BEA
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Measurement of Implicitly-Priced Services of Banks in the US National Accounts

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Why National Accounts include FISIM

- Value of output of a market producer is measured by prices.
- But explicit prices aren't charged for credit intermediation services.
- Commercial banks substitute interest rate margins for explicit prices for services to borrowers and depositors.
- SNA uses the reference rate approach to measure FISIM (financial intermediation services indirectly measured).
- Without FISIM, bank employees and fixed capital would be shown as producing very little, resulting in negative *gross operating surplus.*
- Negative GOS means that banks rely on income attributable to the production of others to pay labor and other costs, so that the industry is, in effect, a "leech on the income stream."

Reference Rate Approach to Measuring FISIM

- Reference rate r^{ref} represents the opportunity cost of funds both for bank and for its customers.
- Rate margin above the opportunity cost of funds covers the cost of providing unpriced services to borrowers.
- Unpriced services to depositors compensate for gap between rate they get and opportunity cost of funds.
- $r^A \equiv$ rate on assets (loans);
- $r^D \equiv$ rate on liabilities (deposits);
- $A \equiv$ assets included in borrower FISIM; and
- $D \equiv$ liabilities included in depositor FISIM.

Total FISIM < Net interest reported by banks

Description	Formula
Borrower FISIM	$(r^A - r^{ref})A$
Depositor FISIM	$(r^{ref} - r^D)D$
TOTAL FISIM	$(r^A - r^{ref})A + (r^{ref} - r^D)D$
Net interest reported by bank if A and D include all interest-bearing assets and liabilities	$r^A A - r^D D = r^{ref}(A - D)$ $+ (r^A - r^{ref})A + (r^{ref} - r^D)D$
“Pure” net interest income of bank recorded in national accounts	$r^{ref}(A - D) +$ net interest from any items excluded from A and D

I. 3 Debates concerning the Definition of FISIM

1. Should FISIM be imputed on assets other than loans and on liabilities other than deposits?

2. Should liquidity provision/transformation count as a service?

3. Should the reward for risk-bearing count as a service?

Warning: Answering "no" to all three questions probably means adopting the "leech on the income stream" view of banks.

1. Should FISIM be limited to loans & deposits?

- Premise is that unpriced services can be provided only when there’s a direct connection to a customer.
- No such connection exists if a bank buys (or issues) bonds, for example.
- But limiting FISIM to items labeled as loans or deposits is too restrictive.
- A securitized loan held by the bank continues to provide borrower services.
- Deposit-like liabilities, such as customer repurchase agreements and sweeps, provide similar services to explicitly identified deposits.
- In the US, banks have substituted other assets for loans and other liabilities for deposits, so narrow definition would understate the industry’s growth rate.
- For the US national accounts, this is more a theoretical issue than a practical one: FISIM is imputed on bonds but the amounts are negligible.

2. Should liquidity provision count as a service?

- Ready access to funds provides convenience and security.
- Households and businesses want *short* maturities on deposits and securities they buy, and *long* maturities on their borrowings.
- To accommodate customer's desire for liquidity, banks must fund long-term, illiquid loans with short-term, easily withdrawn deposits.
- Diamond and Dybvig (1983) view "liquidity transformation" (funding long-term loans with short-term liabilities) as core function of banks.
- To satisfy customers' liquidity needs, banks must manage reserves, maintain a liquid balance sheet, and protect reputation for safety, via risk management and working with troubled borrowers.
- Maturity-matched reference rates would have effect of excluding liquidity transformation from our measure of the output of banks.
- Meaning of "maturity" not same for loans/deposits vs. securities.

3. Should reward for risk-bearing count as a service?

- Wang, Basu and Fernald (2004) develop a model in which rates on business loans include a risk premium that is **not** a service.
- In the model, investments with non-diversifiable risk must have higher expected returns to compensate for disutility of risk-bearing.
- Each business borrower has an exogenous level of risk and can obtain financing from a variety of sources.
- The expected value added generated by the borrower's business must provide investors with compensation for risk-bearing.
- Bank loans used finance the business must include a risk premium.
- Value added should be invariant to how the business is financed.
- *Including in FISIM the risk premium part of loan rate violates invariance by reducing measure of borrower's value added*.

