

Bank services: some reflections on the treatment of default risk and term premium

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1. Introduction

Financial corporations provide financial services that may be paid for explicitly or implicitly. Explicit financial services are directly observable as charges mainly in association with the acquisition and disposal of financial assets and liabilities or with insurance and pension schemes. However, any complete measurement of the production of financial services has to take account of the value of the services for which financial intermediaries do not charge explicit fees. For instance, the payment for the services provided on loans and deposits (ie financial advice, screening creditworthiness, monitoring the performance of the loan, renegotiating the contract conditions, bookkeeping and payment facilities) is usually bundled with the interest rates charged or paid.

Implicit financial services are often referred to as Financial Intermediation Services Indirectly Measured (FISIM). While in principle they may arise from various types of financial transactions, international statistical standards confine them to deposits and loans provided by financial intermediaries. In particular, FISIM are currently compiled following a single reference rate approach in which the rate prevailing for interbank lending is seen as a suitable choice. Following this approach, the compensation for the term premium and the credit default risk is treated as the remuneration for a productive service. This paper briefly discusses the theoretical and practical shortcomings of this approach and proposes modifying the current framework based on reference rates which would reflect the term premium and the credit default risk characteristics of deposits and loans.

The paper is organised as follows: Section 2 reviews the current treatment of implicit financial services in the international statistical standards. Section 3 describes how risk components can be appropriately measured for the euro area, while Section 4 shows the improved estimates of FISIM allocated to resident households and non-financial corporations and compares them with the results obtained by applying the official methodology used for EU countries. In addition, we demonstrate that the new proposed approach can be applied in the regular and timely compilation of quarterly and annual national accounts based on harmonised ECB statistics on retail interest rates.

2. Current treatment in international statistical standards

According to the European System of National and Regional Accounts (ESA 1995), FISIM are imputed for all loans and deposits, vis-à-vis residents and non-residents, provided by deposit-taking corporations and other financial intermediaries, excluding insurance corporations and pension funds. The estimates are derived by comparing bank interest rates to a single reference rate reflecting the average interest rate at which financial intermediaries

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lend money to each other (interbank), without any distinction by type and maturity of the instrument.³ As deposits and loans among financial intermediaries are mainly short term and (relatively) risk-free, it follows that the compensation for bearing the term premium and the credit default risk are treated as the remuneration for a productive service and thus become part of the output of financial intermediaries.⁴

The approach followed in this paper suggests why the term premium and the credit default risk should not be treated as part of the output of financial services. The *term premium* reflects the assumptions about future interest rates but is also a compensation of the investors for having their money tied up for a longer period, including the added risk of greater price uncertainty. Concerning the *credit default risk*, a difference is made between risk management and risk assessment. While risk assessment can be interpreted as a service provided to the borrower to evaluate his creditworthiness, risk management can be seen as an internal process whereby the bank organises its risks (risk controlling). Management of the default risk can be compared to an insurance contract where the lender (as the guarantor) charges a premium to the borrower in exchange of the risk of the potential default – the expected loss of the loan. Looking at a credit insurance contract, the output of a credit insurer is derived as the difference between premiums including premium supplements less adjusted claims incurred. As this compilation is based on an expectation approach, it would argue in favour of the default risk correction (discount of “expected” defaults).⁵

The current treatment of credit default risk and term premium also leads to an inconsistency in national accounts. Consider two non-financial corporations with similar characteristics that need to borrow to finance their investments. The first corporation issues a debt security 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 debt security. The second corporation borrows from a bank and pays the interest rate charged by the bank. Under the current approach, the second corporation is assumed to pay only the interbank rate, while the remainder of the payment, including the term spread and the default risk premium, is considered bank output. Under the proposed methodology, both corporations face the same cost of funds, and only the payments in excess of this market rate by the second corporation are treated as financial services output.

Hence, for deposits and loans, both the term premium and the credit default risk need to be accounted for. In order to better compare and classify these components, detailed financial market statistics should be used, such as data on debt securities yields, money market instruments and financial derivatives. The treatment of deposits is particularly problematic: while they could be seen as a risk-free investment, at least in those cases where credible deposit insurance schemes are in place with government guarantees, as in European countries, the current turbulence in financial markets has led to the occurrence of risk premia in those cases too.

³ Paragraph 6.166 of the 2008 System of National Accounts (2008 SNA) allows some flexibility in compiling the reference rate, stating that “the reference rate to be used in the calculation of SNA interest is a rate between bank interest rates on deposits and loans. However, because there is no necessary equality between the level of loans and deposits, it cannot be calculated as a simple average of the rates on loans or deposits. The reference rate should contain no service element and reflect the risk and maturity structure of deposits and loans”.

