
# What Explains Low Net Interest Income at Community Banks?

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*The views presented here are those of the authors and not those of the Federal Reserve Bank of Kansas City, the Federal Reserve System, or its Board of Governors.*

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# Motivation

- Community bank profitability has improved significantly since the financial crisis
- Net interest income, the most important source of community bank revenue, has not – in fact, it remains near a 40-year low
- Key Question: Is this the new normal?
  - If yes, we must be concerned about future viability of community banks
  - If no, why is it so low and what are the prospects for improvement?

# Presentation Summary

- Historical background on community bank net interest income (NII)
- Estimates from 3 econometric models of NII; data sample includes 5 economic recoveries
- Key results
  - Community bank NII in current recovery is not unusual
  - Community banks are on average asset sensitive
  - Low NII due to low interest rates, flat yield curve, and weak lending
  - When NII in the current recovery is compared with previous recoveries over the past 40 years, it's actually stronger than after the 2 worst recessions (1973-75, 1981-82), given banking and economic conditions

# Community Bank ROAA
# 2007Q4 – 2014Q2

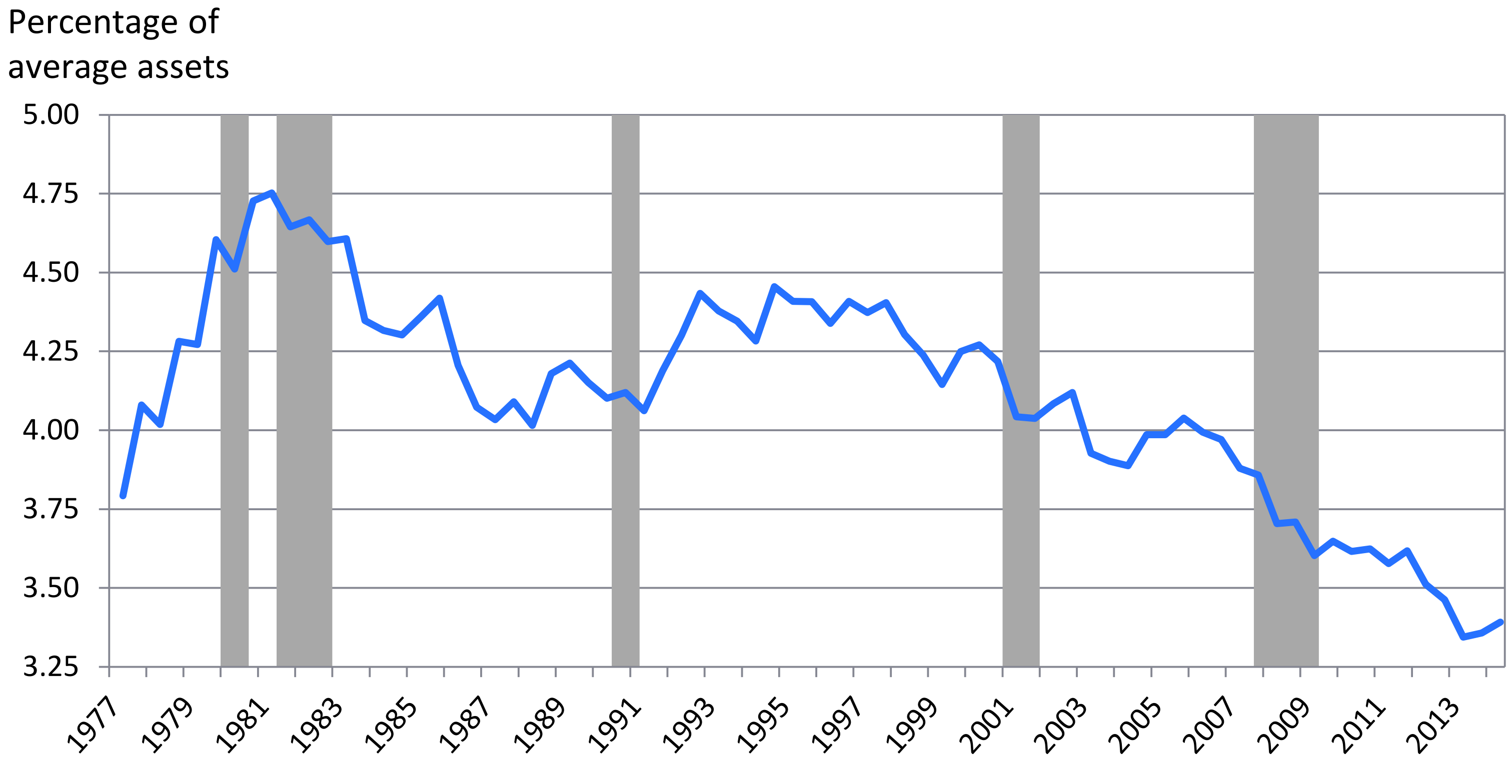
| | Peak 2007Q4 | Trough 2009Q2 | 2014Q2 | Change: Recession 2007Q4-2009Q2 | Change: Recovery 2009Q2-2014Q2 |
|---|---|---|---|---|---|
| Net Interest Income | 3.61 | 3.36 | 3.35 | -0.25 | -0.01 |
| + Net Noninterest Income | -2.07 | -2.28 | -2.13 | -0.21 | 0.15 |
| = Core Net Operating Income | 1.54 | 1.09 | 1.22 | -0.46 | 0.13 |
| - Loan Loss Provisions | 0.27 | 0.91 | 0.12 | 0.64 | -0.79 |
| + Securities gains (losses) + extraordinary items - taxes | -0.29 | -0.03 | -0.17 | 0.25 | -0.14 |
| = Return on Average Assets | 0.99 | 0.15 | 0.93 | -0.84 | 0.78 |

