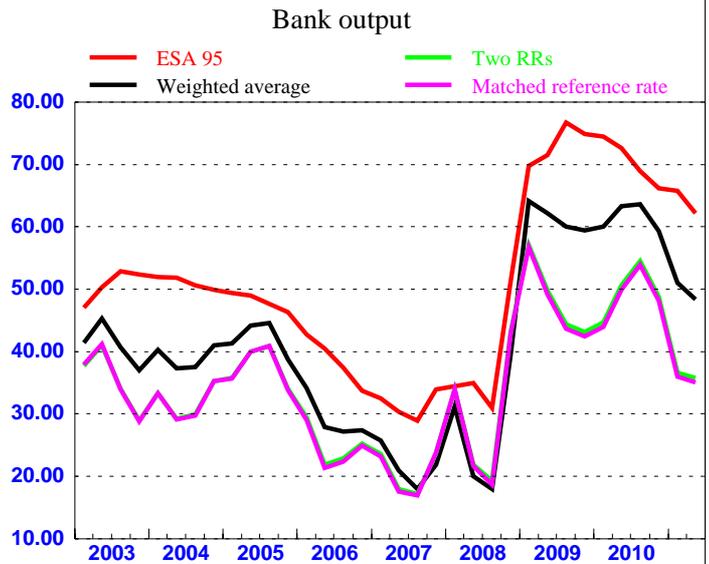
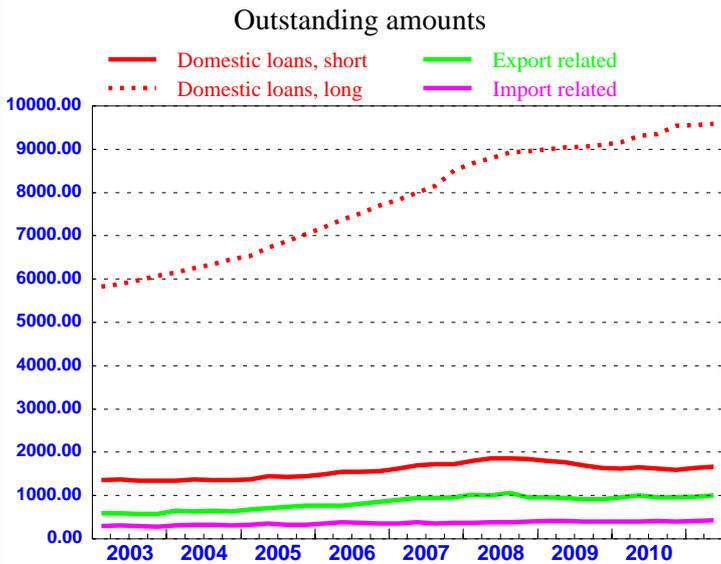
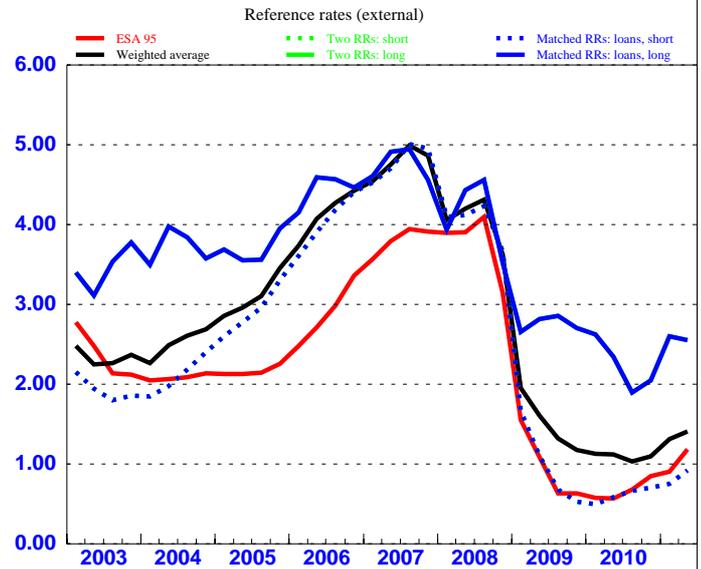
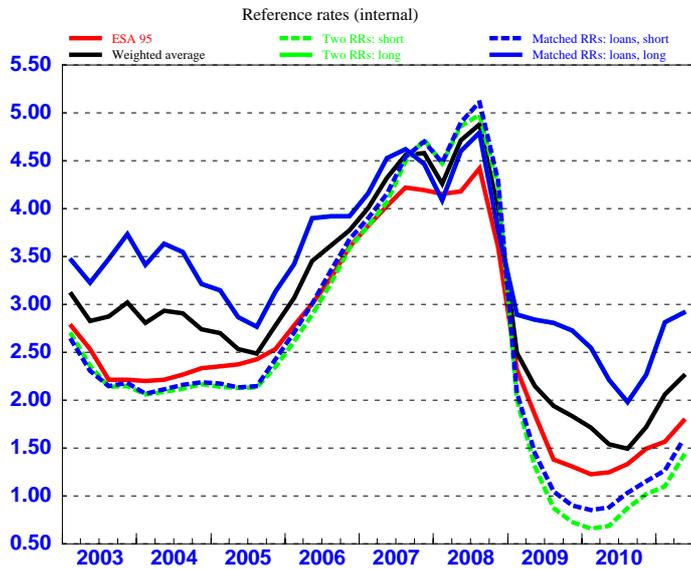
(percentage points for the interest rates; EUR billions for stocks and flows)



