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# SIFMA Insights:

The Importance of FBOs to US Capital Markets

April 2019



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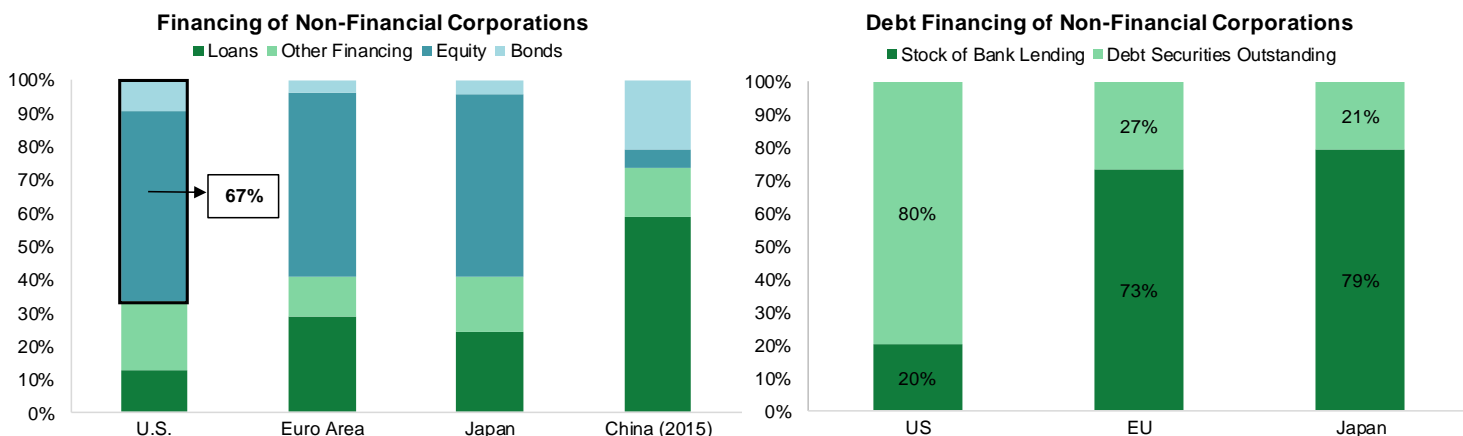
## Key Takeaways

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- Foreign Banking Organizations (FBOs) are key participants in the U.S. capital markets across all asset classes and activities. For example, FBOs comprise 65% primary dealers and 49% of swap dealers.
- FBOs are crucial to the U.S. markets' smooth and efficient operation, however, the speed and extent to which FBOs have deliberately shrunk market share could have longer term impacts.
- Between 2014 and 2018, FBO market share declined across all product types – Equities (-8.2%), FICC (-3.0%), IBD (-5%) – with one of the largest FBO broker-dealers reporting a decrease in assets of 52% between 2010 and 2018.
- The decline in market share appears correlated with the implementation of the Enhanced Prudential Standards, including the requirement to form an Intermediate Holding Company and the application of capital, stress testing and liquidity rules.
- There is no indication that the decline will abate, as costs of compliance and capital charges are considerable. The implication to market efficiency and stability is questionable if current trends continue.
- Conclusion: Applying global regulatory standards to U.S. footprints has caused FBOs to exit businesses, which could have long-term adverse effects on markets and the economy. These actions could also become global, opening U.S. firms to quid-pro-quo regulations on their operations in foreign jurisdictions.

## Executive Summary

U.S. capital markets are crucial to fueling the economy, providing 67% of funding for economic activity and facilitating the transfer of funds from those who seek a return on their assets to those who need capital and credit to grow. Capital markets enable debt issuance, which is a more efficient and stable form of borrowing for corporations. The use of debt capital markets is more prevalent in the U.S., with around 80% of corporate funding coming through the debt capital markets versus 20% bank lending. This is reversed in other major developed and emerging markets. Bank lending can be more cyclical in nature and is, therefore, more prone to disappear during economic or market shocks. The capital markets component of our financial system is an important source of strength for the U.S. economy.



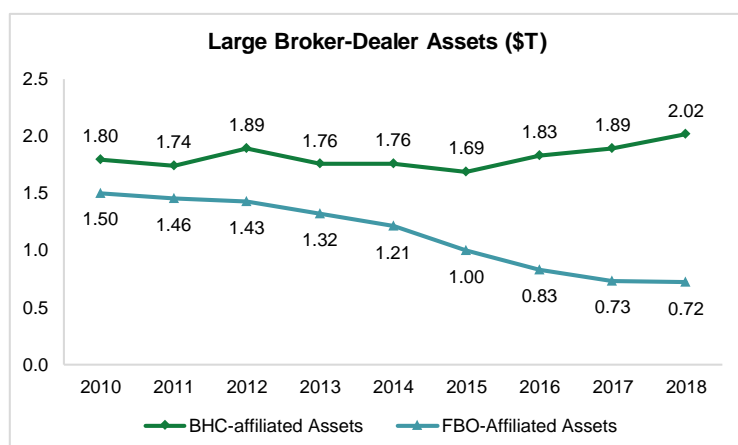
Source: As of 2017, China 2015. (left) OECD, ECB, Bank of Japan, National Bureau of Statistics of China; (right) Bank of Japan, ECB, Federal Reserve  
 Note: (left) Euro Area = 19 members using the Euro; equity = listed, no listed and other; other financing = insurance reserves, trade credits & advances. (right) EU = 28 member states, with the UK

A diverse mix of financial institutions is critical to maintaining the competitiveness and strength of U.S. markets. This enables the group as a whole to provide balance sheet capacity in the form of a wide array of financial products for corporate, government and retail customers. U.S. customers benefit from the opportunity to engage in a multitude of financial transactions to support their needs. Foreign banking organizations (FBOs) are a critical part of this diversity and support the depth and competitiveness of U.S. markets, as well as provide access to international markets.

There are 12 global investment banks which facilitate the vast majority of trading activities (both FICC and equities) and execute a high proportion of issuance transactions (equity and debt) and M&A deals. In the Americas region, 6 of these firms are FBOs (50%). On a global basis, we estimate the largest foreign firms represent over 1/3 of global trading in both equities and FICC and 27% in investment banking. Additionally, FBOs represent 65% of primary dealers and 49% of registered swap dealers, crucial to running U.S. monetary policy and helping corporations manage risk. Yet, FBO market share declined from FY14: equities -8%; FICC -3%, IBD -5%.

Unfortunately, post-crisis regulations have discouraged FBOs from participating in many segments of U.S. capital markets. Many FBOs are subject to enhanced capital and liquidity requirements at the U.S. subsidiary level, despite already being regulated and capitalized at the parent level (under accepted international banking standards), inclusive of U.S. operations. As a result, while FBO-owned broker-dealers have historically provided a major share of U.S. capital markets capability – 45% of balance sheet capacity for the system and 34% of the top 10 fee

revenues generated from underwriting and advisory work (in 2010) – FBO assets have shrunk dramatically since 2010. FBO total assets declined 52% over the last eight years – a dramatic shock to a core source of funding in the U.S. – and FBO market share in investment banking activities (bond issuance, loan origination) is down by essentially one-third, to 24% of top 10 fee revenues.



Source: FINRA

Note: Data covers BHC (bank holding company) and FBO affiliated broker-dealers that are among the 25 largest by assets

This shrinking trajectory coincides with significant new regulations adopted in the early 2010s (on top of capital requirements in their home markets), including the Dodd-Frank Act and Internal Holding Company (IHC) requirements. As noted in the 2017 U.S. Treasury [report](#), requiring capital and liquidity at the IHC<sup>1</sup> level results in regulatory requirements that often exceed what would be required if the U.S. activities were treated as part of the IHC's consolidated parent. Yet, these firms are subject to additional regulatory burdens at the IHC level under U.S. enhanced prudential requirements<sup>2</sup>.

It is inappropriate to apply standards developed for a total global firm to a regional subsidiary. It is an apples-to-oranges comparison. Global firms are already subject to enhanced standards at the global level, and the U.S. has a longstanding tradition of national treatment that acknowledges and respects equivalent home country regulation. It also contradicts a goal of the Basel committee for coherent implementation of policies to create a level playing field across countries and regions, i.e. no ring fencing or gold plating.

This approach also increases the risk of regulatory balkanization. If a leading country like the U.S. is seen to punish foreign banks, other countries may respond by limiting foreign bank operations in their jurisdiction. This can have the undesired effect of actually increasing risk in the total global financial system. For [example](#)<sup>3</sup>, ring fencing traps capital in one local subsidiary, which decreases resources available for other subsidiaries. If other countries implement their own ring fencing policies, the benefit of global diversification is lost. New FBO branch proposals

<sup>1</sup> The Fed requires FBOs with \$50 billion or more in U.S. non-branch assets to establish an IHC over its U.S. banking and non-banking subsidiaries.

<sup>2</sup> Section 165 of Dodd-Frank requires the Fed to adopt tailored enhanced prudential standards (extensive capital, liquidity, risk-management and stress testing requirements) to large bank holding companies (BHCs) and certain FBOs (\$50 billion or more of total U.S. assets).

<sup>3</sup> Please see "Understanding 'ring-fencing' and how it could make banking riskier" by Wilson Ervin.



could increase the probability U.S. firms will face quid-pro-quo regulations on their operations in foreign jurisdictions, similar to what FBOs have experienced in the U.S.

Market participants note concern that the decline in FBO participation – at a time when U.S. firms are constrained by the same regulations and therefore limited in how much new business they can take up – decreases the diversity of business models participating in U.S. markets. This could negatively impact the efficient functioning of U.S. capital markets, i.e. provision of liquidity, under times of market stress. This could reduce the resilience of the U.S. financial system and unduly harm the U.S. economy.

### **Is the Concern around the Fed's Discount Window?**

The Federal Reserve's discount window provides a reliable backup source of funding, aimed to relieve liquidity strains for individual depository institutions and the banking system as a whole. The FBOs in this report are all able to access the discount window via either U.S. subsidiary banks or branches. We surmise this is part of the reason the Fed has applied enhanced prudential standards meant for global footprints at the IHC level. The Fed, it appears, feels this exposes them to risks of the total consolidated entity.

According to Regulation A on extensions of credit by federal reserve banks part 201.3(c2), "Each Federal Reserve Bank shall require any information it believes appropriate or desirable to ensure that assets tendered as collateral for advances or for discount are acceptable and that the borrower uses the credit provided in a manner consistent with this part." Our reading of this is that if the Fed believes the IHC capital levels or quality of collateral could be hindered by the parent entity, it may (a) ask for more information and (b) follow its lending procedures specified for institutions presumed as undercapitalized. In other words, the Fed has other regulatory avenues to pursue to safeguard use of the discount window. Although it should be noted it has already added additional safeguards under Regulation A by narrowing its authority to "unusual and exigent circumstances", as well as requiring evidence that credit is not available from other sources and that failure to obtain credit would adversely impact the economy. More generally, the Dodd Frank Act placed restrictions on the Fed's ability to use the discount window (and other tools) in emergency circumstances. The Fed can now only use section 13(3) authority to provide discount window lending to nonbanks in a program with "broad-based eligibility" to provide liquidity to the entire financial system, not to aid a failing financial company, after receiving approval by the Secretary of the Treasury.

If the Fed has concerns around the global footprint of a firm accessing the discount window, it has legal means to address this through discount window rules and requirements. However, applying global standards to the IHC level can bring negative impacts to the whole of U.S. capital markets in terms of IHCs exiting businesses, thereby decreasing the total pie of assets, loans and deposits in the U.S. financial system. This can have negative effects on the U.S. economy.

## FBOs Play an Important Role in US Capital Markets

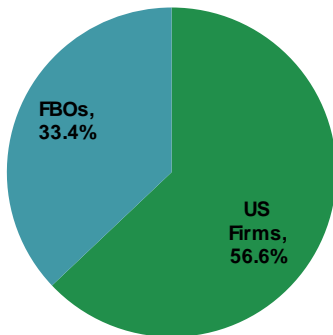
**Key Takeaways:** FBOs play crucial roles in capital markets: 50% T12 firms executing majority of CM transactions in Americas, 58% globally; 65% primary dealers, 49% registered swap dealers; >40% market share in many corporate bond/loan categories.

### Capital Markets Landscape

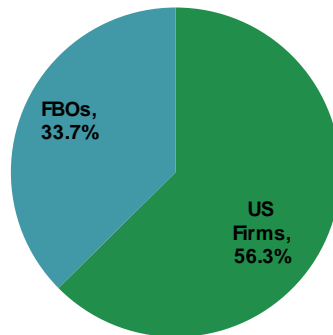
In capital markets, primary and secondary markets are symbiotic in nature. Efficiently functioning primary markets maintain the depth and liquidity in secondary markets. Healthy secondary markets give issuers confidence their needs will be met at a good price level in primary markets, and their cost of capital will be lower at issuance when there is a liquid secondary market. In addition to promoting capital formation, investors utilize secondary markets (trading) to generate returns and manage risk. Market making enables the efficient flow of assets in financial markets, and market making is performed by financial intermediaries. Financial institutions provide advice and connect clients needing capital with those providing capital – they make markets work.

In general, there are 12 global investment banks which facilitate the vast majority of trading activities (both FICC and equities) and execute a high proportion of issuance transactions (equity and debt) and M&A deals. 7 of these firms are FBOs (58%). In the Americas region, 50%, or 6 of the top firms, are FBOs. (Please see league tables on the following pages.)

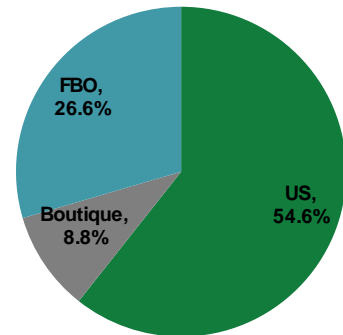
Global Market Share - Equities



Global Market Share - FICC

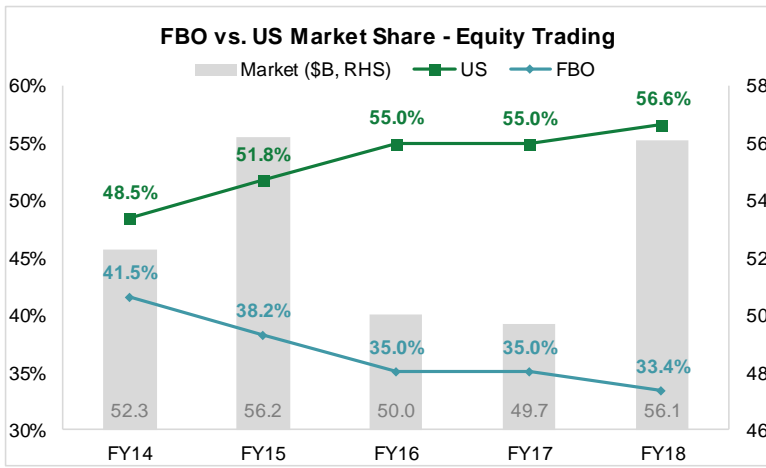


Global Market Share - IBD



Source: Company reports, SIFMA estimates

Note: As of FY18. US = BAC, C, GS, JPM, MS; FBO = BARC, BNP, CS, DB, HSBC, GLE, UBS. Please see Appendix: Terms to Know for ticker details. FICC = fixed income, currencies and commodities. Revenues by firm are taken from company reports. The global universe, the denominator in calculating market shares, is calculated by (a) assuming these firms represent 90% of the global trading pie, (b) grossing up the sum of individual firm revenues by this figure, and (c) calculating market shares.



**FBO Market Share Declines Indicate Exodus of US Businesses**

To assess market shares, we summed revenues of the top 12 firms, grossing this up by 90% (estimate T12 firms perform 90% of capital markets transactions).

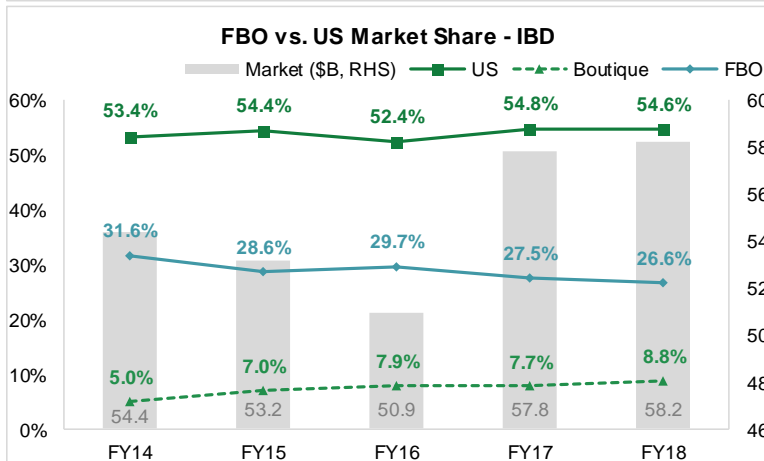
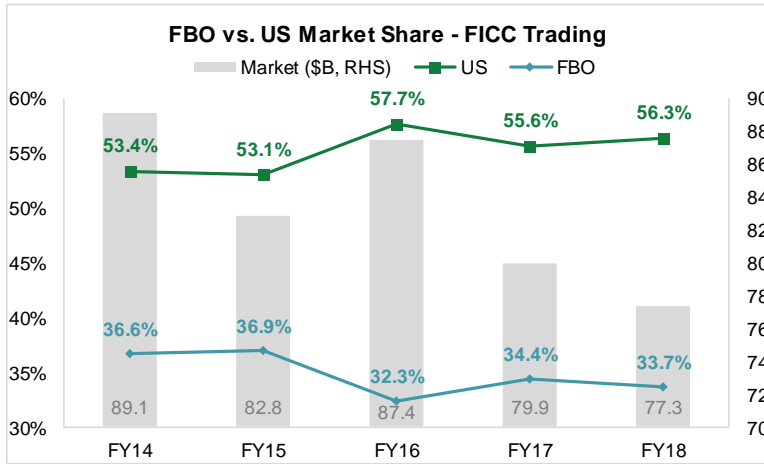
**There is a clear trend of declining market shares across all divisions: (FY14-FY18)**

- Equities = -8.2%
- FICC = -3.0%
- IBD = -5.0%

As FBOs struggle to adapt global regulations at the local IHC level, they are making strategic decisions – costs (of regulations) greater than rewards (revenue, market share) – to exit U.S. businesses.

Strong capital markets need a portfolio of firms with diverse business models to remain healthy under all types of market conditions.

The exodus of FBOs concerns market participants, as it could strain the efficient running of U.S. capital markets under times of economic or market stress. Additionally, the placement of extra regulations on the U.S. subsidiaries of FBOs could increase the probability U.S. banks face quid-pro-quo regulations on their foreign operations.



Source: Company reports, SIFMA estimates

Note: US = BAC, C, GS, JPM, MS; FBO = BARC, CS, DB, HSBC, UBS; no data BNP, GLE. Boutique = Evercore, Houlihan Lokey, Lazard, Moelis, PJT Partners, Raymond James, Stifel; PJT, Raymond James, Stifel start FY15. Please see Appendix: Terms to Know for ticker details. FICC = fixed income, currencies and commodities; IBD = investment banking division. Revenues by firm are taken from company reports. The global universe, the denominator in calculating market shares, is calculated by (a) assuming these firms represent 90% of the global trading pie, (b) grossing up the sum of individual firm revenues by this figure, and (c) calculating market shares.



## FBOs Play an Important Role in US Capital Markets

### Rankings In the Americas - 6 FBOs, or 50%

	J.P. Morgan	Bank of America	Goldman Sachs	Morgan Stanley	Citigroup	Barclays	Credit Suisse	Deutsche Bank	Wells Fargo	RBC	UBS	BNP Paribas
Total Investment Bank												
FICC												
Equities												
IBD												

#1-3
#4-6
#7-9
#10-12

### Rankings Globally - 7 FBOs, or 58%

	J.P. Morgan	Goldman Sachs	Citigroup	Morgan Stanley	Bank of America	Deutsche Bank	Barclays	Credit Suisse	UBS	HSBC	BNP Paribas	Socleto Generale
Total Investment Bank												
FICC												
G10 Rates												
G10 FX												
EM Macro												
Credit												
Securitization												
Commodities												
Municipal Finance												
Equities												
Cash												
Derivatives												
Prime Services												
F&O												
IBD												
M&A												
ECM												
DCM												

#1-3
#4-6
#7-9
#10-12
N/A

Source: CRISIL Coalition Proprietary Competitor Analytics, SIFMA estimates (as of 1H18)

Note: Based on revenues from the top 12 global investment banks. FICC = fixed income, currencies & commodities; IBD = investment banking division.

### Primary Dealers – Making US Monetary Policy Happen

**FBOs are crucial to the efficient running of US monetary policy, given the role played by primary dealers – 15 of the 23 current primary dealers are FBOs (65%).**

An important factor in the functioning of U.S. fixed income market structure is the use of primary dealers. As trading counterparties to the Federal Reserve Bank of New York (NY Fed), primary dealers play a crucial role in open market operations, which support the implementation of U.S. monetary policy. These dealers are expected to be active counterparties for the NY Fed’s operations implementing monetary policy and bid in all Treasury auctions at “reasonably competitive prices” (consistent with their pro rata share of the market).

If a primary dealer is active in agency debt or agency MBS, it is also expected to participate in any NY Fed operations in these instruments at a level proportionate with its share in these markets. Primary dealers are eligible to participate in the NY Fed’s securities lending program, which is designed to help dealers make markets in Treasury securities. Primary dealers play another important role by providing the NY Fed insight into market developments and ongoing market trends, which it uses to support the formulation and implementation of monetary policy.

Current Primary Dealers
<a href="#">Bank of Nova Scotia, New York Agency</a>
<a href="#">BMO Capital Markets Corp.</a>
<a href="#">BNP Paribas Securities Corp.</a>
<a href="#">Barclays Capital Inc.</a>
<a href="#">Cantor Fitzgerald &amp; Co.</a>
<a href="#">Citigroup Global Markets Inc.</a>
<a href="#">Credit Suisse AG, New York Branch</a>
<a href="#">Daiwa Capital Markets America Inc.</a>
<a href="#">Deutsche Bank Securities Inc.</a>
<a href="#">Goldman Sachs &amp; Co. LLC</a>
<a href="#">HSBC Securities (USA) Inc.</a>
<a href="#">Jefferies LLC</a>
<a href="#">J.P. Morgan Securities LLC</a>
<a href="#">Merrill Lynch, Pierce, Fenner &amp; Smith Incorporated</a>
<a href="#">Mizuho Securities USA LLC</a>
<a href="#">Morgan Stanley &amp; Co. LLC</a>
<a href="#">NatWest Markets Securities Inc.</a>
<a href="#">Nomura Securities International, Inc.</a>
<a href="#">RBC Capital Markets, LLC</a>
<a href="#">Societe Generale, New York Branch</a>
<a href="#">TD Securities (USA) LLC</a>
<a href="#">UBS Securities LLC.</a>
<a href="#">Wells Fargo Securities, LLC</a>

Source: Federal Reserve Bank of New York

### Registered Swap Dealers – Helping Corporations Manage Risk

**FBOs are essential to the efficient functioning of US swaps transactions, used as a crucial risk management tool by many corporations (and other clients, municipalities, investors, etc.). We estimate 50 of the 102 provisionally registered swap dealers are FBOs (49%).<sup>4</sup>**

Swaps are derivatives contracts which involve the exchange of one payment obligation for another to manage risk and hedge exposures. Swaps may be used to risk manage future movements in interest or foreign exchange rates, or prices of commodities, equities, or credit. Corporations, governments and other entities need financial institutions to act as counterparties for their swaps transactions, and the Commodities Futures Trading Commission (CFTC) requires institutions engaged in swap dealing register as swap dealers.<sup>5</sup>

### FBOs Hold Significant Market Shares in Several Issuance/Origination Categories

U.S. fixed income markets are an integral component to economic growth, providing efficient, long term and cost effective funding for governments and companies. This enables them to expand, innovate and provide goods and services society demands. The diversity of fixed income products both increases the amount of funds available to borrow and spreads credit risk across multiple market participants.