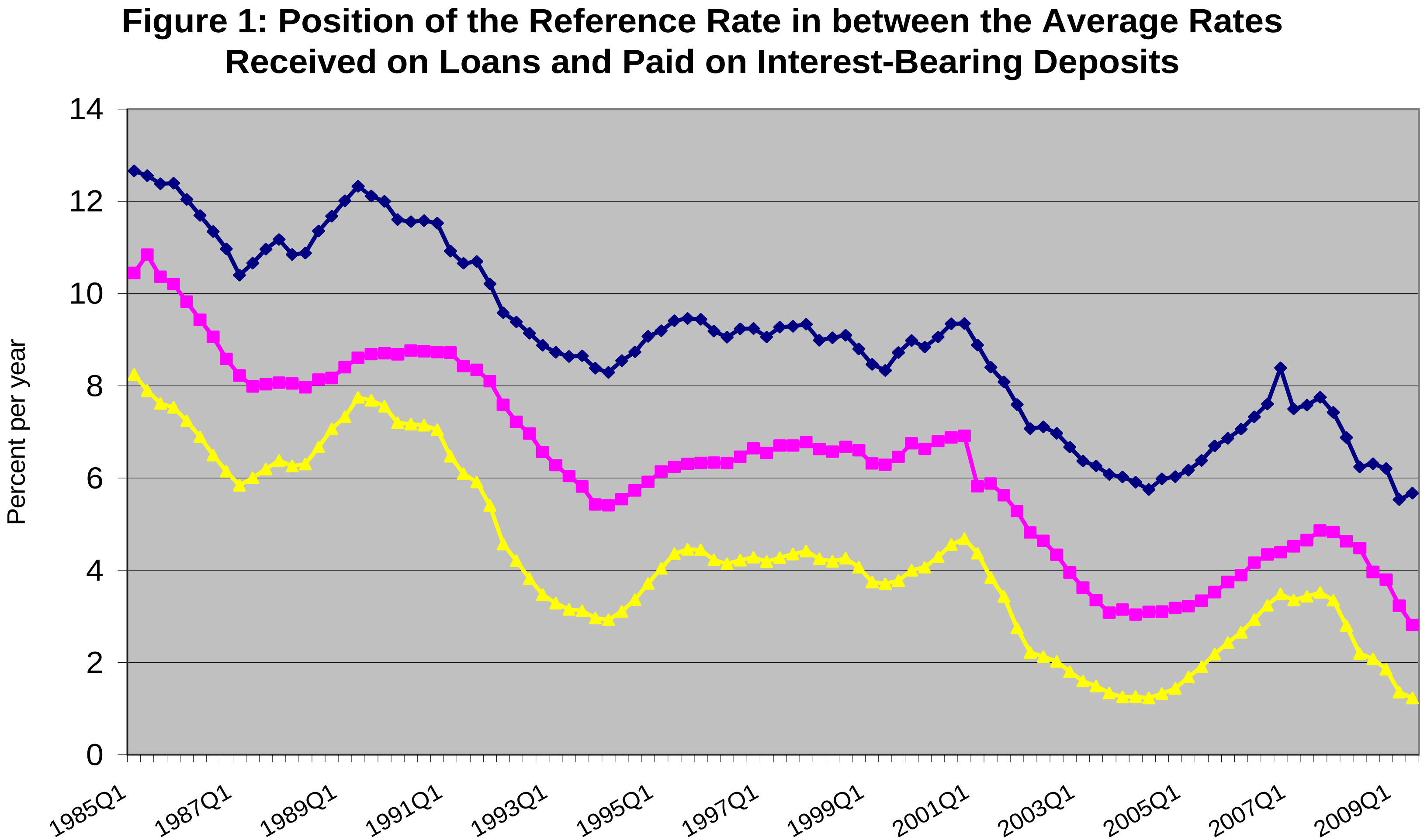
But is this model a good description of bank lending?