# FISIM testing exercise on maturity adjustment

## Loans

(percentage points for the interest rates; EUR billions for stocks and flows)

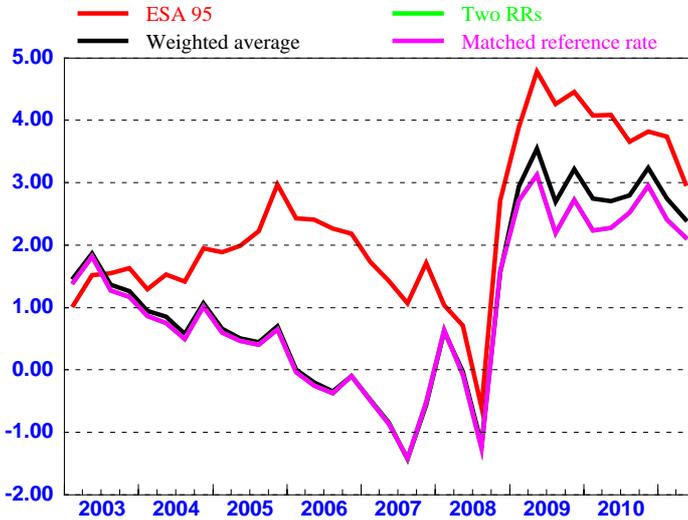


# FISIM testing exercise on maturity adjustment

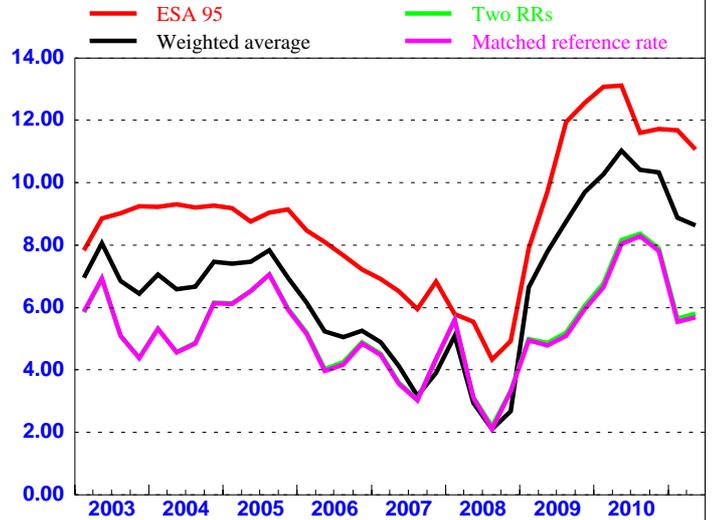
## Loans

(percentage points for the interest rates; EUR billions for stocks and flows)

