

ONLINE APPENDIX

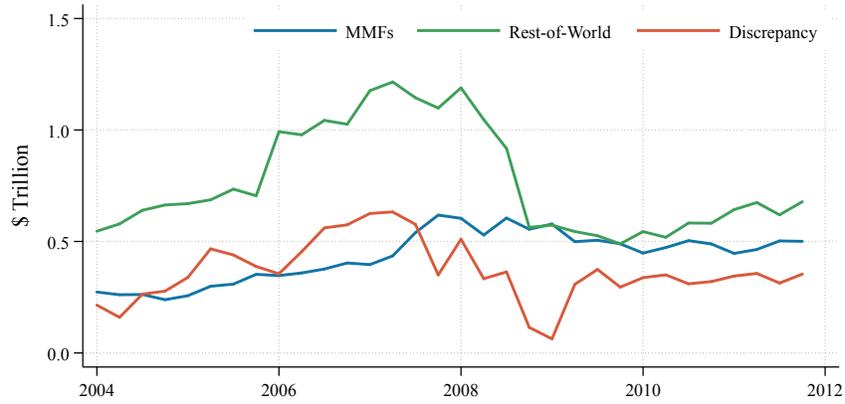


FIGURE A1. MAJOR HOLDERS OF REPO ASSETS

Source: Federal Reserve Flow of Funds Table L.207, as of April 2019.

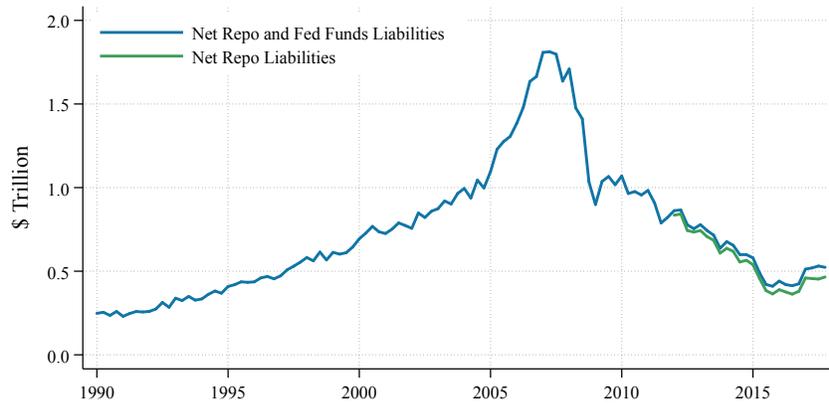


FIGURE A2. NET REPO FUNDING TO BANKS AND BROKER-DEALERS, EXCLUDING FEDERAL FUNDS

Source: Federal Reserve Flow of Funds Table L.207, as of April 2019.