⁴ For a detailed discussion of the conceptual limitations of the current methodology from an economic perspective, specifically in times of financial crisis, see Basu et al (2008), Keuning (2008) and references therein. In this context, the argument of the Federal Statistical Office of Germany (2009) should also be referred to: a productive service requires the input of capital and labour, thus implying that FISIM output should not reflect credit default risk and term premia.

⁵ See SNA 2008, Chapter 17, Part 1: “The treatment of insurance”.

A further consideration refers to the type of interest rates⁶ on loans and deposits to be used to derive aggregated interest margins. While the approach currently used to compile FISIM relies on interest rates for outstanding amounts, this paper follows the framework of Colangelo and Inklaar (2008) by using interest rates on new business, ie newly negotiated interest rates during the period.⁷ Interest margins are applied to the whole outstanding balance of loans and deposits to derive FISIM output.

3. Adjusting for the term and credit default risk premium

Adjusting FISIM estimates for term premia is linked to the identification of an appropriate “risk-free” yield curve from which to extract reference rates for different maturities in the case of deposits and fixation periods in the case of loans.⁸ For long-term maturities, the approach consists of using the government bond yield curve, which represents the relationship between market returns and the remaining time to maturity of debt securities that are usually referred to as risk-free (among other reasons, because the government can raise revenue or increase debt to redeem the bond at maturity). For the euro area, differences in yields appear across euro area countries. Therefore, the yield curve is chosen for long-term debt securities issued by the German central government showing the lowest default risk premia. Due to the lack of a consistent yield curve on short-term government debt securities, the secured interbank lending market is referred to in order to identify the corresponding reference rates with short-term maturities. In particular, the Eurepo interest rates, which represent the reference rates for the secured euro area interbank lending market, are used for the term adjustment.⁹

An alternative approach might rely on a yield curve based on unsecured interbank lending rates and the swap yield curve.¹⁰ In particular, the Euro Overnight Index Average (EONIA) and the Euro Interbank Offered Rate (Euribor) have become the benchmark for the euro area

⁶ The euro area estimates are based on MFI interest rate (MIR) statistics (for monthly periods as from January 2003) as a harmonised and comprehensive set of interest rates applied by euro area deposit-taking corporations to resident households and non-financial corporations on euro-denominated loans and deposits. The requirements for MIR statistics follow Regulation ECB/2001/18. See www.ecb.europa.eu/stats/money/interest/interest/html/index.en.html.

⁷ New business rates should be preferred on various grounds. First, rates on outstanding amounts are weighted averages of rates on current and past loans and, if anything, should be compared with a weighted average of current and past financial market rates. Second, rates on outstanding amounts are not categorised according to periods of rate fixation but if a loan with a long-term original maturity has rates which are renegotiated annually, it would be more appropriate to compare the interest rate on this loan to the yield on a bond with a time to maturity of one year rather than according to the original maturity.

⁸ The paper refers to breakdowns of deposits and loans as collected according to the MIR regulation. Data on corresponding outstanding amounts of deposits and loans are based on the MFI balance sheet statistics (Regulation ECB/2008/32).

⁹ Eurepo rates represent the rates at which euro area banks are offering money to each other as part of a term repurchase agreement having as collateral euro-denominated securities belonging to a specified list (so-called Eurepo General Collateral) which mainly consists of risk-free debt securities such as government guaranteed bonds and bills of European countries.

¹⁰ Interest rate swaps are not completely risk-free, as a counterparty risk premium exists related to the interest flow exchanges (but not to the exchange of principal) and instruments price the expected default risk of money market participants at specified maturities. In recent years, this market has become one of the largest and most liquid in the world and has the advantage that credit risk characteristics are similar across countries.

money and capital markets;¹¹ similarly, a reference swap yield curve is available for the euro-denominated interest rate swap market. While the spreads with respect to the yield curves as described above (German government bond yields and unsecured interbank lending rates) had been rather limited until the start of the financial turmoil (on average varying between 3 and 15 basis points from January 2003 to August 2007), they have increased considerably since then, reflecting higher credit default risk on the interbank market. This implies that they can no longer be used for the term premium adjustment. At least in the euro area, such risk premia may have been passed on to deposits, in which case for those instruments unsecured interbank rates and the swap yield curve would then represent good proxies for the credit default risk and the term premium adjustment.

Adjusting for credit default risk on loans is more challenging. It would not be appropriate to use secured interbank lending rates and the swap yield curve for this adjustment as they would both reflect the risk characteristics of the lender rather than those of the borrower. Hence, for a loan portfolio, the average default risk component of the interest rates charged to customers should, rather, be estimated by the spread between a pool of debt securities having, on average, the same risk profile as the loans under consideration, and the government bond yield. This approach is used in the simulation for the euro area.¹² In particular, euro area bond indices are used as reference rates for non-financial corporations, while corresponding indices for asset-backed securities (ABS) and for residential mortgage-backed securities (RMBS) are used for households.