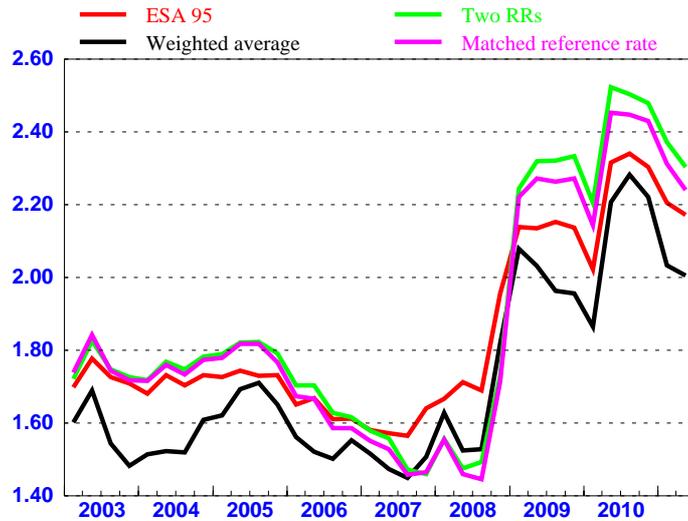
Exports on loans



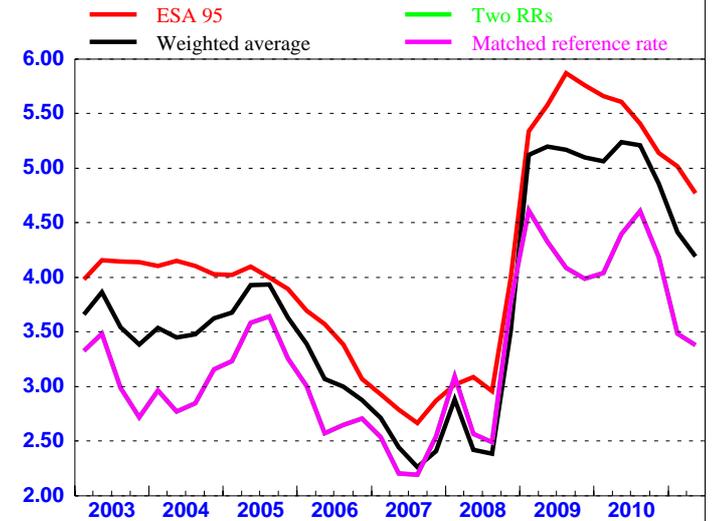
Impact on GDP



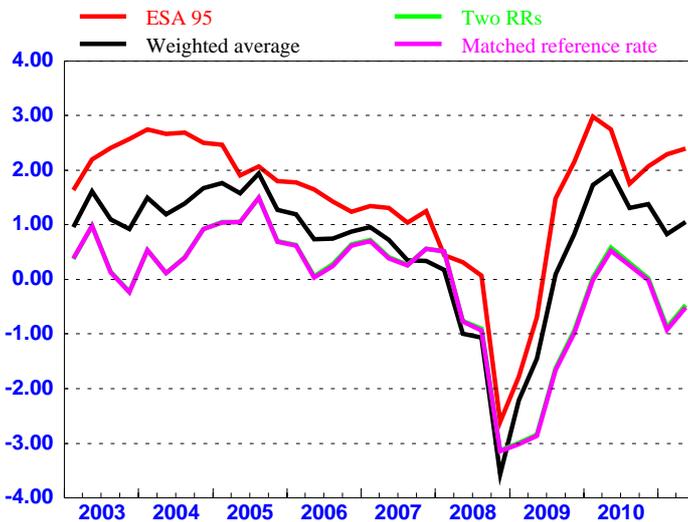
Short-term consumer loans (domestic)