As shown in the tables in the Appendix, FBOs play an important role in maintaining the diversity of product offerings available to corporations, municipalities and investors. As of the end of 2018, these firms held the following market shares:

- Corporate bond issuance 40%+ = textile, publishing, auto/truck, telecommunications, aerospace, mining, chemicals, utility & energy, machinery, forestry & paper and oil & gas
- Loan origination 40%+ = mining, agribusiness and textile
- Specialized lending = agriculture 41.2%, infrastructure 38.5% and aircraft 20.8% (down from >50% in 2010)

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<sup>4</sup> As counted on the CFTC at the time of writing this report.

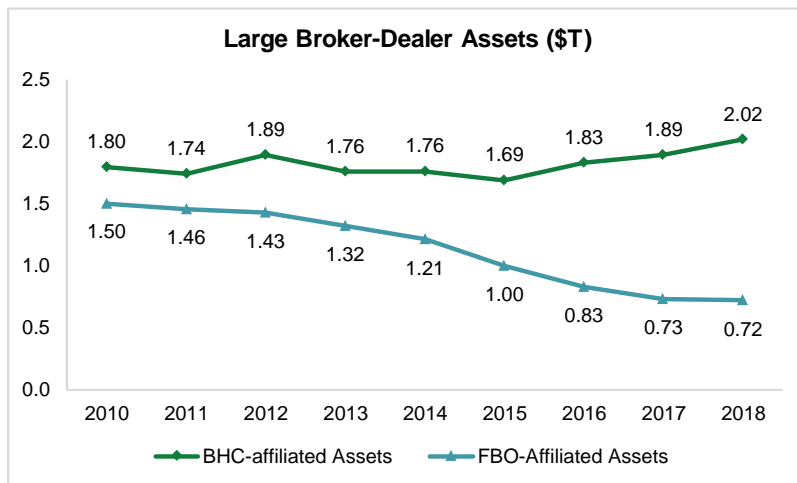
<sup>5</sup> The Dodd-Frank Act and subsequent CFTC rules identify a swap dealer as any person who: (1) holds itself out as a dealer in swaps; (2) makes a market in swaps; (3) regularly enters into swaps with counterparties as an ordinary course of business for its own account; or (4) engages in activity causing itself to be commonly known in the trade as a dealer or market maker in swaps. The CFTC requires that persons engaged in these activities register as swaps dealers after they have reached a “de minimis” threshold: the aggregate gross notional amount of the swaps entered into over the prior 12 months in connection with dealing activities exceeds \$8 billion.

## Yet, Regulations Are Driving FBOs to Exit US Businesses

**Key Takeaways:** Assets at the largest FBO broker-dealer subsidiaries have decreased 52% from 2010 to 2018. Decreases in trading assets indicate FBOs are exiting U.S. businesses – FBO LISCC trading assets -31.4% ('16-'17), U.S. -4.3% ('13-'17).

### FBO US Broker-Dealer Assets Declining Greater than US Peers

As shown in the chart below, assets at the broker-dealer subsidiary level for the top 25 largest U.S. bank holding companies (BHCs) and FBOs have declined in aggregate since 2010. Looking at the period after the passing<sup>6</sup> of the FBO rules by the Fed, whereby IHCs would be subject to the same risk-based and leverage capital standards as large U.S. bank holding companies, there is a divergence in trends between U.S. and FBO broker-dealers. Aggregate assets for broker-dealers affiliated with FBOs have continued to decrease significantly since 2010, with a notable drop in 2015 after the rules passed. Meanwhile, assets for U.S. peers have increased slightly, albeit the increase is not of the same magnitude at which FBOs declined. This implies FBOs as a group have exited many businesses in the U.S.; yet, it does not appear the U.S. firms are picking up all of the business FBOs exited.



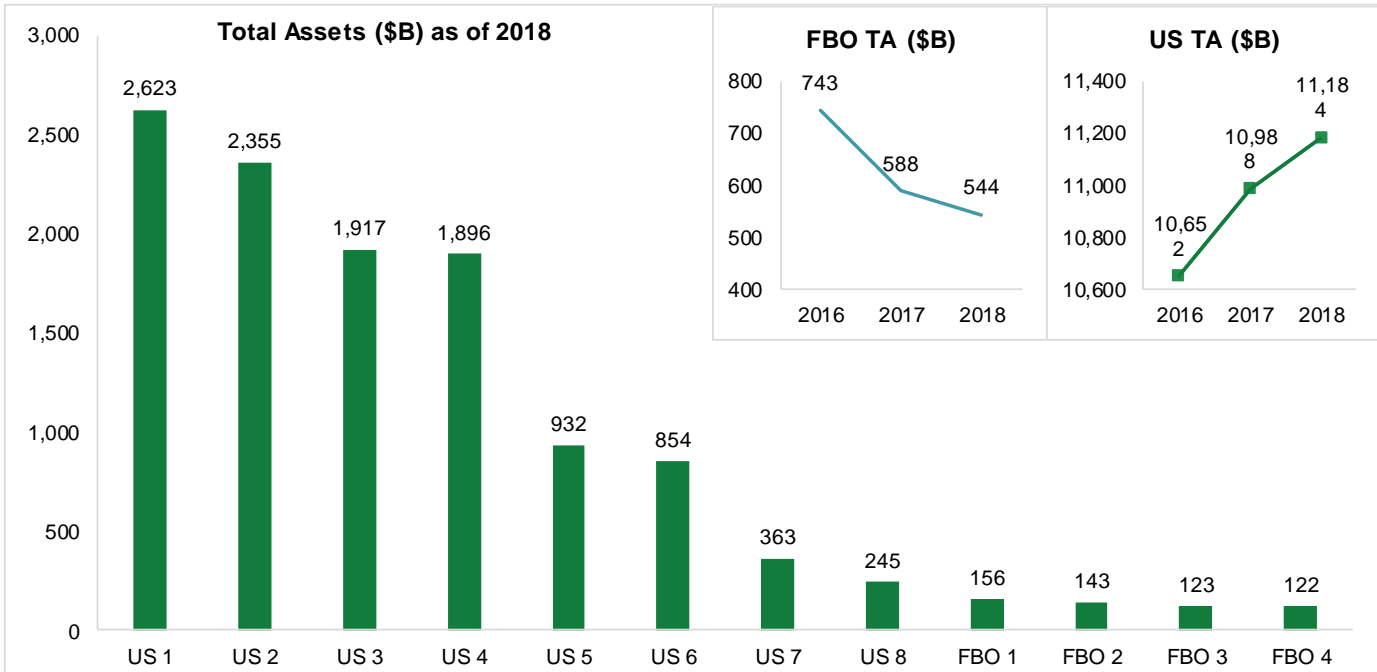
Source: FINRA

Note: Data covers BHC and FBO affiliated broker-dealers that are among the 25 largest by assets

<sup>6</sup> The Fed approved final [rules](#) in February 2014, with firms required to comply by January 1, 2015.

## Yet, Regulations Are Driving FBOs to Exit US Businesses

Looking at Y-9C data for the LISCC firms<sup>7</sup> from 2016-2018 (the full time series available for FBOs), we see **total assets for U.S. firms increased (+5.0%), while FBO assets declined (-26.8%)**. We also point out that the FBOs' assets in the U.S. are just a fraction of the U.S. firms – again this is because the comparison is a full global footprint for the U.S. but only the regional subsidiary for the FBOs.

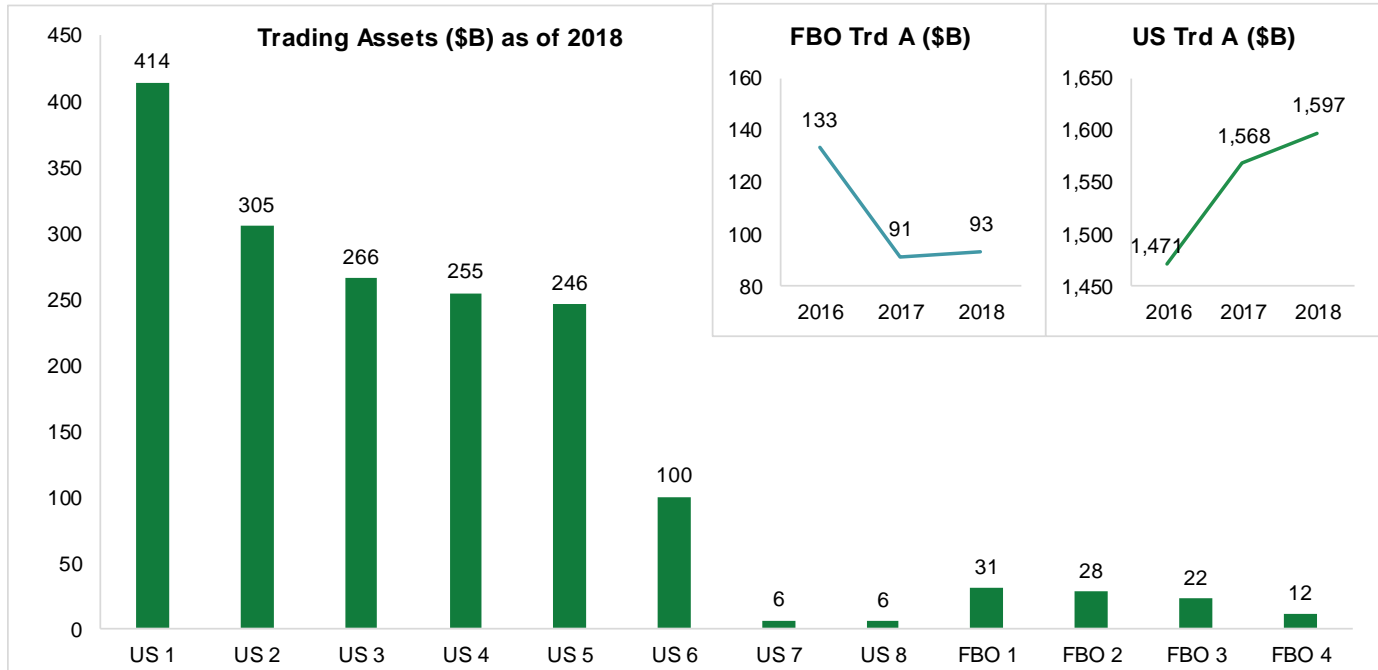


Source: Fed Y-9C, SIFMA estimates

<sup>7</sup> US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS.

## Yet, Regulations Are Driving FBOs to Exit US Businesses

As for trading asset trends for the LISCC firms<sup>8</sup> from 2016-2018 (the full time series available for FBOs), **U.S. firms increased (+8.6%), while FBO assets declined (-30.0%)**. We also point out that the FBOs' trading assets in the U.S. are just a fraction of the U.S. firms (with the exception of the custody banks) – again this is because the comparison is a full global footprint for the U.S. but only the regional subsidiary for the FBOs.



Source: Fed Y-9C, SIFMA estimates

<sup>8</sup> US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS.



Taking one final view of the decline in FBOs' total assets since the financial crisis. **From 2008 to 2018, the FBO LISCC firms have decreased assets at the CUSO level by \$668 billion, or -42%.** This data clearly shows firms making a conscious effort to decrease assets and exit businesses.

**LISCC Banks CUSO Size (\$B)**

	2008	2018	\$ Change	% Change
Deutsche Bank	506	287	-219	-43%
Credit Suisse	392	228	-164	-42%
Barclays	305	208	-97	-32%
UBS	372	184	-188	-51%
Total LISCC	1,575	907	-668	-42%

**LISCC Banks Largest Broker-Dealer Size (\$B)**

	2008	2018	\$ Change	% Change
Credit Suisse	326	110	-216	-66%
Deutsche Bank	244	108	-136	-56%
Barclays	240	106	-134	-56%
UBS	253	56	-197	-78%
Total LISCC	1,063	380	-683	-64%

Source: 2018 Resolution Plan Agency Feedback, SIFMA estimates

Note: CUSO = combined U.S. operations = IHC + branch divisions.

**The Fed Assesses Trading Assets & AFS Securities for Systemic Risk**

As public information on firms’ trading businesses is hard to come by, we use the Fed Y-15 data as a proxy to analyze trends. The Fed uses this data to assess the systemic risk of an institution and, therefore, the level of enhanced regulation and supervision to be applied (determined along with other data sets). It makes sense then to analyze this data to determine the presence of FBOs in the U.S.

It is clear there is a decline in trading assets and available-for-sale (AFS) securities across the industry. Looking at the U.S., where all firms have reported continuously throughout this time series, U.S. LISCC firms are down 25.9% in total from 2013 to 2017 versus a -19.6% industry average, while all GMS firms are down 23.4%. FBO LISCC and FBO GMS firms are -39.8% and -20.3% respectively from 2016 to 2017.

As shown in the table below, the FBO LISCC firms decreased trading assets/AFS 39.8% from 2016 to 2017, while the FBO GMS firms decreased 20.3%. While some of this decline in trading assets/AFS could be related to an individual firm’s shift in business strategy, we believe the magnitude of the single, continuously reporting firm’s decline is more indicative of the overall trend for FBOs, -73.7% from 2013 to 2017 (-23.4% CAGR).

Trading and AFS Securities											
(\$ millions)	2013	2014	Y/Y Change	2015	Y/Y Change	2016	Y/Y Change	2017	Y/Y Change	13-'17 Change	5-Year CAGR
Total Industry	1,647,656	1,507,887	-8.5%	1,366,590	-9.4%	1,392,728	1.9%	1,324,208	-4.9%	-19.6%	-4.3%
US LISCC Firms	1,454,712	1,351,465	-7.1%	1,190,196	-11.9%	1,118,680	-6.0%	1,078,265	-3.6%	-25.9%	-5.8%
FBO LISCC Firms	n/a	n/a	n/a	n/a	n/a	55,468	n/a	33,372	-39.8%	n/a	n/a
GMS Firms	1,412,208	1,341,580	-5.0%	1,134,455	-15.4%	1,130,543	-0.3%	1,081,138	-4.4%	-23.4%	-5.2%
FBO GMS Firms	n/a	n/a	n/a	n/a	n/a	77,295	n/a	61,585	-20.3%	n/a	n/a
FBO GMS Firm Ex.	39,638	43,561	9.9%	8,810	-79.8%	11,504	30.6%	10,421	-9.4%	-73.7%	-23.4%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: Outlier removed. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

Note: For the analysis in this report, we point out some oddities in the data and steps taken to normalize data accordingly:

- Most importantly, most FBOS only began reporting Y-15 data continuously since 2016. Therefore, the data in the table below shows trends only for the two-year period from 2016 to 2017. Yet, as noted in the FSOC chart above, the significant dip in broker-dealer assets occurred in 2015 after the FBO rules were enacted. Our two-year trend analysis is not picking up these longer term trends – we are assessing the decline in trading assets/AFS after the “real” decline already occurred.
- We have only one GMS FBO with continuous data going back to 2013 (“FBO GMS Firm Ex.”). We, therefore, use this firm to point out longer trends. This firm clearly shows a decline in trading assets/AFS, -73.7% from 2013 to 2017.
- One of the difficulties in analyzing FBO data is the continuity of reporting structure. As FBOs moved into the formal IHC reporting structure, data reported from that point forward may represent a different corporate structure than in past years. This adds to the difficulty of finding a long time series to analyze.
- Since we are analyzing only the larger LISCC and GMS firms (12 firms in each group, 10 of which are identical to both groups), we are working through an analysis of a small sample set. The sample set is even smaller for just FBOs – 4 LISCC firms, 6 GMS firms. As this opens up the data to being skewed by one outlier, we have adjusted numbers accordingly.

### Looking at Trading Assets Alone Is a Better Indicator of the Decline

While the Fed Y-15 systemic risk indicator (a subcategory in Factor #4: Complexity) combines trading assets and AFS, we analyze the decline specifically in trading assets. Both trading assets and AFS will ebb and flow with trends in the trading business. Yet, as AFS has more of a tie to accounting rules, we feel trading assets is a better indicator of how a firm is actually running its trading business. After all, market makers need to hold inventory to run their business, i.e. trade.

**Looking at Fed Y-9C data on trading assets held, you see a clearer differentiation between FBOs and U.S. peers. From 2016 to 2017, FBO LISCC firms' trading assets declined 43.8%, versus U.S. LISCC firms only -4.3% from 2013-2017. FBO GMS firms' trading assets declined 25.4%, versus U.S. GMS firms only -3.3%. Again we point to the sole continuously reporting FBO, where trading assets declined 34.6%. We believe this is more indicative for the long term trend for FBOs in general.**

Trading Assets											
(\$ millions)	2013	2014	Y/Y Change	2015	Y/Y Change	2016	Y/Y Change	2017	Y/Y Change	13-'17 Change	5-Year CAGR
LISCC Firms	1,638,405,610	1,631,747,884	-0.4%	1,426,703,969	-12.6%	1,577,813,363	10.6%	1,627,717,222	3.2%	-0.7%	-0.1%
US LISCC Firms	1,638,405,610	1,631,747,884	-0.4%	1,426,703,969	-12.6%	1,470,846,484	3.1%	1,567,608,883	6.6%	-4.3%	-0.9%
FBO LISCC Firms	n/a	n/a	n/a	n/a	n/a	106,966,879	n/a	60,108,339	-43.8%	n/a	n/a
GMS Firms	1,650,708,444	1,647,407,122	-0.2%	1,464,268,426	-11.1%	1,614,537,997	10.3%	1,674,259,571	3.7%	1.4%	0.3%
US GMS Firms	1,610,093,000	1,611,353,000	0.1%	1,413,321,000	-12.3%	1,456,596,000	3.1%	1,556,454,000	6.9%	-3.3%	-0.7%
FBO GMS Firms	n/a	n/a	n/a	n/a	n/a	157,941,997	n/a	117,805,571	-25.4%	n/a	n/a
FBO GMS Firm Ex.	40,615,444	36,054,122	-11.2%	23,696,516	-34.3%	24,833,084	4.8%	26,544,267	6.9%	-34.6%	-8.2%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: Outlier removed. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

### FBO Underwriting Transactions Also on the Decline

Moving away from the trading floor and into the investment banking division, **we see a clear differentiation in trends in underwriting transactions. FBO LISCC firms decreased 2.4% from 2016 to 2017, while U.S. LISCC firms increased 27.1% from 2013 to 2017.** FBO GMS firms decreased transactions 2.8%, yet total GMS transactions increased 8.9% over the 2016 to 2017 time period, i.e. the U.S. firms' transactions increased.

And these declines are in underwriting, an area of business that is less capital intensive than trading activities. We again interpret this as FBOs exiting U.S. businesses. While we note the strategic decision to grow or exit businesses entails many factors (including capital requirements in their home markets), we view regulations and the corresponding RWA charges as the main driver behind decisions to exit U.S. businesses. (We have provided more detail split out by equity and debt for each of these groups in the league table sections in the Appendix.)

Underwriting Transactions - Total											
(\$ thousands)	2013	2014	Y/Y Change	2015	Y/Y Change	2016	Y/Y Change	2017	Y/Y Change	13-'17 Change	5-Year CAGR
Total Industry	2,220,399,425	2,525,567,179	13.7%	2,529,858,067	0.2%	3,151,047,260	24.6%	3,458,849,579	9.8%	55.8%	9.3%
US LISCC Firms	1,953,605,200	2,157,310,470	10.4%	2,369,026,785	9.8%	2,208,979,232	-6.8%	2,482,352,945	12.4%	27.1%	4.9%
FBO LISCC Firms	n/a	n/a	n/a	n/a	n/a	430,455,745	n/a	419,910,343	-2.4%	n/a	n/a
GMS Firms	1,996,500,423	2,204,293,530	10.4%	2,416,534,827	9.6%	2,870,977,461	18.8%	3,125,784,604	8.9%	56.6%	9.4%
FBO GMS Firms	48,735,223	51,887,060	n/a	54,559,042	n/a	669,428,229	n/a	650,713,659	-2.8%	n/a	n/a
FBO GMS Firm Ex.	48,735,223	51,887,060	6.5%	54,559,042	5.1%	53,771,524	-1.4%	63,757,183	18.6%	30.8%	5.5%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: No adjustments made. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

The impact of additional layers of regulations applied at the U.S. subsidiary level, and the corresponding exiting of businesses, is shown by market share declines. We analyzed fee revenues of the top 10 firms in Dealogic league tables across equity capital markets (ECM), debt capital markets (DCM), M&A and Leveraged Finance. The data clearly shows a significant market share decline for FBOs across all four categories. In fact, **aggregated FBO market share declined from 34.4% in 2010 to 23.6% in 2018, or -10.8%. putting it another way, FBOs have lost roughly a third of their market share, as they pulled out of businesses.** Additional highlights (or lowlights) of the lost market share include:

- FBOs have lost market share from 2010-2018 in 13 corporate bond categories. These firms' transactions are down in total bonds (high yield + investment grade; -3.0%), investment grade (-1.9%) and high yield (-1.8%). That is a loss of 3% on a \$971 billion total corporate bond issuance market (in 2018), or \$29 billion in corporate bond issuance these firms are no longer sponsoring.
- On the loan side, FBOs have lost market share from 2010-2018 in 9 loan categories. These firms' transactions are down in leveraged/highly leveraged loans (-1.9%; yet up in investment grade loans, +7.6%). That is a loss of 1.9% on a \$1.4 trillion leverage loan origination market, or \$27 billion in loan origination these firms are no longer sponsoring.

To be fair, firms may choose to grow or exit businesses for many reasons including home country issues in the case of FBOs. In fact, many LISCC/GMS FBOs have decided to remain in, or even grow, their business in selective

bond/loan sub categories. For example, the high yield segment of fixed income is not only more efficient versus investment grade from a leverage perspective, but it can also lead to firms getting to do banking business with private equity firms (investment grade bonds are linked to winning corporate Treasury services business, which is predominantly awarded to U.S. banks). To remain in a business then becomes a risk/reward calculation sector by sector, and these strategic decisions will be idiosyncratic to a firm's business model.

However, there has universally been decreased participation by FBOs, and market participants indicate the declines, at least for the large LISCC/GMS FBOs, are driven predominantly by regulatory decisions, i.e. the need to decrease RWAs. As we noted early in this report, healthy markets consist of firms with a variety of business models. This ensures corporate bond issuance and loan origination can continue in good and bad market environments, across all corporate segments.

## Comparing IHC to Global Footprint = Apples to Oranges

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**Key Takeaways:** Comparing IHC to global footprints = apples-to-oranges comparison, which has caused FBOs to exit businesses in the U.S. This could have long-term adverse effects on U.S. capital markets and thereby the economy.

