

## No Bank is an Island: Years After Financial Crisis, Interconnectedness Still Poses Threat

Trepp has conducted an analysis of systemic financial metrics for large banks, using data from the “Banking Organization Systemic Risk Reports” (FR Y-15) for 33 major bank holding companies. The data is as of year-end 2013 and was made public for the first time by bank regulators in late May 2014. The financial measures pertain to five areas: size, interconnectedness, substitutability, complexity, and cross-border exposure.

The figures from the FR Y-15 reports shed light on the roles that the 33 banks play within the financial system, both at an aggregate level and for each individual bank. Trepp’s analysis focuses on three areas:

- Size (including on- and off-balance sheet assets)
- Intra-Financial System Connectedness (asset and liability exposure to other financial institutions)
- Substitutability (payment activity and assets held in custody)

The analysis reveals that while the group occupies a vital position within the US economy, a handful of firms stand out as having particular importance within the financial system.<sup>1</sup>

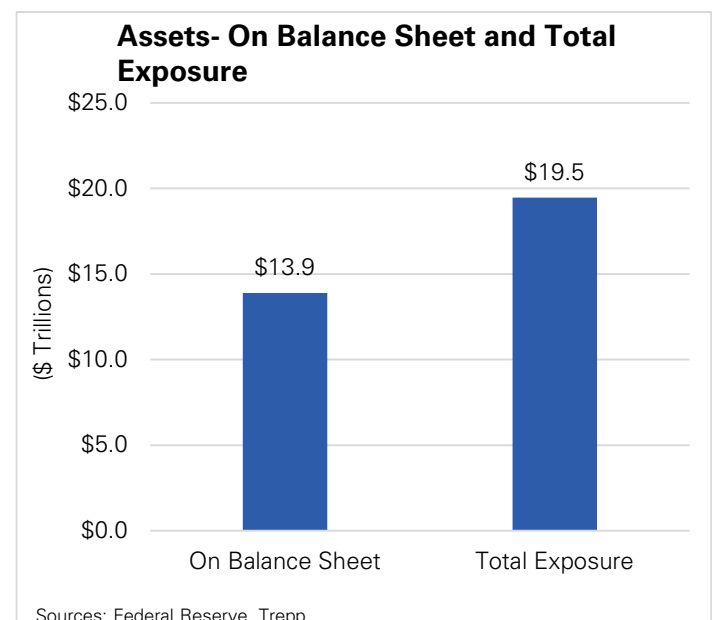
### Size: Total Assets and Total Exposure

Relative to the US economy, the 33 banks analyzed have a significant footprint. Total assets for the group of banks are \$13.9 trillion, accounting for 88% of total depository institution assets. This figure also compares meaningfully to the \$16.8 trillion total US GDP in 2013.

All the banks in the group are considered large, ranging from \$56 billion to \$2.4 trillion in assets. Even within the group, there is a concentration among the largest banks. The top four—JP Morgan Chase, Bank

of America, Citigroup, and Wells Fargo—account for \$7.9 trillion of assets, 57% of the group total.

Total exposure for the 33 banks amounts to \$19.5 trillion, equating to 40% off-balance sheet leverage.<sup>2</sup> For individual banks, the proportion of off-balance sheet leverage ranges widely, from a low of -5% (Deutsche Bank Trust, reduced through hedging offsets) to a high of 66% (Goldman Sachs). The median off-balance sheet leverage for the group is 31%.