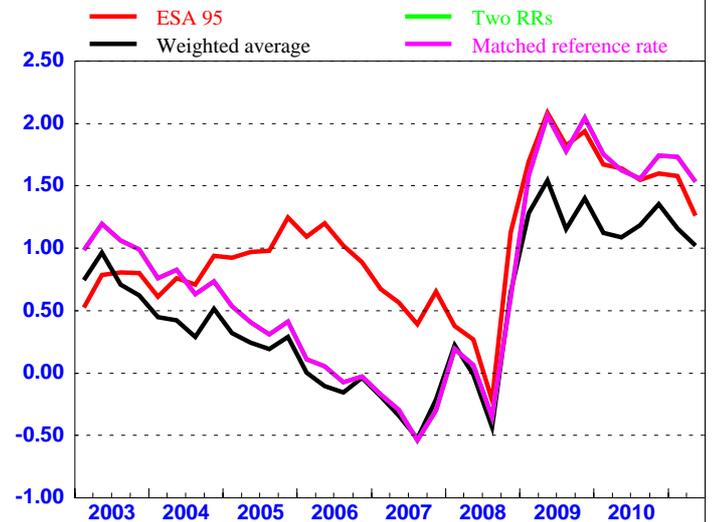
Long-term consumer loans (domestic)



Loans to government (domestic)



