FEDERAL RESERVE BANK OF BOSTON™

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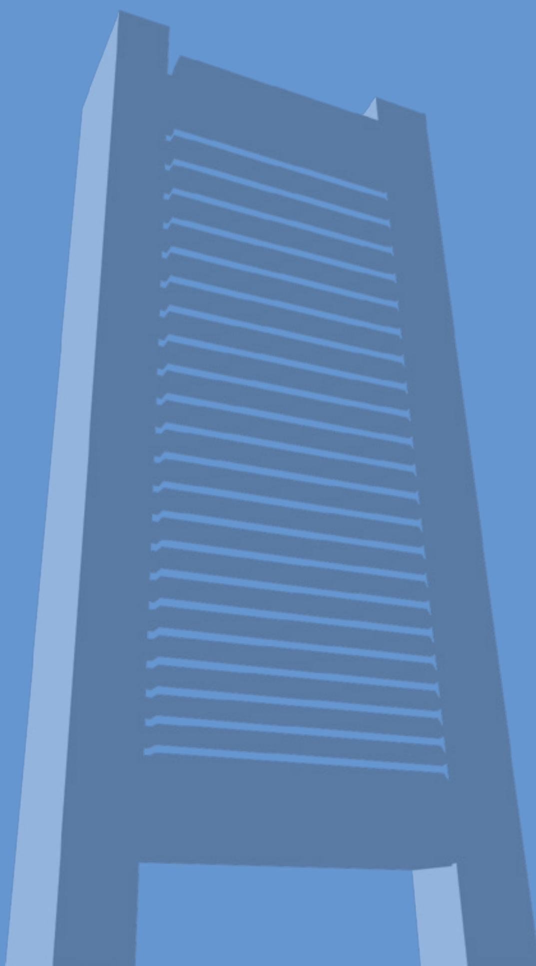
AND 3:15 P.M. IN BEIJING, CHINA; OR UPON DELIVERY



Observations on Financial Stability Concerns for Monetary Policymakers

Eric S. Rosengren
President & CEO
Federal Reserve Bank of Boston

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Shanghai Advanced Institute of Finance (SAIF)
Beijing, China

bostonfed.org

Global Growth

- The global economy continues to underwhelm
  - Disappointing economic performance has led central banks in many developed countries to reduce interest rates
  - Low rates have impacted financial intermediaries
  - Many developing economies are still suffering from the decline in global commodity prices
- United States: real GDP growth below 2 percent in the first two quarters of 2016

U.S. Economy Still Fundamentally Strong

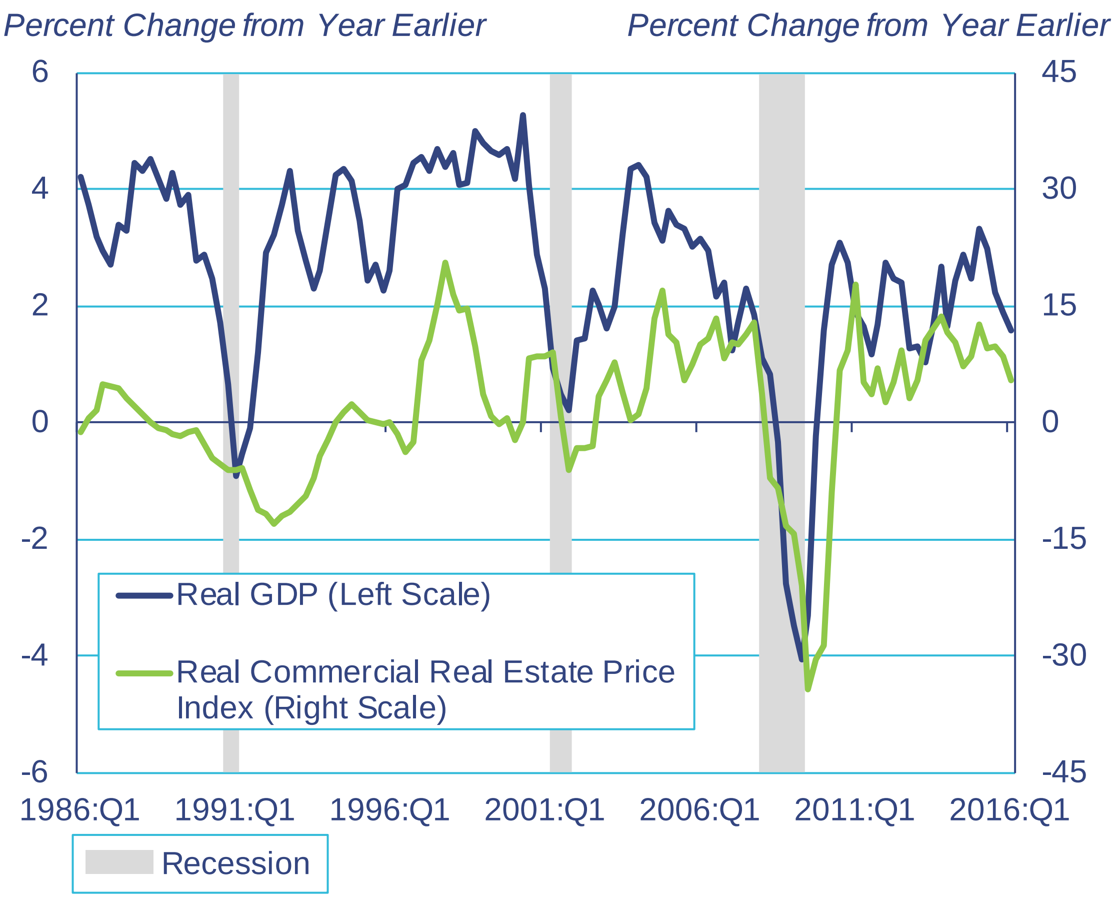
- Unemployment is currently 4.9 percent – close to “full employment”
- Core inflation gradually rising – currently 1.6 percent
- Expect inflation target of 2 percent and full employment – goals of U.S. monetary policy – to be achieved relatively soon
- Monetary policy in the U.S. has been appropriately patient – in support of improving labor markets and reaching our 2 percent inflation target

