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Minipresentation

United States Producer Price Index for Banking
NAICS 522110 and 522120
ISIC 6419 Other Monetary Intermediation

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I. Industry Definition

NAICS Definition

According to the 2007 North American Industry Classification System, Industry Group 5221, Depository Credit Intermediation includes establishments primarily engaged in accepting deposits (or share deposits) and in lending funds from these deposits. Within this group, industries are defined on the basis of differences in the types of deposit liabilities assumed and in the nature of the credit extended.

The BLS currently calculates indexes for two industries within this group:

- NAICS 522110 Commercial Banking – Includes establishments primarily engaged in accepting demand and other deposits and making commercial, industrial, and consumer loans. Commercial banks and branches of foreign banks are included in this industry.
- NAICS 522120 Savings Institutions – Includes establishments primarily engaged in accepting time deposits, making mortgage and real estate loans, and investing in high-grade securities. Savings and loan associations and savings banks are included in this industry.

These industries exclude bank holding companies, which are classified in NAICS 551111 Offices of Bank Holding Companies.

Comparison to ISIC Definition

NAICS 522110 and NAICS 522120 most closely compare to ISIC Class 6419 Other Monetary Intermediation, which includes the receiving of deposits and/or close substitutes for deposits and extending of credit or lending funds. The granting of credit can take a variety of forms, such as loans, mortgages, credit cards etc. These activities are generally carried out by monetary institutions other than central banks, such as banks, savings banks, and credit unions. This class also includes postal giro and postal savings bank activities, credit granting for house purchase by specialized deposit-taking institutions, and money order activities.

One of the major differences between the NAICS and ISIC definitions is the inclusion of credit unions. Under NAICS, credit unions are classified in their own industry, NAICS 522130 Credit Unions. Another difference is credit card issuing which is included in the ISIC industry but is a separate industry in NAICS, 522210 (Credit Card Issuing). Any banking activity generated by the postal service and other non-banking entities is excluded from the NAICS industry but are included in the ISIC industry.

I. Industry Output

The primary output of the banking industry is the provision of financial services including financial intermediation. For this industry, financial intermediation can be defined as the assumption of risk that arises from taking money from depositors and lending it to borrowers. The output can be further defined by the specific types of services provided by banks. The major service lines follow:

- Loans
- Deposits
- Trust services
- Other banking services

Loans are assets of a bank defined as funds advanced to a borrower to be repaid at a later date, usually with interest. Included in the loan category are residential real estate, nonresidential real estate, home equity, commercial and industrial, agricultural, new and used auto, and credit card loans.

Deposits are liabilities of a bank defined as funds placed with a bank in an account subject to withdrawal. Included in the deposit category are demand, time, and savings accounts.

Trust activities involve the bank's acting in a fiduciary capacity for an individual or a legal entity, such as a corporation or an individual's estate. This typically involves holding and managing trust assets for the benefit of a third party.

Other banking services include standby letters of credit, correspondent banking, sale of securities, cash management and other miscellaneous services, such as the sale of money orders.

II. Item Selection

In the US, the banking industry is concentrated with the large banks being dominant. However, there are a large number of small banks. All banks, both large and small, that are insured by the Federal Deposit Insurance Corporation (FDIC) were included in the sampling frame. The frame also included US branches of foreign banks that are FDIC-insured.

For each industry, the sample was drawn in two stages. For the first-stage sample, banks were chosen by probability proportionate-to-size sampling based on revenue. For the second-stage sample, each of the large banks was subsampled using the service categories provided in the FDIC's Reports on Condition and Income, commonly referred to as Call Reports. These quarterly reports are required and disclose the income and expenses, at a detailed level, of all insured banks.

Subsampling created multiple sample units for a single bank in most cases. The service categories are listed below.

- Mortgage loans
- Agricultural loans
- Commercial loans
- Consumer and other loan services
- Retail (deposits)
- Trust services
- Other banking services

For loans and deposits, the unique item to be priced is represented by a homogeneous portfolio of accounts (e.g. all 15-year fixed rate residential mortgages or all 1-year certificates of deposit). Trusts and other banking services are priced by selecting an individual transaction.

Once the actual portfolio is selected, its price determining characteristics are identified to permit monthly repricing of the same unique item. The following characteristics are common for most banking services:

- Type of service - e.g. mortgage loans, money market savings account, corporate trusts, etc.
- Term of service - e.g. 15-year loan, 5-year certificate of deposit
- Type of fees - e.g. late payment, automatic teller machine, early withdrawal penalty, etc.

