

**MEETING OF THE TASK FORCE ON  
FINANCIAL INTERMEDIATION SERVICES INDIRECTLY MEASURED (FISIM)**

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**The Treatment of Risk and Liquidity Transformation in the Measurement  
of FISIM**


To be presented by Marshall Reinsdorf, US Department of Commerce



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U.S. DEPARTMENT OF COMMERCE

# The Treatment of Risk and Liquidity Transformation in the Measurement of FISIM

**Marshall Reinsdorf**  
*Presented at the ISWGNA Task Force on FISIM*  
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3-4 March, 2011



## Bank net interest, SNA interest and FISIM

- Value of output is usually measured by prices, but intermediation services are priced implicitly as part of banks' spread income.
- For loans, rate spread above the opportunity cost of funds, as measured by the reference rate, covers the cost of providing unpriced services to borrowers.
- Unpriced services to depositors compensate them for foregoing the spread between reference rate and the rate paid on deposits.
- Banks' reported net interest income =  
borrower FISIM (bank output) +  
depositor FISIM (bank output) +  
SNA interest (property income).

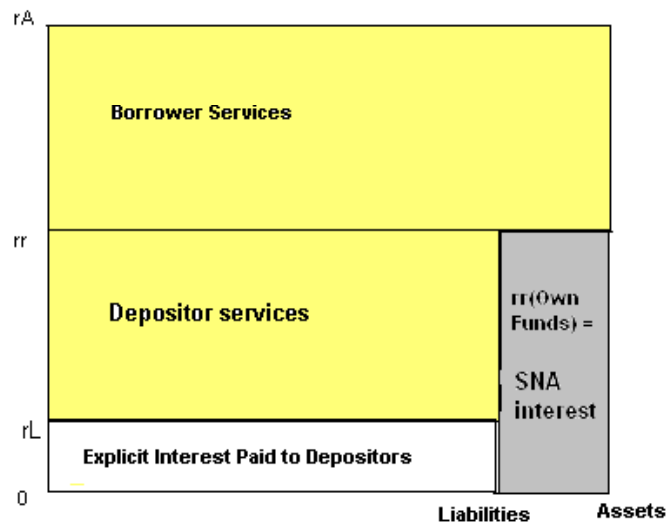
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## Debate over line between FISIM and SNA interest

- “SNA interest” is residual amount of bank’s reported net interest that remains after subtracting borrower FISIM and depositor FISIM.
- Own funds = assets – liabilities.
- With broad definition of the assets & liabilities that generate FISIM, SNA interest = (own funds) × (reference rate).
- Wang (2003) proposed inclusion of a *risk premium* in the reference rate used to calculate borrower FISIM on risky loans.
- Moving the risk premium into SNA interest reduces measures of bank output, value added and gross operating surplus.
- Entrepreneurial income (profit) is unaffected because it includes net property income.

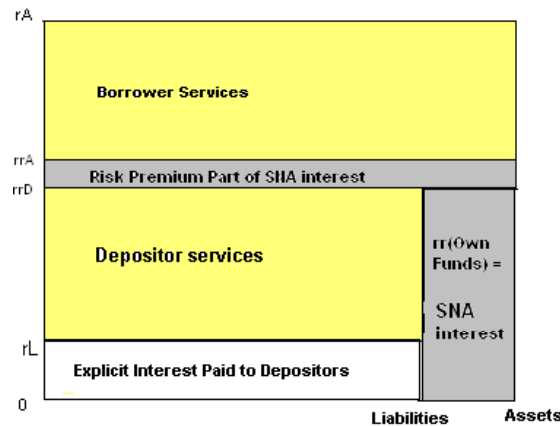
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## FISIM using a single reference rate



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## FISIM with Risk Premium in Reference Rate



SNA Interest now comprises return to risk bearing + return to lending of own funds.

