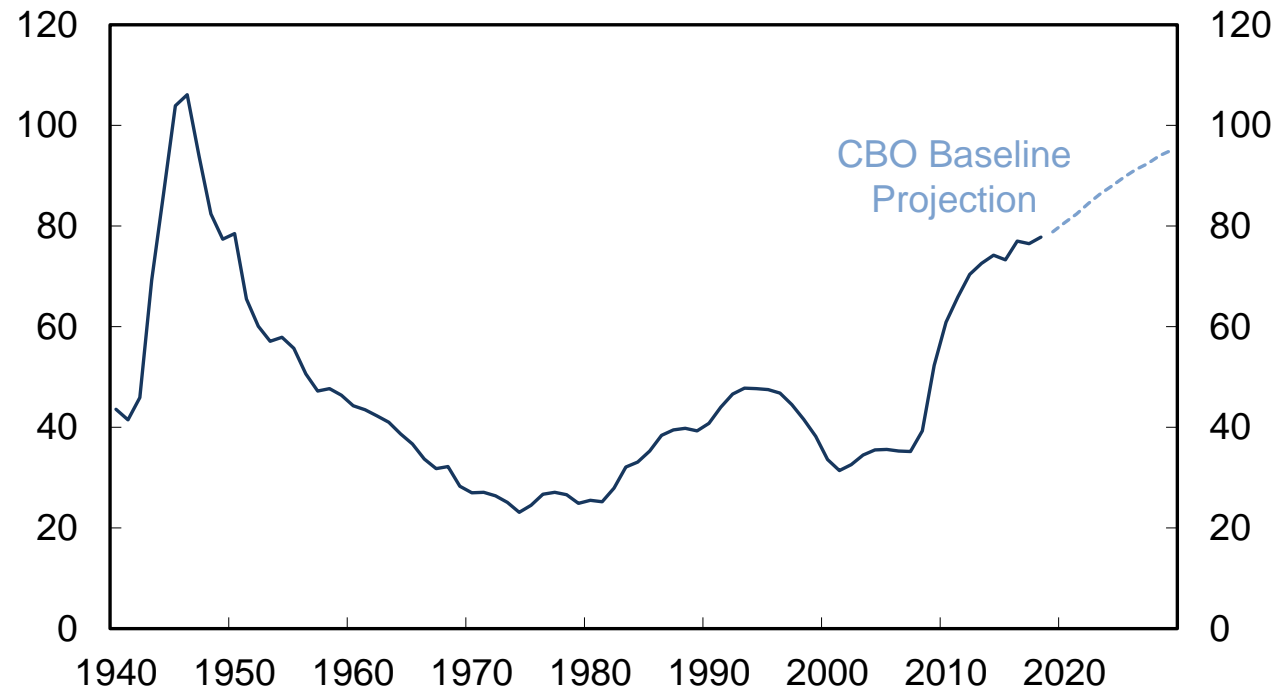


4.1.1 Federal Debt Held by the Public

Percent of GDP

As Of: Aug-2019

Percent of GDP



CBO Baseline
Projection

Source: CBO, Haver Analytics

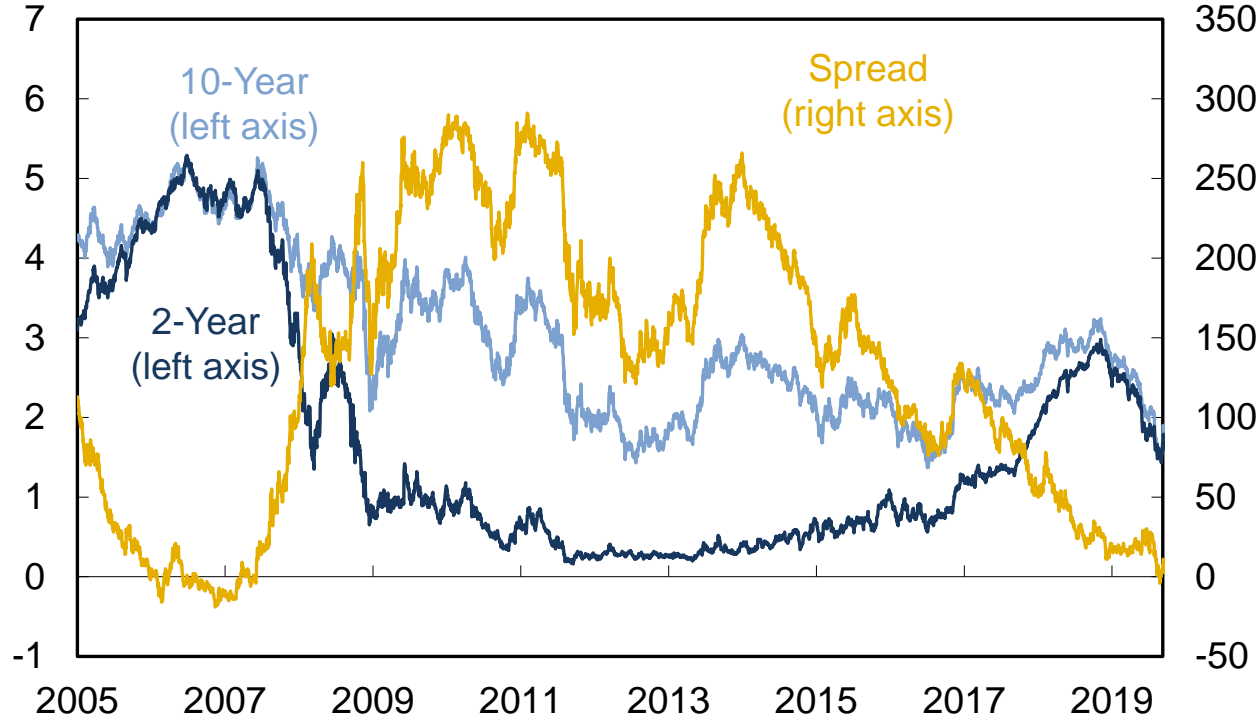
Note: Data for fiscal years.
Years after 2018 are projected.

4.1.2 U.S. Treasury Yields and Yield Curve

Percent

As Of: 30-Sep-2019

Basis Points



Source: U.S. Department
of the Treasury

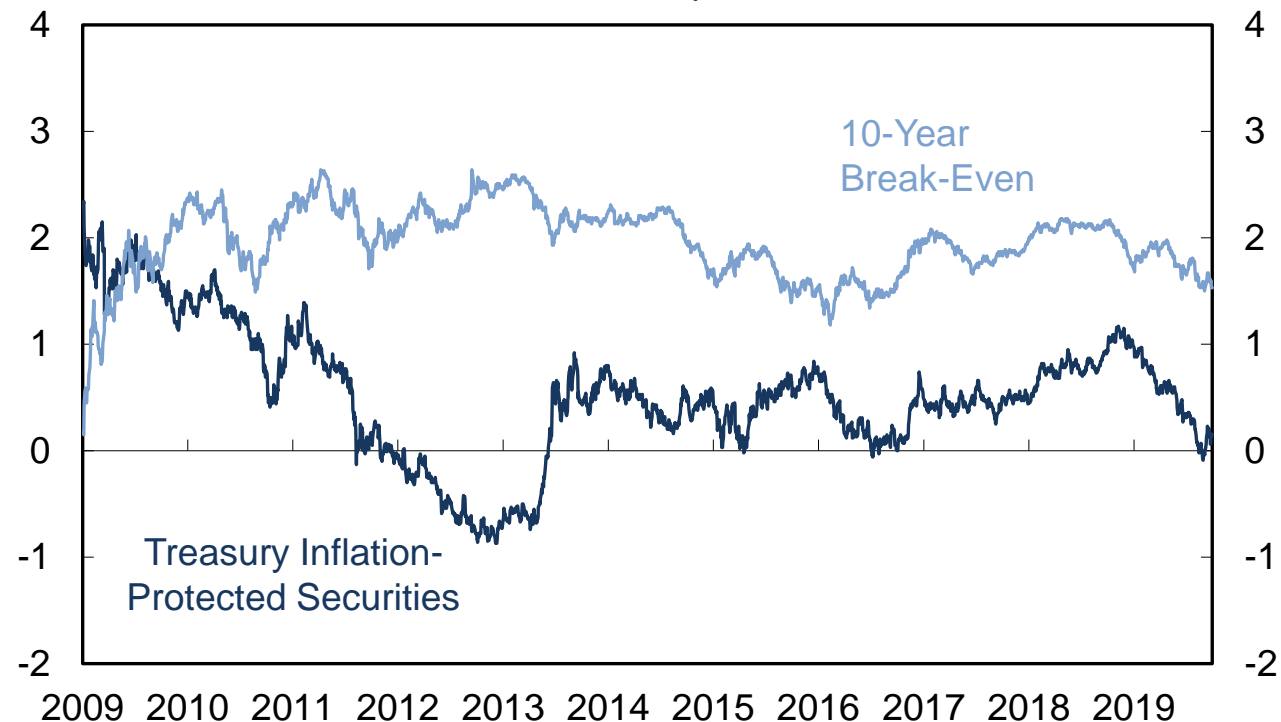
Note: Spread equals the difference between the yield on
the 10-year U.S. Treasury and 2-year U.S. Treasury.

4.1.3 10-Year Treasury Yields

Percent

As Of: 30-Sep-2019

Percent



Source: U.S. Department of
the Treasury

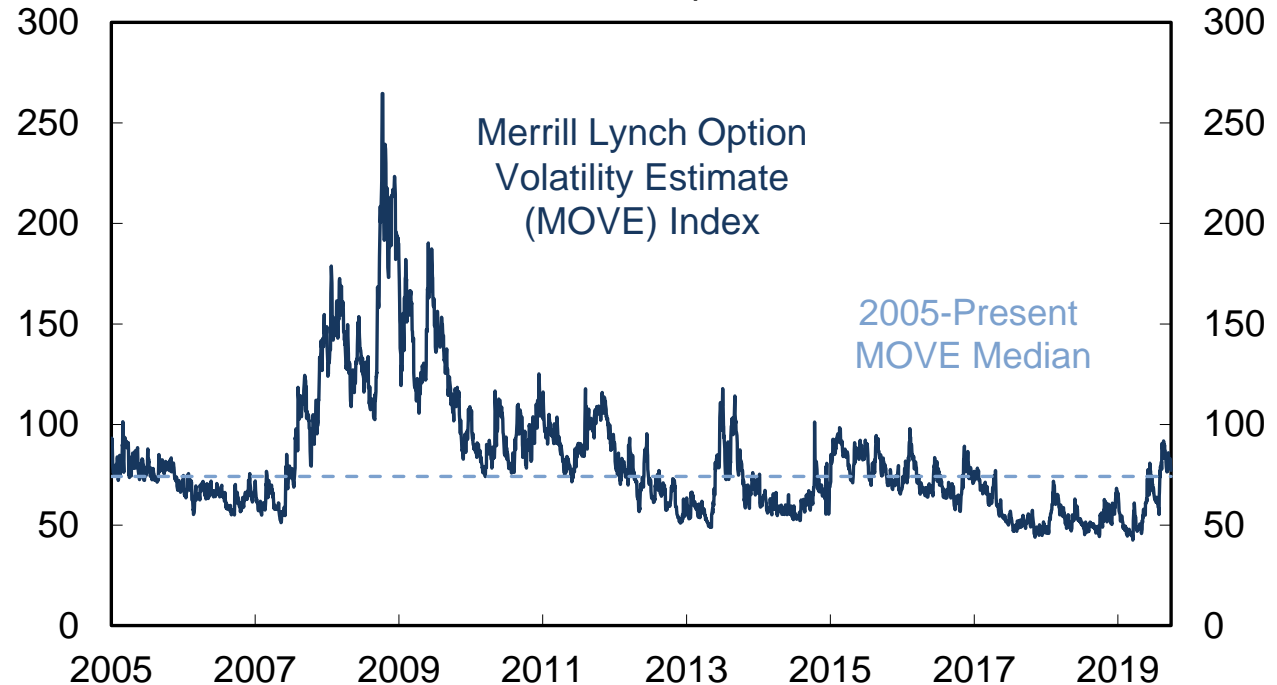
Note: Break-even represents the difference
between the nominal and TIPS yield.

4.1.4 Fixed Income Implied Volatility

Basis Points

As Of: 30-Sep-2019

Basis Points



Note: Implied volatility is calculated using a yield curve-weighted index of the normalized implied volatility on 1-month Treasury options.

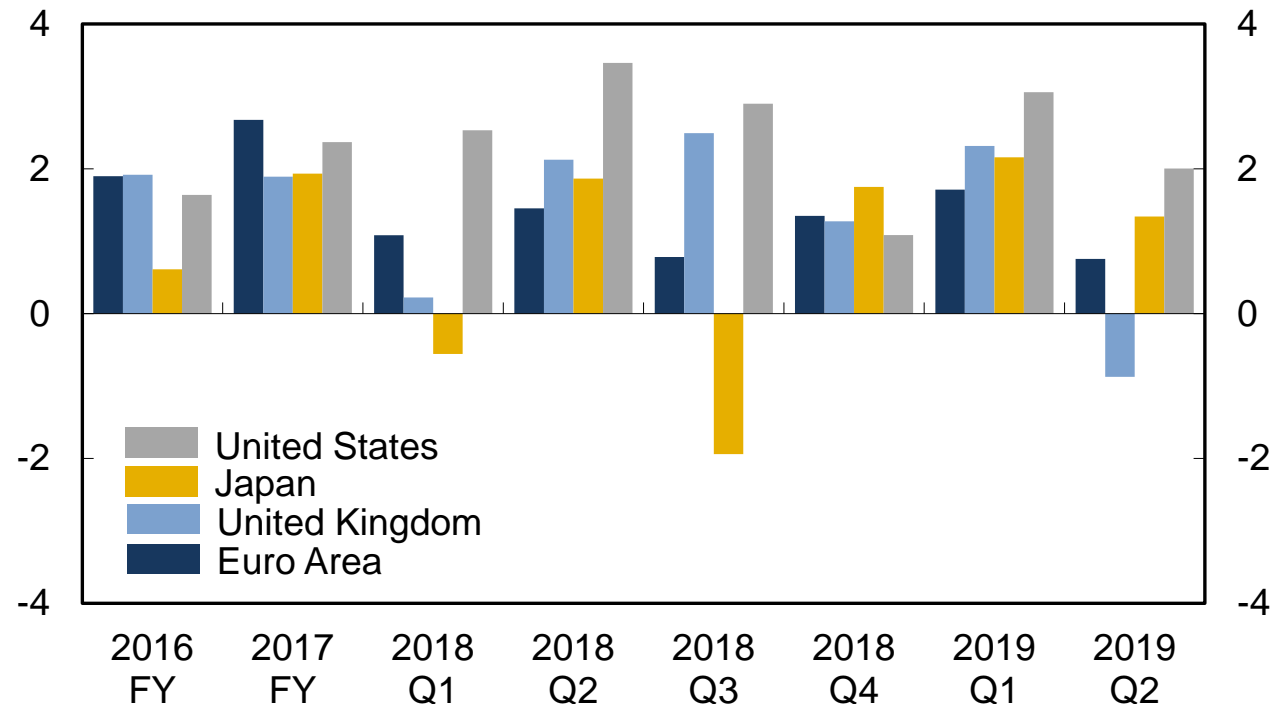
Source: Bloomberg, L.P.

4.2.1 Advanced Economies Real GDP Growth

Percent

As Of: 2019 Q2

Percent



Source: Eurostat, CAO, BEA, Haver Analytics

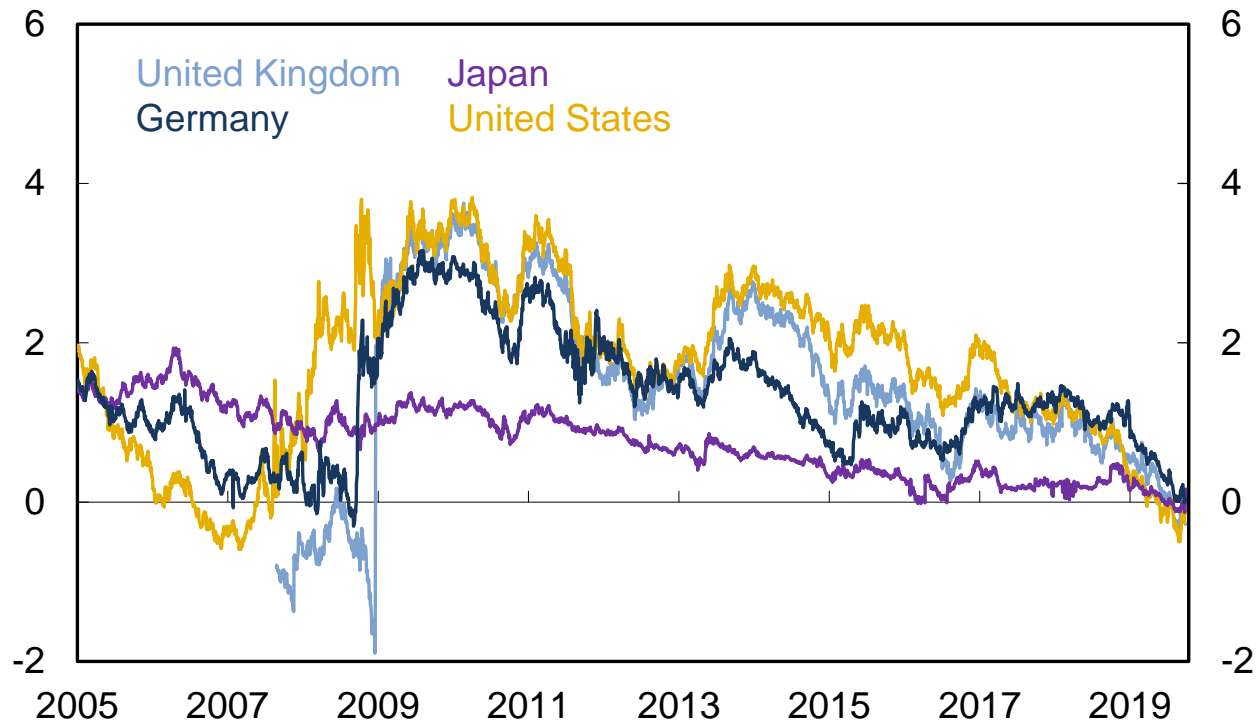
Note: Data represents seasonally adjusted quarter-over-quarter annualized real GDP growth rates.

4.2.2 Sovereign Yield Spreads

Percent

As Of: 30-Sep-2019

Percent



Source: Bloomberg, L.P.

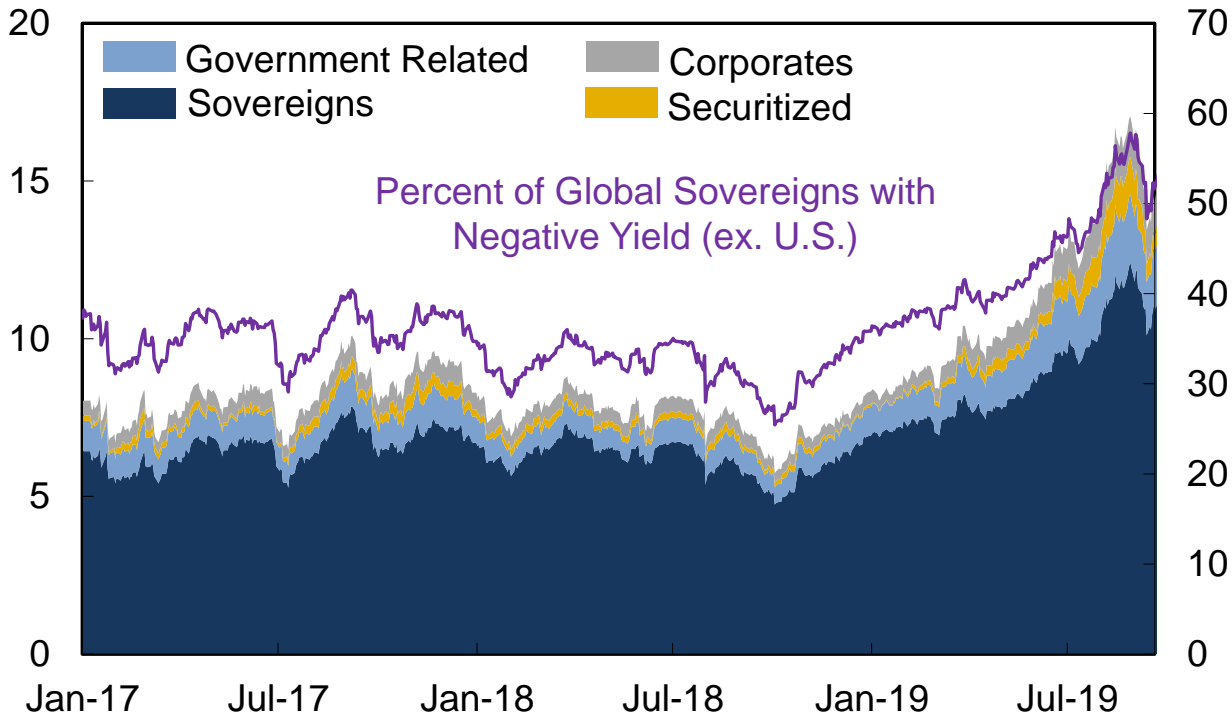
Note: Represents the spread between the 10-year and 3-month yield for select sovereign markets.

4.2.3 Outstanding Negative Yielding Debt

\$ Trillion

As Of: 30-Sep-2019

Percent



Note: Market value of the Bloomberg Barclays Global Aggregate Negative Yielding Debt Index. Sovereigns include securities classified as Treasuries.

Source: Bloomberg, L.P.

4.2.4 Sovereign Negative Yielding Debt

As Of: 30-Sep-2019

Country	S&P Rating	Negative Thru	Value (\$B)	Country	S&P Rating	Negative Thru	Value (\$B)
<u>Euro Area</u>			<u>4,932</u>	<u>Euro Area (Cont.)</u>			
France	AA	15 Yrs.	1,454	Latvia	A	9 Yrs.	5
Germany	AAA	31 Yrs.	1,202	Lithuania	A	10 Yrs.	5
Spain	A	8 Yrs.	589	Cyprus	BBB-	5 Yrs.	4
Italy	BBB	3 Yrs.	470	Malta	A-	2 Yrs.	1
Netherlands	AAA	27 Yrs.	353				
Belgium	AA-	15 Yrs.	302	<u>Japan</u>	A+	14 Yrs.	<u>5,931</u>
Austria	AA+	17 Yrs.	216				
Finland	AA+	15 Yrs.	93	<u>Other Europe</u>			<u>249</u>
Ireland	A+	10 Yrs.	90	Denmark	AAA	20 Yrs.	105
Portugal	BBB	7 Yrs.	89	Switzerland	AAA	45 Yrs.	83
Slovakia	A+	11 Yrs.	33	Sweden	AAA	13 Yrs.	59
Slovenia	AA-	9 Yrs.	20	Hungary	BBB	2 Yrs.	2
Luxembourg	AAA	8 Yrs.	7				

Source: Bloomberg, L.P.

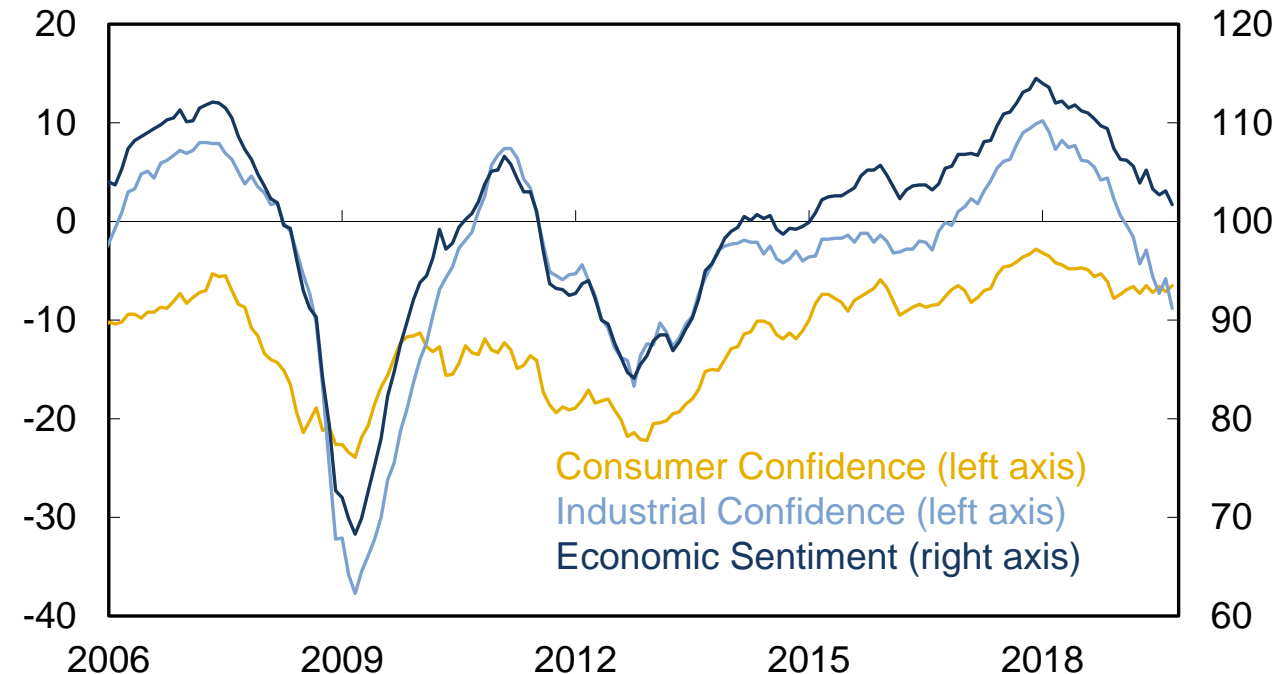
Note: Includes securities classified as Treasuries in the Bloomberg Barclays Global Aggregate Negative Yielding Debt Index.

4.2.5 Euro Area Business and Consumer Surveys

Percent

As Of: Sep-2019

Index



Source: European
Commission, Haver Analytics

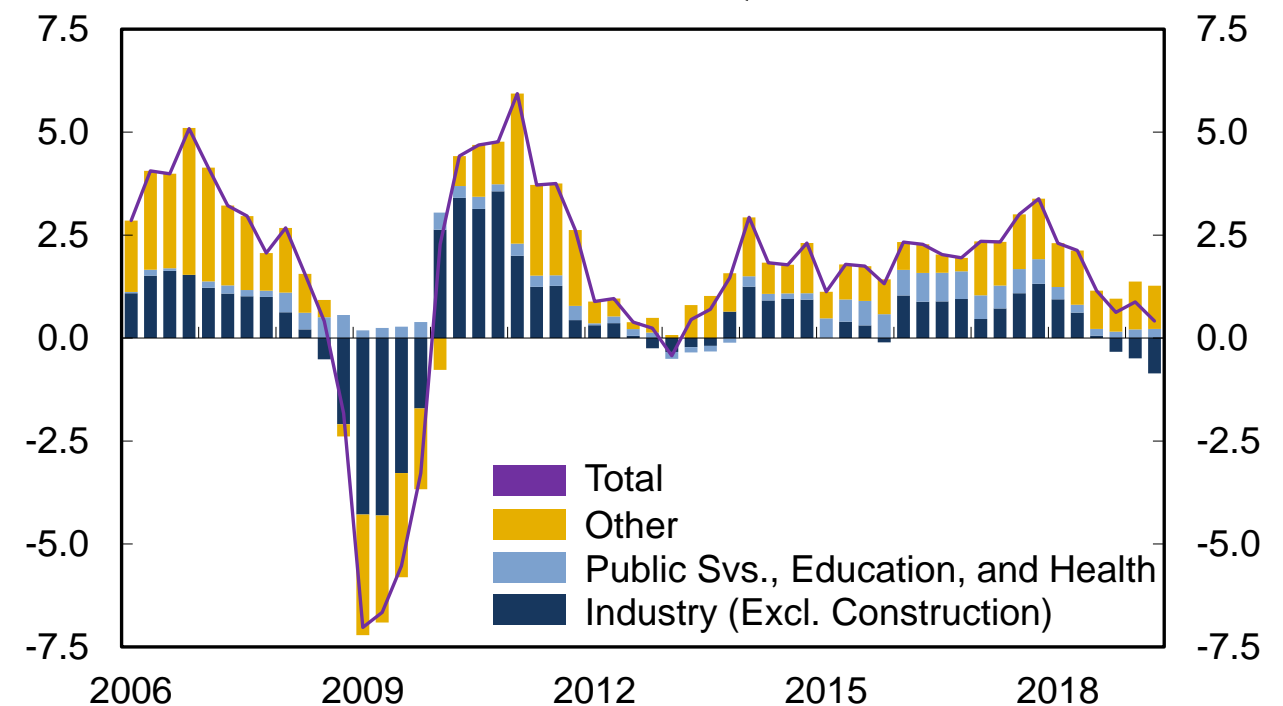
Note: Confidence surveys calculated as the difference between positive and negative responses. For economic sentiment index, 100 = long-term average.

4.2.6 Sectoral Contributions to German GDP Growth

Percent

As Of: 2019 Q2

Percent



Source: FSO, Haver Analytics, Staff Calculations

Note: Select sectoral contributions to year-over-year real GDP growth rates.

4.2.7 Euro 5-Year, 5-Year Inflation Swap Rate

Percent

As Of: 30-Sep-2019

Percent



Source: Bloomberg, L.P.

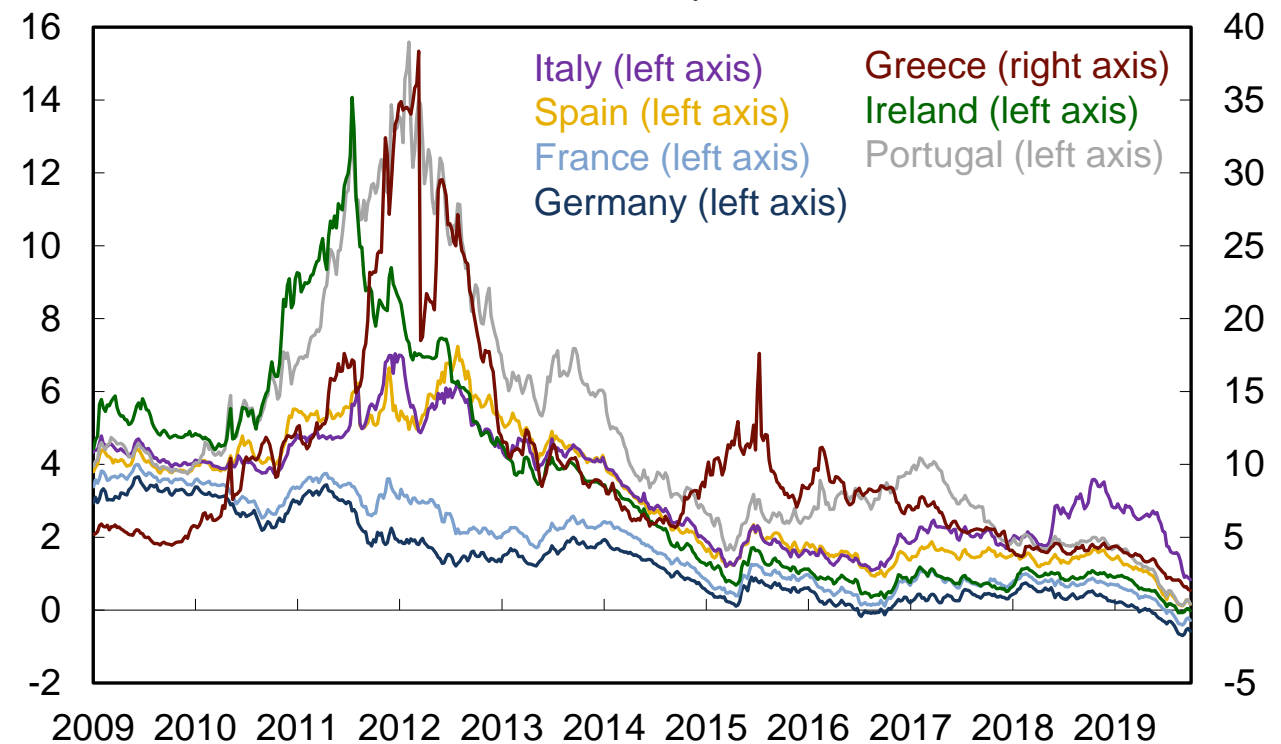
Note: A market-based measure of the expected inflation rate over a 5-year period starting in five years' time.

4.2.8 Euro Area 10-Year Sovereign Yields

Percent

As Of: 27-Sep-2019

Percent



Source: Reuters, Haver Analytics

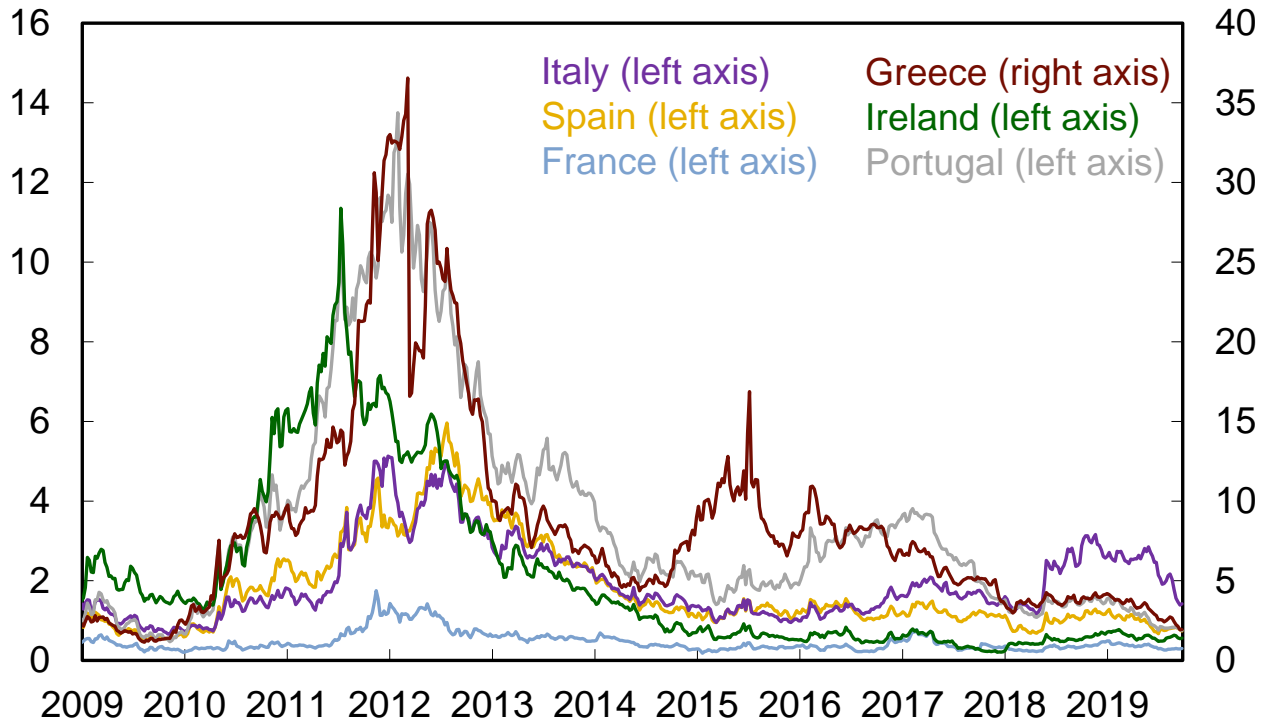
Note: Weekly averages.

4.2.9 Euro Area 10-Year Spreads

Percent

As Of: 27-Sep-2019

Percent



Source: Reuters, Haver Analytics

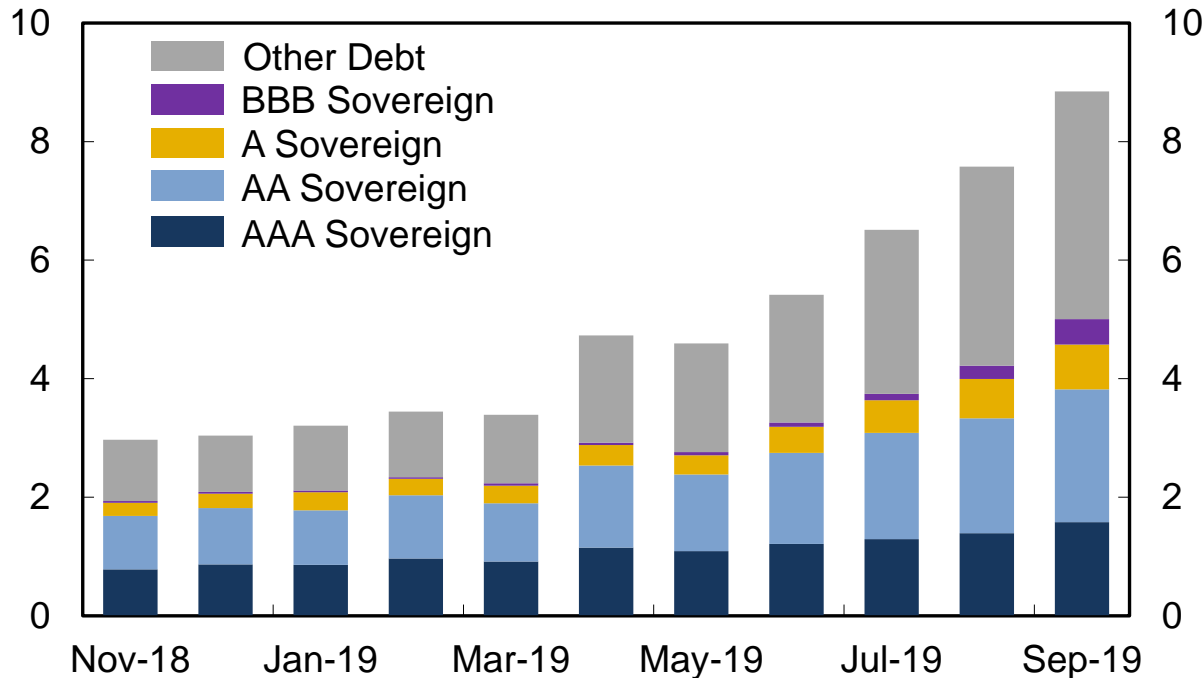
Note: Calculated as the weekly average spread between local 10Y and German 10Y.

4.2.10 Euro Denominated Negative Yielding Debt

Trillions of EUR

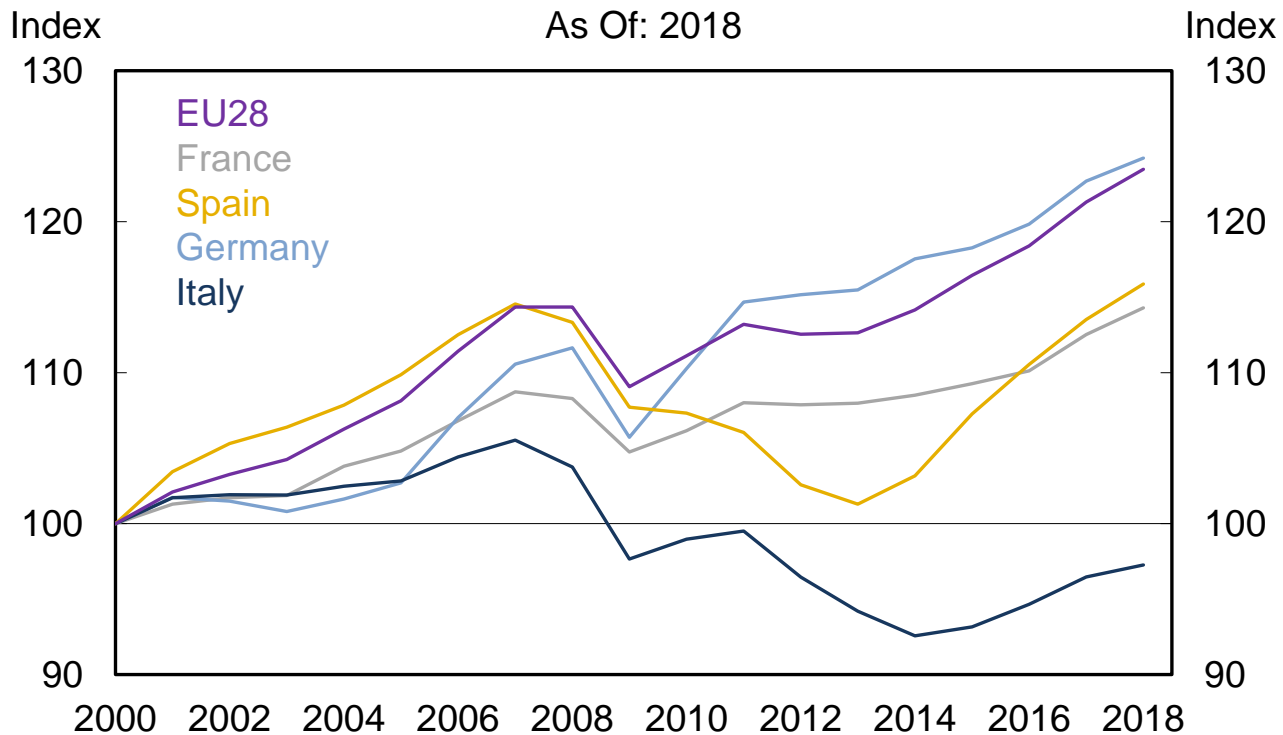
As Of: 30-Sep-2019

Trillions of EUR



Note: AAA = Germany, Netherlands, Luxembourg; AA = France, Austria, Belgium, Slovenia; A = Ireland, Latvia, Lithuania, Malta, Slovakia, Spain; BBB = Italy, Portugal, Cyprus; other debt includes government-related, securitized, and corporate debt.

4.2.11 EU Real GDP Per Capita



Source: Eurostat, Haver Analytics

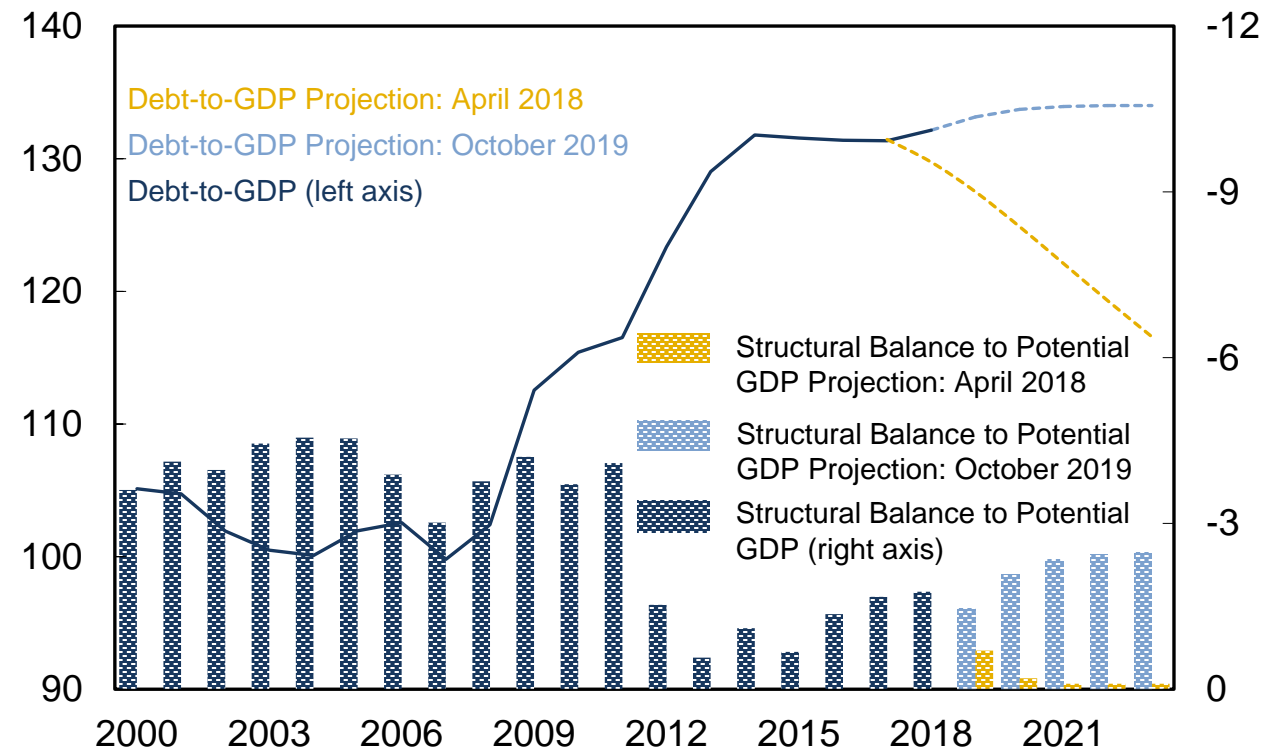
Note: 2000 = 100. EU28 includes the 28 member states of the European Union.

4.2.12 Italy Fiscal Projections

Percent of GDP

As Of: 2018

Percent of Potential GDP



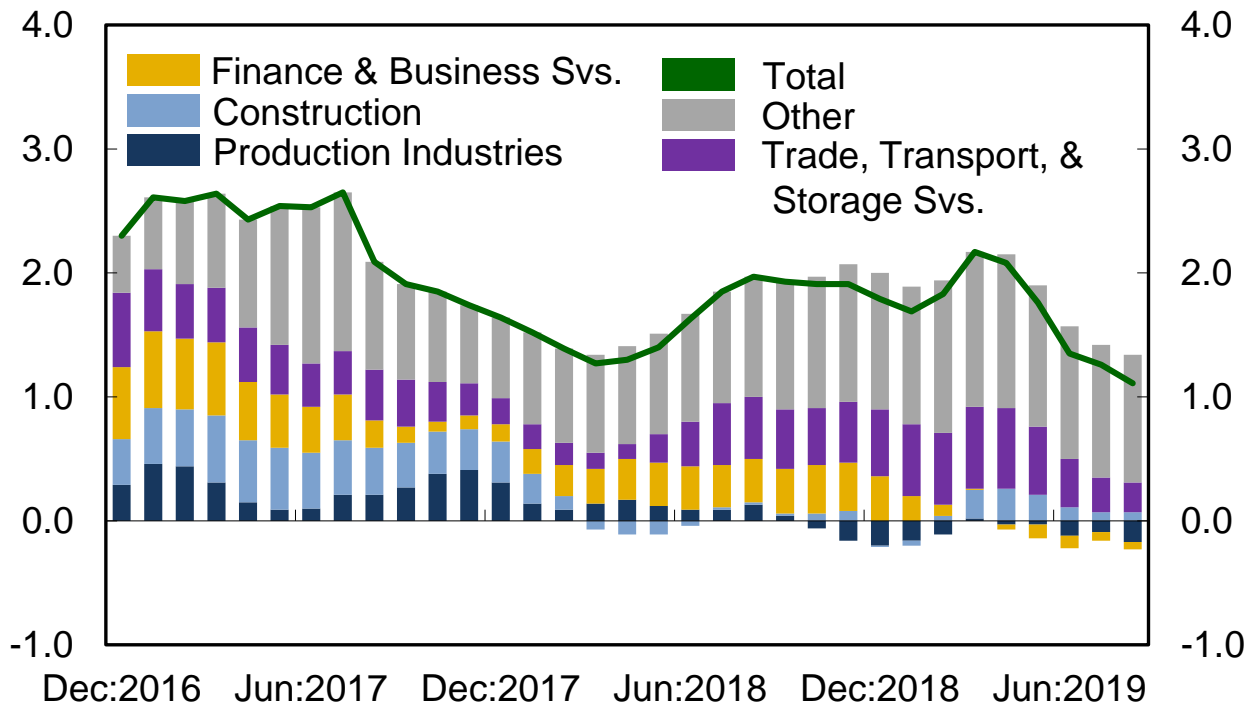
Source: IMF WEO, Haver Analytics

4.2.13 Contributions to UK Real Gross Value Added

Percent

As Of: Sep-2019

Percent

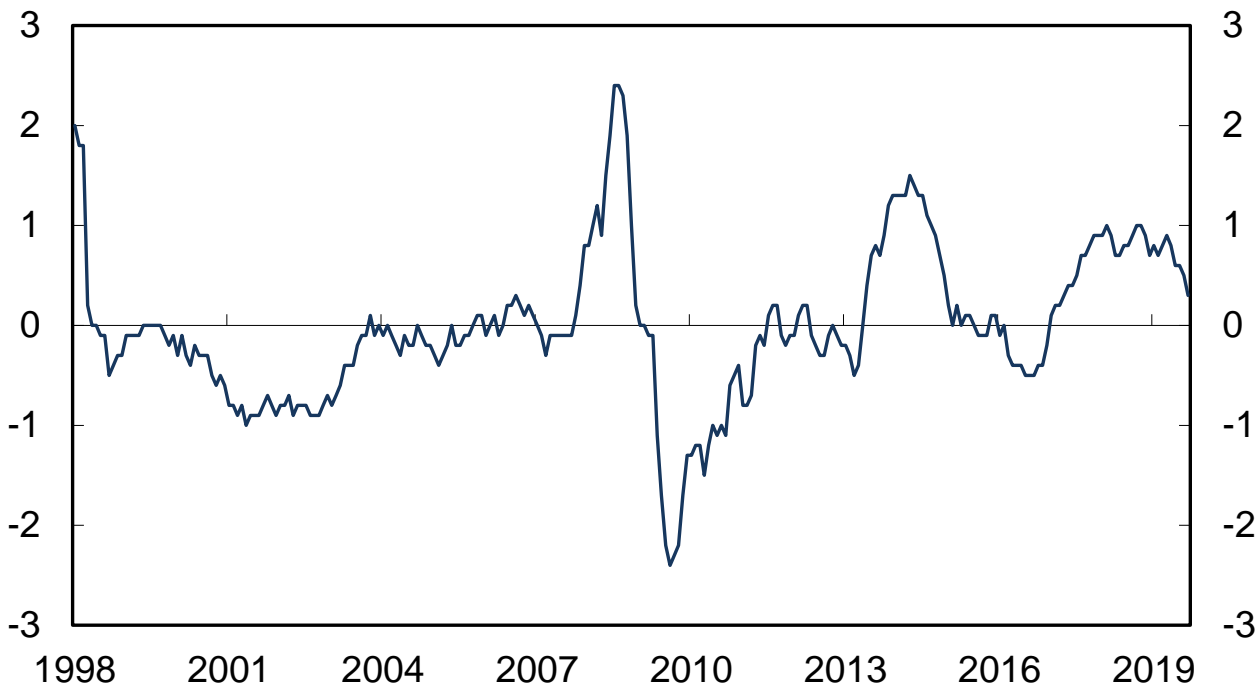


Source: UK Office of National Statistics, Haver Analytics

Note: Contribution to year-over-year percent change in rolling 3 months real GVA.

4.2.14 Japanese Consumer Price Inflation

Percent As Of: Sep-2019 Percent



Source: Bank of Japan,
Haver Analytics

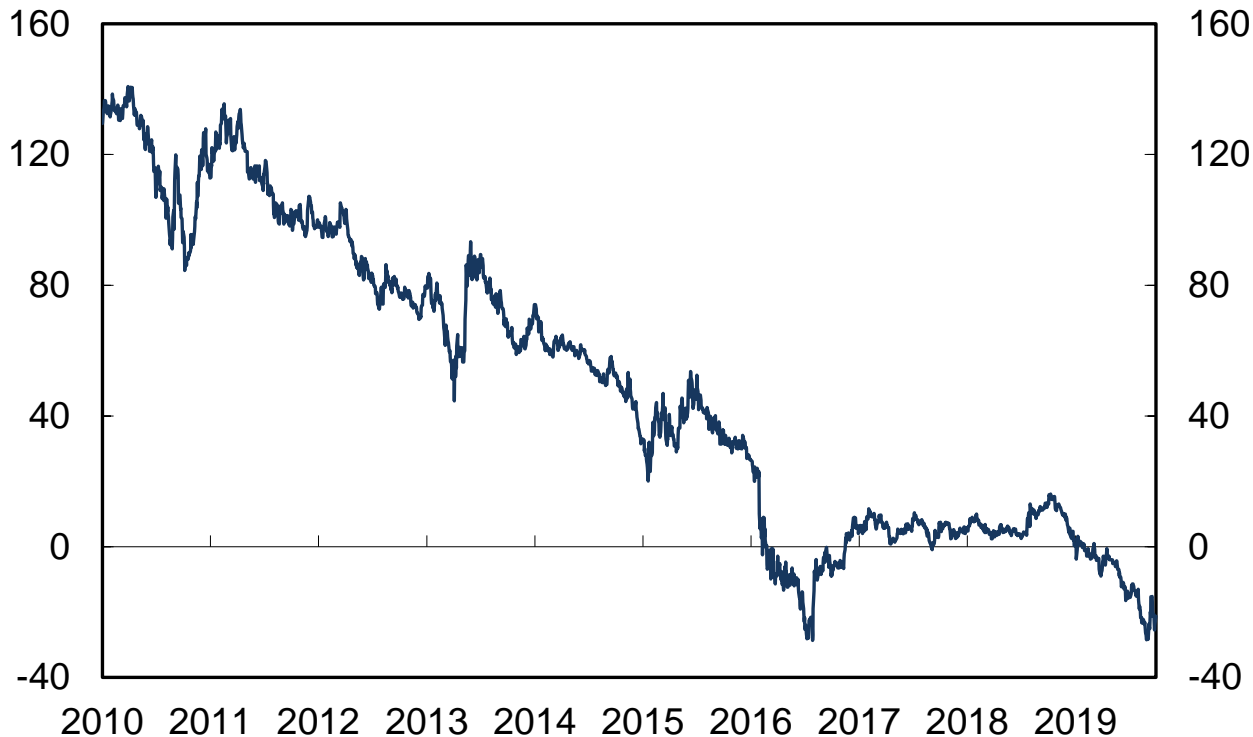
Note: Data represents year-over-year percent change.
CPI excludes fresh food and is adjusted for the
consumption tax increase that took effect in April 2014.

4.2.15 Japan 10-Year Government Bond Yield

Basis Points

As Of: 30-Sep-2019

Basis Points



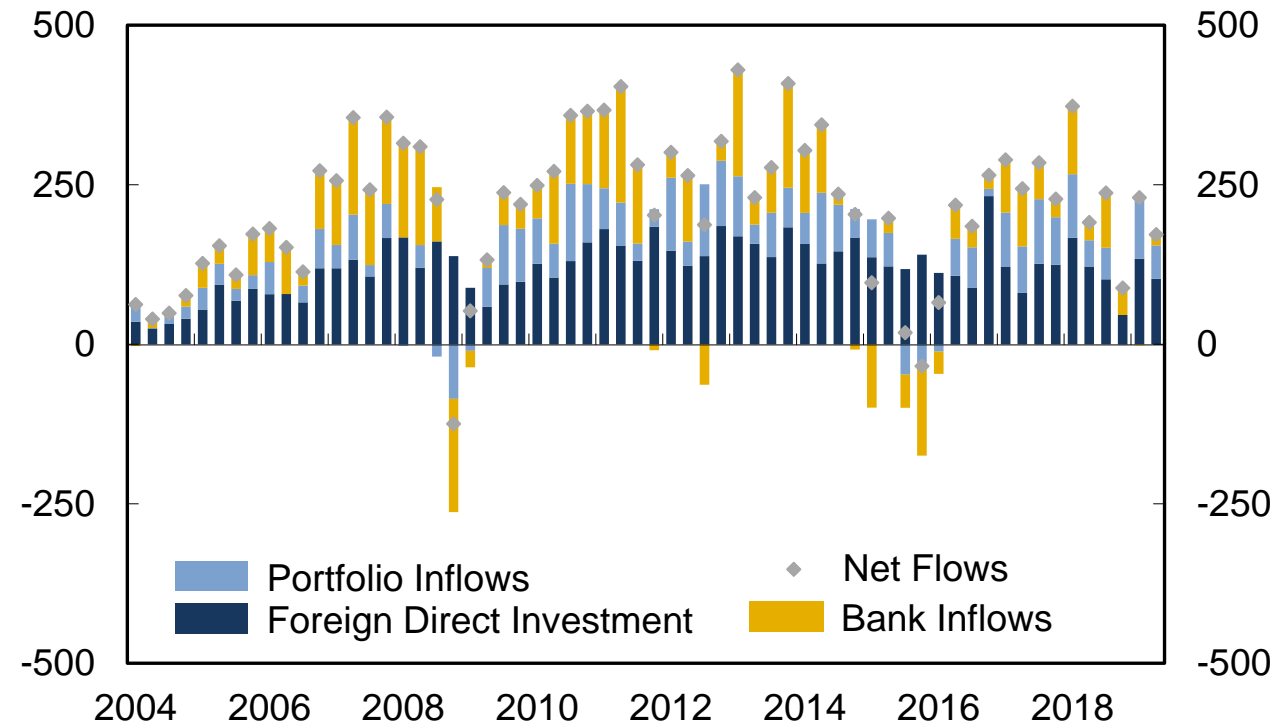
Source: Bloomberg, L.P.

4.2.16 Gross Foreign Investor Capital Inflows to EMEs

Billions of US\$

As Of: 2019 Q2

Billions of US\$



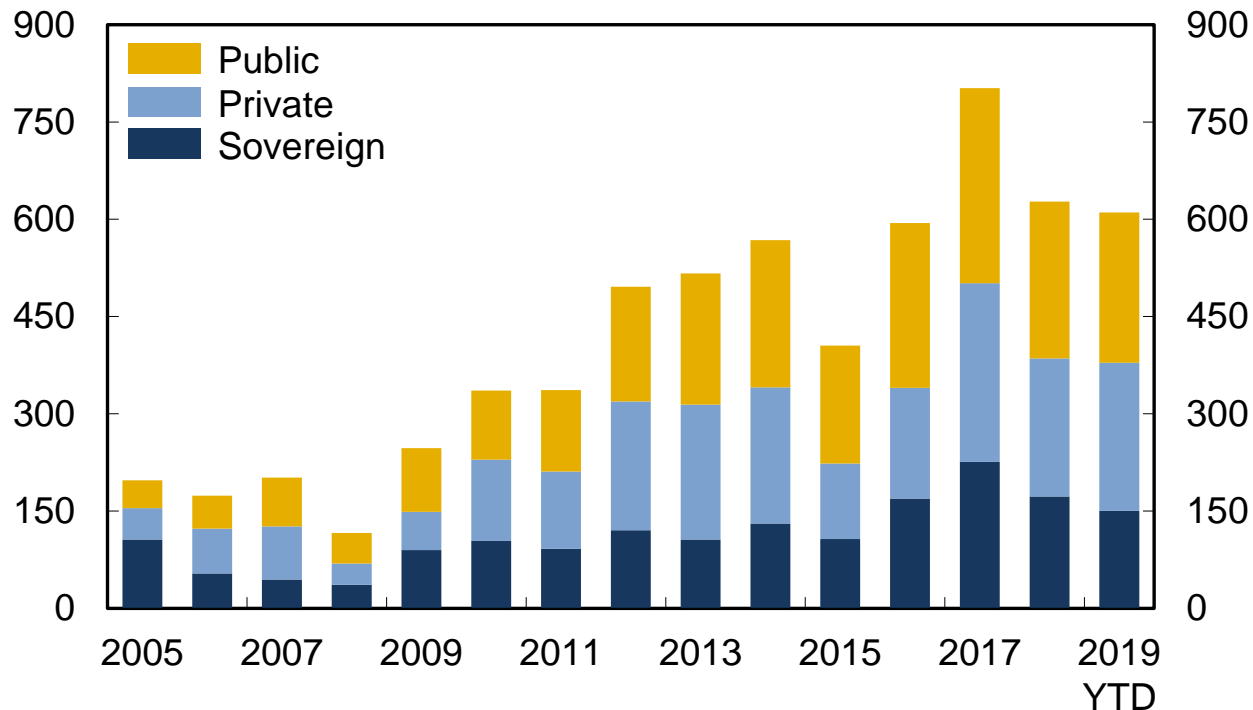
Source: IMF, Haver Analytics

4.2.17 Emerging Market Gross Global Bond Issuance

Billions of US\$

As Of: 30-Sep-2019

Billions of US\$



Note: Bonds have maturities greater than one year and have been internationally marketed or placed. "Public" includes issuance by municipal and state-owned enterprises.

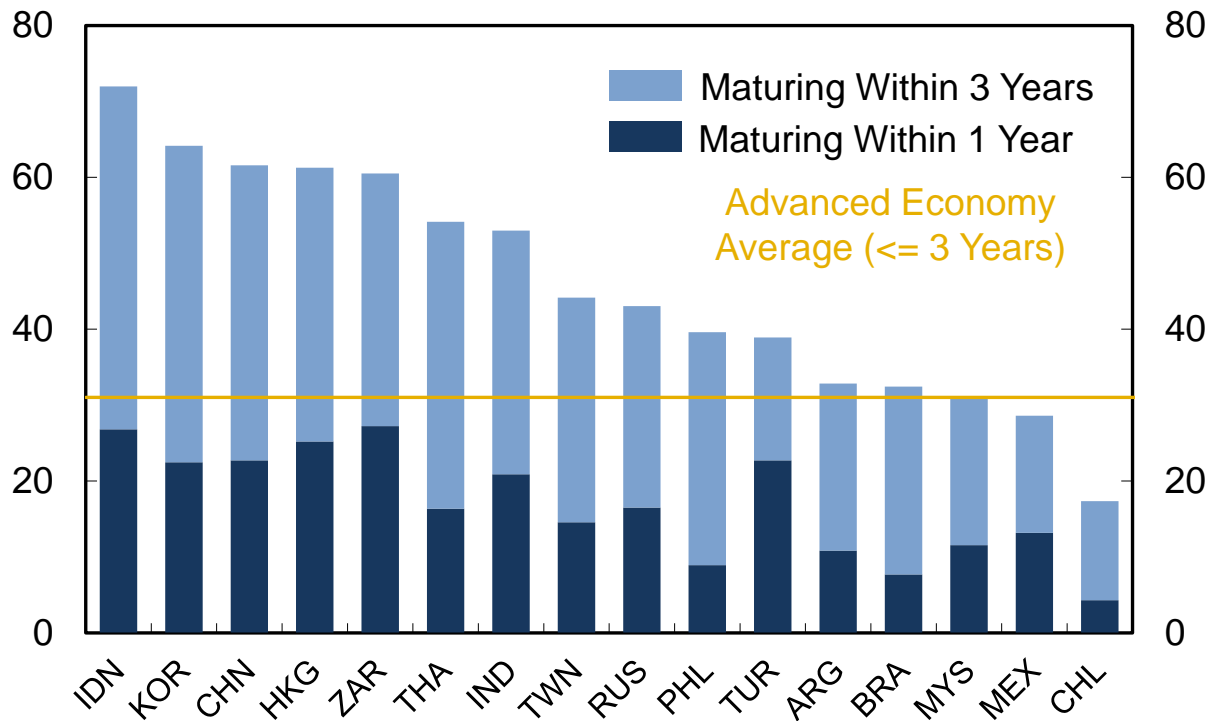
Source: Dealogic

4.2.18 EME Nonfinancial Corporates Maturity Structure

Percent

As Of: 30-Sep-2019

Percent



Source: Bloomberg, L.P,
Staff Calculations

Note: Represents percent of private nonfinancial
corporate debt maturing within 3 years.

4.2.19 Emerging Market Bond Spreads

Basis Points

As Of: 30-Sep-2019

Basis Points

1000

1000

800

800

600

600

400

400

200

200

0

0

2008

2010

2012

2014

2016

2018

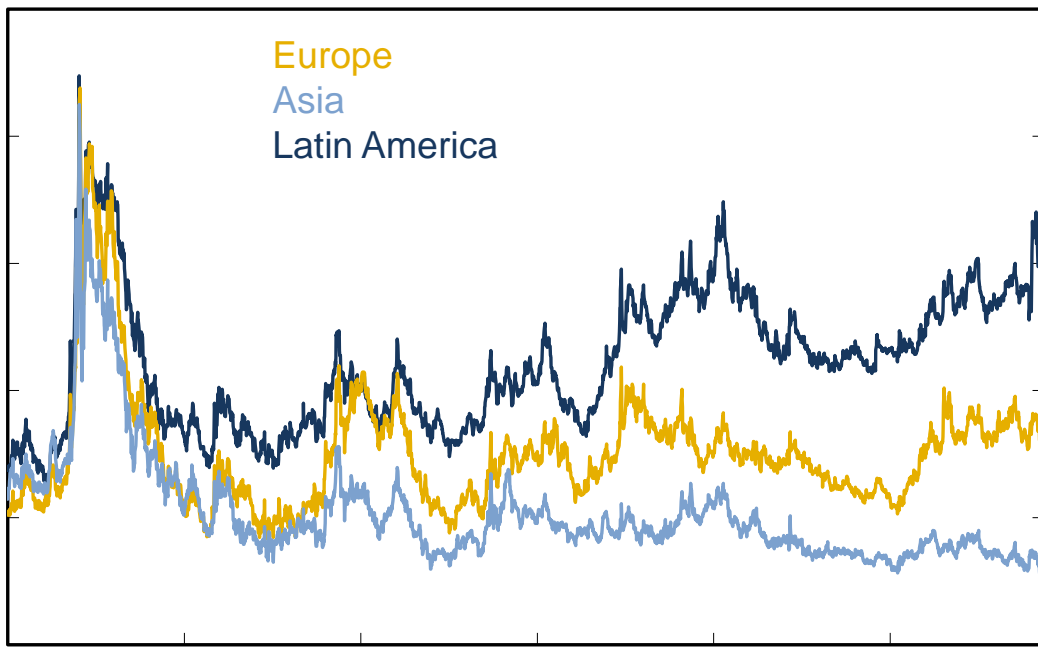
Europe

Asia

Latin America

Source: JP Morgan,
Haver Analytics

Note: JP Morgan EMBI+ Sovereign
Spreads indices for each region.