III. Index Methodology

A. Chosen methodology

One of the primary challenges in this industry is to measure financial intermediation services indirectly measured or *FISIM* as defined in the 1993 UN SNA. Banks often provide services for which they do not explicitly charge by paying or charging different rates of interest to lenders and borrowers. They pay lower rates of interest than would otherwise be the case to those who lend them money and charge higher rates of interest to those who borrow from them. The resulting net revenues of interest are used to defray their expenses and provide an operating surplus. This scheme of interest rates avoids the need to charge customers individually for services provided and leads to the pattern of interest rates observed in practice¹.

Thus, it is necessary to develop a methodology that not only captures directly priced services, but also reflects services priced indirectly. This methodology must allow interest to be allocated between loans and deposits.

The user cost methodology is implemented in the PPI. The user cost for a financial service is the difference between its revenue and the sum of its implicit and explicit costs. To measure these implicit costs, interest is allocated between loans and deposits by means of a "reference rate." The reference rate is the opportunity cost rate of money from which the risk premium is eliminated to the greatest extent possible and which does not include any intermediation services². In theory, the price of a loan is equal to the asset holding rate less a reference rate. The asset holding rate is the interest received plus service charges. For deposits, the price is equal to a reference rate less the liability holding cost rate. The liability holding cost rate is the interest paid to depositors less service charges.

In practice, the price of these services can be expressed as shown below. Again, both services are priced at the portfolio level.

$$\text{Loan Price} = \left[\left(\frac{\text{Earned interest income} + \text{Fees}}{\text{Average loan balance}} \right) - \text{Reference rate} \right] * \$1000$$

¹ 1993 System of National Accounts

² 1993 System of National Accounts

Earned interest income includes all interest actually received in a given month for the portfolio of loans being priced. This includes interest earned on both old and new loans. The average loan balance is calculated by averaging the ending daily balances of the loans in the portfolio over the month.

$$\text{Deposit Price} = \left[\text{Reference rate} - \left(\frac{\text{Interest payments} - \text{Earned fees}}{\text{Average deposit balance}} \right) \right] * \$1000$$

Interest payments include all interest actually paid to depositors on the funds held in the portfolio in a given month. Earned fees should include all fees that are actually collected by the bank, such as those for ATM withdrawals or insufficient funds. Again, the deposit balance is calculated by taking the average of the ending daily balances of the portfolio.

For both equations, the calculation within the outer brackets results in a rate. This rate is multiplied by \$1000 to convert the rate to the dollar value used in index calculation. When the price is positive, the service will be considered an output. However, whenever the price is negative, the service will be considered an input and the price will be excluded from index calculation until it becomes positive.

For trust and all other banking services, the price is equal to the actual fee charged for performing the service. These fees can be a percentage of assets or a flat fee.

B. Alternative methodologies

Two other major approaches for pricing banking services include the earning assets and value added approaches.

Earning assets (or assets) approach

Banks are considered intermediaries between holders of liabilities and those receiving funds. Loans and other bank assets are considered output while deposits are inputs. However, banks provide substantial services to depositors that are excluded under this approach.³ Output is measured by earned interest for loan services and fees for all other banking outputs.

Value added (or cost of funds) approach

All assets and liabilities have some characteristics of output. In addition, there is no mutually exclusive distinction between inputs and outputs. Unlike the user cost approach, this approach explicitly uses operating costs to measure output.⁴ It is measured as the difference between the interest earned on loans and the interest paid on deposits.

Neither approach allocates output between loans and deposits.

³ Berger, Allen N., and David B. Humphrey. "Measurement and Efficiency Issues in Commercial Banking." **Output Measurement in the Services Sector**. Ed. Zvi Griliches. NBER, 1992. 245-300.

⁴ Ibid.

IV. Data Elements

In the current month, banks provide the monthly interest, fees, and average balances from the previous month for each portfolio. BLS calculates a new reference rate each quarter using FDIC Call Report data provided by the Federal Reserve Board. The specific data elements used are the quarterly interest income and the quarterly average balance for U.S. Treasury securities and U.S. government agency obligations (excluding mortgage-backed securities). This data is reported at an aggregate level for all banks filing Call Reports. The reference rate is always lagged by one quarter, which is the period of time necessary for banks to adjust to changes in their investment portfolios.

A single quarterly rate is calculated by dividing the interest income by the average balance and converted to a monthly rate to correspond to the monthly data reported by the banks. The reference rate is updated in March, June, September, and December.

V. Publication Structure

The publication structure represents all primary output of the banking industry. A separate structure is published for each industry. The following is the structure for NAICS 522110.