In 2011, the Basel Committee on Banking Supervision, a group of banking supervisors from 28 jurisdictions, created a set of financial indicators to identify global systemically important banks (G-SIBs). These are banks whose failure could pose a threat to the global financial system. G-SIBs are subject to higher capital and other regulatory requirements to reduce the probability and impact of failure. For example, these firms must maintain additional capital buffers depending on their systemic importance, as determined by a systemic risk score. The firms are grouped into different buckets with corresponding G-SIB CET1 buffers: #1 = +1.0%, #2 = 1.5%, #3 = 2.0% and #4 = 2.5% (there is a fifth bucket with a 3.5% buffer, which is intentionally left blank and meant to discourage firms from growing too risky).

The systemic risk scores are calculated across five factors (12 indicators when looking at sub categories) which build into the score:

- Size, consisting only of total exposures;
- Interconnectedness, with sub categories of intra-financial system assets, intra-financial system liabilities and securities outstanding;
- Substitutability, with sub categories of payments, assets under custody and underwriting;
- Complexity, with sub categories of OTC derivatives, trading and AFS securities and level 3 assets; and
- Cross-jurisdictional activity, with sub categories of cross-jurisdictional claims and cross-jurisdictional liabilities.

This analysis compares several groups of firms: the U.S. LISCC<sup>9</sup> firms; FBO LISCC<sup>10</sup> firms; GMS firms<sup>11</sup>; and FBO GMS<sup>12</sup> firms. We assessed these firms' systemic risk scores and how each firm ranks across each of the sub categories. We note this analysis is from the view of the Fed, meaning the assessment is on the global footprint for U.S. firms but only the U.S. operations for FBOs, i.e. IHC footprints.

We begin by assessing G-SIB buckets, as assigned at the consolidated global level by the Financial Stability Board (FSB). Some firms remain comfortable with their business strategy and competitive positioning. These firms have remained in the same bucket across the years. Others have decided to shed businesses viewed as riskier by

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<sup>9</sup> The Fed has the responsibility for the supervision of systemically important financial institutions, including large bank holding companies, the U.S. operations of certain foreign banking organizations, and nonbank financial companies as designated by the Financial Stability Oversight Council (FSOC). To do this, the Fed created the Large Institution Supervision Coordinating Committee ([LISCC](#)) framework. US LISCC: BAC, BK, C, GS, JPM, MS, STT, WFC. Please see the Appendix: Terms to Know for ticker descriptions.

<sup>10</sup> FBO LISCC: BARC, CS, DB, USB. Please see the Appendix: Terms to Know for ticker descriptions.

<sup>11</sup> GMS = global market shock: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, USB, HSBC, RBC. Please see the Appendix: Terms to Know for ticker descriptions. The Fed requires firms with significant trading operations to include the GMS as part of their calculations of post-stress capital under the supervisory adverse and severely adverse scenarios during CCAR. GMS is a component of the stress test designed specially to assess potential losses stemming from trading books, private equity positions, and counterparty exposures.

<sup>12</sup> FBO GMS: BARC, CS, DB, USB, HSBC, RBC

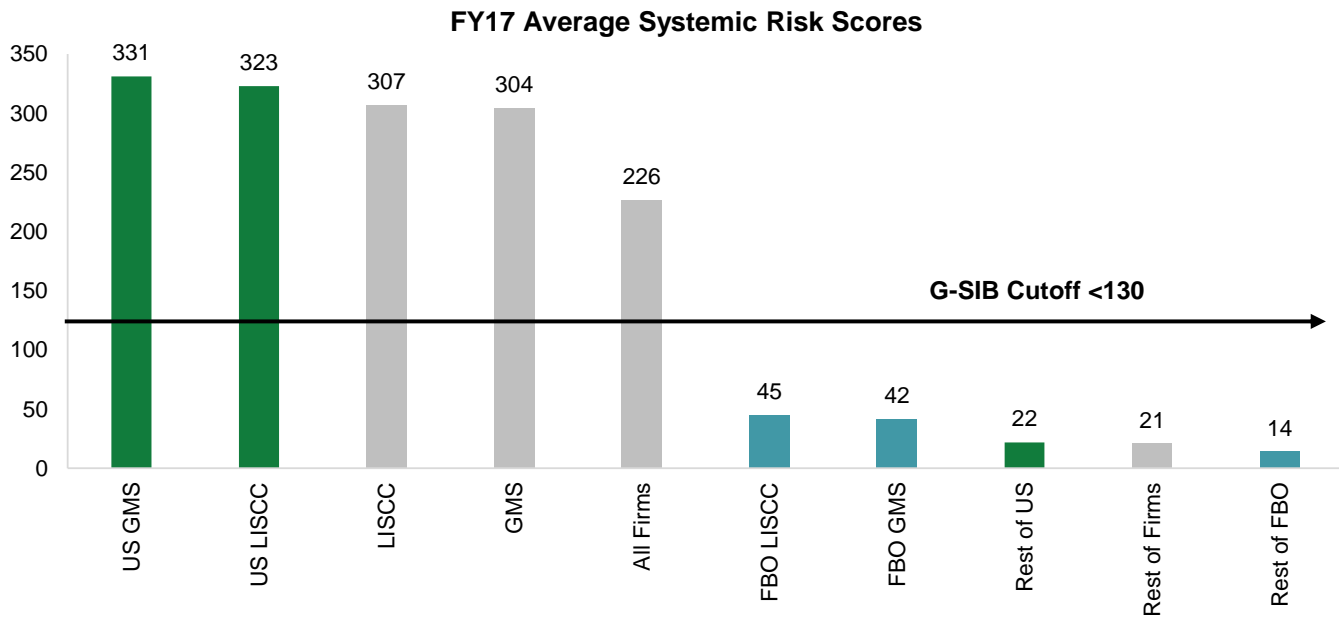


regulators – predominantly in the FICC arena – yet other have grown into higher buckets or were new additions to this list. These firms determined the risk (additional capital charges) versus reward (increasing its client base, gaining market share, etc.) warranted entering new business or growing larger in existing ones. (Please see the Appendix for further details.)

We note the following trends in risk scores from 2013 to 2017:<sup>13</sup>

- Several banks have remained in the same bucket across the years (JPM, GS, BK, STT, DB, UBS)
- Some firms work to maintain a lower bucket (BAC, C, MS, BARC, CS, HSBC)
- Others grew their businesses and increased their bucket or grew into this list (WFC, RBC)

Next, we look at systemic risk scores, as assigned at the global level for U.S. firms but IHC level for FBOs. The analysis shows the FBOs are more in line with smaller U.S. regional firms with less complex business models.<sup>14</sup> **We also note, the FBOs as judged at the IHC level are all well below the cutoff line for G-SIB surcharges, as assigned by the FSB** (please see the tables in the Appendix).



Source: National Information Center, FR Y-15, SIFMA estimates

Note: Averages are weighted by total exposures, factor 1. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

<sup>13</sup> US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC. Please see the Appendix: Terms to Know for ticker descriptions.

<sup>14</sup> For example, Northern Trust, US Bank, PNC Financial, Capital One, SunTrust Banks, BB&T. This report assesses SunTrust and BB&T as standalone entities, although the proposed merger was announced on 2-7-19.

## Comparing IHC to Global Footprint = Apples to Oranges

In fact, as shown in the tables on the following pages, the scores for the FBO LISCC firms are -85.5% the total LISCC average score (or, the total LISCC group is 6.9x larger than the FBO LISCC score) and -86.2% the U.S. LISCC average score (or, the U.S. LISCC group is 7.2x larger than the FBO LISCC score). The scores for the FBO GMS firms are -86.3% the total GMS average score (or, the total GMS group is 7.3x larger than the FBO GMS score) and -87.4% the U.S. LISCC average score (or, the U.S. GMS group is 7.9x larger than the FBO LISCC score). When looking at each of the individual factors building into the systemic risk score, the FBOs are just fractions of the total group scores, ranging from: 0.3% to 16.8% for the FBO LISCC, 1.1% to 18.8% for FBO GMS.

**What this shows is this an apples-to-oranges comparison, looking at total global data for the U.S. but regional data only for the FBOs.** Approaching regulation in a one-size-fits-all manner such as this can create unintended consequences, such as causing FBOs to exit businesses in the U.S. This could have adverse effects on U.S. capital markets and thereby the economy.

2017 Scores	Compared to:			2017 Scores	Compared to:		
	Avg.	Total LISCC	US LISCC		Avg.	Total GMS	US GMS
All Firms	226			All Firms	226		
Total LISCC	307			Total GMS	304		
US LISCC	323			US GMS	331		
FBO LISCC	45	-85%	-86%	FBO GMS	42	-86%	-87%
CS	57	-81%	-82%	CS	57	-81%	-83%
DB	50	-84%	-85%	DB	50	-84%	-85%
BARC	47	-85%	-85%	BARC	47	-84%	-86%
HSBC	40	-87%	-88%	HSBC	40	-87%	-88%
RBC	31	-90%	-90%	RBC	31	-90%	-91%
UBS	19	-94%	-94%	UBS	19	-94%	-94%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: Averages are weighted by total exposures, factor 1. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

Comparing IHC to Global Footprint = Apples to Oranges

Five Factors Building Into Systemic Risk Scores (2017 Data)

(\$ millions, scores bps)	2017 Score	1. Size	2. Interconnectedness			3. Substitutability		
		Total Exposures	Intra-System Assets	Intra-Financial System Liabilities	Securities Outstanding	Payments	Assets Under Custody	Underwriting
Total	226	20,539,266	1,909,017	1,929,110	4,889,732	1,170,852,304	113,978,145	3,458,850
US LISCC Firms	323	13,878,078	1,481,893	1,496,583	3,322,275	870,220,272	98,334,247	2,482,353
% of Total		68%	78%	78%	68%	74%	86%	72%
FBO LISCC Firms	45	844,556	88,956	171,114	15,829	196,900,034	718,714	419,910
% of Total		4%	5%	9%	0.3%	17%	1%	12%
to Total		0.04x	0.05x	0.09x	0.003x	0.17x	0.01x	0.12x
to US LISCC		0.06x	0.06x	0.11x	0.005x	0.23x	0.01x	0.17x
GMS Firms	304	13,523,910	1,350,661	1,248,504	2,907,017	820,137,368	46,194,182	2,800,725
% of Total		66%	71%	65%	59%	70%	41%	81%
FBO GMS Firms	42	1,362,148	162,062	227,049	73,733	210,314,070	1,278,885	650,714
% of Total		7%	8%	12%	2%	18%	1%	19%
to Total		0.07x	0.08x	0.12x	0.02x	0.18x	0.01x	0.19x
to US LISCC		0.10x	0.11x	0.15x	0.02x	0.24x	0.01x	0.26x

Source: National Information Center, FR Y-15, SIFMA estimates

Note: Averages are weighted by total exposures, factor 1. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

Five Factors Building Into Systemic Risk Scores (2017 Data)

(\$ millions, scores bps)	2017 Score	4. Complexity			5. Cross-Jurisdictional Activity	
		OTC Derivatives	Trading and AFS Securities	Level 3 Assets	Cross-Jurisdictional Claims	Cross-Jurisdictional Liabilities
Total	226	204,848,902	1,380,247	141,801	3,484,471	3,253,848
US LISCC Firms	323	189,328,799	1,078,265	108,564	3,066,384	3,007,673
% of Total		92%	78%	77%	88%	92%
FBO LISCC Firms	45	4,919,125	89,411	5,567	166,392	57,126
% of Total		2%	6%	4%	5%	2%
to Total		0.02x	0.06x	0.04x	0.05x	0.02x
to US LISCC		0.03x	0.08x	0.05x	0.05x	0.02x
GMS Firms	304	170,268,939	952,751	96,725	2,736,844	2,439,686
% of Total		83%	69%	68%	79%	75%
FBO GMS Firms	42	12,074,278	117,625	8,472	215,493	66,446
% of Total		6%	9%	6%	6%	2%
to Total		0.06x	0.09x	0.06x	0.06x	0.02x
to US LISCC		0.06x	0.11x	0.08x	0.07x	0.02x

Source: National Information Center, FR Y-15, SIFMA estimates

Note: Averages are weighted by total exposures, factor 1. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC. Please see the Appendix: Terms to Know for ticker descriptions.

## Conclusion

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In conclusion of the analysis included in this report, we highlight the following key takeaways:

- FBOs are crucial to U.S. capital markets. There are 12 global investment banks which facilitate the vast majority of trading activities (both FICC and equities) and execute a high proportion of issuance transactions (equity and debt) and M&A deals. In the Americas region, 6 of these firms are FBOs (50%).
- As FBOs struggle to adapt global regulations at the local IHC level, they are making strategic decisions – costs (of regulations) greater than rewards (revenue, market share) – to exit U.S. businesses. The largest FBO broker-dealer total assets have decreased 52% from 2010 to 2018, while the FBO LISCC firms' trading assets are down 31.4% (from 2016-2017). This is reflected in the clear trend of declining market shares across all divisions of capital markets (from 2014 to 2018): equities -8.2%, FICC -3.0% and investment banking -5.0%. In banking, FBOs have lost a third of market share (for the major bond and loan categories) from 34.4% in 2010 to 23.6% in 2018.
- Strong capital markets need a portfolio of firms with diverse business models to remain healthy under all types of market conditions. The exodus of FBOs – at the same time U.S. peers are constrained by the same regulations – concerns market participants, as it could strain the efficient running of U.S. capital markets under times of economic or market stress. This could have long-term adverse effects on markets and the economy.
- Additionally, and equally concerning, the placement of extra regulations on the U.S. subsidiaries of FBOs could increase the probability U.S. banks face quid-pro-quo regulations on their foreign operations, similar to what FBOs have experienced in the U.S.



# APPENDIX

## Appendix

### I. FBO Footprint in US Capital Markets

**Key Takeaways:** FBO market share >40% in many corporate bond/loan categories; 28% of IPO market. Yet, FBOs are exiting some U.S. businesses – aggregate market share declined from 34.4% to 23.6%, a loss of roughly 1/3 market share.

#### Equities Markets Transactions on the Decline

Capital formation is crucial to enable businesses to grow, innovate and better serve their customers. Companies may need capital for various business purposes – invest in growth, fund mergers and acquisitions, etc. – and firms have several ways they can generate capital, including issuing IPOs. Unfortunately, the number of U.S. domiciled listed companies has been on the decline since the mid-1990s. While the number of listed companies peaked in 1996 at 8,090, the number is down to 4,397 as of the end of 2018 (-46%). The number of IPOs has also declined, ending 2018 at 197 after peaking in 1996 at 860 (-77%).

In light of this decline, it would be beneficial to have more active financial intermediaries available to assist in capital formation, rather than constrain entities well positioned to take companies of any size public. And FBOs play an important role in US capital formation, holding a 27.8% market share in IPOs and 21.5% share in follow-on offerings.

Unfortunately, looking at the Fed Y-15 data on equity underwriting, transaction activity is down across all categories analyzed in the table below. This is particularly true for the FBO LISCC and FBO GMS firms, - 21.8% and -20.5% from 2016 to 2017 respectively. We actually believe this trend is worse, as the CAGR is only for the two years data was reported. If you look at the one FBO GMS firm which has reported continuously since 2013, its 5-year CAGR is -59.8%. This is a substantial difference (albeit, some of this could be related to an individual firm's shift in business strategy). We believe much of the decline in business occurred before 2016 yet was not picked up in these trends since FBOs only began reporting in 2016. Therefore the overall FBO trend from 2013 to 2017 is most likely much more dramatic.

#### Underwriting Transactions - Equity

(\$ thousands)	2013	2014	Y/Y Change	2015	Y/Y Change	2016	Y/Y Change	2017	Y/Y Change	13-'17 Change	5-Year CAGR
Total Industry	412,444,497	380,009,025	-7.9%	329,939,338	-13.2%	301,928,176	-8.5%	357,242,840	18.3%	-13.4%	-2.8%
US LISCC Firms	346,917,050	357,825,170	3.1%	321,395,892	-10.2%	230,997,980	-28.1%	297,253,209	28.7%	-14.3%	-3.0%
FBO LISCC Firms	n/a	n/a	n/a	n/a	n/a	48,466,615	n/a	37,913,649	-21.8%	n/a	n/a
GMS Firms	392,269,631	358,860,877	-8.5%	322,629,151	-10.1%	284,267,584	-11.9%	339,591,890	19.5%	-13.4%	-2.8%
FBO GMS Firms	46,663,581	1,197,707	n/a	1,336,259	n/a	53,381,604	n/a	42,444,681	-20.5%	n/a	n/a
FBO GMS Firm Ex.	46,663,581	1,197,707	-97.4%	1,336,259	11.6%	475,273	-64.4%	487,504	2.6%	-99.0%	-59.8%

Source: National Information Center, FR Y-15, SIFMA estimates

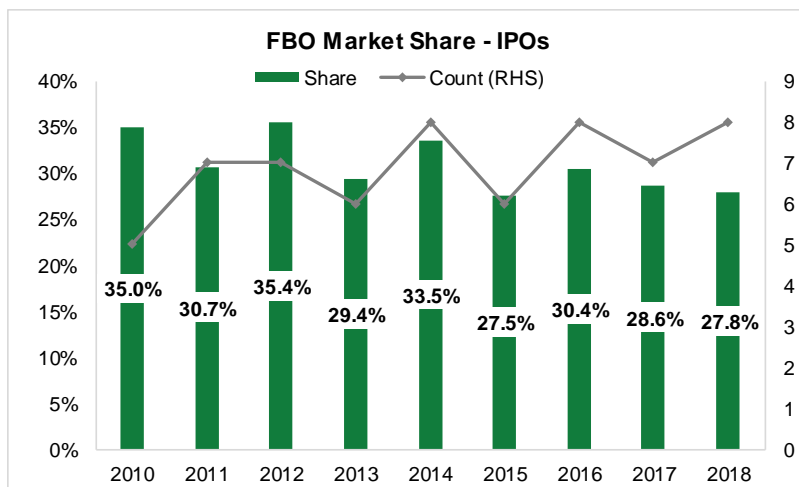
Note: No adjustments made. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.



The charts on the following pages look at the market share and count of FBOs in the top 20 list of issuance league tables, aggregating market share of deals/transactions to identify trends in FBO participation in U.S. markets (all else being equal).

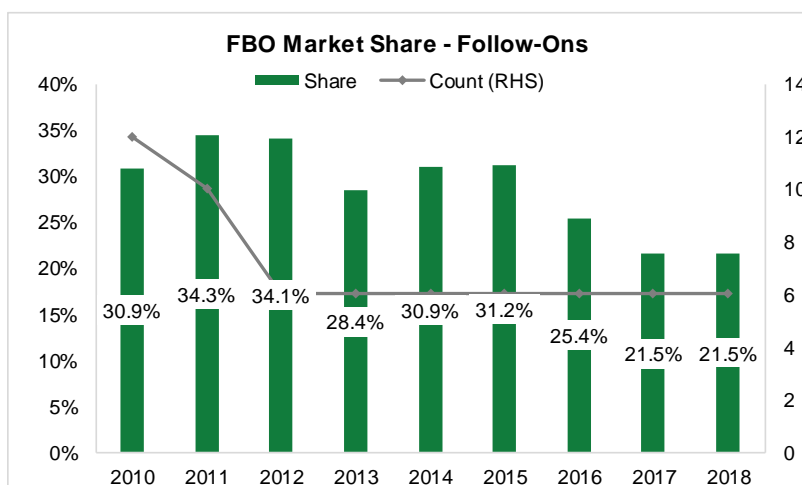
**Capital Formation – IPOs**

FBO market share declined to 27.8% from 35.0% from 2010 to 2018, -7.1%. While the number of FBOs in the top 20 fluctuates, it is up from 2010 (to 8 from 5). Total FBO deal volume declined 9% from 2010-2018, while total industry deal volume actually increased 15%. This implies FBOs are doing less transactions versus the market.



### Capital Formation – Follow-ons

FBO market share declined to 21.5% from 30.9% from 2010 to 2018, -9.3%. The number of FBOs in the top 20 is also down since 2010, to 6 from 12. Total FBO deal volume decreased 36% from 2010-2018, while total industry deal volume fell only 9%. This implies FBOs are doing less transactions versus market trends.



Source: Dealogic, SIFMA estimates

Note: Sums market share and count for FBOs in the top 20 positions in league tables. As of December 2018. U.S. domiciled companies listed on U.S. exchanges. Excludes BDCs, SPACs, ETFs, CEFs, and rights offers

### FBO Transactions Declining in Corporate Bond Underwriting and Loan Originations

Looking at the Fed Y-15 data, we see a delineation between U.S. and foreign firms in debt underwriting, as analyzed in the table below. FBO LISCC firms decreased 0.2% from 2016 to 2017, with some firms increasing business and others exiting (according to idiosyncratic strategic decisions, as explained in more detail at the start of this section), while U.S. LISCC firms increased 10.5%. **FBO GMS firms decreased 1.4%; despite this the group average increased 7.7%, i.e. U.S. peer growth outpaced FBO declines.**

#### Underwriting Transactions - Debt

(\$ thousands)	2013	2014	Y/Y Change	2015	Y/Y Change	2016	Y/Y Change	2017	Y/Y Change	13-'17 Change	5-Year CAGR
Total Industry	1,807,954,928	2,145,558,154	18.7%	2,199,918,729	2.5%	2,843,586,986	29.3%	3,095,230,875	8.8%	71.2%	11.4%
US LISCC Firms	1,606,688,150	1,799,485,300	12.0%	2,047,630,893	13.8%	1,977,981,252	-3.4%	2,185,099,736	10.5%	36.0%	6.3%
FBO LISCC Firms	n/a	n/a	n/a	n/a	n/a	376,457,032	n/a	375,620,830	-0.2%	n/a	n/a
GMS Firms	1,604,230,792	1,845,432,653	15.0%	2,093,905,676	13.5%	2,581,177,779	23.3%	2,779,816,850	7.7%	73.3%	11.6%
FBO GMS Firms	n/a	50,689,353	n/a	53,222,783	n/a	610,514,527	n/a	601,893,114	-1.4%	n/a	n/a
FBO GMS Firm Ex.	n/a	50,689,353	n/a	53,222,783	5.0%	53,296,251	0.1%	63,269,679	18.7%	24.8%	5.7%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: No adjustments made. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

The tables and charts on the following pages look at the market share and count of FBOs in the top 20 list of issuance league tables, aggregating market share of deals/transactions to identify trends in FBO participation in U.S. markets (all else being equal).