Source: Reports of Condition and Income
Data are annualized, weighted averages and expressed as a percentage of average assets over the previous year. Includes all banks with assets of $1 billion or less.  Size thresholds are in 2012 dollars as measured by the CPI for all urban consumers.

# Data Description

- Community banks – defined as banks with $1 billion or less in real assets (2012 dollars)
- Call report data – semiannual (as opposed to quarterly) to get data going back to late 1970s
- Sample – 1977H1–2014H1, unbalanced panel of banks
- Drop de novos, banks with data irregularities (e.g., did not have loans or deposits), outliers based on loan-deposit ratio

# Community Bank Net Interest Income: Historical Perspective




Source: Reports of Condition and Income
Data are sample net interest income (unweighted average, semi-annual) annualized as a percentage of average assets over the previous year. Size thresholds are in 2012 dollars as measured by the CPI for all urban consumers. Shaded bars are recession quarters.

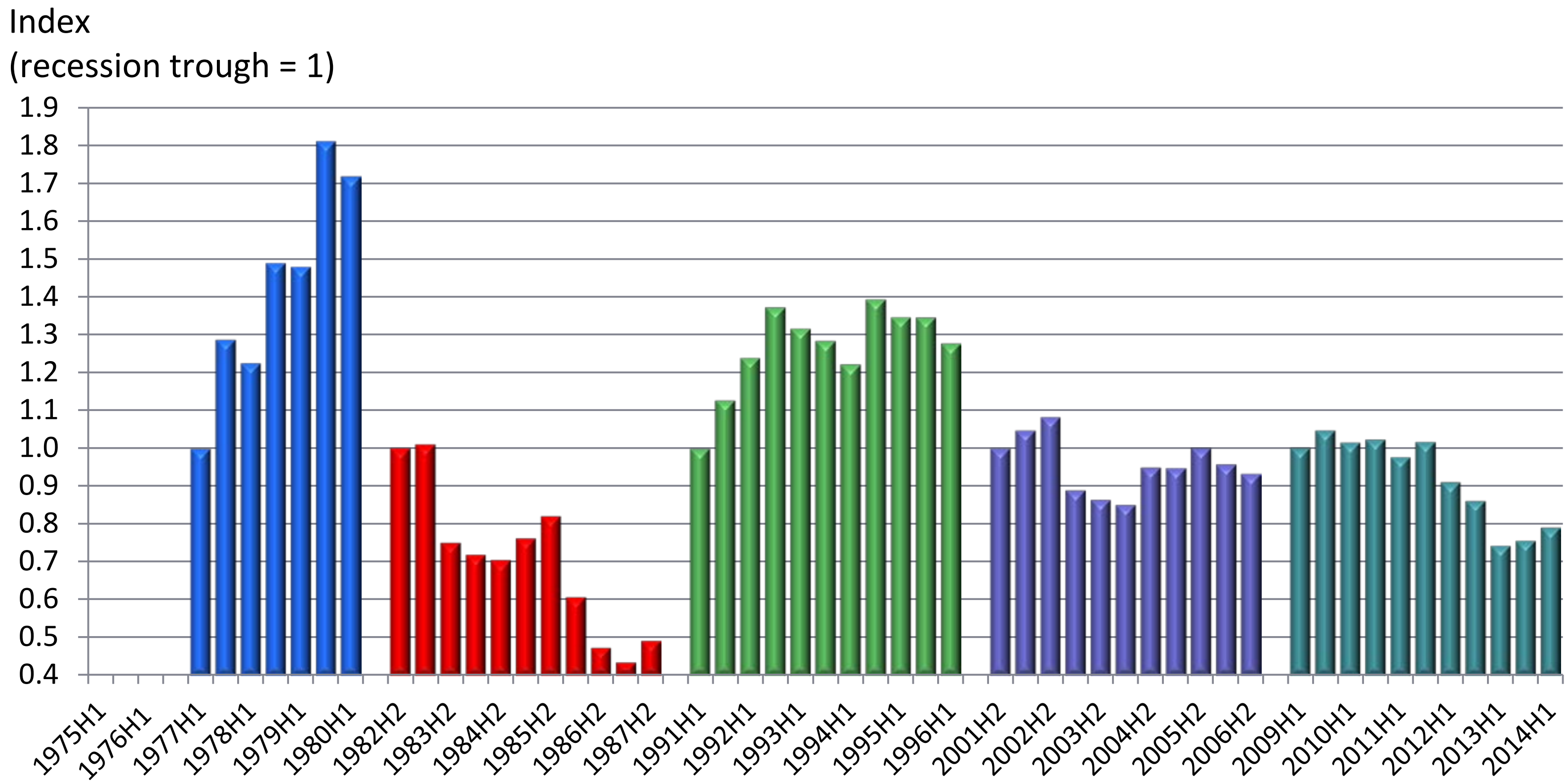
# Variability of Factors Affecting Net Interest Income

## 1976H1-2014H1

| | Max. | Min. | Range | Std. Dev. |
|---|---|---|---|---|
| Net Interest Income | 4.75 | 3.34 | 1.41 | 0.34 |
| 1-year U.S. Treasury rate | 14.9 | 0.1 | 14.8 | 3.7 |
| Spread: 10-year less 1-year U.S. Treasury rates | 3.2 | -1.4 | 4.7 | 1.2 |
| Loan-Asset Ratio | 66 | 50 | 16 | 4.7 |
| Nonmaturity Deposits-Total Liabilities Ratio | 63 | 40 | 23 | 4.7 |

Source: Reports of Condition and Income
Sample data (unweighted), annualized. Net interest income, loan-asset ratio, and nonmaturity deposits-total liabilities ratio are a percentage of average assets over the previous year.

# Community Bank Net Interest Income after Recessions




Source: Reports of Condition and Income

Notes: For each set of bars, with the exception of the 1975-79 period, the first bar is the half-year that included the business cycle trough and is indexed to equal 1. For the 1975-79 period, the business cycle trough was 1975H1, but the data are indexed to 1977H1 because that is the first available data point.