522110	Commercial banks
5221101	Loan services
522110101	Residential real estate loans, except home equity
522110102	Nonresidential real estate loans
522110103	Home equity loans
522110105	Commercial, industrial, and agricultural loans, except real estate
522110106	New and used auto and truck loans
522110107	Credit cards, overdraft credit, and related plans
522110108	Other loan services
5221102	Deposit services
5221103	Trust services
5221104	Other banking services

The structure for NAICS 522120 is identical except trust services are combined with other banking services

VI. Issues in Index Calculation

Time Value of Money

Another fundamental issue in pricing banking services is the ability to maintain constant quality. Particular to these services is the need to keep monetary values stated in terms of constant dollars. Periodically, certain values included in the price calculations are to be adjusted to account for the time value of money.

For loans and deposits, the \$1000 conversion factor is adjusted once a year by the annual change in the gross domestic purchases price index calculated by Bureau of Economic Analysis (BEA). For other services for which the price is based on the value of assets, such as trust

services, the assets for the selected account will be held fixed over time. This value will be adjusted by the rate of return earned on the fixed assets.

Negative Prices

If the 'price' for a banking service is always a negative price, then that particular service is not considered to be output but rather an input to the production process. These services do not present a measurement challenge since they are not priced as output then. However, there are times when the 'price' for a particular banking service will be positive in some months and negative in other months. The services with the occasional negative prices are more challenging to price. Since index calculation methodology cannot calculate price indices from negative prices, those occasional negative prices are not used in the index in the months they are negative. The primary cause of these occasional negative prices is the use of an industry-wide reference rate. Theoretically, collecting a bank-specific rate would likely diminish the number of negative prices significantly. However, obtaining data and calculating a specific rate for each bank would prove difficult and operationally is not feasible.

Average Prices

The variation in the number of days in a month contributes to some volatility in banking prices. For example, considering no other factors, banks have 31 days in January to collect fees and interest on a loan compared to 28 days in February. Loan balances can also change in the additional four days. The impact is unclear since more loans could be paid off in the additional time and/or more loans could be taken out.

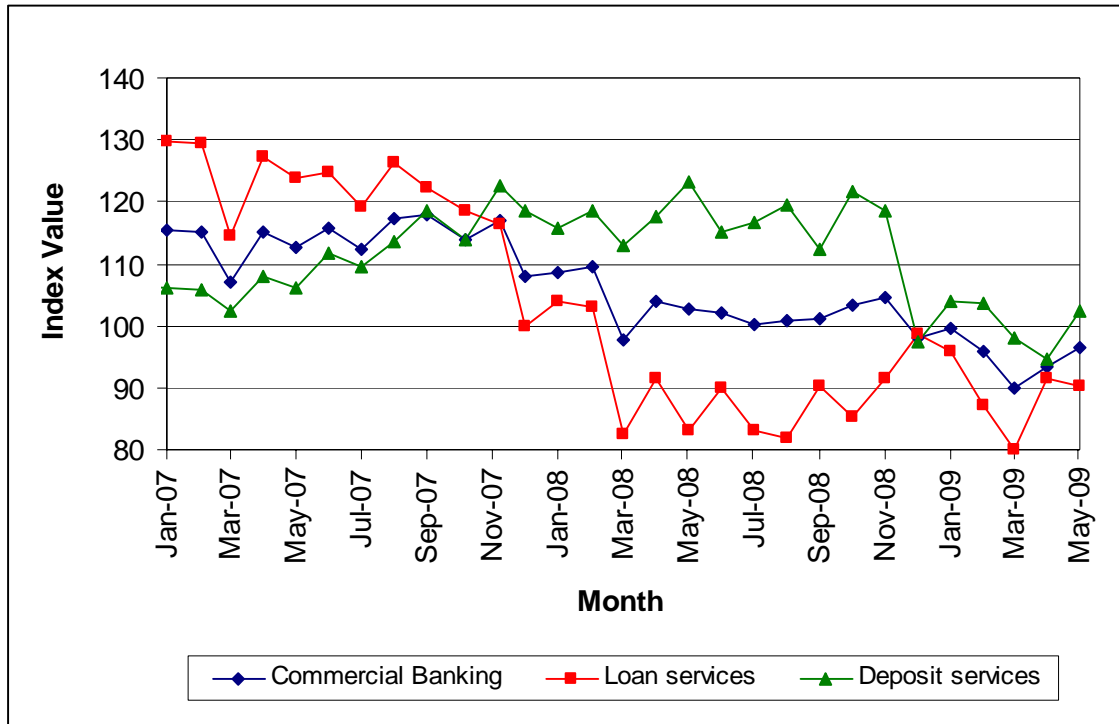
VII. Future of the Banking Indexes

The BLS is scheduled to begin an examination of the current methodology for possible refinement in 2010. A new sample for both banking industries will be selected at this time as well. BEA has requested a more detailed publication structure for deposits. In addition, they would like for BLS to provide additional detail on the fees separate from the interest. They deflate each of those data elements separately, but BLS needs to calculate a single price that includes both for a more accurate index.