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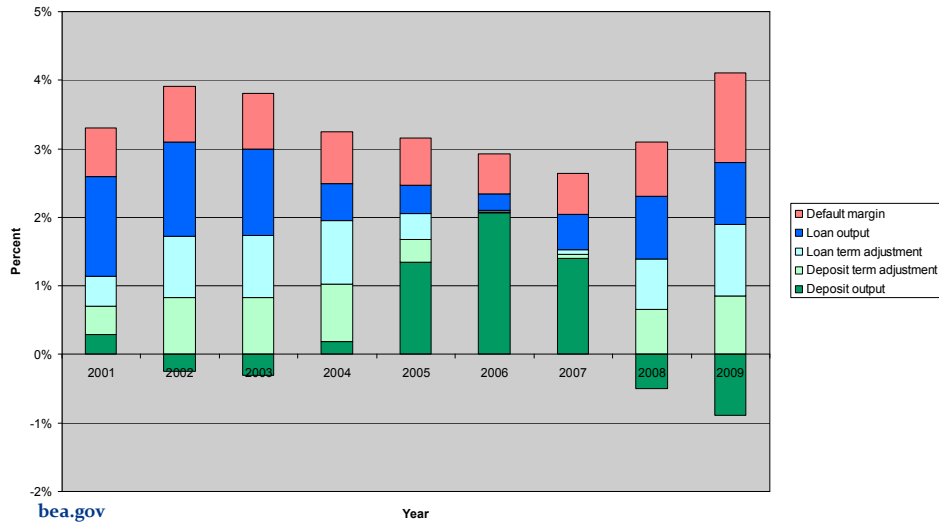
## My proposal to adjust for expected credit losses

- For loans to borrowers at risk of defaulting, contractual interest rate must be high enough so that the interest received from non-defaulters covers the losses of principle due to default.
- Interest that substitutes for missing repayments of principle is not available to pay the labor, fixed capital and tax expenses that are required for production of output.
- Adjusting the loan rate to exclude the *default premium* is not the same as adjusting reference rate to include a *risk premium*.
- The default premium component of interest is analogous to expected claims in non-life insurance.
- Unlike the default premium, the risk premium (which represents an expected reward for risk-bearing) is money the bank keeps.

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## FISIM with default premium adjustment and term adjustment via maturity-matched reference rates

Decomposition of the net interest margin for US banks into default premium, term premia and FISIM




## Services included in FISIM

- “Financial services include monitoring services, convenience services, liquidity provision, risk assumption, underwriting and trading services. Financial intermediation involves financial risk management and liquidity transformation ...”  
SNA 2008, 6.157-6.158.
- Also: safekeeping, record keeping, payment services, intermediation between savers and borrowers, risk management and advice.



Question 1:  
Should Risk Premiums be Included in  
FISIM?


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**Return to Risk Bearing as Property Income**  
(Wang, 2003; Basu, Wang, Fernald, 2004; Basu, Inklaar, Wang, 2011)

- In CAPM, investors require a risk premium to hold risky assets, where risk is measured after allowing for gains from diversification.
- In equilibrium, a business's value added must be adequate to compensate the investors who financed its capital stock for the activity's inherent level of risk.
- Rates on loans to risky borrowers must include a risk premium.
- If we include the risk premium component of the loan rate in FISIM, our measure of the value added of the business will be smaller when the financing is from a bank than when it is from equity shares or bonds.
- But our measure of the value added generated by a business's production should be invariant to how the necessary capital stock is financed.
- To avoid a violation of this invariance principle, we must treat risk premium part of interest on loans as property income (SNA interest).


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### But often other kinds of finance are **not** substitutable for bank loans

- Most bank lending includes an element of liquidity provision.
- Banks have unique advantages in overcoming asymmetric information and in monitoring/advising borrowers.
- Expected return is greater when the bank holds the loan because: (a) working with troubled borrowers and liquidating collateral are less costly for banks; and (b) long-term relationships generate favorable incentives.
- Importance of bank credit channel in business cycle is evidence that bank loans are not so easy to replace.
- If loan is essential for the borrower's production to take place rather than a substitute for available alternative of bonds, **including the risk premium in the bank's value added is reasonable.**


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### Arguments for leaving the risk premium in FISIM


- Most loans involve risk management, monitoring and advice, not purely passive provision of finance, as in the bond market.
- Bonds can't replace loans  $\Rightarrow$  invariance principle inapplicable.
- If measures of output should include a reward to risk bearing, that must also be true for the output of banks.
- Risk-bearing **is** considered a service in case of nonlife insurance, so measure of value added is higher for firms that self-insure.
- Hard to separate costs of risk bearing and liquidity provision.

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Question 2:  
Should Default Premiums be  
Included in FISIM?

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### Expected Credit Losses vs Risk Premium

- Risk premium is the return to risk bearing (extra expected return). Adjusting for this implies use of a higher reference rate for loans in measuring FISIM.
- Economic concept of loan interest excludes amounts set aside to cover expected losses of principle due to default (“expected credit losses” or “default premium”). Adjusting for this implies a correction to the rate paid on loans.
- Interest from non-defaulters covers principle and interest due from defaulters **plus** the risk premium, so it includes a default premium and a risk premium.