#### Corporate Bond Issuance: Market Share & Count of FBOs in Top 20

	2018				2010				Variation	
	# FBOs	# Total	% Total	Mkt. Share	# FBOs	# Total	% Total	Mkt. Share	#	Mkt. Share
Textile	1	1	100.0%	100.0%	5	10	50.0%	31.5%	-4	68.6%
Publishing	7	14	50.0%	63.0%	5	13	38.5%	33.3%	2	29.7%
Auto/Truck	8	13	61.5%	59.7%	7	14	50.0%	38.0%	1	21.7%
Telecommunications	13	20	65.0%	54.3%	11	20	55.0%	39.3%	2	15.0%
Aerospace	13	20	65.0%	51.7%	8	15	53.3%	51.9%	5	-0.2%
Mining	3	6	50.0%	50.0%	6	14	42.9%	24.6%	-3	25.4%
Chemicals	12	20	60.0%	47.6%	8	15	53.3%	38.9%	4	8.8%
Utility & Energy	9	20	45.0%	44.9%	11	20	55.0%	44.4%	-2	0.5%
Machinery	10	20	50.0%	44.5%	16	20	80.0%	70.3%	-6	-25.8%
Forestry & Paper	11	20	55.0%	43.0%	4	11	36.4%	33.4%	7	9.6%
Oil & Gas	11	20	55.0%	40.2%	12	20	60.0%	39.4%	-1	0.8%
Insurance	13	20	65.0%	38.9%	9	17	52.9%	41.9%	4	-3.0%
Food & Beverage	14	20	70.0%	37.8%	13	20	65.0%	61.5%	1	-23.7%
Consumer Products	11	20	55.0%	37.5%	10	18	55.6%	35.6%	1	1.9%
Defense	7	14	50.0%	36.6%	6	12	50.0%	31.9%	1	4.7%
HY Bonds	12	20	60.0%	35.8%	11	20	55.0%	37.6%	1	-1.8%
Metal & Steel	10	20	50.0%	33.3%	6	13	46.2%	36.7%	4	-3.4%
Leisure & Recreation	8	20	40.0%	33.2%	10	18	55.6%	38.5%	-2	-5.4%
Computers & Electronics	11	20	55.0%	33.1%	8	17	47.1%	31.8%	3	1.3%
Healthcare	11	20	55.0%	31.9%	9	20	45.0%	28.1%	2	3.8%
Total Bonds (IG + HY)	11	20	55.0%	29.9%	11	20	55.0%	32.9%	0	-3.0%
IG Bonds	11	20	55.0%	29.2%	11	20	55.0%	31.0%	0	-1.9%
Real Estate/Property	11	20	55.0%	26.8%	10	20	50.0%	36.8%	1	-9.9%
Construction/Bldg Prods	8	20	40.0%	26.8%	5	14	35.7%	24.3%	3	2.6%
Transportation	11	20	55.0%	24.6%	12	19	63.2%	36.1%	-1	-11.5%
Retail	8	20	40.0%	23.6%	11	20	55.0%	33.8%	-3	-10.2%
Professional Services	13	20	65.0%	23.1%	8	14	57.1%	22.5%	5	0.5%
Dining & Lodging	7	17	41.2%	21.1%	6	16	37.5%	20.8%	1	0.2%
Finance	11	20	55.0%	17.0%	11	20	55.0%	18.7%	0	-1.8%
Agribusiness	0	0	0.0%	0.0%	0	2	0.0%	0.0%	0	0.0%
Government	0	0	0.0%	0.0%	0	0	0.0%	0.0%	0	0.0%

Adjustments for  
Limited Deal  
Participants:

--Textile, look back  
to 2016: 8/16 firms,  
45.9% share  
(-3, +14.5%)

--Mining, look back  
to 2017: 5/15 firms,  
42.7% share  
(-1, +18.1%)

Source: Dealogic, SIFMA estimates

Note: Sums market share and count for FBOs in the top 20 positions in league tables.

## Loan Origination: Market Share &amp; Count of FBOs in Top 20

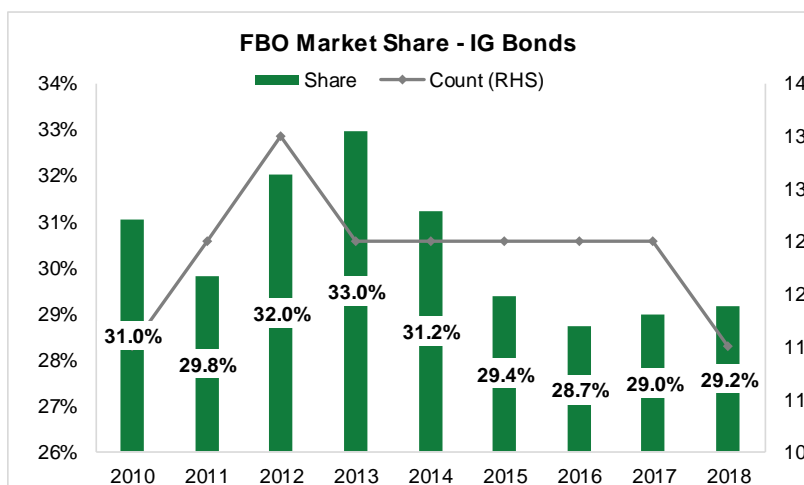
	2018				2010				Variation	
	#	#	% Total	Mkt.	#	#	% Total	Mkt.	#	Mkt.
	FBOs	Total	#	Share	FBOs	Total	#	Share		
Mining	10	20	50.0%	55.3%	11	20	55.0%	29.6%	-1	25.7%
Agribusiness	9	18	50.0%	46.4%	9	17	52.9%	50.9%	0	-4.5%
Textile	10	19	52.6%	40.7%	5	14	35.7%	30.9%	5	9.8%
Forestry & Paper	13	20	65.0%	39.0%	8	19	42.1%	42.6%	5	-3.6%
Utility & Energy	11	20	55.0%	37.0%	11	20	55.0%	33.0%	0	4.0%
Publishing	9	19	47.4%	34.8%	3	11	27.3%	23.4%	6	11.4%
Auto/Truck	13	20	65.0%	34.7%	8	20	40.0%	25.6%	5	9.2%
Chemicals	9	20	45.0%	33.9%	11	20	55.0%	32.1%	-2	1.8%
Oil & Gas	13	20	65.0%	33.4%	12	20	60.0%	36.8%	1	-3.3%
Telecommunications	12	20	60.0%	32.7%	10	20	50.0%	32.2%	2	0.6%
Computers & Electronics	11	20	55.0%	32.2%	8	20	40.0%	21.3%	3	10.9%
Defense	9	20	45.0%	30.4%	6	12	50.0%	31.2%	3	-0.8%
Healthcare	9	20	45.0%	27.5%	8	20	40.0%	17.3%	1	10.2%
Consumer Products	11	20	55.0%	26.5%	10	20	50.0%	23.9%	1	2.7%
L + HL Loans	9	20	45.0%	26.1%	9	20	45.0%	27.9%	0	-1.9%
Insurance	8	20	40.0%	26.0%	6	17	35.3%	22.0%	2	4.1%
Finance	10	20	50.0%	24.6%	10	20	50.0%	10.8%	0	13.8%
IG Loans	12	20	60.0%	24.6%	10	20	50.0%	17.0%	2	7.6%
Professional Services	7	20	35.0%	23.5%	8	20	40.0%	23.1%	-1	0.4%
Total Loans (IG + L + HL)	9	20	45.0%	23.3%	9	20	45.0%	21.0%	0	2.4%
Metal & Steel	12	20	60.0%	23.0%	7	20	35.0%	24.0%	5	-1.0%
Construction/Bldg Prods	8	20	40.0%	22.9%	10	20	50.0%	18.0%	-2	4.9%
Dining & Lodging	7	20	35.0%	22.3%	10	20	50.0%	21.6%	-3	0.8%
Aerospace	10	20	50.0%	20.8%	13	20	65.0%	52.5%	-3	-31.7%
Food & Beverage	9	20	45.0%	20.1%	8	20	40.0%	28.7%	1	-8.6%
Retail	7	20	35.0%	18.9%	11	20	55.0%	15.4%	-4	3.5%
Transportation	8	20	40.0%	18.7%	9	20	45.0%	24.0%	-1	-5.4%
Leisure & Recreation	8	20	40.0%	17.8%	10	20	50.0%	32.6%	-2	-14.8%
Real Estate/Property	8	20	40.0%	14.8%	13	20	65.0%	16.6%	-5	-1.8%
Machinery	9	20	45.0%	12.5%	7	17	41.2%	4.2%	2	8.3%
Government	0	6	0.0%	0.0%	1	4	25.0%	12.2%	-1	-12.2%

Source: Dealogic, SIFMA estimates

Note: Sums market share and count for FBOs in the top 20 positions in league tables.

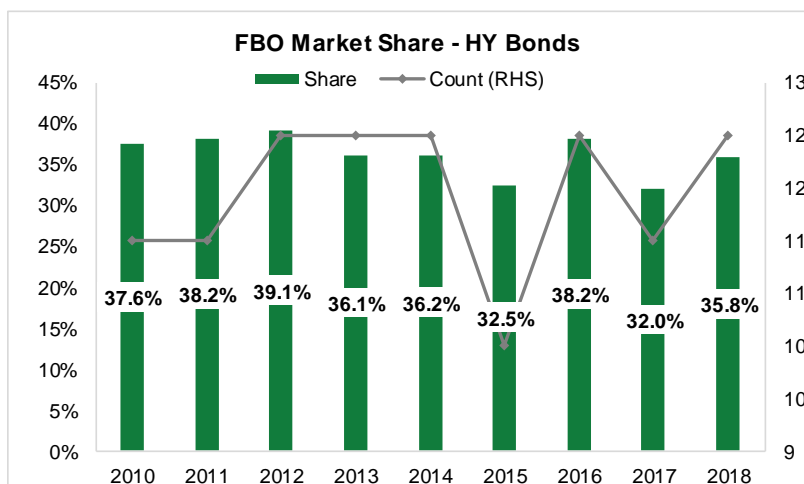
### Corporate Bond Issuance – Investment Grade (IG)

FBO market share is down to 29.2% in 2018 from 31.0% in 2010, -1.9%. The number of FBOs is flat from 2010 to 2018 at 11, after peaking at 13 in 2012. Total FBO deal volume increased 64% from 2010-2018, while total industry deal volume grew 74%. This implies FBOs are doing less transactions versus the market.



### Corporate Bond Issuance – High Yield (HY)

FBO market share is down to 35.8% in 2018 from 37.6% in 2010, -1.8%. The number of FBOs is up slightly from 2010 to 2018 at 12, after troughing at 10 in 2015. Total FBO deal volume declined 37% from 2010-2018, while total industry deal volume decreased 34%. This implies FBOs are doing less transactions versus the market.

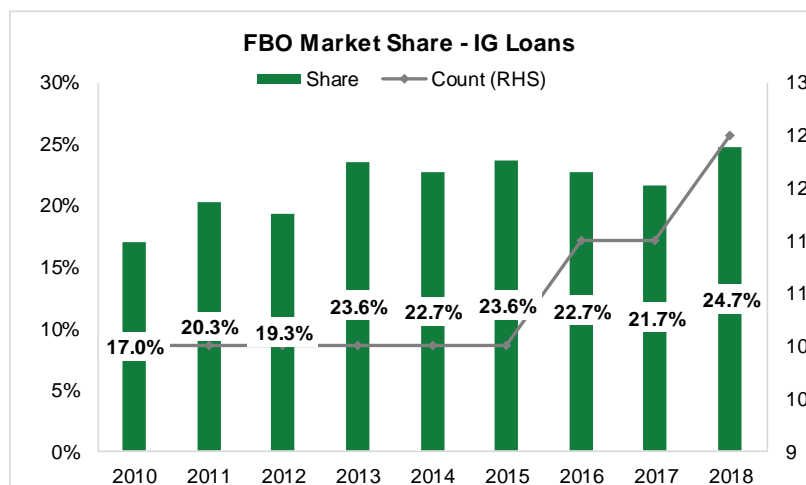


Source: Dealogic, SIFMA estimates

Note: Sums market share and count for FBOs in the top 20 positions in league tables.

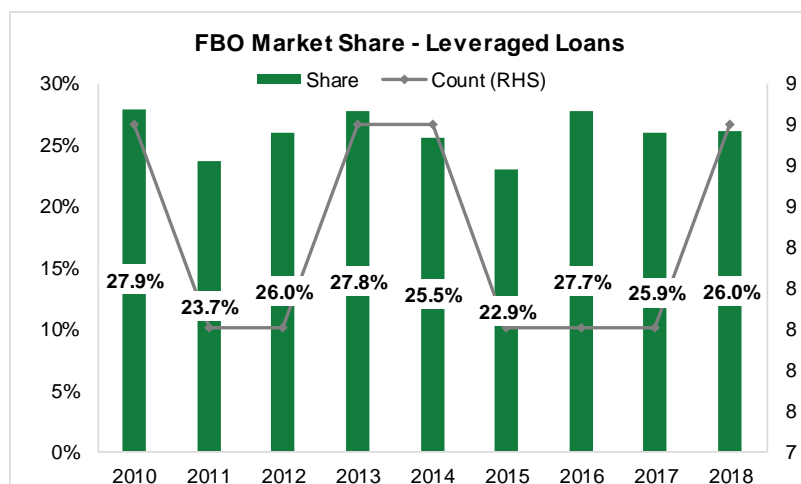
### Loan Origination – Investment Grade (IG)

FBO market share is up, to 24.7% in 2018 from 17.0% in 2010, +7.7%. The number of FBOs is up as well, to 12 from 10 in 2010. Total FBO deal volume increased 242% from 2010-2018, outpacing industry growth in deal volume at 135%. This implies FBOs are doing more transactions versus the market.



### Loan Origination – Leveraged Lending

FBO market share is down to 26.0% in 2018 from 27.9% in 2010, -1.9%. The number of FBOs is flat at 9, after troughing at 8 in multiple years (2011-2012, 2014-2017). Total FBO deal volume increased 155% from 2010-2018, while total industry deal volume increased 173%. This implies FBOs are doing less transactions versus the market.



Source: Dealogic, SIFMA estimates

Note: Sums market share and count for FBOs in the top 20 positions in league tables.

## II. FBO Ownership of US Financial Assets

**Key Takeaways:** While the financial system continues to grow post financial crisis, U.S. peers are growing faster than foreign firms. How much larger could the entire system grow if FBOs were not as constrained? Who is picking up this share?

The capital markets FBOs analyzed in this report also have commercial banking divisions, which contribute to U.S. financial markets and the economy. Therefore, we feel it is important to point out contributions from foreign banks to the commercial banking side of markets as well. Healthy financial systems are supported by financial institutions hosting a diversity of business models. This enables the group as a whole to provide balance sheet capacity in the form of a wide array of financial products for corporate, government and retail customers. The U.S. financial system exhibits such healthy characteristics, as it is serviced by domestic and foreign firms of all sizes. Customers in the U.S. therefore benefit from the opportunity to engage in a multitude of financial transactions to support their needs.

The statistics on FBO ownership of U.S. financial assets include (as of 2Q18):<sup>15</sup>

**Data depicts all types of banks – commercial only & those with capital markets and commercial operations.**

- \$3.8 trillion or 20% of total assets;
- \$578 billion or 25% of commercial and industrial (C&I) loans;
- \$1.5 trillion or 15% of total loans; and
- \$2.1 trillion or 15% of total deposits.

As the entire financial system continues to grow coming out of the financial crisis, in general, U.S. peers are growing faster than foreign firms. We note the data on the next page depicts trends across all types of banks – commercial included, not just firms with capital markets (and commercial) operations. Since the commercial banks are not subject to enhanced prudential standards, these firms have more leeway to expand in retail banking. The data shows this, as growth in U.S. branches (of FBOs) outpaced FBOs in the majority of categories and time periods.

Market participants have grown concerned that regulations at the U.S. subsidiary of FBOs – regulations designed to contain risk at the consolidated global level, i.e. significantly larger footprints – will force (or continue to force in many cases) foreign firms to scale back or exit their U.S. presence. As shown in the table on the next page, with the exception of total loans, FBOs have posted slower growth rates than the total industry or U.S. banks. For example, total assets growth rates for foreign banks is 2%/1.6% less than U.S. banks/industry respectively. We believe this is a loss to the total pie of asset growth, not a zero sum game where other firms benefit from an FBO exodus. We cannot help but think how much larger the entire system could grow if FBOs were not as constrained as they are today.

<sup>15</sup> Share [Data](#) for U.S. Offices of Foreign Banking Organizations Selected Assets and Liabilities of Domestic and Foreign Owned U.S. Commercial Banks (state member, non-member and national) plus U.S. Branches and Agencies of Foreign Banks

## Share Data for the U.S. Offices of Foreign Banking Organizations

(\$ millions)	Total Assets	FBOs vs.	Total C&I Loans	FBOs vs.	Total Loans	FBOs vs.	Total Deposits	FBOs vs.
<b>% Change 2010-2018</b>								
Total Industry	35.5%	-1.6%	80.7%	-3.1%	41.4%	14.3%	42.2%	-23.7%
US Banks	35.9%	-2.0%	81.8%	-4.2%	39.1%	16.6%	47.5%	-29.0%
Total Foreign	33.9%		77.6%		55.7%		18.5%	
(\$ millions)	Total Assets	% Total	Total C&I Loans	% Total	Total Loans	% Total	Total Deposits	% Total
<b>2010 Totals</b>	13,903,960		1,297,241		7,020,065		9,549,051	
US Banks	11,065,544	79.6%	971,696	74.9%	6,060,373	86.3%	7,797,248	81.7%
Foreign	2,838,416	20.4%	325,545	25.1%	959,692	13.7%	1,751,803	18.3%
FBOs	927,012	6.7%	89,833	6.9%	483,961	6.9%	671,094	7.0%
US Branches (FBOs)	1,911,404	13.7%	235,712	18.2%	475,731	6.8%	1,080,709	11.3%
<b>2011 Totals</b>	14,697,229		1,478,778		7,193,261		10,153,226	
US Banks	11,538,414	78.5%	1,107,381	74.9%	6,129,752	85.2%	8,435,666	83.1%
Foreign	3,158,815	21.5%	371,397	25.1%	1,063,509	14.8%	1,717,560	16.9%
FBOs	1,043,436	7.1%	114,761	7.8%	540,383	7.5%	775,598	7.6%
US Branches (FBOs)	2,115,379	14.4%	256,636	17.4%	523,126	7.3%	941,962	9.3%
<b>2012 Totals</b>	15,461,985		1,658,249		7,518,591		10,976,063	
US Banks	12,187,804	78.8%	1,243,435	75.0%	6,401,730	85.1%	9,109,913	83.0%
Foreign	3,274,181	21.2%	414,814	25.0%	1,116,861	14.9%	1,866,150	17.0%
FBOs	1,139,140	7.4%	143,080	8.6%	598,024	8.0%	858,936	7.8%
US Branches (FBOs)	2,135,041	13.8%	271,734	16.4%	518,837	6.9%	1,007,214	9.2%
<b>2013 Totals</b>	16,019,622		1,747,797		7,757,356		11,492,138	
US Banks	12,480,851	77.9%	1,302,558	74.5%	6,559,658	84.6%	9,474,746	82.4%
Foreign	3,538,771	22.1%	445,239	25.5%	1,197,698	15.4%	2,017,392	17.6%
FBOs	1,136,747	7.1%	154,828	8.9%	640,705	8.3%	869,547	7.6%
US Branches (FBOs)	2,402,024	15.0%	290,411	16.6%	556,993	7.2%	1,147,845	10.0%
<b>2014 Totals</b>	16,952,810		1,945,433		8,236,329		12,125,320	
US Banks	13,222,579	78.0%	1,426,248	73.3%	6,901,398	83.8%	9,976,360	82.3%
Foreign	3,730,231	22.0%	519,185	26.7%	1,334,931	16.2%	2,148,960	17.7%
FBOs	1,204,847	7.1%	178,778	9.2%	696,428	8.5%	926,848	7.6%
US Branches (FBOs)	2,525,384	14.9%	340,407	17.5%	638,503	7.8%	1,222,112	10.1%
<b>2015 Totals</b>	17,205,702		2,121,761		8,864,624		12,424,123	
US Banks	13,667,074	79.4%	1,541,825	72.7%	7,448,689	84.0%	10,394,956	83.7%
Foreign	3,538,628	20.6%	579,936	27.3%	1,415,935	16.0%	2,029,167	16.3%
FBOs	1,190,187	6.9%	190,207	9.0%	697,950	7.9%	926,846	7.5%
US Branches (FBOs)	2,348,441	13.6%	389,729	18.4%	717,985	8.1%	1,102,321	8.9%
<b>2016 Totals</b>	17,848,969		2,225,636		9,323,494		12,918,999	
US Banks	14,333,889	80.3%	1,641,527	73.8%	7,879,295	84.5%	10,956,704	84.8%
Foreign	3,515,080	19.7%	584,109	26.2%	1,444,199	15.5%	1,962,295	15.2%
FBOs	1,258,840	7.1%	186,567	8.4%	704,984	7.6%	997,526	7.7%
US Branches (FBOs)	2,256,240	12.6%	397,542	17.9%	739,215	7.9%	964,769	7.5%
<b>2017 Totals</b>	18,682,638		2,253,116		9,738,679		13,459,390	
US Banks	14,904,646	79.8%	1,683,114	74.7%	8,254,682	84.8%	11,426,895	84.9%
Foreign	3,777,992	20.2%	570,002	25.3%	1,483,997	15.2%	2,032,495	15.1%
FBOs	1,277,379	6.8%	183,940	8.2%	734,883	7.5%	1,011,213	7.5%
US Branches (FBOs)	2,500,613	13.4%	386,062	17.1%	749,114	7.7%	1,021,282	7.6%
<b>2018 Totals</b>	18,843,676		2,344,720		9,924,215		13,581,193	
US Banks	15,042,416	79.8%	1,766,549	75.3%	8,430,009	84.9%	11,504,541	84.7%
Foreign	3,801,260	20.2%	578,171	24.7%	1,494,206	15.1%	2,076,652	15.3%
FBOs	1,285,973	6.8%	185,375	7.9%	743,865	7.5%	1,006,929	7.4%
US Branches (FBOs)	2,515,287	13.3%	392,796	16.8%	750,341	7.6%	1,069,723	7.9%

Source: Federal Reserve Board (as of 2Q18), SIFMA estimates

Note: Total foreign includes bank subsidiaries, branches and agencies of foreign banks located in the U.S

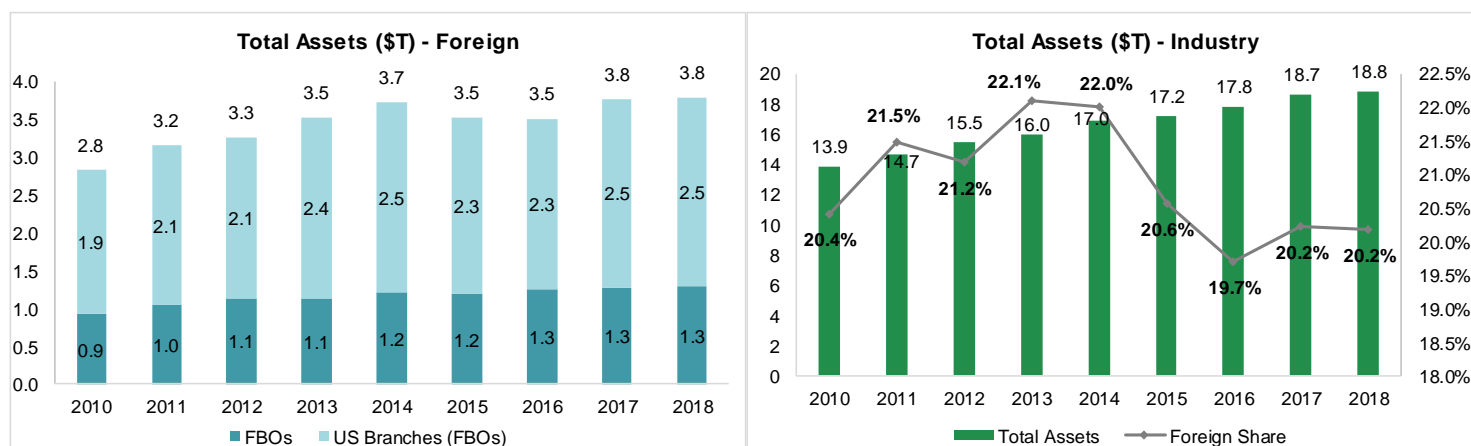


The following charts show foreign bank statistics<sup>16</sup> on the left hand side and foreign bank market share versus total industry (U.S. + foreign firms) statistics on the right hand side. Again, it is clear that all segments of the financial system have grown since 2010, as would be expected coming out of the financial crisis. However, you do see FBO market share decline after the passing<sup>17</sup> of the FBO rules by the Fed, whereby FBOs would be subject to the same risk-based and leverage capital standards as large U.S. bank holding companies, roughly the 2014-2015 period.