The feasibility of these requested changes is unclear at this time.

APPENDIX Index Data

NAICS 522110 - Commercial Banking January 2007- May 2009



Series Id: PCU522110522110

Industry: Commercial banking

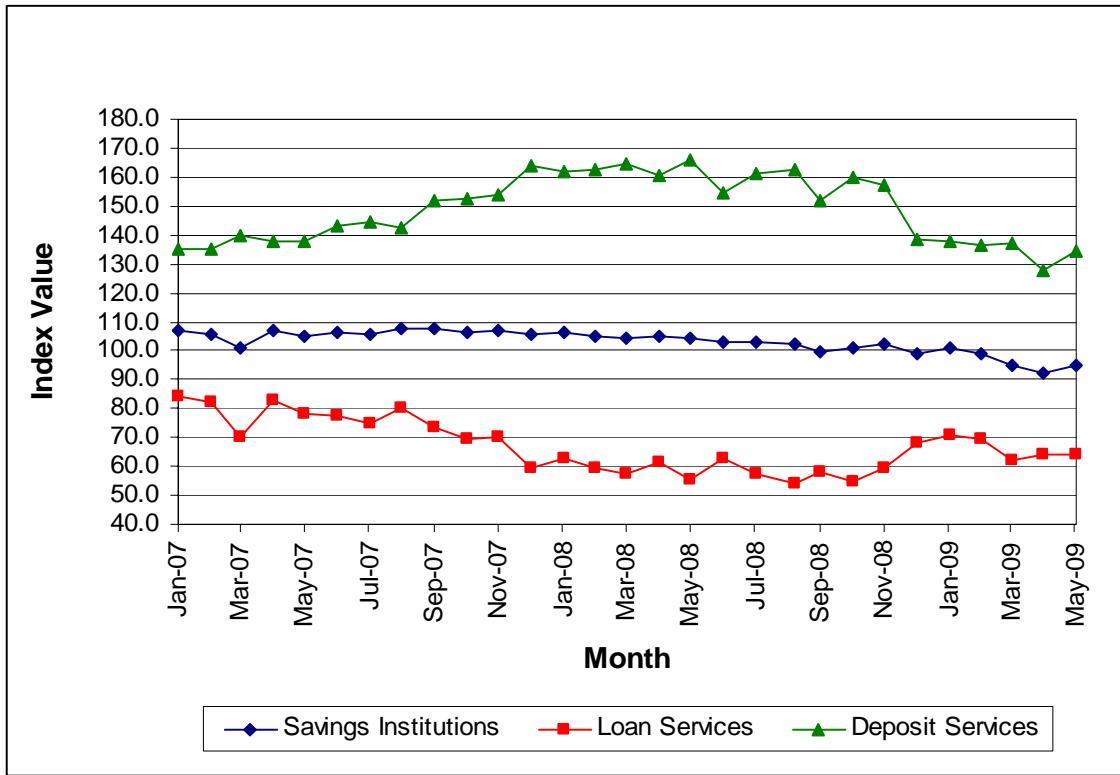
Product: Commercial banking

Base Date: 200312

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2003												100	
2004	108	103.5	102	106.9	103.3	98.7	100	102	103	102	102	101	102.8
2005	105	101.9	96.9	105.2	103.3	106	106	106	111	108	110	113	106.1
2006	112	110.2	102.3	111.5	110.2	115	113	116	120	115	116	114	113
2007	115	115.1	107	115.1	112.7	116	112	117	118	114	117	108	114
2008	109	109.4	97.8	104	102.8	102	100	101	101	103	105	98.1	102.7
2009	99.5	95.7(P)	89.9(P)	93.4(P)	96.4(P)								

P : Preliminary. All indexes are subject to revision four months after original publication.

**NAICS 522120 - Savings Institutions
January 2007- May 2009**



Series Id: PCU522120522120
Industry: Savings institutions
Product: Savings institutions
Base Date: 200312

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2003												100	
2004	106	103.9	99.1	103.9	101.8	99.1	102	100	99.9	99.1	98.1	97.9	100.9
2005	101	94.6	94.2	98.9	99.2	98.5	101	100	102	99.4	98.9	97.9	98.8
2006	99.9	99.9	96	99.2	100.8	102	102	101	101	102	104	107	101.2
2007	107	105.8	100.7	107.2	104.9	107	106	108	108	106	107	106	106
2008	106	104.9	104.3	105.1	104.2	103	103	102	99.3	101	102	99.2	102.9
2009	101	99.0(P)	95.2(P)	92.4(P)	95.1(P)								

P : Preliminary. All indexes are subject to revision four months after original publication.