# Bank Fixed-Effects Regression

**Dependent variable**: Net Interest Income

**Explanatory Variables**
1-year U.S. Treasury rate (1-yr UST)
Spread (10-year less 1-year U.S. Treasury rates)
Loans/Assets (L/A)
Nonmaturity Deposits/Liabilities (NMD/L)
Real Assets (RA)

Interactions with 1-yr UST and Spread: L/A, NMD/L, RA
Dummy Variables: Recession, Urban, Reg Q
Macro Variables: Real GDP, Inflation
Net Interest Income: 2 lags

# Community Bank Net Interest Income – Base Model
## Contemporaneous and Cumulative Effects

| Selective Explanatory Variables | Contemporaneous | Cumulative |
|---|---|---|
| 1-yr UST (α) | 0.051 | 0.15 |
| Spread (β) | 0.036 | 0.11 |
| Loans/Assets | 0.010 | 0.03 |
| Nonmaturity Deposits/Liabilities | 0.011 | 0.03 |
| Recession | -0.137 | -0.39 |

### Asset or Liability Sensitive?

α = parallel shift in yield curve: (+/-) = (asset/liability) sensitive
β = Δ 10-year rate: + whether asset or liability sensitive
α-β = Δ 1-year rate: (+/-) = (asset/liability) sensitive

All contemporaneous coefficients and α-β are statistically significant at the 1 percent level. Standard errors are clustered at the bank level and robust to heteroscedasticity.

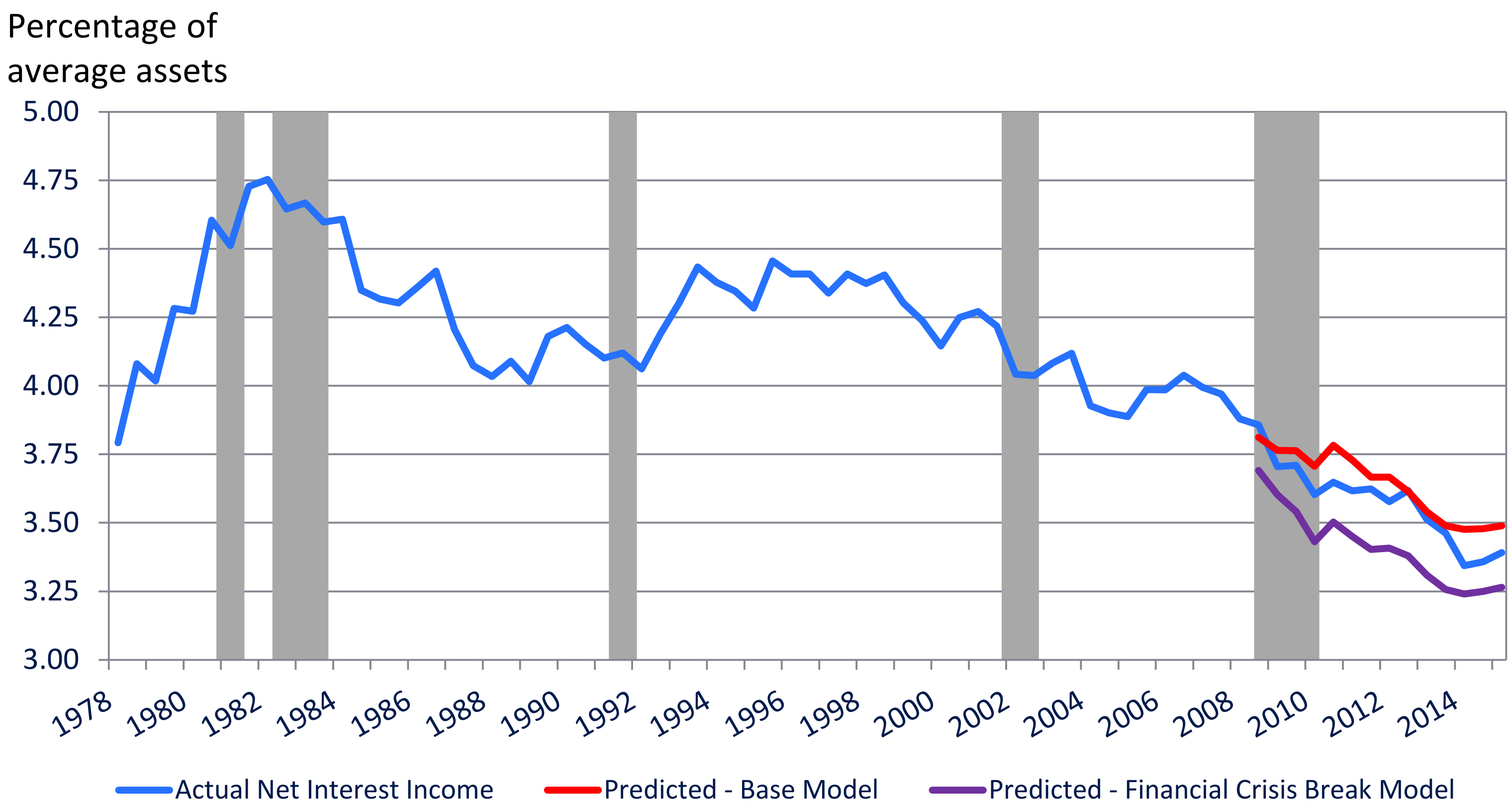
# Community Bank Net Interest Income – Base Model & Financial Crisis Break Model

