10th Meeting of the Advisory Expert Group on National Accounts,
13-15 April 2016, Paris, France

Agenda item: 9.1
Accounting for credit default risk in FISIM

Introduction

The aim of this discussion item is to develop the conceptual arguments to either include or exclude credit default risk in the calculation of FISIM. In the case of excluding credit default risk, this includes the development of methods and data that could support its possible exclusion in the future.

When a lender originates a loan, there is almost always the possibility that the borrower may not pay back the loan's principal in its entirety. To ensure that nonpayment of principal does not drain away their capital, lenders generally charge an additional interest-rate margin large enough so that on average, the interest paid by all borrowers will be sufficient to cover amounts lost to default by some borrowers (in addition to cost of funds and services). This component of the lending rate is termed the "default margin". In the SNA the method for computing the output of borrower services of commercial banks defines the service margin is based on the difference between the interest rate on loans (which contain the default margin) and the reference rate. This implies that the default margin ends up in the service margin, and thus is incorrectly included in the measure of borrower services. This paper elaborates on alternative to the recording of default margins.

Documentation

Paper: Accounting for credit default risk in FISIM

Main issues to be discussed

The AEG is requested to:

- express their views on the accounting for credit default risk

Accounting for credit default risk in FISIM[1]

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1. National economic account statisticians have long recognized that banks are compensated for some services by a portion of the interest that they charge on loans or by a reduction in the interest rates that they pay to depositors—rather than by charging explicit fees. For example, banks may provide some services—such as processing of checks, disbursing or transferring funds when and where needed, protecting deposited funds, and investment services—without charging explicit fees. To account for such services, the national accounts include an imputation of the value of these services because they are omitted by the standard measure of output based on revenue from fees or prices, which is used for most industries. The *System of National Accounts 2008 (SNA)* contains recommendations on measuring implicitly priced services of financial intermediaries, including banks, and terms these services "financial intermediation services indirectly measured," or FISIM (*SNA 2008*, paragraph 6.163, 115).

2. The *SNA 1993* recognized that banks provide financial intermediation services both to borrowers and to depositors. To divide these services between those consumed by borrowers and those consumed by depositors, it introduced the "reference-rate" approach. Under this approach, the difference between the interest rate on bank assets and the reference rate is used to measure implicit services to borrowers, and the difference between the reference rate and interest rate on bank liabilities is used to measure implicit services to providers of funds to the bank. The reference rate methodology can be interpreted as an application of the theory of the user cost of money of Donovan (1978), Diewert (1974), and Barnett (1978). In this theory, the user cost of holding a financial asset is the yield that would have been earned on the funds if they had been invested instead in a "reference" asset, such as a risk-free bond.

3. This paper addresses a conceptual concern relating to interest charged to cover defaults, which we argue is not a charge for services.

Alternative Treatment of Default Losses

4. Some of the interest that a bank charges on loans is used to cover losses of principal due to borrower default, a conceptual concern that has been discussed by Fixler, Reinsdorf, and Smith (2003); Wang (2003); Wang, Basu, and Fernald (2009); and Basu, Inklaar, and Wang

[1] This note is excerpted (with light editing) from Kyle Hood. 2013. "Measuring the Services of Commercial Banks in the National Income and Product Accounts: Changes in Concepts and Methods in the 2013 Comprehensive Revision." *Survey of Current Business* 93 (February): 8–19.

(2011). Funds that are used to cover these principal losses are not available to cover costs of labor and fixed capital needed for production, so they should be out-of-scope for measuring output. Accordingly, an alternative procedure for calculating the value of implicit services provided to borrowers would subtract a measure of expected credit losses due to borrower default from the actual interest that banks earn on loans.[2]

5. When a lender originates a loan, there is almost always the possibility that the borrower may not pay back the loan's principal in its entirety. To ensure that nonpayment of principal does not drain away their capital, lenders generally charge an additional interest-rate margin large enough so that on average, the interest paid by all borrowers will be sufficient to cover amounts lost to default by some borrowers (in addition to cost of funds and services). This component of the lending rate is termed the "default margin."

6. In user cost theory, the interest rate on loans is usually expressed as the sum of the cost of funds (a risk-free, default-free, service-free reference rate) plus a service margin (s):

$$r^{loan} = r^{reference} + s \qquad (1)$$

7. The current method in the SNA for computing the output of borrower services of commercial banks defines the service margin as the difference between the interest rate on loans and the reference rate; this service margin is then multiplied by total loan balances. Because r^{loan} includes a default margin and $r^{reference}$ does not, the default margin ends up in the service margin, and thus is incorrectly included in the measure of borrower services.