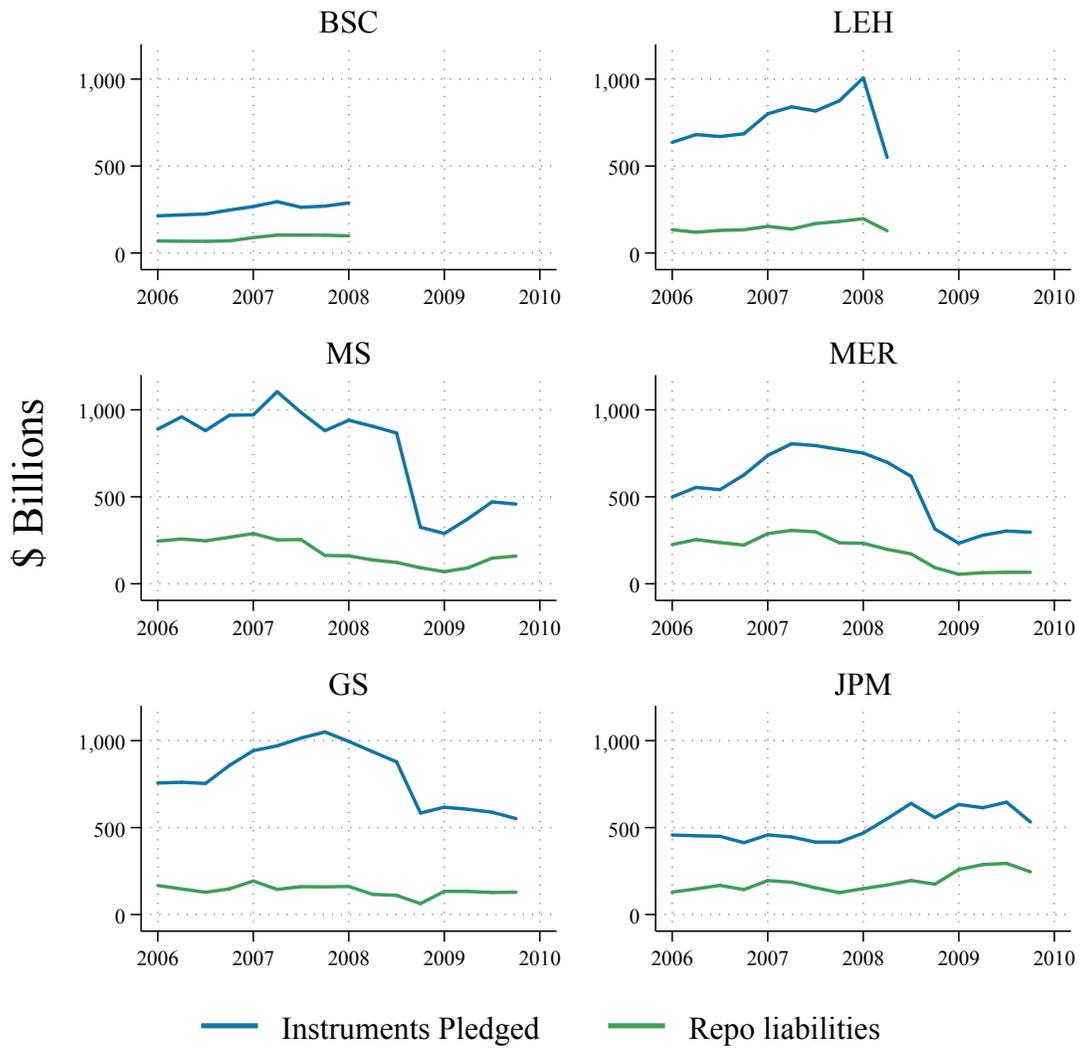


FIGURE A3. INSTRUMENTS PLEDGED AND REPO LIABILITIES

Note: Instruments pledged is the sum of trading assets which are pledged and cannot be repledged, trading assets which are pledged and can be repledged, and collateral received which has been repledged.

Source: Company reports.

TABLE A1—CALCULATING REPO FROM FLOW OF FUNDS

Net Repo Funding to Banks and Broker-Dealers		
Series ID	Description	Source
+ FL762150005.Q	U.S.-chartered depository institutions, including IBFs; federal funds and security repurchase agreements; liability	FFIEC 002, FFIEC 031, FFIEC 041, FFIEC 051
+ FL752150005.Q	Foreign banking offices in the U.S., including IBFs; federal funds and security repurchase agreements; liability	FFIEC 002
+ FL472150053.Q	Credit unions; federal funds and security repurchase agreements held by Corporate Credit Unions; liability	NCUA 5310
+ FL662151003.Q	Security brokers and dealers; security repurchase agreements; liability	FOCUS, FOGS
- FL762050005.Q	U.S.-chartered depository institutions, including IBFs; federal funds and security repurchase agreements; asset	FFIEC 002, FFIEC 031, FFIEC 041 and FFIEC 051
- FL752050005.Q	Foreign banking offices in the U.S. including IBFs; federal funds and security repurchase agreements; asset	FFIEC 002
- FL472050053.Q	Credit unions; federal funds and security repurchase agreements held by Corporate Credit Unions (net of liabilities before 2002:Q4); asset	NCUA 5310
- FL662051003.Q	Security brokers and dealers; security repurchase agreements; asset	FOCUS, FOGS
Net Repo Funding to Broker-Dealers		
Series ID	Description	Source
+ FL662151003.Q	Security brokers and dealers; security repurchase agreements; liability	FOCUS, FOGS
- FL662051003.Q	Security brokers and dealers; security repurchase agreements; asset	FOCUS, FOGS

Note: Series ID is the Flow-of-Funds series identification number.

Source: Federal Reserve Flow of Funds Table L.207, as of April 2019.