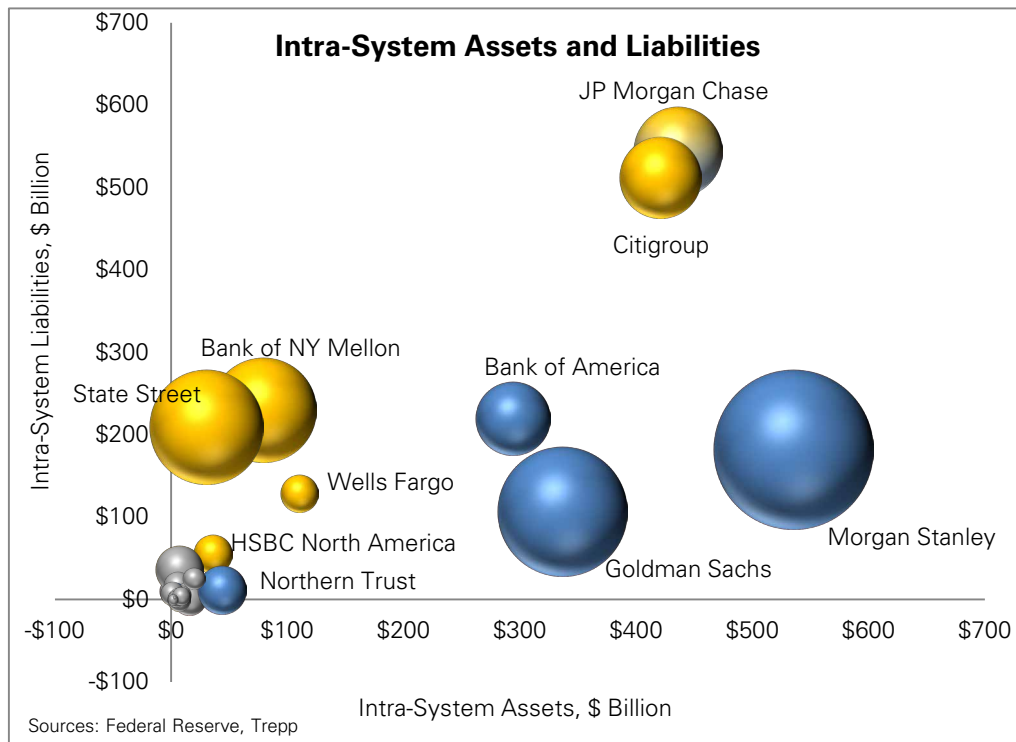


### Interconnectedness: Intra-Financial System Assets and Liabilities

The banks included in the Federal Reserve’s Systemic Risk Reports play a major role in the US financial system, with \$2.5 trillion of intra-system assets and \$2.4 trillion of intra-system liabilities. While net intra-system exposure for the group is a positive \$100 billion, net exposure at the individual institution-level can be positive or negative.

<sup>2</sup> Off-balance sheet items include securities financing transactions and derivatives. These are included in the total exposure figures.

<sup>1</sup> For individual bank data, refer to the Appendix.



The horizontal axis plots intra-system assets and the vertical axis depicts intra-system liabilities, while the bubble size indicates net intra-system exposures. Banks with positive net exposures are shown in blue, while banks with negative net exposures (ie, liabilities greater than assets) are shown in gold. Banks not referenced are shown in gray. The corresponding data can be found in the Appendix.

Morgan Stanley, Goldman Sachs, and Bank of America are the greatest net providers of intra-system credit, with net asset exposure of \$352.5 billion, \$229.7

billion, and \$74.0 billion, respectively. With net positive asset exposure, these banks have a relatively higher sensitivity to risk stemming from other banks. Put another way, these banks have inward exposure to financial system risk. For example, these banks could experience heightened sensitivity to losses at other banks.