An alternative approach would have been to rely on the use of loan loss provisions, which represent the expected losses on a portfolio of non-performing loans. The 2008 SNA recommends recording memorandum items relating to non-performing loans and to the related loan loss provisions.¹³ Data on loan loss provisions are published by some commercial data providers for a set of euro area commercial banks, and risk premia on loans provided by those banks can thus be derived as the ratios between loss provisions and the outstanding amounts of the underlying loans. On the other side, in the context of banking output measurement, several concerns can be raised. First, the definition of loan loss provisions might vary across countries (even though International Accounting Standard 39 provides a general definition of impaired loan loss), thus resulting in a lack of data harmonisation. In addition, the construction of a representative sample of euro area banks on the basis of the available data sources may not be straightforward. The frequency of the available data and the lack of breakdowns by sector of the borrower and purpose of the loan may also be suboptimal.¹⁴ Data on credit default swaps (CDS) for non-financial corporations could also provide meaningful measures for their default risk. For instance, commercial data providers publish data on CDS for several euro area non-financial corporations and this approach would also allow the derivation of risk premia for a higher range of maturity spectra than under the corporate bond yields approach. Yet the market is relatively new and only very big firms are likely to be involved in CDS as reference entities. Therefore, while credit default swap spreads can be of interest in the context of FISIM measurement, the available data are not yet sufficient for use in regular standardised compilation systems.

¹¹ The EONIA is a weighted average of all overnight unsecured lending transactions initiated within the euro area by a panel of domestic banks, while the Euribor represents the rate at which euro-denominated interbank term deposits are offered by euro area banks (the average of the quotes provided by a panel of euro area banks).

¹² See Colangelo and Inklaar (2008) for a detailed description of this approach.

¹³ See 2008 SNA, Chapter 13, Part C.3: "The balance sheet".

¹⁴ For euro area countries, this information could, in principle, be available with the required breakdowns from data on write-offs/writedowns which is collected for MFI balance sheet statistics (Regulation ECB/2008/32). In practice, these statistics represent poor proxies for loan loss provisions as they are collected for the evaluation of transactions and are thus subject to national accounting rules applied in the country concerned.

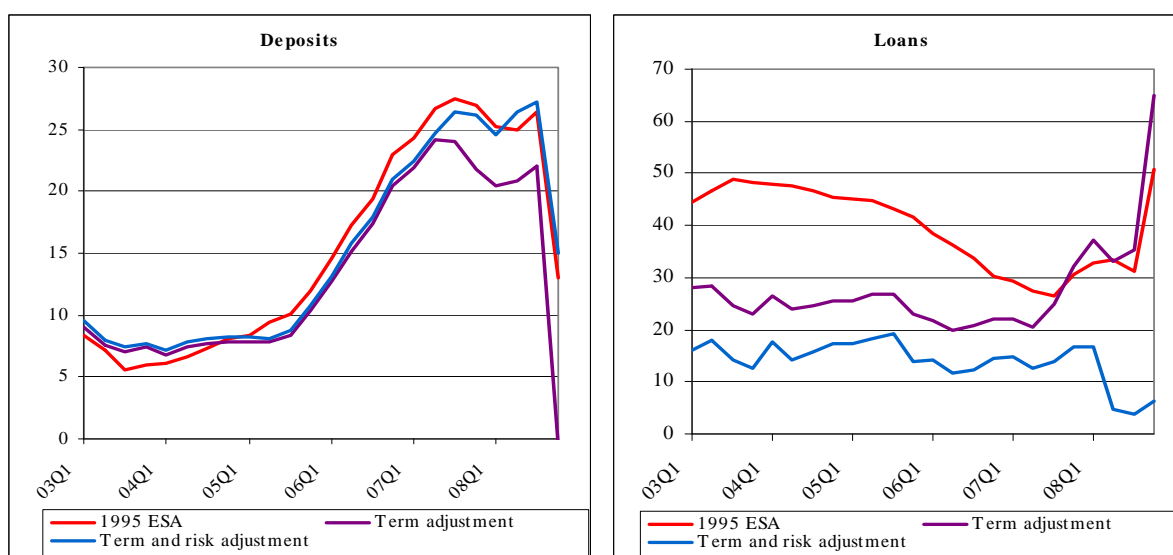
4. FISIM estimates for the euro area

The framework described above is applied to the euro area, estimating quarterly banking sector output on deposits and loans vis-à-vis euro area households and non-financial corporations for the period from the first quarter of 2003 to the fourth quarter of 2008.¹⁵ In particular, results under term adjustment are obtained using, as reference rates, the secured interbank rates and the German government bond yield curve. In case of default risk and term adjustment, results are obtained on the basis of unsecured interbank lending rates and the swap yield curve for deposits as well as on the basis of government bond yield spreads for loans. The table in the appendix shows in detail the reference rates applied to each deposit and loan category under both approaches.