We now provide additional data from the Federal Reserve's Flow-of-Funds on select repo asset series.¹

- 1) Rest of the world; security repurchase agreements; asset
 - Series ID: FL262051003.Q
 - Description: Unadjusted transactions from BEA, ITA, Table 8.1, U.S. International Financial Transactions for Other Investment, line 69, Transactions with deposit-taking institutions excluding the central bank, deposits, of which: Resale agreements plus line 81, Transactions with other financial institutions and non-financial institutions excluding general government, loans, of which: resale agreements. Level is calculated as the previous level plus the unadjusted transactions. Data for the most recent ten years shows no significant seasonality.
- 2) Money market funds; security repurchase agreements; asset
 - Series ID: FL632051000.Q
 - Description: From 2013Q1, level from N-MFP data, taken from ICI table "Monthly Taxable Money Market Fund Portfolio Data", Repurchase agreements total. Sum of Prime, Government, and Tax-exempt totals. Prior to 2013Q1, Level from ICI by subscription, Trends in Mutual Fund Activity, table 8, Month-End Portfolio Holdings of Taxable Money Market Funds, Repurchase agreements. Series includes variable annuity money market funds. Series includes variable annuity money market funds. Unadjusted transactions are the change in the level; seasonally adjusted transactions are obtained using X-13-ARIMA procedure.
- 3) Mutual funds; security repurchase agreements; asset
 - Series ID: FL652051003.Q
 - Description: Level from ICI by subscription, Quarterly Long-Term Mutual Fund Asset Composition report, calculated as one-sixth of line item cash and receivables minus liabilities. Data for the most recent quarter estimated as one-sixth of quarter end, long-term mutual fund liquid assets from ICI Monthly Trends report Table 6, less an estimate for short term municipal bonds and short term government bonds. Series includes variable annuity long term mutual funds. Unadjusted transactions are the change in the level; data for the last ten years show no significant seasonality.
- 4) Government-sponsored enterprises; federal funds and security repurchase agreements; asset
 - Series ID: FL402050005.Q (which is the sum of FL402050013.Q, FL402050023.Q, FL402051033.Q and FL402052033.Q)
 - Description: For FL402050013.Q: Level from FNMA, Condensed Consolidated Balance Sheets, Federal funds sold and securities purchased under agreements to resell. Transactions are calculated as the change in level. Data for the most recent ten years show no significant seasonality.
For FL402050023.Q: Level from Freddie Mac, Consolidated Balance Sheets, Securities purchased under agreements to resell and federal funds sold. Transactions are calculated as the change in level. Data for the most recent ten years show no significant seasonality.
For FL402051033.Q: Level from FHLBs, Combined Statements of Condition, Securities purchased under agreements to resell. Transactions are calculated as the change in level. Data for the most recent ten years show no significant seasonality.

¹Additional detail, and useful links across the series, is available at <https://www.federalreserve.gov/apps/fof/AdvancedSearch.aspx?ck=a>.

For FL402052033.Q: Level from FHLBs, Combined Statements of Condition, Federal funds sold. Transactions are calculated as the change in level. Data for the most recent ten years show no significant seasonality.

- 5) Nonfinancial corporate business; security repurchase agreements; asset
- Series ID: FL102051003.Q
 - Description: Starting in 2010:Q4; level is calculated from QFR Table 70.1 - Balance Sheet for Corporations in the NAICS Manufacturing Sector, Total Assets \$25 Million and Over, line U.S. Treasury and Federal agency securities, Subject to agreements to sell, plus a percentage of QFR short-term investments for all other QFR industries. The percentage is calculated as U.S. Treasury and Federal agency securities, Subject to agreements to sell from QFR Table 70.1, divided by line Total Cash, U.S. Government and other securities less line Total cash on hand and in banks. QFR short-term investments for other industries are calculated as the sum of line Other short-term financial investments, including marketable and government securities, commercial paper, etc. from Table 82.1 - Balance Sheet for Corporations in NAICS Mining and Wholesale Trade sectors, Table 84.1 - Balance Sheet for Corporations in NAICS Retail Trade Sector, Table 86.1 - Balance Sheet for Corporations in NAICS Information Sector, and Table 89.1 - Balance Sheet for Corporations in NAICS Professional and Technical Services Sector (except Legal Services). The QFR total is multiplied by the ratio of line Total Assets from the SOI Corporation Income Tax Returns, Returns of Active Corporations, Table 6 - Balance Sheet, Income Statement, Tax, and Other Selected Items, by Major Industry, Services sector, to line Total Assets from the QFR Table 1.1 - Balance Sheet for Corporations in the NAICS Manufacturing Sector, All Total Asset Sizes. Unadjusted flow is the change in the level; data for the most recent ten years show no significant seasonality.
- 6) State and local governments, excluding employee retirement funds; security repurchase agreements; asset
- Series ID: FL212051003.Q
 - Description: Level is calculated as approximately 5 percent of total financial assets from the U.S. Census Bureau's Table 1—State and Local Government Finances by Level of Government and by State, Cash and security holdings, Other than insurance trust funds, adjusted to match financial accounts framework. Percentage is based on detailed data for fiscal year 2011 on security repurchase agreements from CAFRs for the largest state and local governmental units. Transactions are calculated as the change in level. Data for the most recent ten years show no significant seasonality.
- 7) Property-casualty insurance companies; security repurchase agreements, including those held by U.S. residual market reinsurers; asset
- Series ID: FL512051005.Q (which is the sum of FL512051003.Q and FL512451003.Q)
 - Description: For FL512051003.Q: Level from financial statements compiled by and purchased from SP Global. Series from Supplemental Investment Risk Interrogatories, Question 20, net admitted assets subject to reverse repurchase agreements plus dollar reverse repurchase agreements. Transactions are calculated as the change in level. Data for the most recent ten years show no significant seasonality.
For FL512451003.Q: Levels are FOF Section calculation from property and casualty insurance statutory financial statement Schedule F data compiled by and purchased from SP Global. Unadjusted transactions are the change in the level. Data for the most recent ten years show no significant seasonality.