- Finance literature models meant to apply to securities markets.
- Securities are tradable because they have uniform characteristics, and exogenous levels of risk that are not contingent on ownership.
- Bank loans are idiosyncratic and have levels of risk that partly depend on the effort and skill with which they are managed.
- Risk is also match-specific: bank often has a long-term relationship with the borrower, a detailed understanding of the borrower's business, flexibility to renegotiate lending terms, and ability to provide liquidity services to the borrower.
- Products (or even the business itself) often would not exist without the bank loans.
- *Invariance axiom is inapplicable if no substitute for bank loan exists.*

II. Implementation of reference rate in the NIPAs

- Reference rate approach was implemented in US national income and product accounts (NIPAs) in 2003.
- Before the change, all FISIM was treated as depositor services, so direct effect was to reclassify some FISIM as borrower services.
- Broad definition of in-scope assets and liabilities was chosen.
- Average realized rates calculated from ratios of flow to stocks.
- Average realized rate on Federal government and agency debt held by banks used as reference rate.
- At the time, government agency date was perceived as risk free.
- With these procedures, neither borrower not depositor FISIM had negative estimates.

Position of the Reference Rate



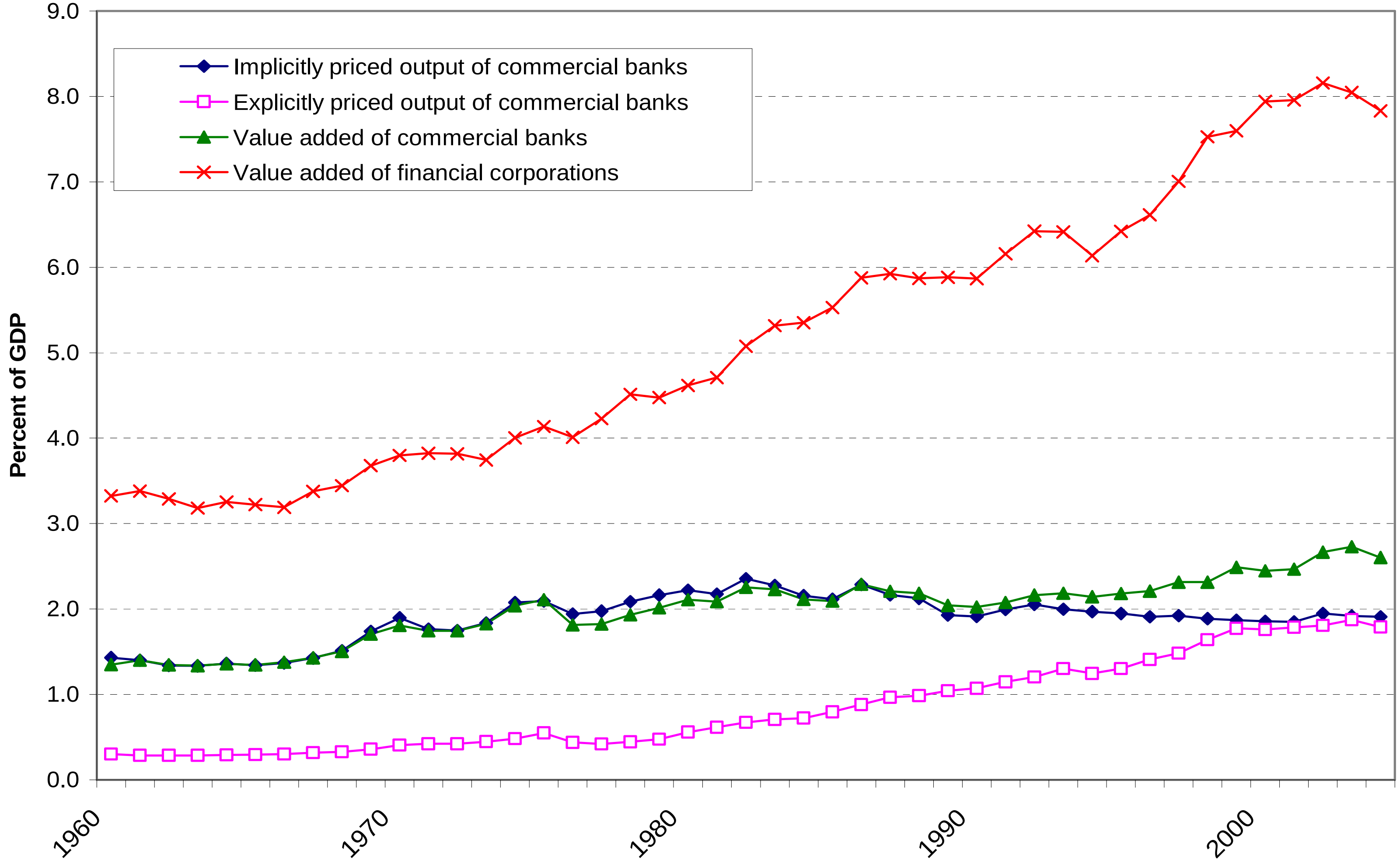
Effect of Comprehensive Revision of 2003 on Estimates of FISIM in 2001 (billions of $)