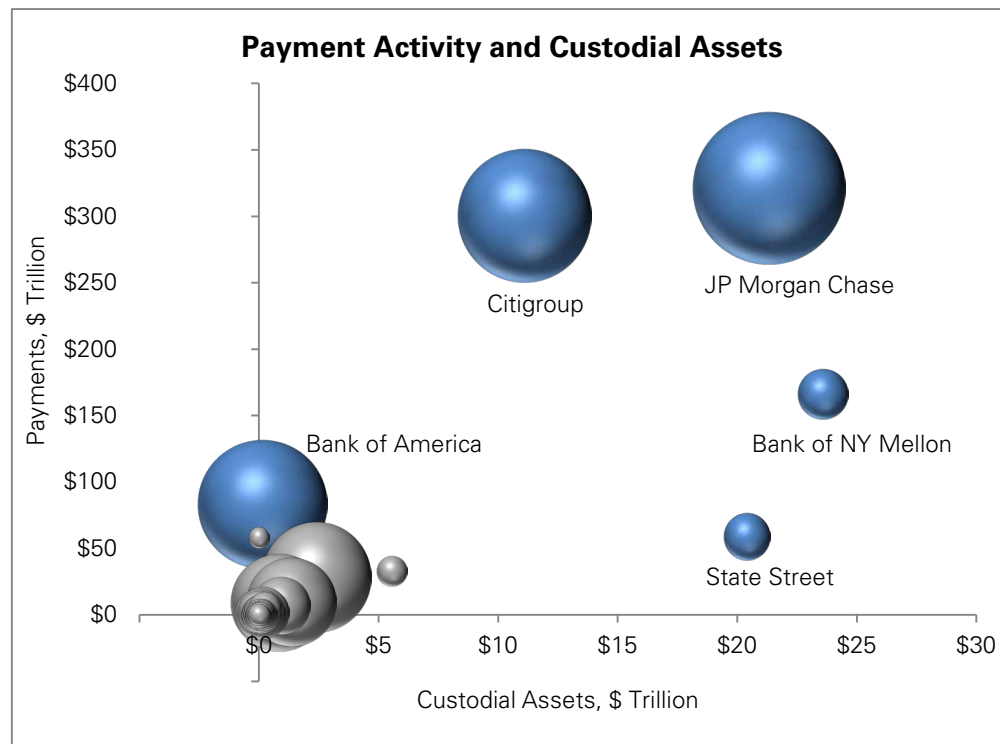
State Street, Bank of New York Mellon, JP Morgan Chase, and Citigroup are the largest net recipients of intra-system credit, with net intra-system liabilities of \$178.9 billion, \$150.5 billion, \$108.6 billion and \$91.6 billion, respectively. With net liability exposure, these banks have net outward exposure to financial system risk, meaning that instability among these

banks could have a stronger influence on the financial system itself than the influence of other banks on the system.

### Substitutability: Payment Activity and Custodial Assets

To gauge bank substitutability, we looked at two measures: total payment activity and assets held in custody for others.<sup>3</sup> As a group, the banks handled a staggering \$1.1 quadrillion in payment activity during 2013. The imposing figure demonstrates that financial flows overall dwarf the size of the productive economy (GDP) while also underscoring the pronounced role that these firms play in facilitating financial transactions. There is a high degree of concentration, with the top six institutions handling 90% of the total activity for the group.

<sup>3</sup> Payment activity in major currencies. Other currencies comprised a relatively small additional amount.



The horizontal axis shows assets held as a custodian (in \$ trillions), the vertical axis shows payment activity in major currencies for the year (in \$ trillions), and the size of the bubble shows the banks' total assets (in \$ billions). Banks not referenced are shown in gray. The corresponding data can be found in the Appendix.

JP Morgan Chase and Citigroup dominate the payment activity area, with \$321.5 and \$300.8 trillion in activity, respectively. The two banks account for 56% of the total. Rounding out the top six are Bank of New York Mellon (\$166.3 trillion), Bank of America (\$83.7 trillion), State Street (\$59.1 trillion), and Deutsche Bank (\$58.5 trillion).

The group of 33 banks holds \$89 trillion in custodial assets. Like payment activity, custodial assets are also concentrated within the group, with the top five banks accounting for \$82 trillion, or 92% of the total. The top two—Bank of New York Mellon and JP Morgan Chase—hold \$44.9 trillion, or just over half of the total. The remaining top five holders of custodial assets are State Street (\$20.4 trillion), Citigroup (\$11.1 trillion), and Northern Trust (\$5.6 trillion).