8. Corrado, Reinsdorf, and Hood (2012) argue that in equilibrium the revenue that banks receive from implicit borrower services should be equal to the total amount needed to compensate factors of production, such as labor, that produce the borrower services. If the default margin is positive, it will be included in the measured service margin from equation (1) even though it is effectively earmarked to be distributed to defaulting borrowers as a replacement for the principal that they owe and is not expected to be available to pay labor and suppliers. Thus, an adjustment to exclude the default margin is needed as part of the procedure for computing the service margin.

[2] Besides the default adjustment, Wang (2003) also removes a risk premium from the measure of implicit borrower services by including a risk premium in the particular reference rate used to calculate borrower services for each type of loan. This risk premium compensates investors for the disutility of bearing risk and is in addition to the component of loan interest needed to cover expected credit losses. The proposed adjustment to remove the risk premium from the measure of implicit services has conceptual and practical disadvantages; it differs from the default cost margin considered in this article. It is important not to conflate the concept of a default margin with that of a risk premium.

9. To exclude the default margin from the measure of output, the interest rate on loans, r^{loan}, is adjusted with an estimate of the default margin. The service margin is then computed using equation (1a):

$$(1a) \qquad r^{loan} - d = r^{reference} + s$$

Here, d is the estimate of the default margin. The default margin is estimated as a smoothed measure of loan charge-offs; charge-offs in a quarter represent the principal value that is recognized as uncollectable during that quarter.

10. In the United States, this alternative treatment of default risk was implemented in the national accounts in the 2013 comprehensive revision. The Bureau of Economic Analysis uses the following methodology. Charge-offs are reported to bank regulators in Call Reports (quarterly reports of bank condition and income). These charge-offs are aggregated and adjusted for business combinations and seasonality by the Federal Reserve Board. Because charge-off rates can be noisy, adjusted charge-off rates (charge-offs divided by loan balances) that are smoothed using a geometrically declining weighted average are computed. (An analogous method is recommended in *SNA 2008* (paragraph 6.189, 118) for nonlife insurance claims.) This is done by setting the estimated default margin of the current quarter Q equal to the estimated default margin from the preceding quarter plus 0.075 times the difference between the observed charge-off rate in the current period and the estimated default margin from the previous period.[3] This is shown in the following equation:

$$(2) \qquad d_Q = d_{Q-1} + 0.075\,(c_Q - d_{Q-1})$$

where c denotes the charge-off rate. Separate default margins are calculated for four types of loans. For each loan type, the estimated default margin is then subtracted from the observed interest rate to arrive at an adjusted loan rate. The adjusted loan rate is then used to compute the service margin, as shown in equation (1a). Chart 1 shows the combined actual charge-offs for the four types of loans and the overall estimated default margin multiplied by loan balances.

11. Sometimes the removal of the default margin is confused with the possibility of excluding from FISIM the uncollected interest on loans on non-performing status. While the *SNA 2008* recommends that interest should continue to be shown accruing on non-performing loans until a loan is repaid or the principal is written off, it does not specifically address whether FISIM should be assigned to those loans. There could be a case for the exclusion of uncollected interest on these doubtful loans, for which interest is contractually due but which the bank does not expect to receive. The adjustment described in equation (2), however,

[3] The 0.075 per quarter figure was chosen to match the average maturity and repricing dates of loans on banks' books, which is about 3 years.

refers to losses of *principal* due to default (or charge-offs), and thus is separate from the issue of the treatment of interest accruing on non-performing loans.

Effects of alternative treatment on commercial bank FISIM

12. As part of the 2013 comprehensive revision of the U.S. national accounts, the alternative treatment of credit default risk was implemented in the FISIM estimates beginning with 1985. The portion of the overall spread between the average loan rate and the average deposit rate that was assigned to FISIM was reduced by the incorporation of the default adjustment. Although prior to 2008, this adjustment normally fell within the range of 0.5 percent to 1 percent, it widened substantially during 2008–2011, reaching nearly half of the margin between the gross rate of interest on loans and the stabilized reference rate. This adjustment grew larger because during this period, charge-off rates were persistently higher than historical averages. Beginning in 2012, they fell, but they were still nearer to historic highs than to long-run averages.

13. The methods previously used in the U.S. national accounts (based on *SNA 1993*) showed growth of approximately 45 percent in nominal borrower services from 2007 to 2011. Yet the growth of gross lending by commercial banks was close to flat over this period because of a financial crisis that resulted in a recession and numerous bank failures. The revised methodology yields results that seem more plausible, as it shows a modest increase in borrower services of approximately 1 percent over this period.