4.2.20 Emerging Market Sovereign CDS Spreads

Basis Points

As Of: 30-Sep-2019

Basis Points



Source: Bloomberg, L.P.

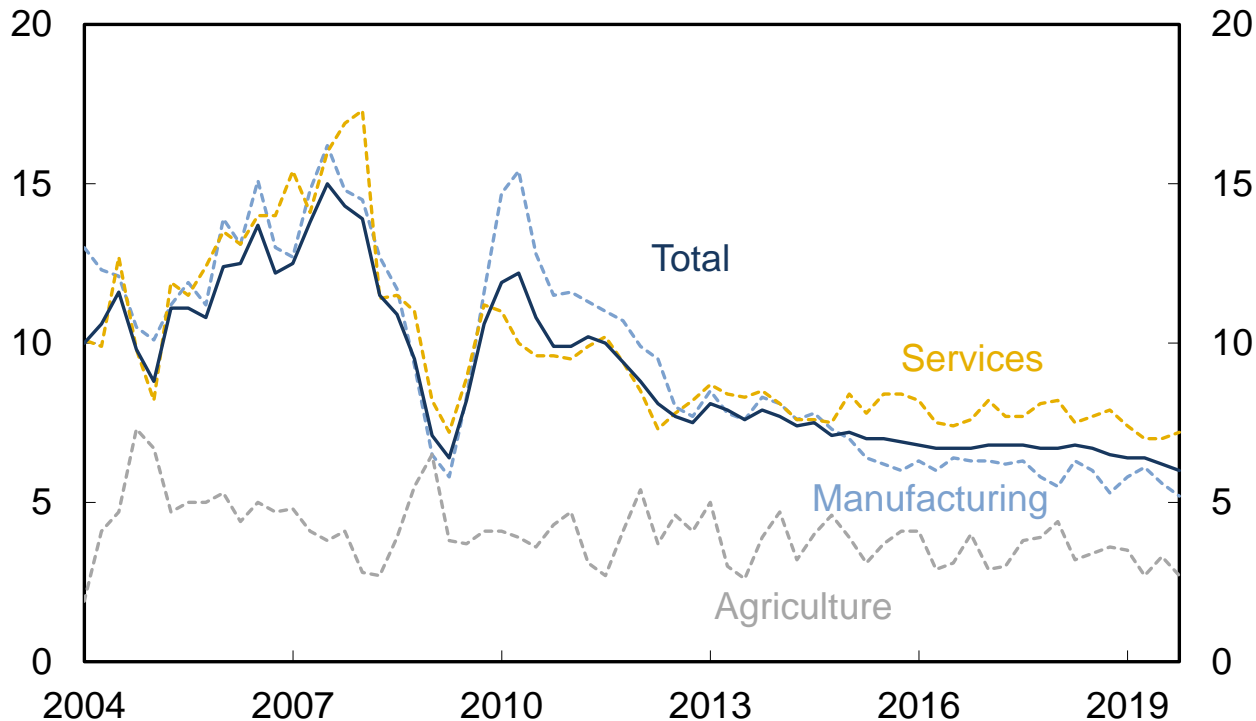
Note: 5-year USD spreads.

4.2.21 Chinese Real GDP Growth and its Components

Percent

As Of: 2019 Q3

Percent



Source: China National Bureau
of Statistics, Haver Analytics

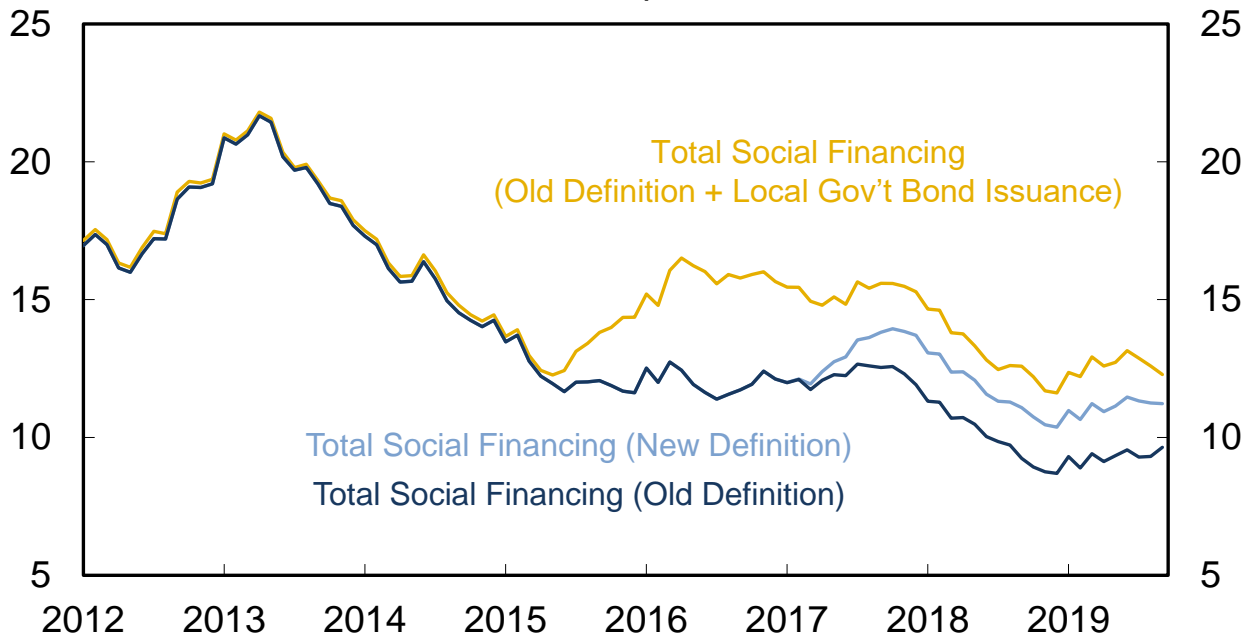
Note: Year-over-year percentage change.

4.2.22 Chinese Credit Growth

Percent

As Of: Sep-2019

Percent



Source: PBOC, CCDC,
Haver Analytics, Staff
Calculations

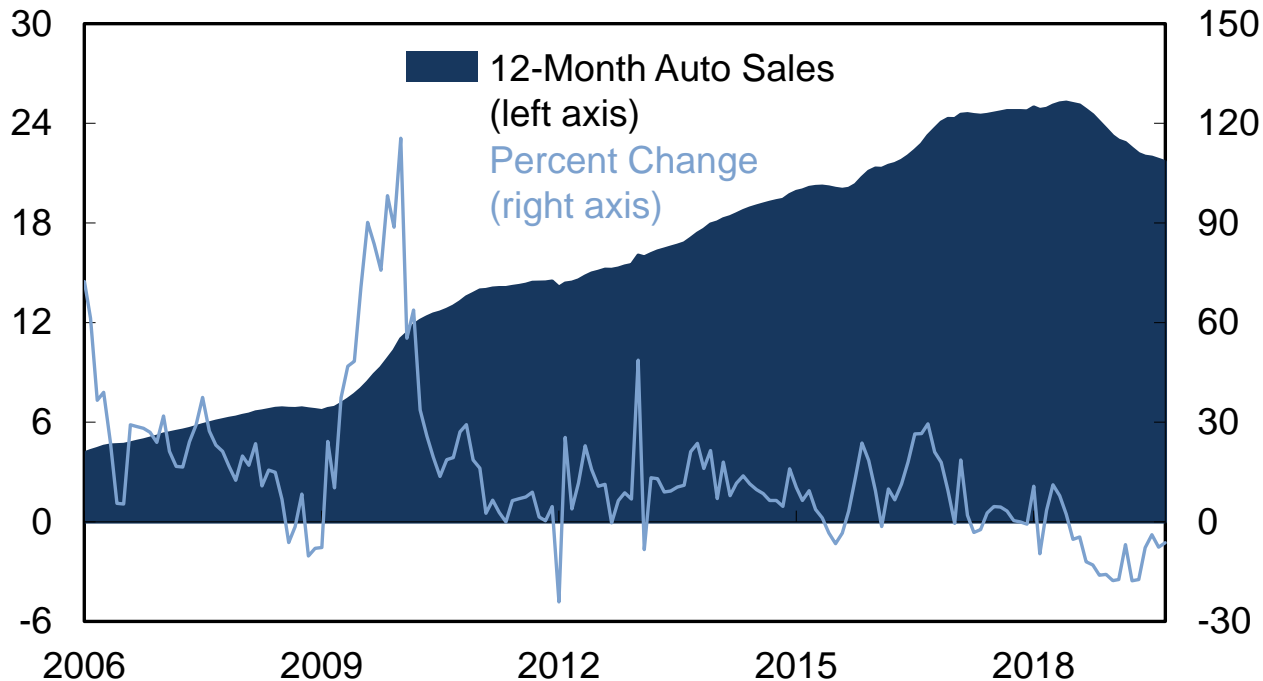
Note: Calculated as the year-over-year percent change total social financing (TSF) flows since 2002. TSF refers to the total volume of financing provided by the financial system to the real economy. TSF (old definition) excludes loan write-offs, ABS of depository institutions, and local gov't special bonds.

4.2.23 12-Month Chinese Auto Sales

Millions (Units)

As Of: Sep-2019

Percent



Source: CAAM,
Haver Analytics

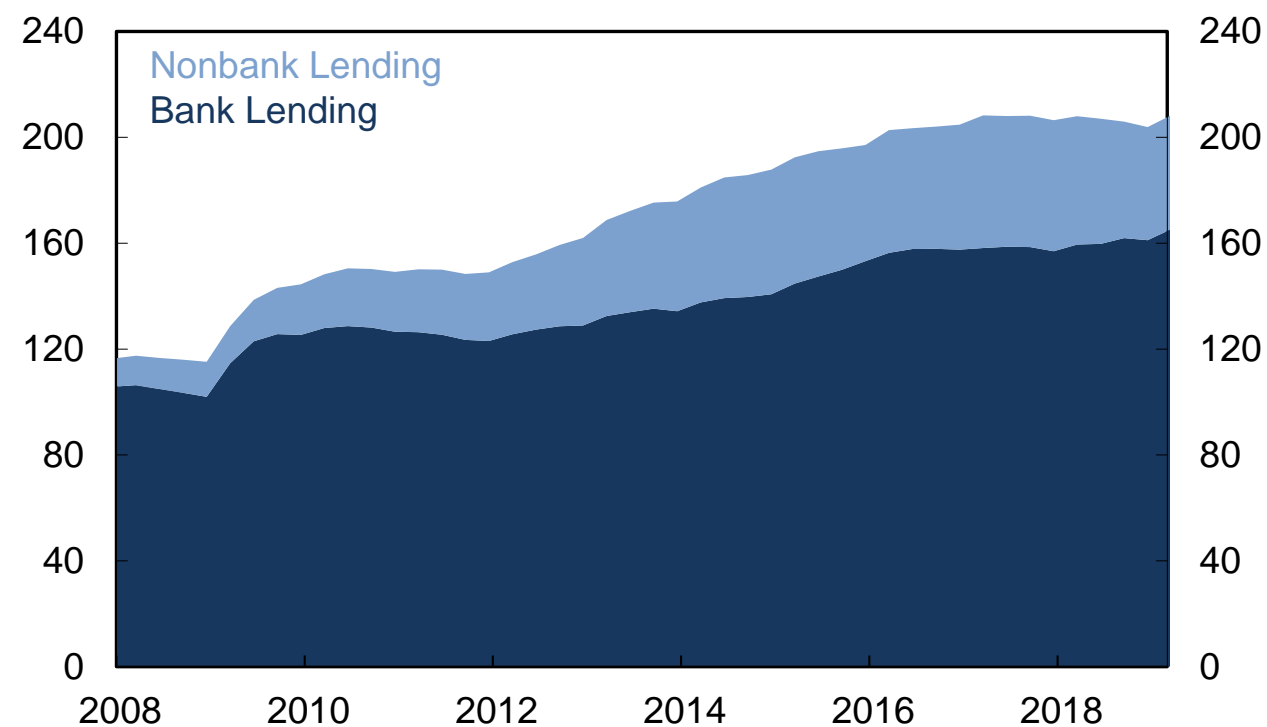
Note: Total passenger car sales over the preceding 12 months. Percent change shows the number of passenger cars sold in a given month compared to the same month one year ago.

4.2.24 Credit to the Chinese Nonfinancial Private Sector

Percent of GDP

As Of: 2019 Q1

Percent of GDP



Source: China National Bureau of Statistics, BIS, Haver Analytics

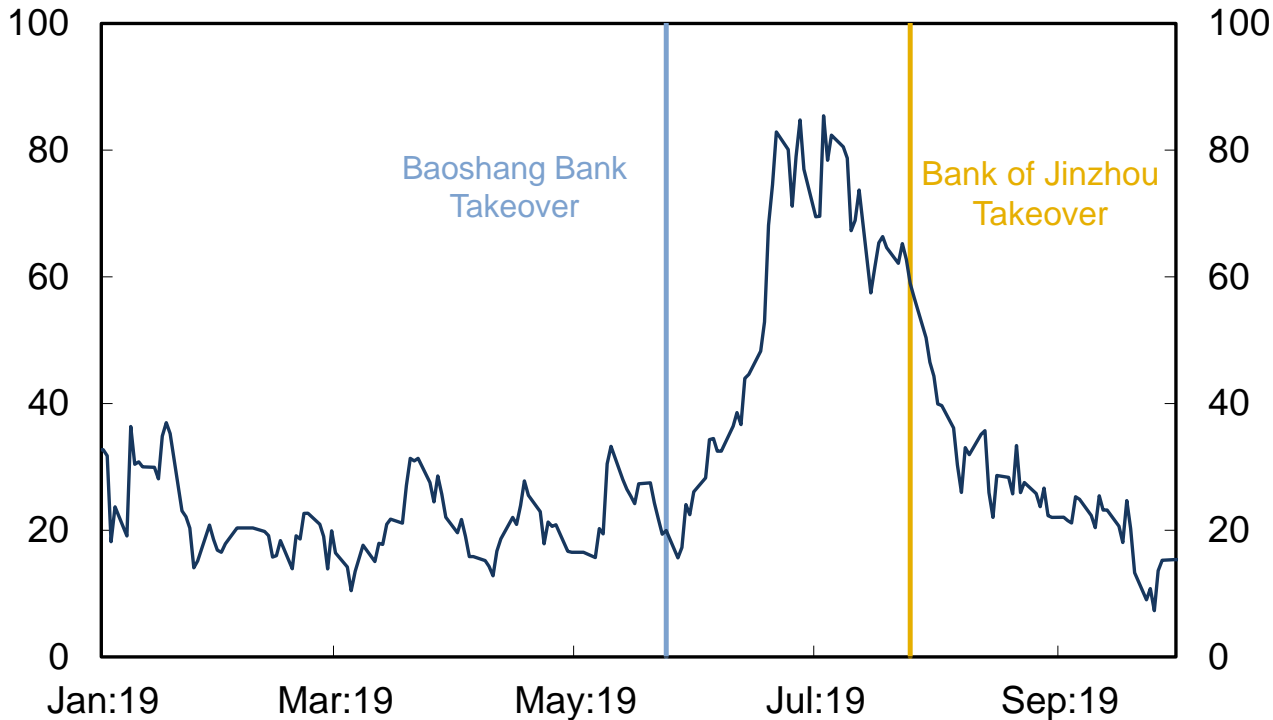
Note: Rolling 4-quarter sum of GDP.

4.2.25 China Negotiable Certificate of Deposit Credit Spread

Basis Points

As Of: 30-Sep-2019

Basis Points

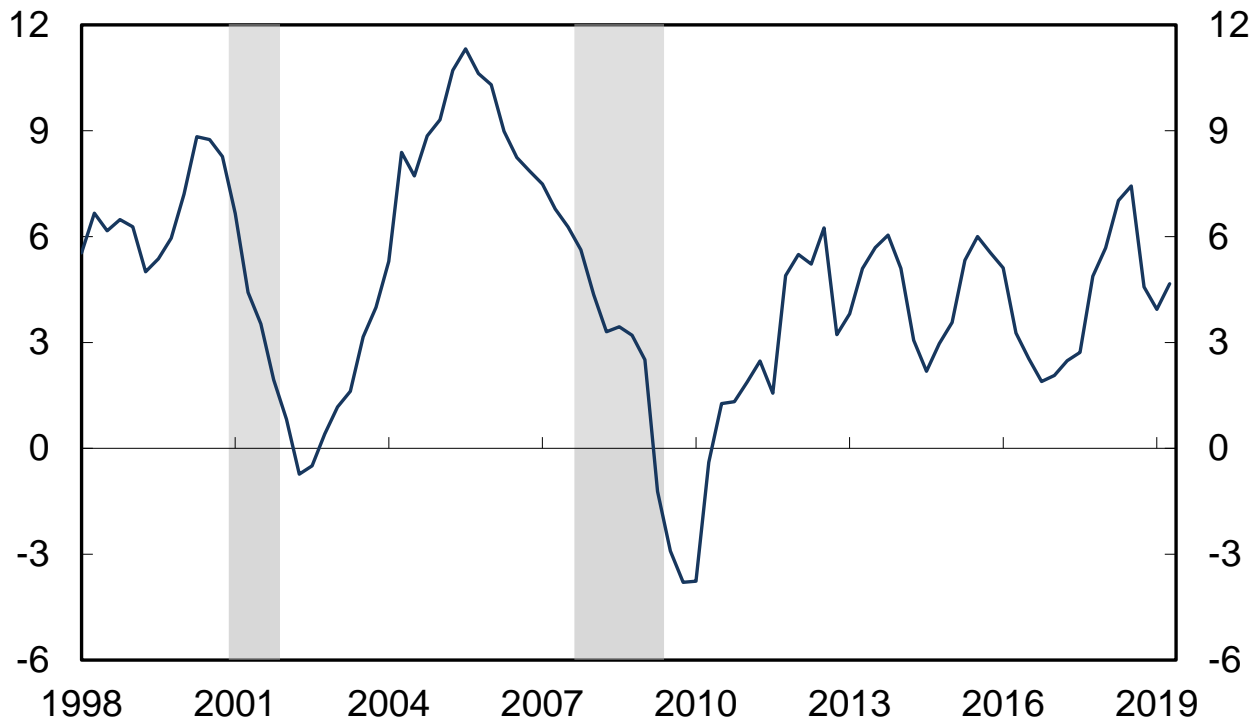


Note: Spread between AAA and AA+ 6-month negotiable certificate of deposit.

Source: Bloomberg, L.P.

4.2.26 Change in State and Local Government Tax Revenues

Percent As Of: 2019 Q2 Percent



Source: Census Bureau

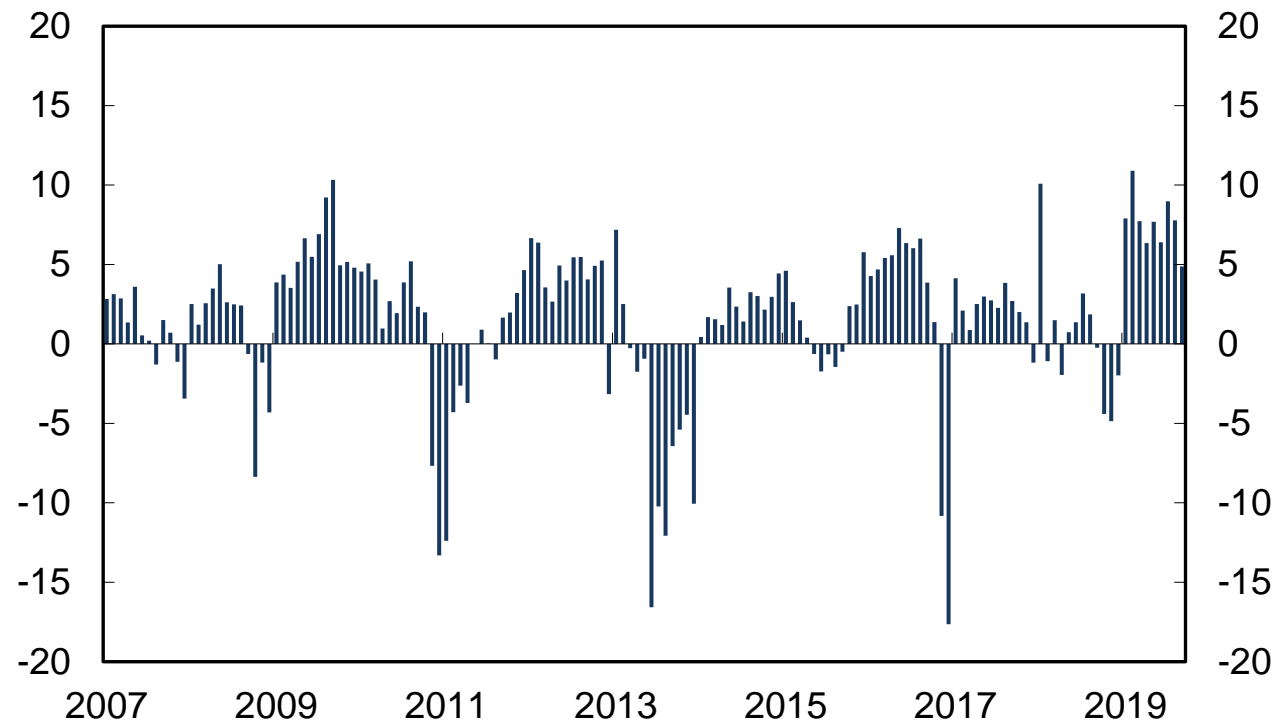
Note: Data represents year-over-year change. Revenue measures includes revenues from property, individual income, corporate income, and sales taxes. Gray bars signify NBER recessions.

4.2.27 Municipal Bond Mutual Fund Flows

Billions of US\$

As Of: Sep-2019

Billions of US\$



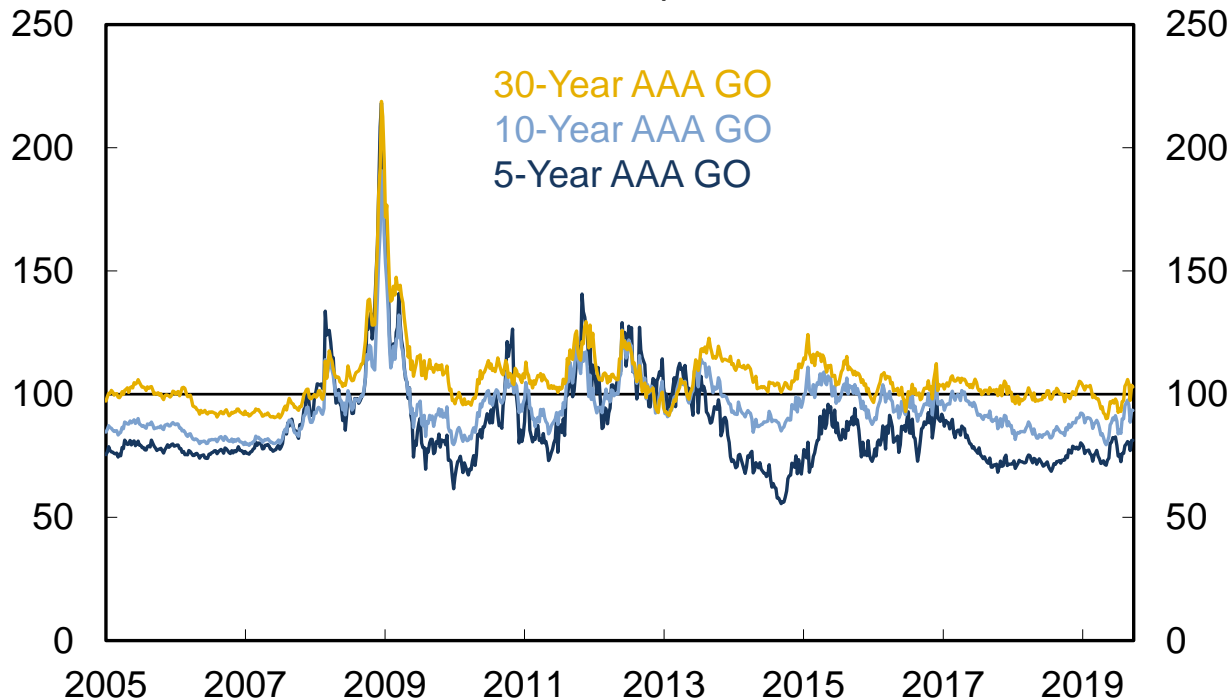
Source: ICI, Haver Analytics

4.2.28 Municipal Bonds to U.S. Treasuries

Percent

As Of: 27-Sep-2019

Percent



Source: Municipal Market
Analytics, Bloomberg, L.P.

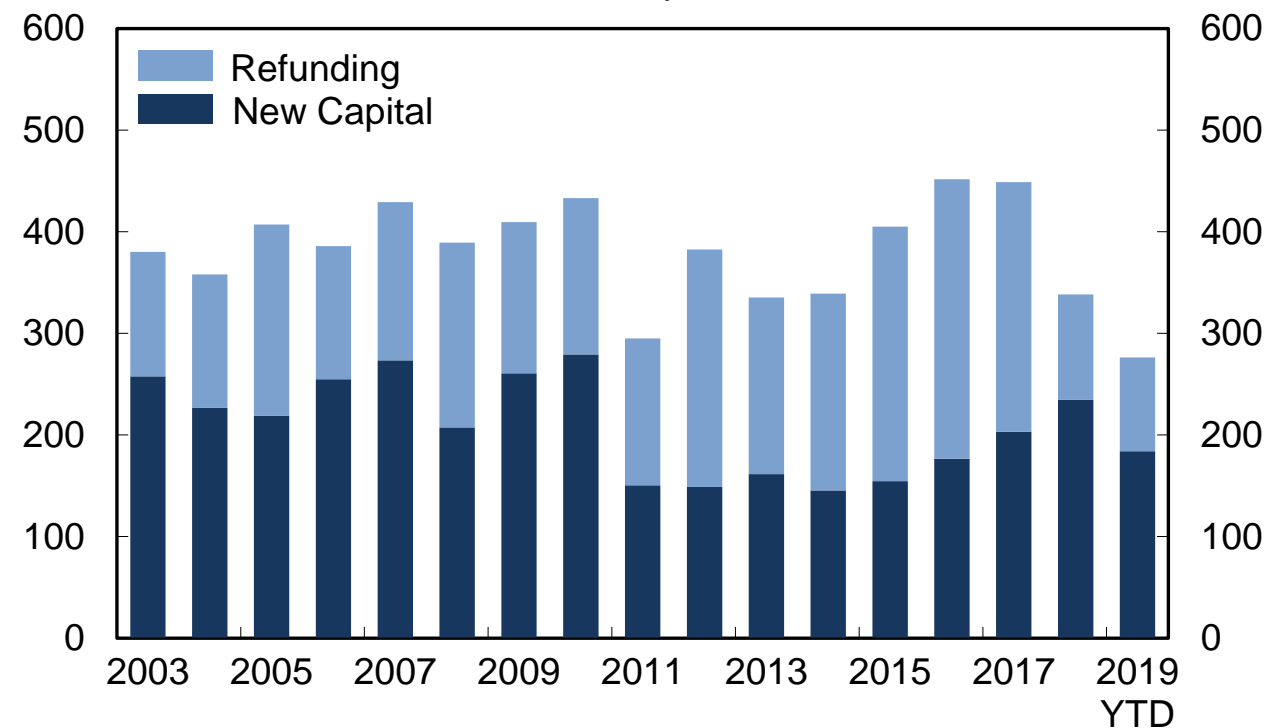
Note: Calculated as the ratio between
municipal general obligation bonds and U.S.
Treasury securities of comparable maturities.

4.2.29 Municipal Bond Issuance

Billions of US\$

As Of: Sep-2019

Billions of US\$



Source: Thomson
Reuters, SIFMA

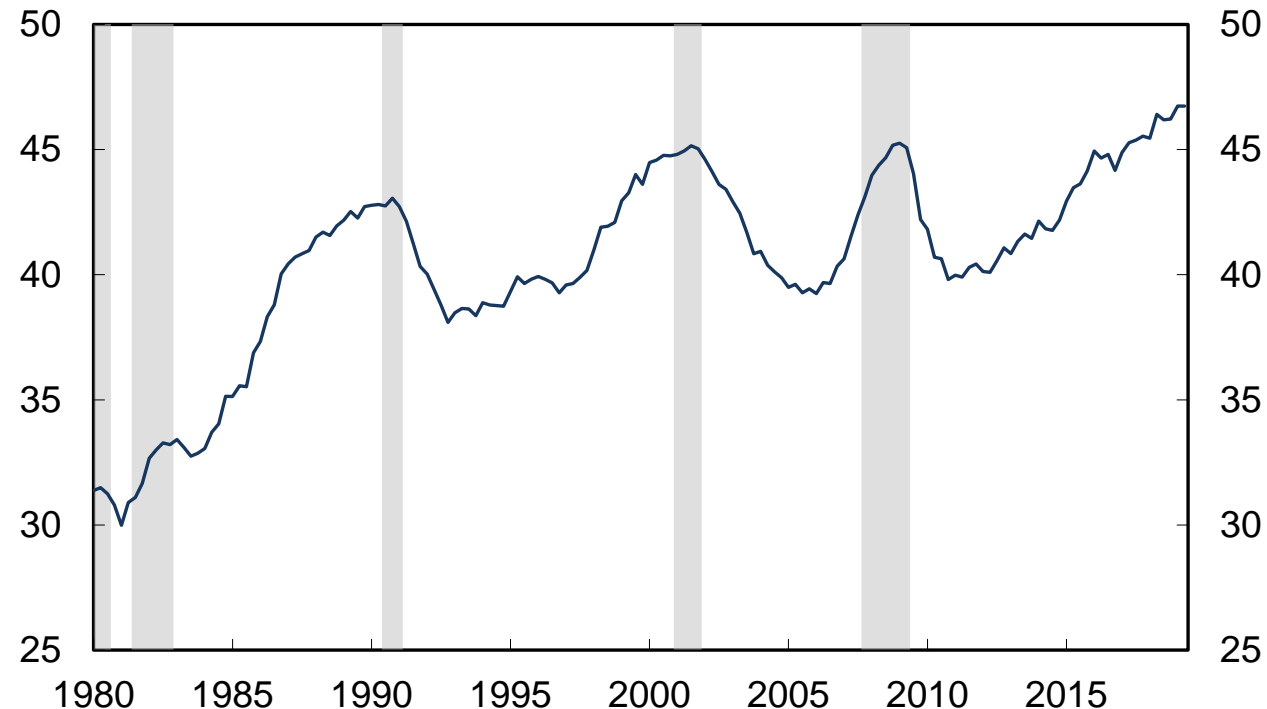
Note: Excludes maturities of 13 months or less.

4.3.1 Nonfinancial Corporate Credit as Percent of GDP

Percent

As Of: 2019 Q2

Percent



Source: Federal Reserve,
Haver Analytics

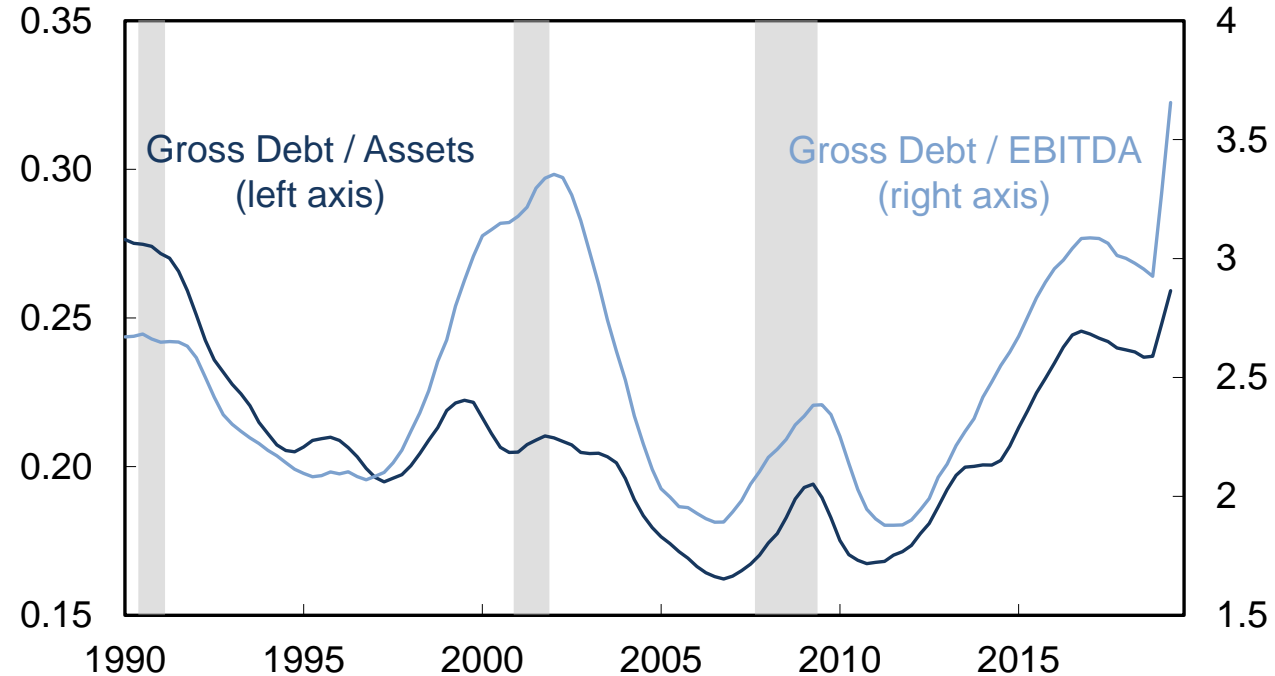
Note: Gray bars signify NBER recessions.

4.3.2 U.S. Nonfinancial Business Leverage

Ratio

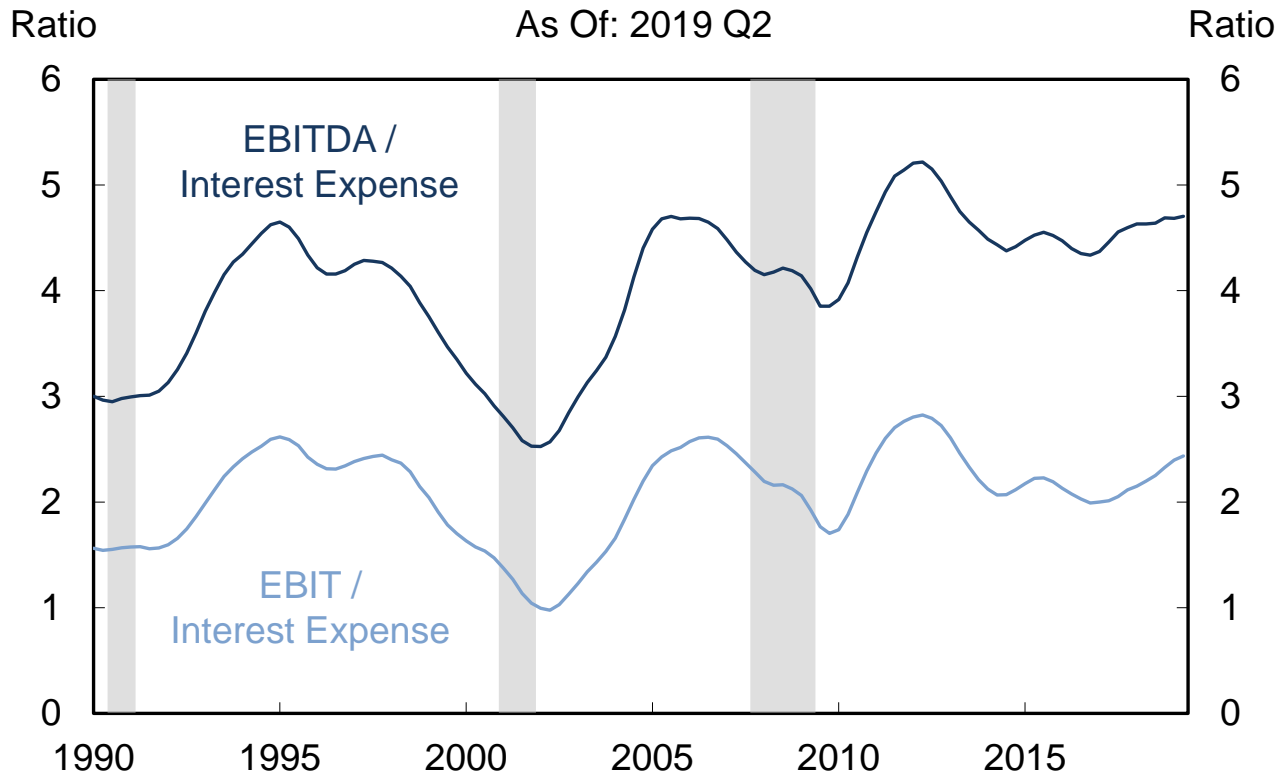
As Of: 2019 Q2

Ratio



Note: Four-quarter moving average of the median ratio. Includes rated and unrated nonfinancial businesses. Gray bars signify NBER recessions. In 2019 FASB ASC 842 took effect. ASC 842 required companies to record operating leases on their balance sheets, resulting in higher reported debt levels.

4.3.3 U.S. Nonfinancial Business Interest Coverage Ratios



Source: Compustat

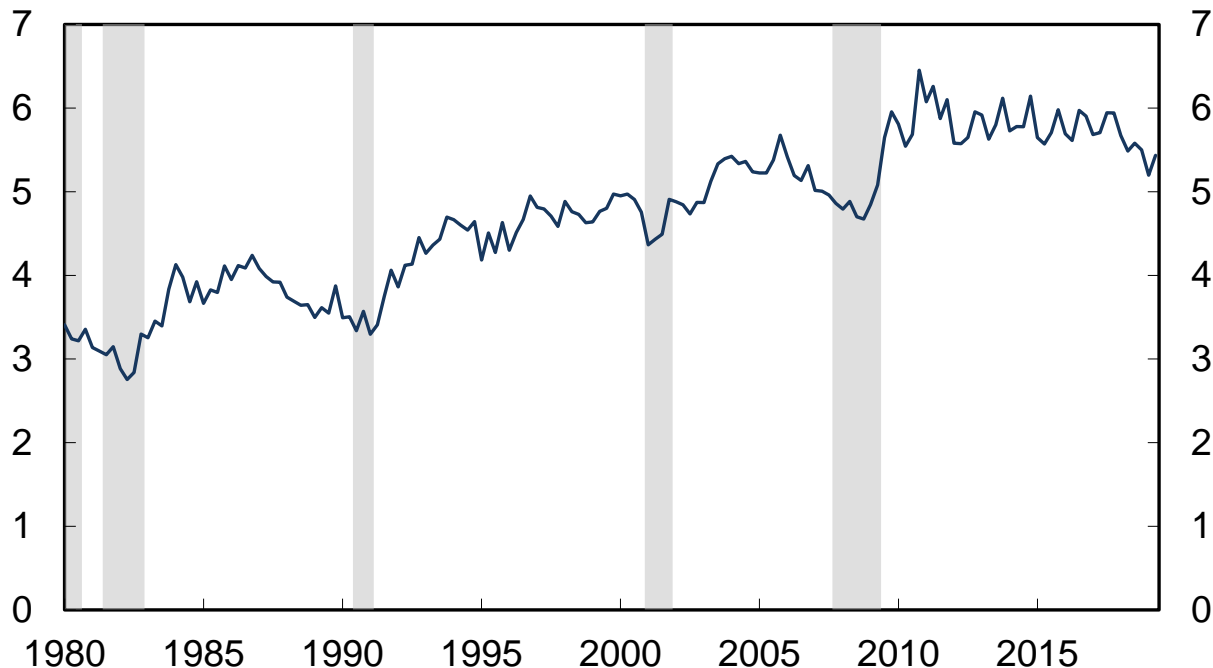
Note: Four-quarter moving average of median ratio. Includes rated and unrated nonfinancial businesses. Gray bars signify NBER recessions.

4.3.4 Nonfinancial Corporations Liquid Assets

Percent of Total Assets

As Of: 2019 Q2

Percent of Total Assets



Source: Federal Reserve,
Haver Analytics

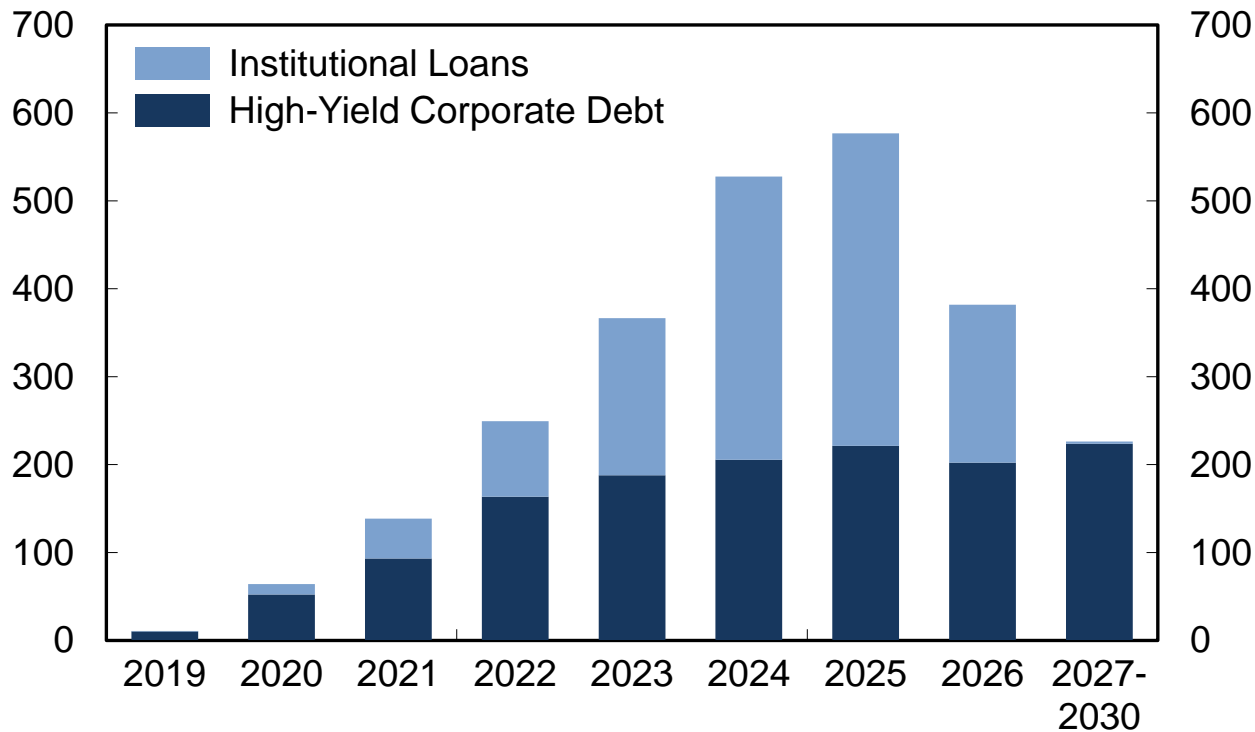
Note: Liquid assets includes foreign deposits, checkable deposits and currency, time and savings deposits, money market fund shares, security repurchase agreements, debt securities, and mutual fund shares. Gray bars signify NBER recessions.

4.3.5 Maturity Profile of Leveraged Debt

Billions of US\$

As Of: Sep-2019

Billions of US\$



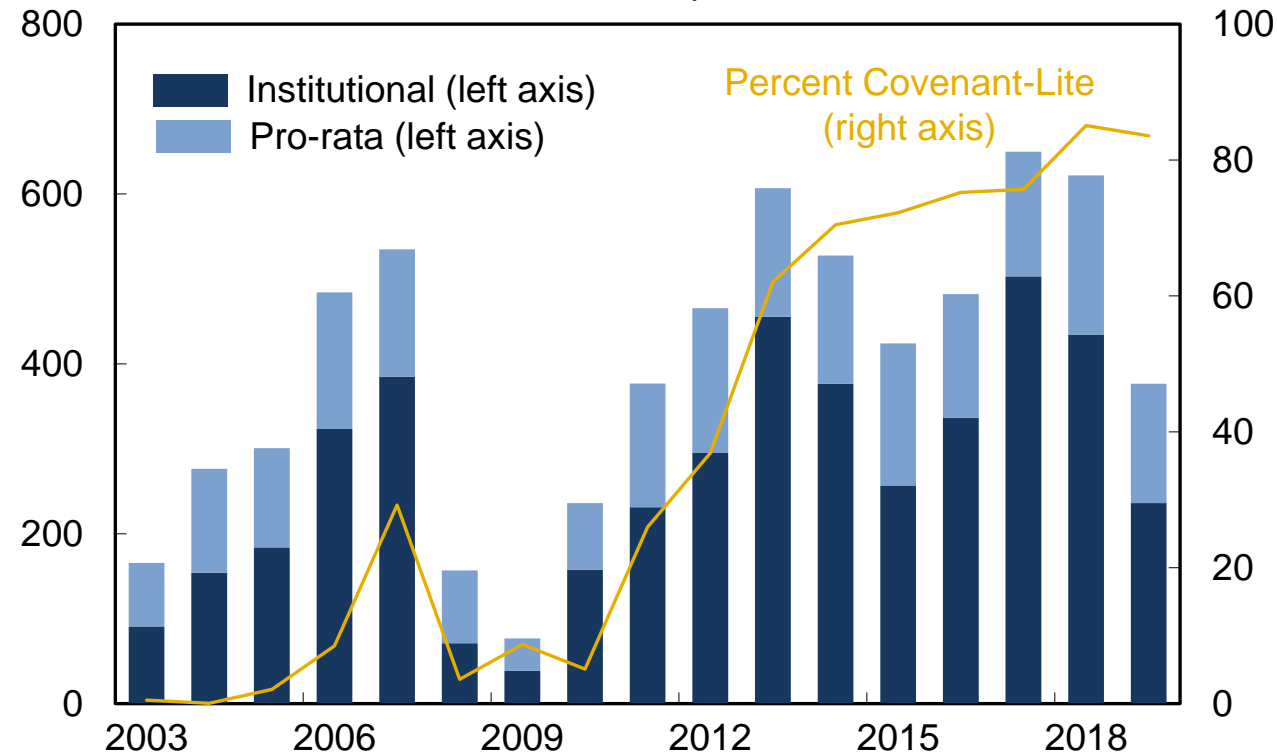
Source: Bank of America/Merrill Lynch Global High-Yield Strategy and S&P Capital IQ LCD

4.3.6 Leveraged Loan Issuance

Billions of US\$

As Of: 30-Sep-2019

Percent



Source: S&P LCD

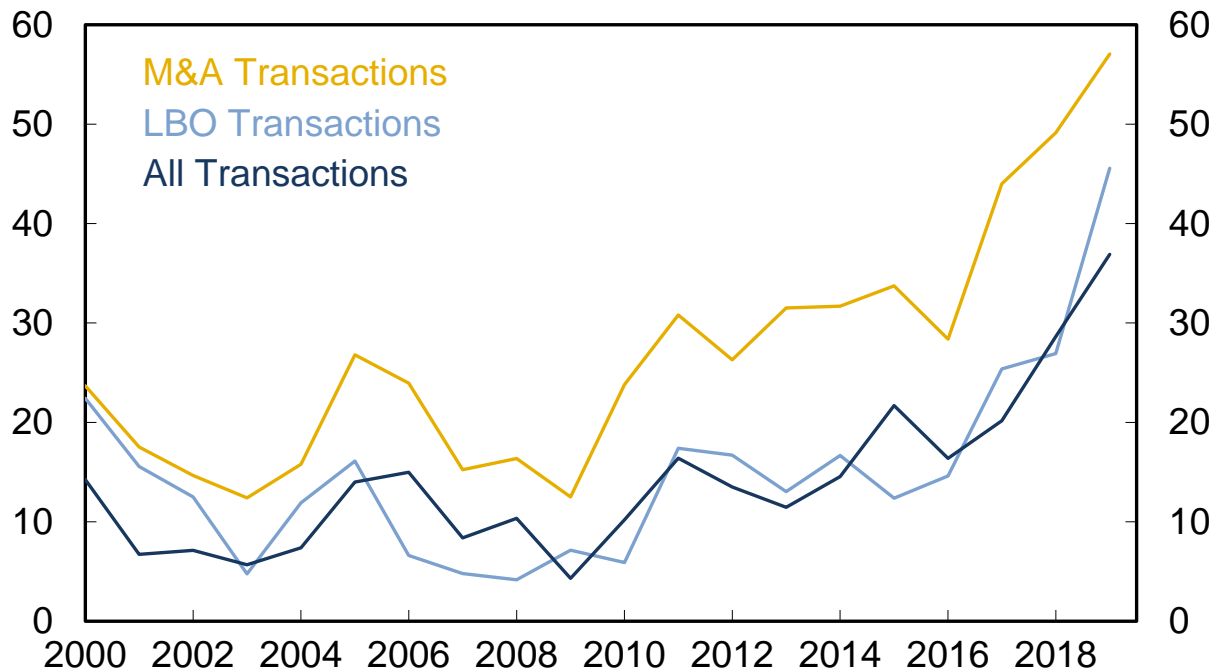
Note: Percent covenant-lite limited to institutional loans.

4.3.7 Leveraged Loan Transactions with EBITDA Adjustments

Percent

As Of: 30-Sep-2019

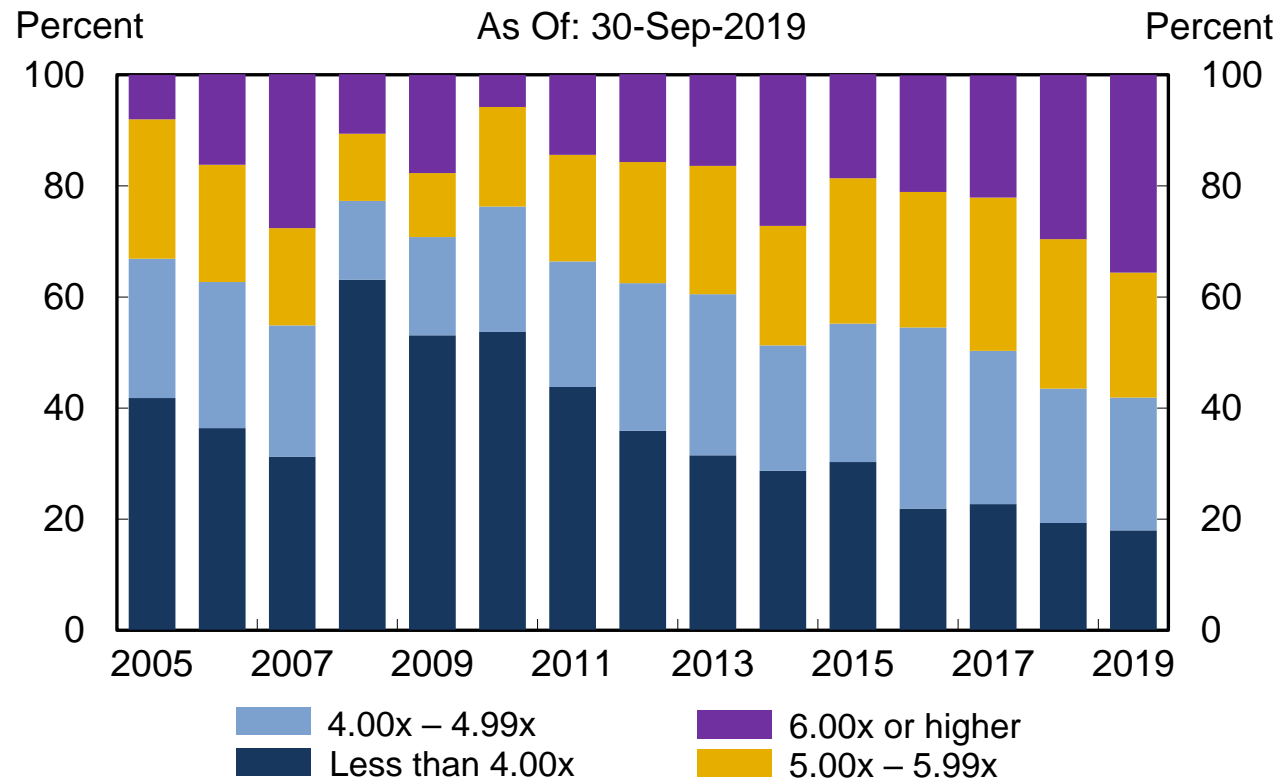
Percent



Note: Media and telecom loans excluded prior to 2011. Excludes existing tranches of add-ons, amendments & restatements with no new money, as well as DIPs, second liens and unsecured transactions. EBITDA adjusted for prospective cost savings or synergies.

Source: S&P LCD

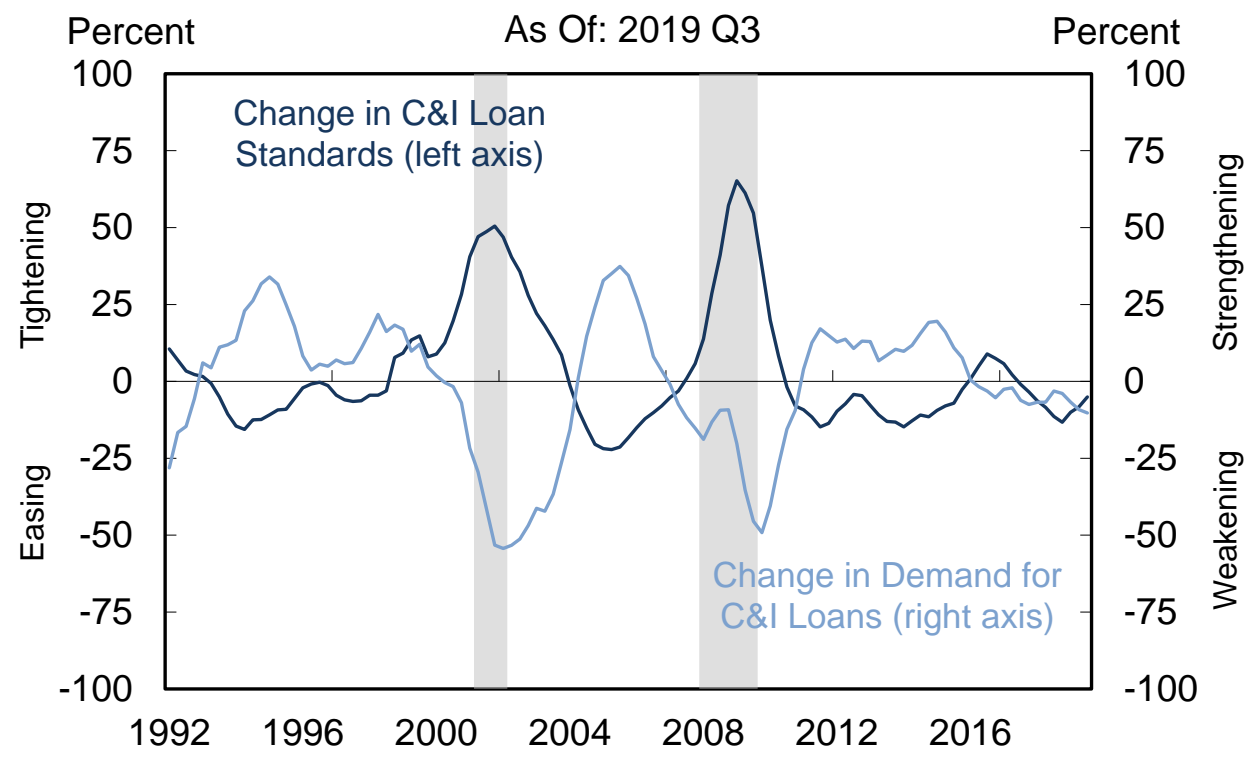
4.3.8 Distribution of Leveraged Loan Debt/EBITDA Ratios



Source: S&P LCD

Note: Includes issuers with EBITDA of more than \$50M.
Media and telecom loans excluded prior to 2011.

4.3.9 Bank Business Lending Standards and Demand

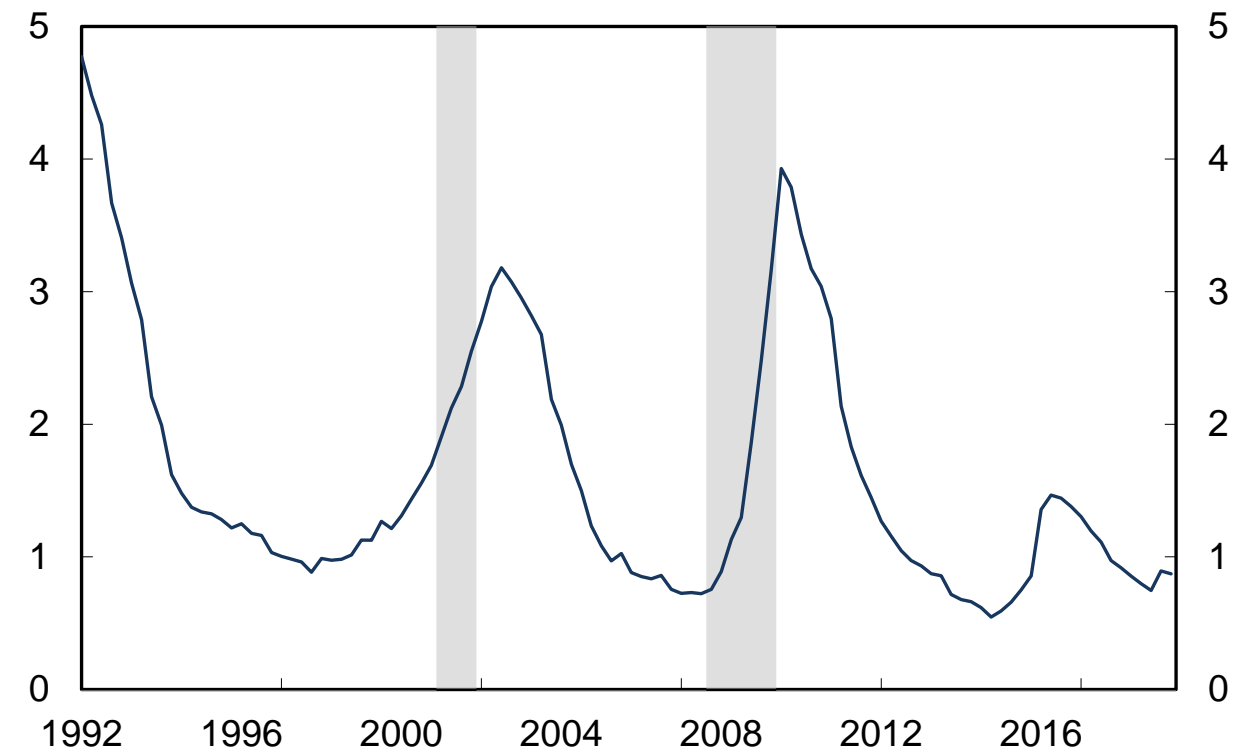


Source: Federal Reserve Senior Loan Officer Opinion Survey

Note: Represents net percent of banks reporting tightening standards or stronger demand for medium and large C&I loans; four period moving average. Gray bars signify NBER recessions.

4.3.10 Non-Performing C&I Loans

Percent of C&I Loans As Of: 2019 Q2 Percent of C&I Loans



Source: FRBNY, Haver Analytics

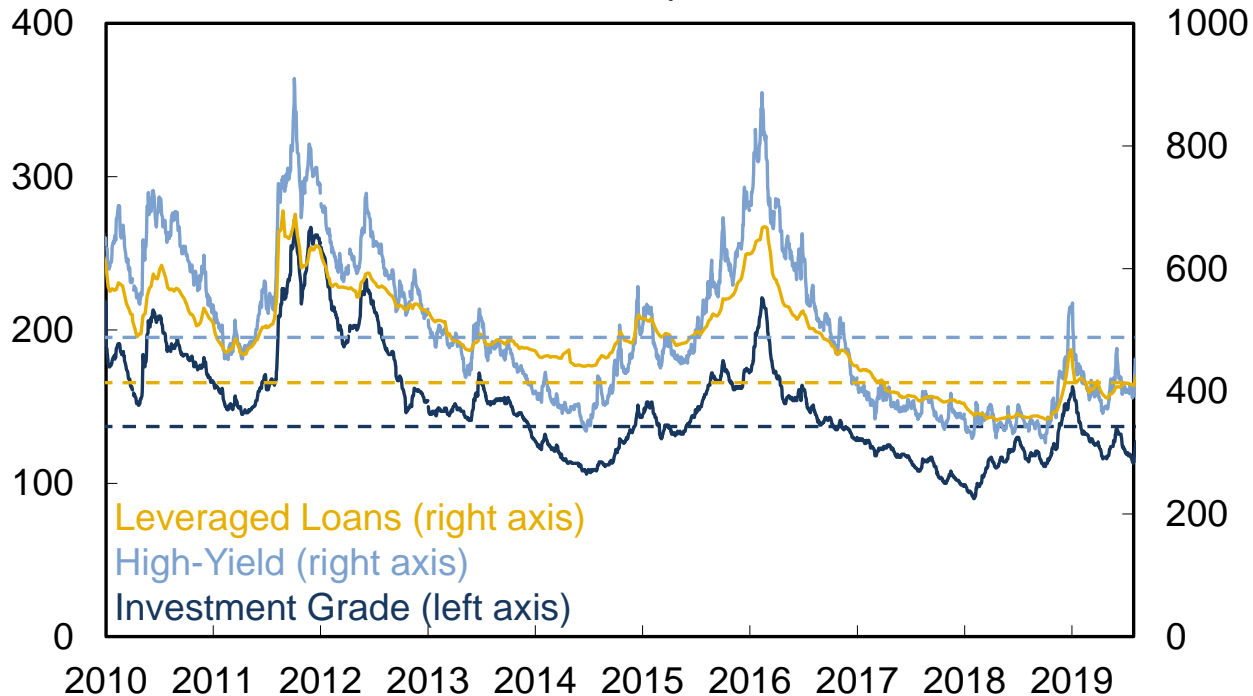
Note: Gray bars signify NBER recessions.

4.3.11 U.S. Corporate Credit Spreads

Basis Points

As Of: 30-Sep-2019

Basis Points



Source: Bank of America Merrill Lynch, Federal Reserve, S&P LCD

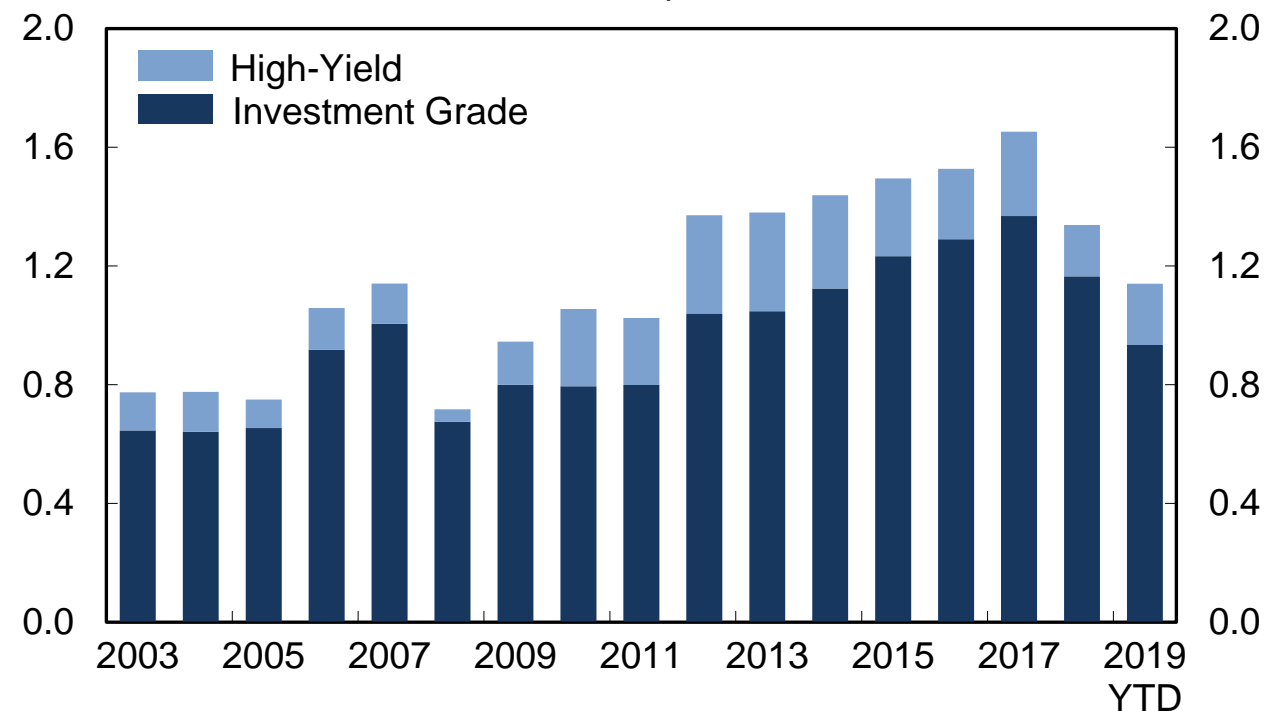
Note: Secondary market spreads. Investment grade and high-yield data represent option-adjusted spreads. Dotted lines represent 1997-present median.