With total assets, loans, etc. growing, yet FBOs losing market share, we wonder who picked up this share? The client bases of the FBOs are more in line with large US banks, which are also constrained by the same regulations. While probable in some cases, it is unlikely all of these clients' needs could be served by smaller regional banks. The other assumption, as discussed by many market participants, is that much of this share could have moved to the shadow banking industry (when looking at league tables, one sees upward movement by non-CCAR firms in some segments, i.e. boutique investment banks, private equity firms).

### FBOs Selected Assets & Liabilities – Commercial Banks, U.S. Branches and Agencies

- Across all categories, FBOs had been expanding, market share then decreased after 2014/2015
- Total assets market share decreased 0.2% from 2010 to 2Q18
- C&I loans market share decreased 0.4% from 2010 to 2Q18
- Total loans market share actually increased slightly, 1.4%; growth in branches outpaced other FBOs
- Total deposits market share decreased 3.1% from 2010 to 2Q18



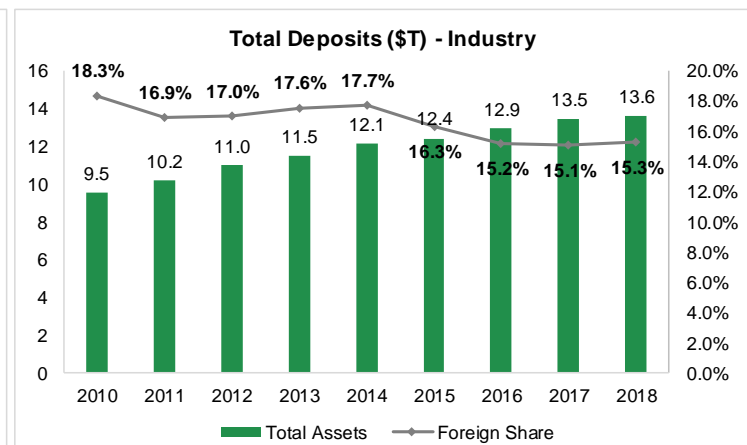
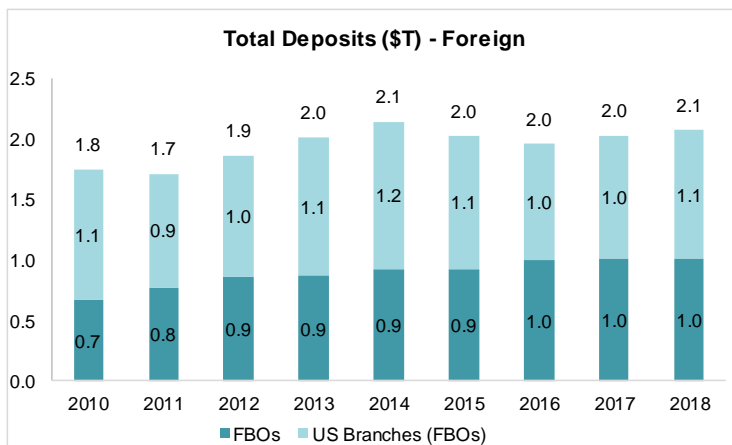
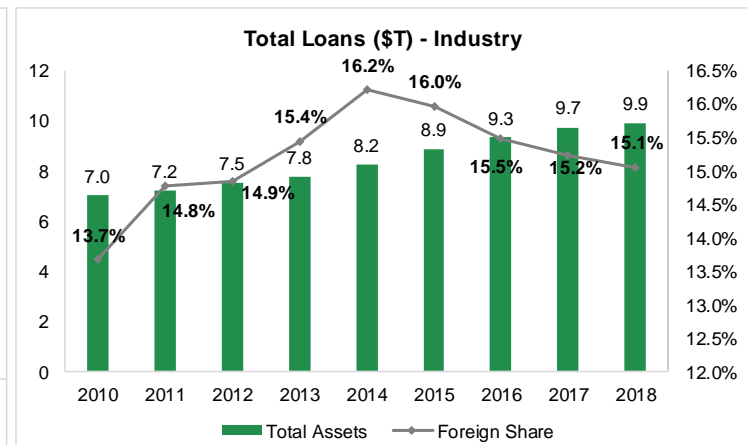
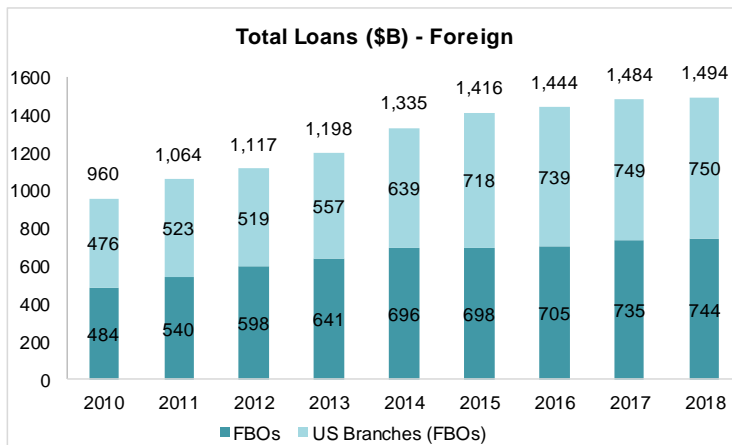
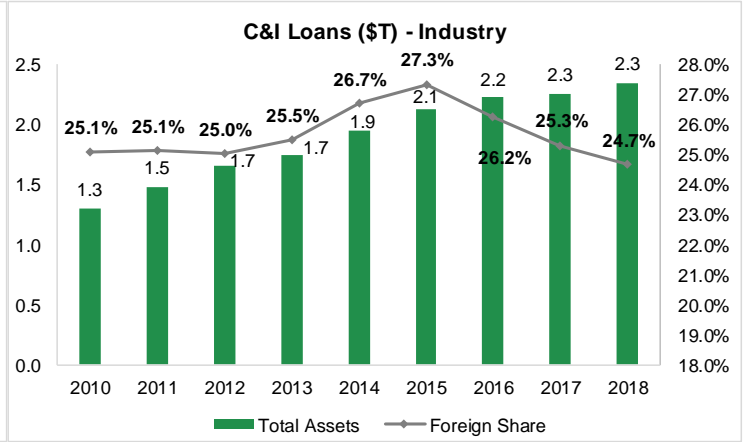
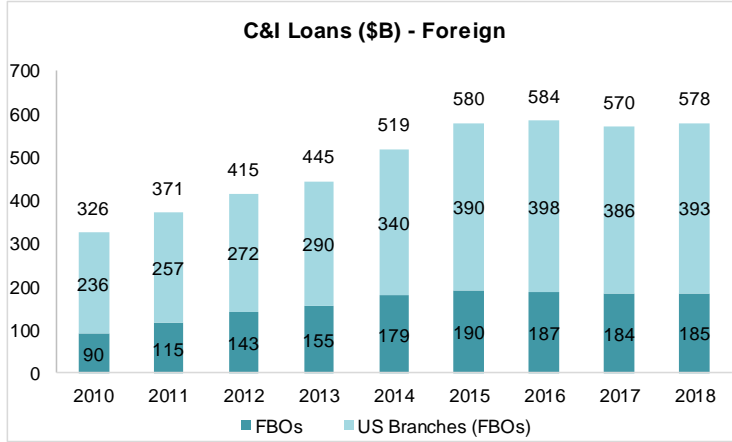
Source: Federal Reserve Board (as of 2Q18), SIFMA estimates

Note: Total foreign includes bank subsidiaries, branches and agencies of foreign banks located in the U.S

<sup>16</sup> Share [Data](#) for U.S. Offices of Foreign Banking Organizations Selected Assets and Liabilities of Domestic and Foreign Owned U.S. Commercial Banks (state member, non-member and national) Plus U.S. Branches and Agencies of Foreign Banks

<sup>17</sup> The Fed approved final [rules](#) in February 2014, with firms required to comply by January 1, 2015.

FBOs Selected Assets & Liabilities – Commercial Banks, U.S. Branches and Agencies



Source: Federal Reserve Board (as of 2Q18), SIFMA estimates  
 Note: Total foreign includes bank subsidiaries, branches and agencies of foreign banks located in the U.S.

### III. Systemic Risk Scorecard

Systemic Risk Total Scores						2017
(bps)	2013	2014	2015	2016	2017	Rank
<b>Bucket 4: Score 430-529</b>						
JPMORGAN CHASE & CO.	506	496	465	468	440	1
<b>Bucket 3: Score 330-429</b>						
CITIGROUP INC.	427	427	431	410	377	2
<b>Bucket 2: Score 230-329</b>						
BANK OF AMERICA CORPORATION	306	326	346	347	326	3
GOLDMAN SACHS GROUP, INC.	248	261	253	255	241	4
WELLS FARGO & COMPANY	172	203	250	243	237	5
<b>Bucket 1: Score 130-229</b>						
MORGAN STANLEY	260	237	212	214	219	6
BANK OF NEW YORK MELLON CORPORATION, THE	150	151	160	152	153	7
STATE STREET CORPORATION	148	147	149	149	147	8
<b>Below Cutoff Point</b>						
NORTHERN TRUST CORPORATION	49	51	56	58	58	
CREDIT SUISSE HOLDINGS (USA), INC.				69	57	10
DB USA CORPORATION				64	50	11
DEUTSCHE BANK TRUST CORPORATION	20	25	23			
BARCLAYS US LLC				63	47	12
U.S. BANCORP	35	39	41	43	42	
HSBC NORTH AMERICA HOLDINGS INC.	38	41	44	43	40	14
PNC FINANCIAL SERVICES GROUP, INC., THE	30	30	34	37	36	
RBC USA HOLDCO CORPORATION				34	31	16
CHARLES SCHWAB CORPORATION, THE			25	33	29	
TD GROUP US HOLDINGS LLC			18	28	28	
TD BANK US HOLDING COMPANY	14	18				
CAPITAL ONE FINANCIAL CORPORATION	19	18	20	21	21	
MUFG AMERICAS HOLDINGS CORPORATION	9	10	11	19	20	
UBS AMERICAS HOLDING LLC				18	19	21
BNP PARIBAS USA, INC.				23	15	22
BANCWEST CORPORATION	4	5	4			
SUNTRUST BANKS, INC.	14	13	14	16	15	
AMERICAN EXPRESS COMPANY	17	15	15	15	15	
BB&T CORPORATION	12	12	14	15	14	
BMO FINANCIAL CORP.	12	10	13	14	14	
FIFTH THIRD BANCORP	10	10	11	11	12	
ALLY FINANCIAL INC.	11	12	13	12	11	
HUNTINGTON BANCSHARES INCORPORATED	4	5	7	10	11	
SANTANDER HOLDINGS USA, INC.	5	9	10	12	10	
KEYCORP	8	7	7	9	8	
CITIZENS FINANCIAL GROUP, INC.	5	5	7	8	8	
RBS CITIZENS FINANCIAL GROUP, INC.*	9					
SYNCHRONY FINANCIAL				8	8	
DISCOVER FINANCIAL SERVICES	6	7	7	8	7	
M&T BANK CORPORATION	8	8	7	7	7	
REGIONS FINANCIAL CORPORATION	11	7	7	7	7	
BBVA COMPASS BANCSHARES, INC.	12	25	5	5	5	
COMERICA INCORPORATED	5	5	5	5	5	
CIT GROUP INC.				7	4	
E*TRADE FINANCIAL CORPORATION					4	
ZIONS BANCORPORATION	4	3	3	4	4	

Source: National Information Center, FR Y-15, SIFMA estimates

Note: BNP owns BancWest; RBS sold off its Citizen's stake in Nov 2015. US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

Ranking Firms by the Five Factors Building Into Systemic Risk Scores

2017 Ranks		1. Size	2. Interconnectedness			3. Substitutability			4. Complexity			5. Cross-Jurisdictional Activity	
(scores in bps, rest millions of USD)	Score	Total Exposures	Intra-System Assets	Intra-System Liabilities	Securities Outstanding	Assets Under Payments	Custody	Underwriting	OTC Derivatives	Trading and AFS Securities	Level 3 Assets	Cross-Jurisdictional Claims	Cross-Jurisdictional Liabilities
JPMORGAN CHASE & CO	1	1	1	1	1	1	3	2	1	1	3	2	2
BANK OF AMER CORP	3	2	3	6	2	4	8	1	4	2	5	4	4
CITIGROUP	2	3	5	3	4	3	4	3	2	5	6	1	1
WELLS FARGO & CO	5	4	6	5	3	9	6	6	6	4	1	6	6
GOLDMAN SACHS GROUP THE	4	5	2	7	5	12	11	4	3	6	2	3	5
MORGAN STANLEY	6	6	4	9	6	11	9	5	5	3	4	5	3
U.S. BANCORP	13	7	21	20	8	16	10	17	15	15	9	16	10
PNC FNCL SVC GROUP	15	8	14	18	11	19	21	16	13	12	7	20	20
TD GRP US HOLDS LLC	18	9	18	24	37	15	31	15	18	8	17	12	24
CAPITAL ONE FC	19	10	13	38	9	26	33	27	19	25	19	17	27
BANK OF NY MELLON CORP	7	11	7	2	12	2	1	25	11	11	36	8	7
HSBC N AMER HOLDS	14	12	8	11	18	18	16	11	7	16	10	14	39
SUNTRUST BK	23	13	37	29	19	27	26	20	17	26	12	28	25
CREDIT SUISSE HOLD USA	10	14	15	8	39	7	18	7	10	14	11	11	11
CHARLES SCHWAB CORP	17	15	19	40	17	39	7	34	41	10	36	22	21
BB&T CORP	25	16	39	35	16	25	27	21	25	28	15	34	28
STATE STREET CORP	8	17	11	4	13	6	2	34	9	9	14	7	8
BARCLAYS US LLC	12	18	9	17	36	8	28	9	8	17	22	10	13
AMERICAN EXPRESS CO	24	19	24	28	7	35	38	34	28	34	36	15	12
UBS AMERS HOLD LLC	21	20	17	12	40	28	12	13	32	24	13	18	36
MUFG AMERS HOLDS CORP	20	21	20	21	33	20	17	10	20	21	16	19	17
CITIZENS FNCL GRP	32	22	32	30	21	22	35	28	21	33	36	30	29
DB USA CORP	11	23	23	10	41	5	20	12	26	7	24	9	14
ALLY FNCL	28	24	28	26	10	38	38	34	34	19	33	35	33
FIFTH THIRD BC	27	25	36	32	22	23	15	24	23	18	18	26	31
KEYCORP	31	26	34	36	20	24	24	22	22	32	31	29	38
RBC USA HOLDCO CORP	16	27	16	14	38	14	13	8	16	13	25	21	16
BNP PARIBAS USA	22	28	25	22	31	13	30	14	12	29	26	24	15
BMO FNCL CORP	26	29	12	13	29	17	22	19	31	22	29	23	19
REGIONS FC	36	30	29	37	25	30	29	26	24	27	23	36	32
NORTHERN TR CORP	9	31	10	15	27	10	5	34	14	20	35	13	9
SANTANDER HOLDS USA	30	32	35	19	24	34	36	18	27	39	20	25	18
SYNCHRONY FNCL	33	33	40	23	14	40	38	34	40	36	32	40	35
M&T BK CORP	35	34	33	16	23	21	23	31	30	35	34	38	34
DISCOVER FS	34	35	22	41	15	32	38	34	37	41	36	41	37
HUNTINGTON BSHRS	29	36	31	34	26	36	19	29	33	23	8	33	39
BBVA COMPASS BSHRS	37	37	41	31	32	31	34	23	29	40	28	32	23
COMERICA	38	38	27	25	30	33	25	30	35	38	30	31	26
ZIONS BC	41	39	30	33	35	29	32	32	39	31	27	39	39
E TRADE FNCL CORP	40	40	38	39	34	41	14	34	38	30	36	37	22
CIT GROUP	39	41	26	27	28	37	37	33	36	37	21	27	30

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

Five Factors Building Into Systemic Risk Scores

2017 Data		1. Size			2. Interconnectedness			3. Substitutability			4. Complexity			5. Cross-Jurisdictional Activity	
	2017 Score	Total Exposures	Intra-Financial System Assets	Intra-Financial System Liabilities	Securities Outstanding	Payments	Assets Under Custody	Underwriting	OTC Derivatives	Trading and AFS Securities	Level 3 Assets	Cross-Jurisdictional Claims	Cross-Jurisdictional Liabilities		
(scores in bps, rest \$ millions)															
JPMORGAN CHASE & CO	440	3,252,348	309,068	419,919	675,653	287,828,840	23,263,058	506,172	44,734,022	244,246	19,207	649,543	708,701		
BANK OF AMER CORP	326	2,834,682	243,360	117,279	606,386	103,713,885	2,839,426	551,217	29,124,877	195,182	12,910	379,879	325,424		
CITIGROUP	377	2,473,863	182,389	223,268	542,742	162,271,186	14,316,869	480,989	39,142,368	134,893	11,059	903,984	857,180		
WELLS FARGO & CO	237	2,255,281	159,134	179,148	591,777	44,179,080	3,461,586	262,672	7,216,489	158,470	24,876	157,080	168,106		
GOLDMAN SACHS GROUP THE	241	1,345,588	294,648	81,841	416,725	11,830,307	1,034,357	348,961	37,976,905	102,335	20,201	430,865	313,830		
MORGAN STANLEY	219	1,091,923	187,990	48,895	309,337	13,024,997	1,820,490	325,060	28,456,074	184,133	18,138	334,604	338,465		
U.S. BANCORP	42	565,169	13,985	12,585	150,885	8,297,738	1,495,848	29,572	335,904	12,519	3,161	14,452	44,760		
PNC FNCL SVC GROUP	36	447,085	26,747	13,984	106,303	2,997,270	94,305	30,741	411,500	18,454	7,200	7,743	3,617		
TD GRP US HOLDS LLC	28	425,159	16,601	9,442	8,981	8,782,145	9,265	39,695	202,967	36,567	1,076	45,404	1,970		
CAPITAL ONE FC	21	422,542	29,667	1,632	134,232	784,210	5,083	3,349	196,284	5,308	934	10,619	1,053		
BANK OF NY MELLON CORP	153	380,434	73,293	244,823	90,179	173,197,355	26,578,400	7,282	983,832	22,558	0	105,163	158,377		
HSBC N AMER HOLDS	40	350,479	52,176	36,072	56,617	3,005,422	205,691	63,757	6,944,228	10,421	2,633	42,409	0		
SUNTRUST BK	15	249,934	2,029	5,021	56,297	675,775	60,025	17,409	206,091	4,358	2,413	2,301	1,875		
CREDIT SUISSE HOLD USA	57	249,577	21,947	70,979	1,218	56,940,199	144,139	182,870	1,108,627	16,520	2,539	46,523	33,549		
CHARLES SCHWAB CORP	29	248,524	15,504	261	75,337	128,420	3,340,534	0	0	33,920	0	6,398	3,573		
BB&T CORP	14	247,777	1,928	3,178	76,419	964,553	54,376	9,557	74,979	3,961	1,898	887	760		
STATE STREET CORP	147	243,959	32,011	181,410	89,475	74,174,622	25,020,061	0	1,694,231	36,448	2,173	105,266	137,590		
BARCLAYS US LLC	47	235,000	38,215	16,660	13,853	54,634,130	29,930	136,126	3,710,657	10,330	372	52,296	13,064		
AMERICAN EXPRESS CO	15	202,425	9,751	6,412	159,248	172,594	0	0	53,931	1,734	0	31,722	14,491		
UBS AMERS HOLD LLC	19	185,155	18,229	34,751	715	558,551	442,705	47,107	35,358	6,522	2,314	8,335	14		
MUFG AMERS HOLDS CORP	20	178,002	14,128	12,544	15,074	2,522,272	155,901	73,916	136,345	7,683	1,805	7,937	7,838		
CITIZENS FNCL GRP	8	177,121	3,187	4,879	45,534	1,566,974	2,670	2,600	104,402	1,976	0	1,975	664		
DB USA CORP	50	174,825	10,565	48,724	44	84,767,154	101,940	53,808	64,483	56,039	342	59,238	10,498		
ALLY FNCL	11	171,555	5,868	7,053	111,360	147,863	0	0	23,762	8,013	19	809	315		
FIFTH THIRD BC	12	171,278	2,401	4,036	45,175	1,497,947	290,061	7,516	81,280	8,765	1,003	2,665	558		
KEYCORP	8	167,499	2,524	2,808	47,465	1,150,447	78,217	8,898	95,360	2,354	53	2,139	9		
RBC USA HOLDCO CORP	31	167,113	20,931	19,864	1,288	10,408,614	354,481	167,046	210,924	17,793	272	6,692	9,320		
BNP PARIBAS USA	15	166,885	8,854	10,436	17,544	11,700,486	15,144	40,397	834,849	3,216	123	4,344	10,232		
BMO FNCL CORP	14	158,686	30,306	23,246	20,378	4,759,376	92,465	18,697	37,172	6,815	77	5,786	5,334		
REGIONS FC	7	144,958	3,488	2,202	30,483	478,775	25,011	3,540	77,940	4,085	348	717	524		
NORTHERN TR CORP	58	139,984	35,726	18,937	27,676	39,255,472	8,084,600	0	337,618	7,794	4	44,304	69,679		
SANTANDER HOLDS USA	10	137,855	2,459	13,716	38,979	283,505	88	27,293	55,170	396	685	3,066	5,959		
SYNCHRONY FNCL	8	132,914	1,616	9,455	85,579	104,927	0	0	1	966	46	180	35		
M&T BK CORP	7	132,560	2,808	17,016	39,999	2,127,076	86,635	783	39,405	1,199	9	260	53		
DISCOVER FS	7	119,169	13,450	8	83,609	308,846	0	0	11,209	165	0	104	10		
HUNTINGTON BSHRS	11	114,780	3,205	3,349	27,975	167,852	108,739	2,101	34,144	6,682	3,248	1,764	0		
BBVA COMPASS BSHRS	5	98,811	558	4,046	16,247	364,689	2,854	8,717	44,634	246	97	1,806	2,142		
COMERICA	5	85,596	6,411	7,461	18,993	302,117	63,036	850	20,545	677	65	1,936	1,425		
ZIONS BC	4	74,444	3,326	3,809	13,908	543,689	7,166	133	6,823	2,525	114	209	0		
E TRADE FNCL CORP	4	63,503	2,010	1,061	14,656	69,304	292,968	0	8,609	3,034	0	669	2,203		
CIT GROUP	4	54,826	6,525	6,901	25,387	163,642	22	18	14,901	946	387	2,399	650		