## Summary

All of the banks included in this analysis are important to the US financial system. With asset sizes ranging from \$56 billion to \$2.4 trillion, the absence of any of these firms would be felt broadly through the financial system. When looking at the financial metrics explored in this study, a few key patterns emerge:

- Two banks—JP Morgan Chase and Citigroup—play a particularly large role in the financial system. Both of the banks are standouts in all the categories we examined. They are among the largest banks, ranking first and third, respectively, for total assets. Both banks have significant off-balance sheet exposure, bringing total leverage to 56% and 54%, respectively. They are deeply embedded in the financial system, with high intra-system assets and liabilities. Finally, JP

Morgan Chase and Citigroup rate very high on the substitutability risk category, handling more than half of the total payment activity among large banks and holding significant custodial assets for others.

- Rounding out the top four largest banks are Bank of America and Wells Fargo. Because of their sheer size—at least 50% larger than the next largest bank—these banks are major players in the US financial markets.
- Morgan Stanley and Goldman Sachs have significant net asset exposure to the US financial system. These are also two of the more highly-leveraged firms, with off-balance sheet leverage well above the average for the group. With positive net intra-system exposure and above-average balance sheet leverage, these banks could be more sensitive to losses at other firms.
- Bank of New York Mellon and State Street stand out in both the intra-financial system exposure and substitutability risk. Both firms have net liability positions relative to the financial system,

as they are major recipients of deposits from other financial institutions. They also rank high in the substitutability risk category, as major holders of custodial assets and among the top banks for payment processing.

Systemic impacts are not limited to the 33 large banks analyzed in this report, although these banks clearly wield outsized influence on the US financial system. Furthermore, the eight banks highlighted above appear to be of special importance to the system. As consolidation in the banking industry has gathered steam in recent months, next year's systemic risk reports could show increased concentrations of risk among large banks. In any case, additional information will add to understanding of the dynamics among firms and across the system over time. ■

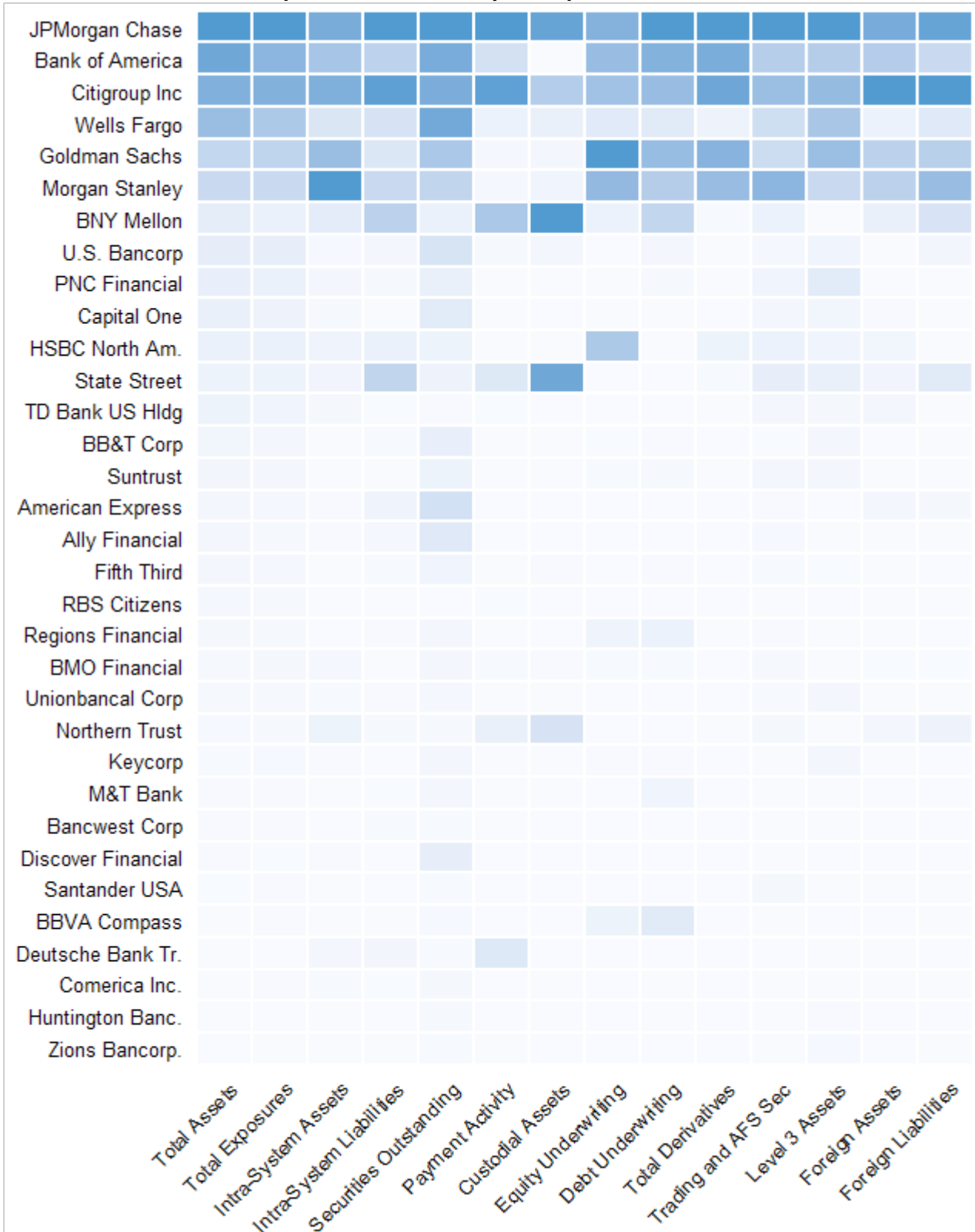
*The Appendix that accompanies this research can be found on the following three pages (pages 5-8). For more information about Trepp and its banking products, please contact [info@trepp.com](mailto:info@trepp.com).*