	Estimate using reference rate approach	Difference from previous estimate
Total implicitly-priced output	186.6	-69.1
Final consumption (GDP)	93.6	-91.9
Persons	78.8	-78.1
Government	5.4	-5.0
Rest of World	9.4	-8.9
Intermediate consumption	93.0	22.8
Financial corporations	7.3	-2.6
Nonfinancial corporations	45.2	3.9
Sole proprietorships and partnerships	20.3	1.5
Landlords, owner-occupiers and NPISHs	20.2	20.1

Decomposition of Difference of -69.1 in Total Imputed Output			
No FISIM on Own Funds	Source Data	Decrease in US Offices of Foreign Banks	Increase in Output attributed to Foreign Offices of US Banks
-19	-13	-13.4	23.7

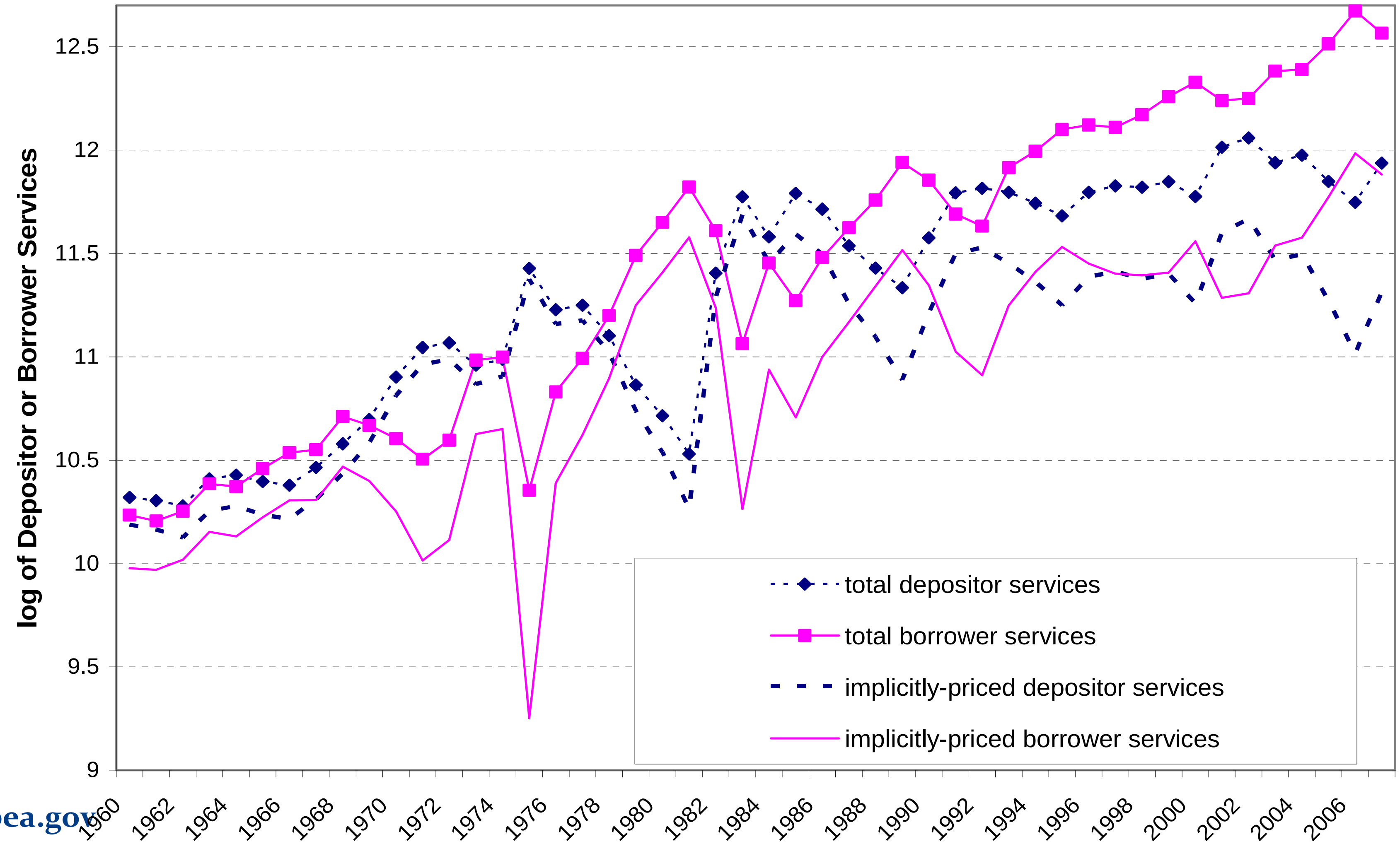
Slowdown of Relative Growth of FISIM

Figure 2: Value Added of Banks and of Financial Corporations, and Implicitly and Explicitly Priced Bank Services



Slower Growth of Implicitly-Priced Services

Figure 3: Growth of Depositor and Borrower Services
(Deflated by the Implicit Price Index for FISIM)