4.3.12 Gross Issuance of Corporate Bonds

Trillions of US\$

As Of: Sep-2019

Trillions of US\$



Source: Thomson
Reuters, SIFMA

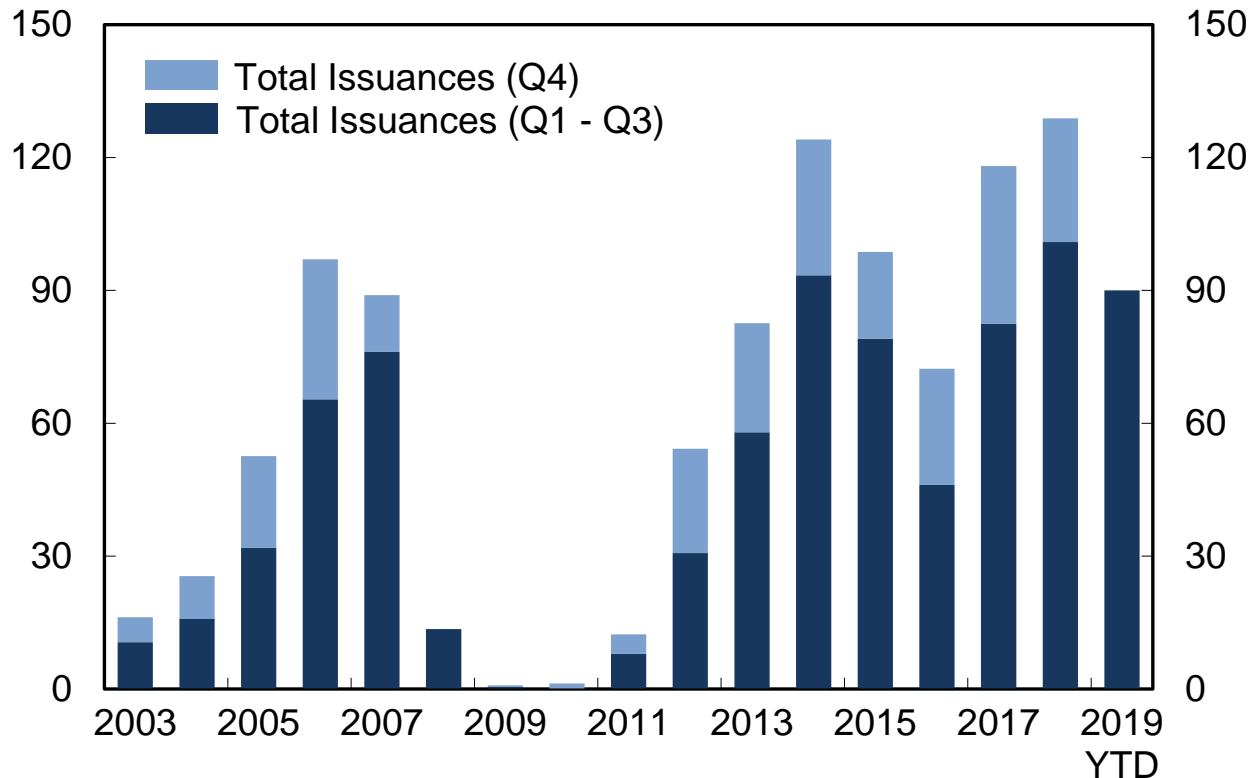
Note: Includes all non-convertible corporate debt, MTNs, and Yankee bonds, but excludes all issues with maturities of 1 year or less and CDs.

4.3.13 CLO Issuance

Billions of US\$

As Of: 30-Sep-2019

Billions of US\$



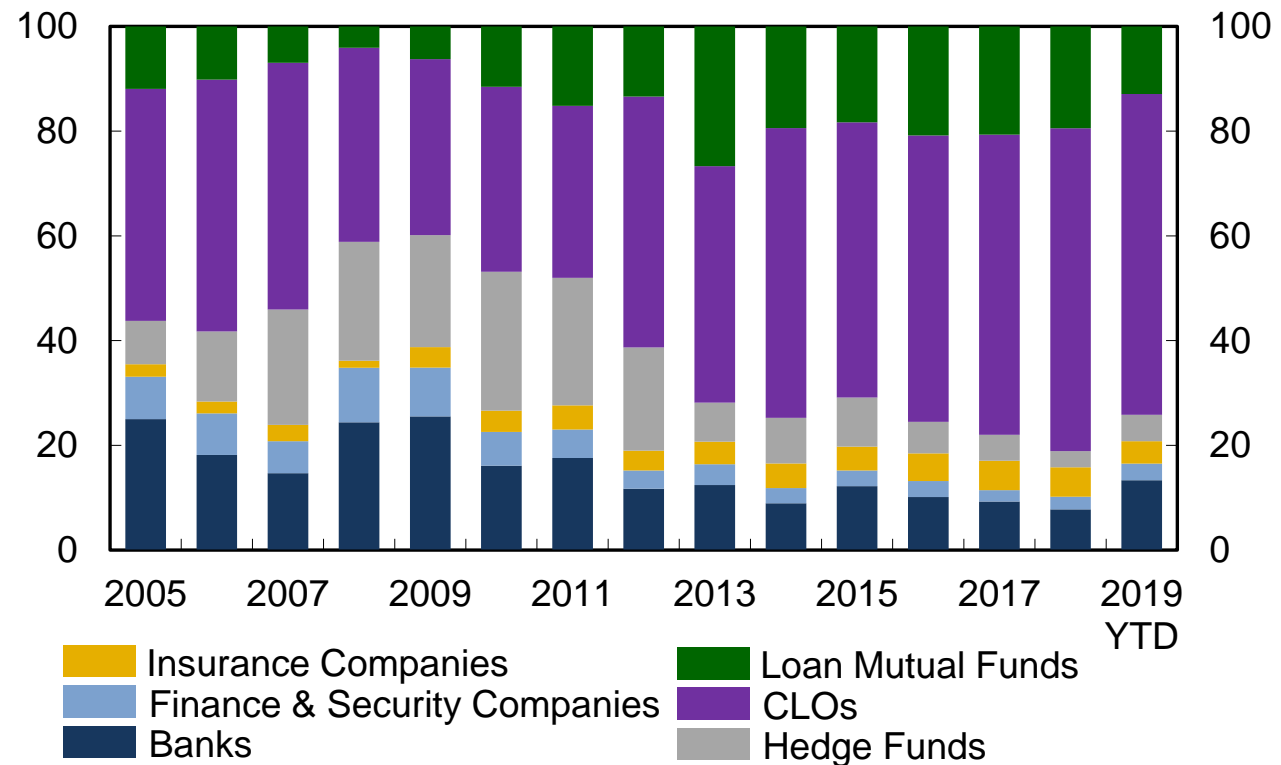
Source: S&P LCD

4.3.14 Leveraged Loan Primary Market by Investor Type

Percent

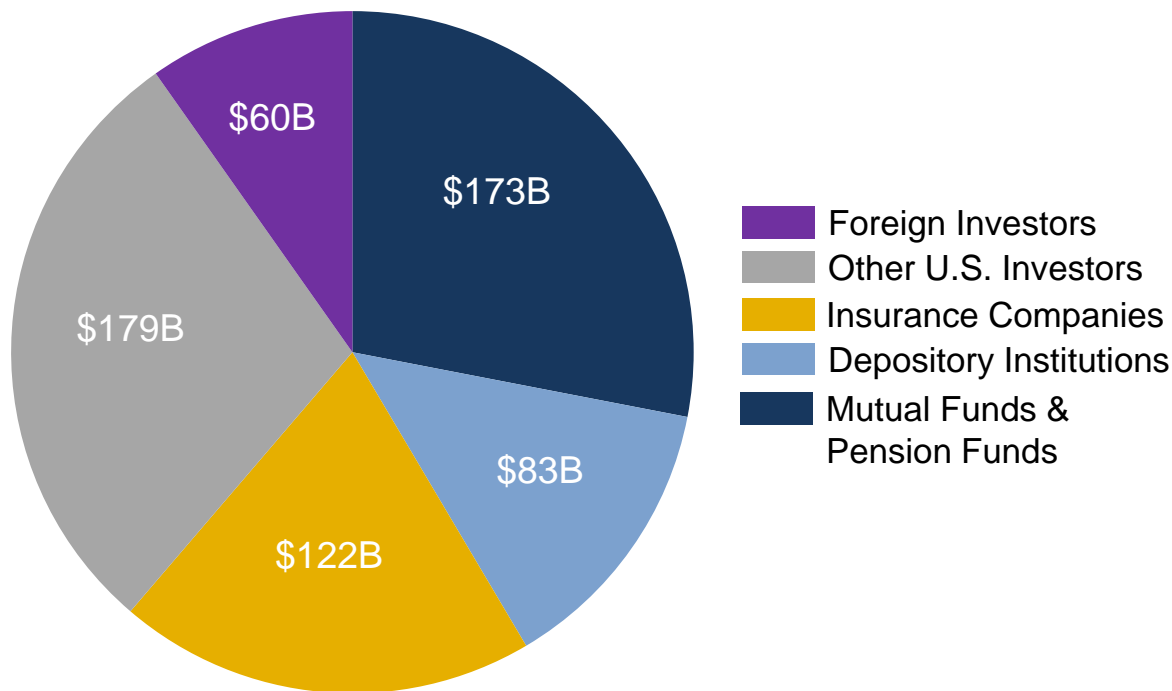
As Of: 2019 Q3

Percent



Source: S&P LCD

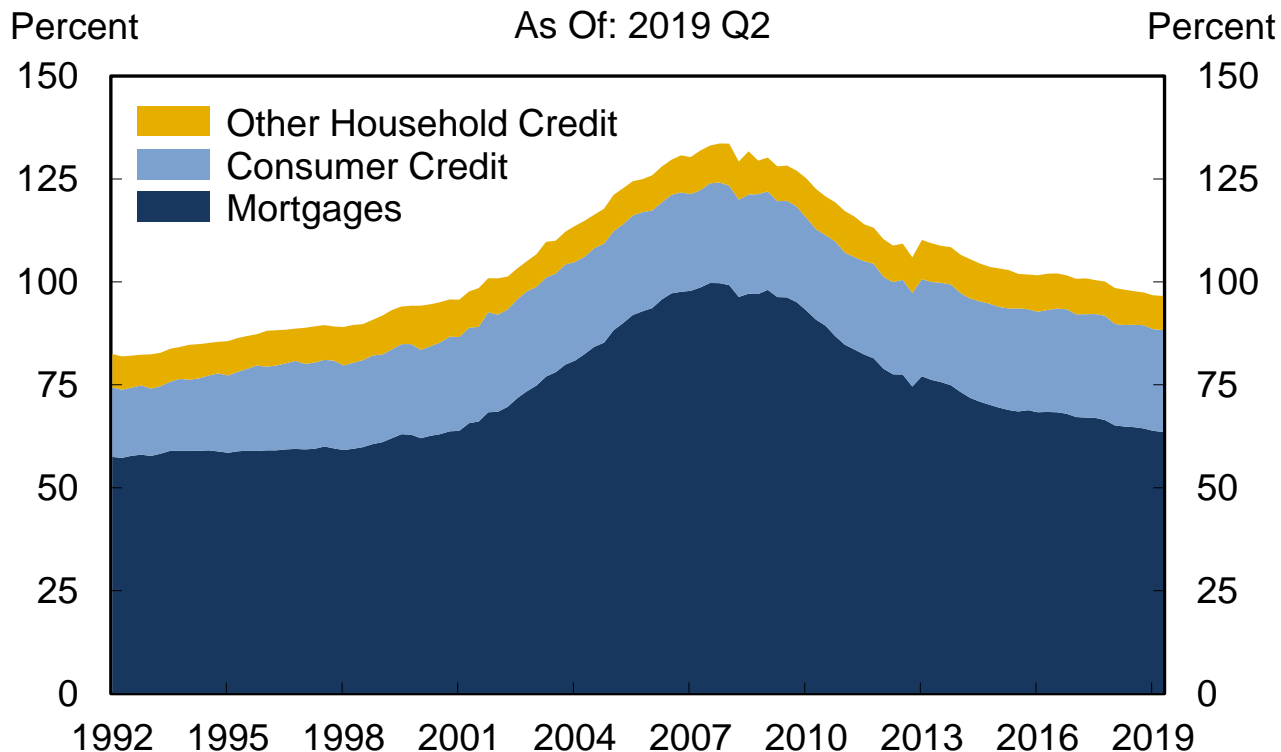
A.1 CLO Investors as of Year-End 2018



Source: Federal Reserve, NAIC,
TIC Data, Staff Calculations

Note: Other U.S. Investors includes holding companies, broker-dealers, private funds, nonfinancial companies, and households.

4.4.1 Household Debt as a Percent of Disposable Personal Income



Source: BEA, Federal Reserve,
Haver Analytics

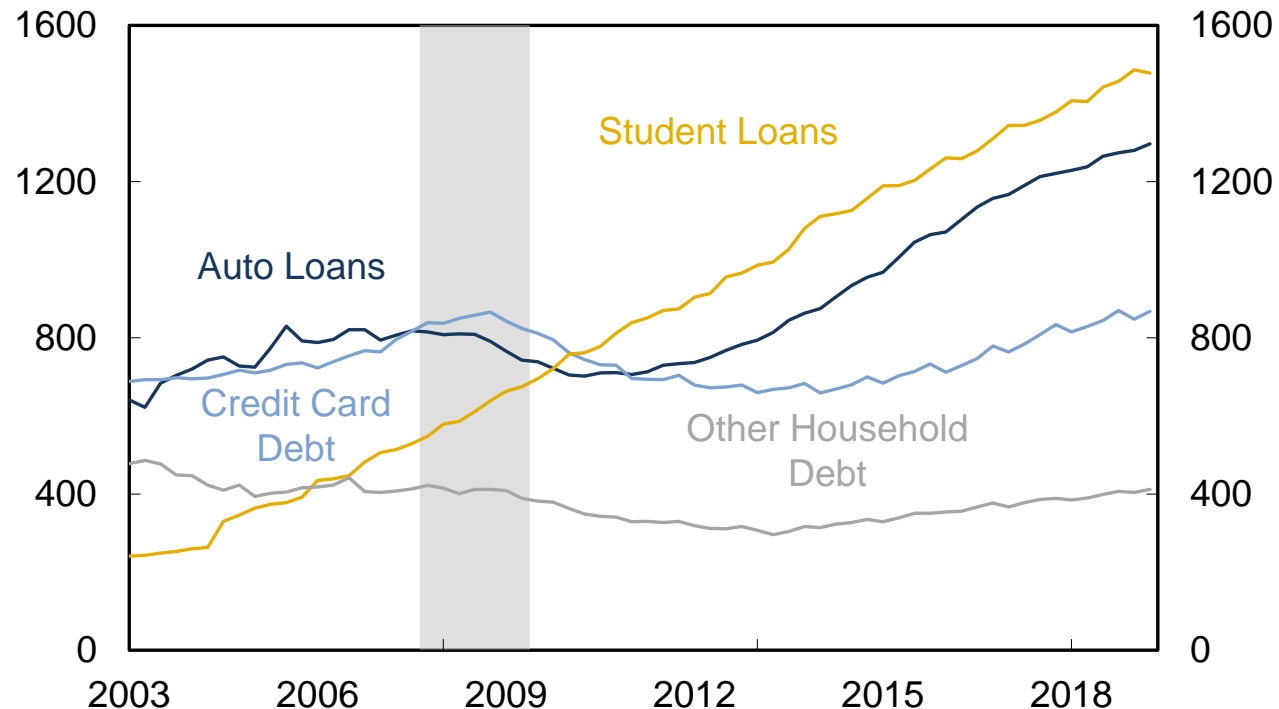
Note: Other Household Credit includes
debts of both households and nonprofits.

4.4.2 Components of Consumer Credit

Billions of US\$

As Of: 2019 Q2

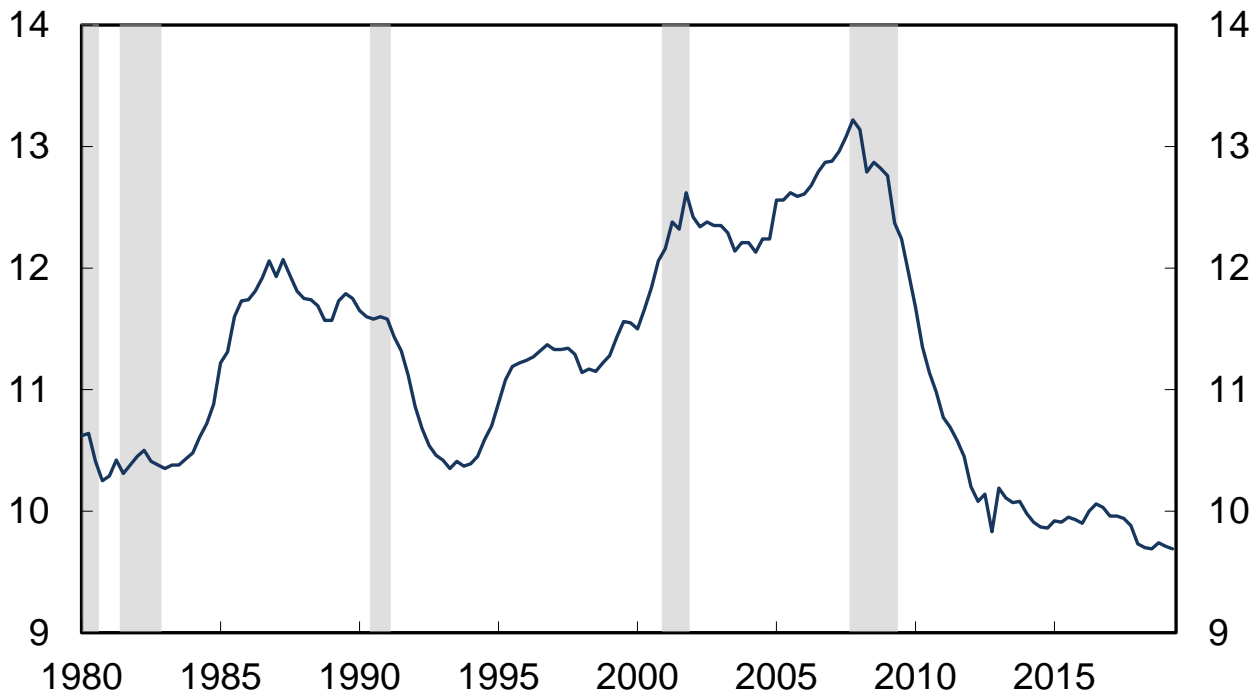
Billions of US\$



Source: FRBNY Consumer Credit
Panel/Equifax, Haver Analytics

4.4.3 Household Debt Service Ratio

Percent As Of: 2019 Q2 Percent



Source: Federal Reserve,
Haver Analytics

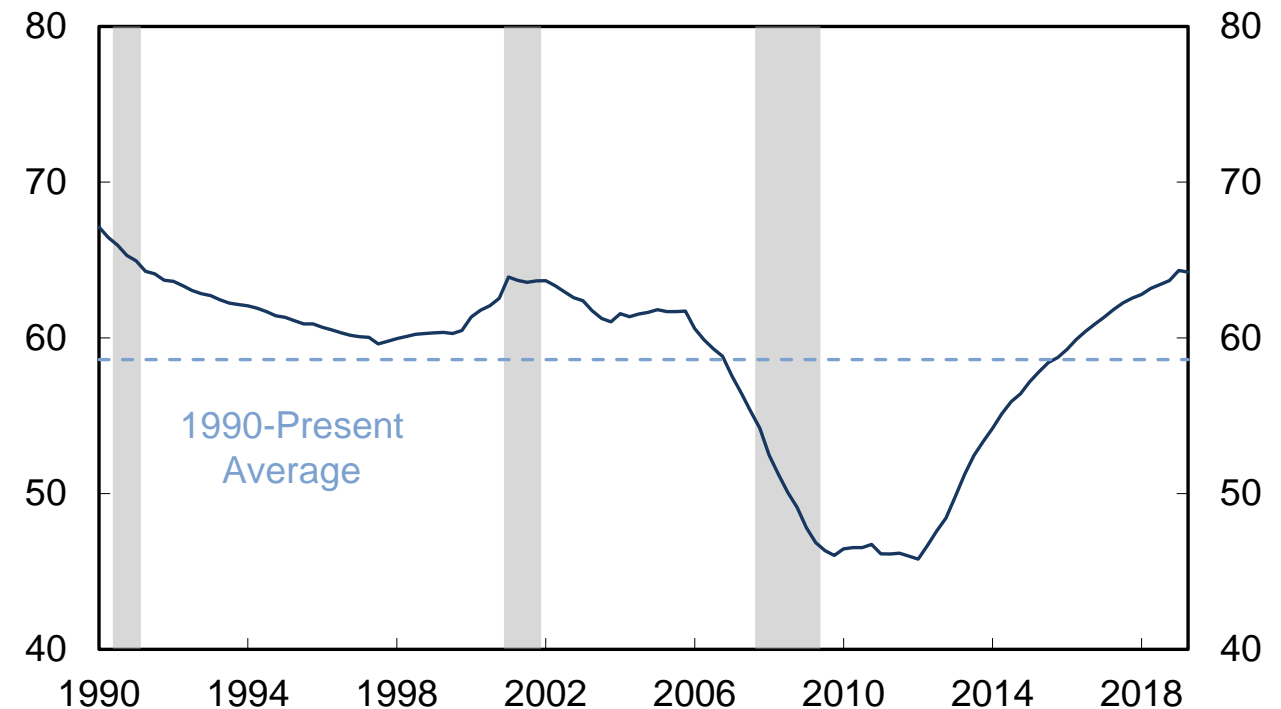
Note: Ratio of debt-service payments to disposable personal income. Seasonally adjusted. Gray bars signify NBER recessions.

4.4.4 Owners' Equity as Share of Household Real Estate

Percent

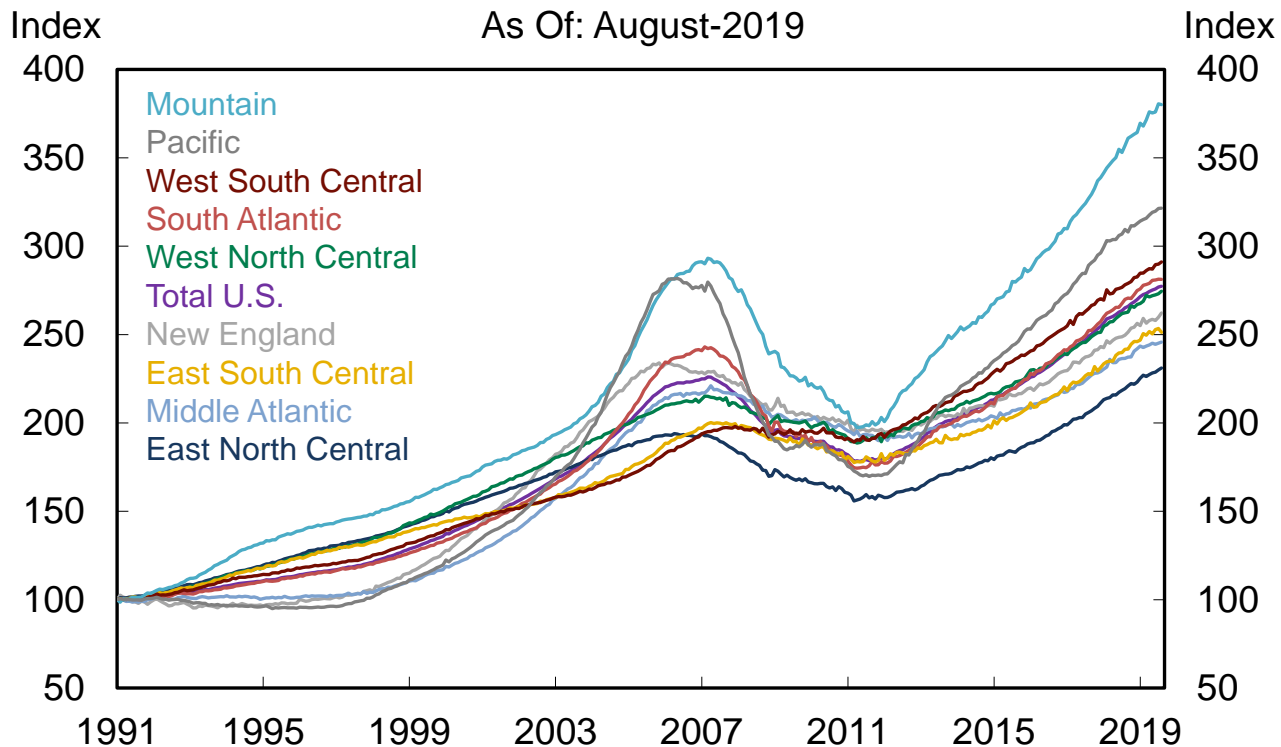
As Of: 2019 Q2

Percent



Source: Federal Reserve, Haver Analytics

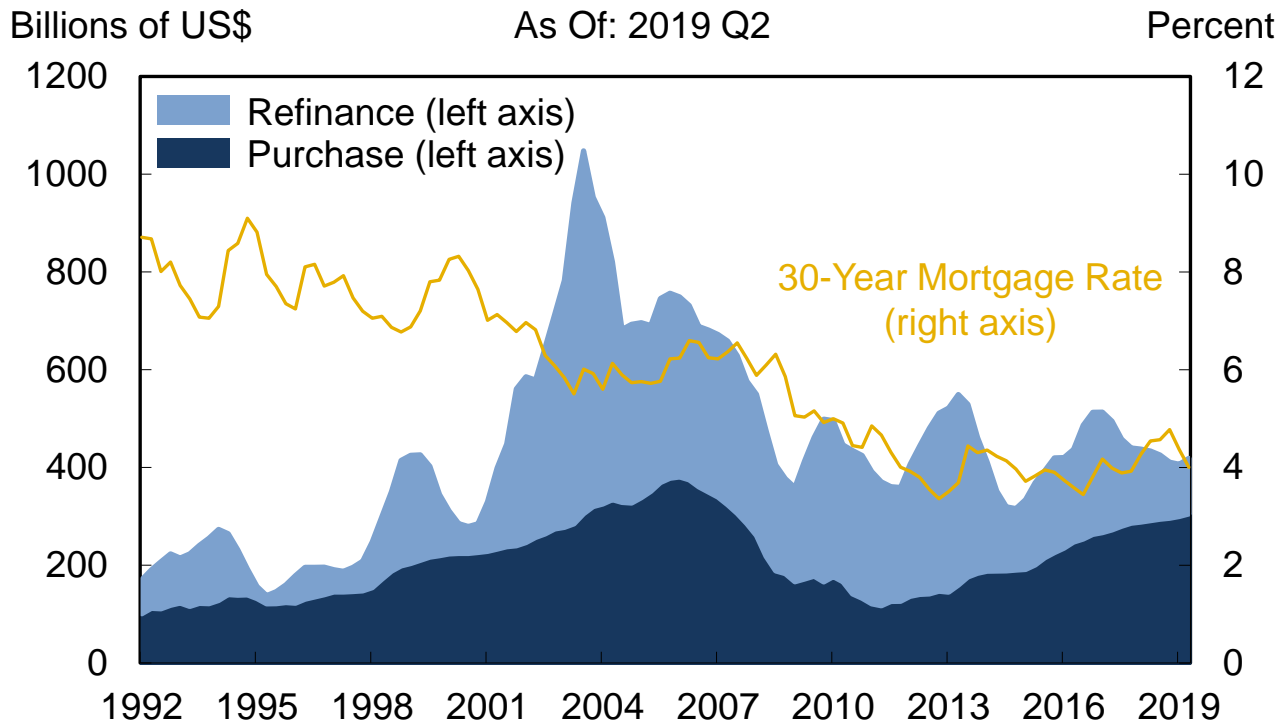
4.5.1 House Prices by Census Division



Note: Purchase-only price index. Jan-1991 = 100.

Source: FHFA, Haver Analytics

4.5.2 Mortgage Originations and Rates



Source: Mortgage Bankers Association, Freddie Mac Primary Mortgage Market Survey

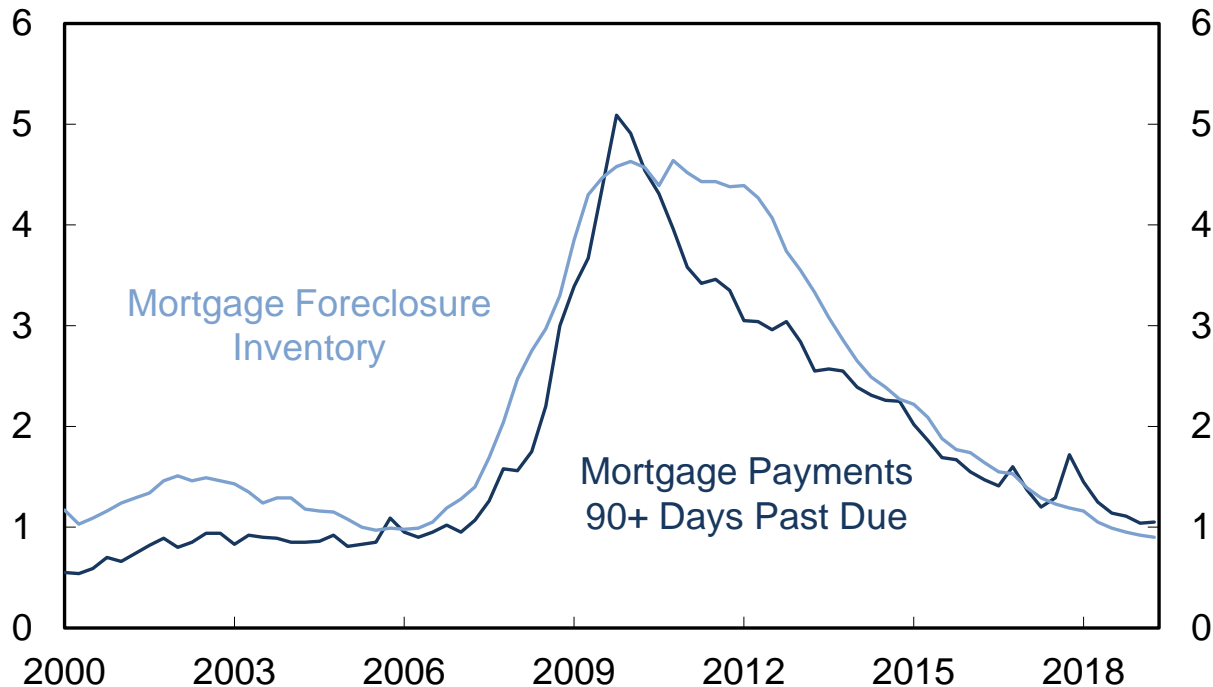
Note: Originations represent all 1-4 family homes. Originations calculated as 4-quarter moving averages. Mortgage rates calculated as quarterly averages.

4.5.3 Mortgage Delinquency and Foreclosure

Percent

As Of: 2019 Q2

Percent



Source: Mortgage Bankers Association, Haver Analytics

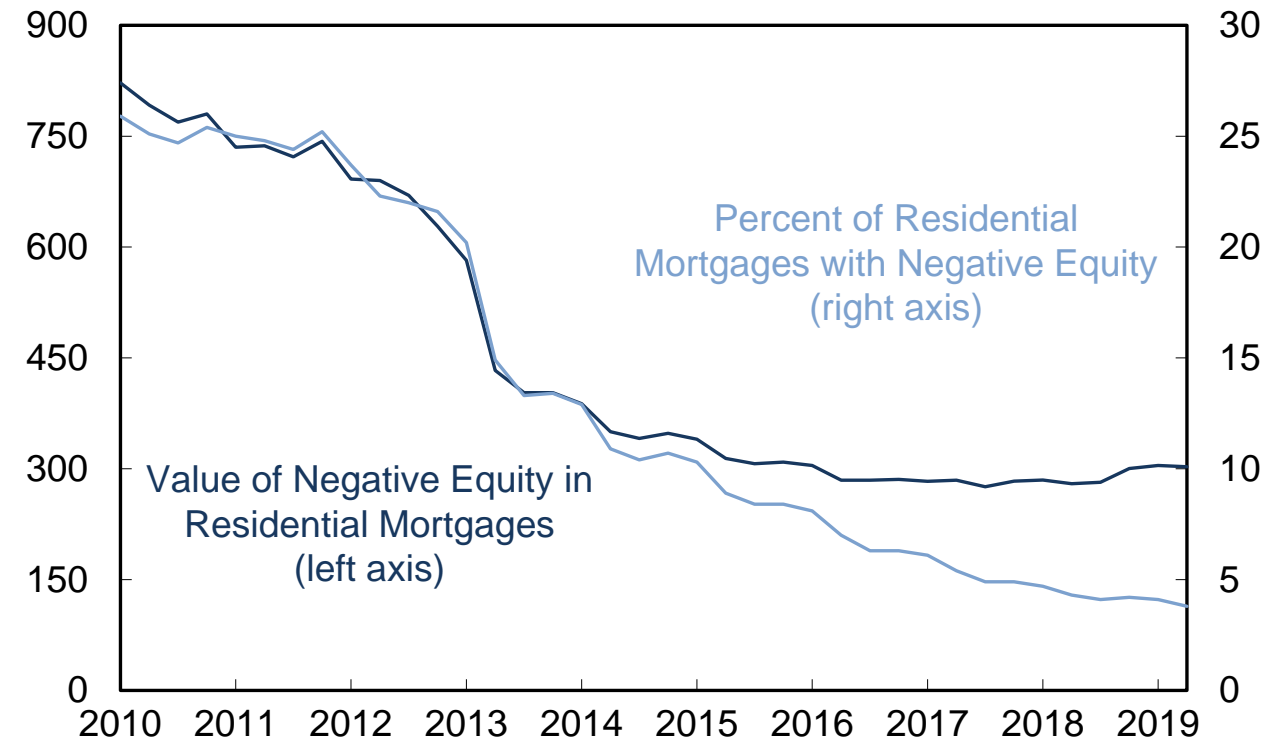
Note: Percent of all mortgages.

4.5.4 Mortgages with Negative Equity

Billions of US\$

As Of: 2019 Q2

Percent



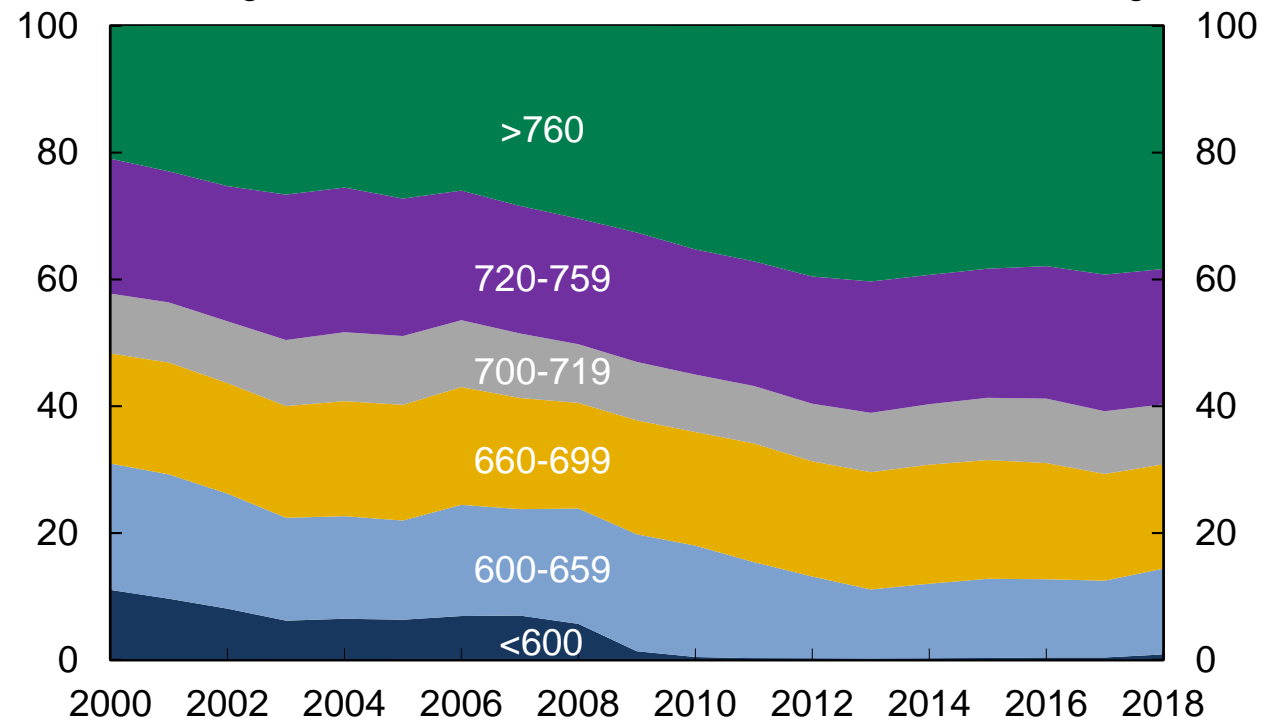
Source: CoreLogic

4.5.5 Purchase Origination Volume by Credit Score

Percent of Originations

As Of: 2018

Percent of Originations

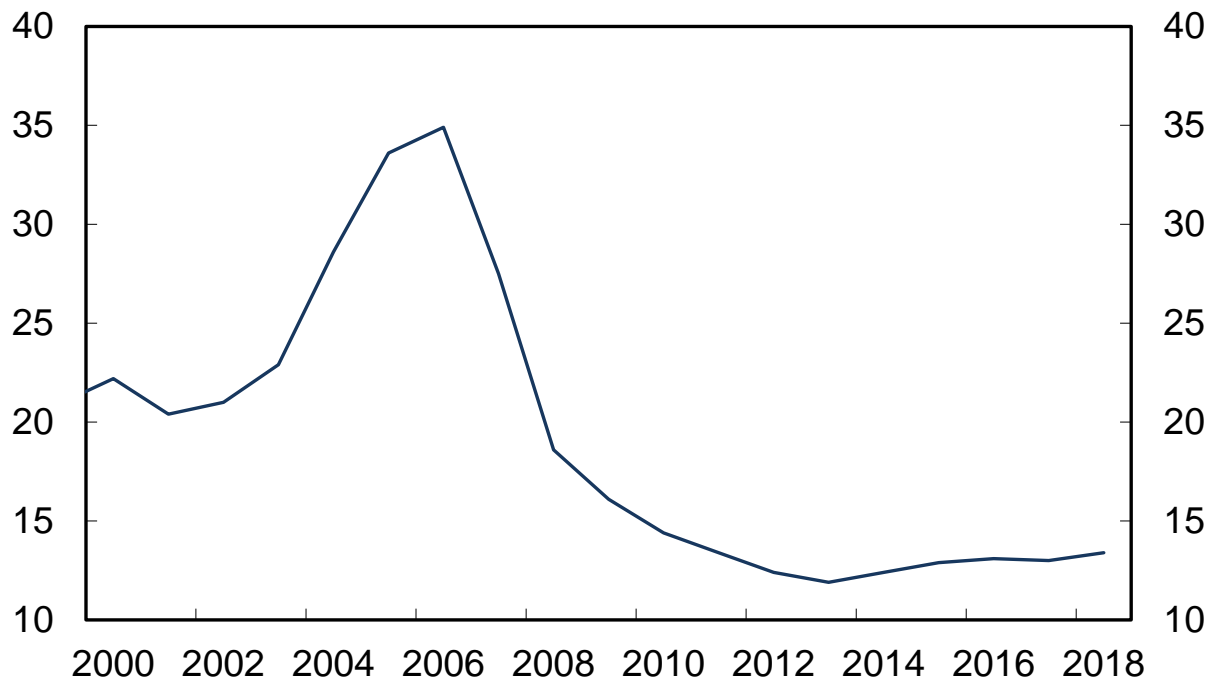


Source: Black Knight's McDash Dataset, FHFA calculations

Note: Includes first lien purchases only.

4.5.6 Average Stressed Default Rate for Home Purchase Loans

Percent As Of: 2018 Percent



Source: Davis, Larson, Oliner, and Smith, *A Quarter Century of Mortgage Risk*, FHFA, (Oct. 2019).

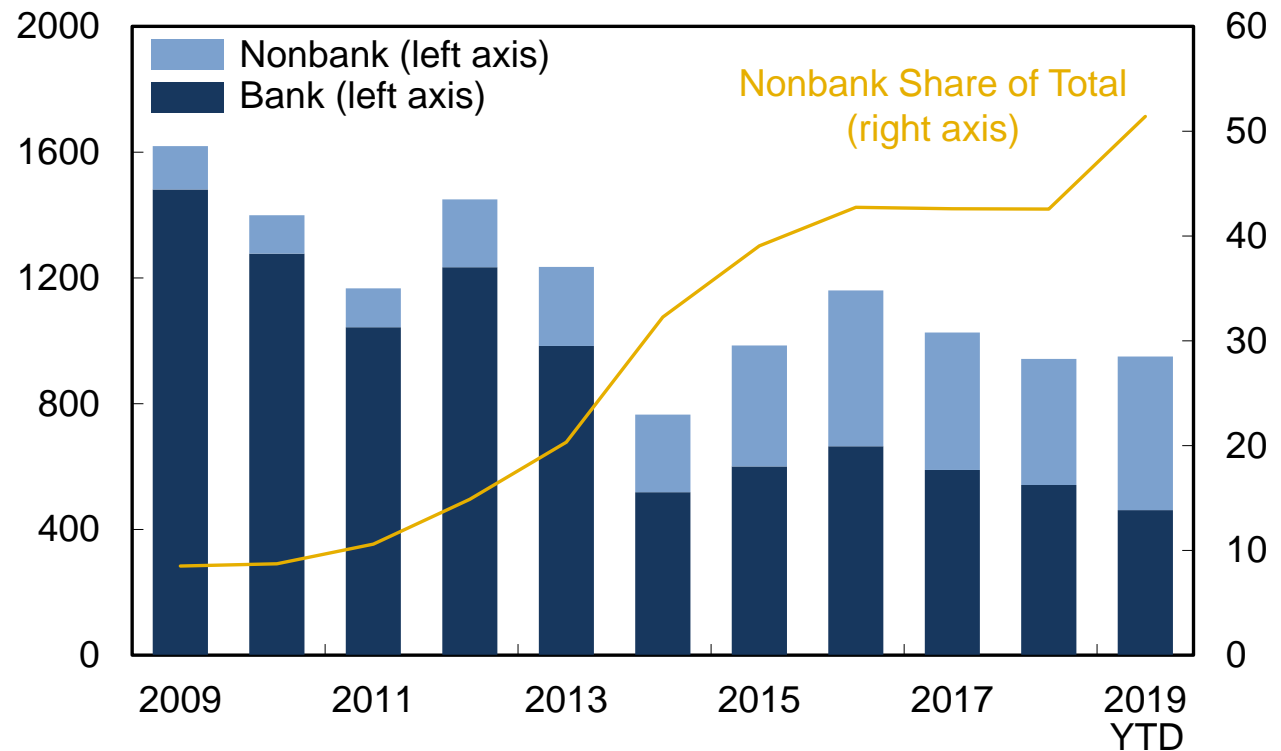
Note: The sample reported includes all first-lien purchase mortgages originated in a given year.

B.1 Mortgage Origination Market

Billions of US\$

As Of: 2019 Q3

Percent



Source: Inside Mortgage Finance

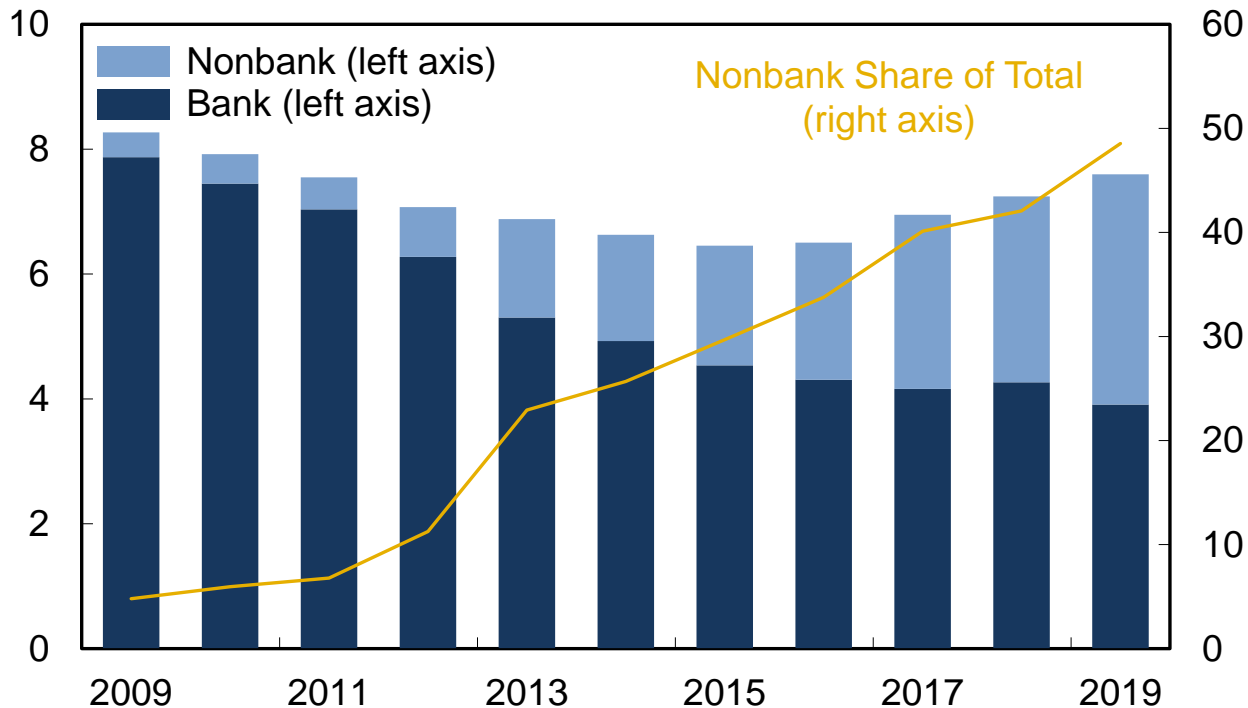
Note: Data covers top 25 originators in each year.

B.2 Mortgage Servicing Market

Trillions of US\$

As Of: 2019 Q3

Percent



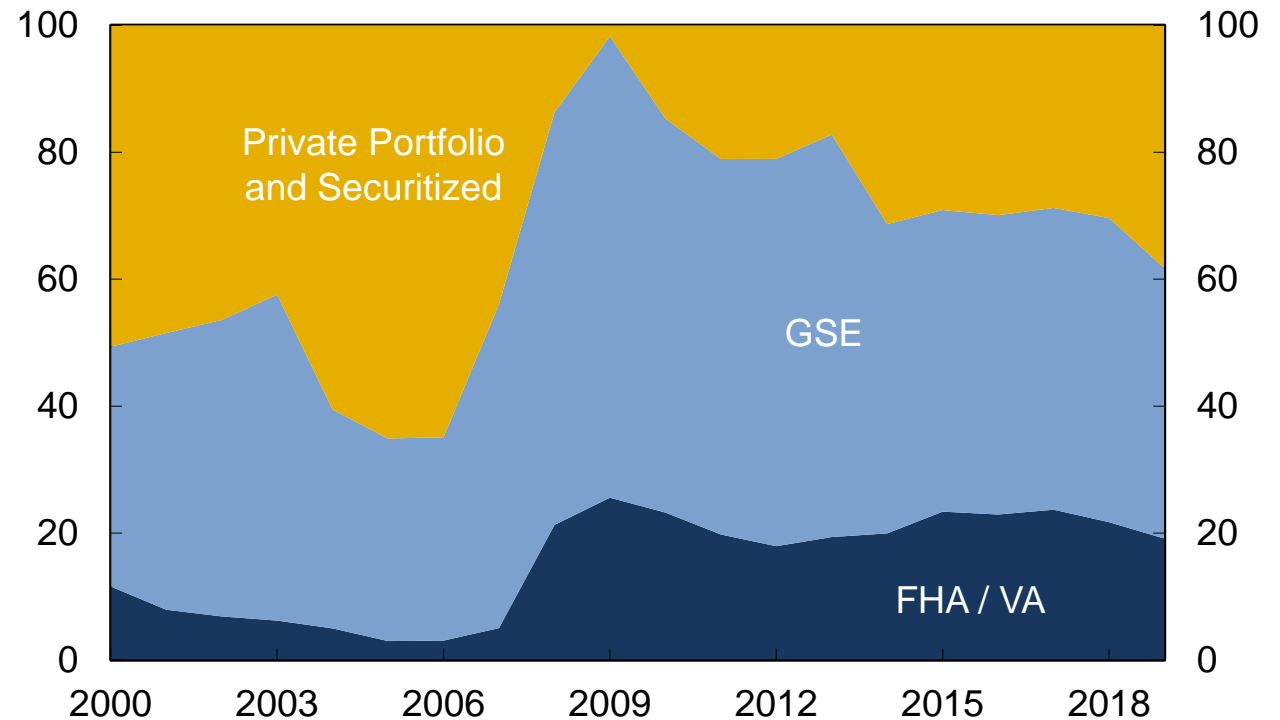
Note: Data is as of fourth quarter each year except 2019, which is as of the third quarter. Data covers top 25 servicers in each quarter.

4.5.7 Mortgage Originations by Product

Percent of Originations

As Of: 2019 Q3

Percent of Originations



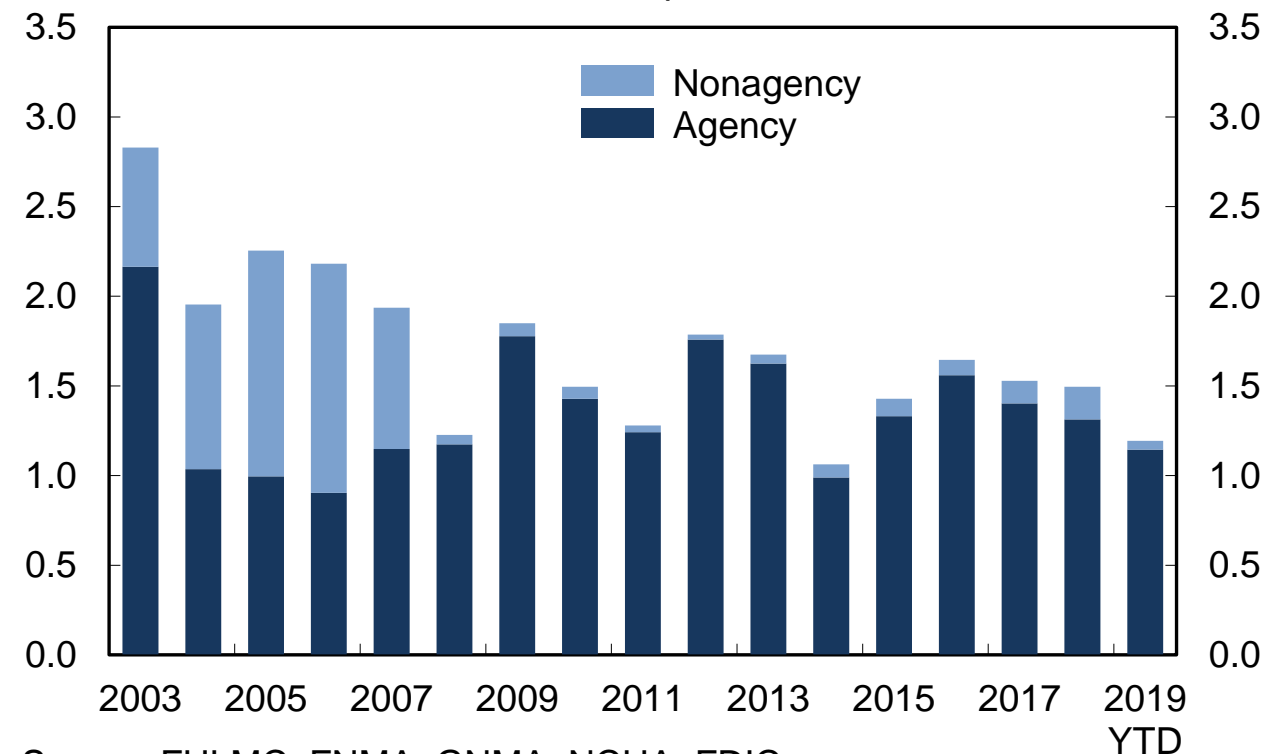
Source: Inside Mortgage Finance

4.5.8 RMBS Issuance

Trillions of US\$

As Of: Sep-2019

Trillions of US\$



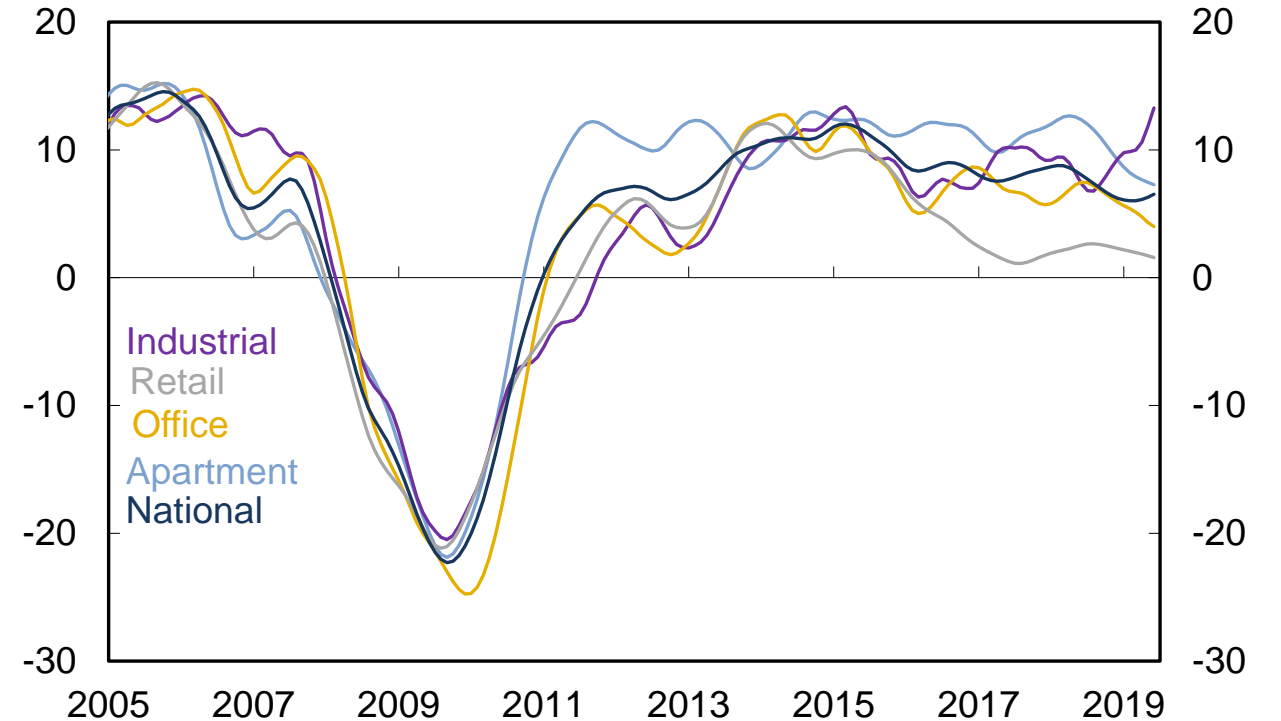
Source: FHLMC, FNMA, GNMA, NCUA, FDIC, Bloomberg, L.P., Dealogic, Thomson Reuters, SIFMA

4.5.9 Commercial Property Price Growth

Percent

As Of: Jun-2019

Percent

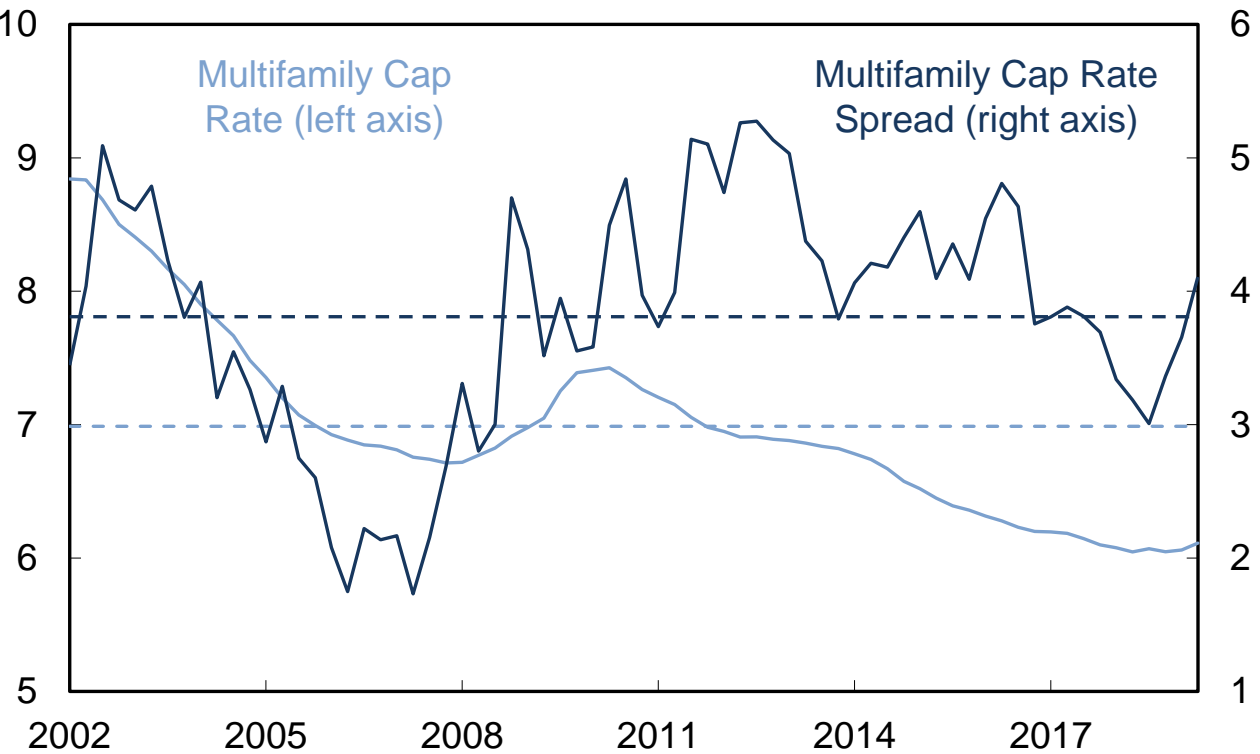


Source: Real Capital Analytics,
Bloomberg, L.P.

Note: Year-over-year price change.

4.5.10 Multifamily Capitalization Rates and Spreads

Percent As Of: Jun-2019 Percent

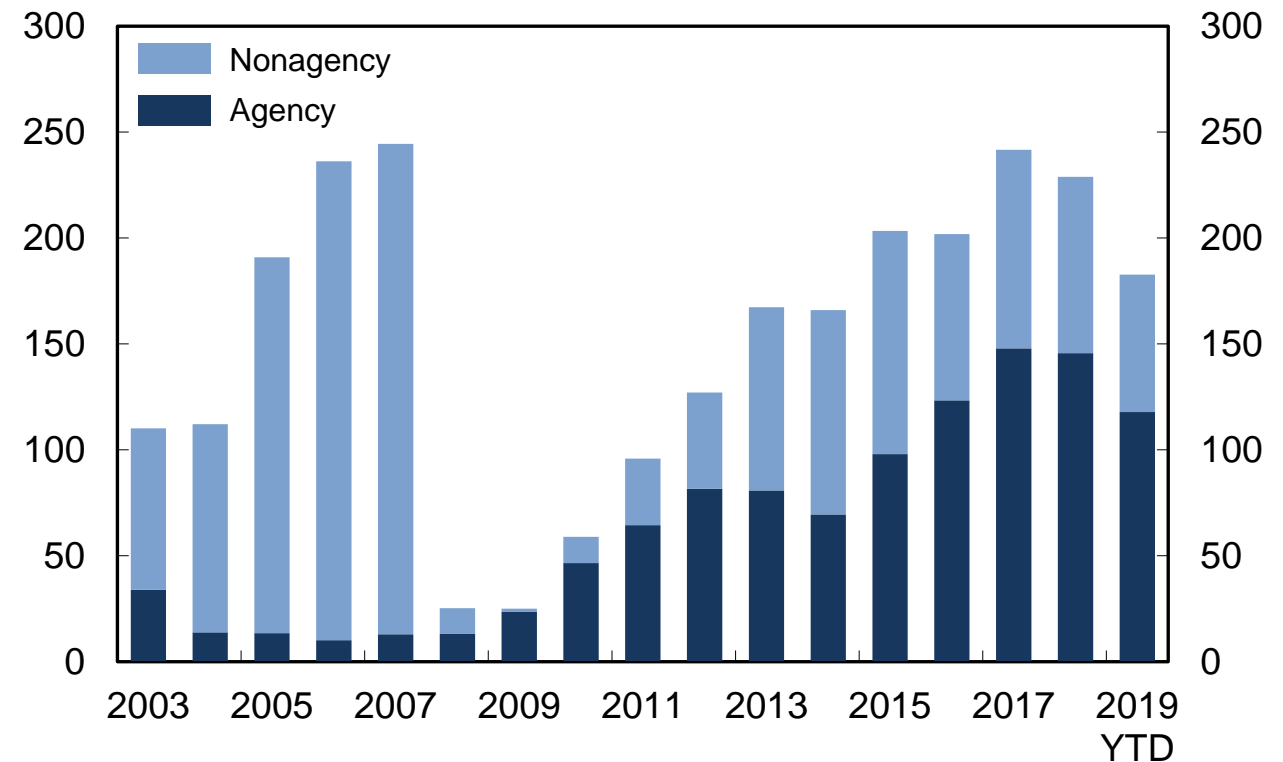


4.5.11 CMBS Issuance

Billions of US\$

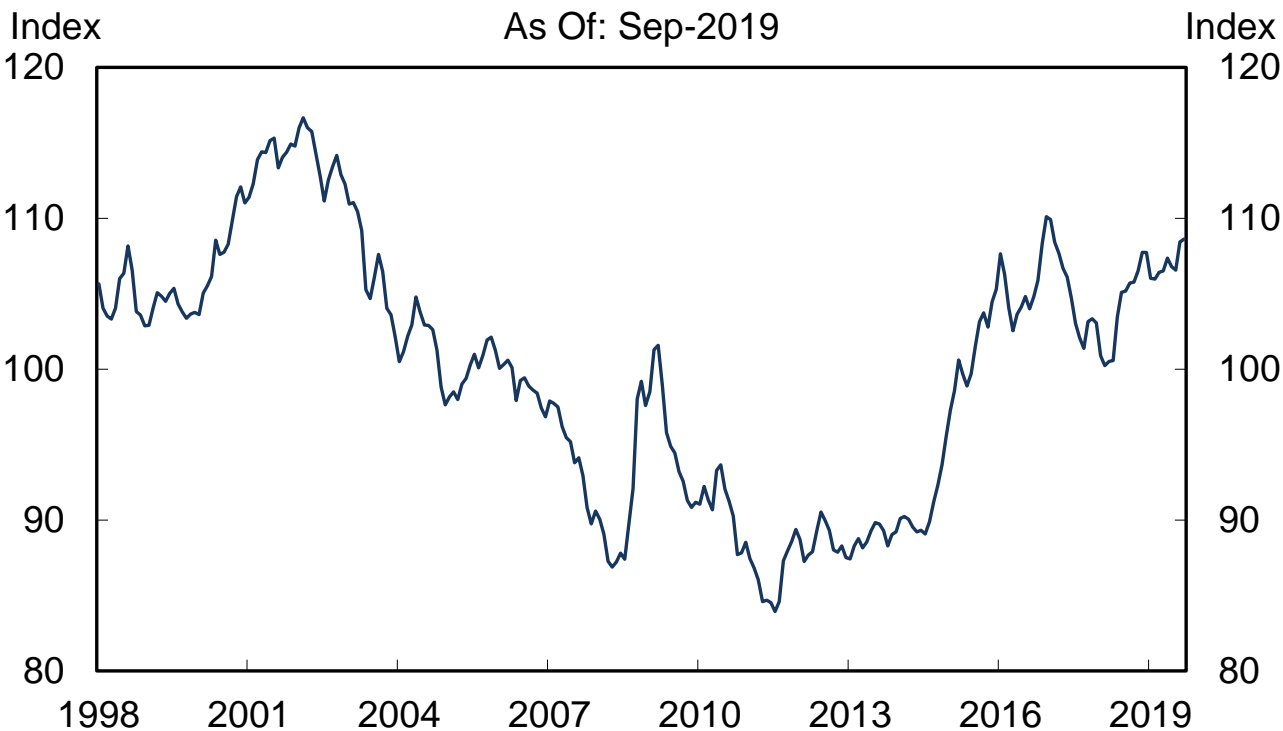
As Of: Sep-2019

Billions of US\$



Source: Inside Mortgage Finance

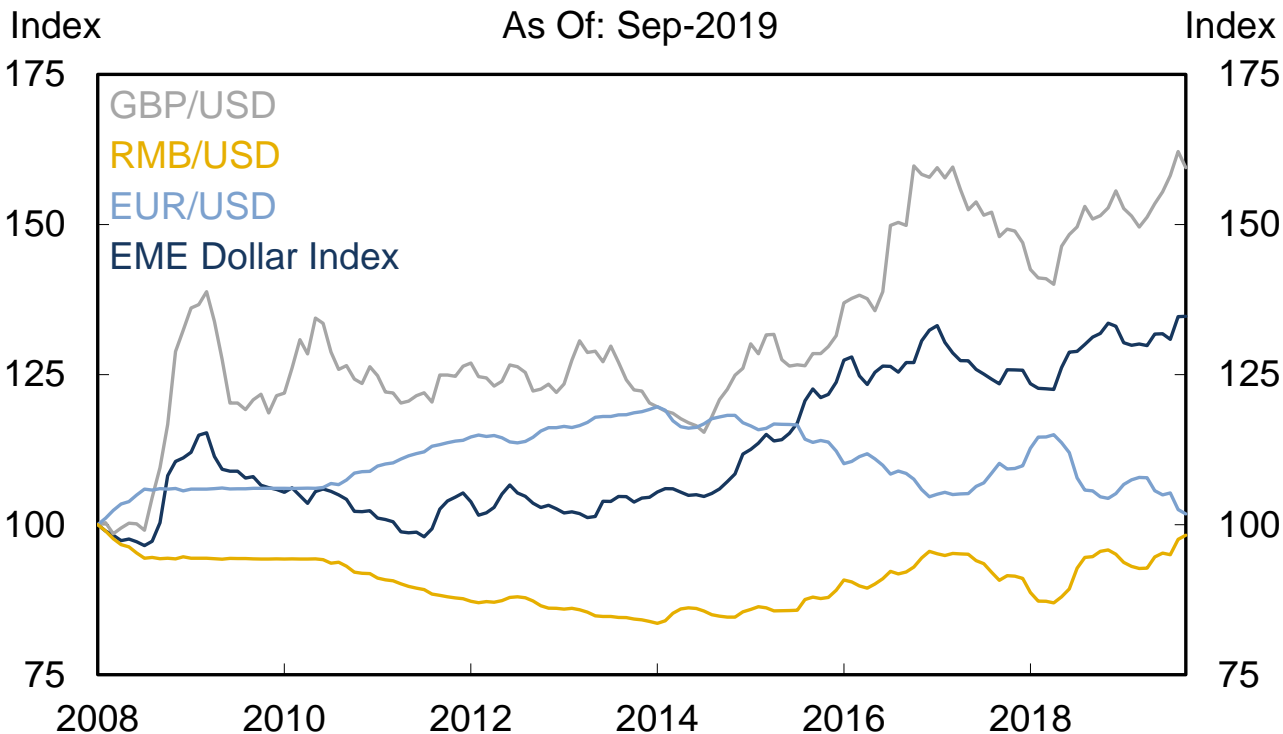
4.6.1 Real U.S. Dollar Trade-Weighted Index



Source: Federal Reserve,
Haver Analytics

Note: Index shown as a share of its 1998-present average.
Real USD Trade-Weighted Index is a weighted average of the
FX value of the USD against the currencies of a broad group
of major U.S. trading partners.