8) Life insurance companies, general accounts; security repurchase agreements, including those held by U.S. captive reinsurers; asset

- Series ID: FL542051075.Q (which is the sum of FL542051073.Q and FL542451073.Q)
- Description: For FL542051073.Q: Level from financial statements compiled by and purchased from SP Global. Series from Supplemental Investment Risk Interrogatories, Question 20, net admitted assets subject to reverse repurchase agreements plus dollar reverse repurchase agreements. Transactions are calculated as the change in level. Data for the most recent ten years show no significant seasonality.

For FL542451073.Q: Levels are FOF Section calculation from life insurance statutory financial statement Schedule S data compiled by and purchased from SP Global. Unadjusted transactions are the change in the level. Data for the most recent ten years show no significant seasonality.

9) Pension funds; security repurchase agreements; asset

- Series ID: FL592051005.Q (which is the sum of FL222051043.Q, FL572051043.Q and FL572051033.Q)

- Description: For FL222051043.Q: Second quarter levels are benchmarked annually to U.S. Census Bureau, Annual Survey of Public Pensions (ASPP), State Local Data, Table 1: National Summary of Public-Employee Retirement Systems. Second quarter level estimated as a portion of other short-term cash investments (Z68) from ASPP fund level individual unit file applied to the ASPP summary total cash and short-term investments (X21) less time and savings deposits (Z87; see FL223030043), and less cash on hand (Z88; see FL223020043). The portion of other short-term cash investments is estimated from a sample of Comprehensive Annual Financial Reports of the largest state and local governmental units taken in 2004:Q2 and 2011:Q2. Quarterly levels between ASPP Q2 benchmarks are computed by increasing the previous level using the quarterly growth rate of U.S. Census Bureau, Quarterly Survey of Public Pensions (QSPP) cash short-term investments (X21). Any residual difference between Q2 benchmark level and quarter level method is spread evenly over the previous quarters. The unadjusted transactions are the change in the level. Data for the most recent ten years show no significant seasonality.

For FL572051043.Q: Year-end level estimated from DOL Employee Benefits Security Administration, Private Pension Plan Bulletin: Abstract of Form 5500 Annual Reports and DOL Form 5500 Direct Filing Entity Bulletin: Abstract of Form 5500 Annual Reports table 12, Defined Benefit, as Assets in registered investment companies, plus a portion of Assets in common/collective trusts and Assets in master trusts, where the portion is estimated using DFE Table 2 and Table 12 (Excluding real estate). The level is then adjusted for plans whose fiscal years do not end on December 31 and to include plans with fewer than 100 participants. Data are available with a two-year lag. Series is converted to quarterly and estimated for quarters assuming constant transactions throughout the year. The growth rate of the Milliman 100 Pension Funding Index market value of assets (adjusted for market gains of debt securities) is used to estimate total assets after benchmark years. The unadjusted transactions are the change in the level. Data for the most recent ten years show no significant seasonality.

For FL572051033.Q: Level from the H.4.1 Federal Reserve statistical release, table 5 Consolidated Statement of Condition of All Federal Reserve Banks, Repurchase agreements. While data is released weekly (Wednesday), we use only quarter end dates. Unadjusted transactions are the change in the level; seasonally adjusted transactions are obtained using X-13-ARIMA procedure.

For FL542451073.Q: Levels are FOF Section calculation from life insurance statutory financial statement Schedule S data compiled by and purchased from SP Global. Unad-

justed transactions are the change in the level. Data for the most recent ten years show no significant seasonality.