III. Research in Progress at BEA

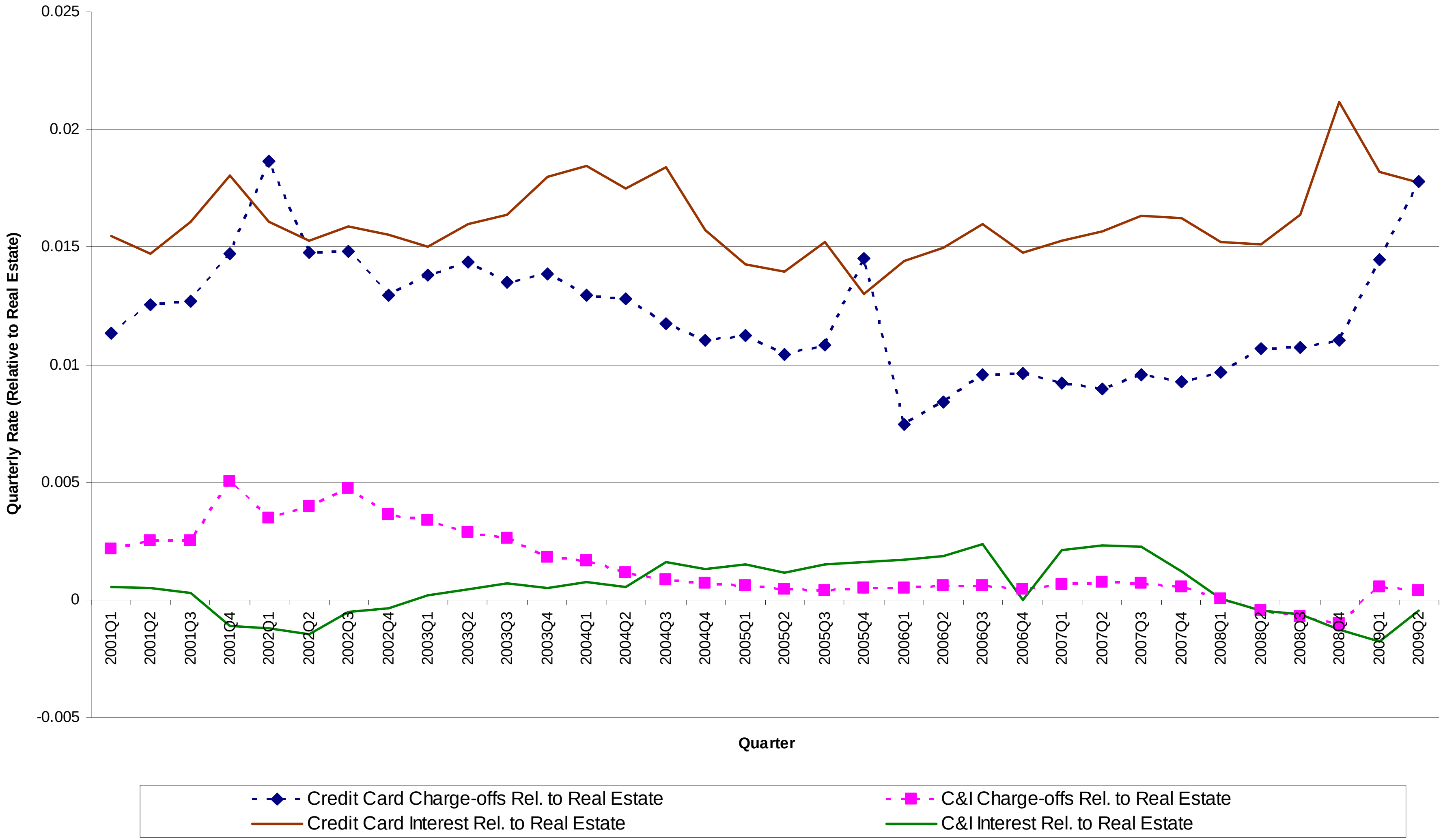
- Improving measurement of commercial banks is among our research projects in the National Accounts Directorate.
- Topics include:
  - Methods to reduce volatility of the split between borrower and deposit services;
  - Accounting for expected credit losses (bad debt write-offs);
  - Better measures of volume of FISIM by direct deflation.