4.6.2 Nominal Value of the U.S. Dollar



Note: Jan 2008 = 100. Above 100 indicates dollar strengthening, while below 100 indicates dollar weakening. EME dollar index is a weighted average of the FX value of the USD against a subset of the broad index currencies that are EMEs.

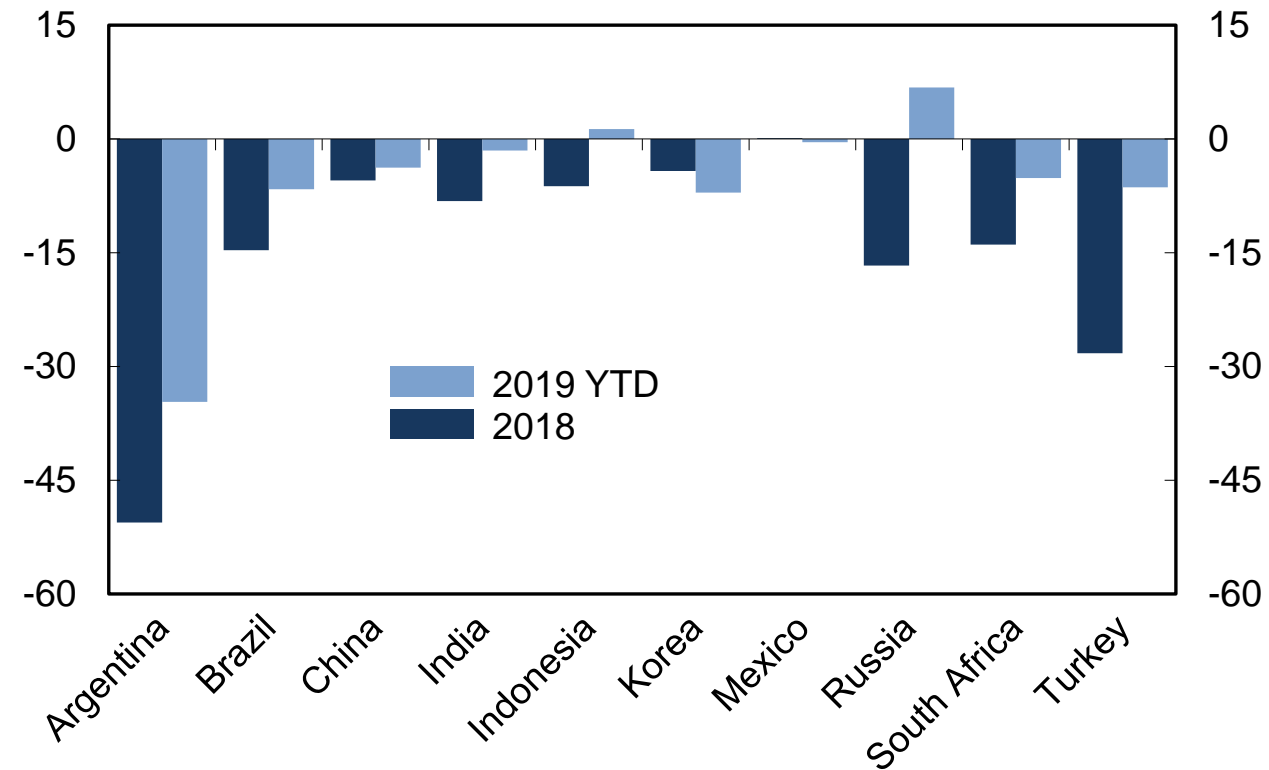
Source: Federal Reserve,
Haver Analytics

4.6.3 Change in U.S. Dollar Exchange Rates

Percent

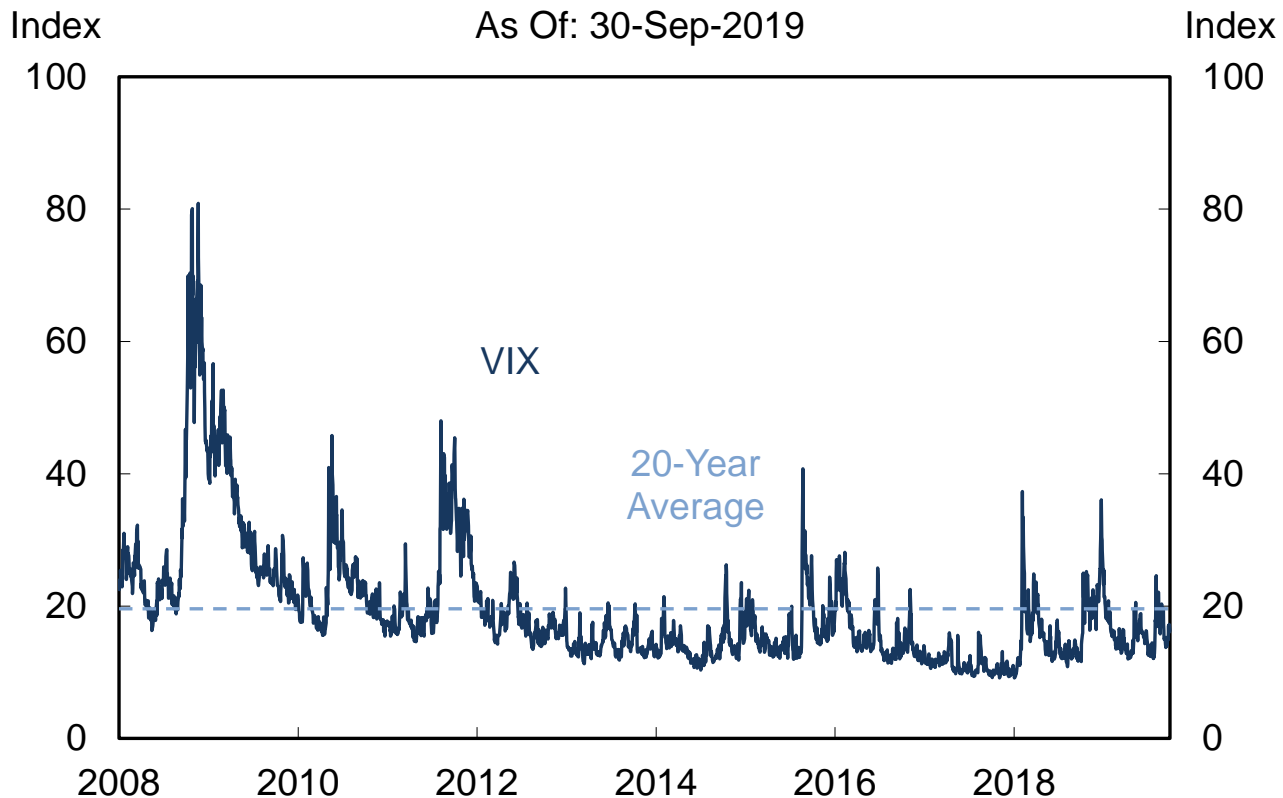
As Of: 30-Sep-2019

Percent



Source: Wall Street Journal, Haver Analytics

4.7.1 S&P 500 Volatility



Source: Bloomberg, L.P.

4.7.2 Returns in Selected Equities Indices

As Of: 30-Sep-2019

	6 Month Returns	1 Year Returns	5 Year Annualized Returns
Major Economies			
U.S. (S&P 500)	5.0%	2.2%	8.6%
Euro (Euro Stoxx 50)	6.5%	5.0%	2.0%
Japan (Nikkei 225)	2.6%	(9.8%)	6.1%
U.K. (FTSE 100)	1.8%	(1.4%)	2.3%
Selected Europe			
Germany (DAX)	7.8%	1.5%	5.6%
France (CAC 40)	6.1%	3.4%	5.2%
Italy (FTSE MIB)	3.9%	6.7%	1.1%
Spain (IBEX 35)	0.0%	(1.5%)	(3.1%)
Emerging Markets			
MSCI Emerging Market Index	(5.4%)	(4.5%)	(0.1%)
Brazil (Bovespa)	9.8%	32.0%	14.1%
India (S&P BSE Sensex)	(0.0%)	6.7%	7.7%
China (Shanghai SE Composite)	(6.0%)	3.0%	4.2%
Hong Kong (Hang Seng)	(10.2%)	(6.1%)	2.6%
Taiwan (TAIEX)	1.8%	(1.6%)	3.8%
South Korea (KOSPI)	(3.6%)	(12.0%)	0.4%

Source: Bloomberg, L.P.

4.7.3 U.S. Stock Valuations

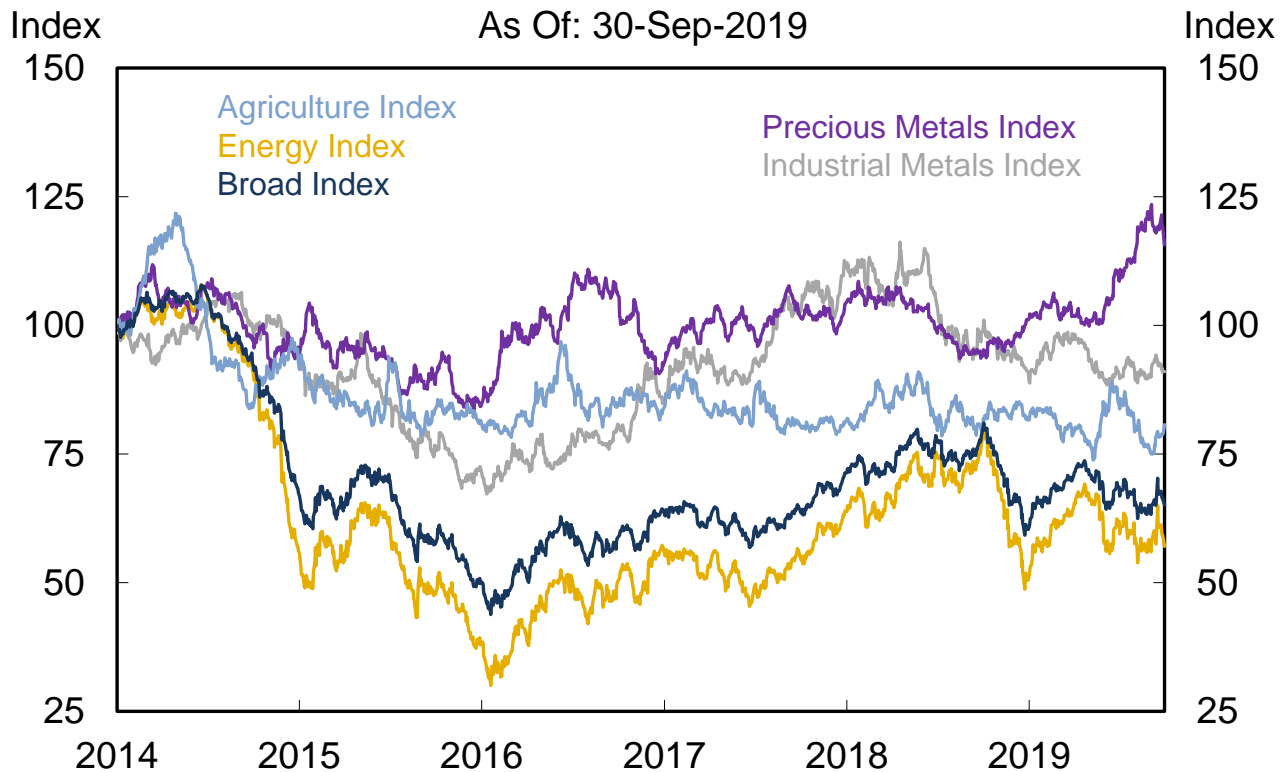
As Of: 2019 Q3

Metric	Current	Historical Percentile
CAPE Ratio	29.3	95%
Buffett Indicator	146%	96%
Price-to-Book	3.4	83%
Trailing Price-to-Earnings	19.6	77%
Forward Price-to-Earnings	17.5	77%

Source: Bloomberg, L.P.,
Wilshire Associates, Haver
Analytics, OFR

Note: Percentiles are based on historical data since, respectively, 1881, 1970, 1990, 1954, and 1990. CAPE, price-to-book, and price-to-earnings ratios are based on the S&P 500 aggregate index. Buffett Indicator is based on the Wilshire 5000 and is as of 2019 Q2.

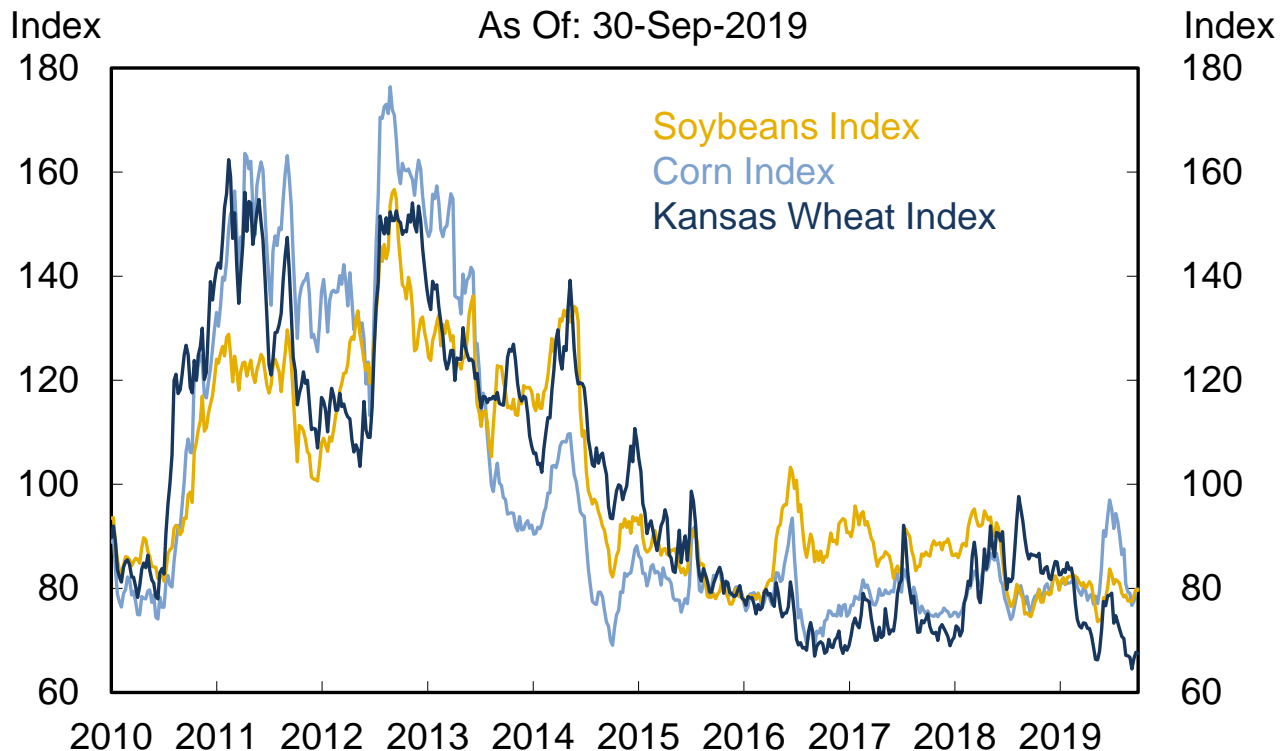
4.8.1 Commodities



Source: S&P GSCI Spot
Indices, Haver Analytics

Note: 01-Jan-2014 = 100.

4.8.2 Agricultural Prices



Source: S&P GSCI Spot Indices,
Haver Analytics

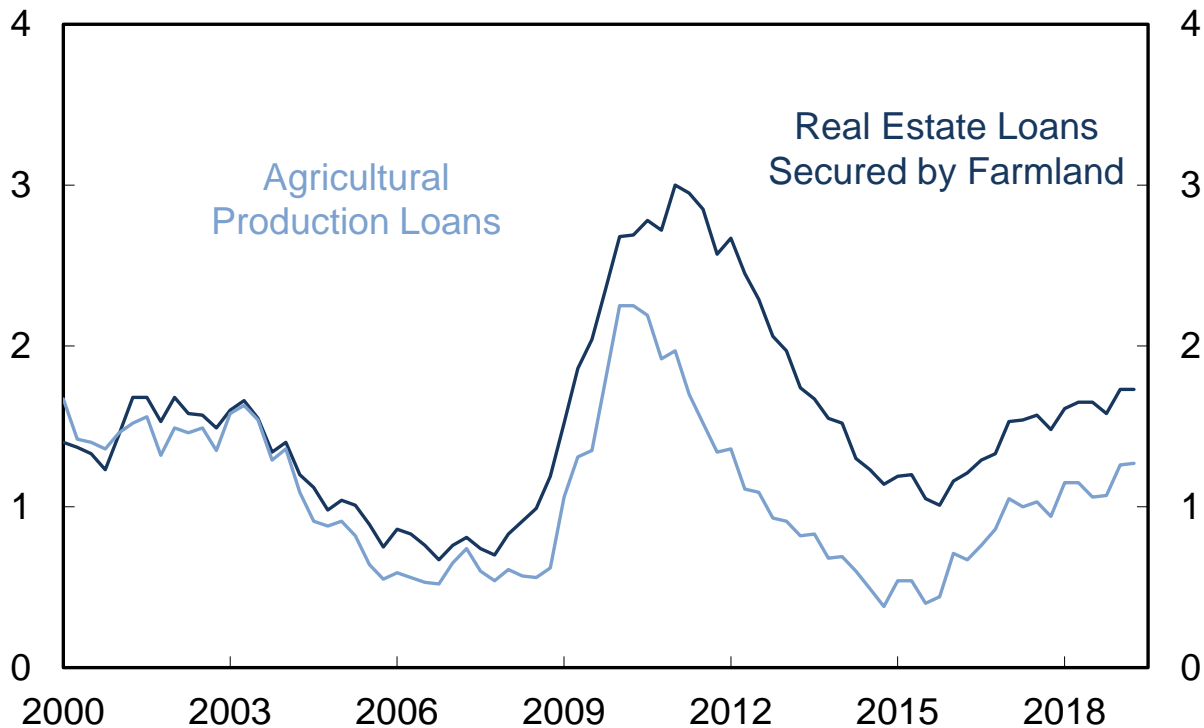
Note: Index shown as a share of its
2010-present average.

4.8.3 Agricultural Loans: Noncurrent Rate

Percent

As Of: 2019 Q2

Percent



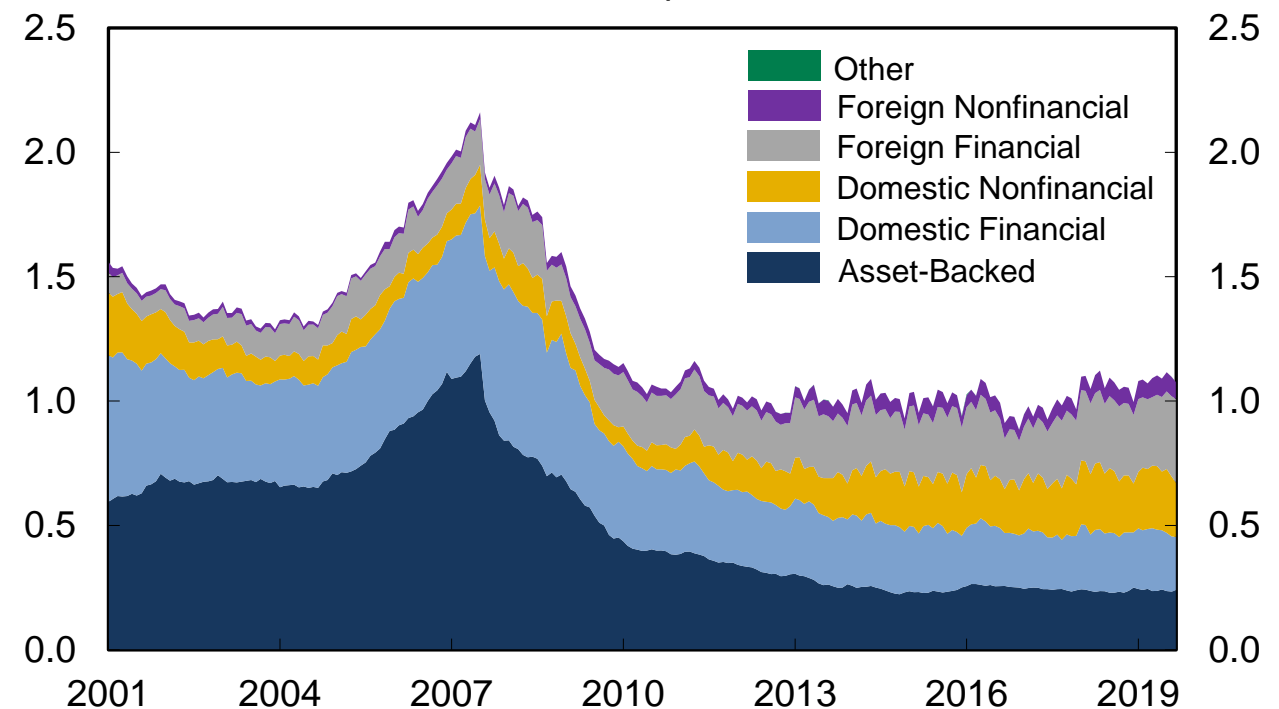
Source: FDIC, Haver Analytics

4.9.1 Commercial Paper Outstanding

Trillions of US\$

As Of: Sep-2019

Trillions of US\$



Source: Federal Reserve,
Haver Analytics

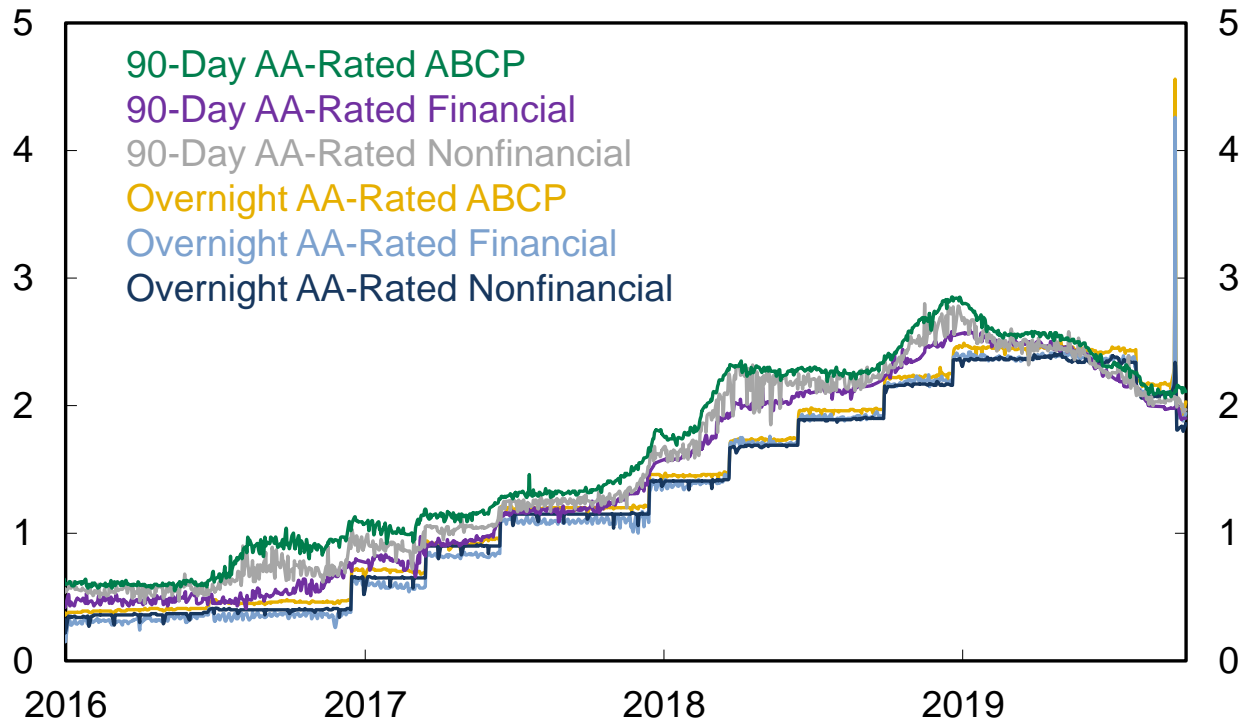
Note: Not seasonally adjusted. Domestic includes CP issued in the U.S. by entities with foreign parents.

4.9.2 Commercial Paper Interest Rates

Percent

As Of: 30-Sep-2019

Percent



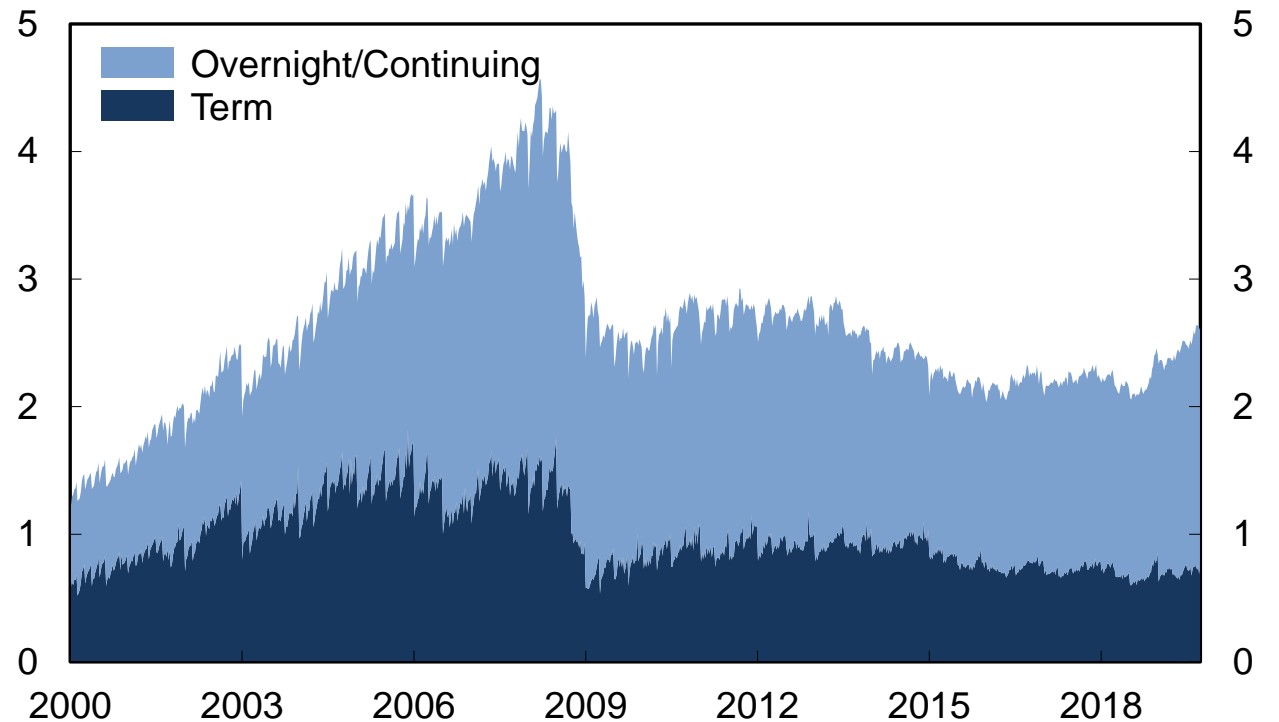
Source: Federal Reserve, Haver Analytics

4.9.3 Primary Dealer Repo Agreements

Trillions of US\$

As Of: 25-Sep-2019

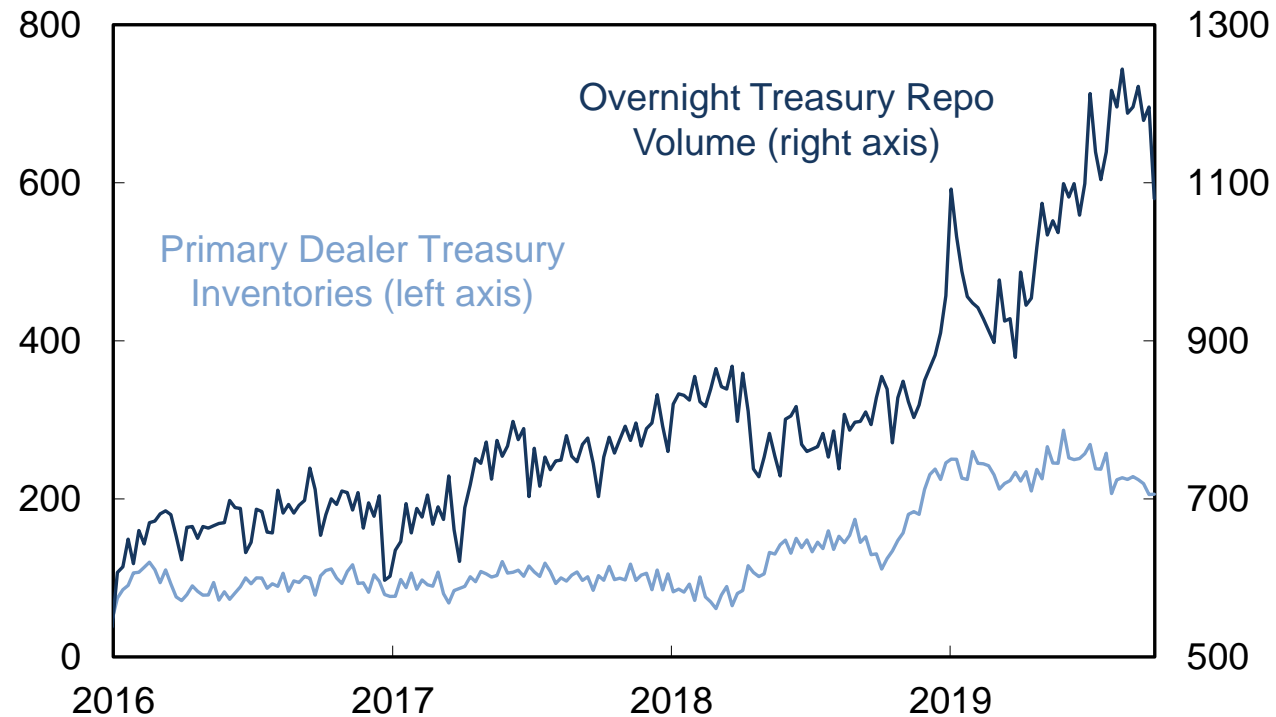
Trillions of US\$



Source: FRBNY, Haver Analytics

4.9.4 Overnight Repo Volumes and Dealer Inventories

Billions of US\$ As Of: 25-Sep-2019 Billions of US\$



Source: FRBNY, Haver Analytics

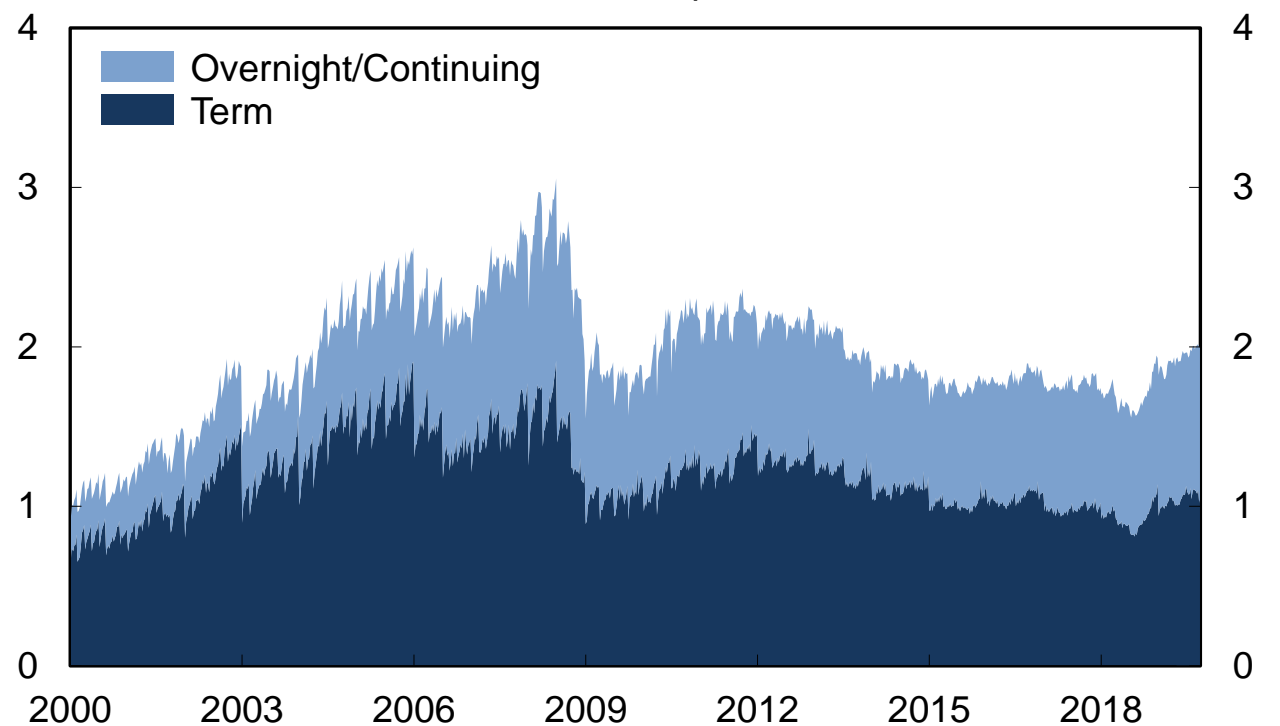
Note: Overnight Treasury repo volume includes published volumes for SOFR.

4.9.5 Primary Dealer Reverse Repo Agreements

Trillions of US\$

As Of: 25-Sep-2019

Trillions of US\$



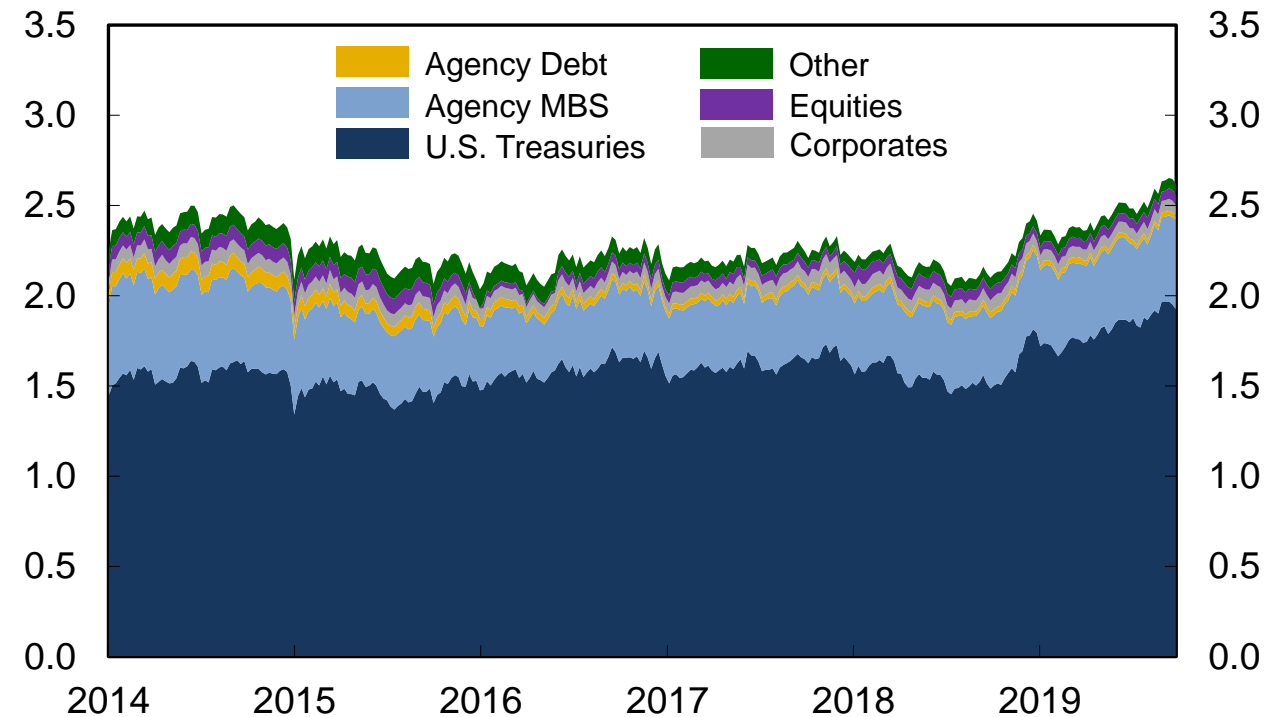
Source: FRBNY, Haver Analytics

4.9.6 Primary Dealer Repo Collateral

Trillions of US\$

As Of: 25-Sep-2019

Trillions of US\$



Source: FRBNY, Haver Analytics

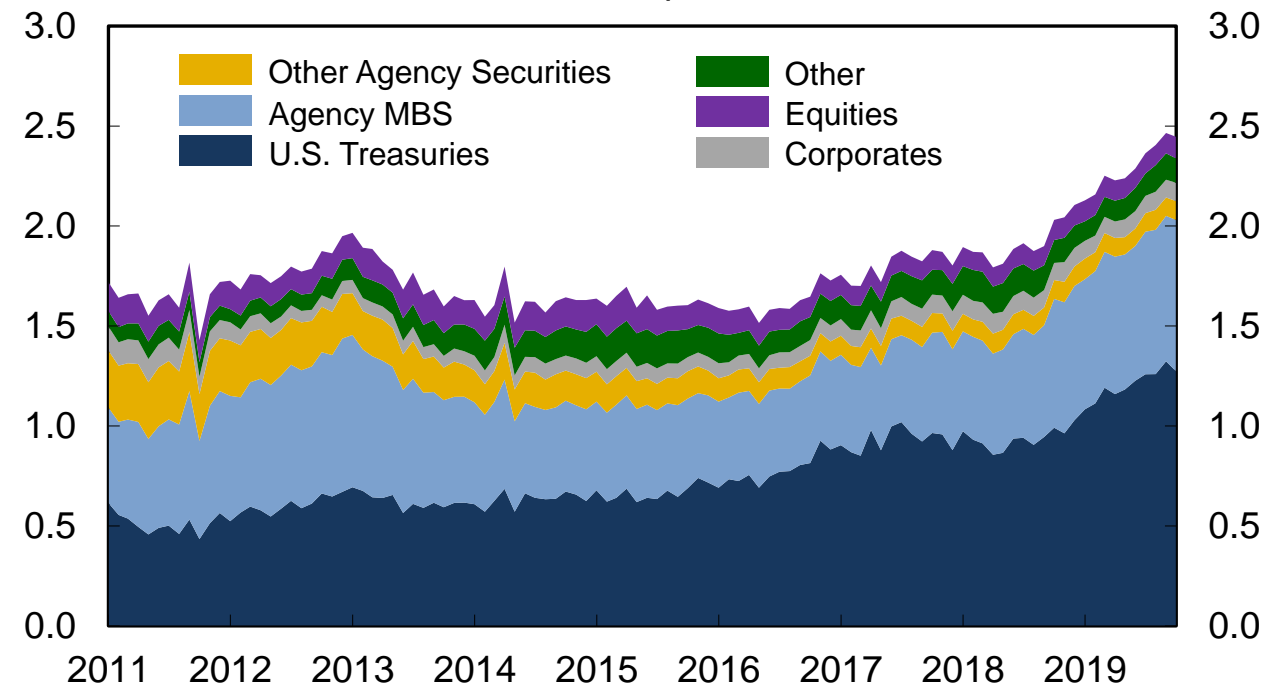
Note: U.S. Treasuries includes TIPS;
other includes ABS.

4.9.7 Collateral in the Tri-Party Repo Market

Trillions of US\$

As Of: Sep-2019

Trillions of US\$

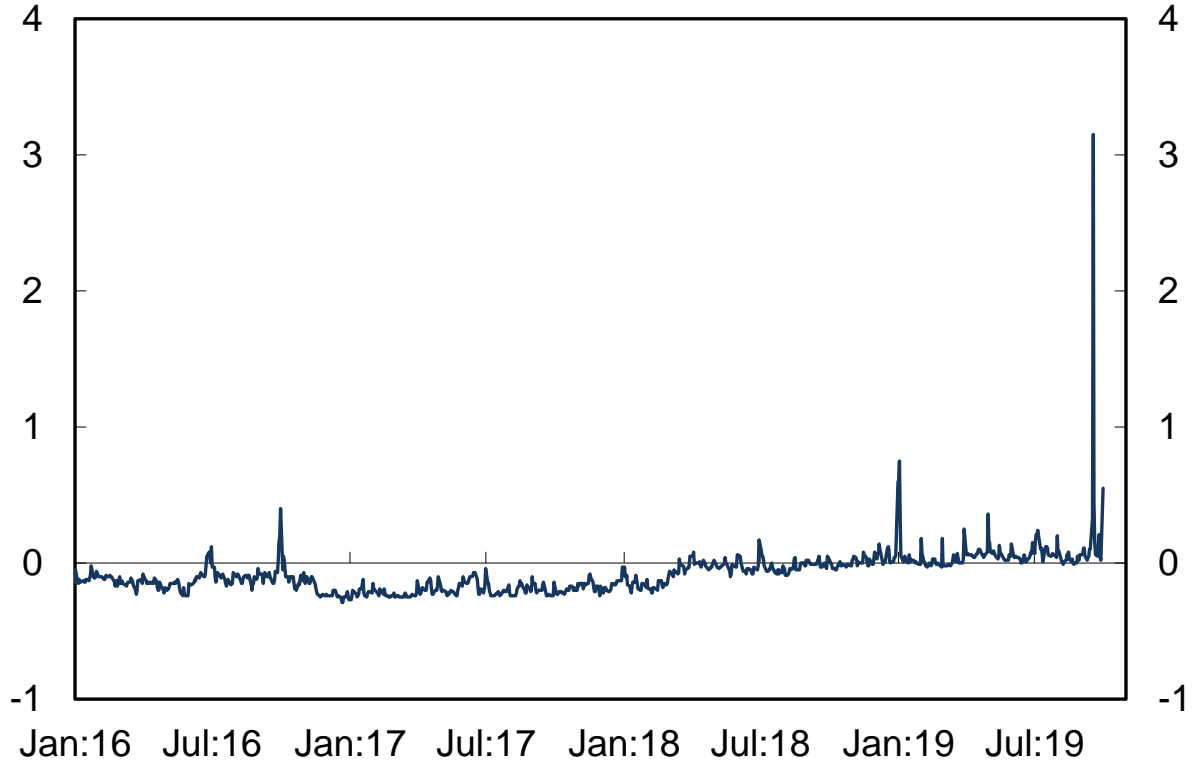


Source: FRBNY,
Haver Analytics

Note: Other includes ABS, CDOs, private label CMOs, international securities, money markets, municipal debt, and whole loans.

4.9.8 SOFR Spread to IOER

Percent As Of: 30-Sep-2019 Percent



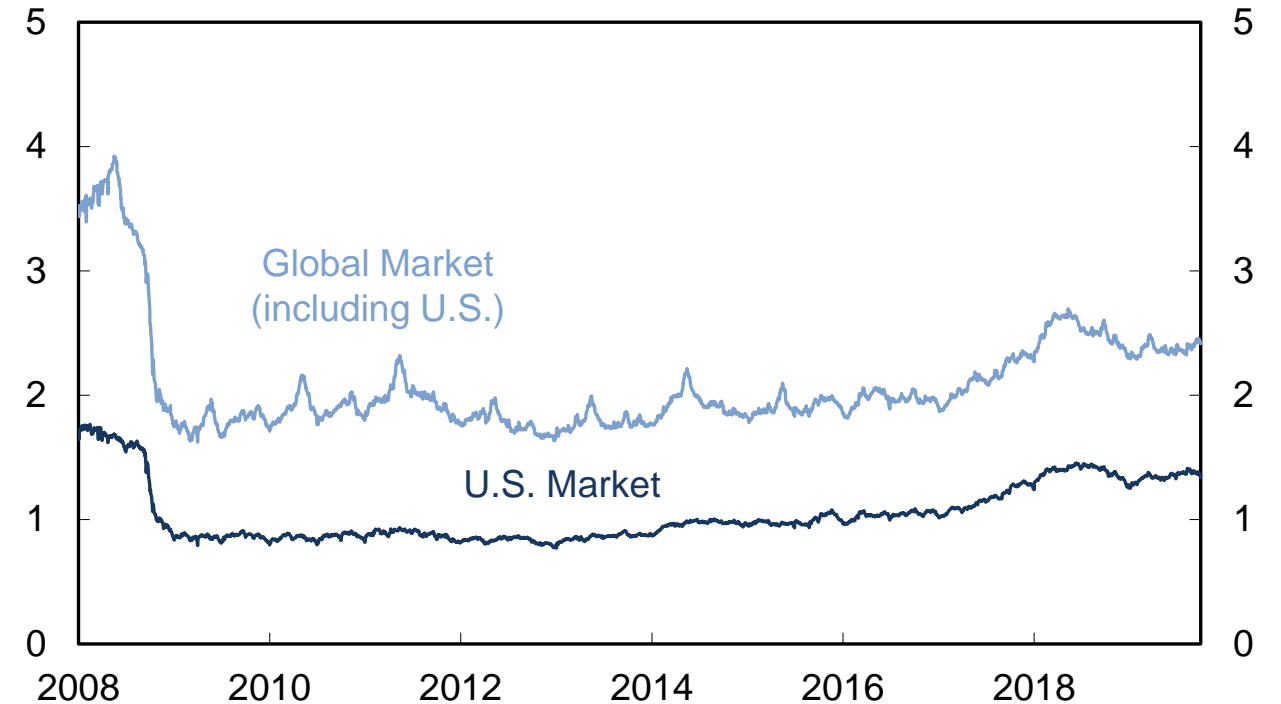
Source: Federal Reserve, Haver Analytics

4.9.9 Value of Securities on Loan

Trillions of US\$

As Of: 30-Sep-2019

Trillions of US\$



Note: Data is based on a survey of agent-based lenders.

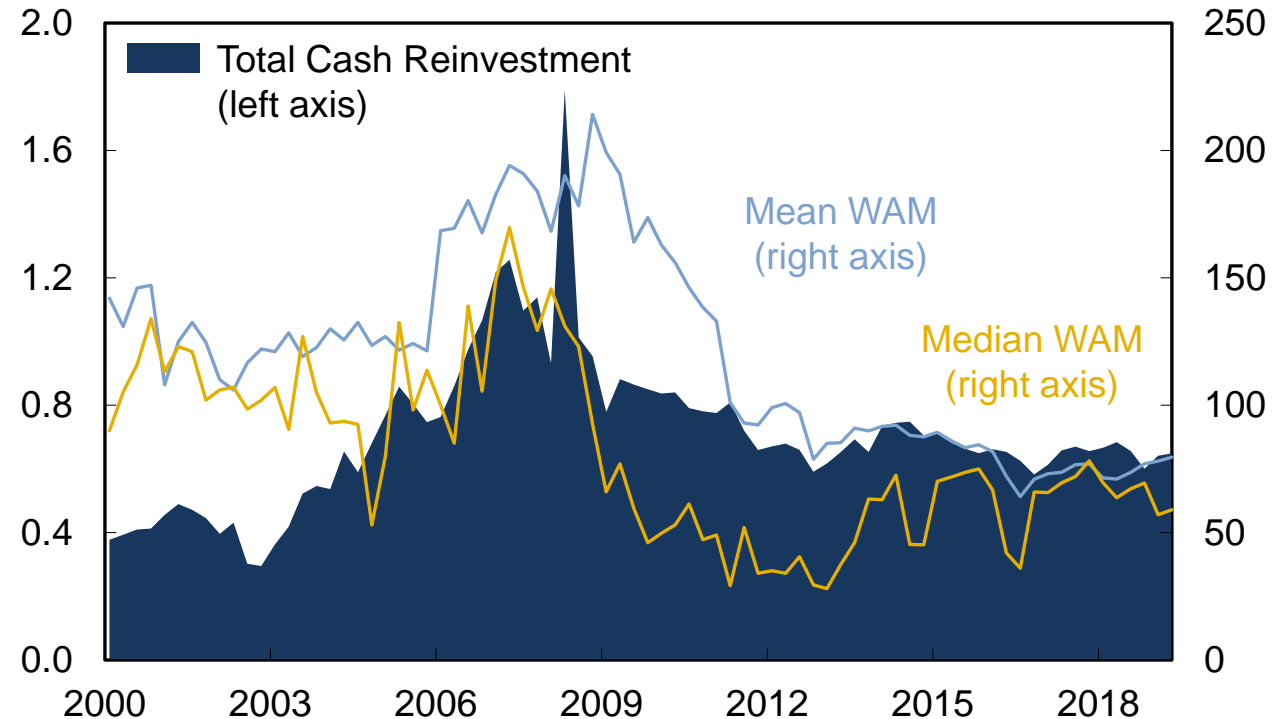
Source: Markit Group Limited

4.9.10 U.S. Securities Lending Cash Reinvestment

Trillions of US\$

As Of: 2019 Q2

Days



Source: The Risk Management Association

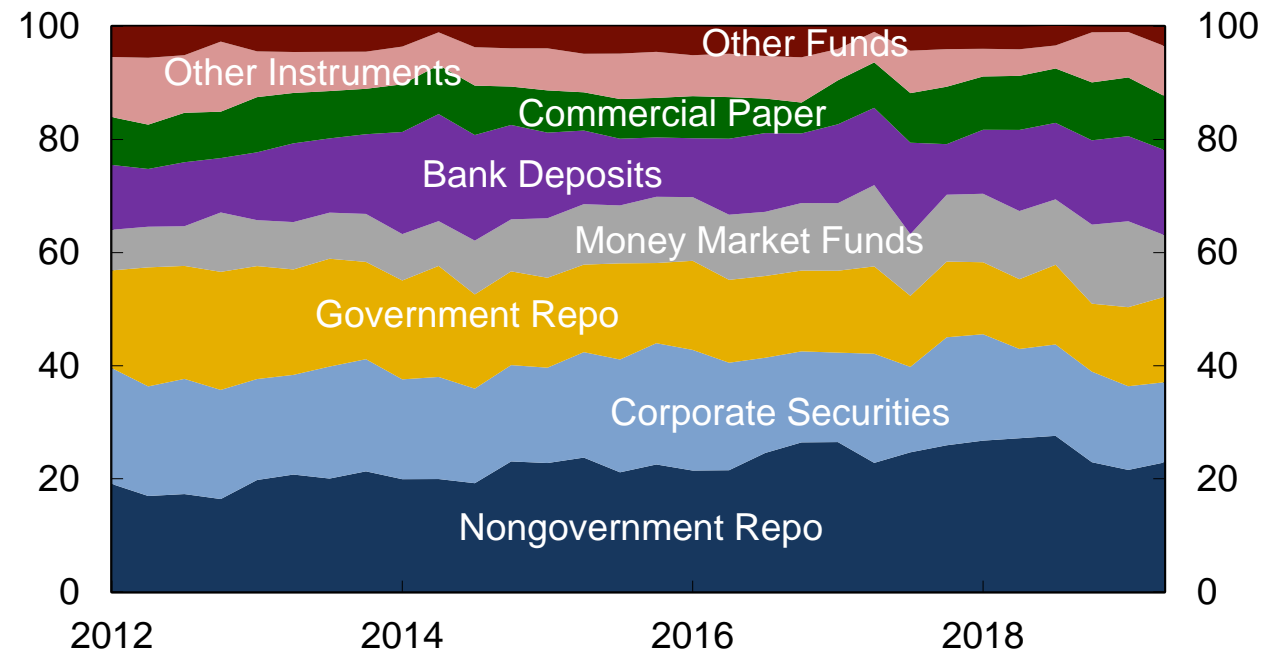
Note: Data is based on a survey of agent-based lenders.

4.9.11 U.S. Securities Lending Cash Reinvestment

Percent of Total

As Of: 2019 Q2

Percent of Total



Source: The Risk Management Association, Office of Financial Research

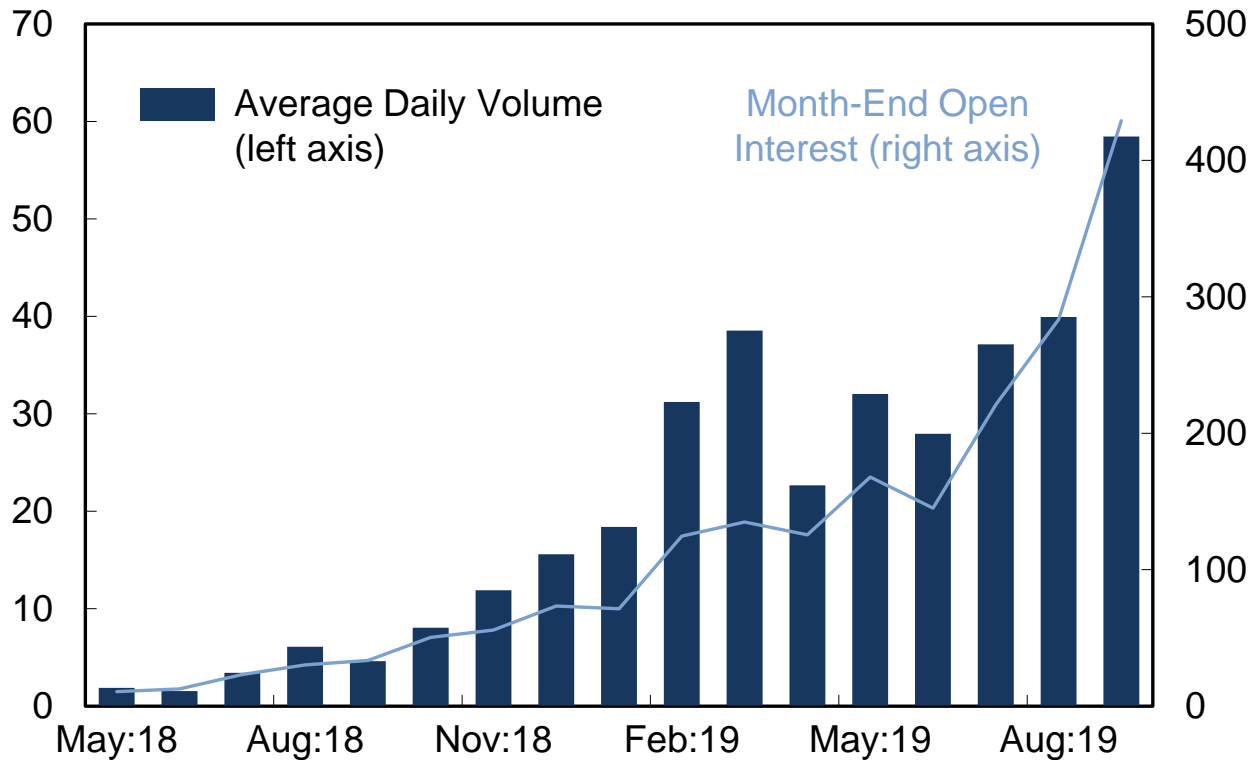
Note: Nongovernment repos have collateral of whole loans, equity, and corporate debt. Data is based on a survey of agent-based lenders.