Potential Risks to a Prolonged Period of Low Interest Rates

- Potential “Reaching for Yield” – buying riskier assets to achieve a desired profit or savings goal
  - Firms take on risk to achieve profit margins
  - Households take on risk to achieve savings goals
- May generate costs in the future if there is a large negative shock
- Policymakers must weigh this risk against the benefits of low rates in supporting the economy
- Possible example – commercial real estate, where prices have risen significantly and cap rates are hitting historic lows

Figure 1: Growth in Real GDP and Real Commercial Real Estate Prices in the United States

1986:Q1 - 2016:Q1



Note: The commercial real estate price index is adjusted for inflation using the GDP deflator.

Source: BEA, Federal Reserve Board, NBER, Haver Analytics

Figure 2: U.S. Commercial Real Estate by Lender Type

2016:Q1

Outstanding as of March 31, 2016	Commercial Mortgages		Multifamily Residential Mortgages		Total	
Lender Type	Billion Dollars	%	Billion Dollars	%	Billion Dollars	%
Banking Institutions[1]	1,494.0	59	388.6	35	1,882.7	52
Banks with over $50 Billion in Assets[2]	552.7		164.6		717.3	
Life Insurers and Other Long-Term Investors[3]	369.7	15	66.4	6	436.1	12
GSEs & Agency CMBS	0.0	0	472.5	43	472.5	13
Non-Agency CMBS[4]	498.1	20	61.2	6	559.3	15
Finance Companies	27.8	1	1.2	0	29.1	1
Nonfinancial (Other)[5]	133.1	5	121.2	11	254.3	7
Total	2,522.8	100	1,111.1	100	3,633.9	100

[1]Includes U.S.-chartered depository institutions, foreign banking offices in the U.S. and banks in U.S.-affiliated areas.

[2]Includes commercial and savings banks and thrifts with assets over $50 billion. Author's estimates using call report data.

[3]Includes life and property-casualty insurance companies, private pension funds, and state and local government retirement funds.

[4]Includes REITS.

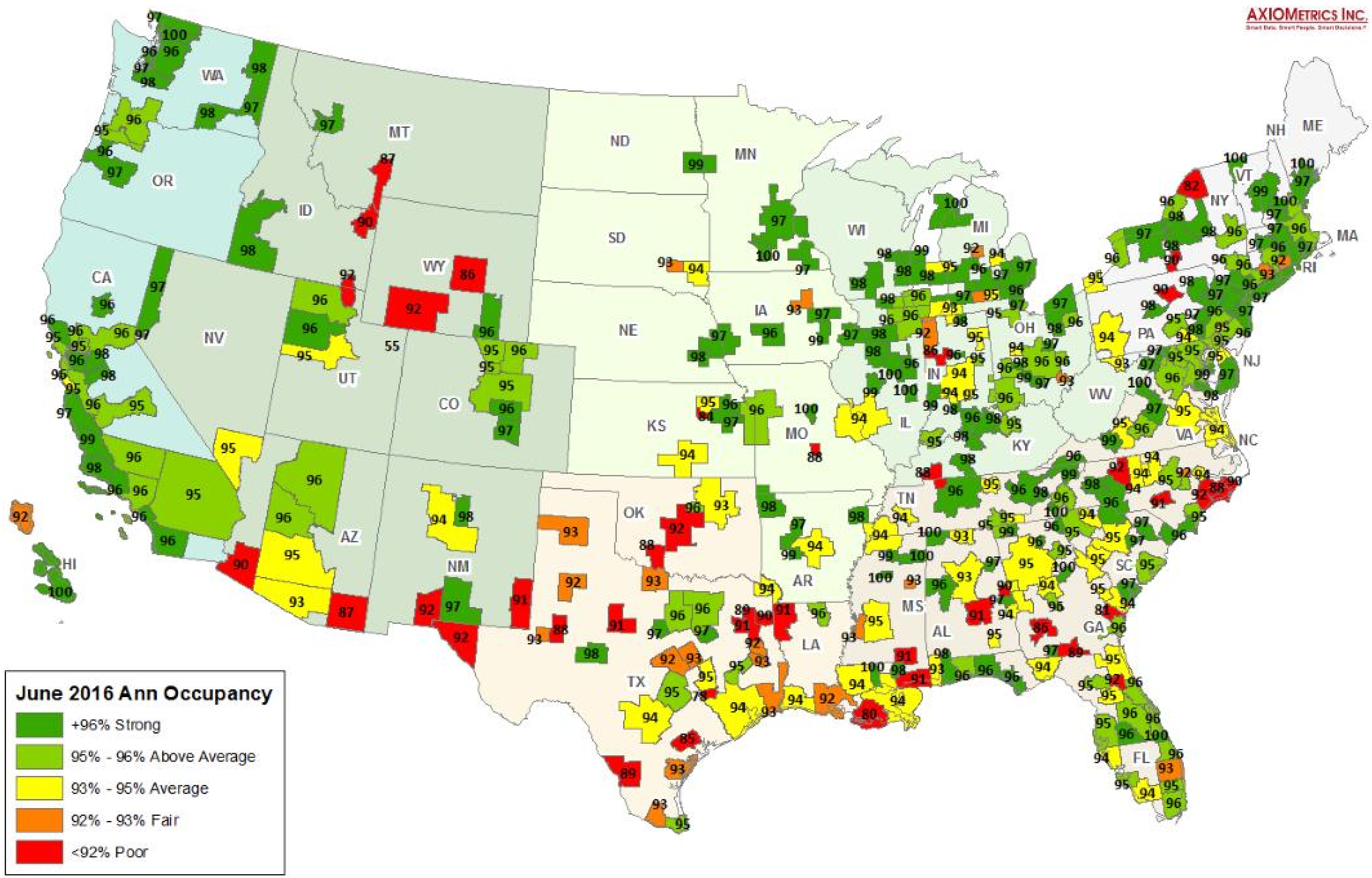
[5]Includes households, nonfinancial corporate and noncorporate businesses and federal and state and local governments.

