

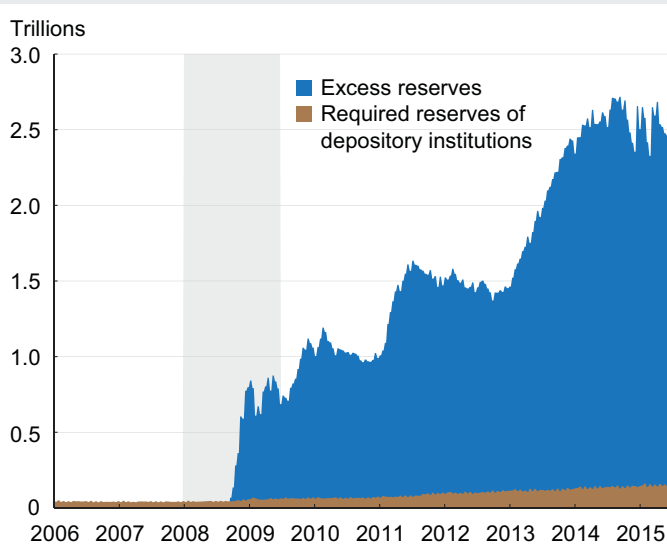
## Who Is Holding All the Excess Reserves?

Ben Craig, Sara Millington, and John Zito

The Federal Reserve requires depository institutions in the United States to hold a certain fraction of their deposits as reserves—either as vault cash or on deposit with a Federal Reserve Bank. These reserve requirements were originally intended to ensure that banks had sufficient liquidity to meet the short-term needs of their depositors. Now that the Federal Reserve acts as a lender of last resort and the FDIC insures deposits, reserve requirements do not play quite the same role, but they are still an important tool for monetary policy. Since December 2008, the Federal Reserve has paid banks interest on their reserves, while simultaneously engaging in accommodative monetary policy that has kept economy-wide interest rates low. In this environment, the interest that banks can receive from originating loans (the opportunity cost of holding reserves) is much lower, and keeping reserves at the Federal Reserve offers a much less risky return. Consequently, banks have taken the large injections of liquidity from the Federal Reserve and held them as interest-bearing excess reserves, which are the reserves held by banks over the required amount.

The stock of required reserves has been stable since late 2008, while the stock of excess reserves has increased drastically. This difference reflects the fact that the 10 percent reserve ratio has not changed in this period, and it indicates that the stock of deposits

### Excess and Required Reserves



Source: Board of Governors of the Federal Reserve System.

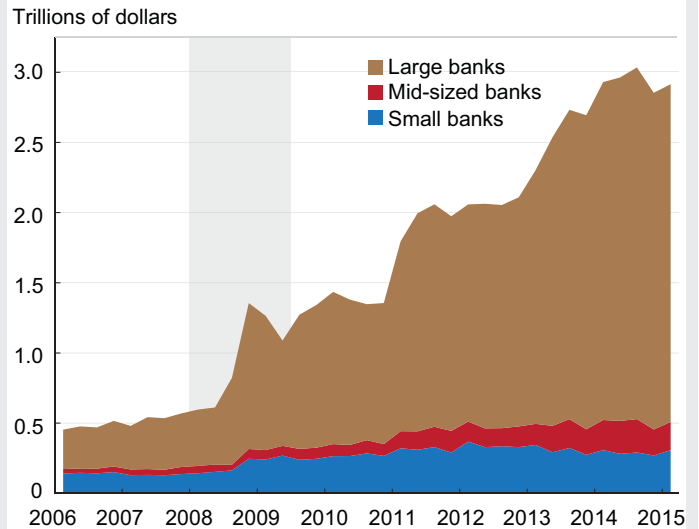
has not increased substantially either. We explore the composition of this unprecedented increase in excess reserves. Using data on the US banking system from 2006 to the present, we find that changes in excess reserves are driven by the largest financial institutions in the system. We also find that the growth in excess reserves is being increasingly shared by subsidiaries of foreign banks.

To see how much banks of different sizes and nationalities are holding in excess reserves, we analyze quarterly call report data from the first quarter of 2006 to the first quarter of 2015. The banking system has evolved over that period and so has the sample of banks covered. The data for 2006:Q1 includes 8,357 banks, while the data for 2015:Q1 includes 6,737 banks. For our analysis, we use a bank's cash holdings as a proxy for its excess reserves. (Cash holdings include currency, coin, cash items in process, and balances due from domestic and foreign banks and central banks.) Cash holdings are a reasonable proxy for total reserves, and since required reserves are such a small and stable component of total reserves, total reserves are a good proxy for excess reserves.

We first rank each bank by its total asset holdings in 2014. We then classify the top 100 as large institutions, the next 100 as mid-sized institutions, and the remainder as small institutions. We hold these groups of institutions constant across the sample period. The makeup of the US banking system fluctuated substantially in the wake of the financial crisis, and these fluctuations create issues when ranking banks by asset size on a yearly basis. We avoid these issues by fixing the set of institutions that constitute a group. We use 2014 data for the ranking because it is the most recent complete year of data. We sum excess reserves in each quarter across all of the banks in a group, giving us the top right figure.