Figure 1

Euro area banking sector output on deposits and loans

(EUR billions, quarterly output, Q1 2003–Q4 2008)



Notes: The sum of the output for the various types of loans and deposits. For each instrument category, the output is derived as the product of the relevant average interest margin times the outstanding amounts. Margins under the three approaches are derived by simulating the ESA 1995 methodology, on the basis of Eurepo rates and German government bond yields (term adjustment), using the EONIA/Euribor rates and the swap yield curve for deposits, and the relevant yield curve for corporate bonds and ABS/RMBS for loans (term and risk adjustment).

Source: ECB calculations.

When adjusting for both term and default risk premia, this method yields that the euro area banking sector output vis-à-vis resident households and non-financial corporations is, on average, 37% lower than estimated under the current approach. This would also imply that GDP, the total value of goods and services delivered to final demand, is overestimated by about €19.2 billion or 0.23% of euro area GDP.¹⁶

¹⁵ FISIM estimates under the ESA 1995 approach are not based on national official statistics but have been derived by simulating this methodology.

¹⁶ As this paper only refers to FISIM allocated to households and non-financial corporations, estimates of the GDP correction do not reflect the impact of the new approach on FISIM allocated to general government and to the rest of the world.

Appendix table: Bank loan and deposit instruments and reference rates

| | Term premium adjustment | Default risk and term premium adjustment |
|--|----------------------------|--|
| Loans | | |
| Non-financial corporations | | |
| Up to 1 year | Six-month EUREPO | ML NFC bond index, 1–5Y minus 3Y German GB yield plus 1Y German GB yield |
| Over 1 year and up to 5 years | Three-year German GB yield | ML NFC bond index, 1–5Y |
| Over 5 years | Seven-year German GB yield | ML NFC bond index, 5–10Y |
| Households | | |
| <i>For house purchases</i> | | |
| Up to 1 year | Six-month EUREPO | ML ABS/MBS index minus 5Y German GB yield plus 1Y German GB yield |
| Over 1 year and up to 5 years | Three-year German GB yield | ML ABS/MBS index minus 5Y German GB yield plus 3Y German GB yield |
| Over 5 years and up to 10 years | Seven-year German GB yield | ML ABS/MBS index minus 5Y German GB yield plus 7Y German GB yield |
| Over 10 years | Ten-year German GB yield | ML ABS/MBS index minus 5Y German GB yield plus 10Y German GB yield |
| <i>Consumer credit</i> | | |
| Up to 1 year | Six-month EUREPO | ML ABS/MBS index minus 5Y German GB yield plus 1Y German GB yield |
| Over 1 year and up to 5 years | Three-year German GB yield | ML ABS/MBS index minus 5Y German GB yield plus 3Y German GB yield |
| Over 5 years | Seven-year German GB yield | ML ABS/MBS index minus 5Y German GB yield plus 7Y German GB yield |
| <i>Other purposes</i> | | |
| Up to 1 year | Six-month EUREPO | ML ABS/MBS index minus 5Y German GB yield plus 1Y German GB yield |
| Over 1 year and up to 5 years | Three-year German GB yield | ML ABS/MBS index minus 5Y German GB yield plus 3Y German GB yield |
| Over 5 years | Seven-year German GB yield | ML ABS/MBS index minus 5Y German GB yield plus 7Y German GB yield |
| Deposits | | |
| (same treatment for households and non-financial corporations) | | |
| <i>Overnight deposits</i> | | |
| | EUREPO T/N | EONIA |
| <i>Deposits with agreed maturity</i> | | |
| Up to 1 year | Six-month EUREPO | Six-month EURIBOR |
| Over 1 year and up to 2 years | Two-year German GB yield | Two-year interest rate swap rate |
| Over 2 years | Five-year German GB yield | Five-year interest rate swap rate |
| <i>Deposits redeemable at notice</i> | | |
| Up to 3 months | One-month EUREPO | One-month EURIBOR |
| Over 3 months | Two-year German GB yield | Two-year interest rate swap rate |
| <i>Repurchase agreements</i> | | |
| | EUREPO Tomorrow/Next | EONIA |
| <i>Acronyms:</i> | | |
| ML: Merrill Lynch | | |
| ABS/RMBS: Asset-backed securities/Residential mortgage-backed securities | | |
| GB: Government bond | | |

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