Source: Federal Reserve Board, Financial Accounts of the United States, Quarterly Call Reports, Haver Analytics

Commercial Real Estate Risk

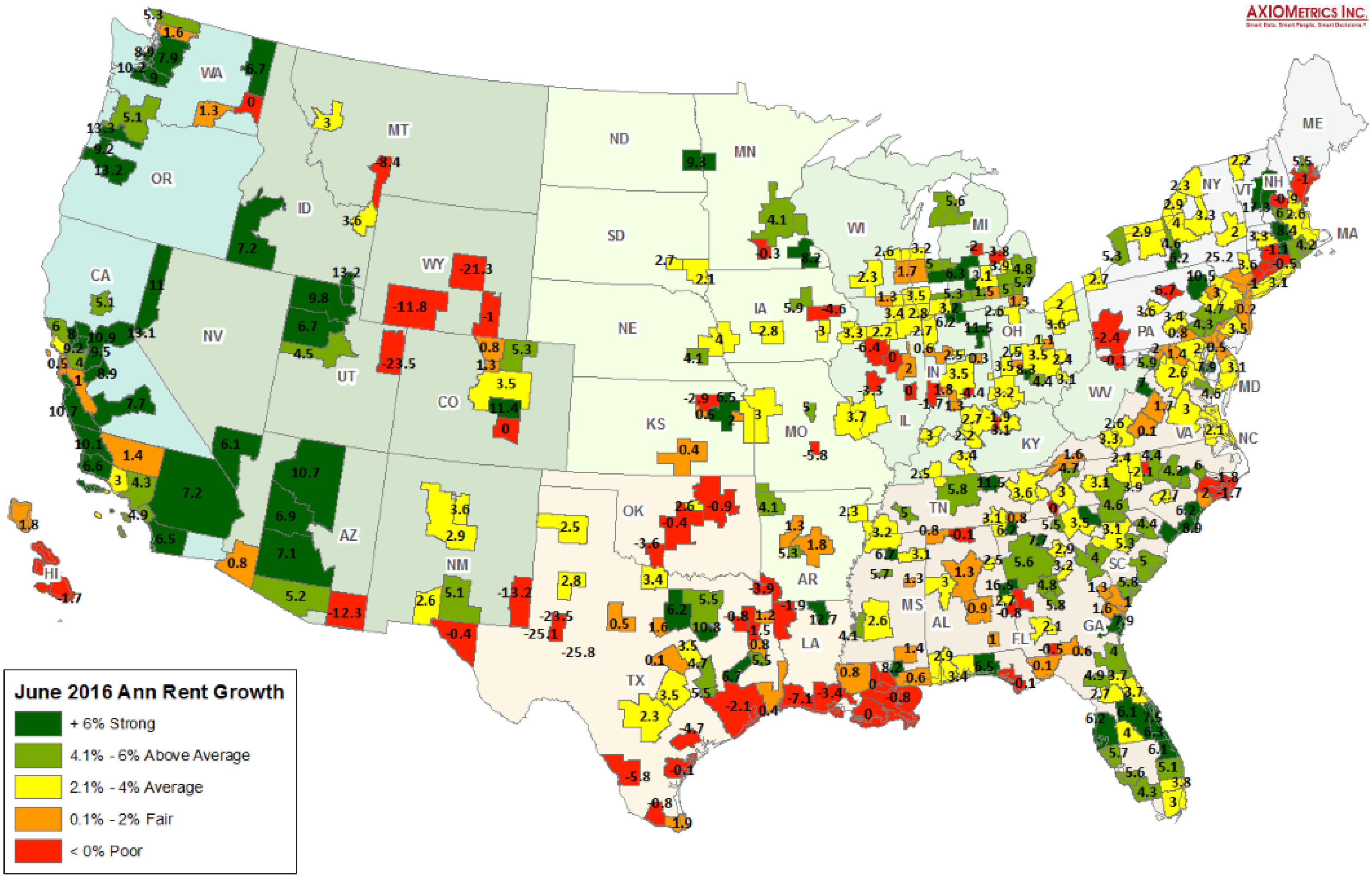
- By themselves, exposures unlikely to trigger problems – could aggravate economic downturn
  - Weaker economy could trigger lower commercial real estate collateral values with potential problems for leveraged firms
  - Banks may pull back on lending, reducing access to credit for firms and households
  - Consistent with recession where collateral values declined in the U.S.
- Real estate is a particular problem because it is widely held by leveraged institutions