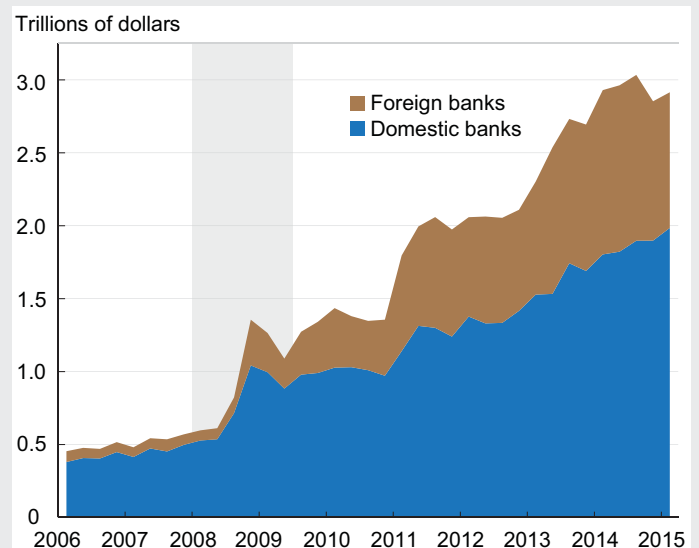
The largest banks by our classification hold the greatest share of excess reserves, and this share has grown substantially over time. The primary dealers that act as counterparties for the Federal Reserve's liquidity injections are some of the nation's largest financial institutions, and larger banks have more assets to sell to create excess reserves. So while we might expect larger banks to hold more cash, we observe that small and mid-sized banks have only modestly increased their holdings of excess reserves, and now the level of reserves of small banks is roughly consistent with levels predicted by a pre-crisis growth rate. This indicates that liquidity is not diffus-

## Excess Reserves by Asset Size



Note: Shaded bar indicates a recession.  
Source: Quarterly call report data.

## Excess Reserves of Foreign and Domestic Banks



Note: Shaded bar indicates a recession.  
Source: Quarterly call report data.

ing through the banking system, but is instead staying concentrated on the balance sheets of the largest banks.

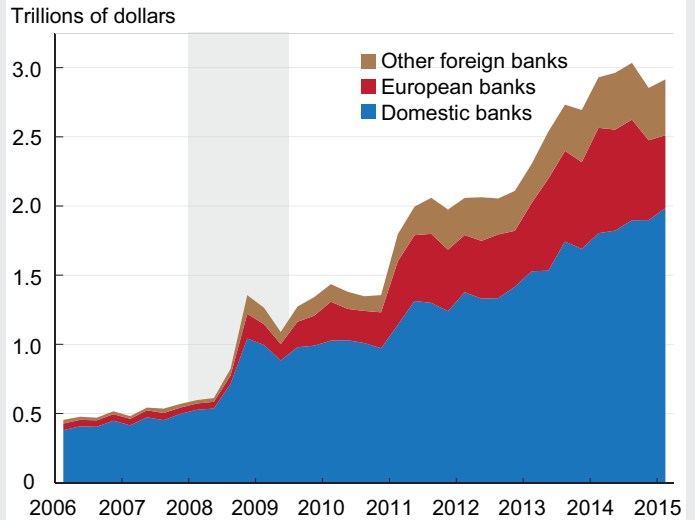
Foreign-owned banks have been a large contributor to the expansion of reserves in the banking system, especially when looking at excess reserves following the financial crisis. Prior to the financial crisis in late 2008, foreign-owned bank reserves contributed essentially nothing to bank reserves. However, after the financial crisis, the level of bank reserves held by foreign-owned banks has expanded.

Banks in the European Union (EU) are driving this growth in foreign holdings of excess reserves.

A look at recent quarters' holdings of excess reserves by banks shows that domestic banks have continuously increased their holdings while foreign European banks have scaled theirs back. Non-European banks have a much more mixed pattern of increases and decreases. The mixed pattern may reflect the fact that the countries included in the non-European group are more dissimilar than those in the EU.

We have explored the unprecedented growth in excess reserves since 2008 and seen that this growth is concentrated on the balance sheets of the largest financial institutions and increasingly shared by foreign-owned banks. Since the accommodative monetary policy of recent years seems to be driving the increase in excess reserves, it will be interesting to observe how these trends evolve as the Federal Reserve contemplates raising policy rates in the near future.

## Excess Reserves



Note: Shaded bar indicates a recession.  
Source: Quarterly call report data.

## Excess Reserve Holdings by Region

	Domestic Banks	European-Owned Banks	Non-European Foreign-Owned Banks	Total Excess Reserves
2014:Q1	1.8033	0.7617	0.3652	2.9301
2014:Q2	1.8222	0.7298	0.4112	2.9631
2014:Q3	1.8972	0.7273	0.4100	3.0344
2014:Q4	1.8981	0.5767	0.3788	2.8535
2015:Q1	1.9849	0.5265	0.4040	2.9154

Source: Quarterly call report data.



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