C.1 SOFR Futures

Contracts '000s

As Of: Sep-2019

Billions of US\$



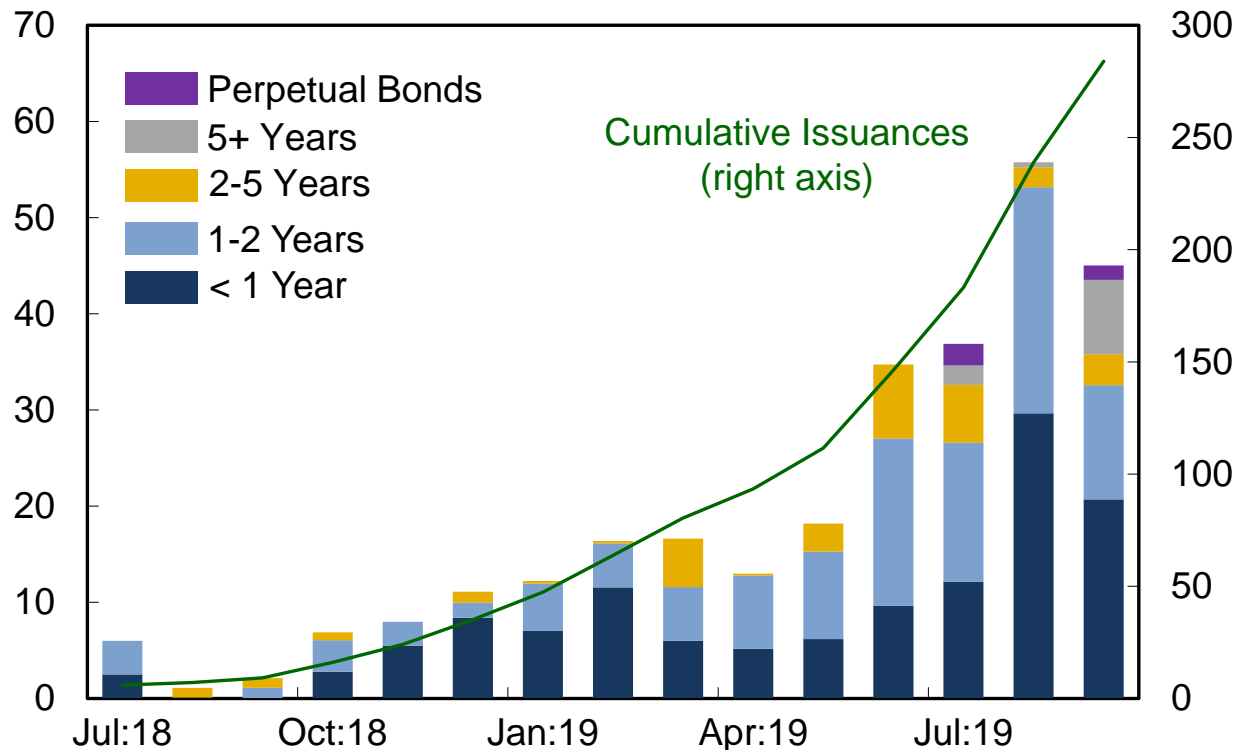
Source: CME

C.2 Issuance of SOFR Linked Notes by Tenor

Billions of US\$

As Of: 30-Sep-2019

Billions of US\$



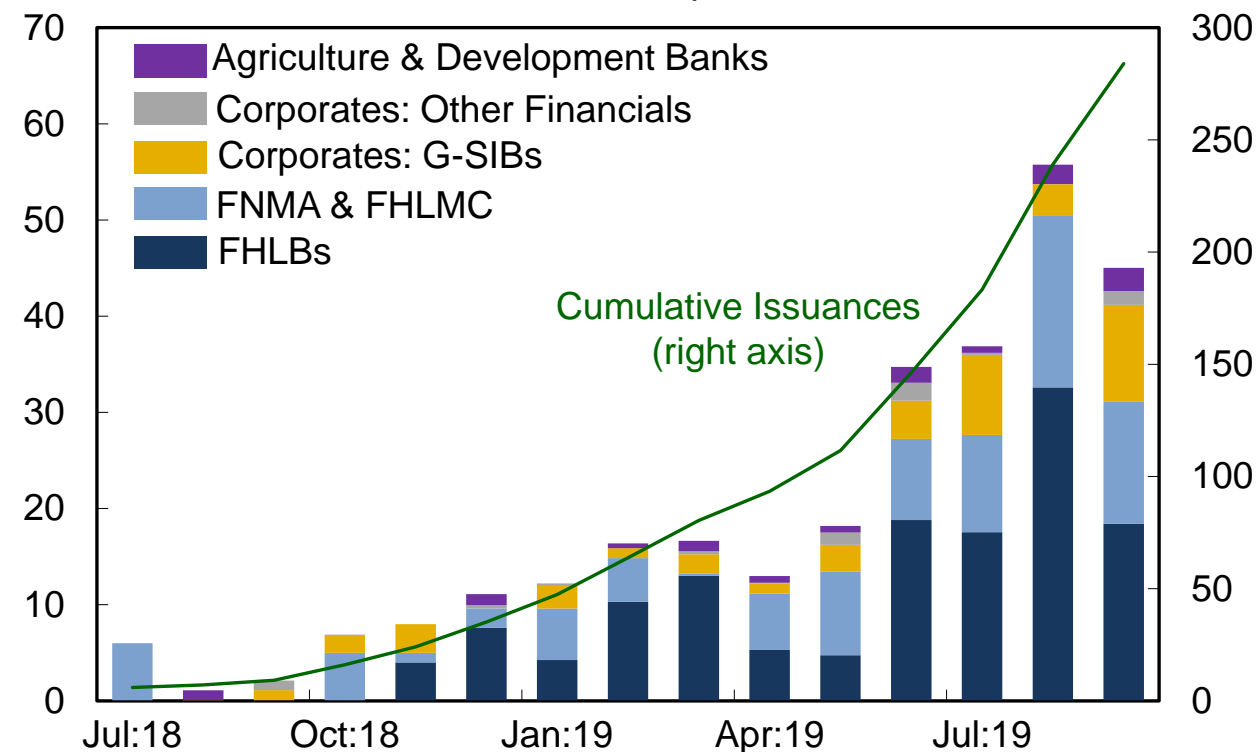
Source: Bloomberg, L.P., Staff Calculations

C.3 Issuance of SOFR Linked Notes by Issuer

Billions of US\$

As Of: 30-Sep-2019

Billions of US\$



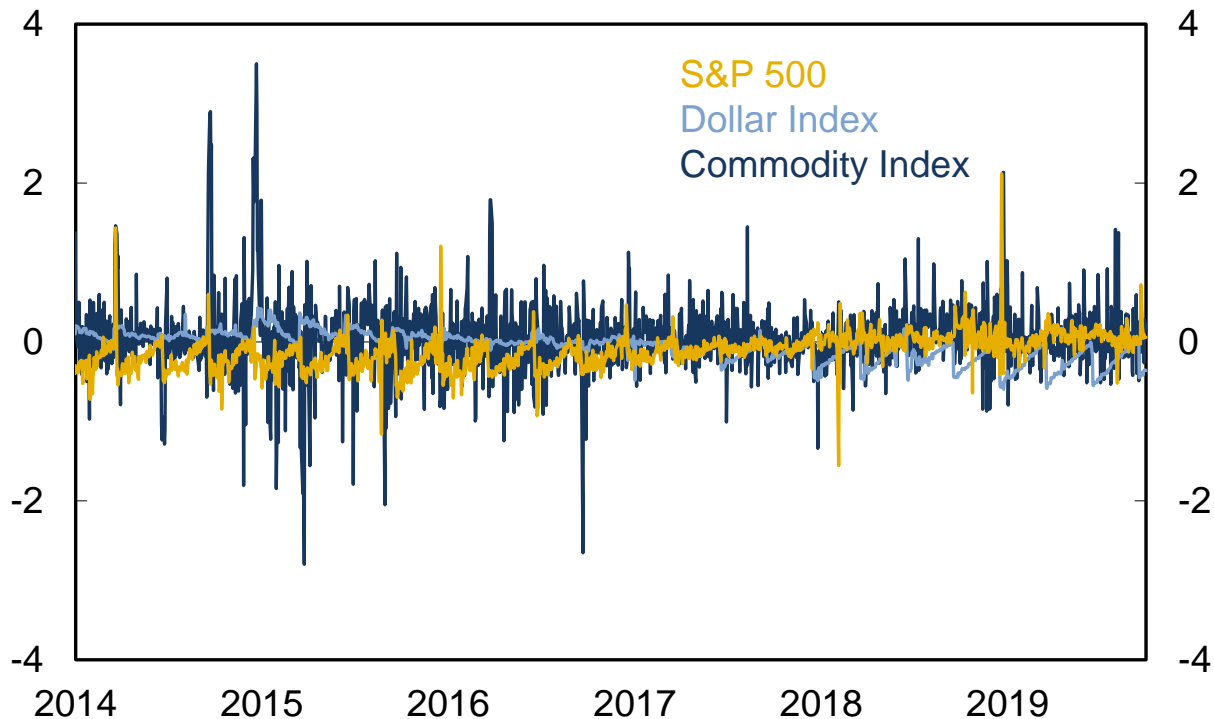
Source: Bloomberg, L.P., Staff Calculations

4.10.1 Futures-Spot Price Spread

Percent

As Of: 30-Sep-2019

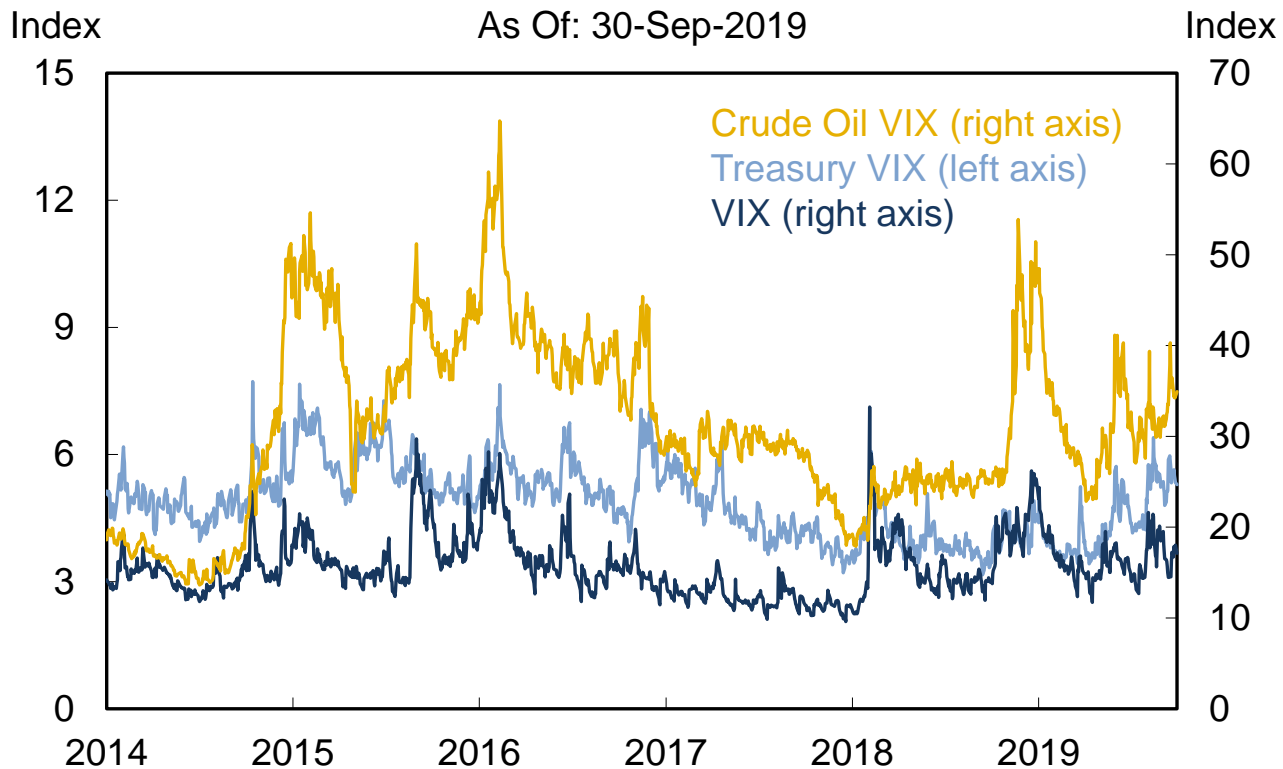
Percent



Note: Represents the percent spread between the front-month future and the spot price.

Source: Bloomberg, L.P.

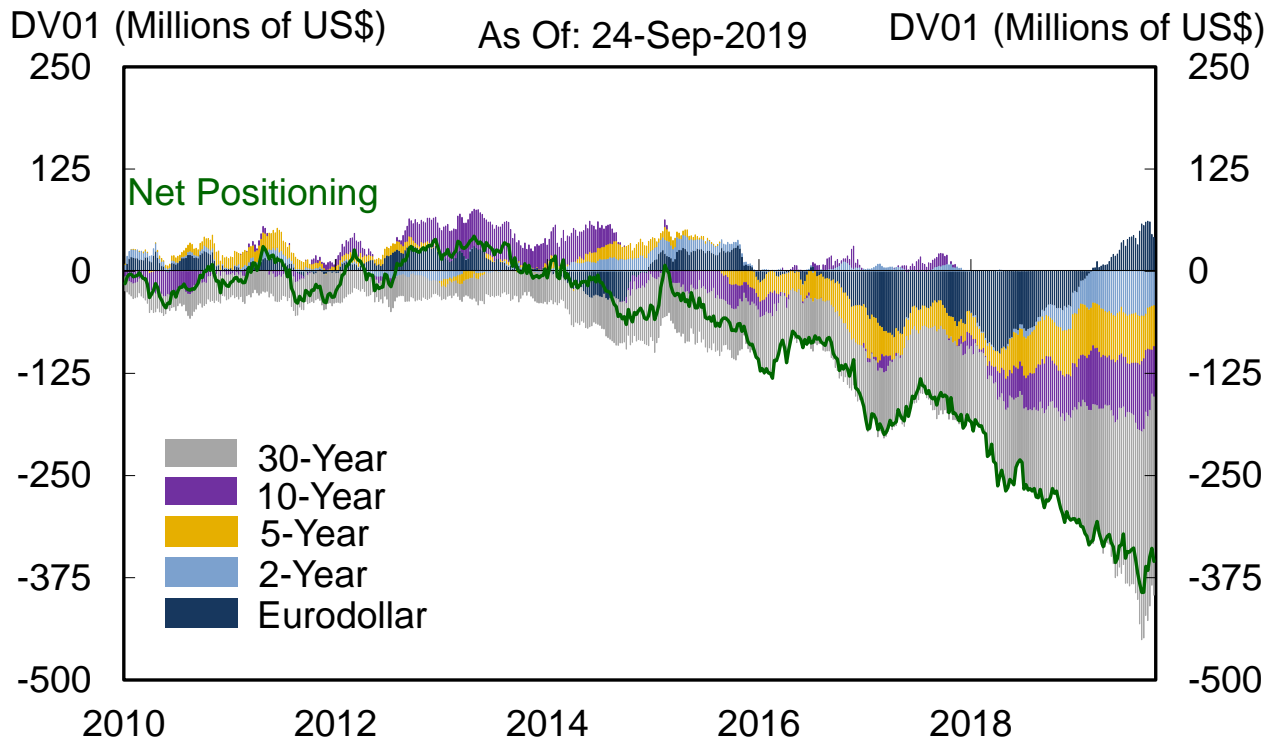
4.10.2 Market Volatility Indices



Source: Bloomberg, L.P.

Note: Crude VIX and Treasury VIX are implied volatility measures. VIX is the 1-month VIX future.

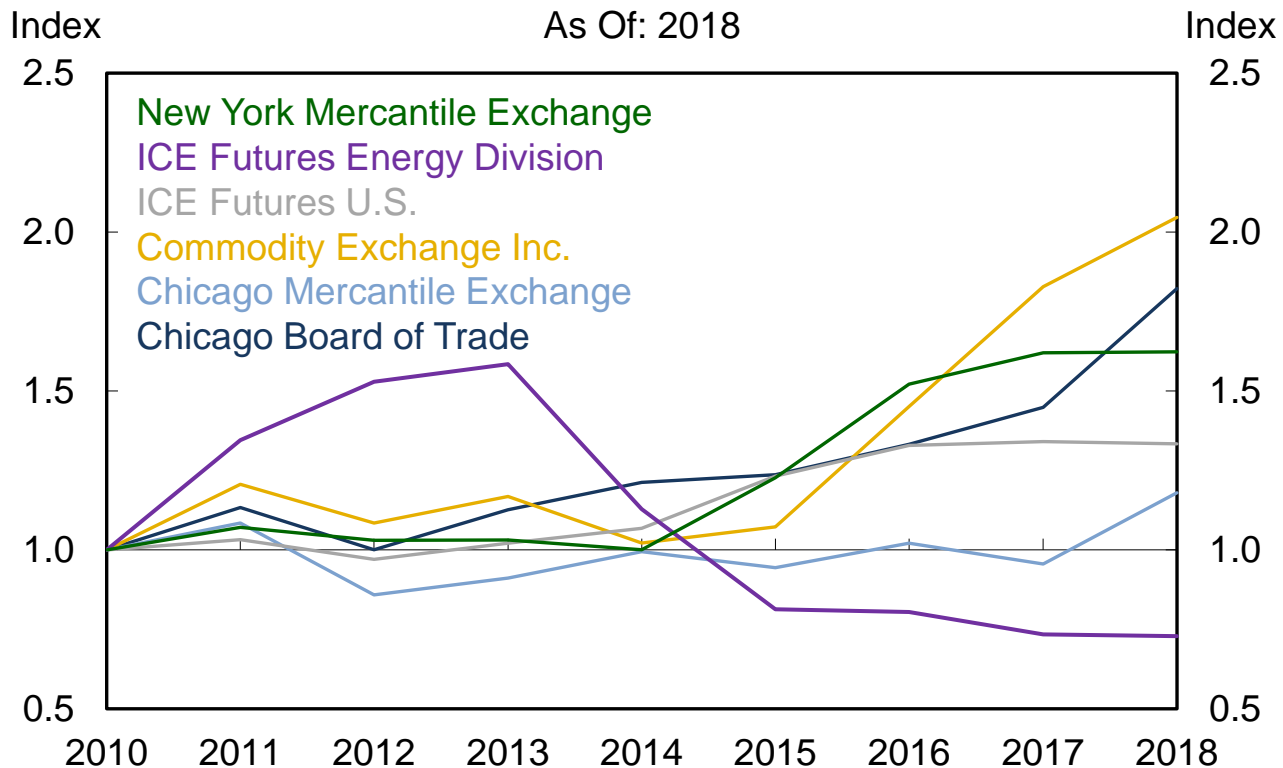
4.10.3 Leveraged Funds Net Position: Treasury & Eurodollar Futures



Source: CFTC Commitment of Traders Report, Bloomberg, L.P., Staff Calculations

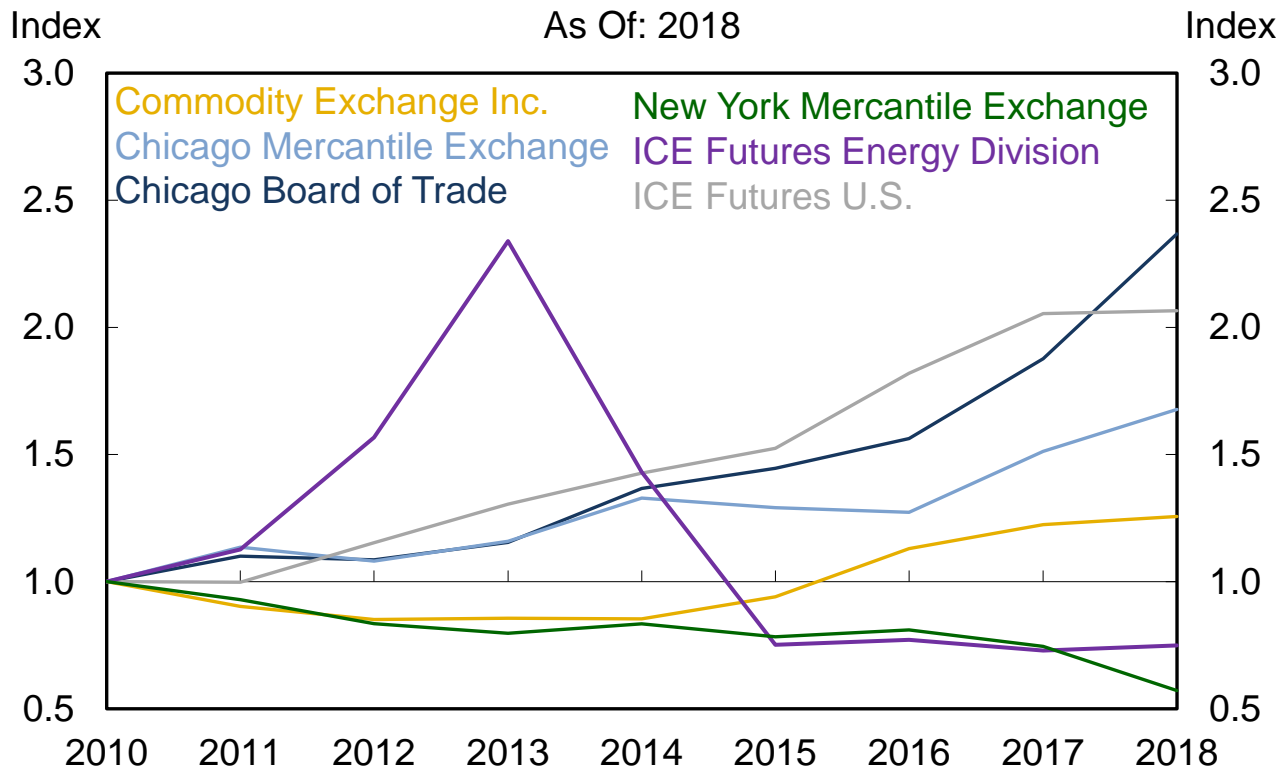
Note: Futures contracts adjusted to represent the estimated dollar value per one basis point (DV01); 10-year includes 10-Year and 10-Year Ultra Treasury Note futures; 30-Year includes Treasury Bond and Ultra Treasury Bond futures.

4.10.4 Normalized Futures Exchange Volume



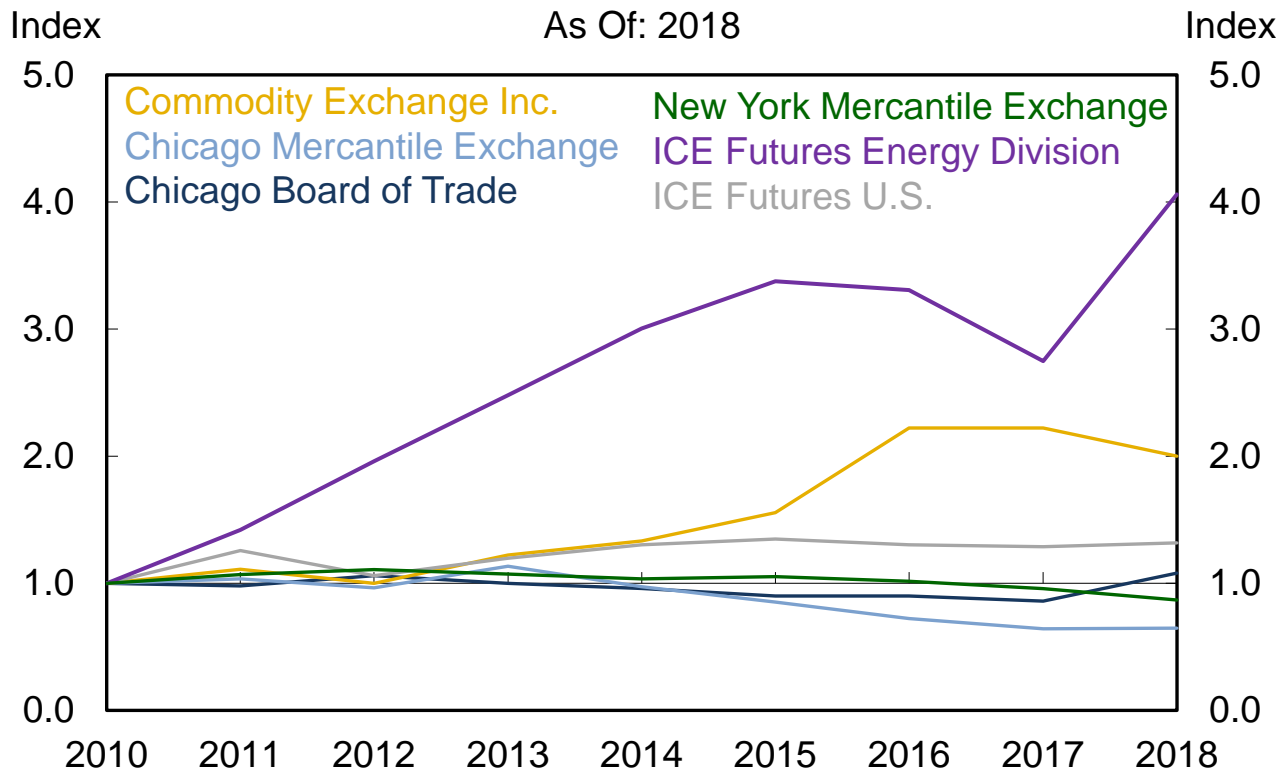
Source: CFTC

4.10.5 Normalized Futures Exchange Open Interest



Source: CFTC

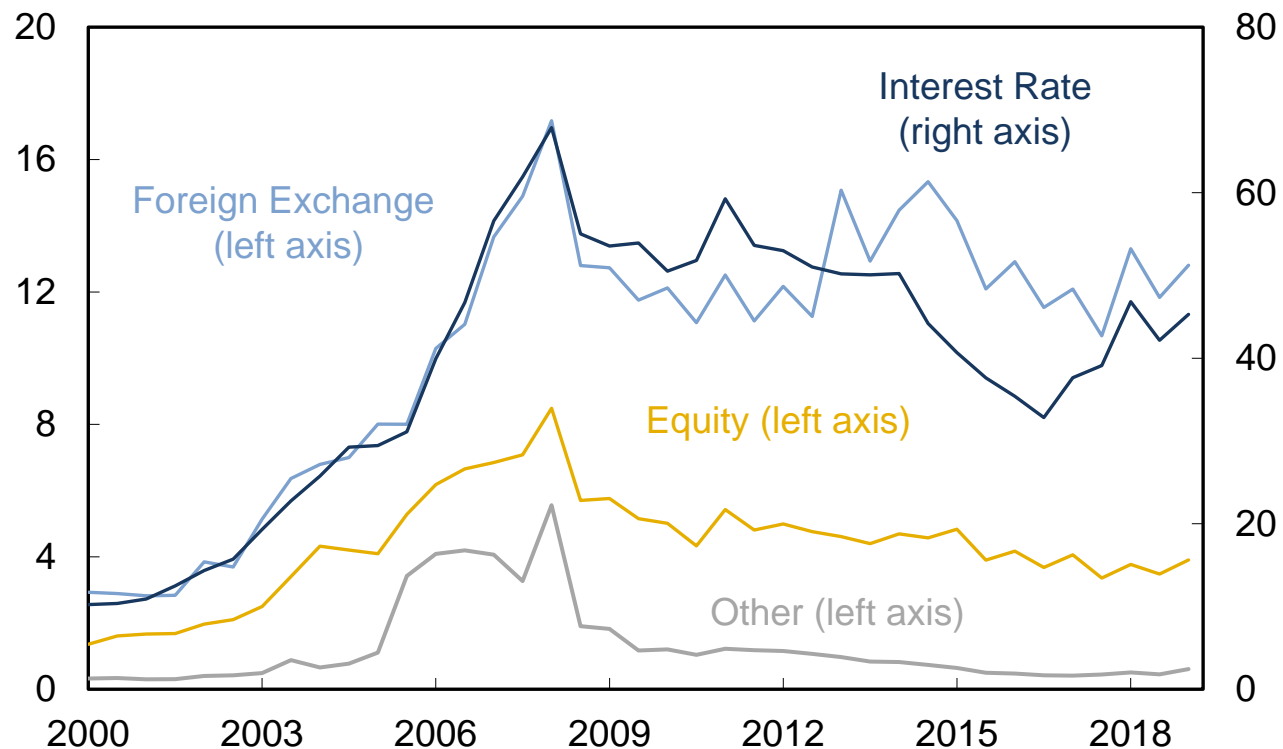
4.10.6 Normalized Futures Exchange Number of Products



Source: CFTC

4.10.7 OTC Options: Global Notional Outstanding

Trillions of US\$ As Of: 2019 Q2 Trillions of US\$



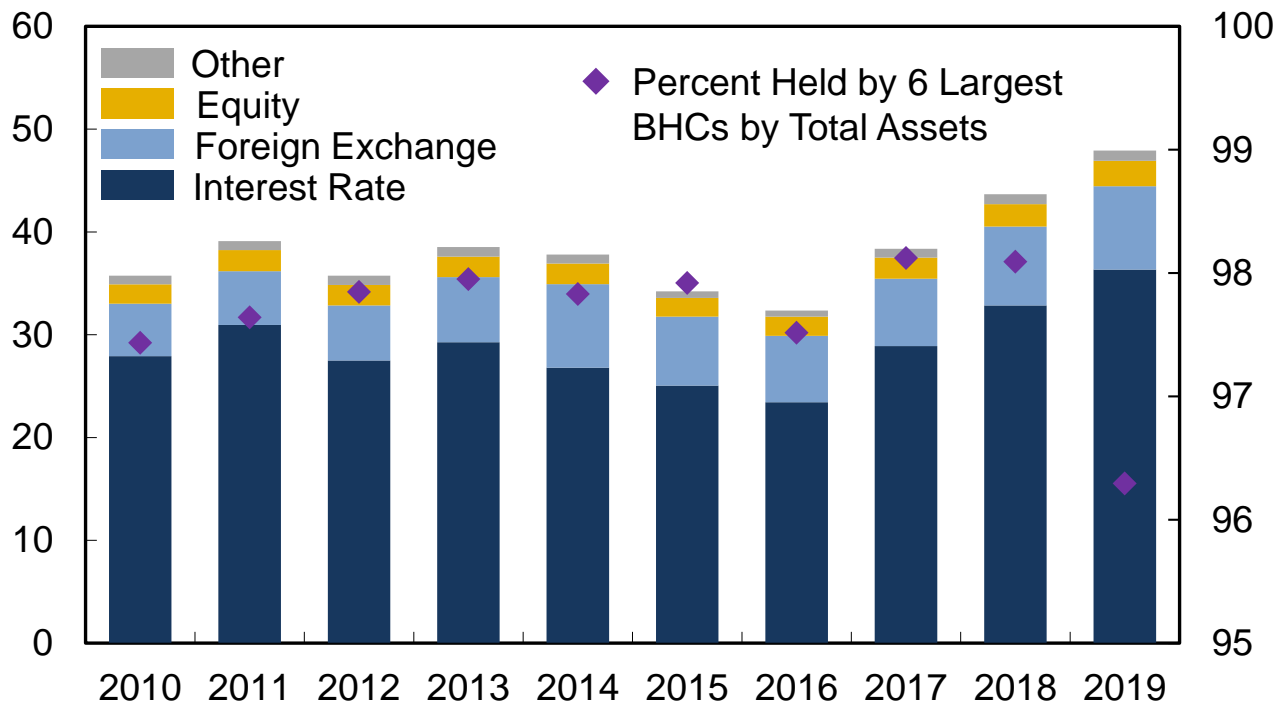
Source: BIS, Haver Analytics

4.10.8 OTC Options: BHC Gross Notional Outstanding

Trillions of US\$

As Of: 2019 Q2

Percent



Source: FR Y-9C, Staff Calculations

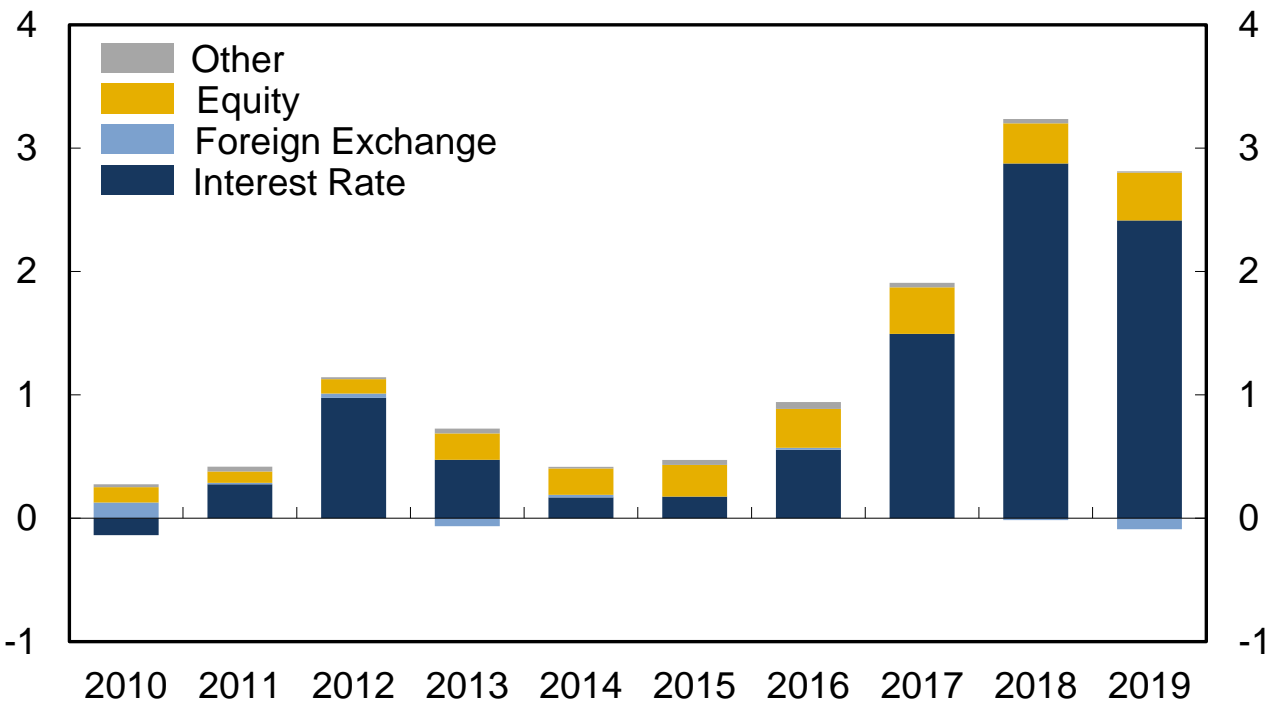
Note: Other includes credit, commodity, and other OTC options.

4.10.9 OTC Options: BHC Net Notional Outstanding

Trillions of US\$

As Of: 2019 Q2

Trillions of US\$



Source: FR Y-9C, Staff Calculations

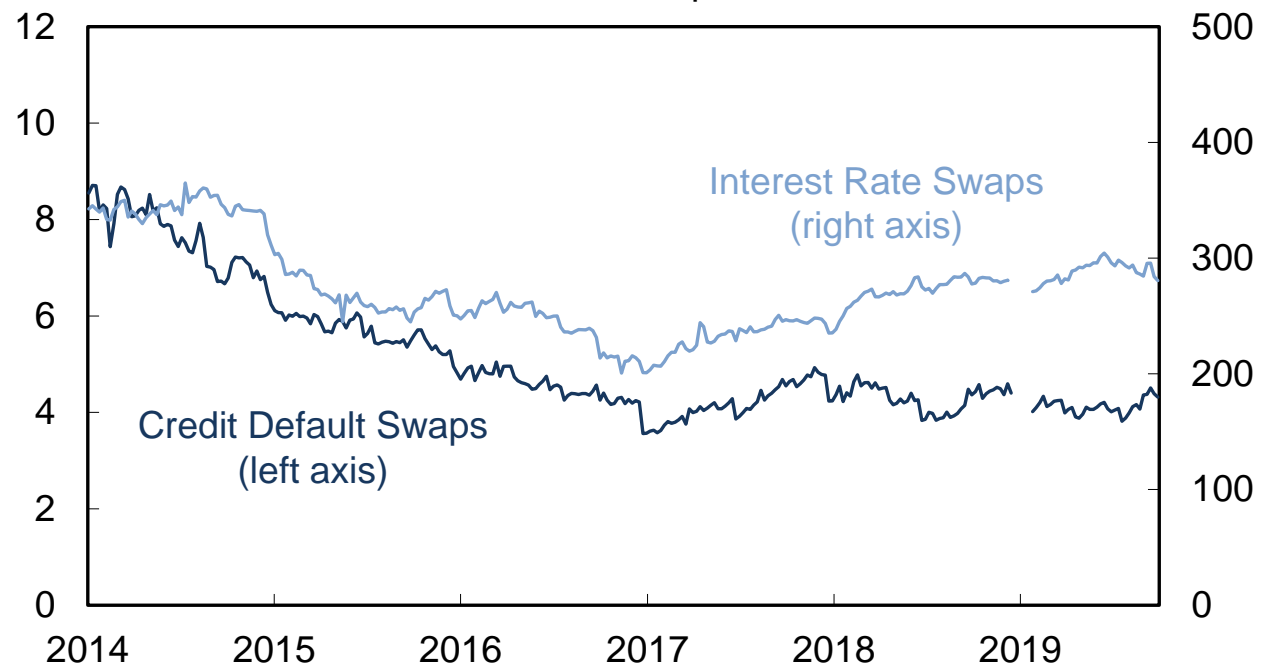
Note: Other includes credit, commodity, and other OTC options.

4.10.10 Derivatives Notional Amount Outstanding

Trillions of US\$

As Of: 27-Sep-2019

Trillions of US\$



Source: CFTC Weekly Swaps Report, Haver Analytics

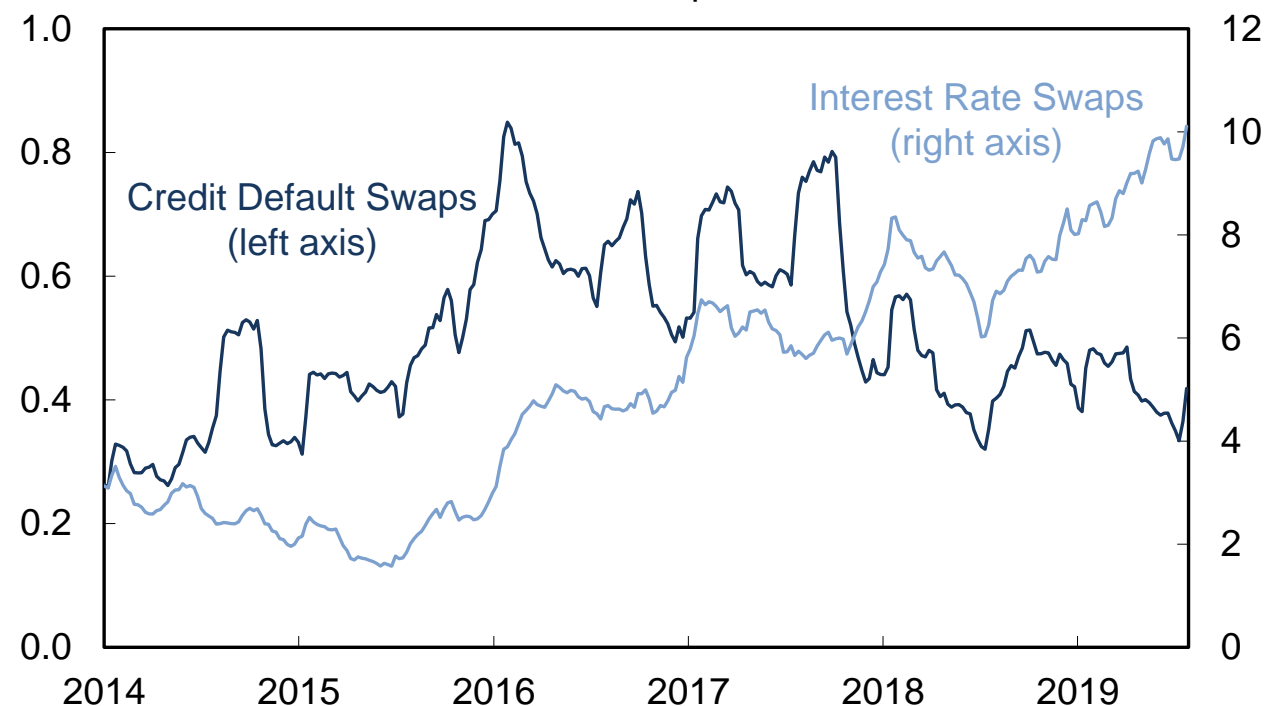
Note: Weekly Swaps Report not issued between Dec. 22, 2018 and Jan. 26, 2019 due to a lapse in government funding; excludes security-based swaps.

4.10.11 Derivatives Notional Volume

Trillions of US\$

As Of: 27-Sep-2019

Trillions of US\$



Source: CFTC Weekly Swaps
Report, Haver Analytics

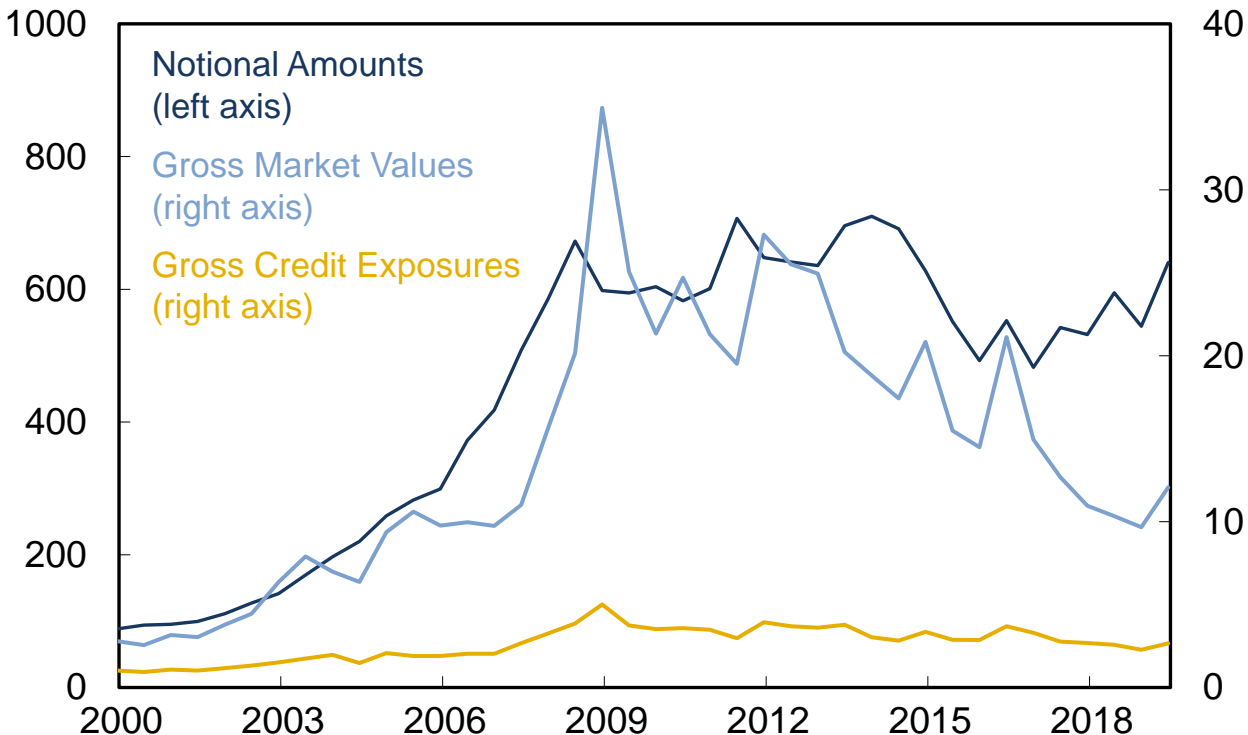
Note: 12-week moving-averages;
excludes security-based swaps.

4.10.12 Global OTC Positions

Trillions of US\$

As Of: 2019 Q2

Trillions of US\$



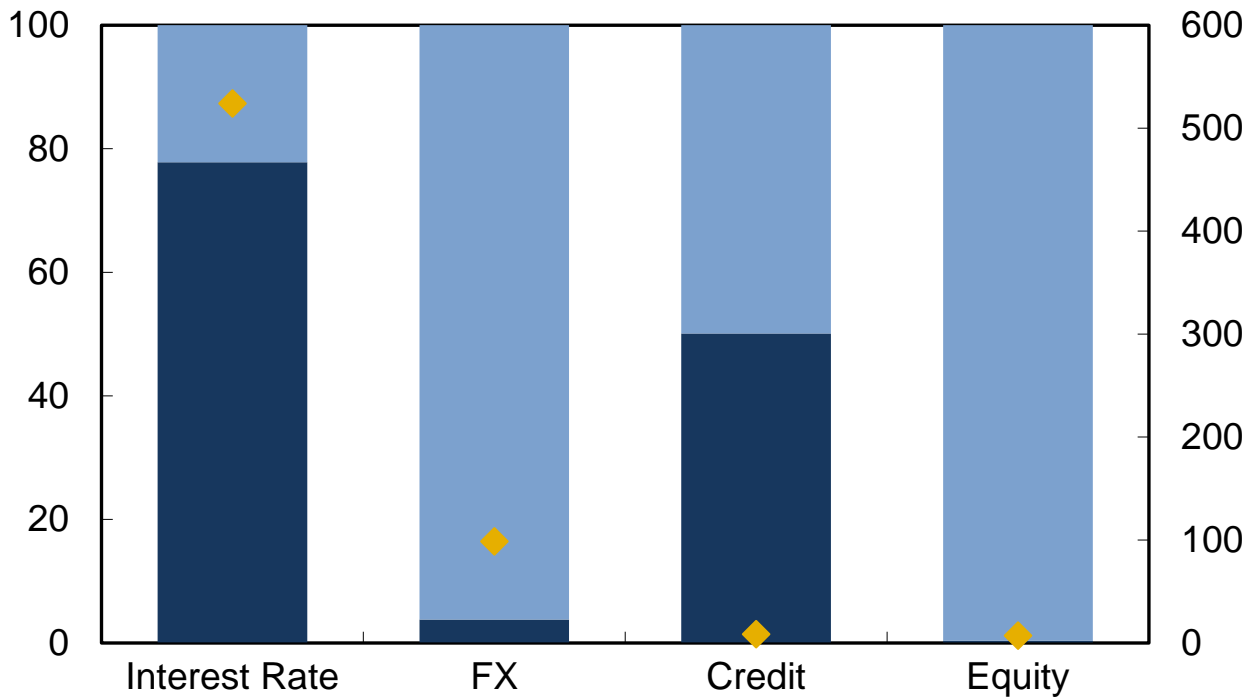
Source: BIS, Haver Analytics

4.10.13 Global OTC Central Clearing Market Share

Percent

As Of: 2019 Q2

Trillions of US\$



Source: BIS,
Haver Analytics

Not Cleared (left axis)
Cleared (left axis)

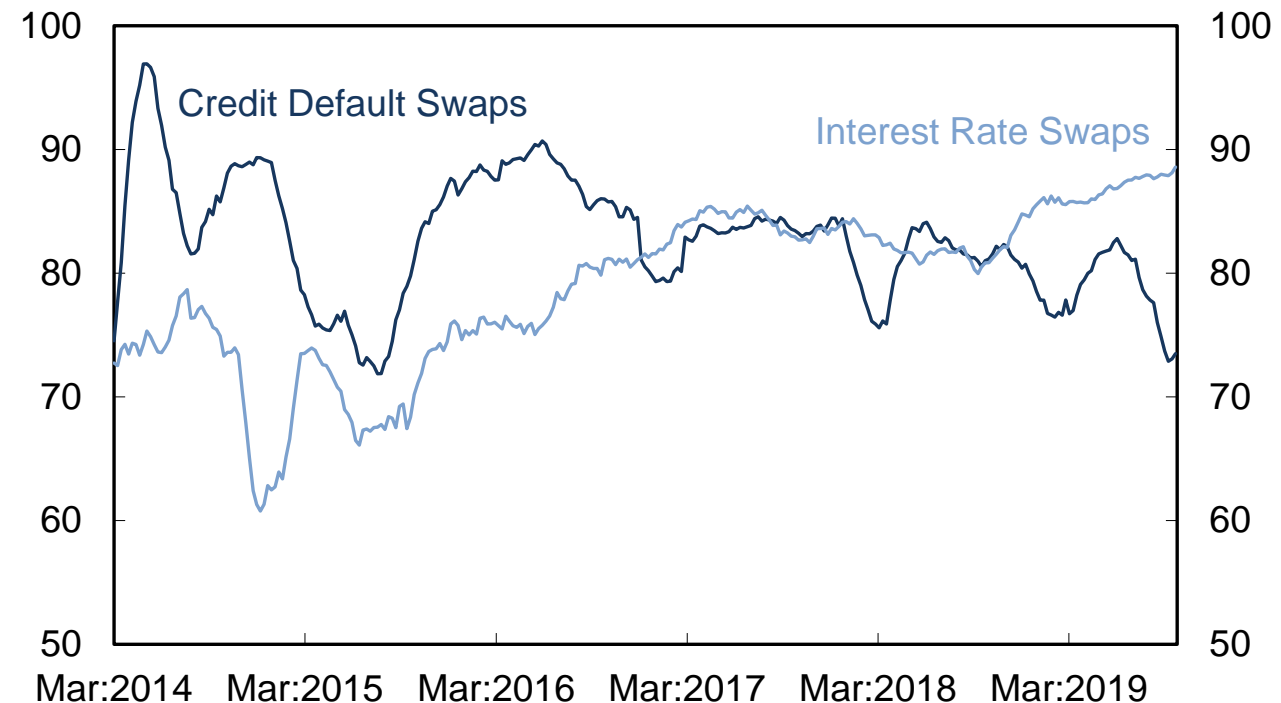
Total Notional
Outstanding (right axis)

4.10.14 Average Clearing Rates for OTC Trading

Percent

As Of: 27-Sep-2019

Percent



Source: CFTC Weekly Swaps
Report, Haver Analytics

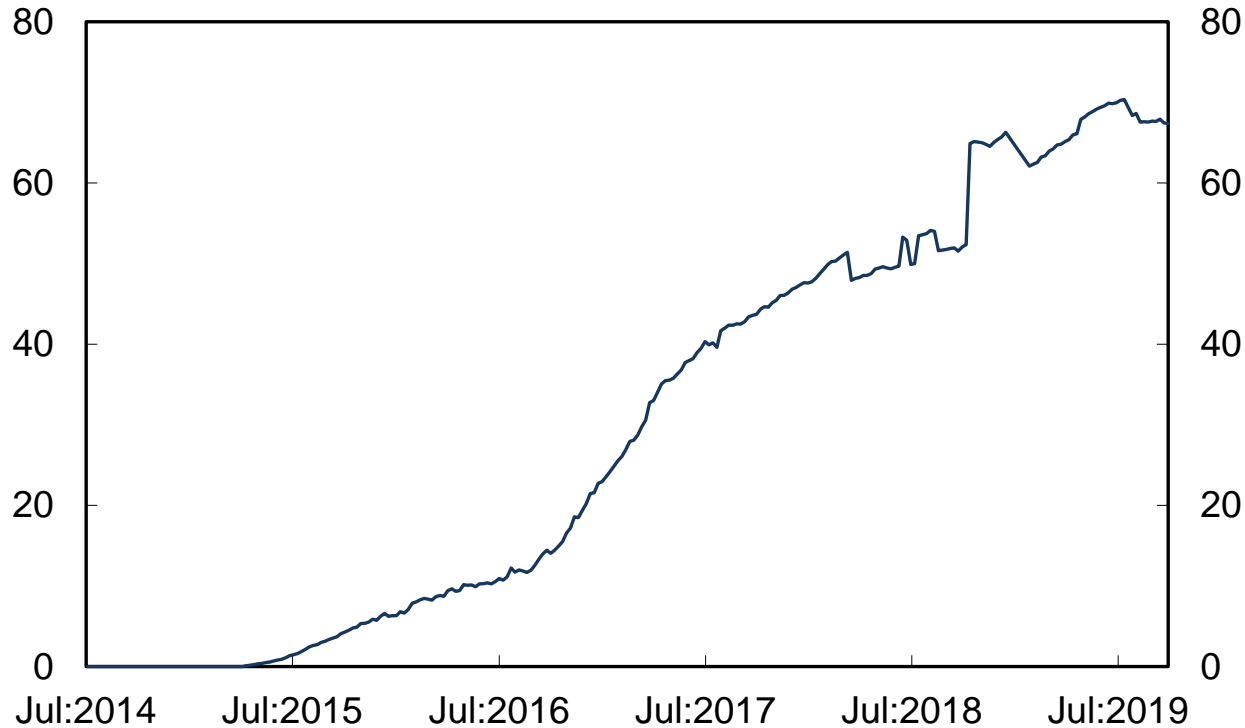
Note: 12-week moving-averages;
excludes security-based swaps.

4.10.15 Clearing Rates for U.S. Inflation Swap Positions

Percent

As Of: 27-Sep-2019

Percent



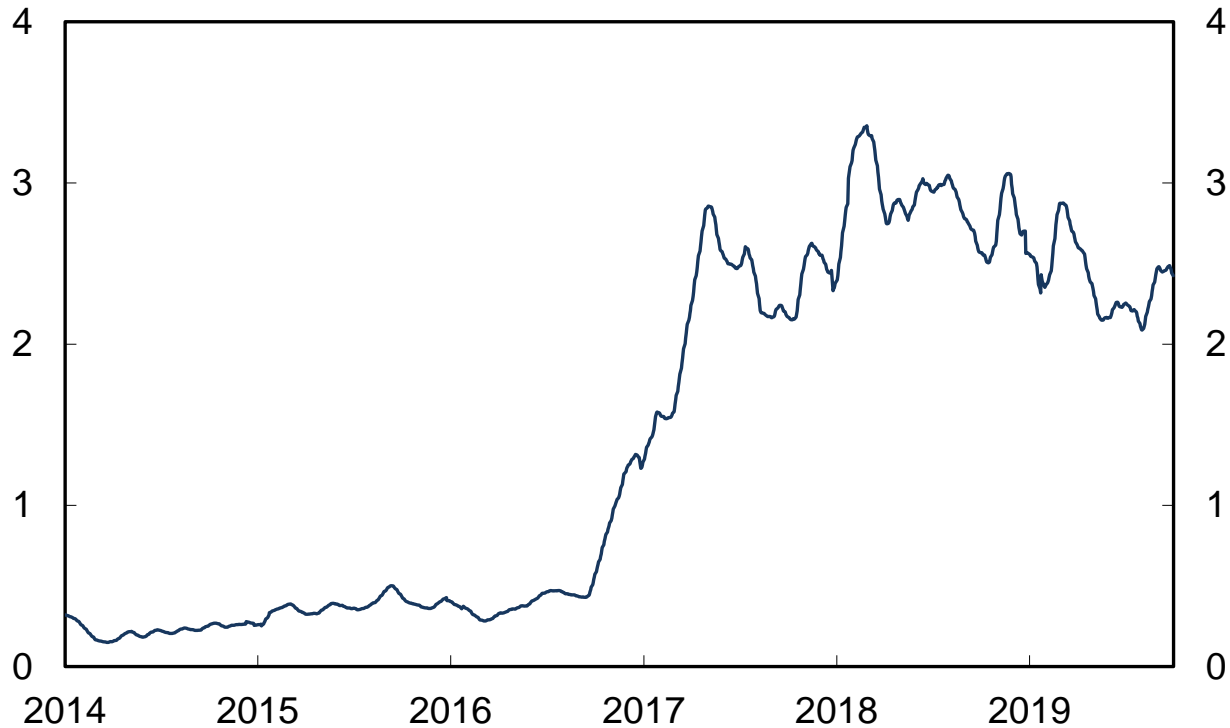
Source: CFTC

4.10.16 Initial Margin Posted against Cleared FX Positions

Billions of US\$

As Of: 30-Sep-2019

Billions of US\$



Source: CFTC

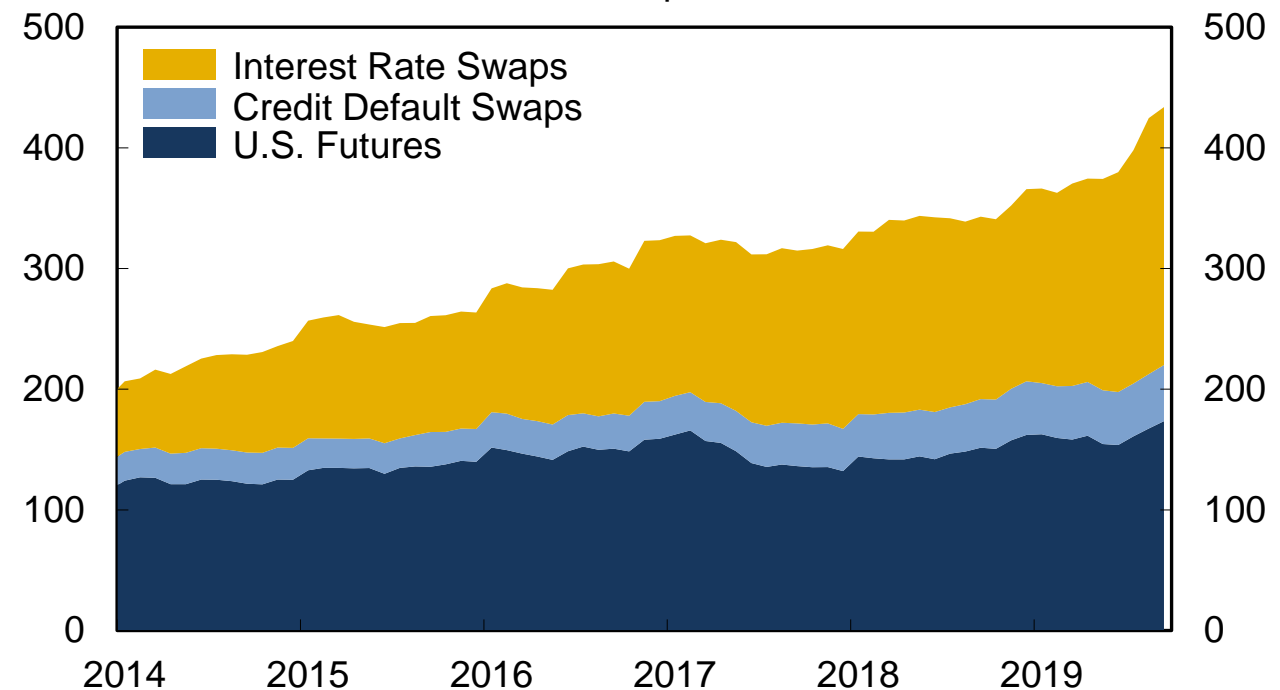
Note: 20-day moving-average.

4.10.17 Cleared Initial Margin Requirements

Billions of US\$

As Of: Sep-2019

Billions of US\$



Note: Includes house and customer margin requirements. Futures margin include CME, ICEU, and ICUS. Interest rate swap margin include CME and LCH Ltd. Credit default swap margin include CME, ICC, ICEU, and LCH SA). All data are as of month-end.

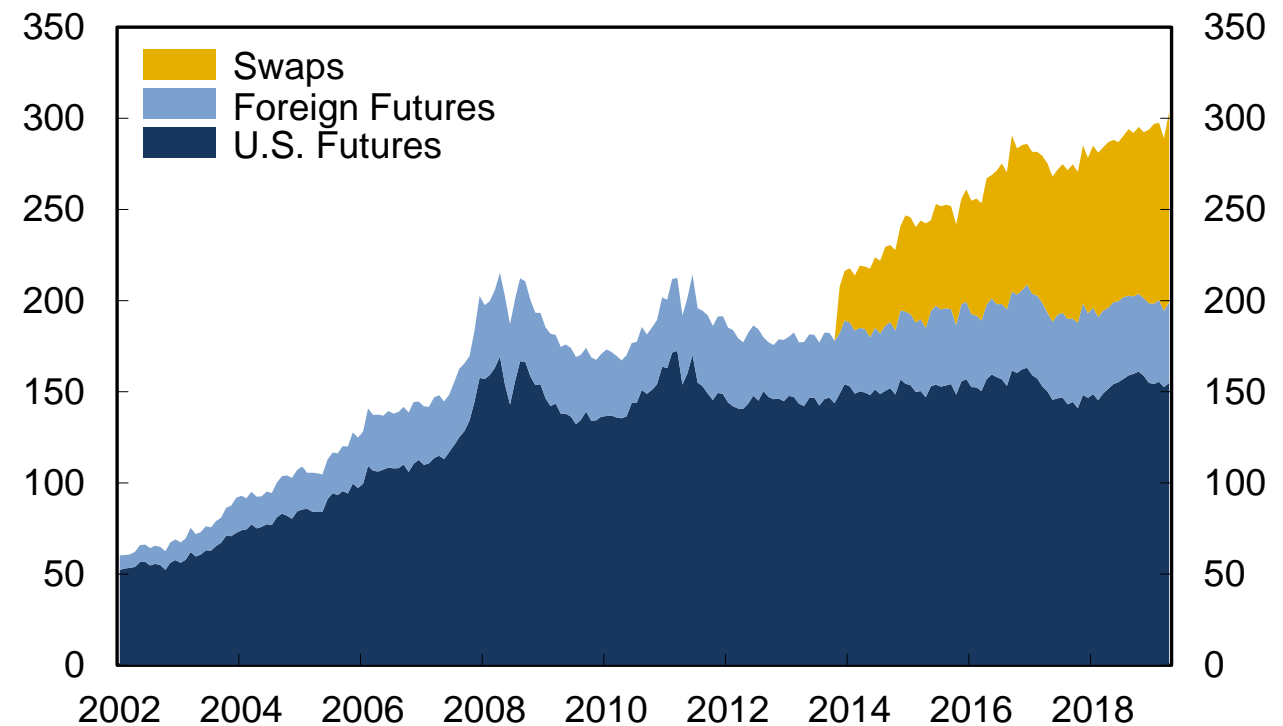
Source: CFTC

4.10.18 Margin Funds Held at CFTC Registered FCMs

Billions of US\$

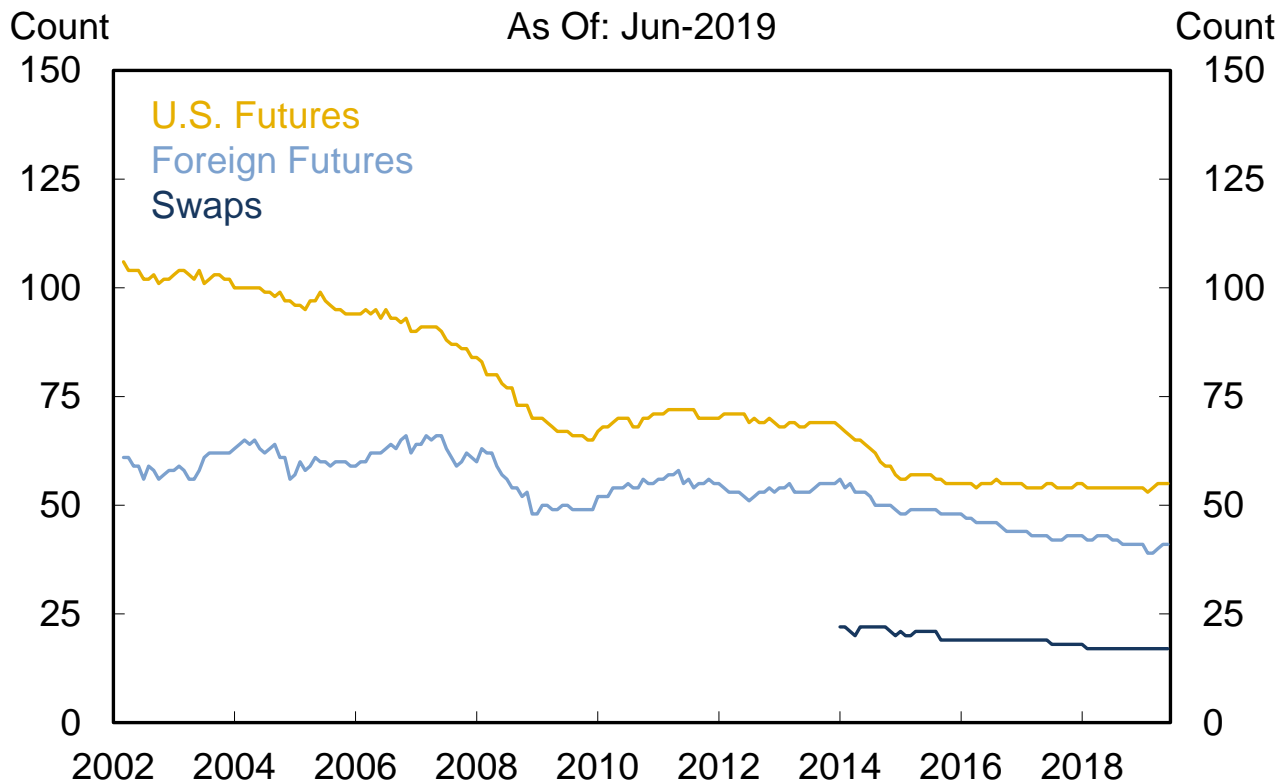
As Of: Jun-2019

Billions of US\$



Source: CFTC

4.10.19 CFTC Registered FCMs Holding Client Funds



Source: CFTC

4.10.20 FCM Concentration: Customer Futures Balances

Percent

As Of: 2019 Q2

Percent

100

100

Top 10 Top 5 Top 3

75

75

50

50

25

25

0

0

2002

2005

2008

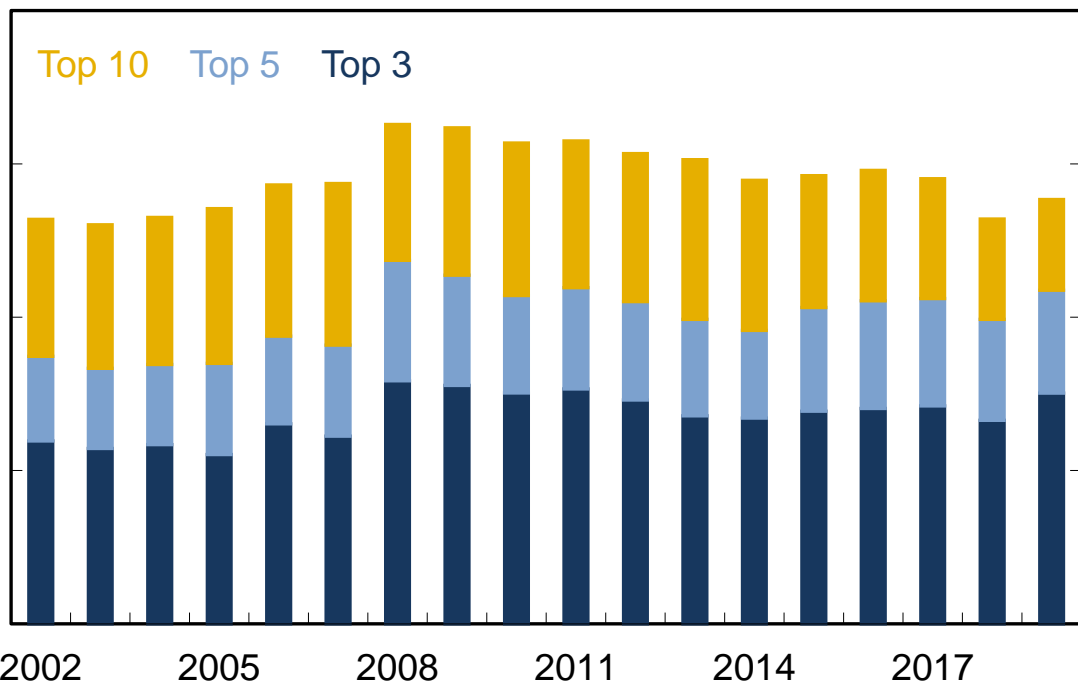
2011

2014

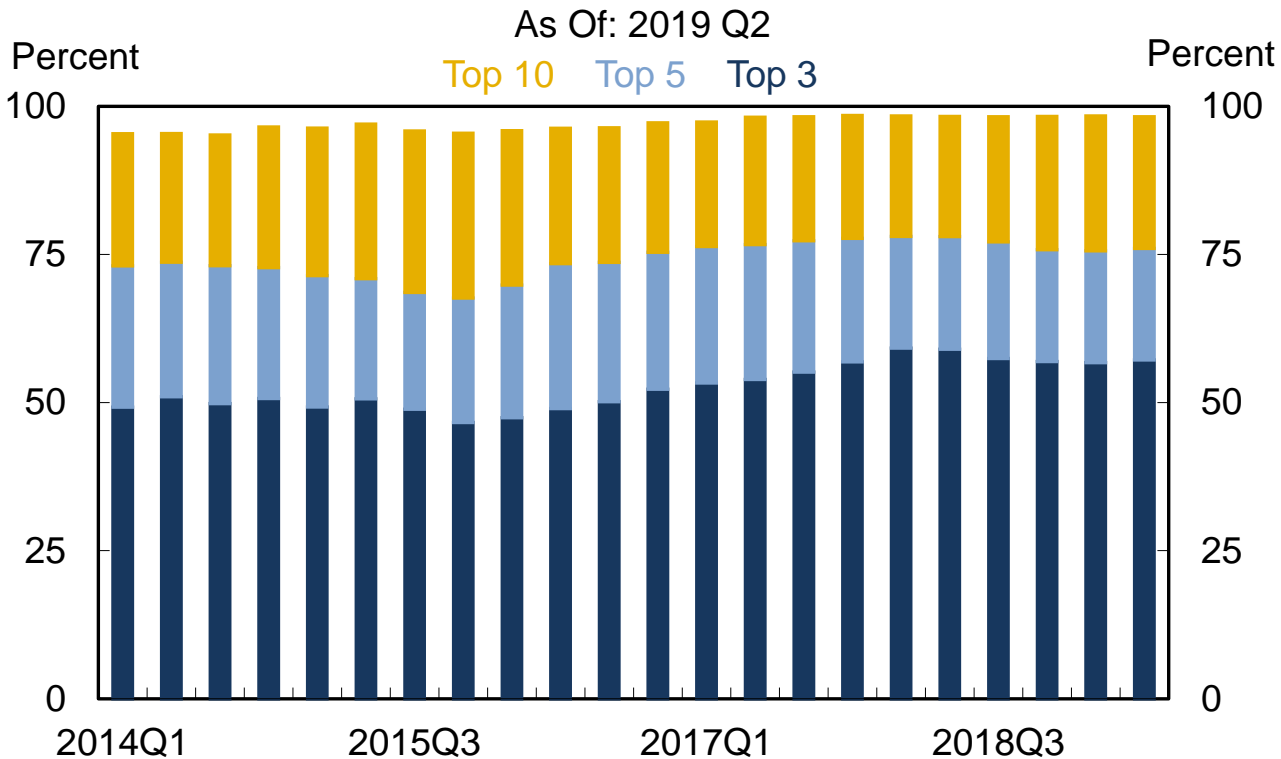
2017

Source: CFTC
financial data for FCMs

Note: Represents total amount of funds that an FCM is required to segregate on behalf of customers who are trading futures and options on futures at U.S. exchanges.