Figure 3: National Annual Apartment Occupancy



Source: AXIOMetrics/Risk Analysis Unit, FRB Atlanta

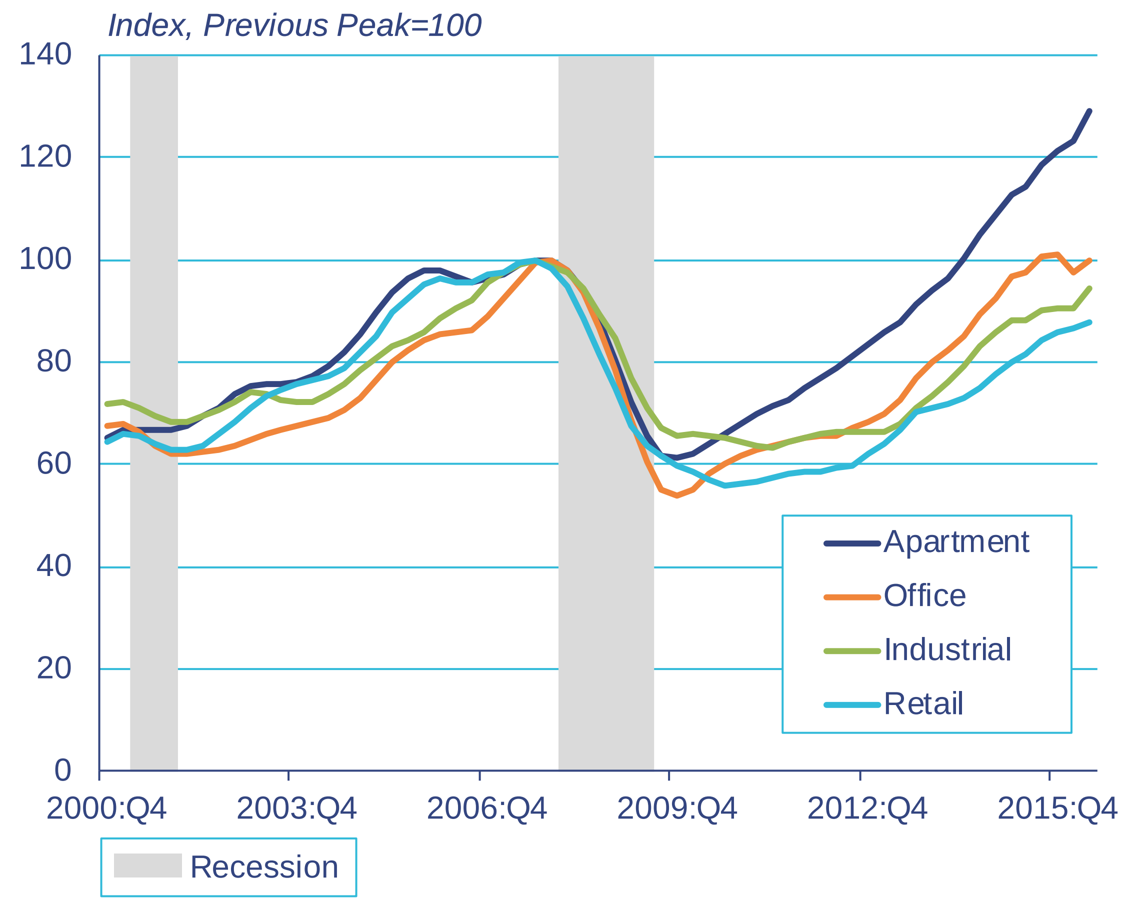
Figure 4: National Annual Effective Rent Growth for Apartments



Source: AXIOMetrics/Risk Analysis Unit, FRB Atlanta

Figure 5: U.S. Real Commercial Property Price Indices by Property Type

2000:Q4 - 2016:Q2

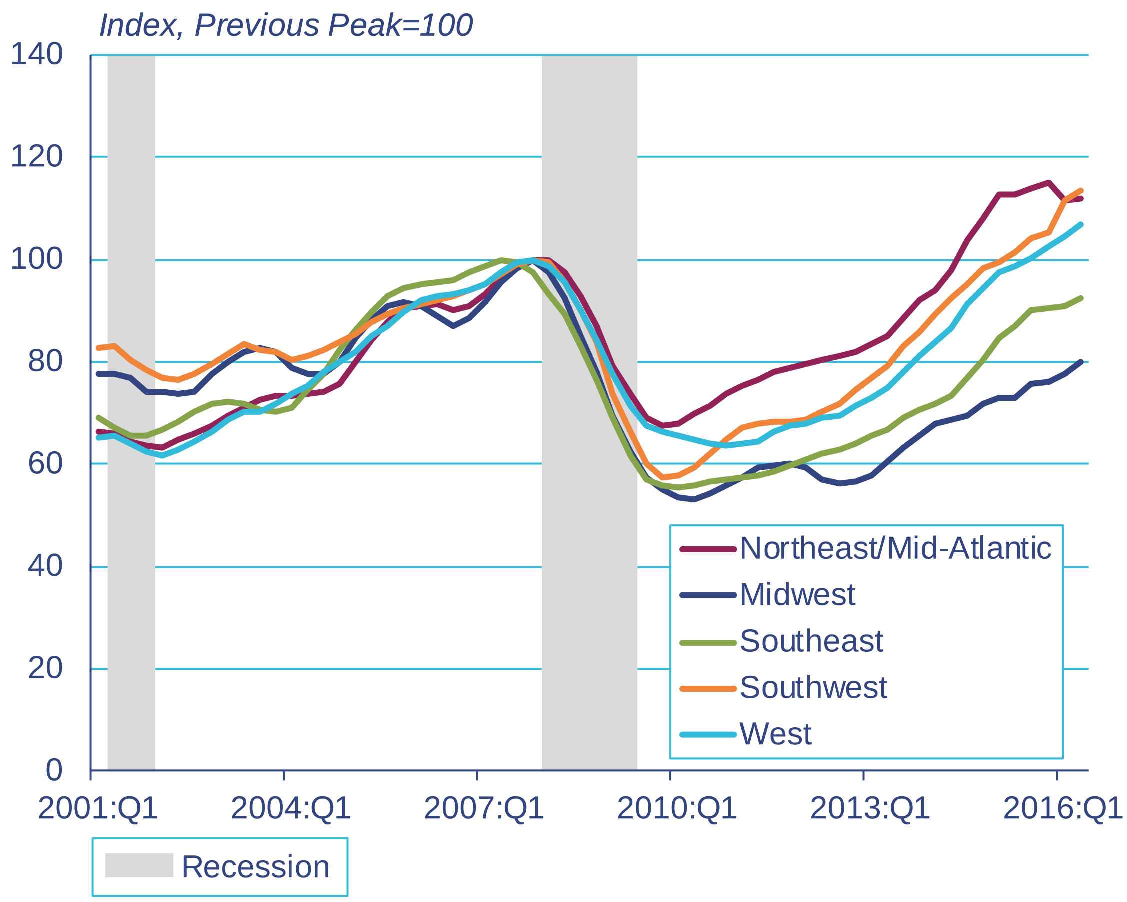


Note: Indices are adjusted for inflation using the GDP deflator. Indices are repeat-sales based.