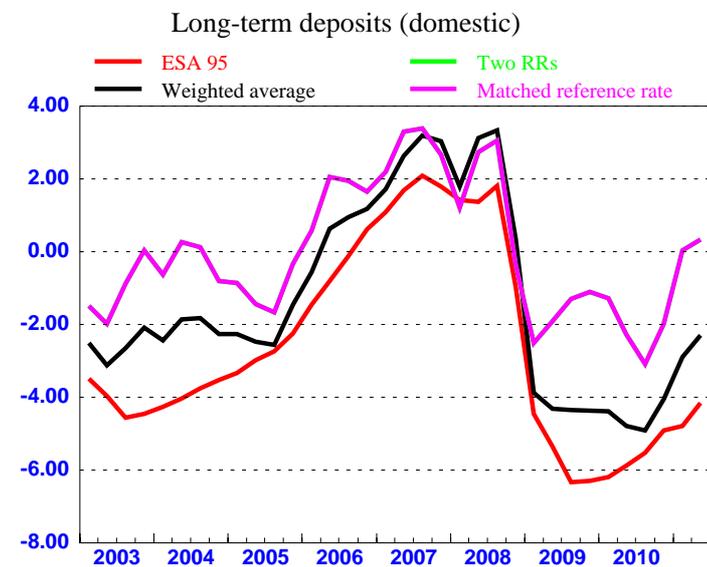
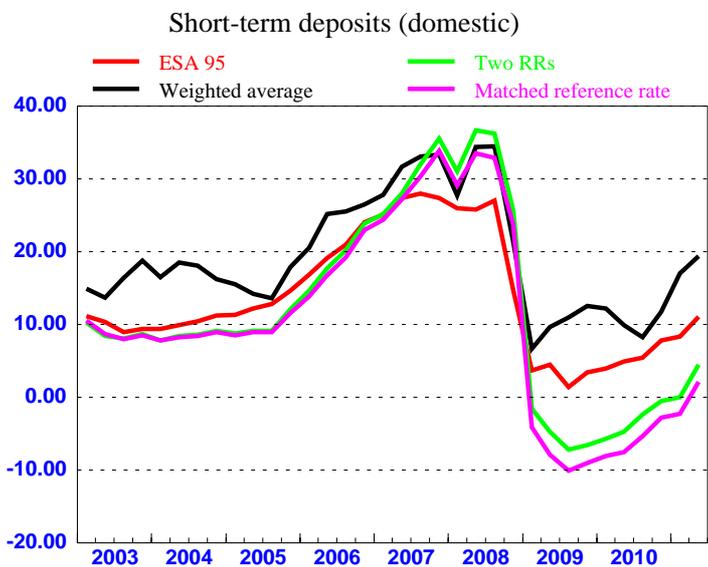
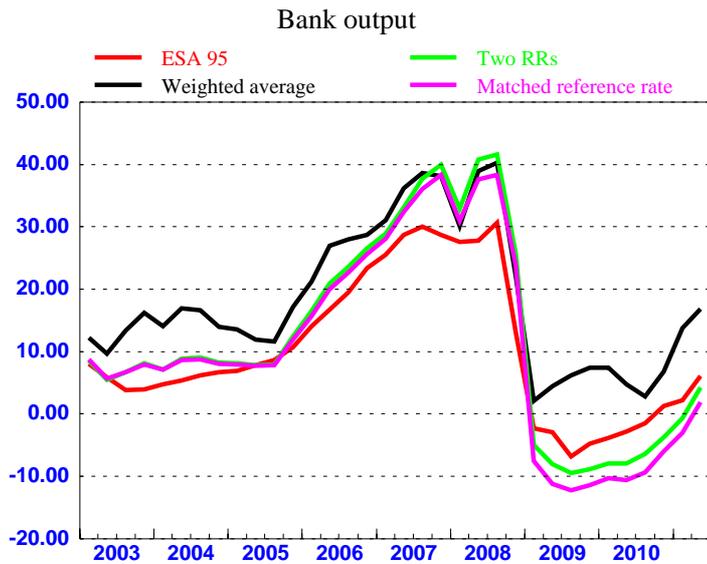
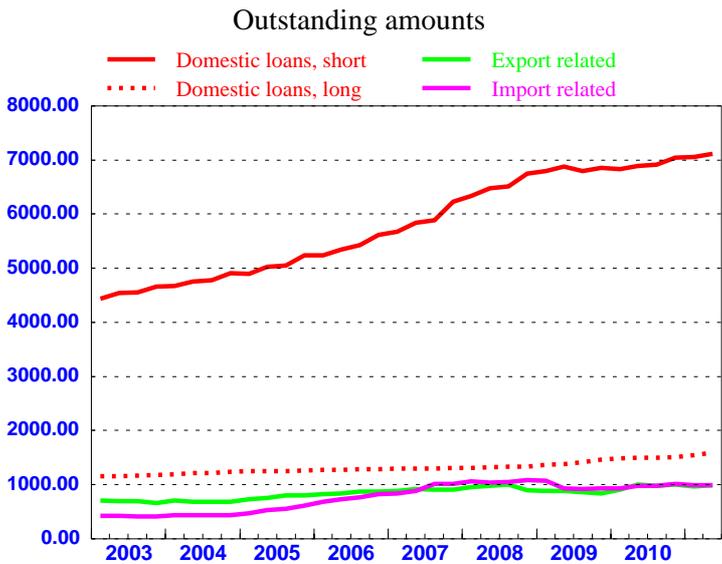
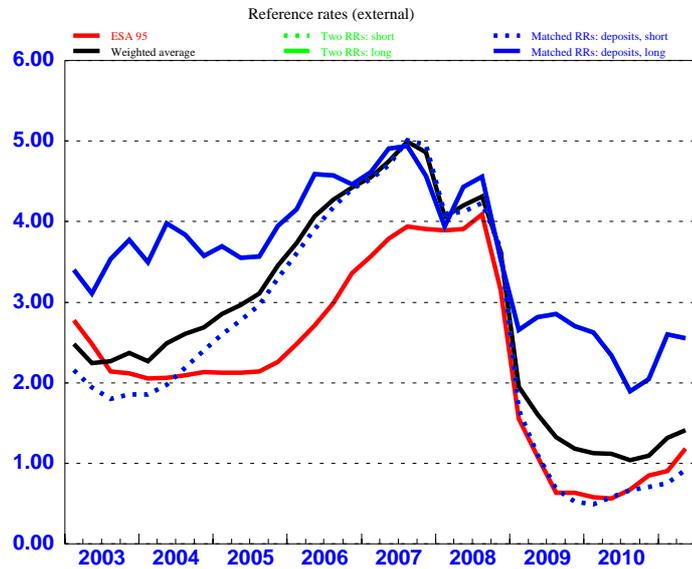
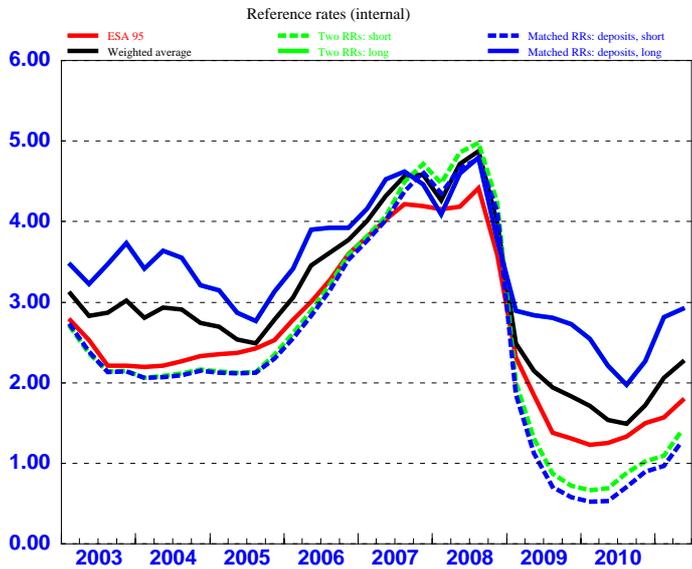
Imports on loans