## Contemporaneous and Cumulative Effects

| Selective Explanatory Variables | Base Model | Financial Crisis Break Model: Pre-Crisis 1977H1-2007H1 | Financial Crisis Break Model: Post-Crisis 2007H2-2013H1 |
|---|---|---|---|
| | | **Contemporaneous Effects** | |
| 1-yr UST (α) | 0.051 | 0.047 | 0.047 |
| Spread (β) | 0.036 | 0.038 | 0.012 |
| Loans/Assets | 0.010 | 0.010 | 0.012 |
| Nonmaturity Deposits/Liabilities | 0.011 | 0.012 | 0.004 |
| Recession | -0.137 | -0.137 | -0.180 |
| | | **Cumulative Effects** | |
| 1-yr UST (α) | 0.15 | 0.13 | 0.14 |
| Spread (β) | 0.11 | 0.11 | 0.04 |
| Loans/Assets | 0.03 | 0.03 | 0.03 |
| Nonmaturity Deposits/Liabilities | 0.03 | 0.03 | 0.01 |
| Recession | -0.39 | -0.39 | -0.52 |

All contemporaneous coefficients and α-β are statistically significant at the 1 percent level. Standard errors are clustered at the bank level and robust to heteroscedasticity.

# Community Bank Net Interest Income: Actual and Predicted Values




Source: Reports of Condition and Income
Predicted values are out-of-sample predictions. Data are sample net interest income (semi-annual) annualized as a percentage of average assets over the previous year. Size thresholds are in 2012 dollars as measured by the CPI for all urban consumers. Shaded bars are recession quarters.

# Community Bank Net Interest Income – Base Model & Recovery Model

## Contemporaneous and Cumulative Effects

| | Contemporaneous Effects | | Cumulative Effects | |
|---|---|---|---|---|
| **Selective Explanatory Variables** | **Base Model** | **Recovery Model** | **Base Model** | **Recovery Model** |
| 1-yr UST (α) | 0.051 | 0.050 | 0.15 | 0.14 |
| Spread (β) | 0.036 | 0.027 | 0.11 | 0.08 |
| Loans/Assets | 0.010 | 0.011 | 0.03 | 0.03 |
| Nonmaturity Deposits/Liabilities | 0.011 | 0.011 | 0.03 | 0.03 |
| Recession | -0.137 | -0.110 | -0.39 | -0.31 |
| Post 1973-75 Recession | | -0.165 | | -0.46 |
| Post 1981-82 Recession | | -0.094 | | -0.26 |
| Post 1990-91 Recession | | 0.147 | | 0.41 |
| Post 2001 Recession | | 0.037 | | 0.10 |
| Post 2007-09 Recession | | -0.045 | | -0.13 |

All contemporaneous coefficients and α-β are statistically significant at the 1 percent level. Standard errors are clustered at the bank level and robust to heteroscedasticity.

# Conclusions

- Key question: Is current low level of NII the new normal?
- Key answer: NO!
- Community banks on average are asset sensitive, so low NII is expected given historically low interest rates for past 5½ years and flat yield curve
- Low NII also due to low loan-asset ratio
- Optimistic outlook for community banks
  - Have faced hard times before and have always found a way to grow business and thrive
  - While NII is unlikely to increase to levels of early 1990s, it should rebound significantly as economy improves and monetary policy is normalized