14. The incorporation of the default adjustment generally led to downward revisions of total output of commercial banks because it reduced the amount of net interest that is viewed as an implicit payment for services. The default adjustment lowered estimates of both final and intermediate uses of bank output. It should be noted that the default adjustment did not directly affect measures of saving by sectors. The reductions in the amount of interest that is counted as a payment from borrowers for services were offset by increases in the amount of pure interest paid from borrowers to banks (referred to as "SNA interest" in the SNA).

15. The implementation of the default adjustment reduced total commercial bank FISIM for 2008 about $49.2 billion or 17 percent. Of course, the entire effect of the default adjustment was to reduce borrower services, so depositor services were unaffected. Because borrower services are mostly allocated to intermediate consumption, however, the effect on final consumption was much smaller, a reduction of about $8.7 billion or less than 0.1 percent of GDP.

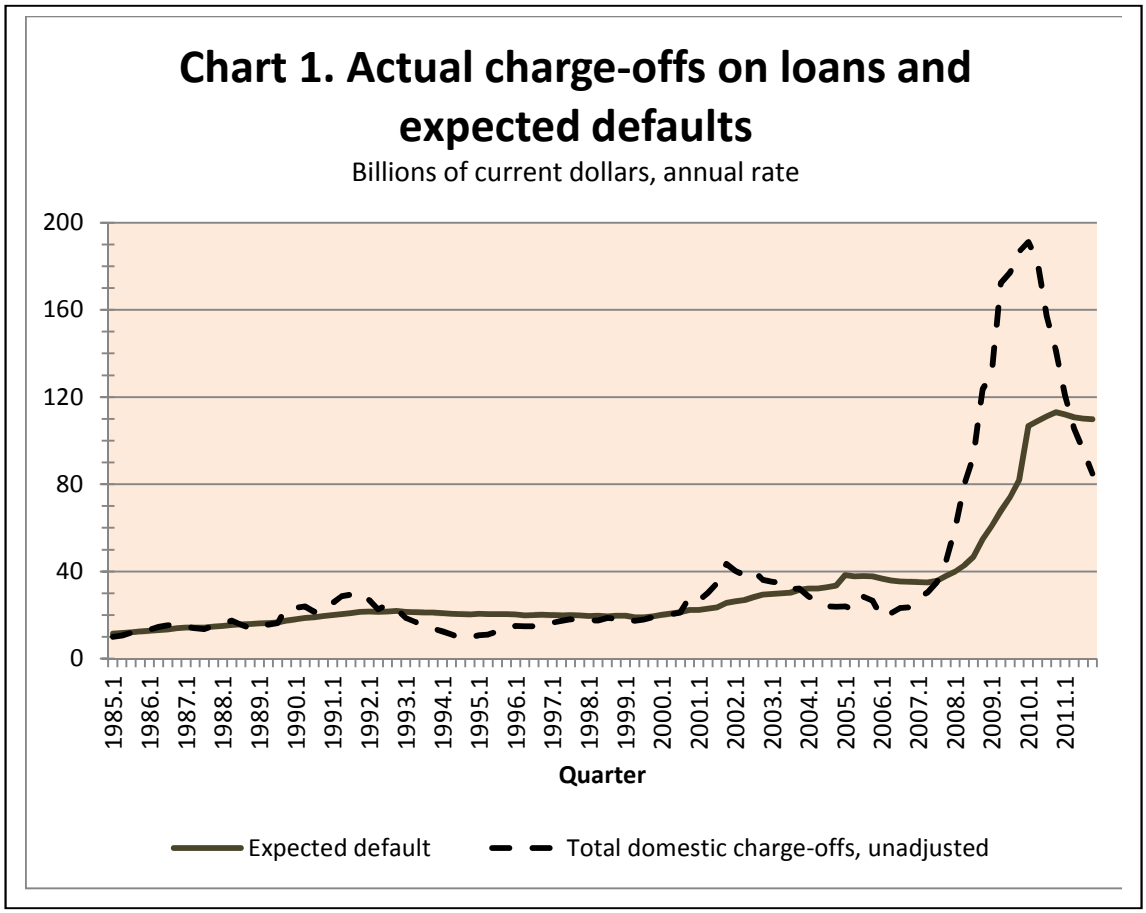
Chart 1. Actual charge-offs on loans and expected defaults
Billions of current dollars, annual rate
200
160
120
80
40
0
1985.1
1986.1
1987.1
1988.1
1989.1
1990.1
1991.1
1992.1
1993.1
1994.1
1995.1
1996.1
1997.1
1998.1
1999.1
2000.1
2001.1
2002.1
2003.1
2004.1
2005.1
2006.1
2007.1
2008.1
2009.1
2010.1
2011.1
Quarter
Expected default
Total domestic charge-offs, unadjusted

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