# FISIM testing exercise on maturity adjustment

## Deposits

(percentage points for the interest rates; EUR billions for Stocks and flows)

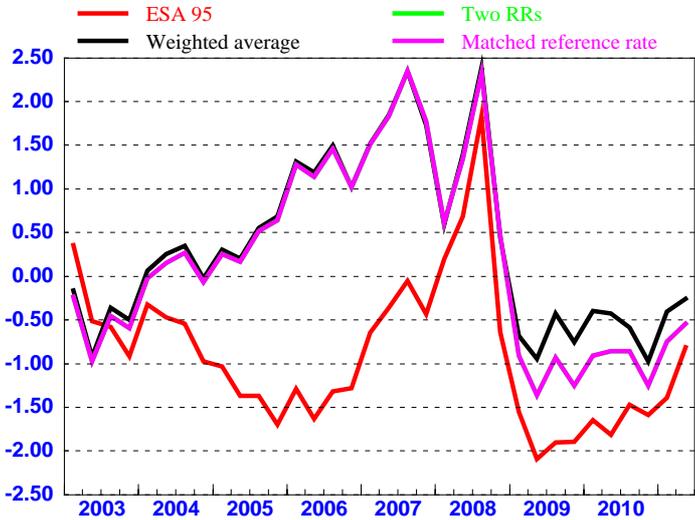


# FISIM testing exercise on maturity adjustment

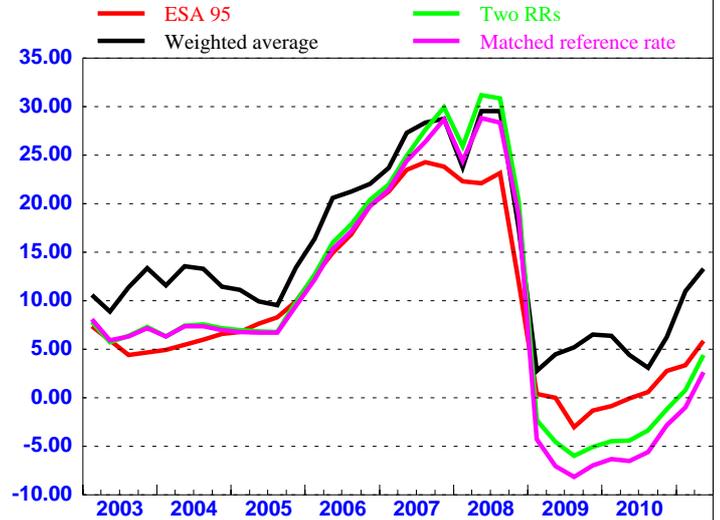
## Deposits

(percentage points for the interest rates; EUR billions for stocks and flows)