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

## Factor #1: Size

(\$ millions)	Total Exposures										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	3,569,552	1	3,743,113	1	3,126,873	1	3,239,816	1	3,252,348	1	-8.9%	-1.8%
BANK OF AMER CORP	2,695,637	3	2,810,246	2	2,808,783	2	2,783,111	2	2,834,682	2	5.2%	1.0%
CITIGROUP	2,894,628	2	2,765,878	3	2,377,387	3	2,403,271	3	2,473,863	3	-14.5%	-3.1%
WELLS FARGO & CO	1,961,305	4	2,191,752	4	2,146,079	4	2,274,695	4	2,255,281	4	15.0%	2.8%
GOLDMAN SACHS GROUP THE	1,517,514	5	1,484,013	5	1,349,772	5	1,275,070	5	1,345,588	5	-11.3%	-2.4%
MORGAN STANLEY	1,282,727	6	1,281,235	6	1,107,945	6	1,071,784	6	1,091,923	6	-14.9%	-3.2%
U S BC	524,636	7	538,756	7	518,500	7	550,772	7	565,169	7	7.7%	1.5%
PNC FNCL SVC GROUP	425,387	8	459,925	8	422,642	9	431,571	8	447,085	8	5.1%	1.0%
TD GRP US HOLDS LLC					296,676	12	378,868	11	425,159	9	43.3%	12.7%
CAPITAL ONE FC	336,208	12	353,601	11	372,483	11	402,612	9	422,542	10	25.7%	4.7%
BANK OF NY MELLON CORP	409,666	9	418,632	9	402,213	10	373,969	12	380,434	11	-7.1%	-1.5%
HSBC N AMER HOLDS	405,782	10	416,910	10	449,650	8	386,309	10	350,479	12	-13.6%	-2.9%
SUNTRUST BK	229,448	13	252,483	13	232,861	15	249,886	16	249,934	13	8.9%	1.7%
CREDIT SUISSE HOLD USA							284,387	14	249,577	14	-12.2%	-6.3%
CHARLES SCHWAB CORP					187,588	17	227,848	19	248,524	15	32.5%	9.8%
BB&T CORP	212,387	14	217,773	14	234,321	14	244,903	18	247,777	16	16.7%	3.1%
STATE STREET CORP	345,428	11	292,212	12	252,733	13	257,509	15	243,959	17	-29.4%	-6.7%
BARCLAYS US LLC							290,847	13	235,000	18	-19.2%	-10.1%
AMERICAN EXPRESS CO	177,272	15	184,977	15	189,415	16	180,536	22	202,425	19	14.2%	2.7%
UBS AMERS HOLD LLC							180,760	21	185,155	20	2.4%	1.2%
MUFG AMERS HOLDS CORP	146,462	19	153,901	20	138,633	24	173,905	23	178,002	21	21.5%	4.0%
CITIZENS FNCL GRP	146,082	20	157,364	17	160,112	20	173,496	24	177,121	22	21.2%	3.9%
DB USA CORP							245,385	17	174,825	23	-28.8%	-15.6%
ALLY FNCL	152,516	18	154,347	19	162,112	19	167,300	27	171,555	24	12.5%	2.4%
FIFTH THIRD BC	174,423	16	184,946	16	170,345	18	171,155	25	171,278	25	-1.8%	-0.4%
KEYCORP	134,369	23	140,421	24	125,288	27	170,906	26	167,499	26	24.7%	4.5%
RBC USA HOLDCO CORP							166,413	28	167,113	27	0.4%	0.2%
BNP PARIBAS USA							199,360	20	166,885	28	-16.3%	-8.5%
BMO FNCL CORP	162,935	17	155,869	18	144,569	22	151,132	29	158,686	29	-2.6%	-0.5%
REGIONS FC	145,969	21	151,157	22	146,354	21	146,405	31	144,958	30	-0.7%	-0.1%
NORTHERN TR CORP	142,399	22	151,569	21	136,548	26	138,241	33	139,984	31	-1.7%	-0.3%
SANTANDER HOLDS USA	98,283	26	146,358	23	142,110	23	147,324	30	137,855	32	40.3%	7.0%
SYNCHRONY FNCL							125,102	34	132,914	33	6.2%	3.1%
M&T BK CORP	104,645	24	119,590	25	138,459	25	138,843	32	132,560	34	26.7%	4.8%
DISCOVER FS	95,633	28	100,186	28	104,891	28	111,665	35	119,169	35	24.6%	4.5%
HUNTINGTON BSHRS	64,612	30	80,341	29	78,527	31	110,293	36	114,780	36	77.6%	12.2%
BBVA COMPASS BSHRS	100,957	25	107,580	26	101,787	29	98,097	37	98,811	37	-2.1%	-0.4%
COMERICA	98,084	27	102,554	27	88,170	30	87,770	38	85,596	38	-12.7%	-2.7%
ZIONS BC	75,165	29	74,391	30	66,869	32	70,908	40	74,444	39	-1.0%	-0.2%
E TRADE FNCL CORP									63,503	40	n/a	n/a
CIT GROUP							78,146	39	54,826	41	-29.8%	-16.2%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

## Factor #2: Interconnectedness

(\$ millions)	Intra-Financial System Assets										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	421,963	2	461,425	1	320,091	1	324,767	1	309,068	1	-26.8%	-6.0%
BANK OF AMER CORP	293,939	5	305,364	4	256,291	4	225,971	3	243,360	3	-17.2%	-3.7%
WELLS FARGO & CO	110,263	6	167,007	6	189,511	6	164,542	6	159,134	6	44.3%	7.6%
CITIGROUP	420,904	3	317,240	3	298,157	2	191,984	5	182,389	5	-56.7%	-15.4%
GOLDMAN SACHS GROUP THE	336,644	4	326,951	2	290,125	3	314,605	2	294,648	2	-12.5%	-2.6%
MORGAN STANLEY	535,022	1	221,710	5	217,533	5	202,820	4	187,990	4	-64.9%	-18.9%
AMERICAN EXPRESS CO	7,155	17	8,243	16	7,719	19	8,994	25	9,751	24	36.3%	6.4%
U S BC	11,460	14	15,130	14	14,984	15	13,753	21	13,985	21	22.0%	4.1%
CAPITAL ONE FC	14,187	13	17,493	12	21,842	12	26,590	14	29,667	13	109.1%	15.9%
ALLY FNCL	6,098	20	5,416	20	6,880	20	7,203	26	5,868	28	-3.8%	-0.8%
PNC FNCL SVC GROUP	17,703	11	18,636	11	20,943	13	21,919	16	26,747	14	51.1%	8.6%
BANK OF NY MELLON CORP	79,313	7	59,446	7	79,803	7	78,736	7	73,293	7	-7.6%	-1.6%
STATE STREET CORP	30,393	10	38,366	9	30,019	10	35,230	11	32,011	11	5.3%	1.0%
SYNCHRONY FNCL							1,098	38	1,616	40	47.2%	21.3%
DISCOVER FS	6,861	18	7,508	17	9,774	18	12,088	22	13,450	22	96.0%	14.4%
BB&T CORP	1,471	29	1,688	29	1,458	30	1,297	37	1,928	39	31.1%	5.6%
CHARLES SCHWAB CORP					15,876	14	17,245	18	15,504	19	-2.3%	-0.8%
HSBC N AMER HOLDS	35,711	9	36,445	10	44,348	9	49,618	8	52,176	8	46.1%	7.9%
SUNTRUST BK	3,491	25	3,520	24	3,053	23	5,283	29	2,029	37	-41.9%	-10.3%
KEYCORP	6,166	19	5,423	19	1,528	28	2,780	30	2,524	34	-59.1%	-16.4%
CITIZENS FNCL GRP	3,778	23	4,739	21	4,771	22	2,575	32	3,187	32	-15.6%	-3.3%
FIFTH THIRD BC	4,098	21	3,248	25	2,939	24	2,441	34	2,401	36	-41.4%	-10.1%
M&T BK CORP	2,070	27	2,260	27	2,381	26	2,561	33	2,808	33	35.7%	6.3%
SANTANDER HOLDS USA	3,862	22	3,821	23	2,503	25	2,154	36	2,459	35	-36.3%	-8.6%
REGIONS FC	1,254	30	1,314	30	694	31	795	39	3,488	29	178.2%	22.7%
HUNTINGTON BSHRS	1,550	28	2,270	26	2,196	27	2,331	35	3,205	31	106.8%	15.6%
NORTHERN TR CORP	43,594	8	43,203	8	46,314	8	45,164	9	35,726	10	-18.0%	-3.9%
CIT GROUP							6,492	28	6,525	26	0.5%	0.3%
BMO FNCL CORP	15,724	12	16,264	13	24,339	11	25,166	15	30,306	12	92.7%	14.0%
COMERICA	8,431	16	6,058	18	6,427	21	6,544	27	6,411	27	-24.0%	-5.3%
BNP PARIBAS USA							34,974	12	8,854	25	-74.7%	-49.7%
BBVA COMPASS BSHRS	3,575	24	3,897	22	613	32	558	40	558	41	-84.4%	-31.0%
MUFG AMERS HOLDS CORP	9,834	15	10,971	15	13,061	17	11,852	23	14,128	20	43.7%	7.5%
E TRADE FNCL CORP									2,010	38	n/a	n/a
ZIONS BC	2,607	26	1,746	28	1,522	29	2,685	31	3,326	30	27.6%	5.0%
BARCLAYS US LLC							45,095	10	38,215	9	-15.3%	-7.9%
TD GRP US HOLDS LLC					14,362	16	15,250	20	16,601	18	15.6%	4.9%
RBC USA HOLDCO CORP							17,527	17	20,931	16	19.4%	9.3%
CREDIT SUISSE HOLD USA							29,395	13	21,947	15	-25.3%	-13.6%
UBS AMERS HOLD LLC							10,417	24	18,229	17	75.0%	32.3%
DB USA CORP							17,152	19	10,565	23	-38.4%	-21.5%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.



## Factor #2: Interconnectedness

(\$ millions)	Intra-Financial System Liabilities										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	544,258	1	570,830	1	402,363	1	385,606	1	419,919	1	-22.8%	-5.1%
BANK OF AMER CORP	219,927	4	227,580	4	179,305	4	116,731	6	117,279	6	-46.7%	-11.8%
WELLS FARGO & CO	128,896	7	170,841	6	154,959	6	174,666	4	179,148	5	39.0%	6.8%
CITIGROUP	512,523	2	458,603	2	400,864	2	361,820	2	223,268	3	-56.4%	-15.3%
GOLDMAN SACHS GROUP THE	106,942	8	113,405	8	126,231	7	99,896	7	81,841	7	-23.5%	-5.2%
MORGAN STANLEY	182,491	6	118,360	7	60,297	9	43,440	10	48,895	9	-73.2%	-23.2%
AMERICAN EXPRESS CO	36,921	10	5,794	16	7,268	17	6,155	25	6,412	28	-82.6%	-29.5%
U S BC	21,887	11	13,976	11	13,987	13	13,918	19	12,585	20	-42.5%	-10.5%
CAPITAL ONE FC	2,467	23	1,682	26	1,820	30	1,368	38	1,632	38	-33.9%	-7.9%
ALLY FNCL	16,534	12	13,796	12	11,110	15	5,852	26	7,053	26	-57.3%	-15.7%
PNC FNCL SVC GROUP	13,135	13	8,342	13	13,970	14	12,950	21	13,984	18	6.5%	1.3%
BANK OF NY MELLON CORP	229,805	3	248,552	3	269,146	3	209,601	3	244,823	2	6.5%	1.3%
STATE STREET CORP	209,263	5	214,039	5	169,008	5	164,997	5	181,410	4	-13.3%	-2.8%
SYNCHRONY FNCL							10,198	22	9,455	23	-7.3%	-3.7%
DISCOVER FS	296	30	234	30	111	31	145	40	8	41	-97.1%	-50.9%
BB&T CORP	10,317	15	4,558	21	5,143	19	3,664	31	3,178	35	-69.2%	-21.0%
CHARLES SCHWAB CORP							369	39	261	40	-29.3%	-15.9%
HSBC N AMER HOLDS	54,925	9	41,279	9	63,141	8	34,719	11	36,072	11	-34.3%	-8.1%
SUNTRUST BK	1,308	25	1,282	27	3,079	25	2,221	37	5,021	29	284.0%	30.9%
KEYCORP	724	27	2,140	25	2,385	28	3,302	32	2,808	36	287.6%	31.1%
CITIZENS FNCL GRP	3,610	21	5,786	17	4,990	20	5,436	27	4,879	30	35.2%	6.2%
FIFTH THIRD BC	8,943	16	3,232	22	3,751	23	4,298	29	4,036	32	-54.9%	-14.7%
M&T BK CORP	4,983	19	5,014	19	4,825	21	3,869	30	17,016	16	241.5%	27.8%
SANTANDER HOLDS USA	402	28	7,290	14	24,263	10	23,884	15	13,716	19	3313.4%	102.6%
REGIONS FC	6,693	17	6,832	15	2,680	26	2,275	36	2,202	37	-67.1%	-19.9%
HUNTINGTON BSHRS	313	29	1,274	28	1,940	29	2,737	35	3,349	34	968.3%	60.6%
NORTHERN TR CORP	12,215	14	17,568	10	18,586	11	17,896	18	18,937	15	55.0%	9.2%
CIT GROUP							9,319	23	6,901	27	-26.0%	-13.9%
BMO FNCL CORP	958	26	881	29	15,525	12	18,264	17	23,246	13	2327.1%	89.2%
COMERICA	4,242	20	4,757	20	5,600	18	7,501	24	7,461	25	75.9%	12.0%
BNP PARIBAS USA							31,949	12	10,436	22	-67.3%	-42.8%
BBVA COMPASS BSHRS	2,381	24	2,657	24	3,643	24	2,957	33	4,046	31	69.9%	11.2%
MUFG AMERS HOLDS CORP	5,858	18	5,363	18	10,096	16	13,733	20	12,544	21	114.1%	16.4%
E TRADE FNCL CORP								1,061	39	n/a	n/a	
ZIONS BC	2,501	22	2,713	23	2,616	27	2,941	34	3,809	33	52.3%	8.8%
BARCLAYS US LLC							28,924	14	16,660	17	-42.4%	-24.1%
TD GRP US HOLDS LLC					4,418	22	4,726	28	9,442	24	113.7%	28.8%
RBC USA HOLDCO CORP							20,419	16	19,864	14	-2.7%	-1.4%
CREDIT SUISSE HOLD USA							93,940	8	70,979	8	-24.4%	-13.1%
UBS AMERS HOLD LLC							30,111	13	34,751	12	15.4%	7.4%
DB USA CORP							84,028	9	48,724	10	-42.0%	-23.9%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.



## Factor #2: Interconnectedness

(\$ millions)	Securities Outstanding										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	598,997	1	641,607	1	578,262	1	598,781	1	675,653	1	12.8%	2.4%
BANK OF AMER CORP	488,785	4	499,711	4	488,065	3	521,558	3	606,386	2	24.1%	4.4%
WELLS FARGO & CO	507,718	3	590,283	2	570,457	2	573,341	2	591,777	3	16.6%	3.1%
CITIGROUP	595,500	2	505,808	3	456,903	4	468,959	4	542,742	4	-8.9%	-1.8%
GOLDMAN SACHS GROUP THE	310,141	5	328,277	5	338,694	5	368,844	5	416,725	5	34.4%	6.1%
MORGAN STANLEY	231,406	6	246,187	6	233,499	6	252,089	6	309,337	6	33.7%	6.0%
AMERICAN EXPRESS CO	161,518	7	162,085	8	131,797	8	129,183	8	159,248	7	-1.4%	-0.3%
U S BC	138,882	8	174,515	7	143,262	7	144,232	7	150,885	8	8.6%	1.7%
CAPITAL ONE FC	94,444	10	104,287	10	112,907	10	109,387	9	134,232	9	42.1%	7.3%
ALLY FNCL	108,149	9	116,354	9	113,162	9	106,802	10	111,360	10	3.0%	0.6%
PNC FNCL SVC GROUP	67,593	13	78,035	12	78,397	12	88,025	12	106,303	11	57.3%	9.5%
BANK OF NY MELLON CORP	61,106	14	66,878	14	68,474	14	77,724	15	90,179	12	47.6%	8.1%
STATE STREET CORP	42,822	17	60,107	15	86,367	11	98,222	11	89,475	13	108.9%	15.9%
SYNCHRONY FNCL							81,605	13	85,579	14	4.9%	2.4%
DISCOVER FS	74,146	11	79,096	11	73,116	13	79,558	14	83,609	15	12.8%	2.4%
BB&T CORP	68,852	12	68,023	13	67,865	15	73,301	16	76,419	16	11.0%	2.1%
CHARLES SCHWAB CORP					47,914	17	58,275	18	75,337	17	57.2%	16.3%
HSBC N AMER HOLDS	50,431	15	54,211	16	62,774	16	60,692	17	56,617	18	12.3%	2.3%
SUNTRUST BK	49,992	16	51,741	17	41,910	18	47,417	19	56,297	19	12.6%	2.4%
KEYCORP	26,156	20	25,397	21	26,827	21	42,940	21	47,465	20	81.5%	12.7%
CITIZENS FNCL GRP	1,350	30	8,052	30	19,496	26	37,406	24	45,534	21	3272.9%	102.1%
FIFTH THIRD BC	37,550	18	38,466	18	38,115	20	43,267	20	45,175	22	20.3%	3.8%
M&T BK CORP	21,928	22	25,804	20	39,834	19	40,874	23	39,999	23	82.4%	12.8%
SANTANDER HOLDS USA	11,631	28	21,682	22	26,494	22	31,084	25	38,979	24	235.1%	27.4%
REGIONS FC	27,271	19	27,306	19	24,238	24	29,355	26	30,483	25	11.8%	2.3%
HUNTINGTON BSHRS	15,666	26	16,114	26	18,478	27	26,312	27	27,975	26	78.6%	12.3%
NORTHERN TR CORP	16,242	25	16,212	25	17,713	28	25,508	28	27,676	27	70.4%	11.2%
CIT GROUP							41,870	22	25,387	28	-39.4%	-22.1%
BMO FNCL CORP	25,682	21	20,466	23	24,834	23	25,182	29	20,378	29	-20.7%	-4.5%
COMERICA	17,245	24	15,463	27	13,944	30	19,891	30	18,993	30	10.1%	1.9%
BNP PARIBAS USA							14,410	34	17,544	31	21.7%	10.3%
BBVA COMPASS BSHRS	12,791	27	14,488	28	16,496	29	15,921	33	16,247	32	27.0%	4.9%
MUFG AMERS HOLDS CORP	19,747	23	18,189	24	20,596	25	16,070	32	15,074	33	-23.7%	-5.3%
E TRADE FNCL CORP									14,656	34	n/a	n/a
ZIONS BC	10,866	29	9,868	29	9,178	31	12,533	36	13,908	35	28.0%	5.1%
BARCLAYS US LLC							13,726	35	13,853	36	0.9%	0.5%
TD GRP US HOLDS LLC					6,934	32	19,276	31	8,981	37	29.5%	9.0%
RBC USA HOLDCO CORP							1,222	37	1,288	38	5.4%	2.6%
CREDIT SUISSE HOLD USA							1,178	38	1,218	39	3.4%	1.7%
UBS AMERS HOLD LLC							740	39	715	40	-3.4%	-1.7%
DB USA CORP									44	41	n/a	n/a

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

## Factor #3: Substitutability

(\$ millions)	Payments										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	321,458,431	1	323,173,878	1	285,757,577	1	273,000,000	1	287,828,840	1	-10.5%	-2.2%
BANK OF NY MELLON CORP	166,278,578	3	218,569,391	3	197,357,685	3	177,000,000	2	173,197,355	2	4.2%	0.8%
CITIGROUP	300,782,648	2	274,865,406	2	272,719,250	2	154,000,000	3	162,271,186	3	-46.1%	-11.6%
BANK OF AMER CORP	83,704,984	4	93,184,380	4	109,318,623	4	107,000,000	4	103,713,885	4	23.9%	4.4%
DB USA CORP							95,084,566	5	84,767,154	5	-10.9%	-5.6%
STATE STREET CORP	59,122,190	5	71,014,770	5	78,735,680	5	79,261,009	6	74,174,622	6	25.5%	4.6%
CREDIT SUISSE HOLD USA							53,472,648	8	56,940,199	7	6.5%	3.2%
BARCLAYS US LLC							53,838,197	7	54,634,130	8	1.5%	0.7%
WELLS FARGO & CO	28,761,213	7	34,295,107	7	35,132,991	7	36,836,857	10	44,179,080	9	53.6%	9.0%
NORTHERN TR CORP	32,997,308	6	35,333,968	6	41,717,833	6	38,345,512	9	39,255,472	10	19.0%	3.5%
MORGAN STANLEY	9,811,965	8	11,640,648	8	11,531,764	9	10,147,160	13	13,024,997	11	32.7%	5.8%
GOLDMAN SACHS GROUP THE	9,584,773	9	11,306,295	9	12,425,836	8	11,317,596	12	11,830,307	12	23.4%	4.3%
BNP PARIBAS USA							11,553,124	11	11,700,486	13	1.3%	0.6%
RBC USA HOLDCO CORP							9,809,311	14	10,408,614	14	6.1%	3.0%
TD GRP US HOLDS LLC					540,001	23	8,509,039	15	8,782,145	15	1526.3%	153.4%
U S BC	6,918,228	10	7,772,596	10	8,235,443	10	8,120,512	16	8,297,738	16	19.9%	3.7%
BMO FNCL CORP	5,244,698	11	6,179,034	11	5,340,978	11	5,059,845	17	4,759,376	17	-9.3%	-1.9%
HSBC N AMER HOLDS	1,061,322	16	3,704,707	12	2,688,055	12	3,706,548	18	3,005,422	18	183.2%	23.1%
PNC FNCL SVC GROUP	2,004,252	13	2,598,451	13	2,633,850	13	2,656,532	19	2,997,270	19	49.5%	8.4%
MUFG AMERS HOLDS CORP	1,058,279	17	947,515	17	989,042	18	1,917,215	21	2,522,272	20	138.3%	19.0%
M&T BK CORP	1,594,474	14	1,546,288	15	1,795,874	15	2,080,521	20	2,127,076	21	33.4%	5.9%
CITIZENS FNCL GRP	2,816,151	12	1,883,788	14	2,012,653	14	1,438,759	22	1,566,974	22	-44.4%	-11.1%
FIFTH THIRD BC	1,186,752	15	1,479,898	16	1,156,526	16	1,268,120	23	1,497,947	23	26.2%	4.8%
KEYCORP	983,712	18	945,763	18	1,075,266	17	1,004,870	25	1,150,447	24	16.9%	3.2%
BB&T CORP	972,398	19	811,414	19	723,605	21	905,686	26	964,553	25	-0.8%	-0.2%
CAPITAL ONE FC	913,806	20	772,586	22	750,034	20	789,105	28	784,210	26	-14.2%	-3.0%
SUNTRUST BK	643,952	22	781,720	21	705,609	22	723,915	29	675,775	27	4.9%	1.0%
UBS AMERS HOLD LLC							1,052,028	24	558,551	28	-46.9%	-27.1%
ZIONS BC	437,011	23	417,119	24	407,611	24	459,067	30	543,689	29	24.4%	4.5%
REGIONS FC	754,883	21	800,830	20	768,519	19	811,509	27	478,775	30	-36.6%	-8.7%
BBVA COMPASS BSHRS	198,758	28	245,028	27	253,427	28	305,421	31	364,689	31	83.5%	12.9%
DISCOVER FS	321,093	24	321,441	25	293,982	26	275,449	34	308,846	32	-3.8%	-0.8%
COMERICA	245,756	27	250,361	26	283,637	27	300,310	32	302,117	33	22.9%	4.2%
SANTANDER HOLDS USA	24,074	30	51,581	30	49,853	32	278,074	33	283,505	34	1077.6%	63.8%
AMERICAN EXPRESS CO	143,718	29	140,455	28	151,143	30	159,401	37	172,594	35	20.1%	3.7%
HUNTINGTON BSHRS	302,706	25	431,902	23	382,262	25	151,674	38	167,852	36	-44.5%	-11.1%
CIT GROUP							169,027	36	163,642	37	-3.2%	-1.6%
ALLY FNCL	290,017	26	118,390	29	152,018	29	179,043	35	147,863	38	-49.0%	-12.6%
CHARLES SCHWAB CORP					129,583	31	118,818	39	128,420	39	-0.9%	-0.3%
SYNCHRONY FNCL							99,907	40	104,927	40	5.0%	2.5%
E TRADE FNCL CORP								69,304	41	n/a	n/a	