Accounting for Expected Credit Losses

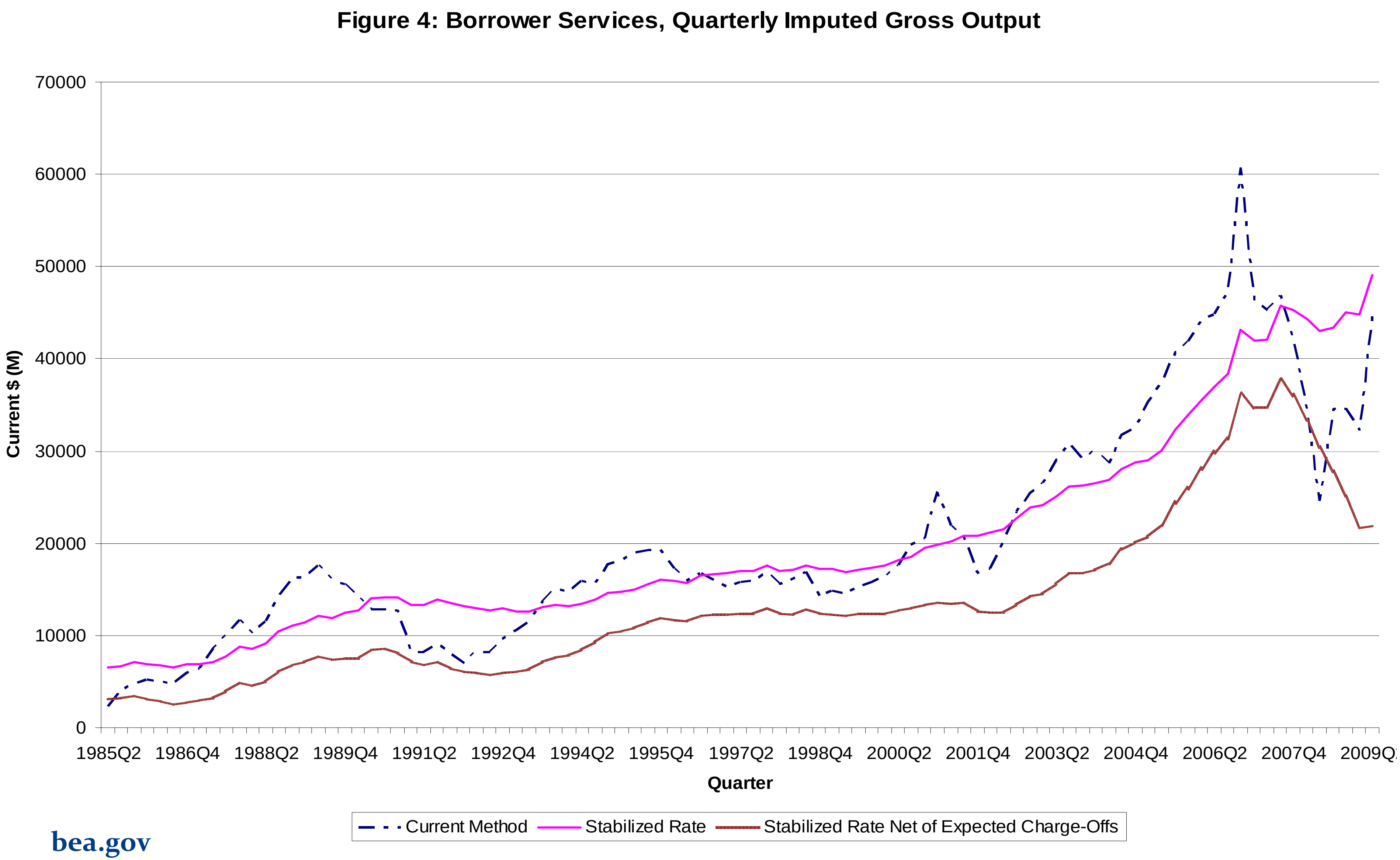
- Ignoring bad debts in national accounts is fine, except when bad debts are expected as part of normal operations.
- A portion of interest margins on loans is intended to substitute for explicit repayment of principle by borrowers who default.
- Economic definition of interest is *excess of expected receipts from borrowers over the amount of principle borrowed*.
- Some parallels with treatment of expected claims in insurance and with Vanoli's treatment of interest under high inflation.
- Should exclude expected bad debt losses from FISIM.
- Might also exclude from bank income and profits (unlike Wang proposal!) but this would raise borrower's income and saving.

Interest rate and loss rate differentials compared with real estate loans

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



Experimental Measures of Borrower FISIM (Smoothing Ref. Rate and Deducting Credit Losses)



Concluding Thoughts

- Measuring bank output presents hard conceptual and practical challenges!
- Theorists should bear in mind that methods have to be simple to be practical.
- Definitions of FISIM that result in negative output or negative gross operating surplus are not believable.
- Liquidity transformation is a service.
- Banks' willingness to pay for deposits is high, which suggest that they provide substantial amounts of unpriced services to depositors.