## About Trepp

Trepp, LLC, founded in 1979, is the leading provider of information, analytics and technology to the CMBS, commercial real estate and banking markets. Trepp provides primary and secondary market participants with the web-based tools and insight they need to increase their operational efficiencies, information transparency and investment performance. From its offices in New York, San Francisco and London, Trepp serves its clients with products and services to support trading, research, risk management, surveillance and portfolio management. Trepp is wholly-owned by DMG Information, the information publishing division of the Daily Mail and General Trust (DMGT).

## Appendix

### Systemic Risk Heat Map - 14 Systemic Risk Indicators



The heat map assigns darker shades for measures that are at the higher end of the distribution for the group, and lighter shades for values that are at the lower end of the distribution.

Systemic Risk Financial Measures (as of 12/31/13)							
Institution Name	Size			Interconnectedness (\$B)			
	On Balance Sheet Assets (\$B)	Total Exposures (\$B)	Off-Balance Sheet Leverage	Intra-Financial System Assets	Intra-Financial System Liabilities	Net Intra-System Assets	Total Securities Outstanding
JPMorgan Chase	\$2,415.7	\$3,757.1	56%	\$435.7	\$544.3	-\$108.6	\$599.0
Bank of America	\$2,105.0	\$2,695.6	28%	\$293.9	\$219.9	\$74.0	\$488.8
Citigroup Inc	\$1,880.4	\$2,895.7	54%	\$420.9	\$512.5	-\$91.6	\$481.6
Wells Fargo	\$1,527.0	\$1,961.3	28%	\$110.3	\$128.9	-\$18.6	\$507.7
Goldman Sachs	\$911.6	\$1,517.5	66%	\$336.6	\$106.9	\$229.7	\$310.1
Morgan Stanley	\$832.7	\$1,282.7	54%	\$535.0	\$182.5	\$352.5	\$231.4
Bank of New York Mellon	\$374.3	\$409.7	9%	\$79.3	\$229.8	-\$150.5	\$61.1
U.S. Bancorp	\$364.0	\$525.4	44%	\$11.5	\$21.9	-\$10.4	\$138.9
PNC Financial	\$320.6	\$425.4	33%	\$17.7	\$13.1	\$4.6	\$67.2
Capital One	\$297.3	\$336.2	13%	\$14.2	\$2.5	\$11.7	\$94.4
HSBC North America	\$290.0	\$405.8	40%	\$35.7	\$54.9	-\$19.2	\$50.4
State Street	\$243.0	\$345.4	42%	\$30.4	\$209.3	-\$178.9	\$42.8
TD Bank US Holding	\$234.6	\$276.8	18%	\$14.6	\$5.1	\$9.4	\$8.3
BB&T Corp	\$183.0	\$212.4	16%	\$1.5	\$10.3	-\$8.8	\$68.9
Suntrust	\$175.4	\$229.4	31%	\$3.5	\$1.3	\$2.2	\$50.0
American Express	\$153.4	\$177.3	16%	\$7.2	\$36.9	-\$29.8	\$161.5
Ally Financial	\$151.2	\$152.5	1%	\$6.1	\$16.5	-\$10.4	\$108.1
Fifth Third	\$130.4	\$175.2	34%	\$4.1	\$8.9	-\$4.8	\$37.6
RBS Citizens	\$122.3	\$146.1	19%	\$3.8	\$3.6	\$0.2	\$1.4
Regions Financial	\$117.7	\$146.0	24%	\$1.3	\$6.7	-\$5.4	\$27.3
BMO Financial	\$111.1	\$162.9	47%	\$15.7	\$1.0	\$14.8	\$25.7
Unionbancal Corp	\$105.9	\$146.5	38%	\$9.8	\$5.9	\$4.0	\$19.7
Northern Trust	\$102.9	\$142.4	38%	\$43.6	\$12.2	\$31.4	\$16.2
Keycorp	\$93.0	\$134.4	44%	\$6.2	\$0.7	\$5.4	\$26.2
M&T Bank	\$85.2	\$104.6	23%	\$2.1	\$5.0	-\$2.9	\$21.9
Bancwest Corp	\$83.5	\$102.6	23%	\$0.9	\$7.8	-\$6.9	\$11.6
Discover Financial	\$79.3	\$95.6	21%	\$6.9	\$0.3	\$6.6	\$74.1
Santander Holdings USA	\$77.1	\$98.3	27%	\$3.9	\$0.4	\$3.5	\$11.6
BBVA Compass	\$72.0	\$101.0	40%	\$3.6	\$2.4	\$1.2	\$12.8
Deutsche Bank Trust	\$67.0	\$63.7	-5%	\$19.7	\$25.8	-\$6.1	\$11.8
Comerica Incorporated	\$65.4	\$98.1	50%	\$8.4	\$4.2	\$4.2	\$17.2
Huntington Bancshares	\$59.5	\$64.6	9%	\$1.6	\$0.3	\$1.2	\$15.7
Zions Bancorporation	\$56.0	\$75.2	34%	\$2.6	\$2.5	\$0.1	\$10.9
Total	\$13,887.5	\$19,463.4	40%	\$2,488.1	\$2,384.5	\$103.5	\$3,812.0