Source: Real Capital Analytics, BEA, NBER, Haver Analytics

Figure 6: U.S. Real Commercial Property Price Indices by Region

2001:Q1 - 2016:Q2

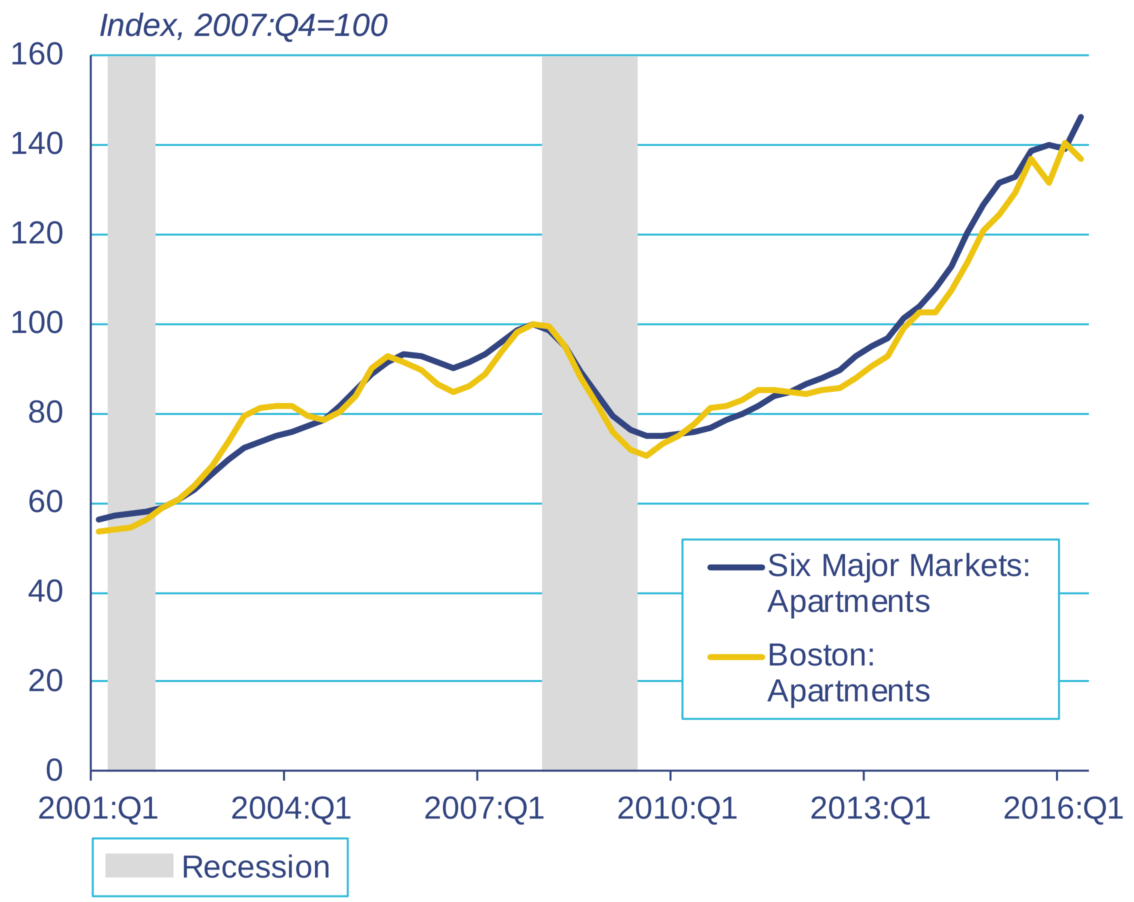


Note: Indices are adjusted for inflation using the GDP deflator. Indices are repeat-sales based.

Source: Real Capital Analytics, BEA, NBER, Risk Analysis Unit/Federal Reserve Bank of Atlanta

Figure 7: Apartments: Boston vs Six Major Markets Real Commercial Property Price Indices