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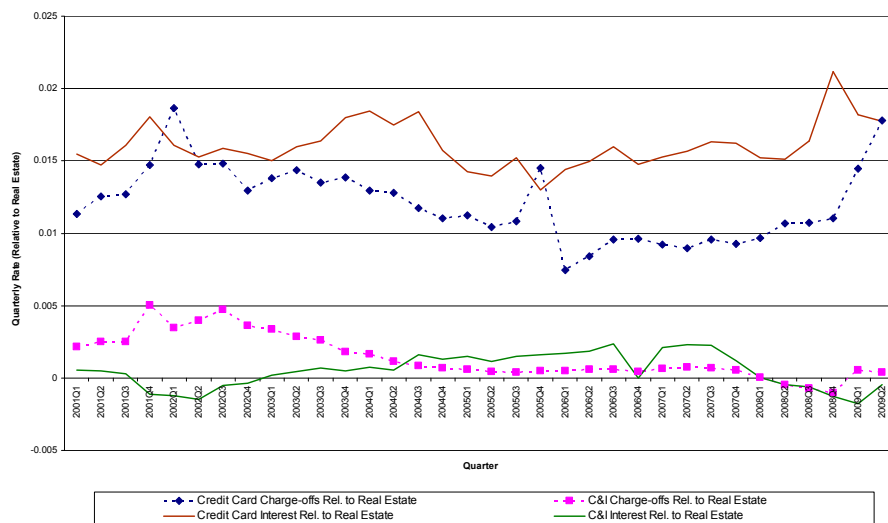
## Why adjust FISIM for the default premium?

- In the SNA, output generates revenue that is used to pay for inputs and taxes.
- Default premium is earmarked to replace amounts lost to default. It is not available to pay for inputs or taxes.
- Expected credit losses are parallel to expected claims in nonlife insurance.
- Usual treatment of bad debt doesn't work well when lenders expect default losses as part of normal operations.
- SNA 2008, 6.169, takes need for consistency too far when it says to impute interest on nonperforming loans (for which banks don't use accrual accounting.) This rules out use of "effective" interest rates.

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## Loan interest rates line up with loss rates

Figure 6: Charge-offs and Interest Rate Margins, 2001-2009



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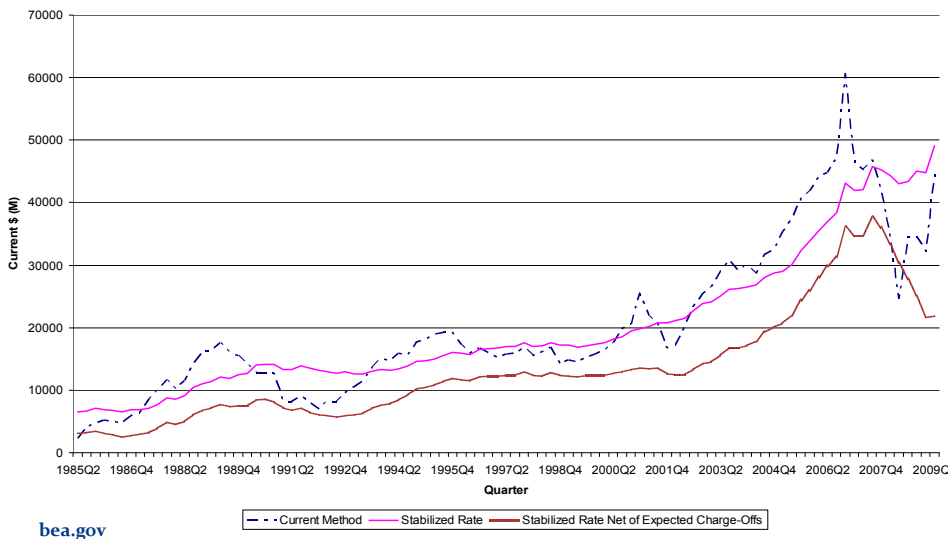
# A Dilemma

- From bank's point of view, default premium is neither implicitly-priced output nor property income from interest.
- Treating default premium as a transfer to defaulters used to repay the principle that they owe would give best estimate of banks' entrepreneurial income (profits) and saving.
- But in measuring the borrowing sectors, we cannot count non-repayment of principle as saving. From the borrower's point of view, bad debt must be in "other change in volume of liabilities".
- Compromise between creditor and debtor perspectives is to include default premium in SNA interest. This at least gets right the measures of bank output and borrower saving.