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

## Factor #3: Substitutability

(\$ millions)	Assets Under Custody										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	21,320,085	2	21,097,734	3	19,738,583	3	20,200,746	3	23,263,058	3	9.1%	1.8%
BANK OF NY MELLON CORP	23,590,412	1	24,632,807	1	23,557,691	1	24,342,800	1	26,578,400	1	12.7%	2.4%
CITIGROUP	11,095,924	4	12,520,569	4	11,606,842	4	12,253,212	4	14,316,869	4	29.0%	5.2%
BANK OF AMER CORP	136,190	13	139,555	12	113,239	14	2,619,111	8	2,839,426	8	1984.9%	83.6%
DB USA CORP							77,230	22	101,940	20	32.0%	14.9%
STATE STREET CORP	20,411,068	3	21,656,000	2	21,257,877	2	21,724,645	2	25,020,061	2	22.6%	4.2%
CREDIT SUISSE HOLD USA							134,854	17	144,139	18	6.9%	3.4%
BARCLAYS US LLC							33,017	27	29,930	28	-9.4%	-4.8%
WELLS FARGO & CO	2,400,000	6	2,500,000	6	2,053,400	7	3,200,401	6	3,461,586	6	44.2%	7.6%
NORTHERN TR CORP	5,575,700	5	5,968,800	5	6,072,100	5	6,720,500	5	8,084,600	5	45.0%	7.7%
MORGAN STANLEY	1,369,186	7	1,573,837	7	1,480,579	8	1,537,341	9	1,820,490	9	33.0%	5.9%
GOLDMAN SACHS GROUP THE	865,755	9	1,013,139	9	1,028,103	10	937,951	11	1,034,357	11	19.5%	3.6%
BNP PARIBAS USA							17,217	29	15,144	30	-12.0%	-6.2%
RBC USA HOLDCO CORP							301,162	13	354,481	13	17.7%	8.5%
TD GRP US HOLDS LLC					8,352	24	9,014	30	9,265	31	10.9%	3.5%
U S BC	959,466	8	1,102,084	8	1,207,999	9	1,278,292	10	1,495,848	10	55.9%	9.3%
BMO FNCL CORP	257,113	10	135,147	13	138,464	12	155,895	15	92,465	22	-64.0%	-18.5%
HSBC N AMER HOLDS	42,775	20	39,476	20	25,738	22	116,073	18	205,691	16	380.9%	36.9%
PNC FNCL SVC GROUP	161,000	12	171,000	11	85,340	16	88,441	20	94,305	21	-41.4%	-10.1%
MUFG AMERS HOLDS CORP	119,955	14	128,819	14	129,173	13	137,785	16	155,901	17	30.0%	5.4%
M&T BK CORP	100,836	15	112,906	15	80,299	18	82,218	21	86,635	23	-14.1%	-3.0%
CITIZENS FNCL GRP	6,724	23	3,913	24	3,438	27	3,071	33	2,670	35	-60.3%	-16.9%
FIFTH THIRD BC	240,024	11	246,921	10	235,612	11	251,084	14	290,061	15	20.8%	3.9%
KEYCORP	82,231	16	89,324	16	85,695	15	73,566	23	78,217	24	-4.9%	-1.0%
BB&T CORP	34,913	21	38,953	21	40,055	21	46,660	26	54,376	27	55.7%	9.3%
CAPITAL ONE FC	2,724	26	4,396	23	4,148	26	4,431	32	5,083	33	86.6%	13.3%
SUNTRUST BK	64,438	18	58,849	18	54,416	19	55,928	24	60,025	26	-6.8%	-1.4%
UBS AMERS HOLD LLC							375,012	12	442,705	12	18.1%	8.7%
ZIONS BC	2,849	25	3,581	25	4,663	25	5,687	31	7,166	32	151.6%	20.3%
REGIONS FC	22,040	22	17,108	22	18,308	23	22,562	28	25,011	29	13.5%	2.6%
BBVA COMPASS BSHRS	3,069	24	2,617	26	2,487	28	2,786	34	2,854	34	-7.0%	-1.4%
DISCOVER FS											n/a	n/a
COMERICA	53,084	19	55,913	19	53,158	20	55,253	25	63,036	25	18.7%	3.5%
SANTANDER HOLDS USA							99	35	88	36	-10.7%	-5.5%
AMERICAN EXPRESS CO											n/a	n/a
HUNTINGTON BSHRS	79,935	17	79,217	17	81,193	17	93,507	19	108,739	19	36.0%	6.3%
CIT GROUP							24	36	22	37	-8.7%	-4.5%
ALLY FNCL											n/a	n/a
CHARLES SCHWAB CORP					2,492,382	6	2,757,167	7	3,340,534	7	34.0%	10.3%
SYNCHRONY FNCL											n/a	n/a
E TRADE FNCL CORP									292,968	14	n/a	n/a

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

## Factor #3: Substitutability

(\$ millions)	Underwriting										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	507,734	1	490,698	1	453,209	2	468,668	2	506,172	2	-0.3%	-0.1%
BANK OF NY MELLON CORP	5,840	15	4,904	17	7,051	15	7,430	23	7,282	25	24.7%	4.5%
CITIGROUP	331,012	4	370,772	3	347,507	4	393,109	3	480,989	3	45.3%	7.8%
BANK OF AMER CORP	390,267	2	445,911	2	472,753	1	489,673	1	551,217	1	41.2%	7.1%
DB USA CORP							74,800	10	53,808	12	-28.1%	-15.2%
STATE STREET CORP											n/a	n/a
CREDIT SUISSE HOLD USA							152,197	9	182,870	7	20.2%	9.6%
BARCLAYS US LLC							172,420	8	136,126	9	-21.0%	-11.1%
WELLS FARGO & CO	85,947	6	167,681	7	433,802	3	223,765	6	262,672	6	205.6%	25.0%
NORTHERN TR CORP											n/a	n/a
MORGAN STANLEY	261,805	5	331,344	5	331,705	5	283,774	5	325,060	5	24.2%	4.4%
GOLDMAN SACHS GROUP THE	371,000	3	346,000	4	323,000	6	342,560	4	348,961	4	-5.9%	-1.2%
BNP PARIBAS USA							36,652	14	40,397	14	10.2%	5.0%
RBC USA HOLDCO CORP							185,201	7	167,046	8	-9.8%	-5.0%
TD GRP US HOLDS LLC							43,981	13	39,695	15	-9.7%	-5.0%
U S BC	17,199	11	27,517	9	23,615	8	24,603	16	29,572	17	71.9%	11.4%
BMO FNCL CORP	8,304	14	8,401	13	8,396	12	12,328	20	18,697	19	125.2%	17.6%
HSBC N AMER HOLDS	48,735	8	51,887	8	54,559	7	53,772	12	63,757	11	30.8%	5.5%
PNC FNCL SVC GROUP	10,044	13	12,740	11	17,370	9	21,949	17	30,741	16	206.1%	25.1%
MUFG AMERS HOLDS CORP							60,199	11	73,916	10	22.8%	10.8%
M&T BK CORP	25,845	10	25,633	10	598	21	812	29	783	31	-97.0%	-50.3%
CITIZENS FNCL GRP									2,600	28	n/a	n/a
FIFTH THIRD BC	5,428	17	6,068	14	7,438	14	7,749	22	7,516	24	38.5%	6.7%
KEYCORP	5,379	18	5,838	15	8,312	13	5,977	25	8,898	22	65.4%	10.6%
BB&T CORP	5,511	16	5,592	16	10,803	11	10,361	21	9,557	21	73.4%	11.6%
CAPITAL ONE FC	1,851	19	2,414	18	2,294	17	2,361	27	3,349	27	81.0%	12.6%
SUNTRUST BK	11,251	12	11,871	12	16,186	10	15,405	19	17,409	20	54.7%	9.1%
UBS AMERS HOLD LLC							31,039	15	47,107	13	51.8%	23.2%
ZIONS BC	232	22	155	22	87	22	38	32	133	32	-42.5%	-10.5%
REGIONS FC	44,635	9	1,400	20	2,131	18	2,744	26	3,540	26	-92.1%	-39.8%
BBVA COMPASS BSHRS	79,955	7	206,041	6	6,139	16	6,425	24	8,717	23	-89.1%	-35.8%
DISCOVER FS											n/a	n/a
COMERICA	1,484	20	1,556	19	1,396	20	585	30	850	30	-42.7%	-10.5%
SANTANDER HOLDS USA							19,256	18	27,293	18	41.7%	19.1%
AMERICAN EXPRESS CO											n/a	n/a
HUNTINGTON BSHRS	942	21	1,142	21	1,505	19	1,120	28	2,101	29	123.1%	17.4%
CIT GROUP							95	31	18	33	-81.1%	-56.5%
ALLY FNCL											n/a	n/a
CHARLES SCHWAB CORP											n/a	n/a
SYNCHRONY FNCL											n/a	n/a
E TRADE FNCL CORP											n/a	n/a

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

## Factor #4: Complexity

(\$ millions)	OTC Derivatives										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	68,003,662	1	65,268,349	1	48,364,568	1	44,555,323	1	44,734,022	1	-34.2%	-8.0%
CITIGROUP	59,472,006	2	54,952,090	2	44,577,718	2	41,799,391	2	39,142,368	2	-34.2%	-8.0%
GOLDMAN SACHS GROUP THE	50,355,240	4	53,478,619	3	42,555,299	3	36,278,660	3	37,976,905	3	-24.6%	-5.5%
BANK OF AMER CORP	54,887,232	3	52,034,160	4	39,960,844	4	31,775,824	4	29,124,877	4	-46.9%	-11.9%
MORGAN STANLEY	43,610,512	5	34,515,890	5	25,912,296	5	25,444,159	5	28,456,074	5	-34.7%	-8.2%
WELLS FARGO & CO	4,879,596	7	5,643,148	6	5,782,280	7	6,935,310	6	7,216,489	6	47.9%	8.1%
HSBC N AMER HOLDS	5,193,826	6	4,737,666	7	6,682,073	6	6,377,024	7	6,944,228	7	33.7%	6.0%
BARCLAYS US LLC							4,721,181	8	3,710,657	8	-21.4%	-11.3%
STATE STREET CORP	1,141,089	9	1,239,188	8	1,279,671	8	1,445,832	11	1,694,231	9	48.5%	8.2%
CREDIT SUISSE HOLD USA							933,161	12	1,108,627	10	18.8%	9.0%
BANK OF NY MELLON CORP	1,157,850	8	1,186,938	9	1,035,365	9	834,904	13	983,832	11	-15.0%	-3.2%
BNP PARIBAS USA							3,360,010	9	834,849	12	-75.2%	-50.2%
PNC FNCL SVC GROUP	251,979	11	278,409	10	326,423	11	372,253	14	411,500	13	63.3%	10.3%
NORTHERN TR CORP	254,851	10	270,054	11	388,464	10	290,684	15	337,618	14	32.5%	5.8%
U S BC	106,000	13	136,400	13	194,150	14	274,873	16	335,904	15	216.9%	25.9%
RBC USA HOLDCO CORP							214,293	19	210,924	16	-1.6%	-0.8%
SUNTRUST BK	182,527	12	195,903	12	209,509	12	243,315	18	206,091	17	12.9%	2.5%
TD GRP US HOLDS LLC					201,582	13	259,422	17	202,967	18	0.7%	0.2%
CAPITAL ONE FC	63,418	17	88,639	14	105,430	16	143,964	21	196,284	19	209.5%	25.4%
MUFG AMERS HOLDS CORP	64,309	15	71,678	16	123,748	15	168,395	20	136,345	20	112.0%	16.2%
CITIZENS FNCL GRP	43,163	21	46,639	23	59,773	21	77,485	23	104,402	21	141.9%	19.3%
KEYCORP	61,561	18	55,643	20	63,026	20	82,499	22	95,360	22	54.9%	9.1%
FIFTH THIRD BC	63,887	16	62,853	18	71,906	18	68,713	26	81,280	23	27.2%	4.9%
REGIONS FC	74,346	14	79,237	15	75,584	17	75,497	24	77,940	24	4.8%	0.9%
BB&T CORP	59,276	20	71,582	17	67,127	19	74,884	25	74,979	25	26.5%	4.8%
DB USA CORP							1,992,939	10	64,483	26	-96.8%	-82.0%
SANTANDER HOLDS USA	17,537	27	49,005	21	57,472	22	55,352	27	55,170	27	214.6%	25.8%
AMERICAN EXPRESS CO	42,224	22	47,644	22	44,692	24	46,028	28	53,931	28	27.7%	5.0%
BBVA COMPASS BSHRS	18,059	26	25,000	26	30,888	26	41,228	29	44,634	29	147.2%	19.8%
M&T BK CORP	21,408	24	22,149	27	19,792	29	22,710	33	39,405	30	84.1%	13.0%
BMO FNCL CORP	21,977	23	27,763	25	23,084	27	32,109	32	37,172	31	69.1%	11.1%
UBS AMERS HOLD LLC							7,283	37	35,358	32	385.5%	120.3%
HUNTINGTON BSHRS	7,580	29	29,096	24	31,684	25	35,918	30	34,144	33	350.4%	35.1%
ALLY FNCL	61,542	19	62,313	19	57,212	23	34,166	31	23,762	34	-61.4%	-17.3%
COMERICA	20,538	25	21,561	28	20,764	28	20,051	34	20,545	35	0.0%	0.0%
CIT GROUP							12,043	35	14,901	36	23.7%	11.2%
DISCOVER FS	11,631	28	11,227	29	8,510	30	10,106	36	11,209	37	-3.6%	-0.7%
E TRADE FNCL CORP									8,609	38	n/a	n/a
ZIONS BC	3,049	30	3,070	30	4,533	31	6,209	38	6,823	39	123.8%	17.5%
SYNCHRONY FNCL									1	40	n/a	n/a
CHARLES SCHWAB CORP											n/a	n/a

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

## Factor #4: Complexity

(\$ millions)	Trading and AFS Securities										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	446,323	1	323,285	1	297,142	1	262,775	1	244,246	1	-45.3%	-11.4%
CITIGROUP	130,113	5	168,630	4	164,719	3	150,920	5	134,893	5	3.7%	0.7%
GOLDMAN SACHS GROUP THE	138,305	4	148,746	5	111,085	6	101,228	6	102,335	6	-26.0%	-5.8%
BANK OF AMER CORP	203,138	3	229,595	3	229,233	2	208,813	2	195,182	2	-3.9%	-0.8%
MORGAN STANLEY	316,369	2	286,975	2	160,356	4	171,098	3	184,133	3	-41.8%	-10.3%
WELLS FARGO & CO	127,761	6	135,221	6	156,676	5	161,666	4	158,470	4	24.0%	4.4%
HSBC N AMER HOLDS	39,638	8	43,561	7	8,810	13	11,504	16	10,421	16	-73.7%	-23.4%
BARCLAYS US LLC							22,370	12	10,330	17	-53.8%	-32.0%
STATE STREET CORP	53,759	7	33,983	8	43,597	7	39,836	8	36,448	9	-32.2%	-7.5%
CREDIT SUISSE HOLD USA							23,365	11	16,520	14	-29.3%	-15.9%
BANK OF NY MELLON CORP	38,944	9	25,031	9	27,388	9	22,345	13	22,558	11	-42.1%	-10.3%
BNP PARIBAS USA							2,214	33	3,216	29	45.3%	20.5%
PNC FNCL SVC GROUP	25,921	10	16,385	10	21,109	11	20,976	14	18,454	12	-28.8%	-6.6%
NORTHERN TR CORP	11,761	14	7,492	15	7,426	17	6,442	25	7,794	20	-33.7%	-7.9%
U S BC	12,961	13	13,830	11	12,781	12	11,554	15	12,519	15	-3.4%	-0.7%
RBC USA HOLDCO CORP							10,323	17	17,793	13	72.4%	31.3%
SUNTRUST BK	14,987	12	3,332	23	2,989	26	3,560	28	4,358	26	-70.9%	-21.9%
TD GRP US HOLDS LLC					28,883	8	25,729	10	36,567	8	26.6%	8.2%
CAPITAL ONE FC	16,186	11	10,913	12	8,597	14	7,657	21	5,308	25	-67.2%	-20.0%
MUFG AMERS HOLDS CORP	8,144	18	7,297	16	7,684	16	6,544	22	7,683	21	-5.7%	-1.2%
CITIZENS FNCL GRP	869	28	937	28	618	31	2,176	34	1,976	33	127.3%	17.8%
KEYCORP	1,644	26	1,372	25	1,754	27	2,522	30	2,354	32	43.2%	7.4%
FIFTH THIRD BC	6,808	19	5,399	18	6,810	18	8,176	20	8,765	18	28.7%	5.2%
REGIONS FC	5,061	20	4,814	19	4,656	22	4,425	27	4,085	27	-19.3%	-4.2%
BB&T CORP	4,024	22	4,558	20	5,210	21	4,771	26	3,961	28	-1.6%	-0.3%
DB USA CORP							35,687	9	56,039	7	57.0%	25.3%
SANTANDER HOLDS USA	11,600	15	9,123	13	6,741	19	1,035	37	396	39	-96.6%	-49.1%
AMERICAN EXPRESS CO	4,401	21	3,733	21	3,151	24	2,475	31	1,734	34	-60.6%	-17.0%
BBVA COMPASS BSHRS	1,089	27	802	29	3,088	25	3,049	29	246	40	-77.4%	-25.7%
M&T BK CORP	588	29	1,118	27	1,481	28	1,727	36	1,199	35	104.0%	15.3%
BMO FNCL CORP	10,561	16	5,567	17	6,434	20	6,481	24	6,815	22	-35.5%	-8.4%
UBS AMERS HOLD LLC							9,733	18	6,522	24	-33.0%	-18.1%
HUNTINGTON BSHRS	2,909	23	3,693	22	3,947	23	6,524	23	6,682	23	129.7%	18.1%
ALLY FNCL	9,027	17	9,089	14	8,118	15	8,216	19	8,013	19	-11.2%	-2.4%
COMERICA	1,682	25	1,334	26	1,039	29	855	38	677	38	-59.8%	-16.6%
CIT GROUP							1,790	35	946	37	-47.1%	-27.3%
DISCOVER FS	559	30	433	30	315	32	205	40	165	41	-70.5%	-21.7%
E TRADE FNCL CORP									3,034	30	n/a	n/a
ZIONS BC	2,523	24	1,641	24	667	30	2,277	32	2,525	31	0.1%	0.0%
SYNCHRONY FNCL							227	39	966	36	326.0%	106.4%
CHARLES SCHWAB CORP					24,087	10	55,146	7	33,920	10	40.8%	12.1%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.