2001:Q1 - 2016:Q2

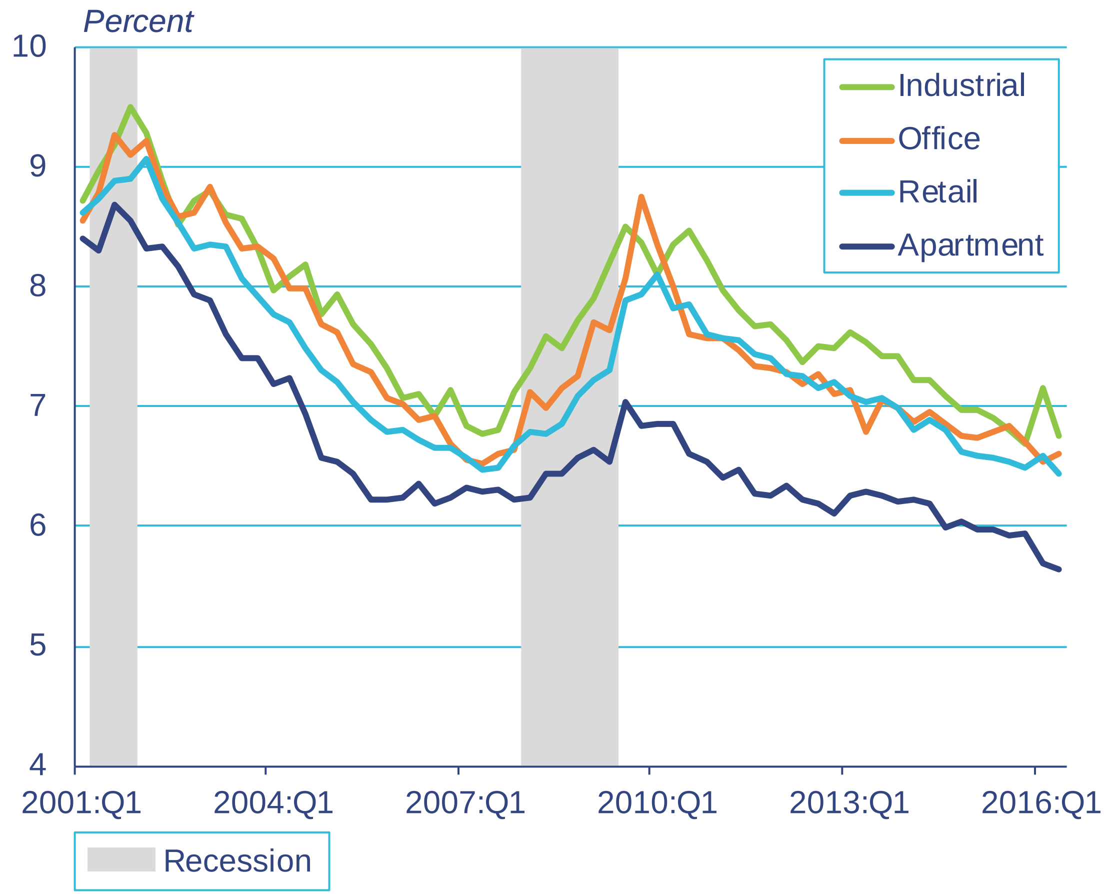


Note: Indices are adjusted for inflation using the GDP deflator. Indices are repeat-sales based. The six major markets are Boston, Chicago, DC Metro, LA Metro, NYC Metro and SF Metro.

Source: Real Capital Analytics, BEA, NBER, Risk Analysis Unit/Federal Reserve Bank of Atlanta

Figure 8: U.S. Capitalization Rates by Property Type

2001:Q1 - 2016:Q2

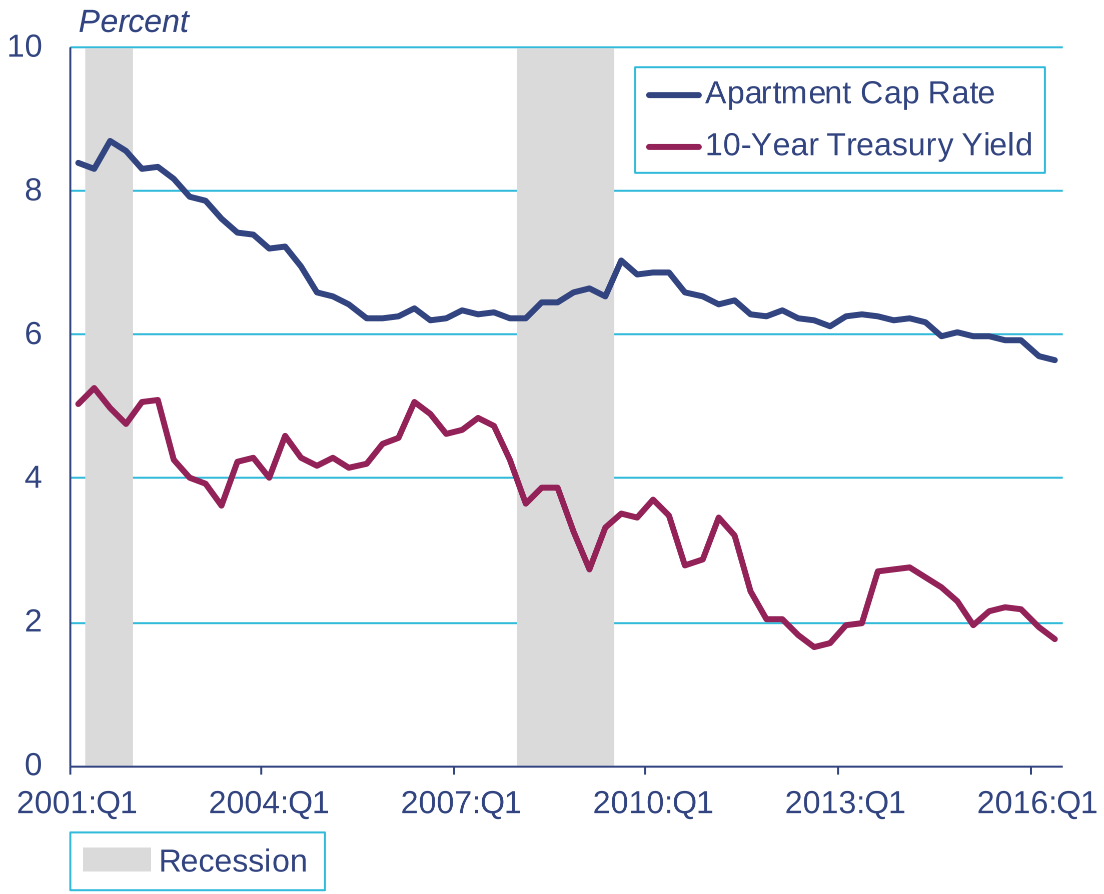


Note: The capitalization or "cap" rate is the ratio of net operating income produced by a property to the price paid, calculated at the time of a transaction. Thus, aggregate cap rate statistics only include cap rates from recent sales.