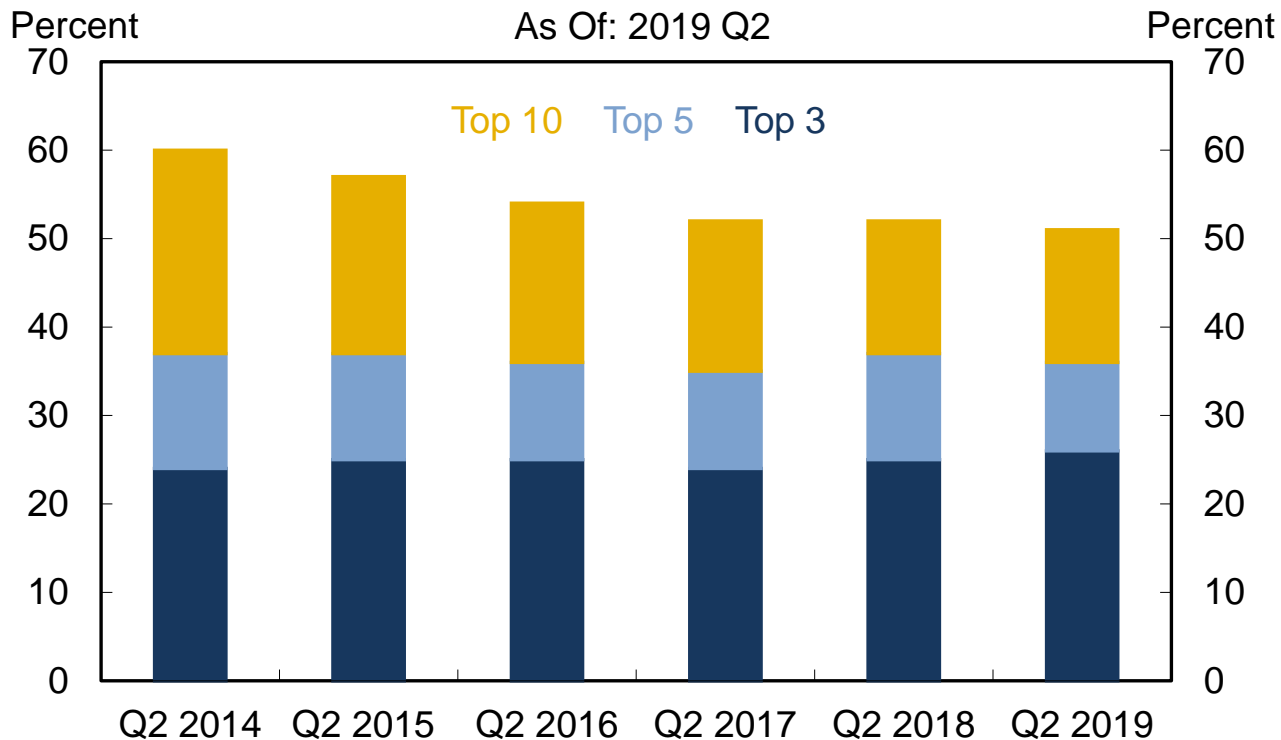
4.10.21 FCM Concentration: Customer Swap Balances



Source: CFTC
financial data for FCMs

Note: Represents the amount of funds an FCM is required to segregate for customers who trade cleared swaps.

4.10.22 Concentration of Swap Positions for Registered SDs



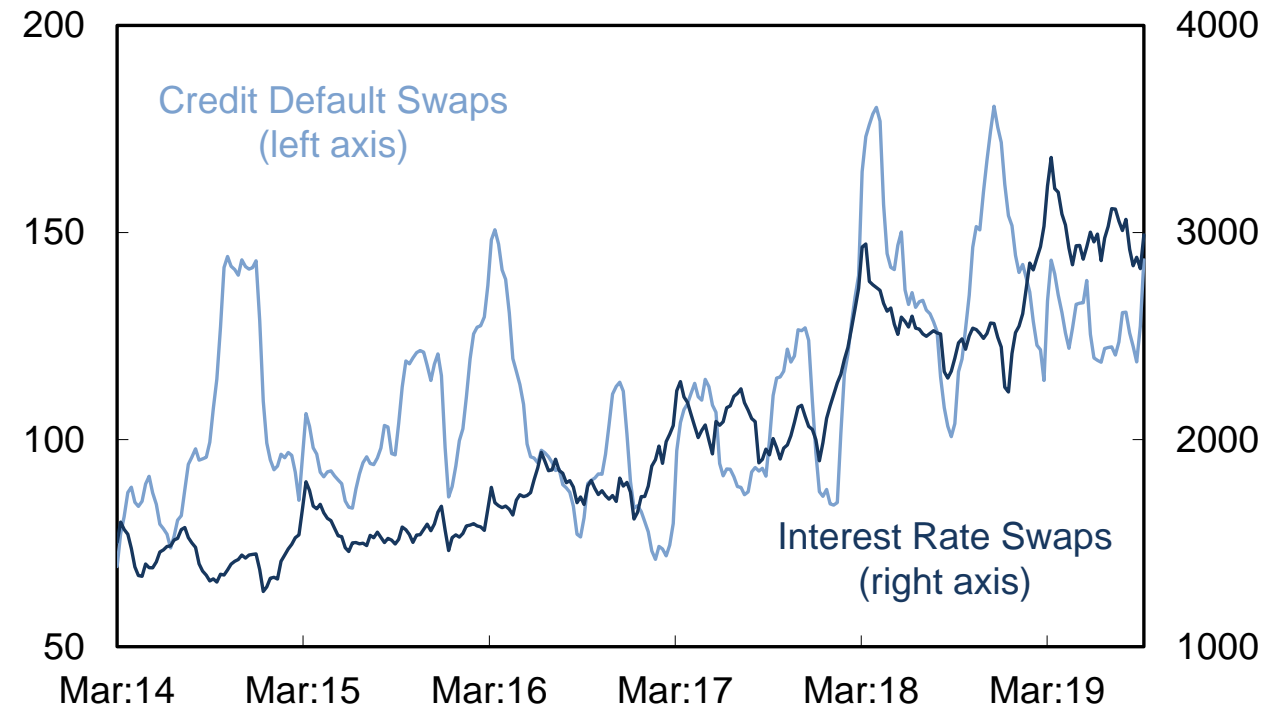
Note: Positions between two Swap Dealers (SDs) in the same category (e.g., Top 3 or Top 5) are double-counted (*i.e.*, a trade between the #1 SD and #3 SD would be counted twice).

4.10.23 On-SEF Weekly Trading Volume

Billions of US\$

As Of: 27-Sep-2019

Billions of US\$



Source: ISDA SwapsInfo

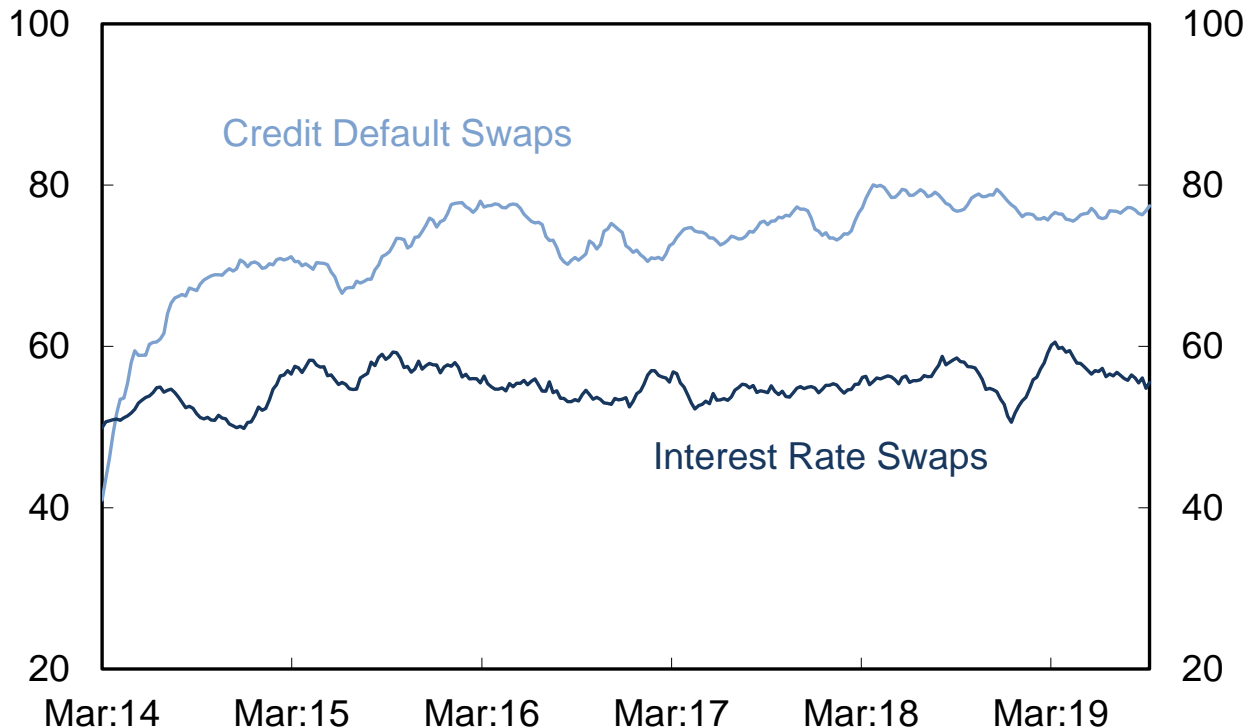
Note: 12-week moving averages.
Excludes security-based swaps.

4.10.24 On-SEF Trading Share

Percent

As Of: 27-Sep-2019

Percent



Source: ISDA SwapsInfo

Note: Share of notional volume. Excludes security-based swaps. 12-week moving averages.

4.11.1 Categorization of Large U.S. BHCs

Description	U.S. Domestic Banking Org.
Category 1 (U.S. G-SIBs)	Bank of America Bank of New York Mellon Citigroup Goldman Sachs JPMorgan Chase Morgan Stanley State Street Wells Fargo
Category II (≥\$700b total assets or ≥ \$75b in cross-jurisdictional activity)	Northern Trust
Category III (≥\$250b total assets or ≥ \$75b in nonbank assets, wSTWF, or off-balance sheet exposure)	Capital One Charles Schwab PNC Financial U.S. Bancorp
Category IV (Other firms with \$100b to \$250b total assets)	Ally Financial American Express BB&T Corp. Citizens Financial Discover First Third Huntington KeyCorp M&T Bank Regions Financial SunTrust Inc. Synchrony Financial
Other firms (\$50b to \$100b total assets)	Comerica Inc. CIT Group Inc. E*TRADE Financial NY Community Bancorp Silicon Valley Bank

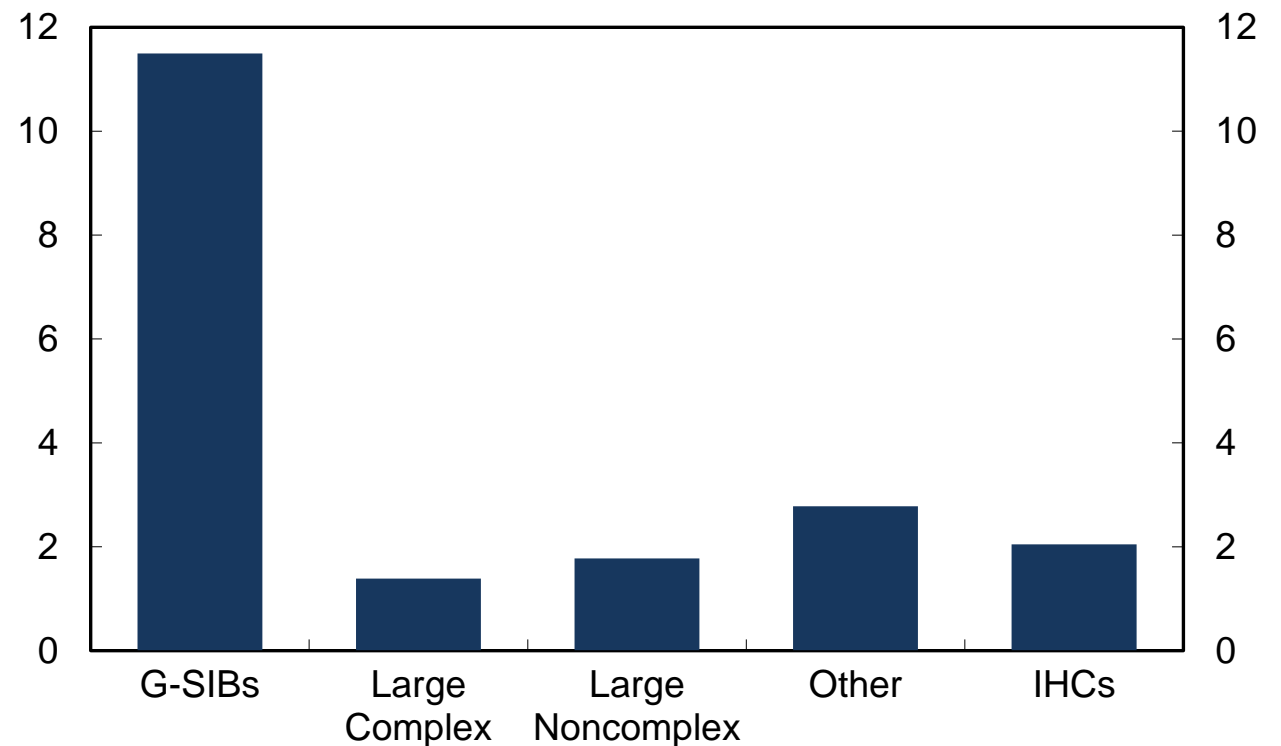
Note: Northern Trust is included in Category II because of its large cross-jurisdictional activity.

4.11.2 Total Assets by BHC Type

Trillions of US\$

As Of: 2019 Q2

Trillions of US\$



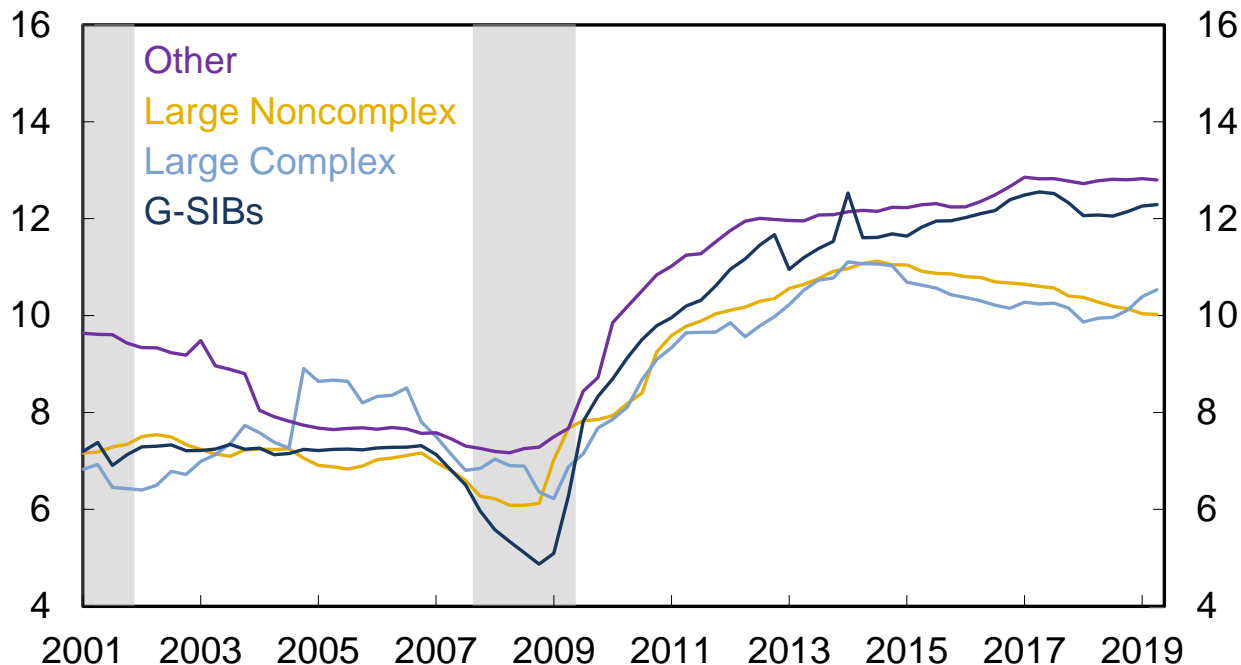
Source: FR Y-9C

4.11.3 Common Equity Tier 1 Ratios

Percent of RWA

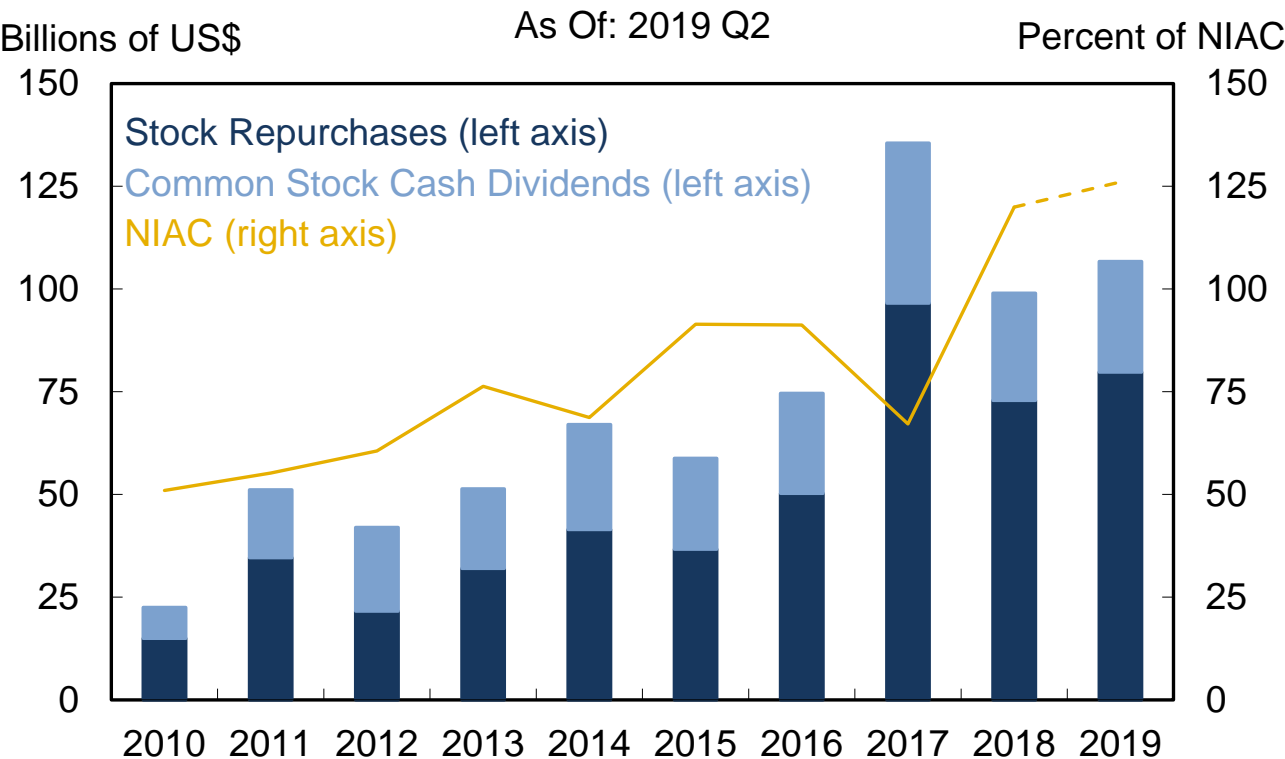
As Of: 2019 Q2

Percent of RWA



Note: Tier 1 common capital is used as the numerator of the CET1 ratio prior to 2014:Q1 for G-SIBs and large complex BHCs, and prior to 2015:Q1 for large noncomplex and other BHCs. The denominator is risk-weighted assets (RWA). Shaded areas indicate NBER recessions.

4.11.4 Payout Rates at U.S. G-SIBs



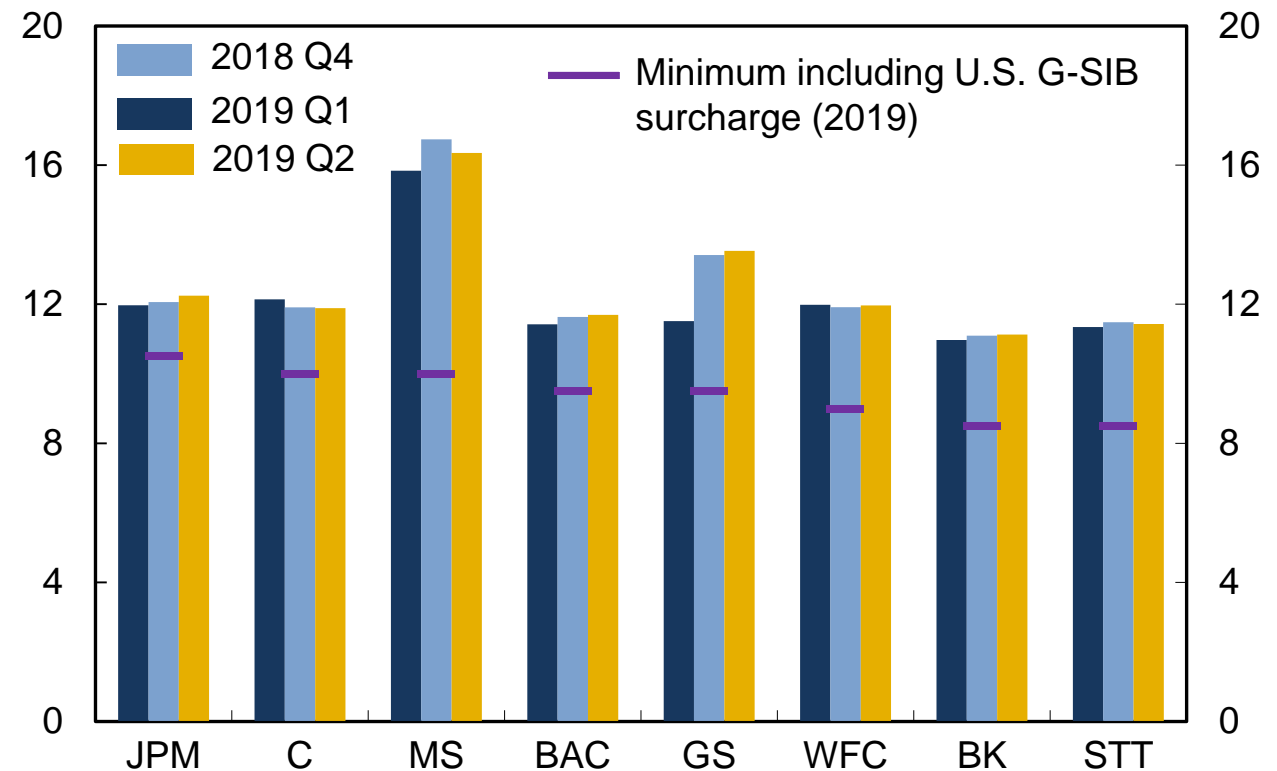
Note: Payout rates are the ratios of stock repurchases plus cash dividends to net income available to common shareholders (NIAC). NIAC is net income minus preferred dividends. 2019 data are through Q2 and are annualized.

4.11.5 Common Equity Tier 1 Ratios at U.S. G-SIBs

Percent of RWA

As Of: 2019 Q2

Percent of RWA



Source: FR-Y9C

4.11.6 Return on Equity and Return on Assets, All BHCs

Percent

As Of: 2019 Q2

Percent

2.0

16

1.5

12

1.0

8

0.5

4

0.0

0

ROE (right axis)

ROA (left axis)

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019

Note: Dashed lines represent 2001 – 2007 averages. Return on equity is equal to net income divided by average equity. Return on assets is equal to net income divided by average assets.

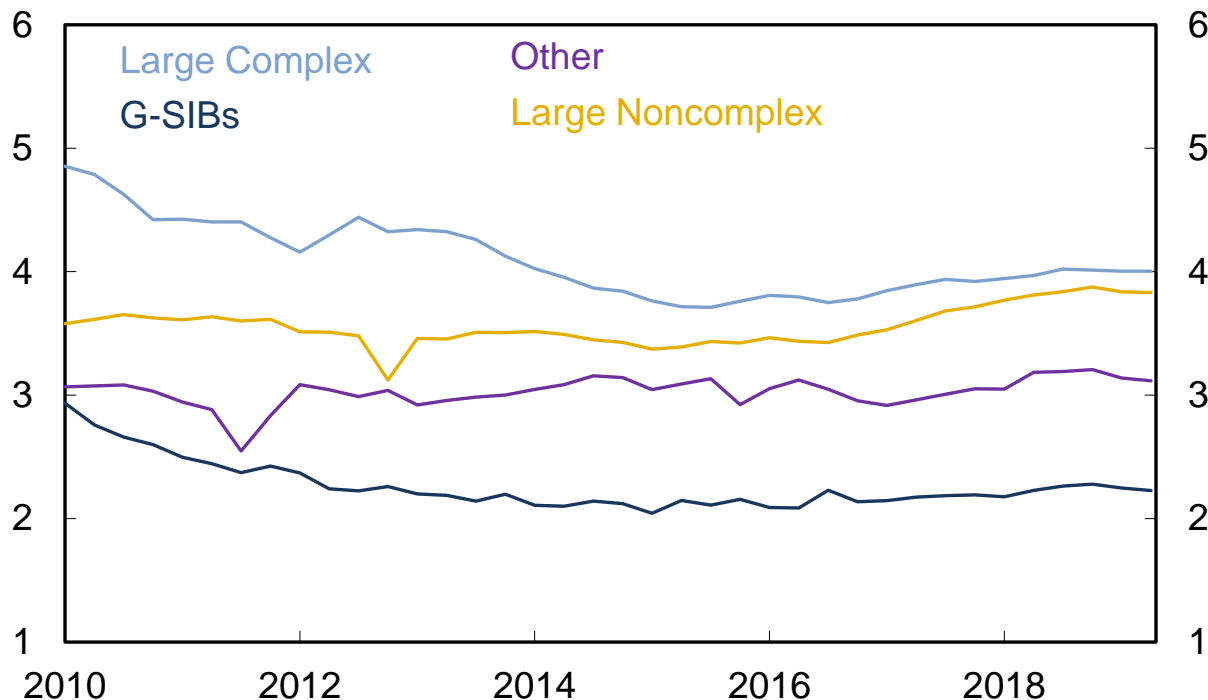
Source: FR Y-9C

4.11.7 Net Interest Margins

Percent

As Of: 2019 Q2

Percent



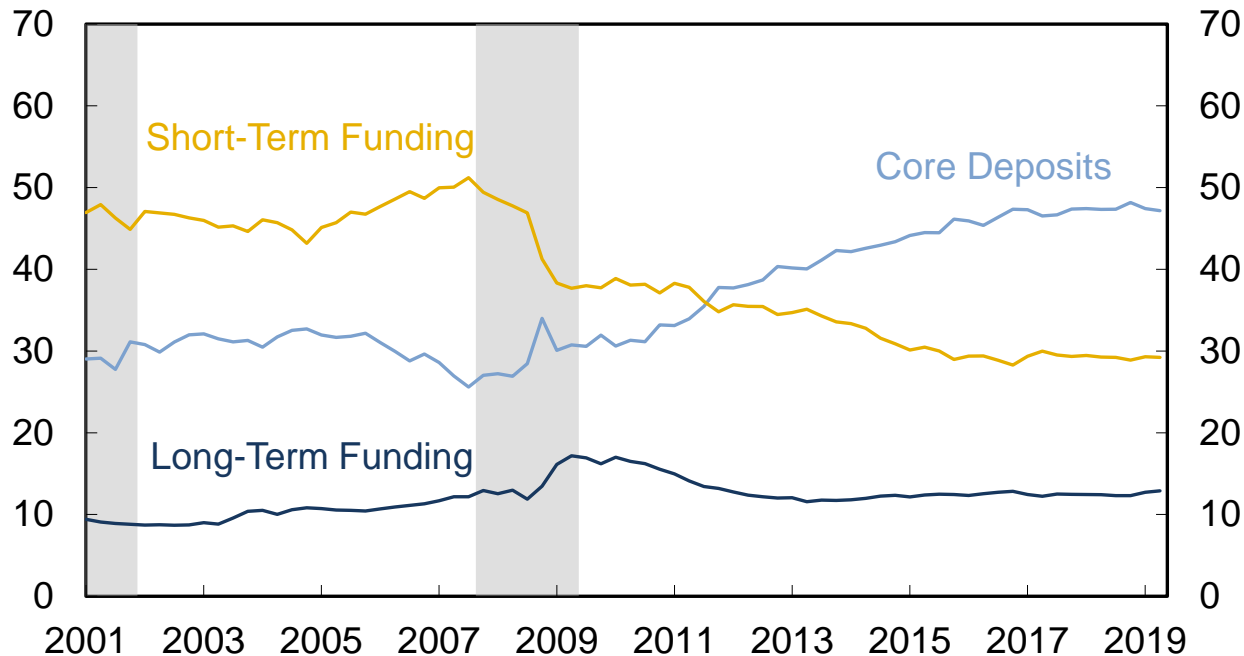
Note: Net interest margin is equal to net interest income divided by the quarterly average of interest-earning assets.

4.11.8 Selected Sources of Funding at CCAR BHCs

Percent of Total Assets

As Of: 2019 Q2

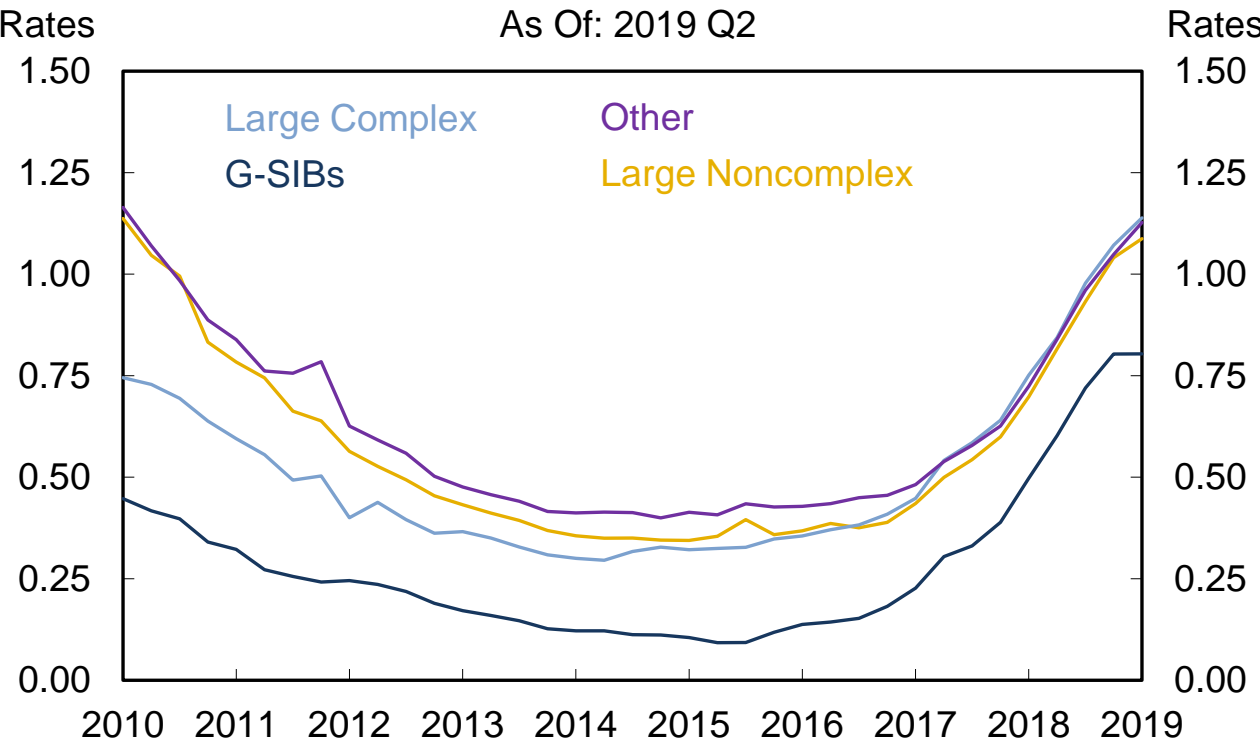
Percent of Total Assets



Source:
FR Y-9C

Note: ST funding: liabilities with maturities ≤ 1 yr, trading liabilities, repos, CP and foreign deposits. LT funding: other borrowed money, subordinated notes and large time deposits with maturities > 1 yr. Core deposits: demand deposits, non-interest bearing balances, transaction accts, money mkt deposits and time deposits $< \$250K$. Gray bars signify NBER recessions.

4.11.9 Effective Deposit Rates by BHC Category

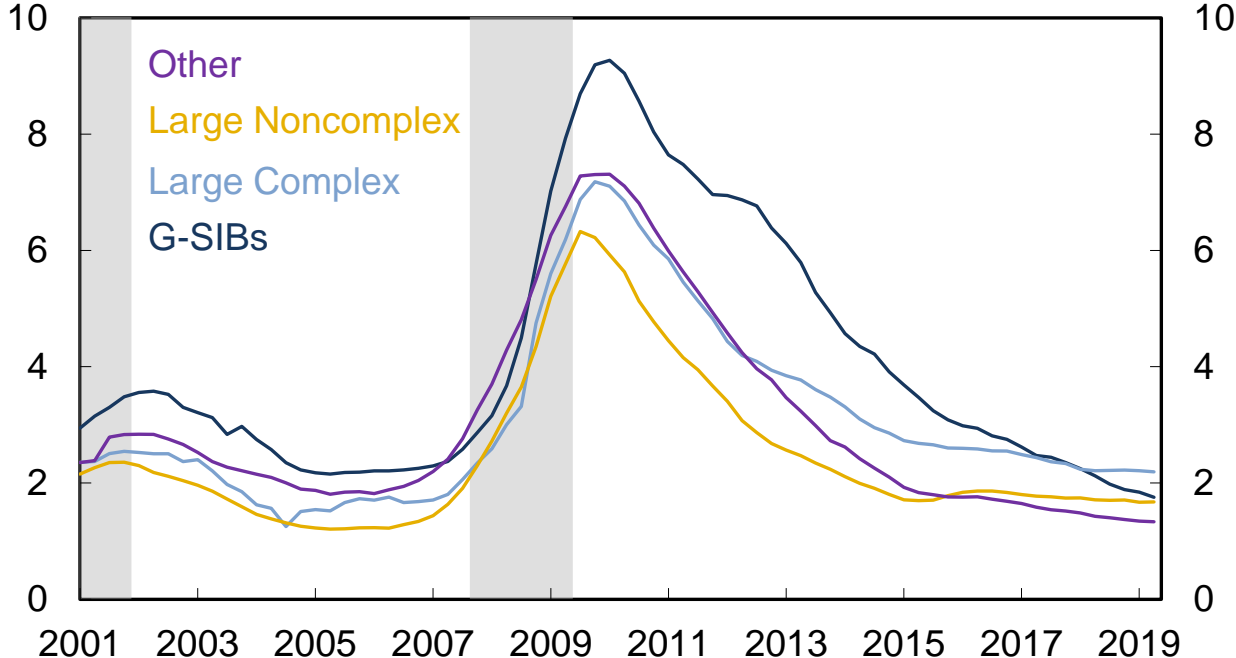


4.11.10 Delinquency Rates

Percent

As Of: 2019 Q2

Percent



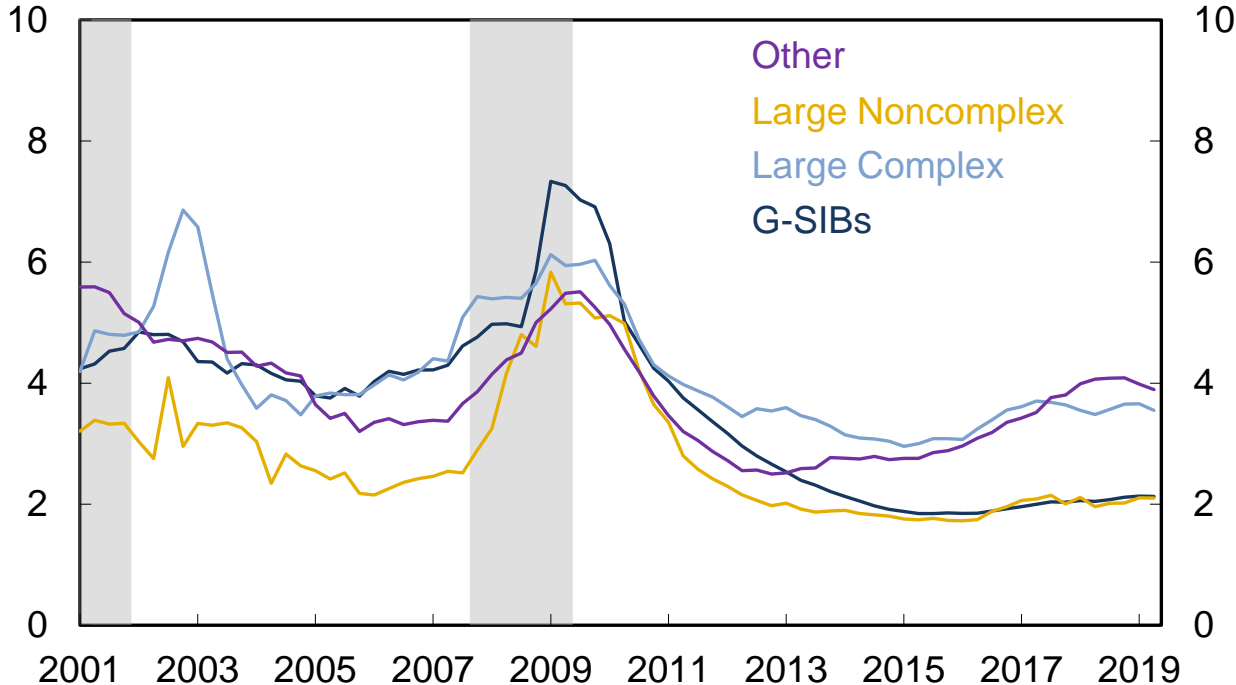
Note: Includes all loans in foreign and domestic offices. Delinquent loans are loans 30 days or more past due or in nonaccrual status. Gray bars signify NBER recessions.

4.11.11 Credit Card Delinquency Rates

Percent

As Of: 2019 Q2

Percent



Note: Delinquencies are determined using nonaccrual loans and loans that are past due 30 days or more.
Gray bars signify NBER recessions.

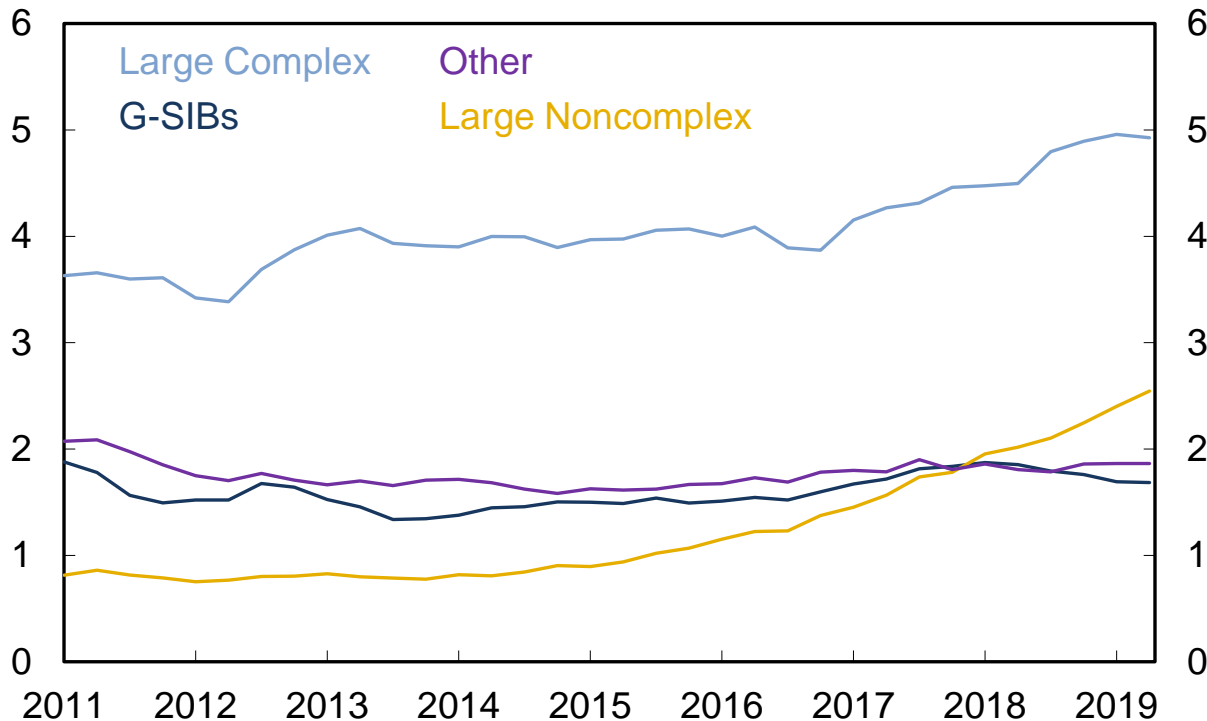
Source: Call Report

4.11.12 Auto Loan Delinquency Rates

Percent

As Of: 2019 Q2

Percent



Source: Call Report

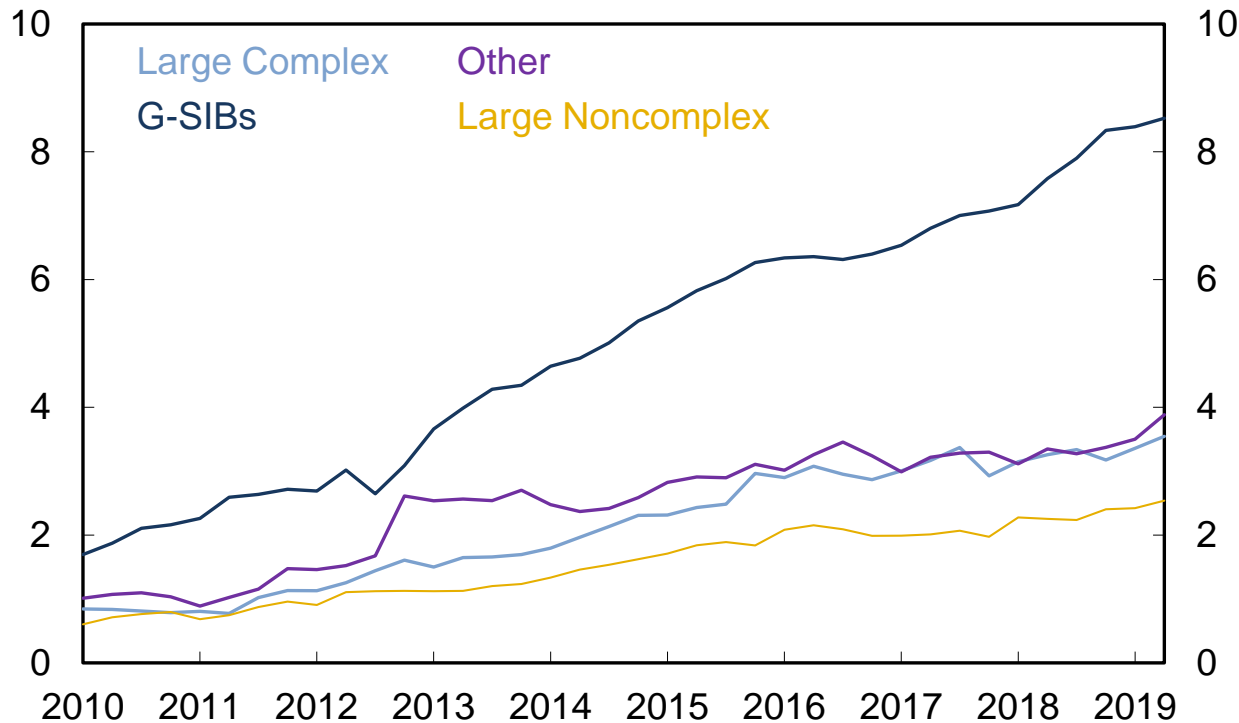
Note: Delinquencies are determined using nonaccrual loans and loans that are past due 30 days or more.

4.11.13 Loans to Nondepository Financial Institutions

Percent of Total Loans

As Of: 2019 Q2

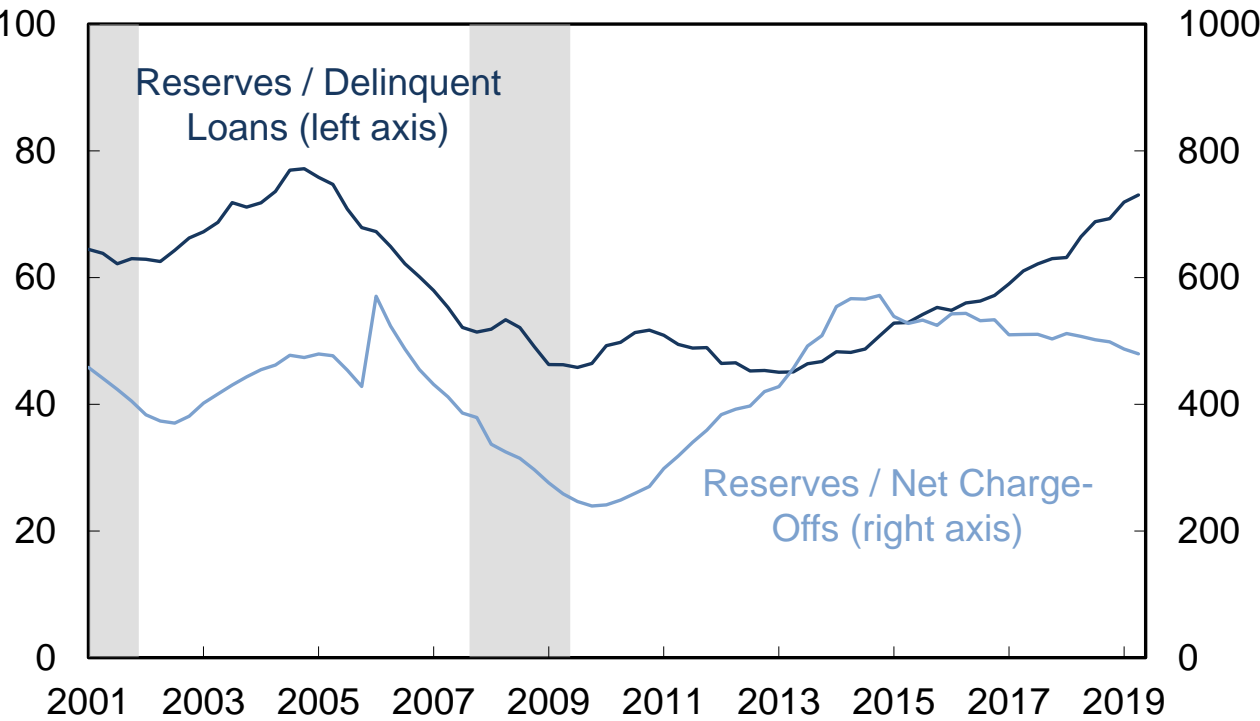
Percent of Total Loans



Source: FR Y-9C

4.11.14 Loan-Loss Reserves

Percent As Of: 2019 Q2 Percent



Source: FR Y-9C

Note: Gray bars signify NBER recessions.

4.11.15 Liquidity Coverage Ratio

Percent

As Of: 2019 Q2

Percent

200

200

150

150

100

100

50

50

0

0

2018 Q4
2019 Q1
2019 Q2

JPM

C

MS

BAC

GS

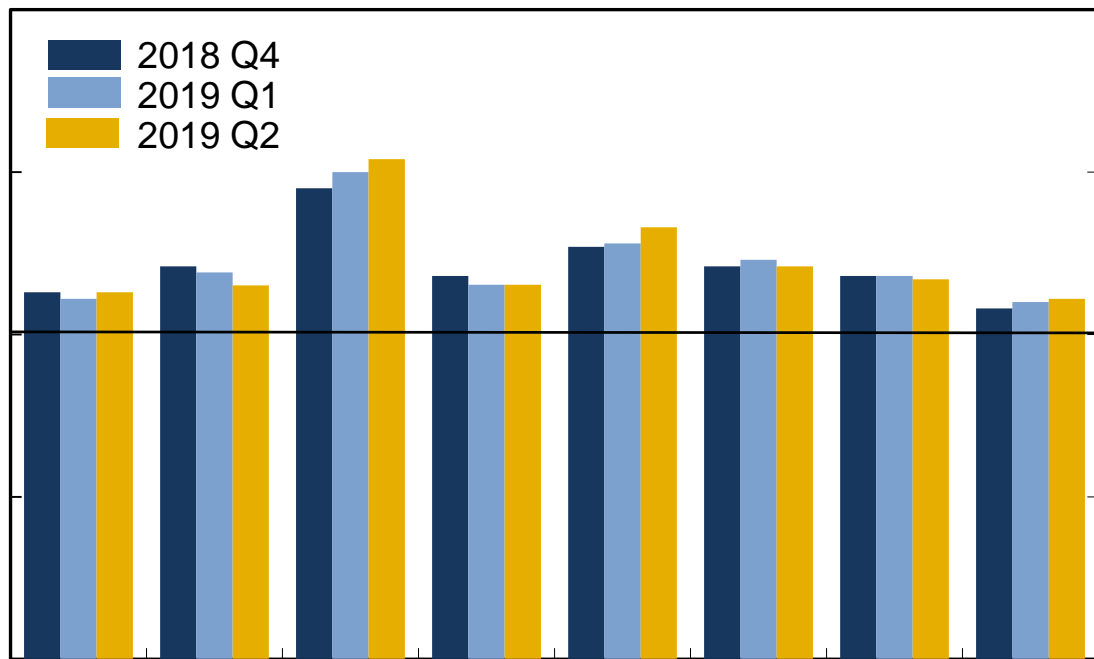
WFC

BK

STT

Source: LCR Disclosures
from banks' websites

Note: The solid line represents
the regulatory minimum.

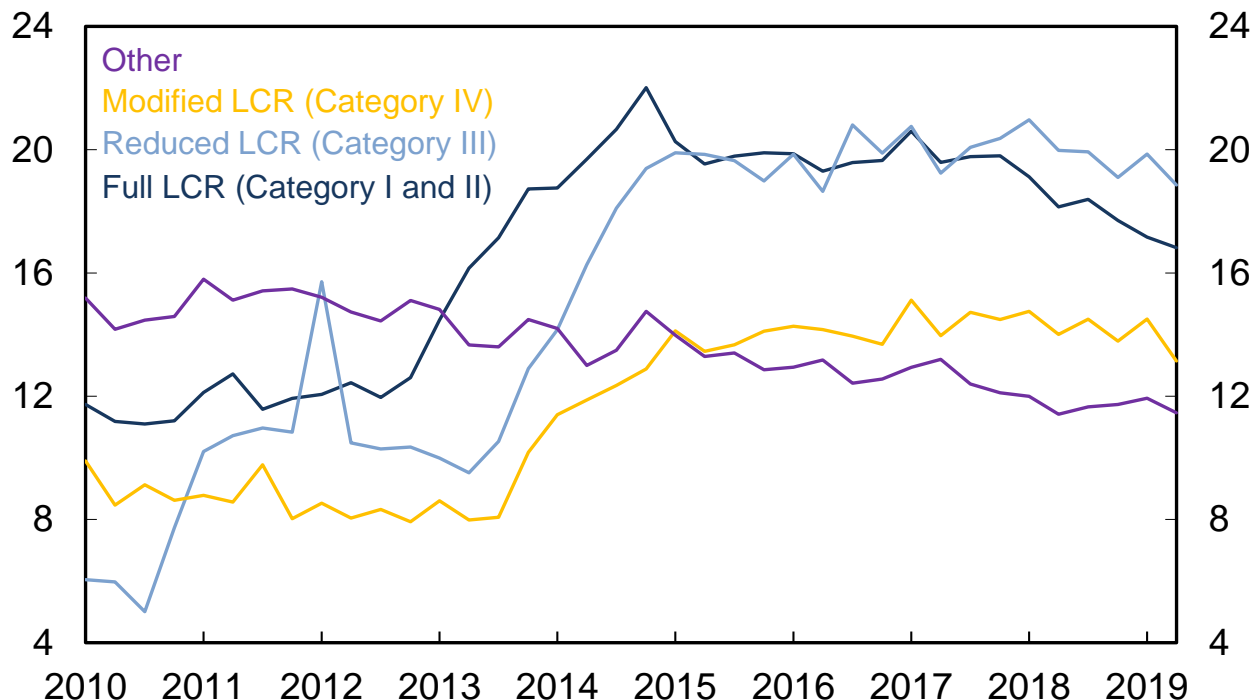


4.11.16 High-Quality Liquid Assets by BHC Type

Percent of Assets

As Of: 2019 Q2

Percent of Assets



Note: HQLA is estimated by adding excess reserves to an estimate of securities that qualify for HQLA. Haircuts and level 2 asset limitations are incorporated into the estimate.

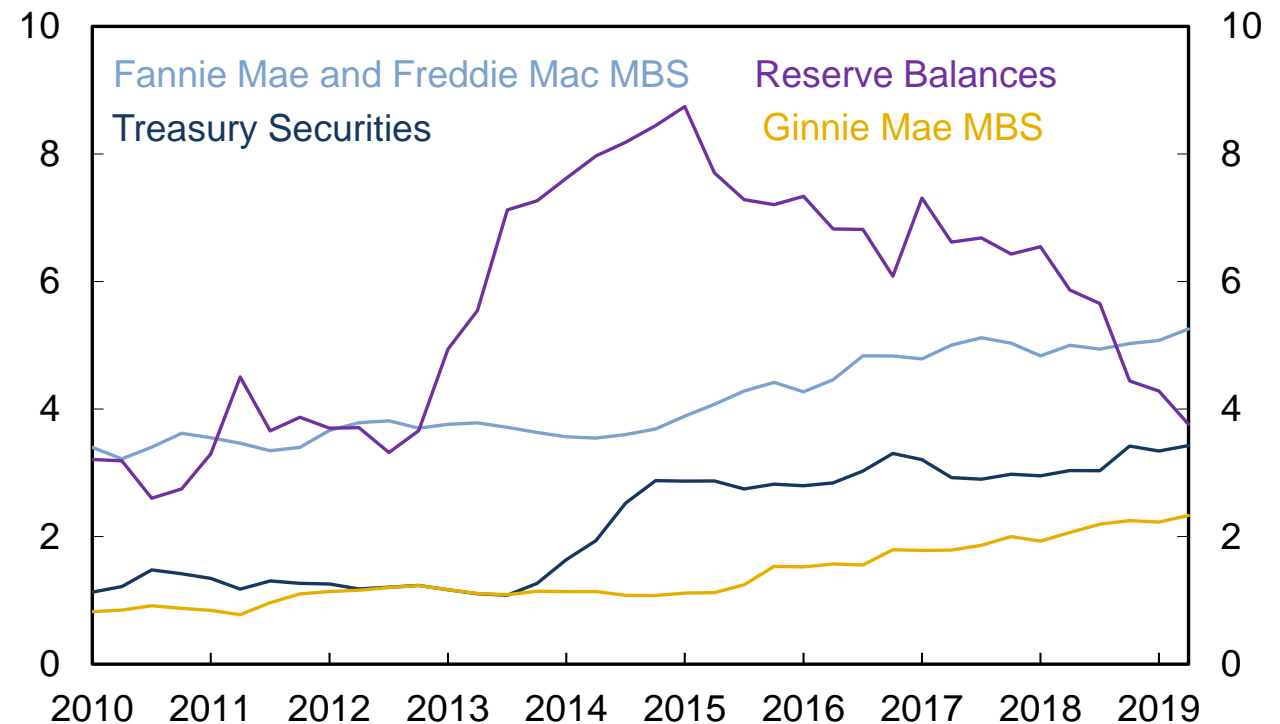
Source: FR Y-9C, FR 2900

4.11.17 Selected Liquid Assets at All BHCs

Percent of Assets

As Of: 2019 Q2

Percent of Assets



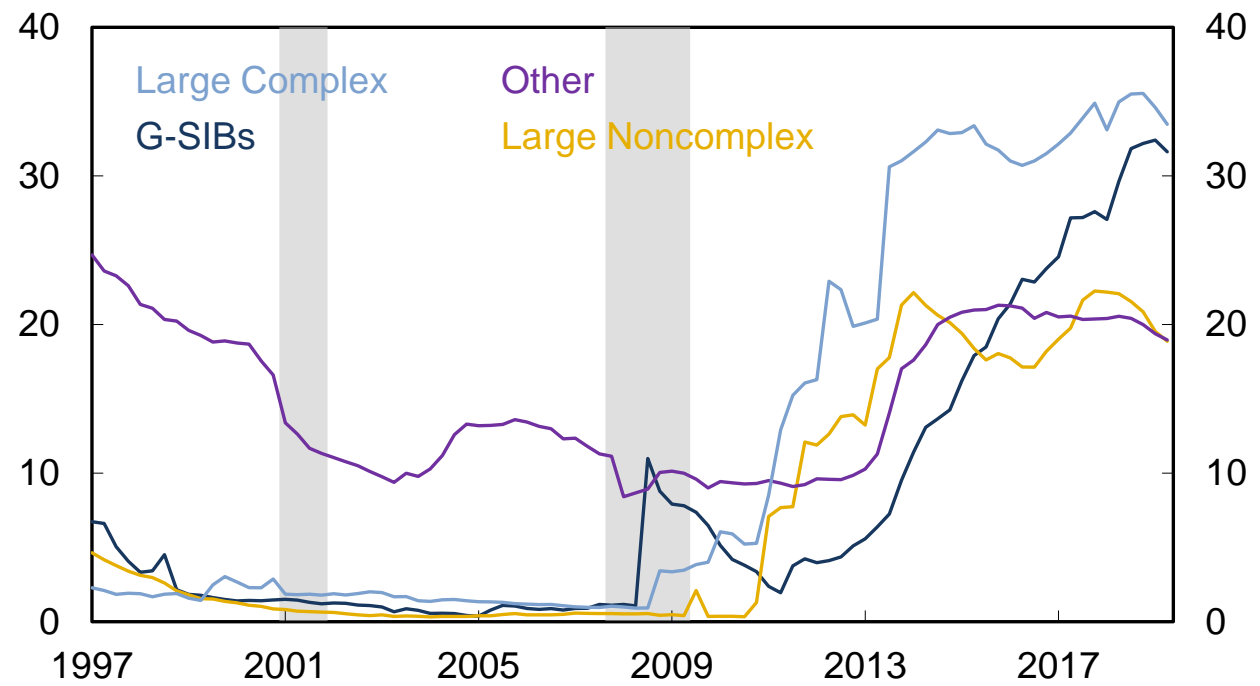
Source: FR Y-9C, FR 2900

4.11.18 Held-to-Maturity Securities

Percent of Investment Securities

As Of: 2019 Q2

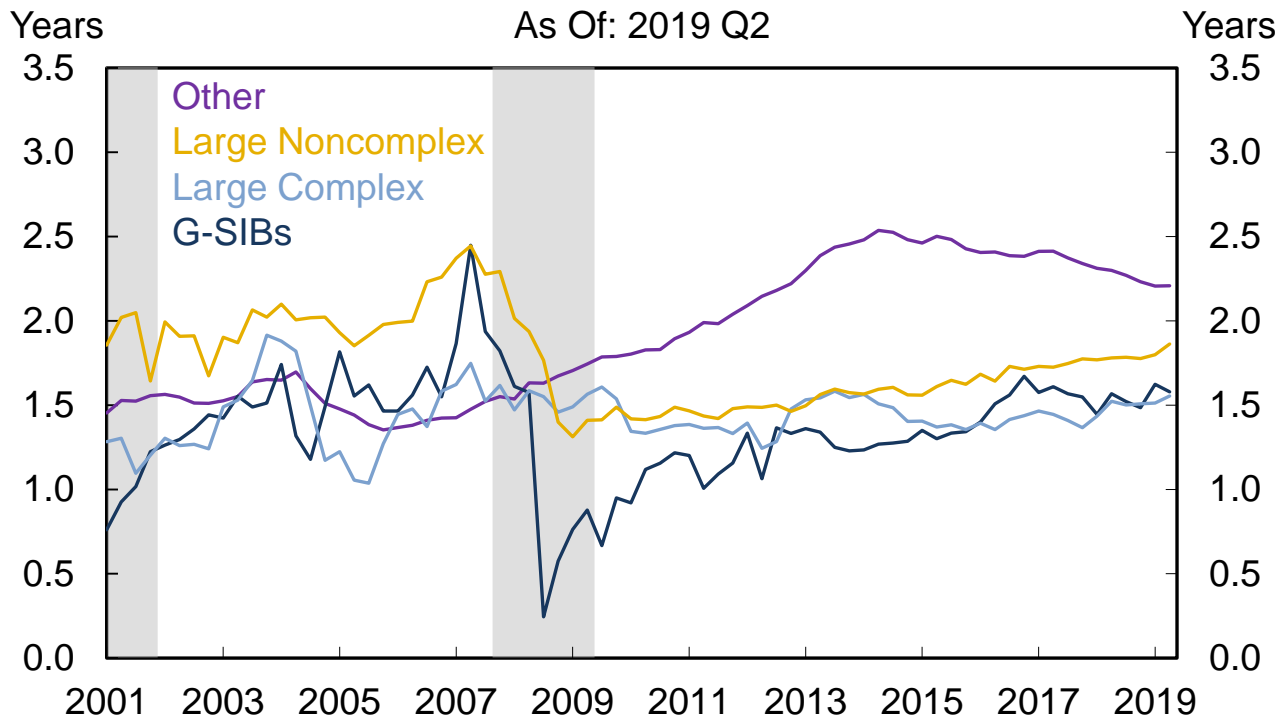
Percent of Investment Securities



Source: Call Report

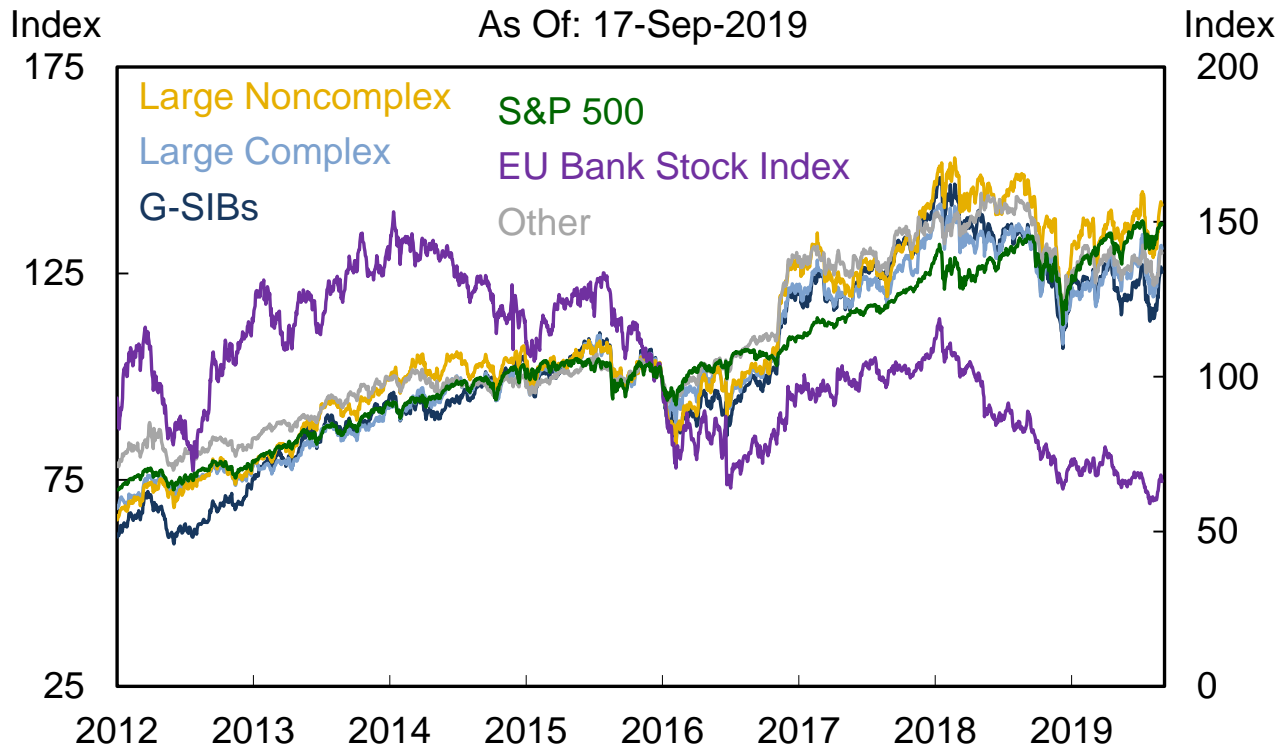
Note: Investment securities are held-to-maturity securities plus available-for-sale securities. Gray bars signify NBER recessions.