## Factor #4: Complexity

(\$ millions)	Level 3 Assets										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
JPMORGAN CHASE & CO	69,310	1	50,457	1	31,227	2	23,240	3	19,207	3	-72.3%	-22.6%
CITIGROUP	45,685	2	43,018	3	32,637	1	19,526	4	11,059	6	-75.8%	-24.7%
GOLDMAN SACHS GROUP THE	43,003	3	44,666	2	26,157	4	24,673	1	20,201	2	-53.0%	-14.0%
BANK OF AMER CORP	31,779	5	22,265	5	18,101	5	14,461	6	12,910	5	-59.4%	-16.5%
MORGAN STANLEY	23,281	6	22,137	6	16,135	6	15,122	5	18,138	4	-22.1%	-4.9%
WELLS FARGO & CO	37,171	4	32,324	4	27,664	3	23,463	2	24,876	1	-33.1%	-7.7%
HSBC N AMER HOLDS	4,206	9	4,232	9	3,978	8	3,900	9	2,633	10	-37.4%	-8.9%
BARCLAYS US LLC							466	22	372	22	-20.2%	-10.7%
STATE STREET CORP	7,564	8	5,446	8	2,469	10	1,347	16	2,173	14	-71.3%	-22.1%
CREDIT SUISSE HOLD USA							4,683	8	2,539	11	-45.8%	-26.4%
BANK OF NY MELLON CORP	139	23	90	22							-100.0%	-100.0%
BNP PARIBAS USA							88	27	123	26	39.6%	18.2%
PNC FNCL SVC GROUP	10,635	7	10,258	7	8,953	7	8,830	7	7,200	7	-32.3%	-7.5%
NORTHERN TR CORP	99	24	18	27	17	27	5	35	4	35	-95.7%	-46.8%
U S BC	4,042	10	3,754	10	3,696	9	3,593	10	3,161	9	-21.8%	-4.8%
RBC USA HOLDCO CORP							258	24	272	25	5.6%	2.7%
SUNTRUST BK	2,630	13	2,450	11	2,236	11	2,468	13	2,413	12	-8.2%	-1.7%
TD GRP US HOLDS LLC					1,209	16	1,034	18	1,076	17	-11.0%	-3.8%
CAPITAL ONE FC	3,649	11	1,545	16	950	17	906	19	934	19	-74.4%	-23.9%
MUFG AMERS HOLDS CORP	2,289	14	2,102	13	1,832	14	1,830	15	1,805	16	-21.2%	-4.6%
CITIZENS FNCL GRP	1	29	1	29							-100.0%	-100.0%
KEYCORP	2,765	12	632	17	333	19	58	31	53	31	-98.1%	-54.6%
FIFTH THIRD BC	489	18	535	18	444	18	156	25	1,003	18	105.3%	15.5%
REGIONS FC	313	19	276	20	303	20	375	23	348	23	11.0%	2.1%
BB&T CORP	2,202	15	1,939	14	1,804	15	1,927	14	1,898	15	-13.8%	-2.9%
DB USA CORP							621	21	342	24	-44.9%	-25.8%
SANTANDER HOLDS USA	195	21	2,262	12	1,839	13	1,156	17	685	20	250.7%	28.5%
AMERICAN EXPRESS CO											n/a	n/a
BBVA COMPASS BSHRS	33	27	39	26	49	25	71	29	97	28	198.2%	24.4%
M&T BK CORP	73	26	68	24	58	24	8	34	9	34	-87.8%	-34.4%
BMO FNCL CORP	78	25	78	23	79	23	79	28	77	29	-1.8%	-0.4%
UBS AMERS HOLD LLC							2,522	12	2,314	13	-8.3%	-4.2%
HUNTINGTON BSHRS	884	17	1,568	15	2,222	12	2,941	11	3,248	8	267.5%	29.7%
ALLY FNCL	205	20	50	25	41	26	28	33	19	33	-90.7%	-37.9%
COMERICA	162	22	139	21	88	22	68	30	65	30	-59.9%	-16.7%
CIT GROUP							770	20	387	21	-49.8%	-29.1%
DISCOVER FS	4	28	7	28							-100.0%	-100.0%
E TRADE FNCL CORP											n/a	n/a
ZIONS BC	1,387	16	514	19	134	21	149	26	114	27	-91.8%	-39.4%
SYNCHRONY FNCL							46	32	46	32	0.4%	0.2%
CHARLES SCHWAB CORP											n/a	n/a

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

## Factor #5: Cross-Jurisdictional Activity

(\$ millions)	Cross-Jurisdictional Claims										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
CITIGROUP	838,644	1	832,923	1	789,796	1	785,958	1	903,984	1	7.8%	1.5%
JPMORGAN CHASE & CO	692,557	2	616,296	2	537,389	2	646,831	2	649,543	2	-6.2%	-1.3%
GOLDMAN SACHS GROUP THE	346,666	5	333,240	5	352,194	4	379,340	4	430,865	3	24.3%	4.4%
BANK OF AMER CORP	387,493	3	350,009	4	357,345	3	379,474	3	379,879	4	-2.0%	-0.4%
MORGAN STANLEY	353,380	4	350,157	3	263,166	5	302,080	5	334,604	5	-5.3%	-1.1%
WELLS FARGO & CO	70,104	7	100,542	6	119,583	6	145,507	6	157,080	6	124.1%	17.5%
STATE STREET CORP	47,447	8	74,589	8	82,154	8	86,400	9	105,266	7	121.9%	17.3%
BANK OF NY MELLON CORP	86,775	6	94,164	7	91,292	7	88,485	7	105,163	8	21.2%	3.9%
DB USA CORP							81,370	11	59,238	9	-27.2%	-14.7%
BARCLAYS US LLC							84,293	10	52,296	10	-38.0%	-21.2%
CREDIT SUISSE HOLD USA							87,162	8	46,523	11	-46.6%	-26.9%
TD GRP US HOLDS LLC					29,128	11	45,182	12	45,404	12	#DIV/0!	#DIV/0!
NORTHERN TR CORP	28,277	11	26,139	11	29,805	10	34,024	13	44,304	13	56.7%	9.4%
HSBC N AMER HOLDS	43,465	9	44,431	9	38,923	9	33,823	14	42,409	14	-2.4%	-0.5%
AMERICAN EXPRESS CO	29,504	10	27,728	10	25,323	12	27,856	15	31,722	15	7.5%	1.5%
U S BC	3,297	17	3,192	18	4,775	17	10,348	16	14,452	16	338.3%	34.4%
CAPITAL ONE FC	9,495	12	8,878	12	9,034	13	9,569	17	10,619	17	11.8%	2.3%
UBS AMERS HOLD LLC							7,556	18	8,335	18	10.3%	5.0%
MUFG AMERS HOLDS CORP	2,201	20	4,097	16	4,325	18	7,371	20	7,937	19	260.6%	29.2%
PNC FNCL SVC GROUP	4,895	14	5,343	14	6,863	15	7,448	19	7,743	20	58.2%	9.6%
RBC USA HOLDCO CORP							5,970	22	6,692	21	12.1%	5.9%
CHARLES SCHWAB CORP					7,065	14	7,226	21	6,398	22	-9.4%	-3.3%
BMO FNCL CORP	6,756	13	7,177	13	5,934	16	4,774	23	5,786	23	-14.4%	-3.1%
BNP PARIBAS USA							4,329	25	4,344	24	0.3%	0.2%
SANTANDER HOLDS USA	3,825	16	3,785	17	2,706	20	3,632	26	3,066	25	-19.9%	-4.3%
FIFTH THIRD BC	4,407	15	4,463	15	3,172	19	2,426	28	2,665	26	-39.5%	-9.6%
CIT GROUP							4,694	24	2,399	27	-48.9%	-28.5%
SUNTRUST BK	1,643	23	1,963	20	2,096	21	2,727	27	2,301	28	40.0%	7.0%
KEYCORP	2,218	19	1,903	21	1,936	22	2,099	30	2,139	29	-3.6%	-0.7%
CITIZENS FNCL GRP	1,689	22	1,550	23	1,586	26	2,343	29	1,975	30	16.9%	3.2%
COMERICA	1,790	21	2,051	19	1,930	23	1,921	31	1,936	31	8.2%	1.6%
BBVA COMPASS BSHRS	860	25	1,509	25	1,776	24	1,803	32	1,806	32	110.0%	16.0%
HUNTINGTON BSHRS	834	26	1,529	24	1,715	25	1,425	33	1,764	33	111.5%	16.2%
BB&T CORP	634	27	851	27	1,061	27	1,000	34	887	34	39.9%	6.9%
ALLY FNCL	2,236	18	1,843	22	1,000	28	983	35	809	35	-63.8%	-18.4%
REGIONS FC	1,058	24	937	26	843	29	649	36	717	36	-32.3%	-7.5%
E TRADE FNCL CORP									669	37	n/a	n/a
M&T BK CORP	273	28	317	28	377	30	389	37	260	38	-4.9%	-1.0%
ZIONS BC	86	30	95	30	168	31	169	39	209	39	142.8%	19.4%
SYNCHRONY FNCL							184	38	180	40	-2.2%	-1.1%
DISCOVER FS	192	29	129	29	109	32	114	40	104	41	-45.8%	-11.5%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.



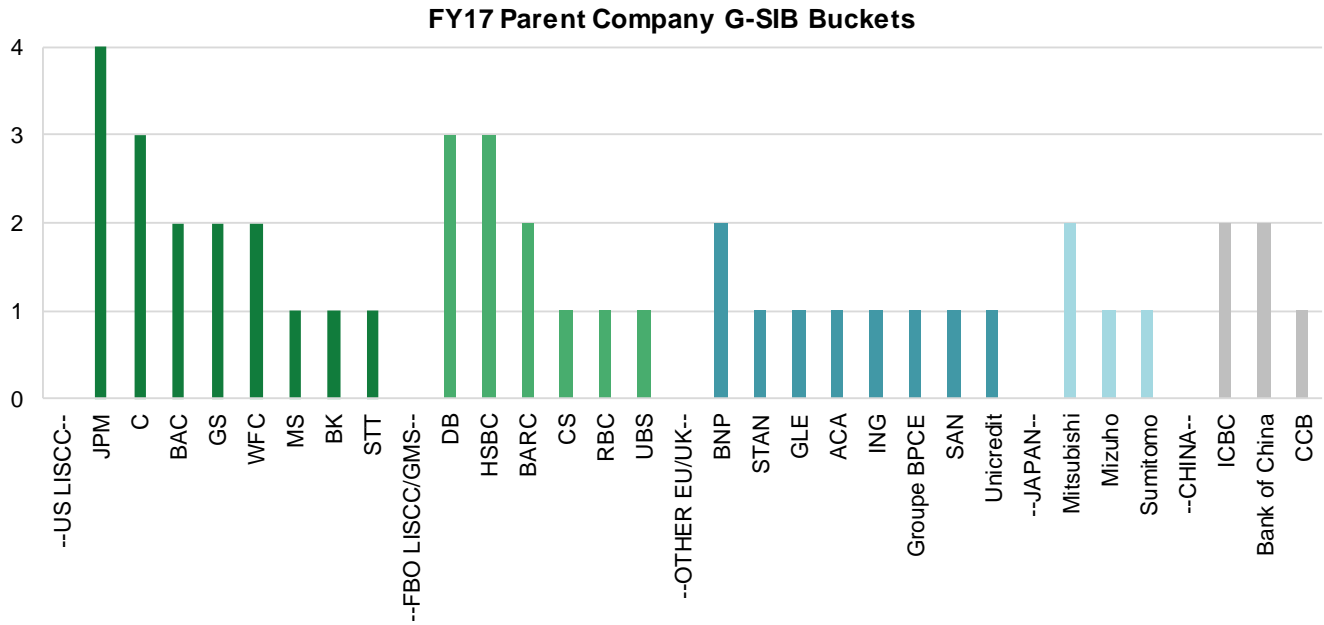
## Factor #5: Cross-Jurisdictional Activity

(\$ millions)	Cross-Jurisdictional Liabilities										2017 Data	
	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	% Change	5-Year CAGR
CITIGROUP	742,475	1	756,438	1	735,886	1	758,540	1	857,180	1	15.4%	2.9%
JPMORGAN CHASE & CO	673,734	2	625,601	2	609,986	2	698,196	2	708,701	2	5.2%	1.0%
GOLDMAN SACHS GROUP THE	319,418	4	289,812	4	280,160	4	283,200	5	313,830	5	-1.7%	-0.4%
BANK OF AMER CORP	245,722	5	278,666	5	273,307	5	294,541	4	325,424	4	32.4%	5.8%
MORGAN STANLEY	470,008	3	298,181	3	314,249	3	331,088	3	338,465	3	-28.0%	-6.4%
WELLS FARGO & CO	130,239	7	147,496	7	136,852	7	149,487	6	168,106	6	29.1%	5.2%
STATE STREET CORP	124,911	8	138,801	8	130,392	8	135,599	8	137,590	8	10.2%	2.0%
BANK OF NY MELLON CORP	164,125	6	173,677	6	193,856	6	144,694	7	158,377	7	-3.5%	-0.7%
DB USA CORP							9,480	15	10,498	14	10.7%	5.2%
BARCLAYS US LLC							13,108	12	13,064	13	-0.3%	-0.2%
CREDIT SUISSE HOLD USA							82,505	9	33,549	11	-59.3%	-36.2%
TD GRP US HOLDS LLC					2,001	17	2,603	23	1,970	24	-1.5%	-0.5%
NORTHERN TR CORP	51,358	9	50,515	9	53,297	9	62,027	10	69,679	9	35.7%	6.3%
HSBC N AMER HOLDS	898	24	3	29							-100.0%	-100.0%
AMERICAN EXPRESS CO	19,906	11	17,541	11	12,742	11	12,664	13	14,491	12	-27.2%	-6.2%
U S BC	33,759	10	32,731	10	33,345	10	37,977	11	44,760	10	32.6%	5.8%
CAPITAL ONE FC	1,882	18	469	25	1,098	21	895	28	1,053	27	-44.0%	-11.0%
UBS AMERS HOLD LLC							3	36	14	36	376.6%	118.3%
MUFG AMERS HOLDS CORP	2,618	13	2,439	14	2,341	15	7,009	17	7,838	17	199.4%	24.5%
PNC FNCL SVC GROUP	1,989	15	2,659	13	2,653	14	3,314	20	3,617	20	81.9%	12.7%
RBC USA HOLDCO CORP							10,314	14	9,320	16	-9.6%	-4.9%
CHARLES SCHWAB CORP					2,707	13	3,314	20	3,573	21	32.0%	9.7%
BMO FNCL CORP	5,772	12	7,177	12	6,086	12	5,969	18	5,334	19	-7.6%	-1.6%
BNP PARIBAS USA							4,255	19	10,232	15	140.5%	55.1%
SANTANDER HOLDS USA	1,210	22	574	23	752	23	7,603	16	5,959	18	392.3%	37.5%
FIFTH THIRD BC	562	25	593	22	673	24	518	30	558	31	-0.7%	-0.1%
CIT GROUP							3,131	22	650	30	-79.2%	-54.4%
SUNTRUST BK	2,002	14	2,063	15	1,785	18	2,477	24	1,875	25	-6.4%	-1.3%
KEYCORP	27	28	8	28	13	29	2	37	9	38	-66.7%	-19.7%
CITIZENS FNCL GRP	954	23	947	20	1,289	20	938	27	664	29	-30.4%	-7.0%
COMERICA	1,759	20	1,662	17	1,419	19	1,768	26	1,425	26	-19.0%	-4.1%
BBVA COMPASS BSHRS	1,864	19	1,929	16	2,023	16	2,257	25	2,142	23	14.9%	2.8%
HUNTINGTON BSHRS											n/a	n/a
BB&T CORP	1,409	21	1,059	19	777	22	763	29	760	28	-46.1%	-11.6%
ALLY FNCL	1,932	17	1,622	18	273	27	261	32	315	33	-83.7%	-30.4%
REGIONS FC	460	26	483	24	456	25	458	31	524	32	14.0%	2.7%
E TRADE FNCL CORP									2,203	22	n/a	n/a
M&T BK CORP	30	27	36	26	37	28	42	33	53	34	74.5%	11.8%
ZIONS BC	1,954	16	629	21	305	26					-100.0%	-100.0%
SYNCHRONY FNCL							32	34	35	35	9.4%	4.6%
DISCOVER FS	21	29	18	27	8	30	8	35	10	37	-52.4%	-13.8%

Source: National Information Center, FR Y-15, SIFMA estimates

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

Global G-SIB Groupings, Assigned at the Total Parent Company Level



Source: Financial Stability Board

Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

Please see the Appendix: Terms to Know for ticker descriptions.

## Parent Company G-SIB Bucket History

Count	31 2013	31 2014	31 2015	31 2016	30 2017
5 (3.5%)			(Empty)		
4 (2.5%)	HSBC JPM	HSBC JPM	C JPM	JPM	JPM
3 (2.0%)	BARC BNP C DB	BARC BNP C DB	BAC BNP DB HSBC	BAC C DB HSBC	C DB HSBC
2 (1.5%)	BAC CS GS Mitsubishi MS RBS	BAC CS GS Mitsubishi MS	BARC CS GS ICBC Mitsubishi WFC	Bank of China BARC BNP CCB GS ICBC Mitsubishi WFC	BAC Bank of China BARC BNP GS ICBC Mitsubishi WFC
1 (1.0%)	Ag Bank China Bank of China BK BBVA Groupe BPCE ACA ICBC ING Mizuho Nordea SAN GLE STAN STT Sumitomo UBS Unicredit WFC	Ag Bank China Bank of China BK CCB Groupe BPCE ACA ICBC ING Mizuho Nordea RBS SAN GLE STAN STT Sumitomo UBS Unicredit WFC	Ag Bank China Bank of China BK CCB Groupe BPCE ACA ING Mizuho Nordea RBS SAN GLE STAN STT Sumitomo UBS Unicredit	Ag Bank China BK CS ACA ING Mizuho Nordea RBS SAN GLE STAN STT Sumitomo UBS Unicredit	Ag Bank China BK CCB CS Groupe BPCE ACA ING Mizuho RBC SAN GLE STAN STT Sumitomo UBS Unicredit
Published:	Nov. 2014	Nov. 2015	Nov. 2016	Nov. 2017	Nov. 2018

Source: Financial Stability Board

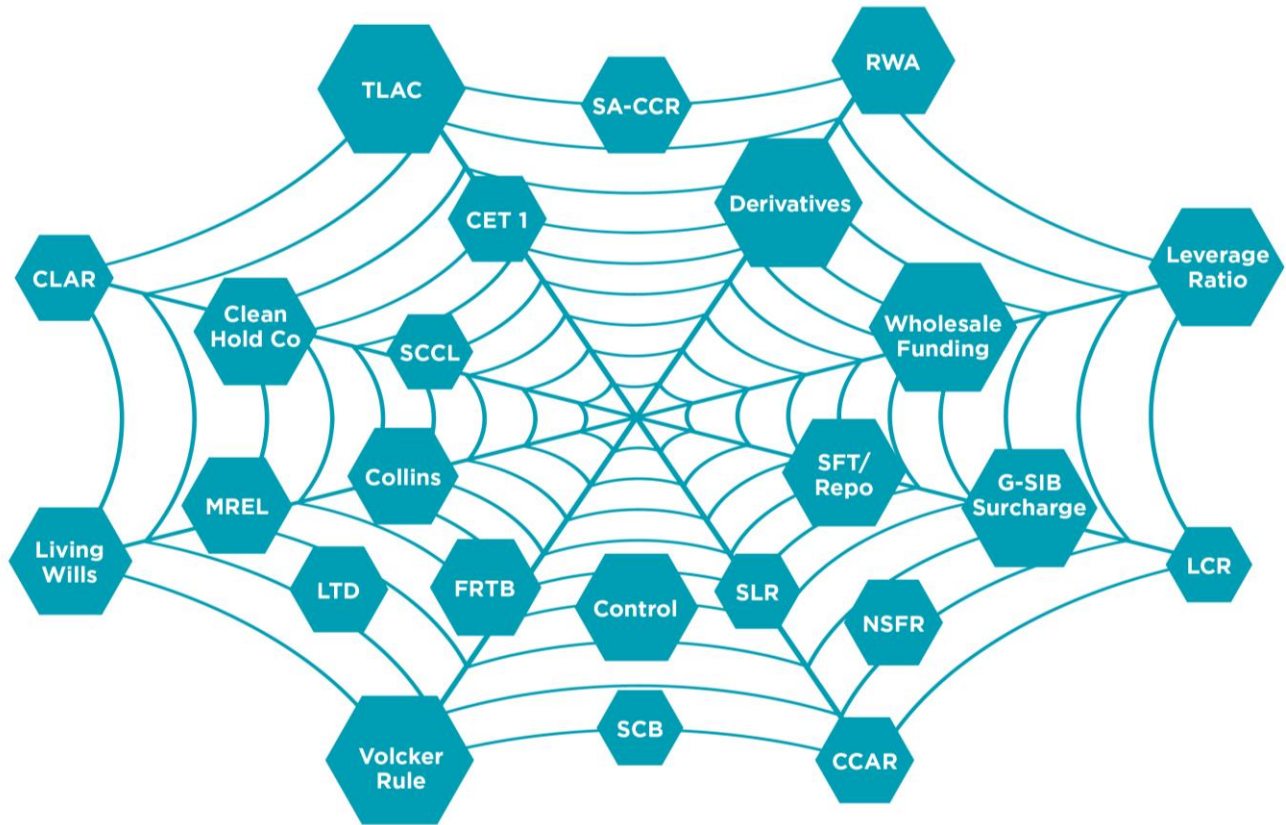
Note: US LISCC Firms: BAC, BK, C, GS, JPM, MS, STT, WFC. FBO LISCC Firms: BARC, CS, DB, UBS. GMS Firms: BAC, C, GS, JPM, MS, WFC, BARC, CS, DB, UBS, HSBC, RBC. FBO GMS Firms: BARC, CS, DB, UBS, HSBC, RBC.

Please see the Appendix: Terms to Know for ticker descriptions.

## IV. Terms to Know – Prudential Regulations and Regulators

Regulations and Regulatory Terms		International Regulators	
ASF	Available Amount of Stable Funding	BCBS	Basel Committee on Banking Supervision
AT1	Additional Tier 1 Capital	BIS	Bank for International Settlements
B3	Basel III	FSB	Financial Stability Board
BHC	Bank Holding Company	GHOS	Group of Central Bank Governors and Heads of Supervision
BRRD	Bank Recovery and Resolution Directive	IOSCO	International Organization of Securities Commissions
CCAR	Comprehensive Capital Analysis and Review	<b>AsiaPac Regulators</b>	
CEM	Current Exposure Method	APRA	Australian Prudential Regulation Authority
CET1	Common Equity Tier 1	ASIC	Australian Securities and Investments Commission
CLAR	Comprehensive Liquidity Analysis and Review	RBA	Reserve Bank of Australia
CRD	Capital Requirements Directive	CBRC	China Banking Regulatory Commission
CRR	Capital Requirements Regulation	CSRC	China Securities Regulatory Commission
DFA	Dodd–Frank Wall Street Reform and Consumer Protection Act	PBC	People's Bank of China
EAD	Exposure at Default	HKMA	Hong Kong Monetary Authority
EMIR	European Market Infrastructure Regulation	SFC	Securities and Futures Commission (Hong Kong)
FBO	Foreign Banking Organization	RBI	Reserve Bank of India
FRTB	Fundamental Review of the Trading Book	SEBI	Securities and Exchange Board of India
GDPR	General Data Protection Regulation	BoJ	Bank of Japan
GMS	Global Market Shock	FSA	Financial Services Agency (Japan)
G-SIB	Global Systemically Important Bank	MAS	Monetary Authority of Singapore (Singapore)
HQLA	High Quality Liquid Assets	<b>European Union Regulators</b>	
IHC	Intermediate Holding Company	EBA	European Banking Authority
IM	Initial Margin	ECB	European Central Bank
LCR	Liquidity Coverage Ratio	ESMA	European Securities and Markets Authority
LEI	Legal Entity Identifier	SRB	Single Resolution Board
LISCC	Large Institution Supervision Coordinating Committee	AMF	Autorité des Marchés Financiers (France)
MiFID	Markets in Financial Instruments Directive	BaFin	Federal Financial Supervisory Authority (Germany)
MiFID II	Markets in Financial Instruments Directive (revised)	FINMA	Swiss Financial Market Supervisory Authority (Switzerland)
MiFIR	Markets in Financial Instruments Regulation	NCA	National Competent Authority
MREL	Minimum Requirement for own funds and Eligible Liabilities	NRA	National Resolution Authority
NCOF	Net Cash Outflows	<b>United Kingdom Regulators</b>	
NSFR	Net Stable Funding Ratio	BoE	Bank of England
PFE	Potential Future Exposure	FCA	Financial Conduct Authority
QIS	Quantitative Impact Studies	PRA	Prudential Regulation Authority
RSF	Required Amount of Stable Funding	<b>United States Regulators</b>	
RWA	Risk-Weighted Assets	AG	Attorney General
SA-CCR	Standardised Approach for measuring Counterparty Credit Risk	CFPB	Consumer Financial Protection Bureau
SCB	Stress Capital Buffer	CFTC	Commodity Futures Trading Commission
SLR	Supplemental Leverage Ratio	FDIC	Federal Deposit Insurance Corporation
SRMR	Single Resolution Mechanism Regulation	Fed	Federal Reserve System
SSM	Single Supervisory Mechanism	FFIEC	Federal Financial Institutions Examination Council
T1C	Tier 1 Capital	FINRA	Financial Industry Regulatory Authority
T2C	Tier 2 Capital	FSOC	Financial Stability Oversight Council
TE	Total Exposure	OFR	Office of Financial Research
TLAC	Total Loss-Absorbing Capacity	OCC	Office of the Comptroller of the Currency
		SEC	Securities and Exchange Commission
		USTD	U.S. Treasury Department

## V. The Spider Web of Regulations



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