Source: Real Capital Analytics, NBER, Haver Analytics

Figure 9: U.S. Apartment Capitalization Rate and Ten-Year Treasury Yield

2001:Q1 - 2016:Q2

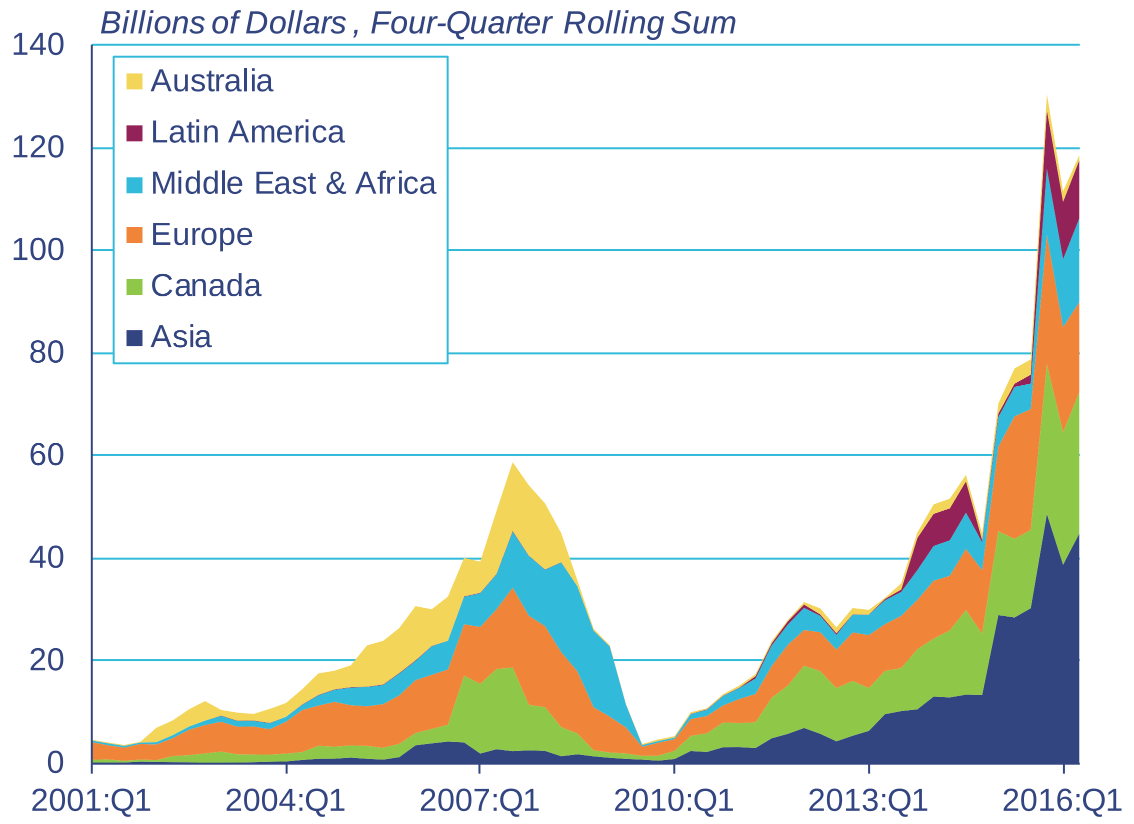


Note: The capitalization or "cap" rate is the ratio of net operating income produced by a property to the price paid, calculated at the time of a transaction. Thus, aggregate cap rate statistics only include cap rates from recent sales.