4.11.19 Duration Gap



Note: Duration gap is the approximate weighted-average time of cash inflows less the approximate weighted-average time of cash outflows. Gray bars signify NBER recessions.

4.11.20 Bank Stock Performance



Source:
Bloomberg, L.P.

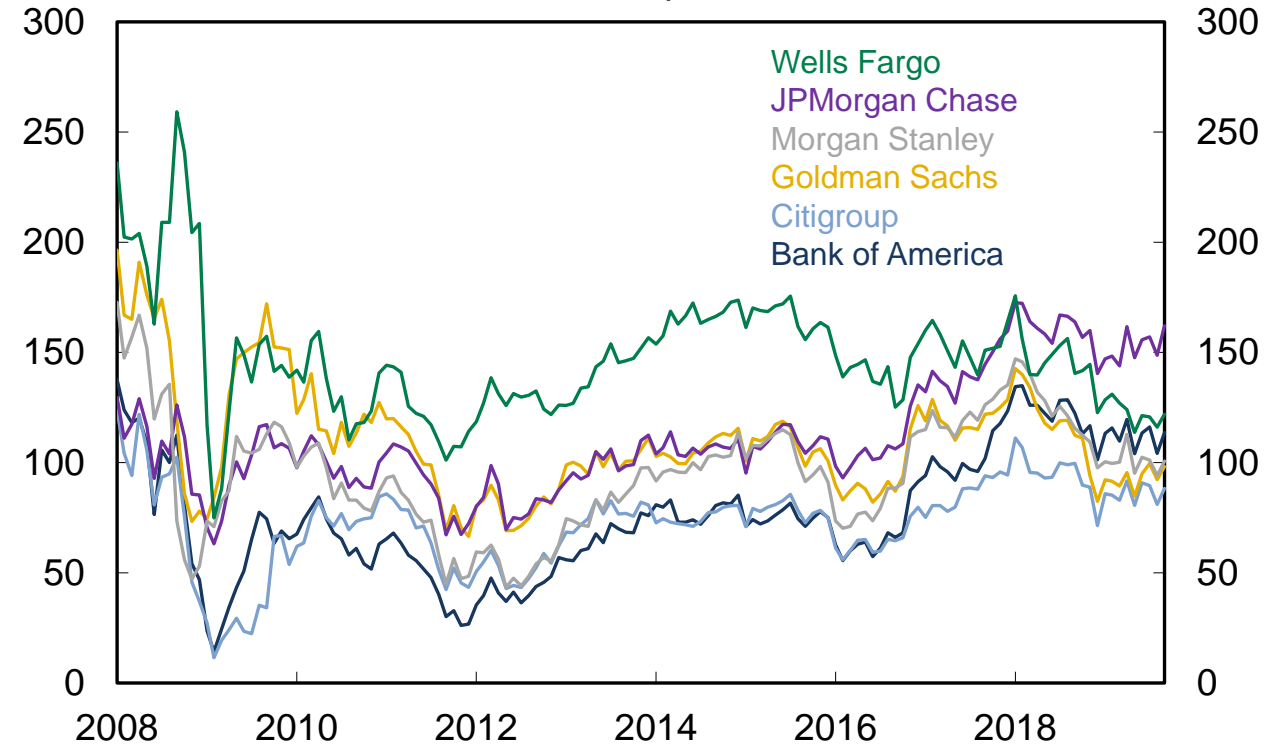
Note: January 2, 2016 = 100. EU Bank Stock Index created from stock price information for the following banks: BCS, BNPQY, CS, ACA, DB, SAN, UBS. All indexes are created by equally weighting banks.

4.11.21 Price-to-Book for Select U.S. G-SIBs

Percent

As Of: Sep-2019

Percent



Source: SNL Financial

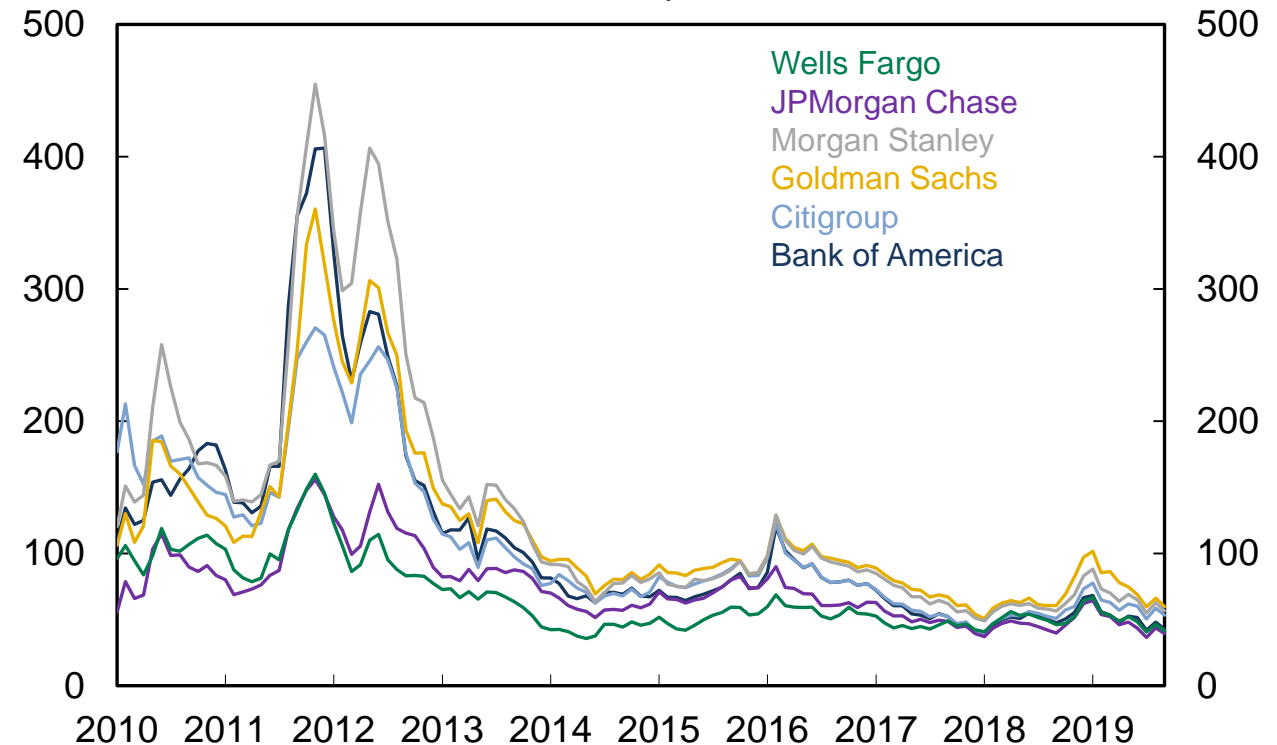
Note: Month-end values.

4.11.22 5-Year CDS Premiums Select U.S. G-SIBs

Basis Points

As Of: Sep-2019

Basis Points



Source: Bloomberg, L.P.

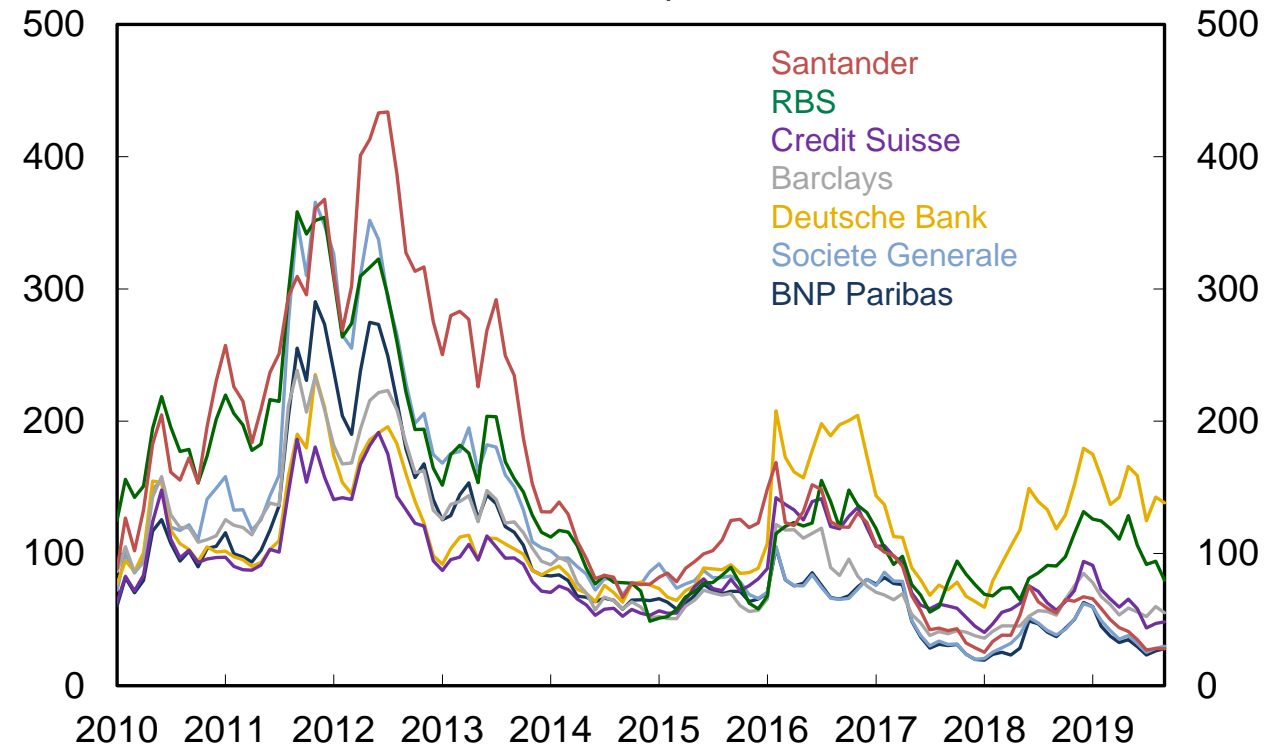
Note: Monthly averages.

4.11.23 5-Year CDS Premiums Select Foreign Banks

Basis Points

As Of: Sep-2019

Basis Points



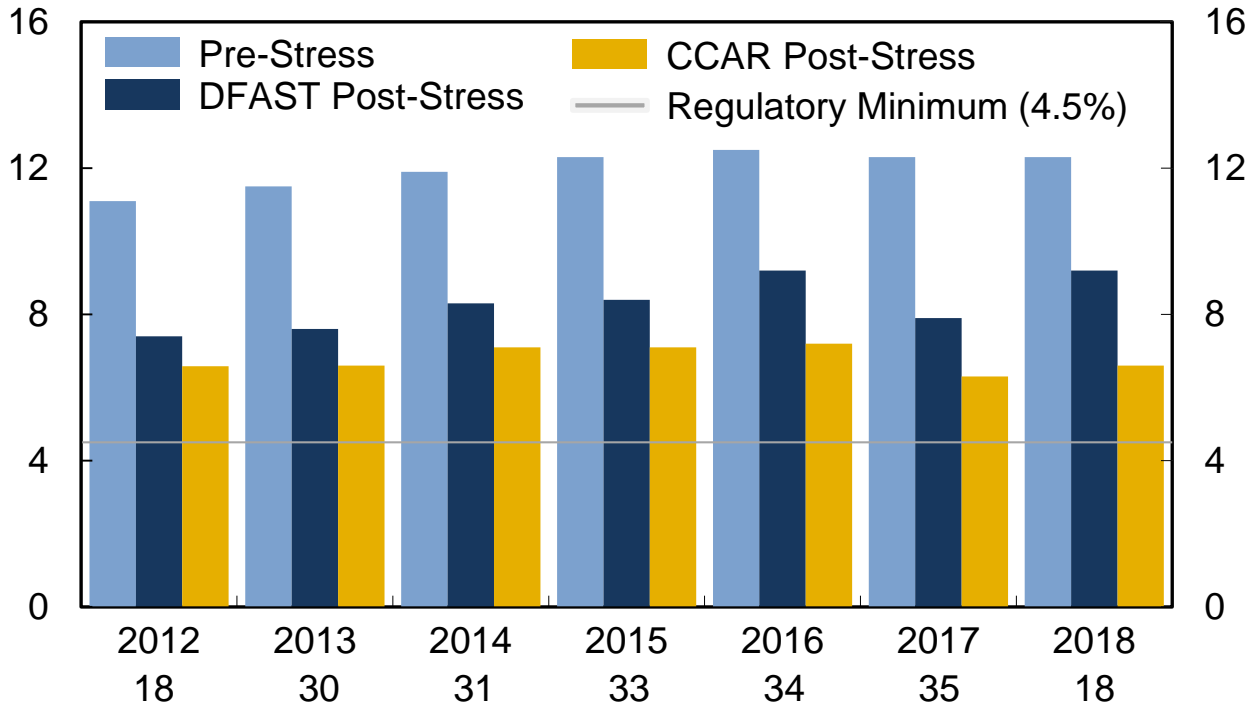
Source: Bloomberg, L.P.

Note: Monthly averages.

4.11.24 Initial and Stressed Capital Ratios

Percent

Percent



Note: For DFAST, 2013-2015 bars show Tier 1 Common Capital Ratio and 2016-2018 bars show CET1 Ratio. The x-axis labels represent the number of banks tested within a given year.

Source: Federal Reserve

4.11.25 Federal Reserve's Actions in CCAR 2019

Non-Objection to Capital Plan

Bank of America	Morgan Stanley
Bank of New York Mellon	Northern Trust
Barclays USA	PNC
Capital One Financial	State Street
Citigroup	TD Group U.S.
DB USA	UBS Americas
Goldman Sachs	US Bancorp
HSBC North America Holdings	Wells Fargo
JPMorgan Chase	

Conditional Non-Objection to Capital Plan

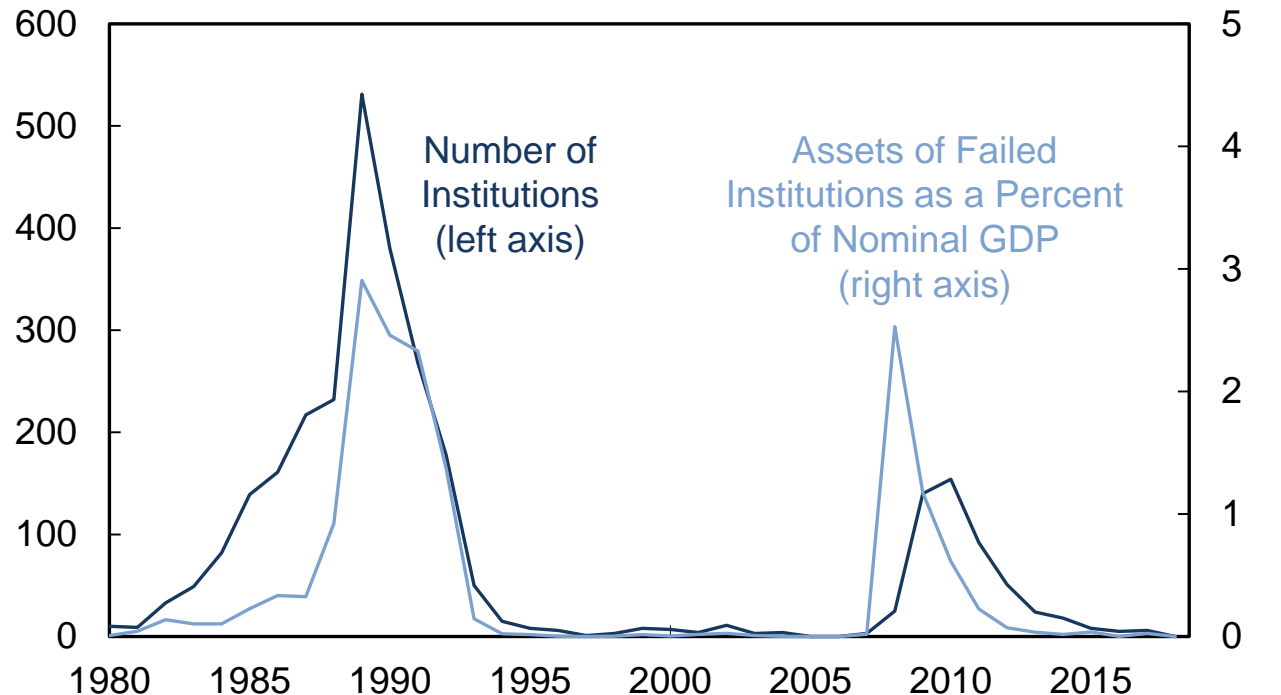
Credit Suisse Holdings (USA)

4.11.26 FDIC-Insured Failed Institutions

Number of Institutions

As Of: 2018

Percent

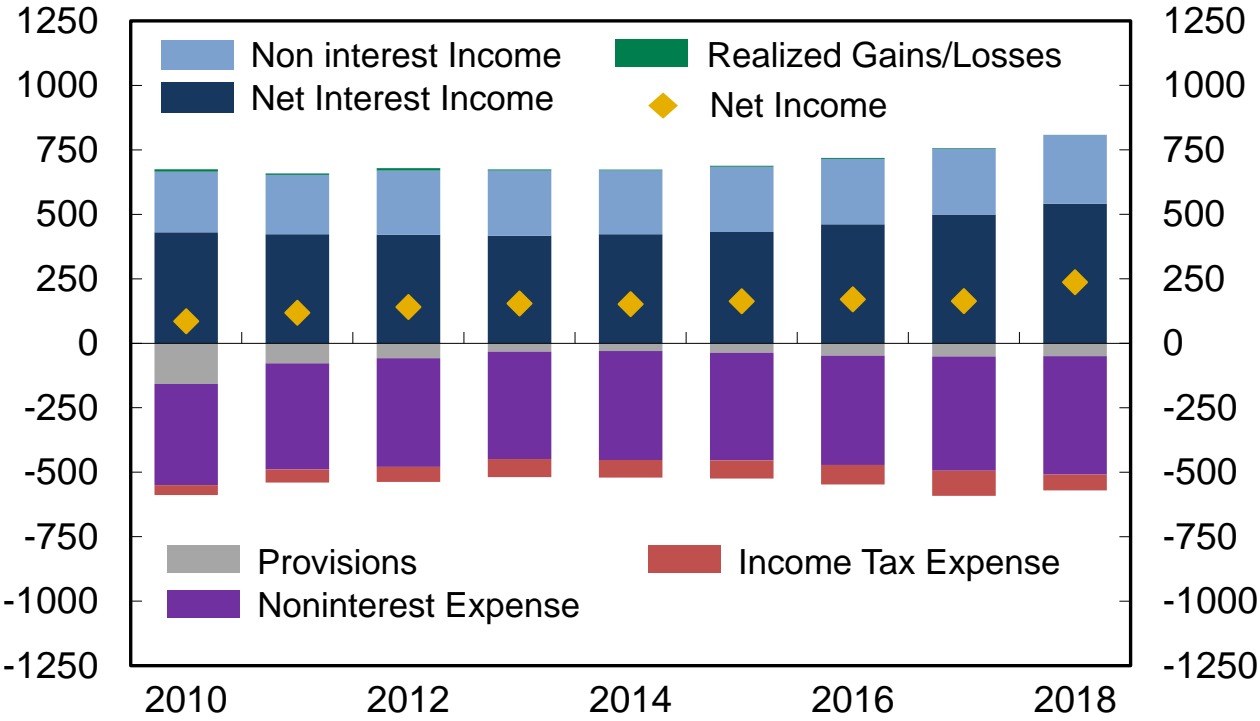


Source: BEA, FDIC,
Haver Analytics

Note: No FDIC-insured institutions
failed during 2005, 2006, and 2018.

4.11.27 Commercial Bank and Thrift Net Income

Billions of US\$ As Of: 2018 Q4 Billions of US\$



Source: FDIC

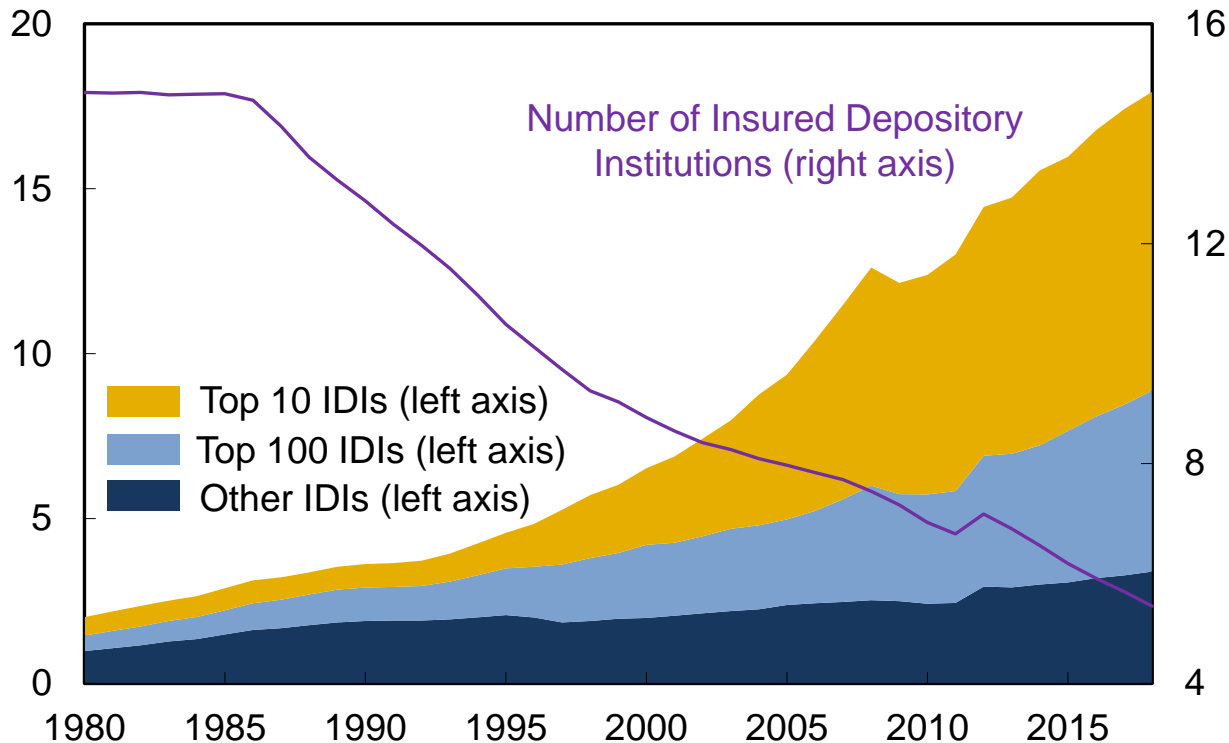
Note: Includes all FDIC-insured commercial banks and thrifts.

4.11.28 Total Assets of Largest Insured Depository Institutions

Trillions of US\$

As Of: 2018

Count ('000s)



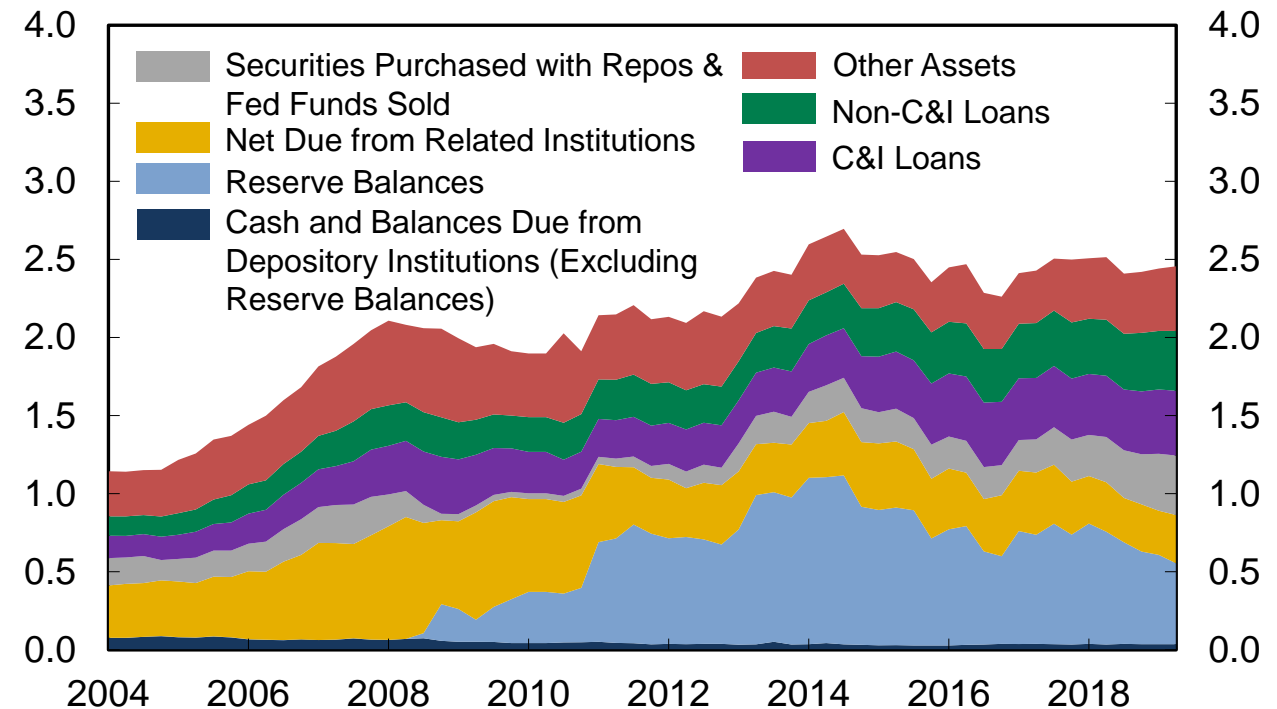
Source: FFIEC Call Report

4.11.29 U.S. Branches and Agencies of Foreign Banks: Assets

Trillions of US\$

As Of: 2019 Q2

Trillions of US\$



Source: Federal Reserve,
Haver Analytics

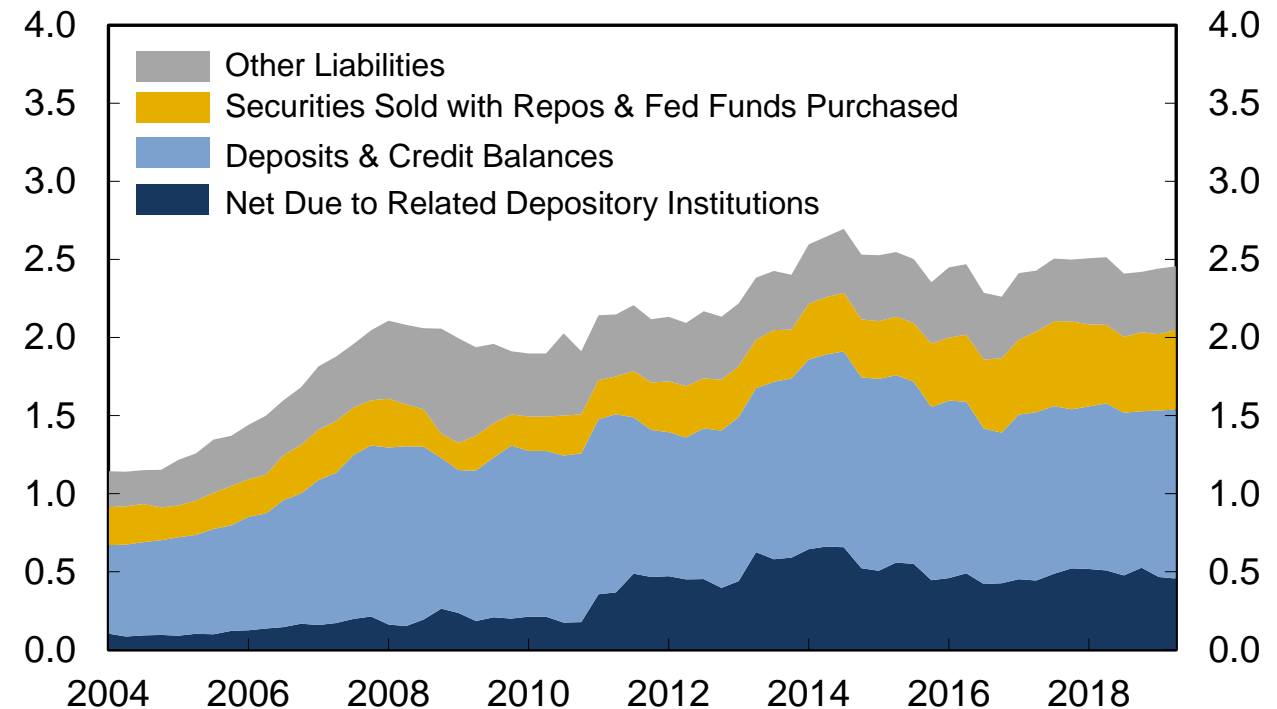
Note: Other assets includes government securities,
asset-backed securities, and other trading assets.

4.11.30 U.S. Branches and Agencies of Foreign Banks: Liabilities

Trillions of US\$

As Of: 2019 Q2

Trillions of US\$



Source: Federal Reserve,
Haver Analytics

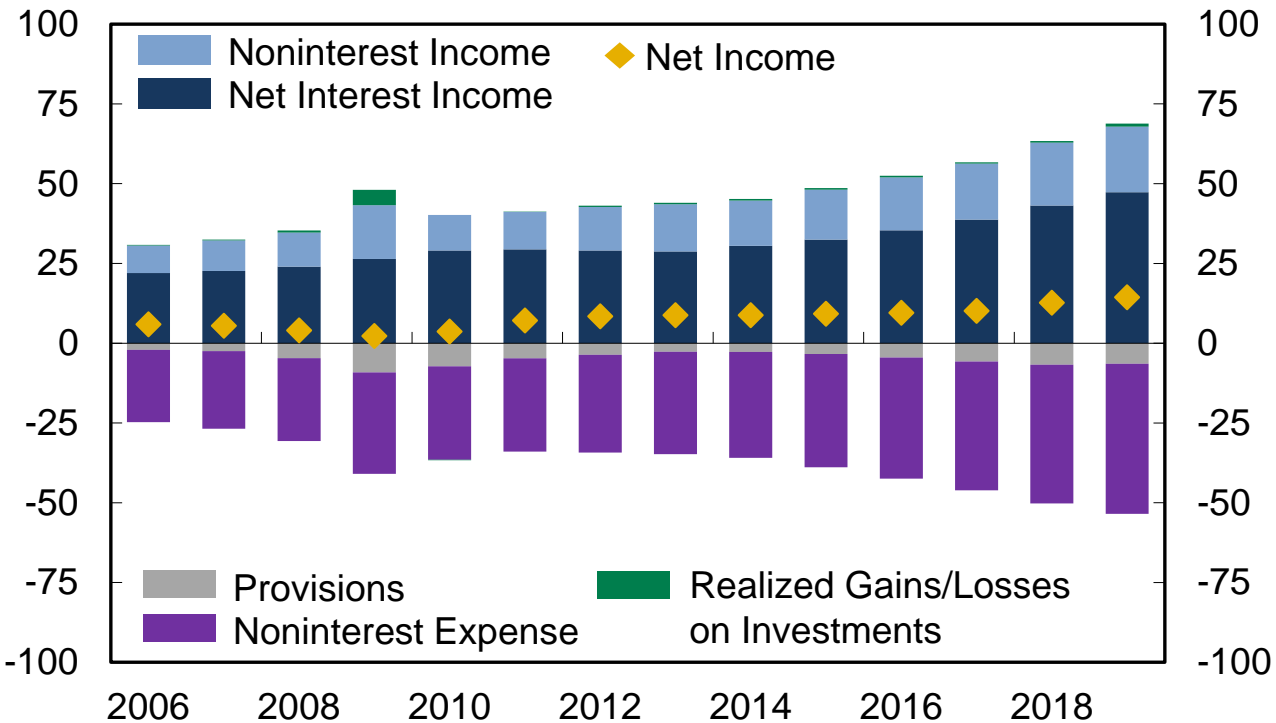
Note: Other liabilities includes transaction accounts,
non-transaction accounts, and other borrowed money.

4.11.31 Credit Union Income

Billions of US\$

As Of: 2019 Q2

Billions of US\$



Source: NCUA

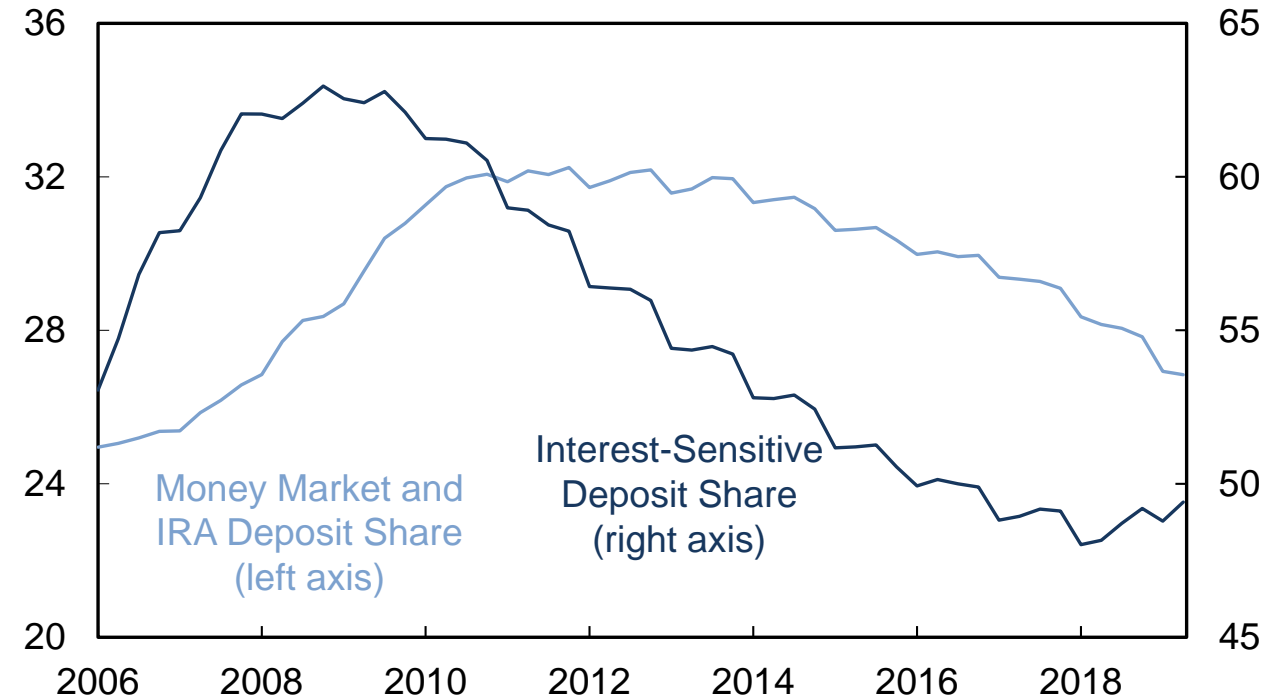
Note: Federally-insured credit unions.
Values are annualized.

4.11.32 Credit Union Deposits

Percent

As Of: 2019 Q2

Percent



Interest-Sensitive
Deposit Share
(right axis)

Money Market and
IRA Deposit Share
(left axis)

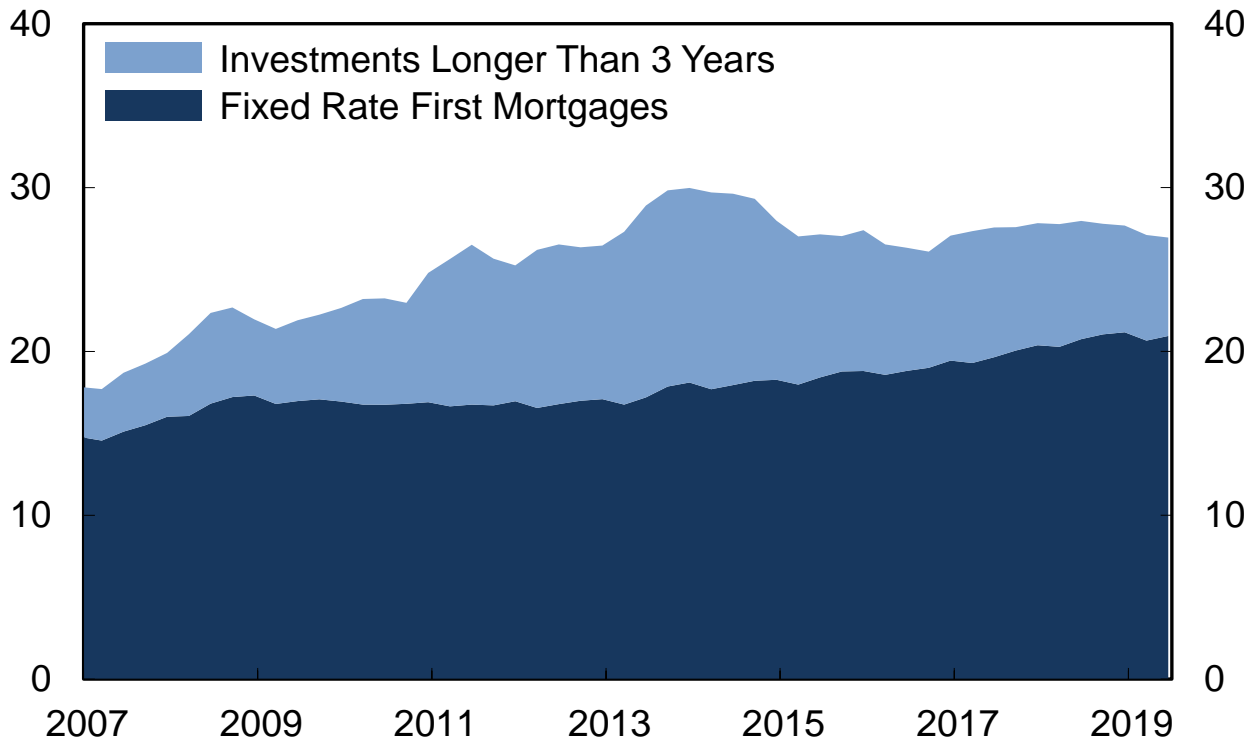
Note: Federally-insured credit unions. Interest-sensitive deposit share includes money market and IRA deposit share, share certificates, and certain other deposits.

4.11.33 Credit Union Net Long-Term Assets

Percent of Total Assets

As Of: 2019 Q2

Percent of Total Assets



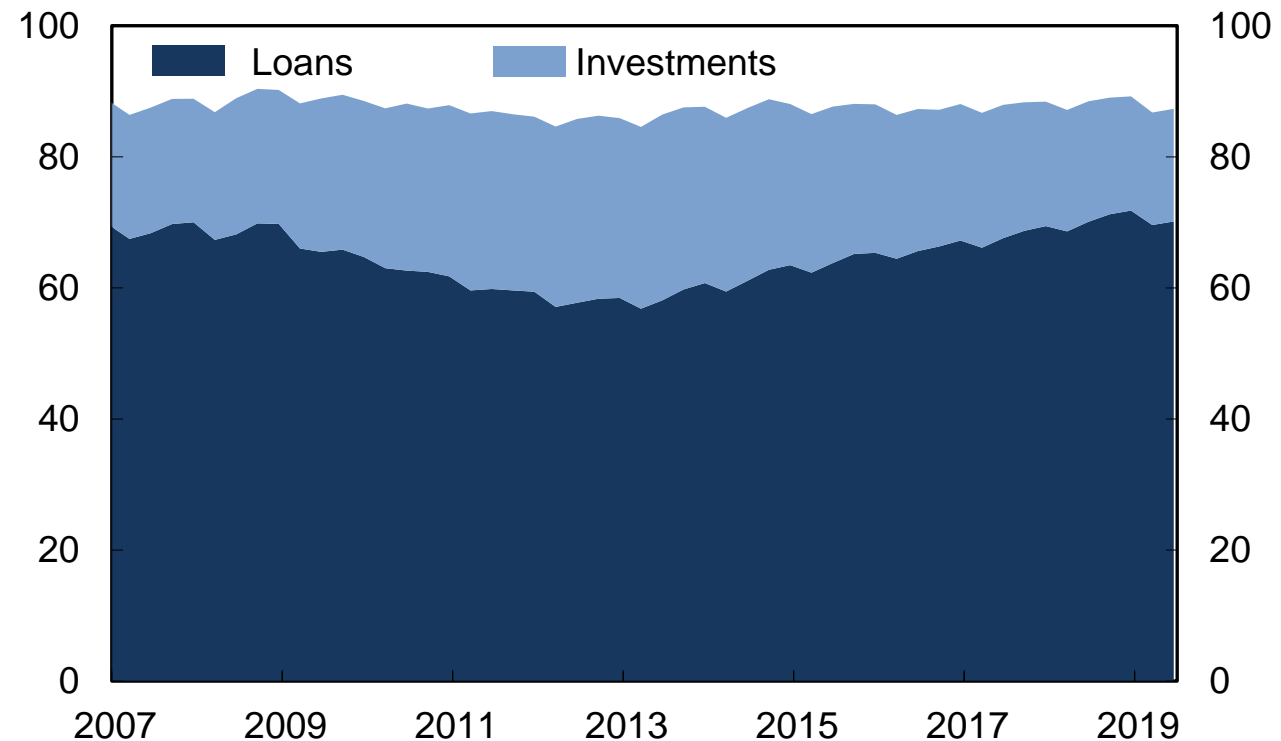
Source: NCUA

4.11.34 Credit Union Composition of Assets

Percent of Total Assets

As Of: 2019 Q2

Percent of Total Assets



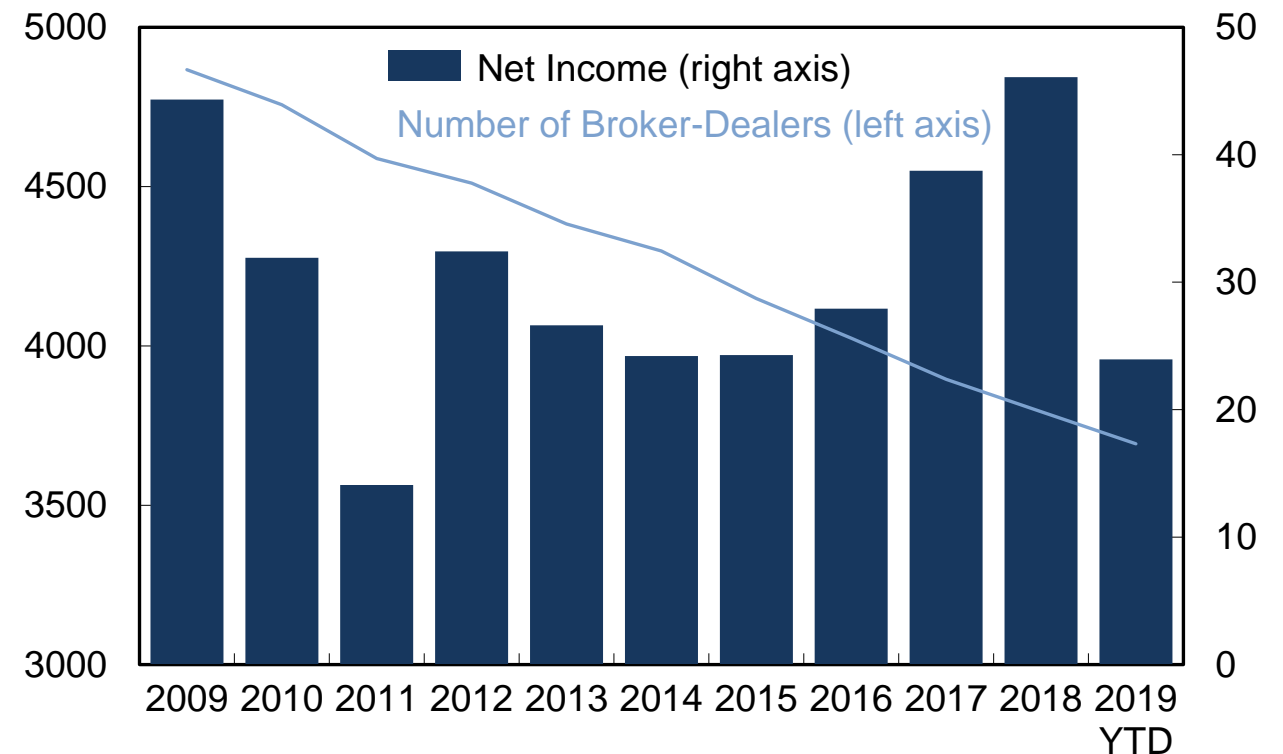
Source: NCUA

4.12.1 Number of Broker-Dealers and Industry Net Income

Number of Firms

As Of: 2019 Q2

Billions of US\$



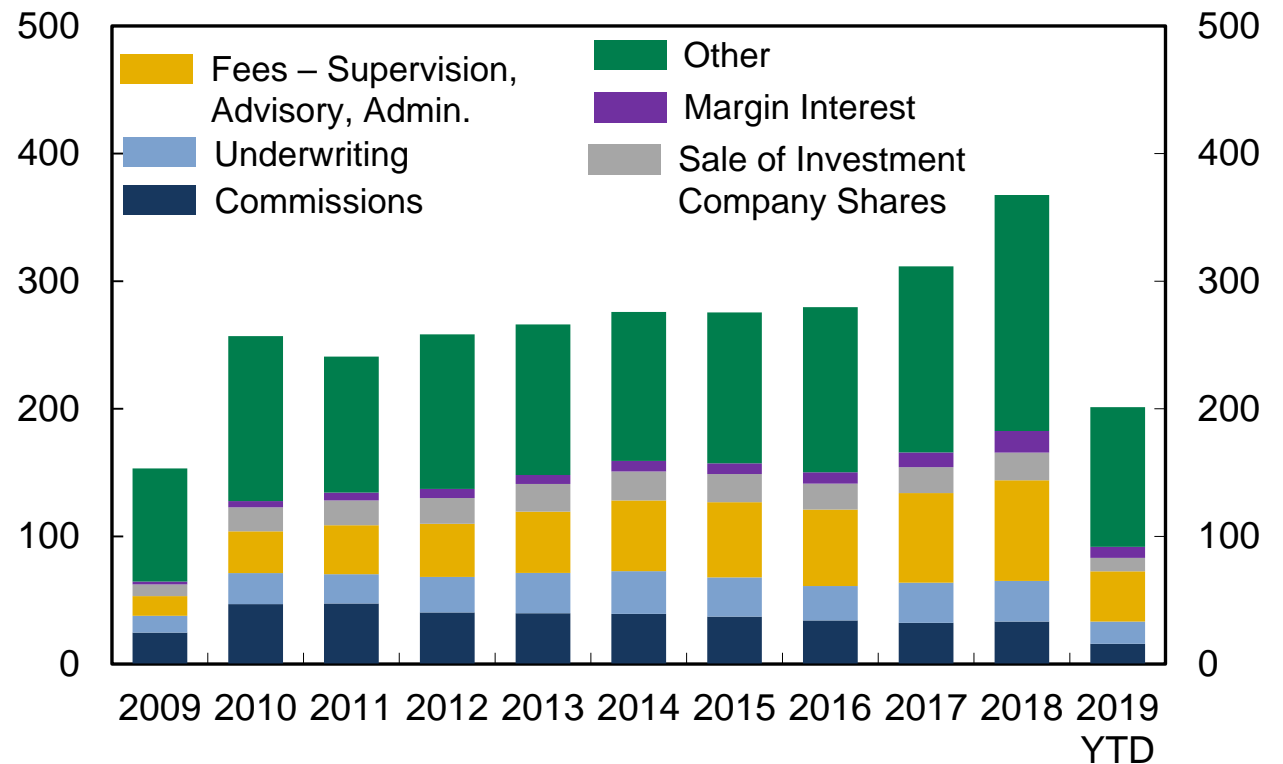
Source: FINRA

4.12.2 Broker-Dealer Revenues

Billions of US\$

As Of: 2019 Q2

Billions of US\$



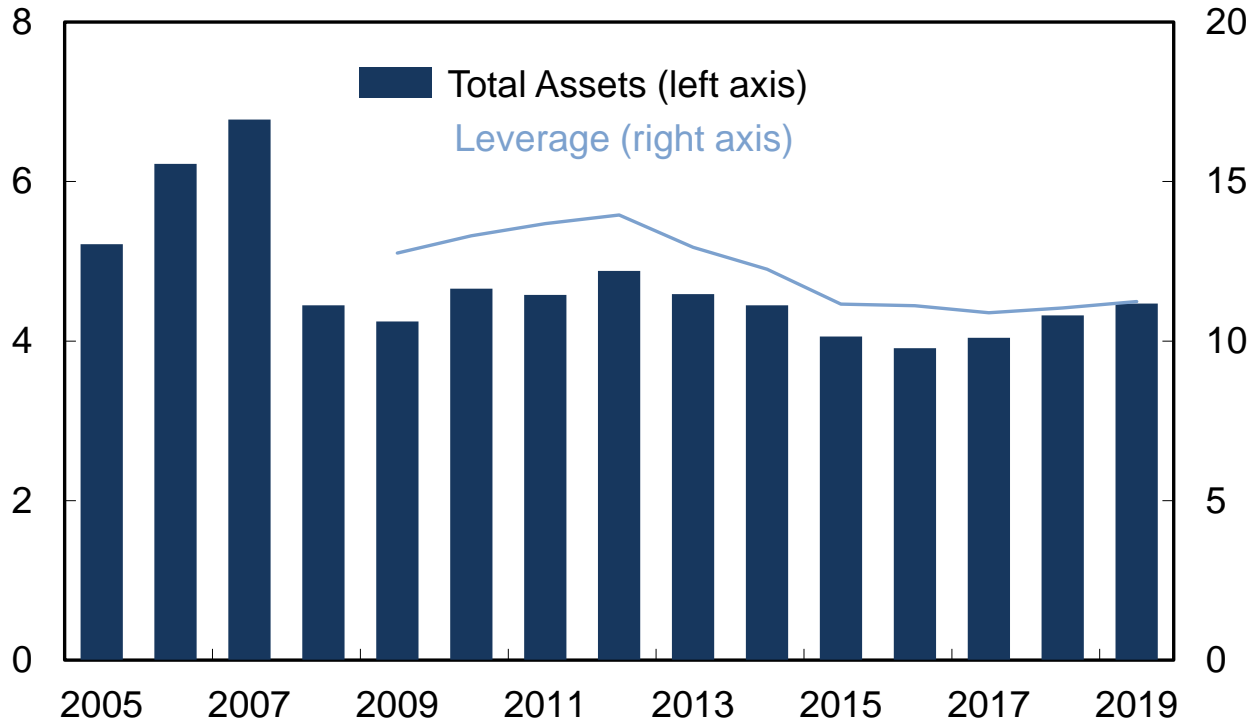
Source: FINRA

4.12.3 Broker-Dealer Assets and Leverage

Trillions of US\$

As Of: 2019 Q2

Ratio



Source: FINRA

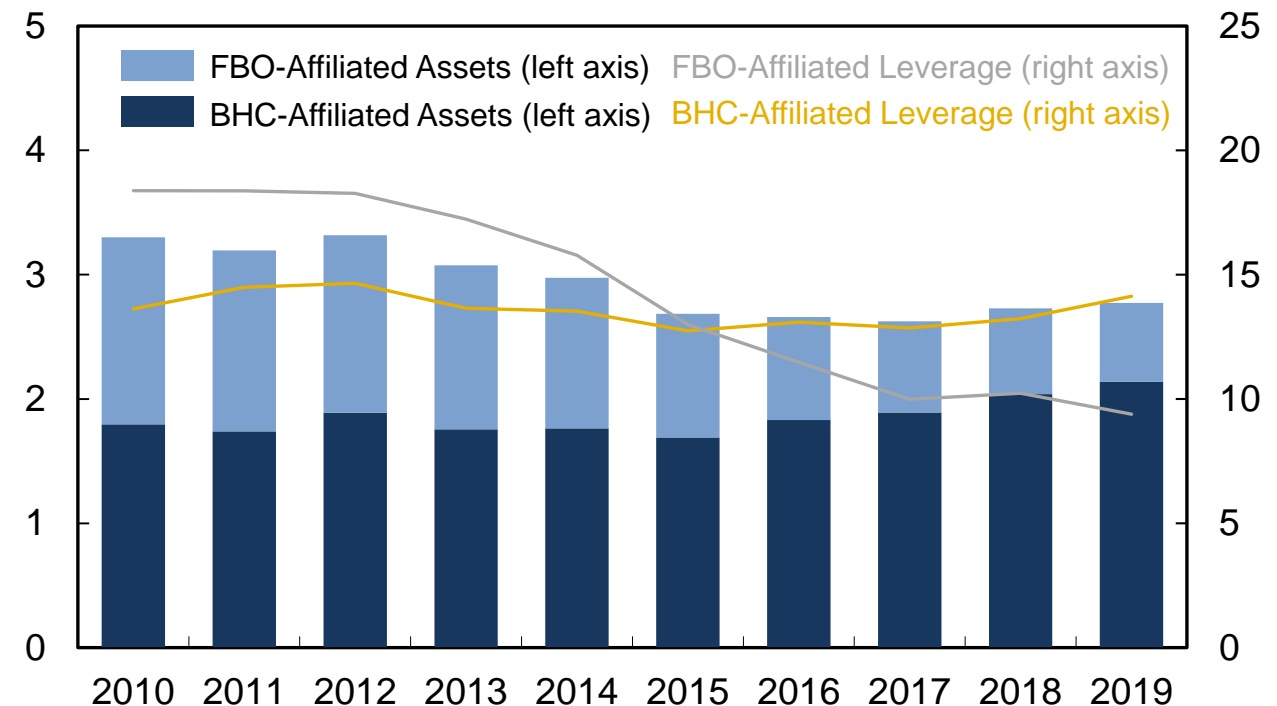
Note: Leverage is the ratio of total assets to total regulatory capital.

4.12.4 Large Broker-Dealer Assets and Leverage by Affiliation

Trillions of US\$

As Of: 2019 Q2

Ratio



Note: Covers bank holding company (BHC) and foreign banking organization (FBO) affiliated broker-dealers that are among the 25 largest broker-dealers by assets as of Q2 2019.

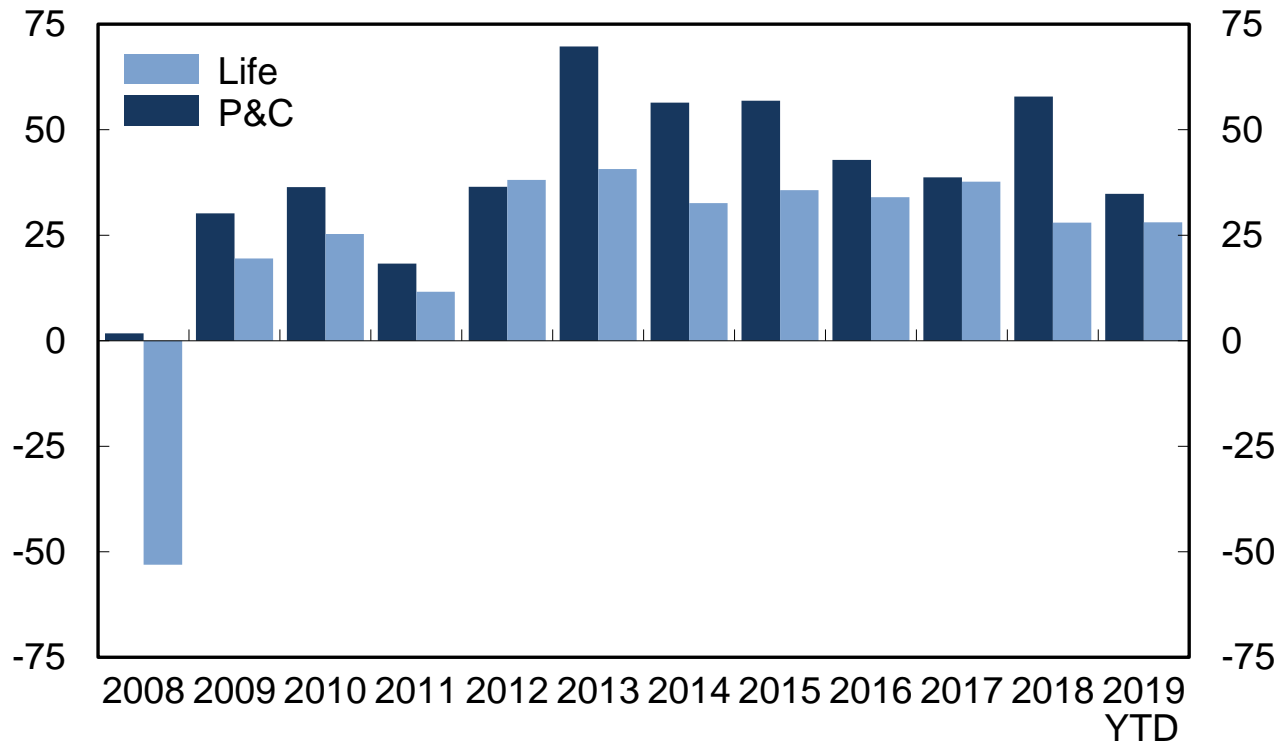
Source: FINRA

4.12.5 Insurance Industry Net Income

Billions of US\$

As Of: 2019 Q2

Billions of US\$



Source: NAIC

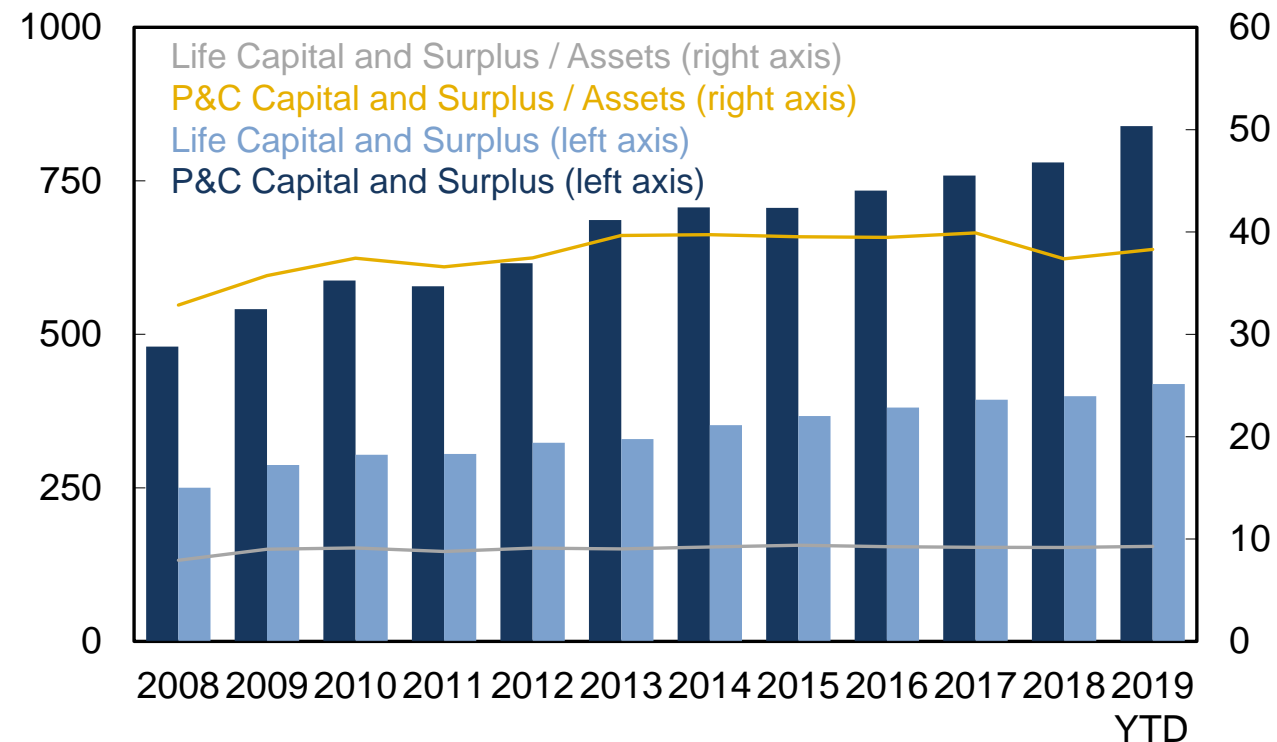
Note: Life includes accident and health.

4.12.6 Insurance Industry Capital and Surplus

Billions of US\$

As Of: 2019 Q2

Percent of Total Assets



Source: NAIC

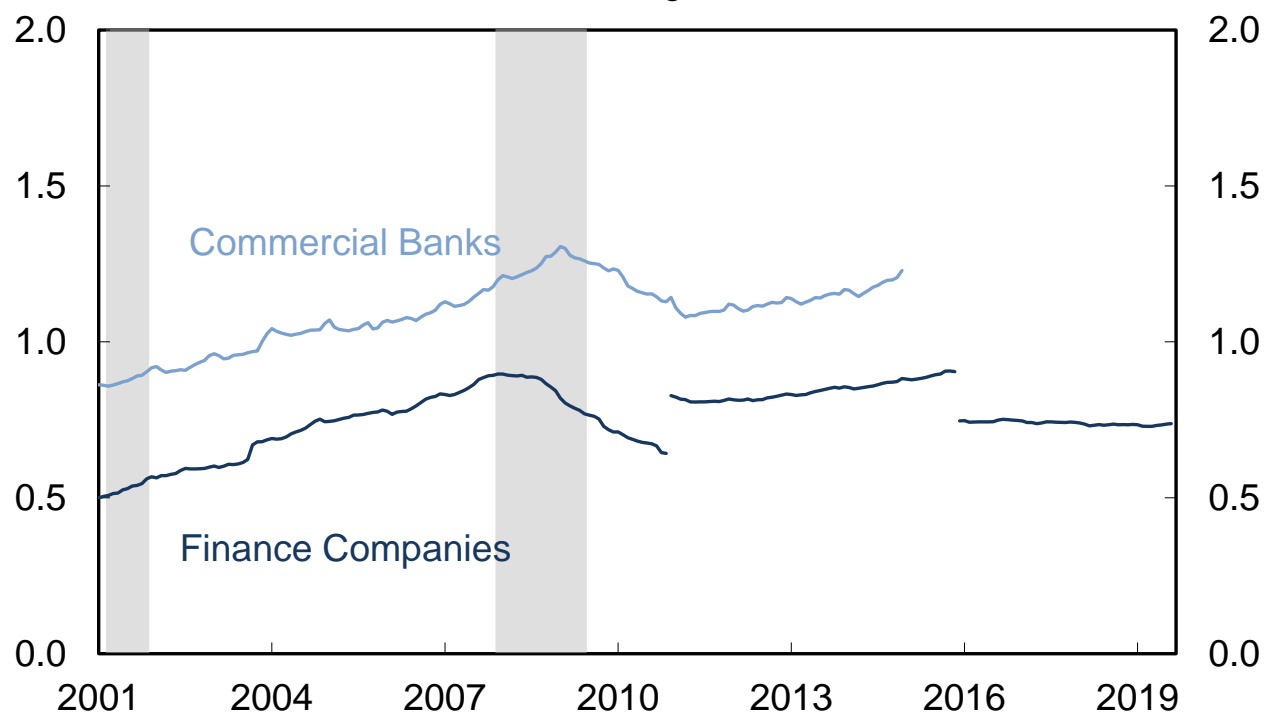
Note: Total assets includes net admitted assets less net admitted separate account assets. Life includes accident and health.