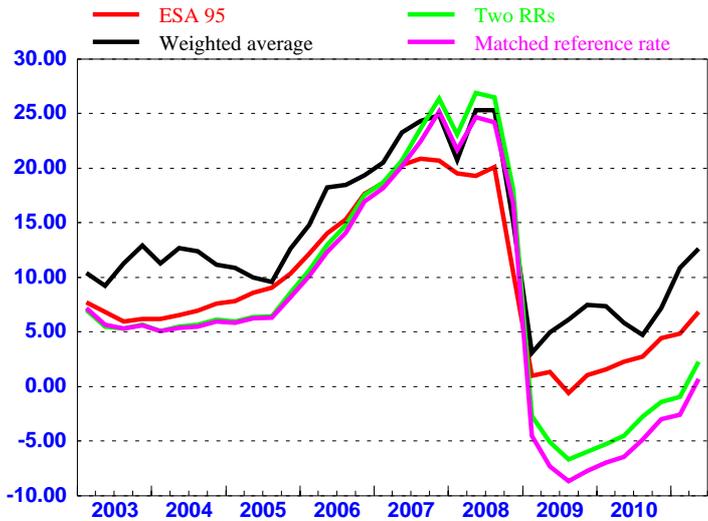
Exports on deposits



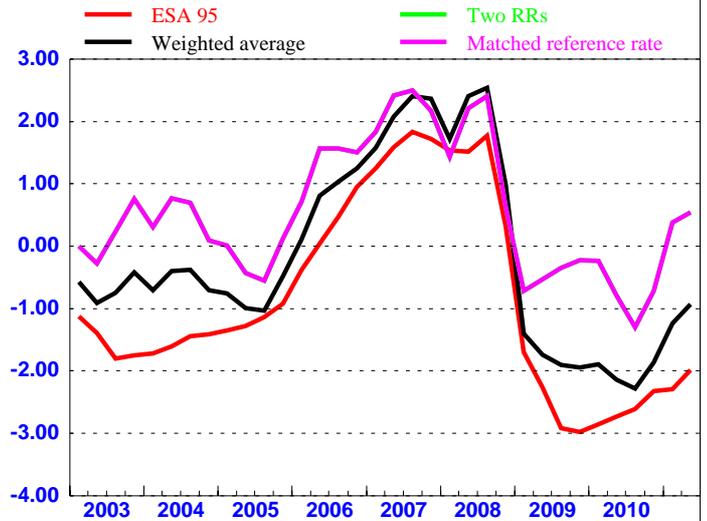
Impact on GDP



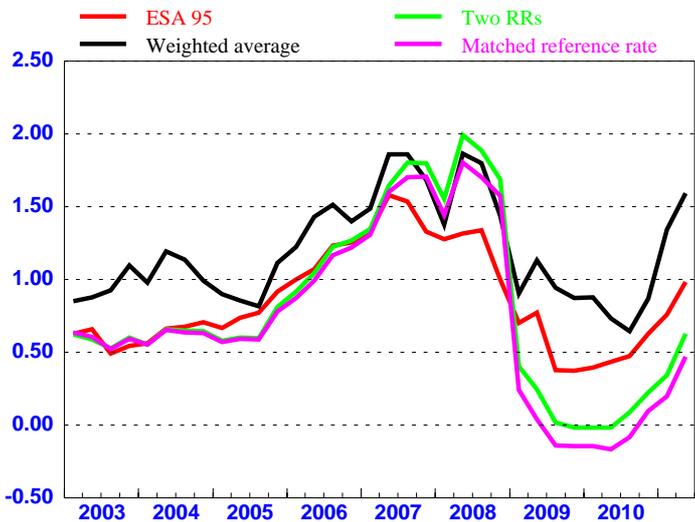
Short-term household deposits (domestic)



Long-term household deposits (domestic)



Government deposits (domestic)



Imports on deposits