Source: Federal Reserve Board, Real Capital Analytics, NBER, Haver Analytics

Figure 10: Foreign Capital Invested in U.S. Commercial Real Estate

2001:Q1 - 2016:Q2

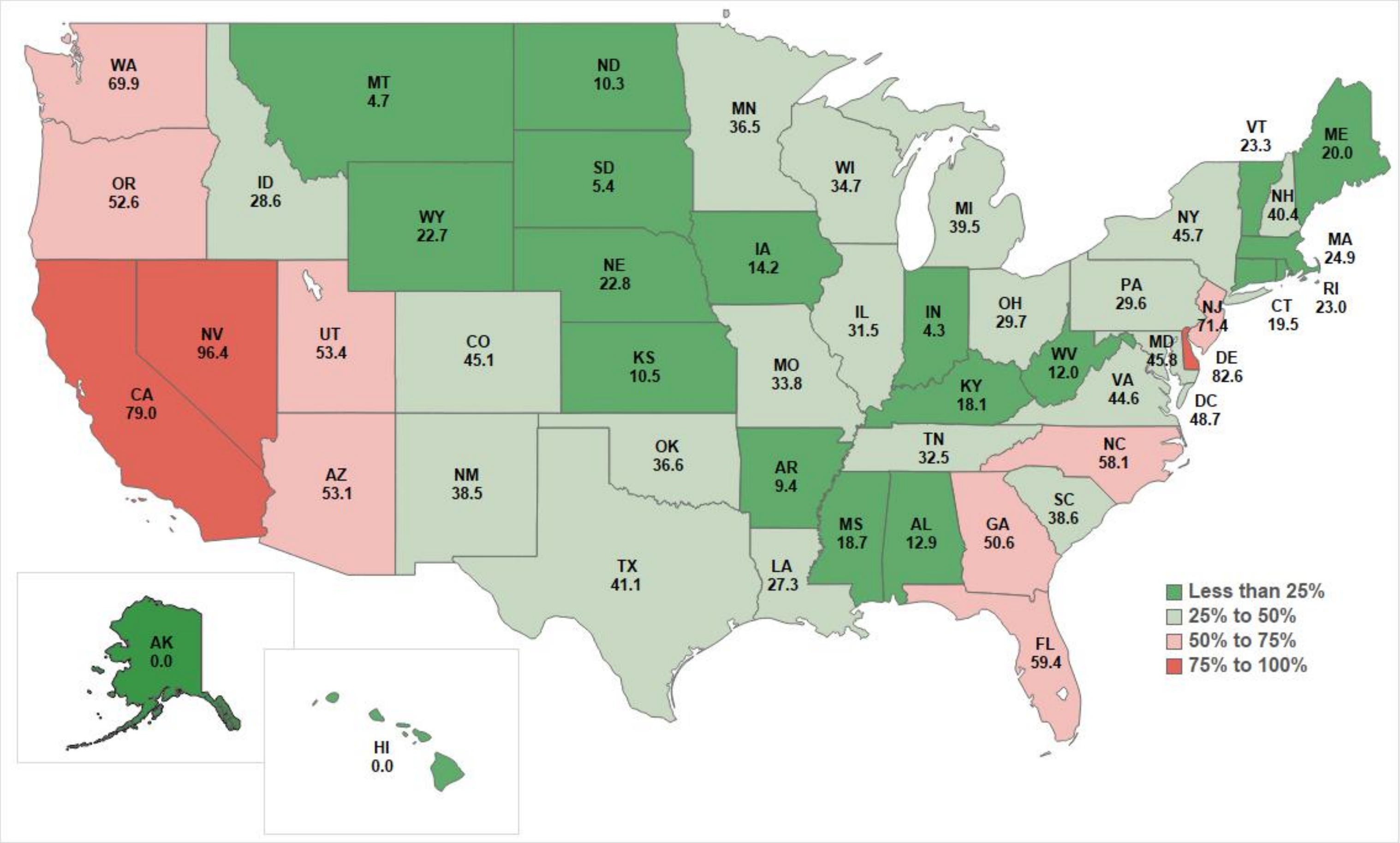


Note: Latin America is defined as any country in North or South America except Canada and the United States.

Source: Real Capital Analytics

Figure 11: Share of Commercial Real Estate in Banks with CRE Greater than or Equal to 350% of Risk-Based Capital by State for Banks with Assets Under $1 Billion

2016:Q1



Note: Loans secured by owner-occupied nonfarm nonresidential properties are included in the definition of commercial real estate for this analysis.

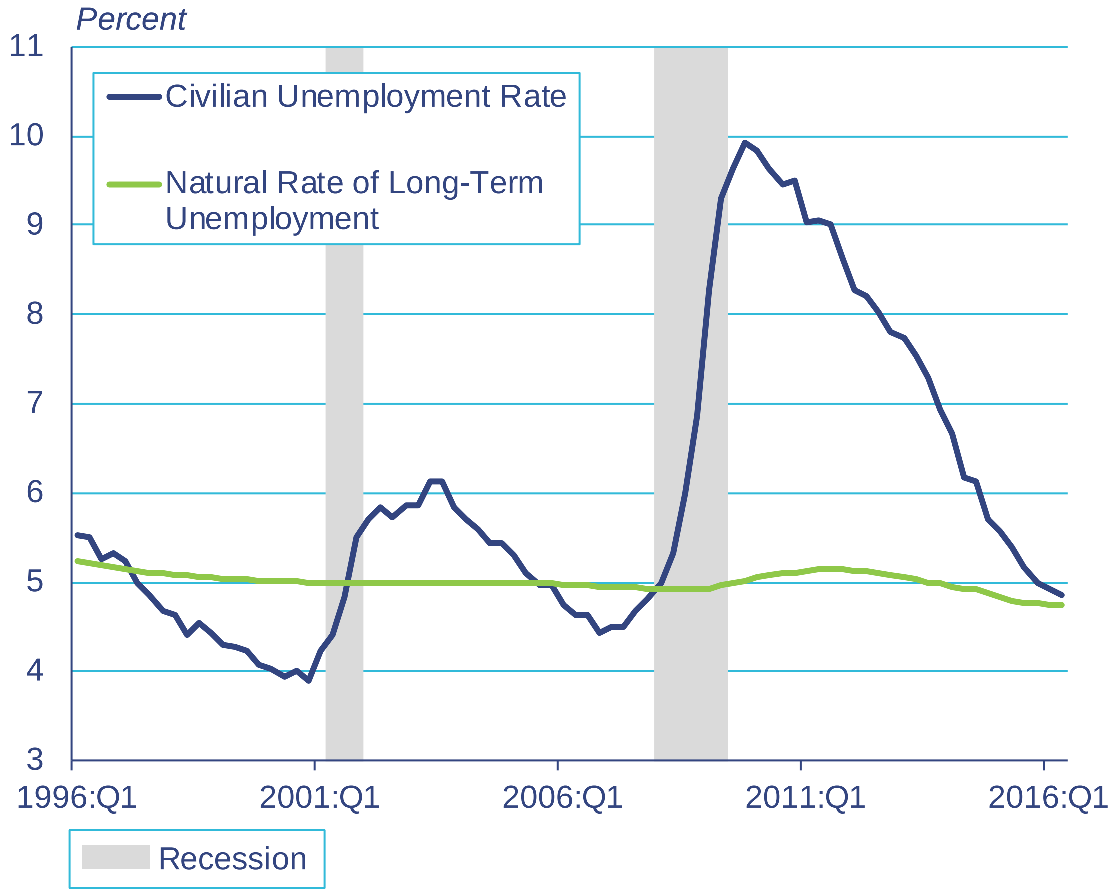
Source: Quarterly Call Reports

Trade-Offs Related to Low Rates

- Low rates help us reach inflation and employment goals more quickly – but at what cost?
- Potential cost is increasing imbalances that result in a worse outcome in the future if an economic downturn occurs
- This trade-off may be particularly unfavorable when already close to achieving goals (full employment and inflation target)

Figure 12: U.S. Civilian Unemployment Rate and the Natural Rate of Long-Term Unemployment

1996:Q1 - 2016:Q2



Risk if Financial Conditions Change

- Commercial real estate has been appreciating
  - Rents rising rapidly
  - Occupancy rates high
  - Interest rates low
- How might prices and the economy react if these factors become less favorable, or are reversed?
- Such a revaluation could make a downturn more severe – i.e., missing our goals by more in the next downturn – than if normalization had occurred more rapidly

Concluding Observations

- Central banks need to achieve their goals not only at the current time, but *through* time
- Weigh benefits of low interest rates now against potential costs for the future of creating imbalances now
- Commercial real estate currently an attractive asset class in the U.S., but could become a concern should conditions change in an economic downturn