4.12.7 Consumer Loans and Leases Outstanding

Trillions of US\$

As Of: Aug-2019

Trillions of US\$



Source: Federal Reserve,
Haver Analytics

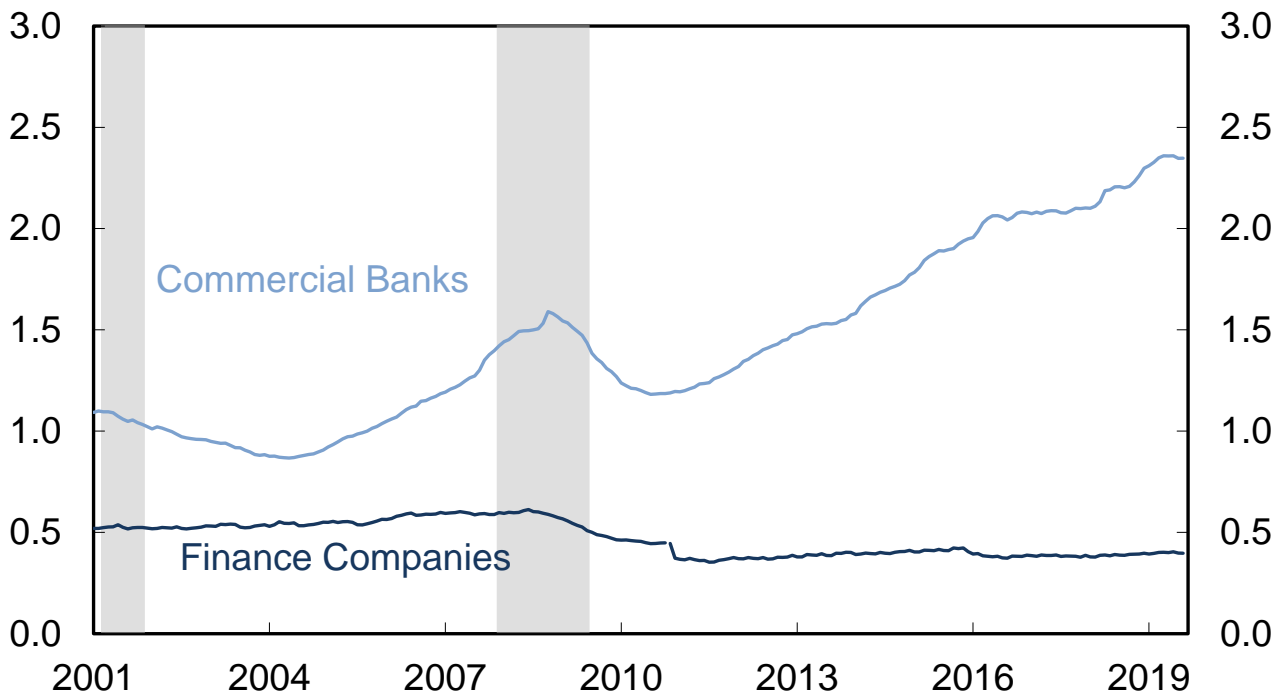
Note: Loans and leases owned and securitized. Series breaks in December 2010 and December 2015 due to change in data collection methodology. Gray bars signify NBER recessions.

4.12.8 Business Loans and Leases Outstanding

Trillions of US\$

As Of: Aug-2019

Trillions of US\$

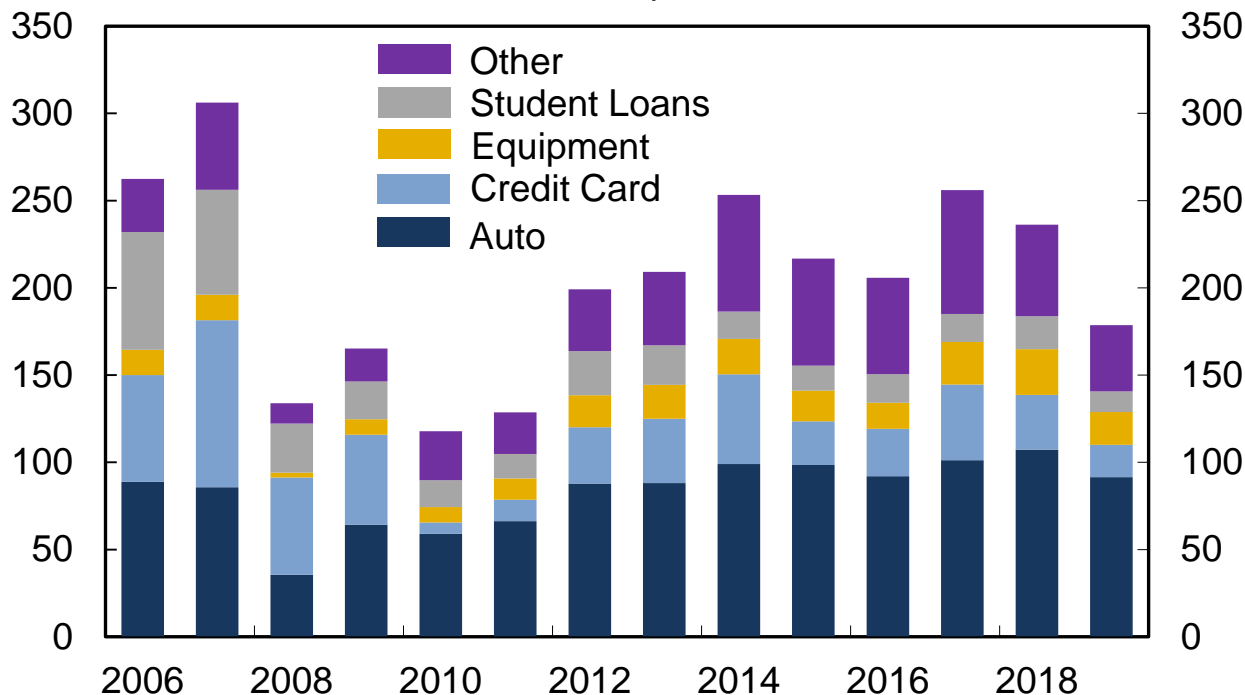


Source: Federal Reserve,
Haver Analytics

Note: Loans and leases owned and securitized. Series break in December 2010 due to change in data collection methodology. Gray bars signify NBER recessions.

4.12.9 ABS Issuance

Billions of US\$ As Of: Sep-2019 Billions of US\$



Source: Thomson Reuters, SIFMA

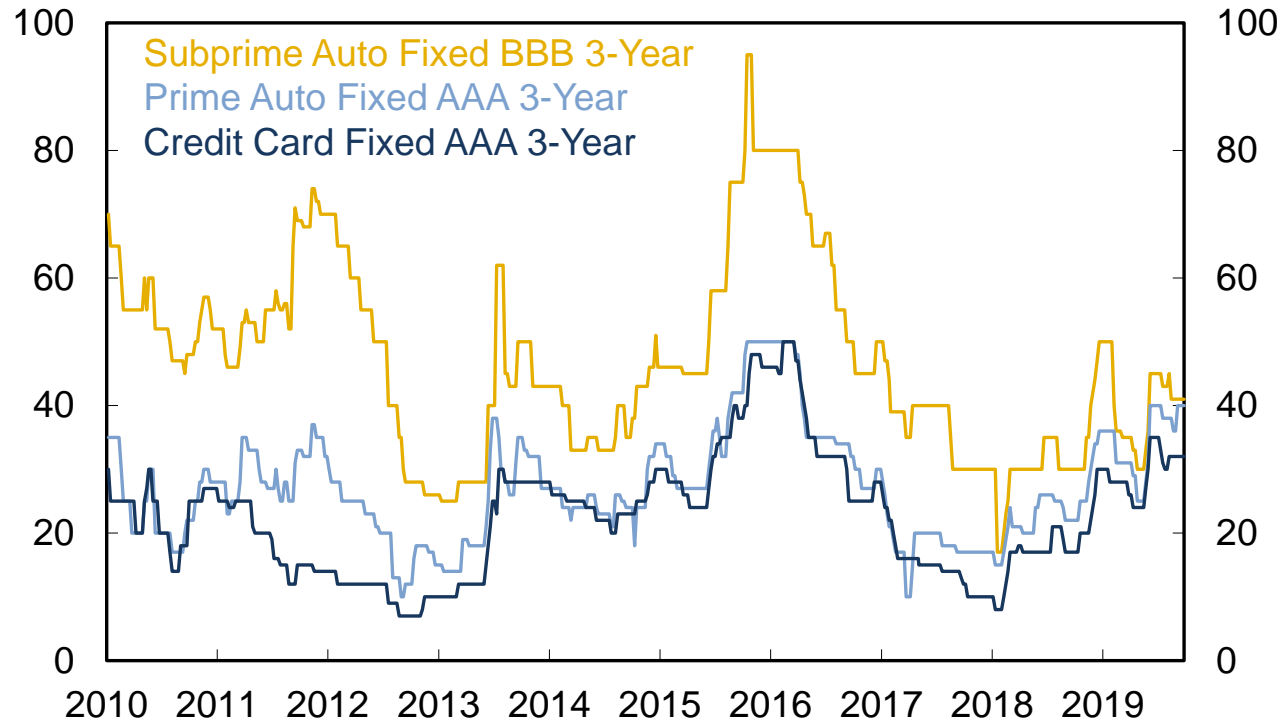
Note: Figures are as of year end through 2018.
2019 figures are through September.

4.12.10 Select ABS Spreads

Basis Points

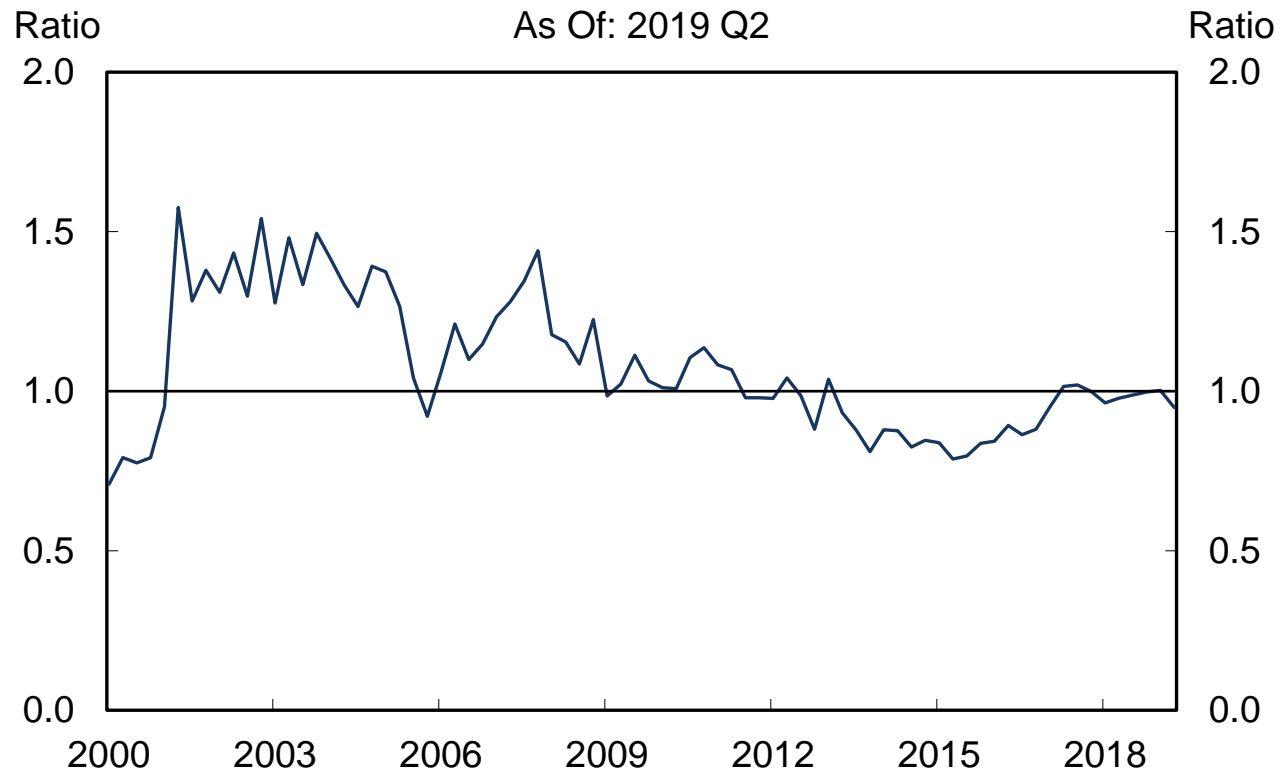
As Of: 26-Sep-2019

Basis Points



Source: J.P. Morgan

4.12.11 Agency REIT Price-to-Book Ratio



Source: Bloomberg, L.P.

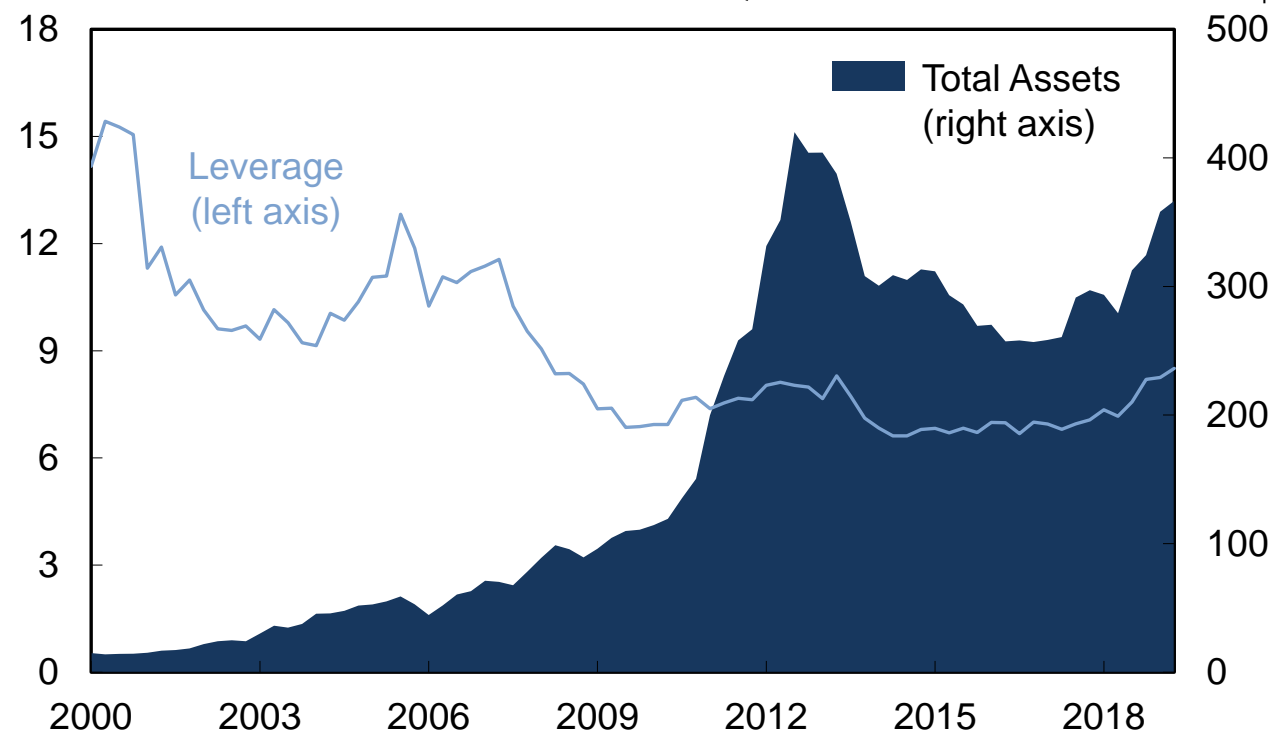
Note: P/B ratio is weighted by market capitalization. Not all agency REITs existed in all time periods in the figure.

4.12.12 Agency REIT Assets and Leverage

Ratio

As Of: 2019 Q2

Billions of US\$



Source: Bloomberg, L.P.

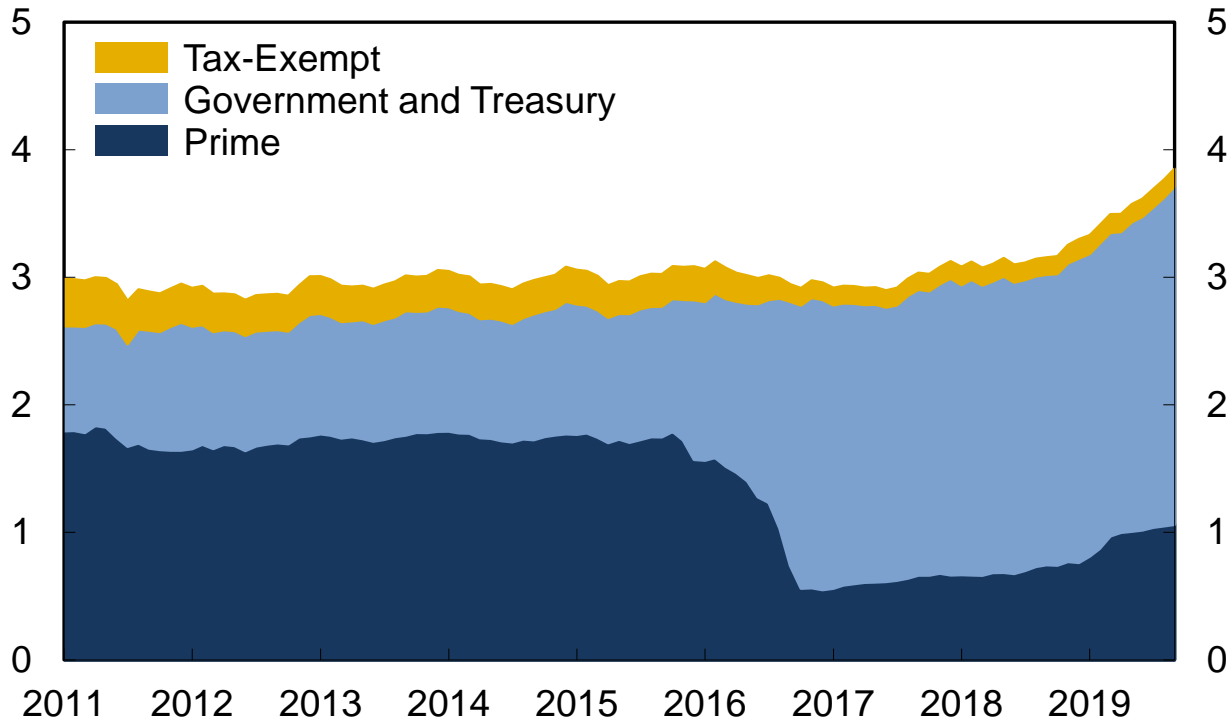
Note: Leverage is the ratio of total assets to equity. Not all agency REITs existed in all time periods in the figure.

4.13.1 MMF Assets by Fund Type

Trillions of US\$

As Of: Sep-2019

Trillions of US\$



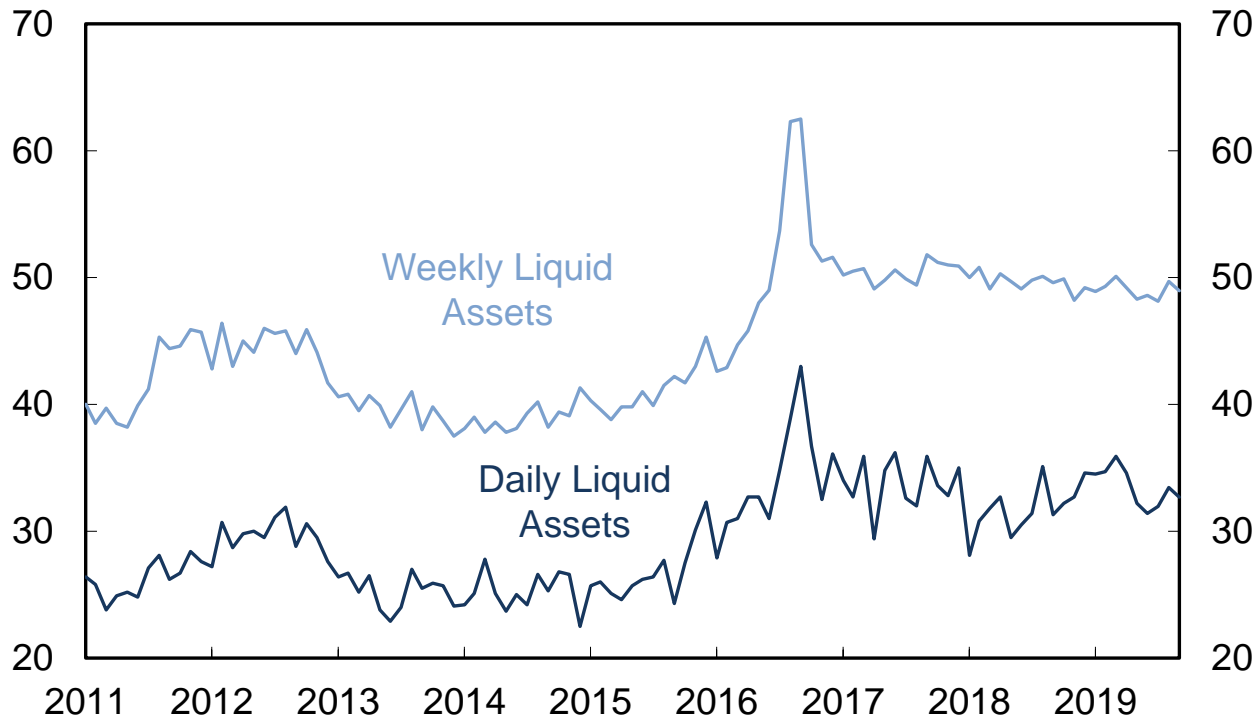
Source: SEC

4.13.2 Liquid Asset Shares of Prime MMFs

Percent of Total Assets

As Of: Sep-2019

Percent of Total Assets



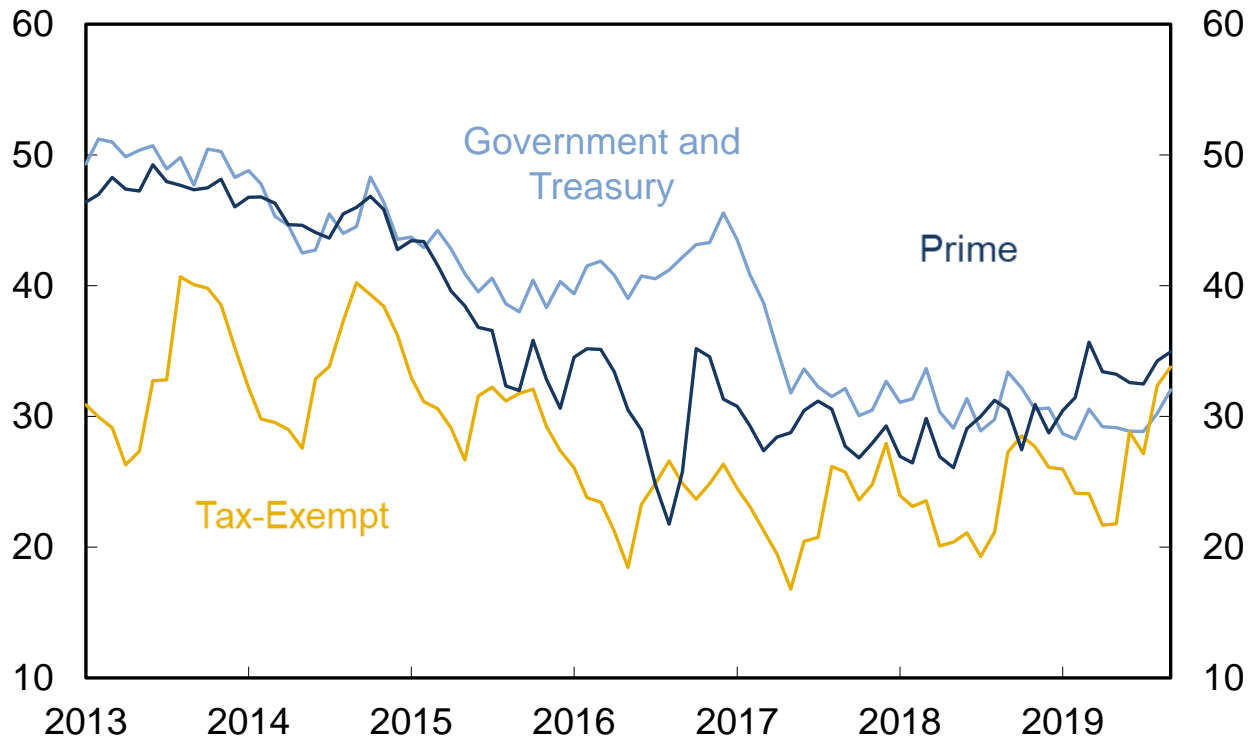
Source: SEC

4.13.3 Weighted Average Maturity by Fund Type

Days

As Of: Sep-2019

Days



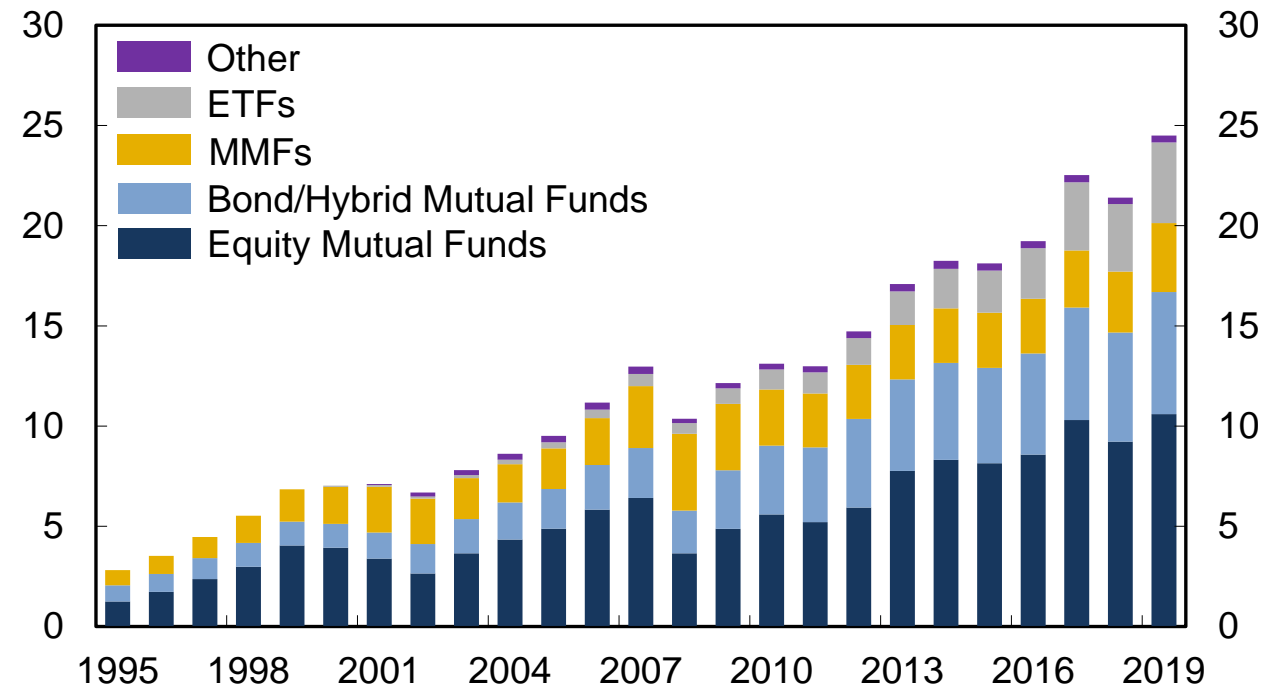
Source: SEC

4.13.4 Net Assets of the Investment Company Industry

Trillions of US\$

As Of: 2019 Q3

Trillions of US\$



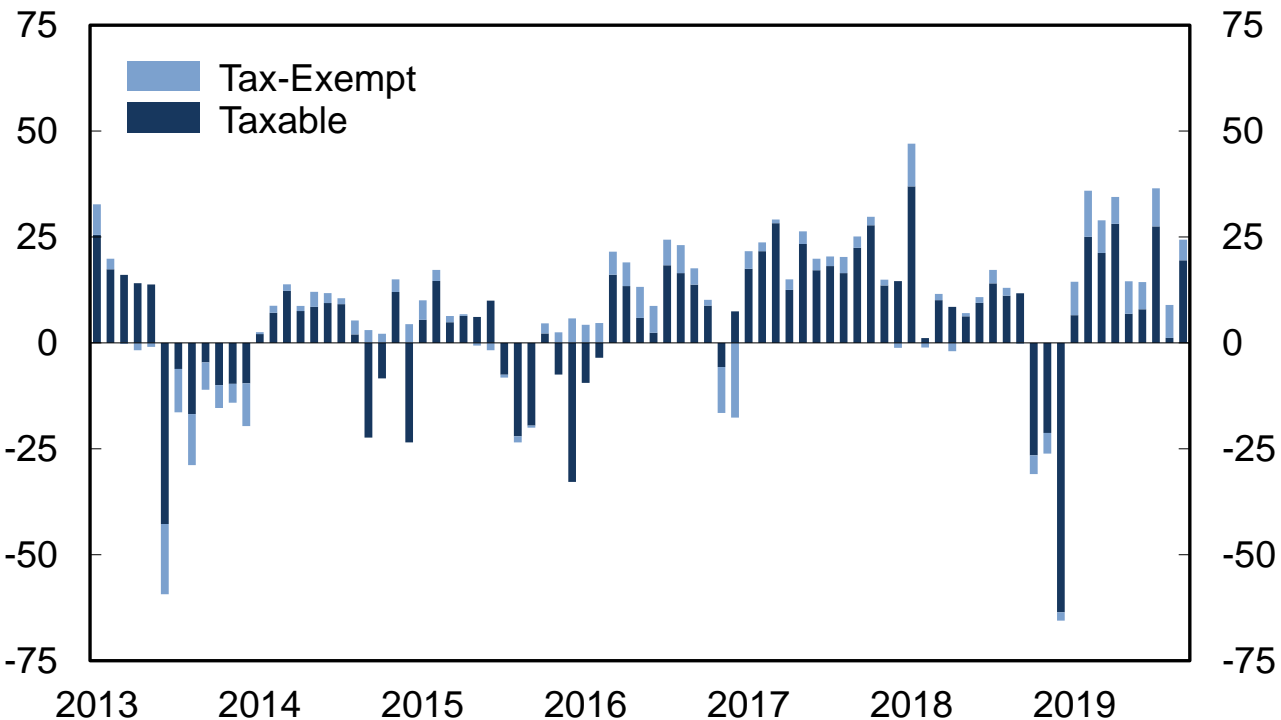
Note: Other is composed of unit investment trusts and closed-end funds. Q3 2019 figures include 2018 UIT data, which is reported annually.

4.13.5 Monthly Bond Mutual Fund Flows

Billions of US\$

As Of: Sep-2019

Billions of US\$



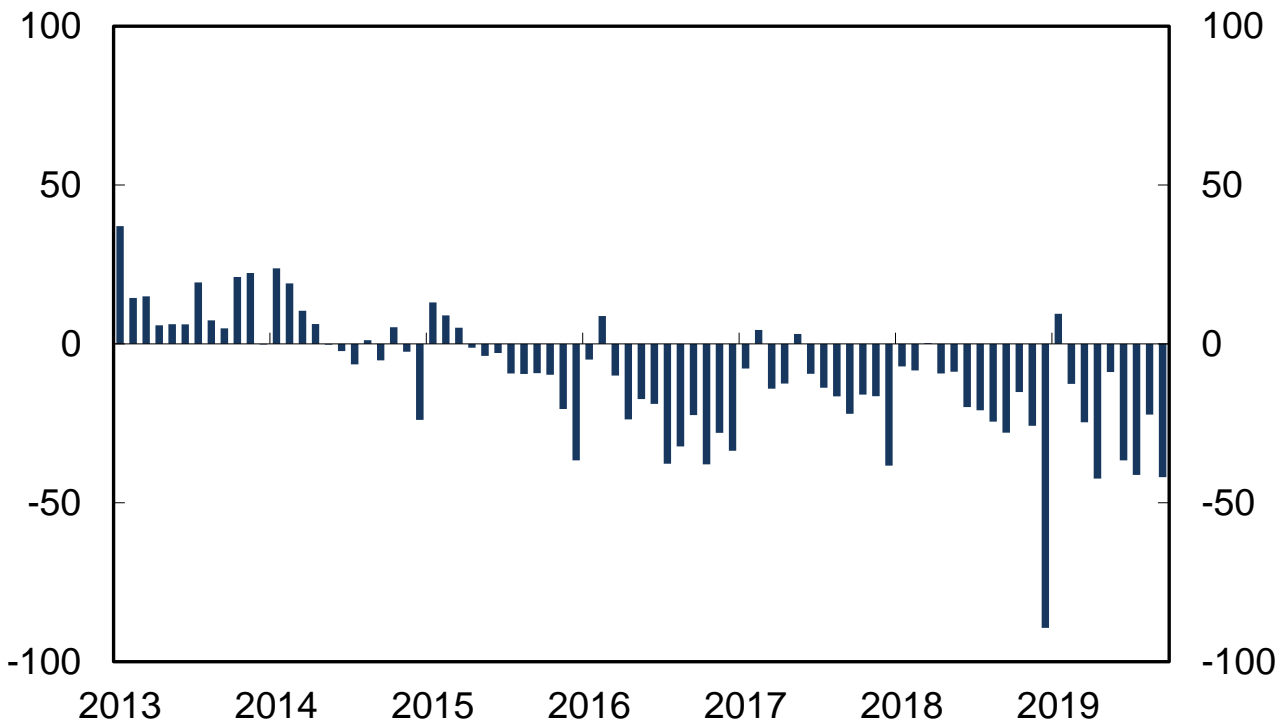
Source: ICI, Haver Analytics

4.13.6 Monthly Equity Mutual Fund Flows

Billions of US\$

As Of: Sep-2019

Billions of US\$



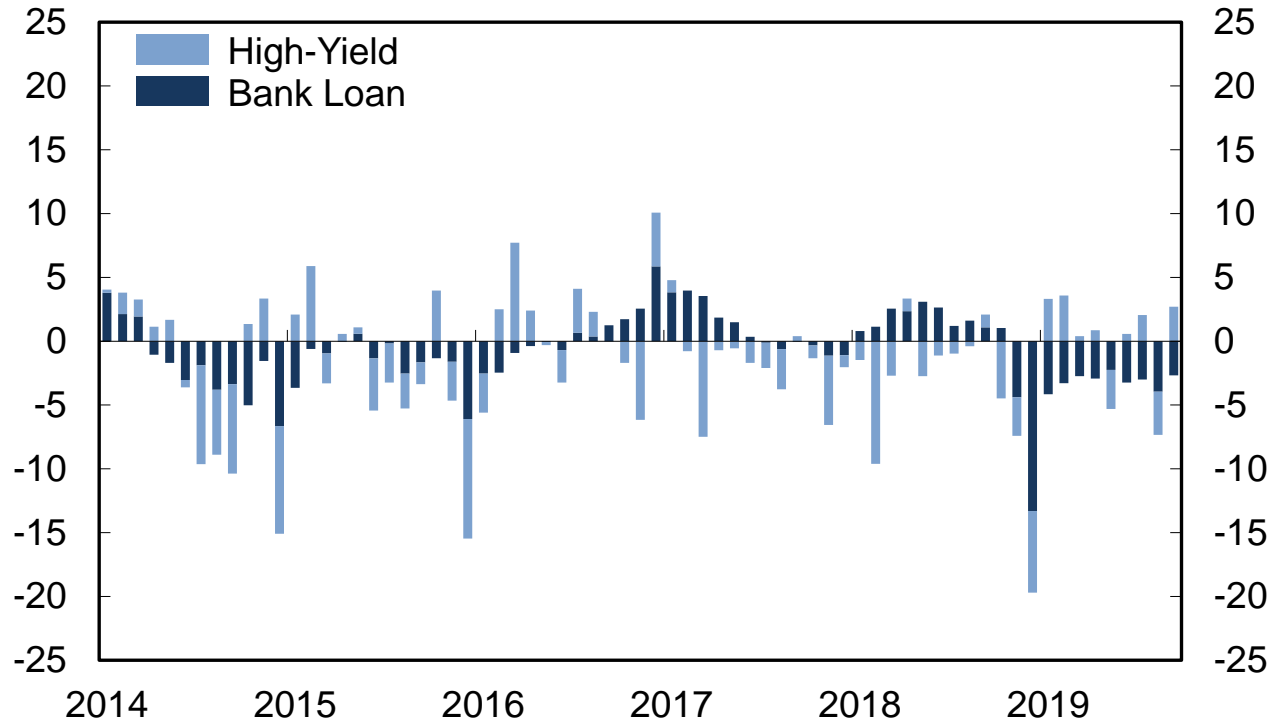
Source: ICI, Haver Analytics

4.13.7 Monthly Bank Loan and High-Yield Fund Flows

Billions of US\$

As Of: Sep-2019

Billions of US\$



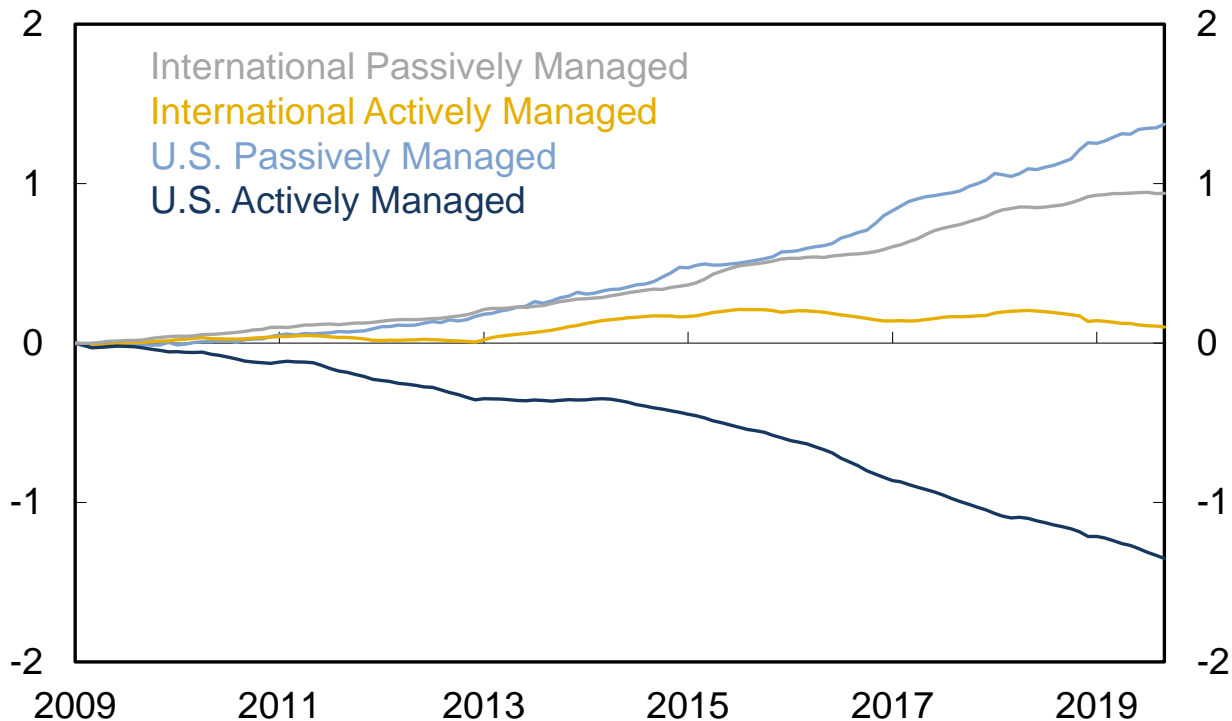
Source: Morningstar, Inc.

4.13.8 Cumulative Equity Fund Flows

Trillions of US\$

As Of: Sep-2019

Trillions of US\$



Source: Morningstar, Inc.

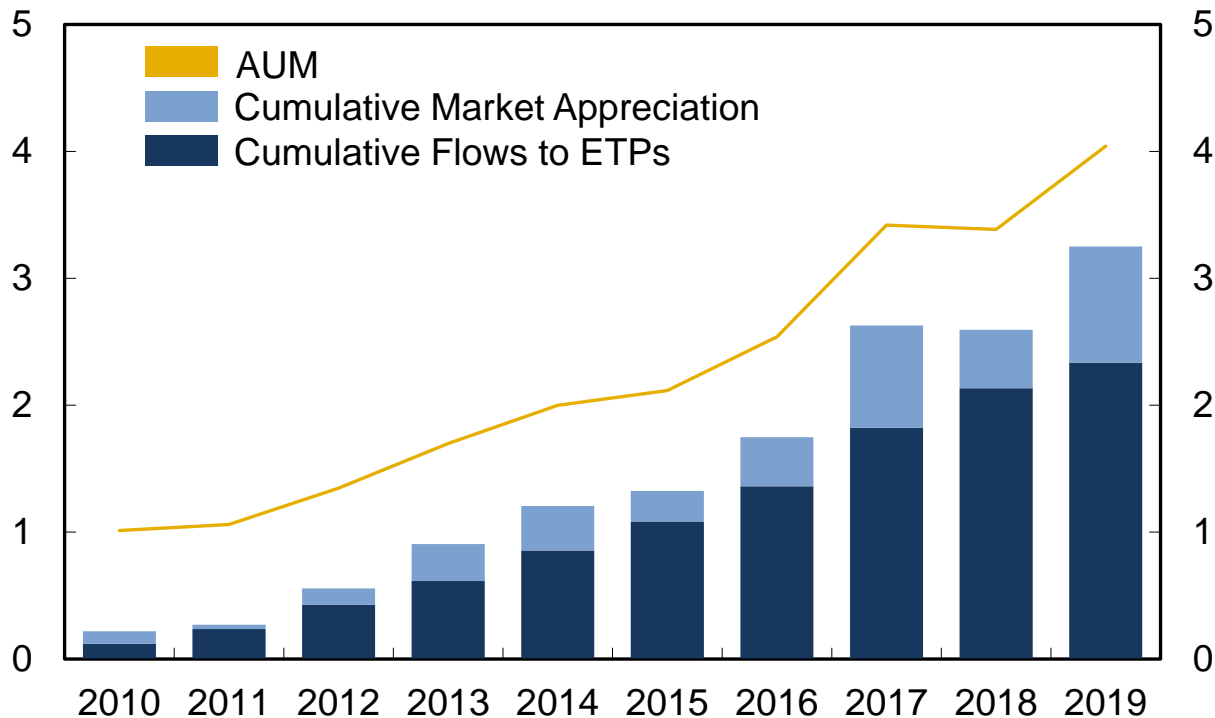
Note: Includes ETFs and mutual funds.

4.13.9 U.S.-Listed ETP AUM

Trillions of US\$

As Of: Sep-2019

Trillions of US\$



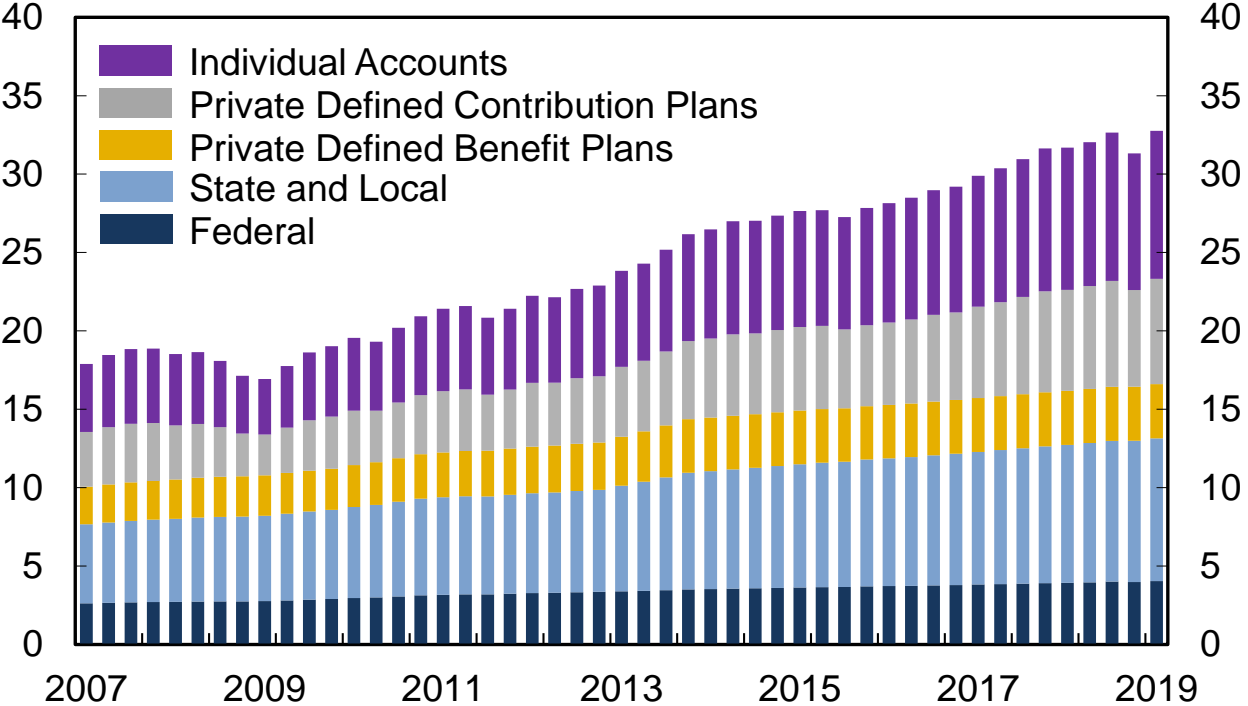
Source: Morningstar, Inc.

4.13.10 Retirement Fund Assets by Plan Type

Trillions of US\$

As Of: 2019 Q2

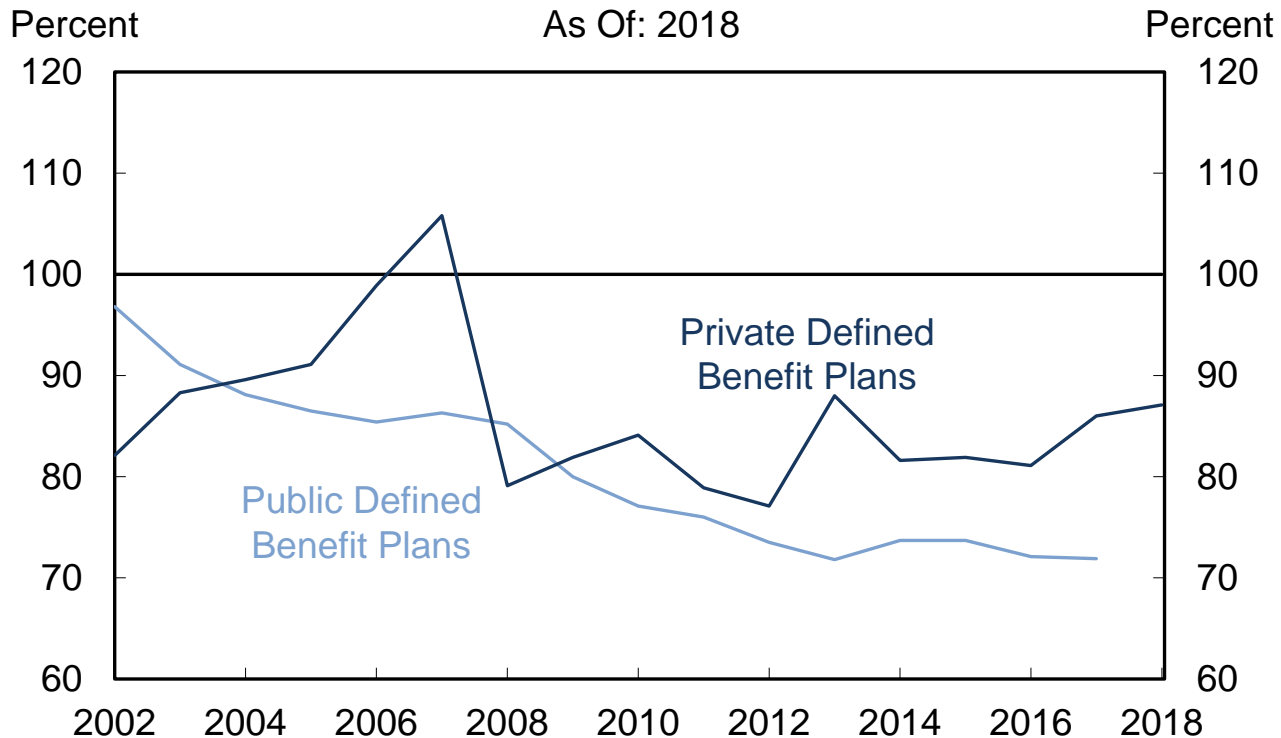
Trillions of US\$



Source: Federal Reserve,
Haver Analytics

Note: Individual accounts as of 2019 Q1.

4.13.11 Public and Private Pension Funding Levels



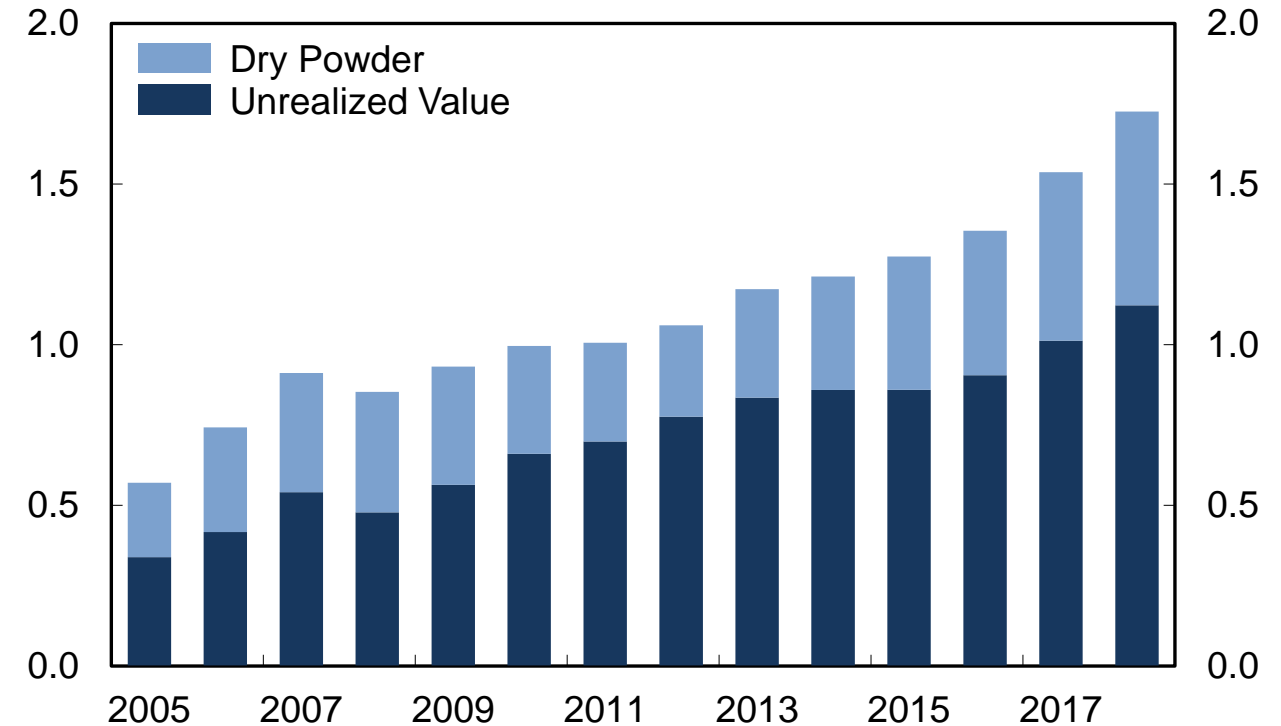
Source: NASRA Public Fund Survey, Milliman
2018 Corporate Pension Funding Study

4.13.12 North American Private Equity AUM

Trillions of US\$

As Of: 2018

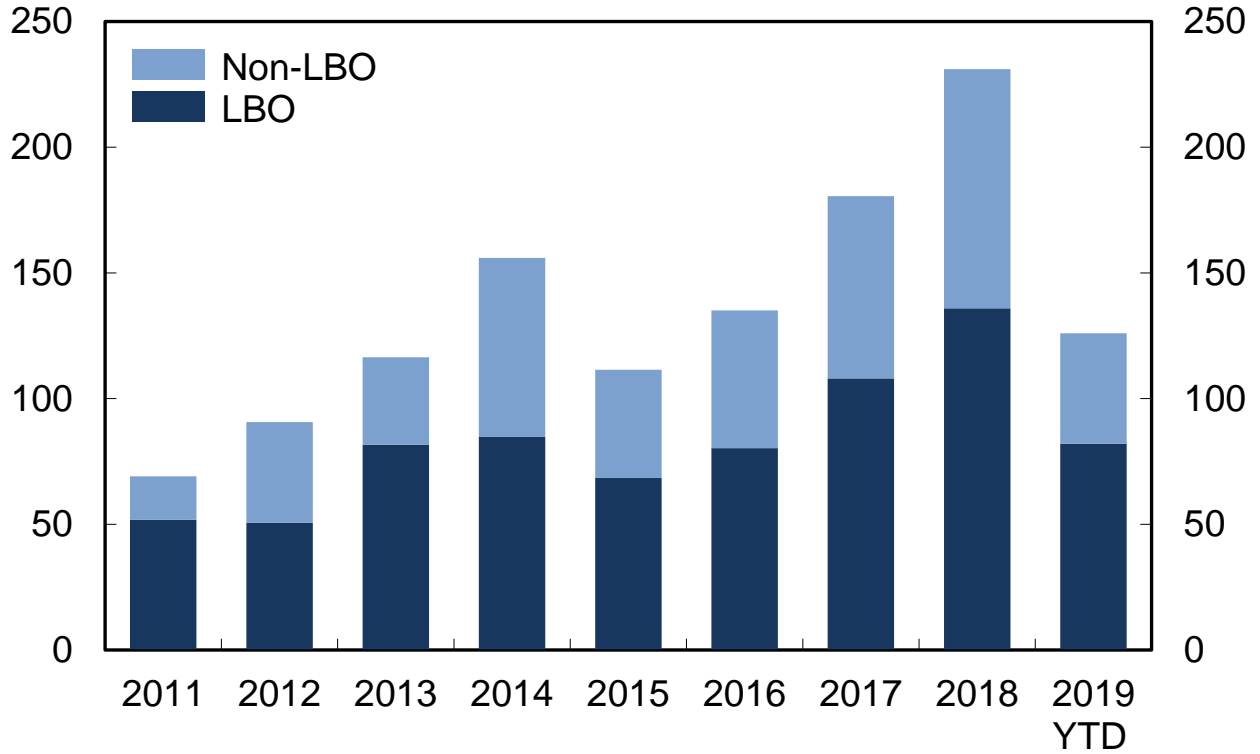
Trillions of US\$



Source: Preqin

4.13.13 M&A Loan Volume for Private Equity-Backed Issuers

Billions of US\$ As Of: 30-Sep-2019 Billions of US\$



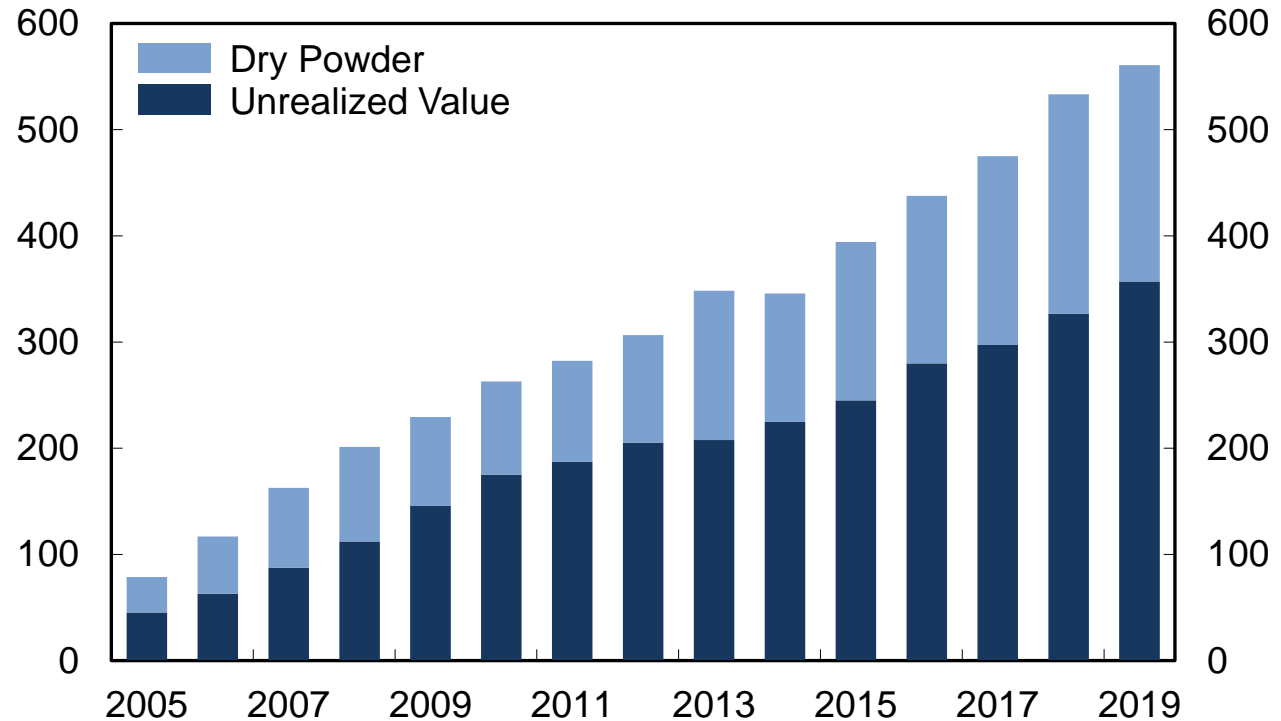
Source: S&P LCD

4.13.14 North American Private Debt AUM

Billions of US\$

As Of: Mar-2019

Billions of US\$



Source: Preqin

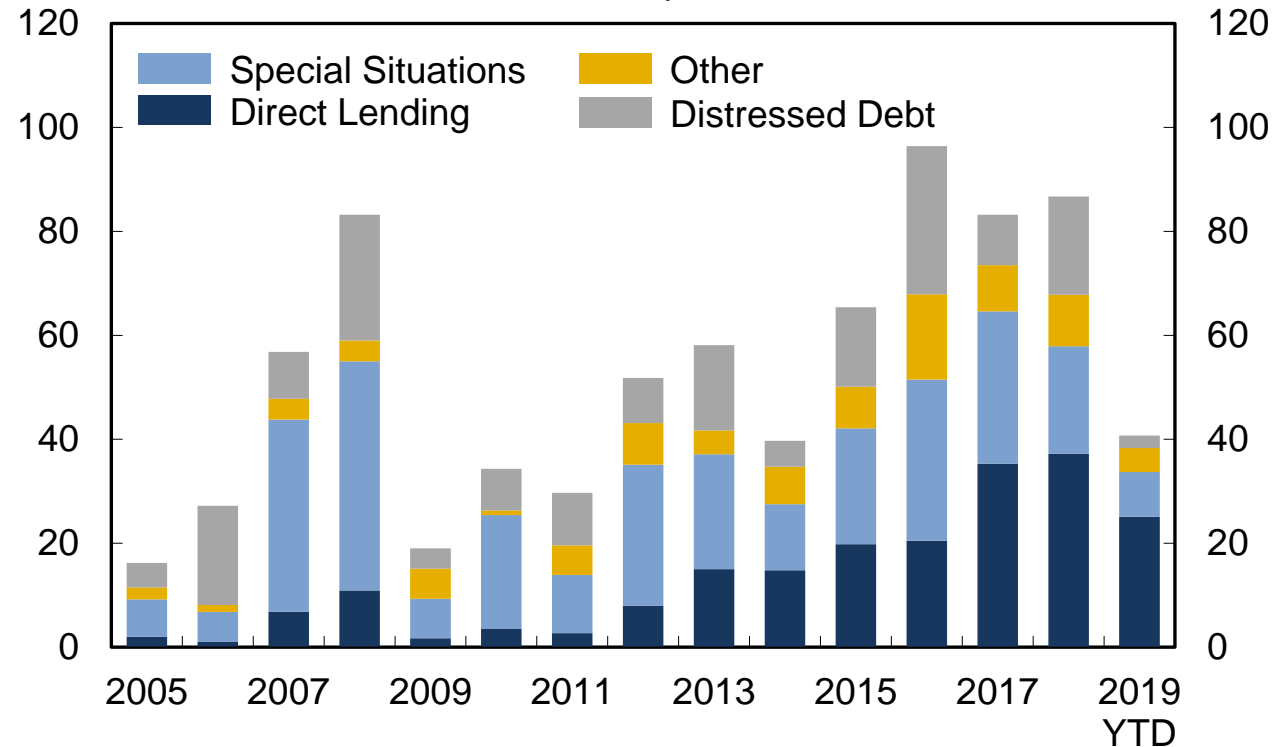
Note: 2005-2018 figures as of year-end. Includes all North American private debt funds (excluding funds of funds).

4.13.15 North American Private Debt Fundraising

Billions of US\$

As Of: Sep-2019

Billions of US\$



Source: Preqin

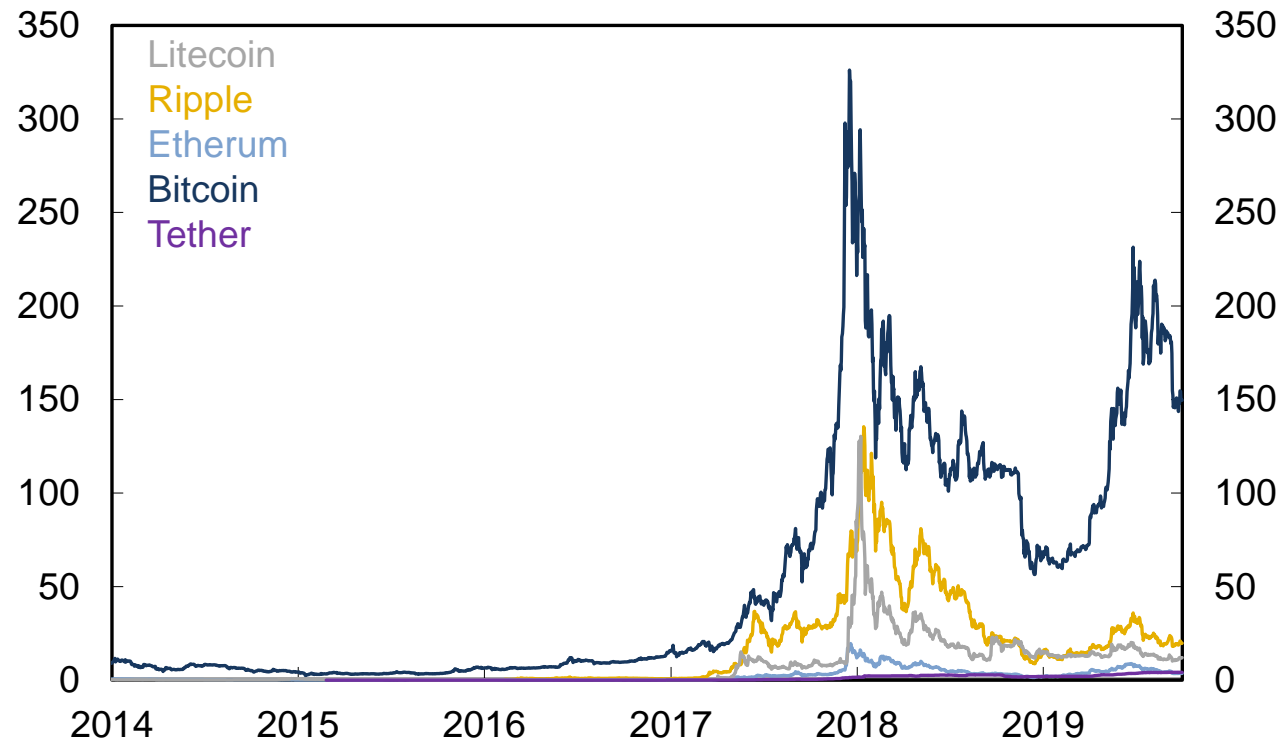
Note: Includes all North American private debt funds (excluding funds of funds).

4.14.1 Market Capitalization of Blockchain-Based Digital Assets

Billion of US\$

As Of: 30-Sep-2019

Billions of US\$



Source: Coinmarketcap.com, Office of Financial Research