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# Experimental Measures of Borrower FISIM

Figure 4: Borrower Services, Quarterly Imputed Gross Output




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**Question 3: Is the Use of Maturity Matched Reference Rates Appropriate?**

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**Use of Maturity-Matched Reference Rates**

- Researchers have proposed (and experimented with) multiple, maturity-matched reference rates. Possible rationales are:
  - Seek to exclude from FISIM the term risk part of the risk premium.
  - Seek to measure bank services by holding constant everything except whether the money is invested with a bank (for deposits) or obtained from a bank (for loans).
  - Banks may effectively try to maturity-match their assets and liabilities to hedge their exposure to interest rate changes.
- But there are conceptual and practical problems with the proposal.

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## Maturity has different meaning for bank products

- Rollover/renewal probabilities are much higher for deposits and loans than for securities market instruments.
- For deposits, “virtual maturity” is longer than contractual maturity. In the financial crisis deposits were a relatively stable and reliable source of funding for banks.
- Banks provide extra services to attract deposits because deposits’ long virtual maturity makes them a stable source of funding.
- Flexibility to modify term is greater with loans and deposits.
- Loans often reprice at short intervals but allow borrower many years to repay principle. The matched security may have short term for both repricing and repayment.

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## Liquidity Provision and Liquidity Transformation

- A key service is liquidity provision, defined as giving the customer the ability to access cash or means of payment whenever the need arises. Besides offering convenience, access to liquidity provides insurance of the ability to pay obligations without delay.
- Diamond and Dybvig’s (1983) definition of *liquidity transformation*: Desire for the security and convenience that comes from having access to funds causes households and businesses to prefer short maturities when they are the creditor, but long maturities when they are the debtor. Banks accommodate their customers’ preference by financing illiquid long term loans with short term liabilities that must continually be rolled over or replaced.

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## Underestimation of Liquidity Provision Services

- Liquidity transformation is a key part of banks' intermediation services, so banks' liabilities tend to have short maturities and their loans tend to have long maturities.
- Liquidity transformation is not be counted as a service of banks when maturity-matched reference rates are used for FISIM.
- Financial instruments with short maturities involve provision of liquidity by debtor, so use of a short-maturity reference rate for deposits will understate value of liquidity services to depositors.
- Notwithstanding the fact that long term fixed-rate loans provide insurance against rate swings, the liquidity transformation process also provides liquidity services to long term borrowers. Borrowers have use of the bank's money for longer.

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## Problems of small and volatile estimates

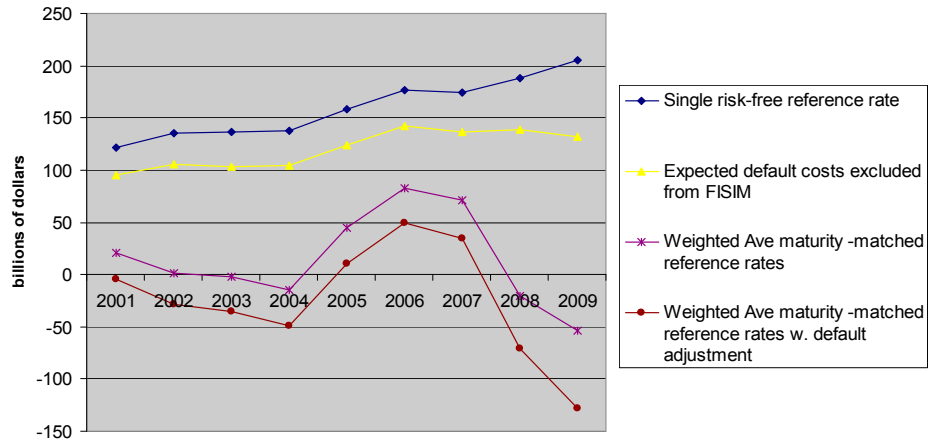
- With risk premium, default premium and liquidity transformation excluded, the estimate of FISIM implies negative gross operating surplus for banks, making them "a leech on the income stream."
- Maturity-matched reference rates can cause volatility in estimate of FISIM because slope of the yield curve varies over the cycle.

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## Experimental Measures of Net Operating Surplus of Commercial Banks



Banking Industry Net Operating Surplus under Alternative Definitions of FISIM




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## Let's Keep Things Simple



- Saying that liquidity provision is a service, but risk bearing is not unless its done by a nonlife insurer, causes lots of complications.
- We can't directly observe the return to risk bearing; we'll have to impute using returns on some risky asset as a reference rate.
- Suitability of the supposedly "matched" asset is usually doubtful.
- Single reference rate is more practical for national accounts.
- But we do have direct measures of losses from defaults.
- Excluding adjusted default losses from FISIM produces plausible estimates of bank output during times of high expected losses.


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**Thank you for your attention**

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