<b>Systemic Risk Financial Measures (as of 12/31/13)</b>						
Institution Name	Complexity			Cross Border Activity (\$B)		
	Total Notional Amt of OTC Derivatives (\$T)	Total Adj. Trading and AFS Securities (\$B)	Level 3 Assets (\$B)	Foreign Assets	Foreign Liabilities	
JPMorgan Chase	\$68.0	\$446.3	\$69.3	\$687.1	\$673.7	
Bank of America	\$54.9	\$203.1	\$31.8	\$387.5	\$245.7	
Citigroup Inc	\$59.5	\$277.9	\$45.7	\$835.5	\$742.5	
Wells Fargo	\$4.9	\$127.8	\$37.2	\$69.9	\$130.2	
Goldman Sachs	\$50.4	\$138.3	\$43.0	\$346.7	\$319.4	
Morgan Stanley	\$43.6	\$316.4	\$23.3	\$353.4	\$470.0	
Bank of New York Mellon	\$1.2	\$38.9	\$0.1	\$86.8	\$164.1	
U.S. Bancorp	\$0.1	\$13.0	\$4.0	\$3.3	\$33.8	
PNC Financial	\$0.3	\$25.9	\$10.6	\$4.9	\$2.0	
Capital One	\$0.1	\$16.2	\$3.6	\$9.5	\$1.9	
HSBC North America	\$5.2	\$39.6	\$4.2	\$43.5	\$0.9	
State Street	\$1.1	\$53.8	\$7.6	\$47.4	\$124.9	
TD Bank US Holding	\$0.2	\$17.8	\$1.8	\$35.4	\$1.2	
BB&T Corp	\$0.1	\$4.0	\$2.2	\$0.6	\$1.4	
Suntrust	\$0.2	\$15.0	\$2.6	\$1.6	\$2.0	
American Express	\$0.0	\$4.4	\$0.0	\$29.5	\$19.9	
Ally Financial	\$0.1	\$9.0	\$0.2	\$2.2	\$1.9	
Fifth Third	\$0.1	\$6.8	\$0.5	\$4.4	\$0.6	
RBS Citizens	\$0.0	\$0.9	\$0.0	\$1.7	\$1.0	
Regions Financial	\$0.1	\$5.1	\$0.3	\$1.1	\$0.5	
BMO Financial	\$0.0	\$10.6	\$0.1	\$6.8	\$5.8	
Unionbanca Corp	\$0.1	\$8.1	\$2.3	\$2.2	\$2.6	
Northern Trust	\$0.3	\$11.8	\$0.1	\$28.3	\$51.4	
Keycorp	\$0.1	\$1.6	\$2.8	\$2.2	\$0.0	
M&T Bank	\$0.0	\$0.6	\$0.1	\$0.3	\$0.0	
Bancwest Corp	\$0.0	\$1.2	\$0.1	\$0.5	\$0.6	
Discover Financial	\$0.0	\$0.6	\$0.0	\$0.2	\$0.0	
Santander Holdings USA	\$0.0	\$11.6	\$0.2	\$3.8	\$1.2	
BBVA Compass	\$0.0	\$1.1	\$0.0	\$0.9	\$1.9	
Deutsche Bank Trust	\$0.0	\$0.1	\$0.1	\$4.0	\$0.0	
Comerica Incorporated	\$0.0	\$1.7	\$0.2	\$1.8	\$1.8	
Huntington Bancshares	\$0.0	\$2.9	\$0.9	\$0.8	\$0.0	
Zions Bancorporation	\$0.0	\$2.5	\$1.4	\$0.1	\$2.0	
<b>Total</b>	<b>\$290.3</b>	<b>\$1,814.5</b>	<b>\$296.3</b>	<b>\$3,003.8</b>	<b>\$3,004.9</b>	

Systemic Risk Financial Measures (as of 12/31/13)					
Institution Name	Payments Activity	Substitutability			
		Assets Under Custody	Equity Underwriting	Debt Underwriting	
JPMorgan Chase	\$321.5	\$21.3	\$68.6	\$439.2	
Bank of America	\$83.7	\$0.1	\$57.7	\$332.5	
Citigroup Inc	\$300.8	\$11.1	\$53.1	\$277.9	
Wells Fargo	\$28.8	\$2.4	\$14.3	\$71.6	
Goldman Sachs	\$9.6	\$0.9	\$91.0	\$280.0	
Morgan Stanley	\$9.8	\$1.4	\$60.9	\$200.9	
Bank of New York Mellon	\$166.3	\$23.6	\$8.1	\$164.1	
U.S. Bancorp	\$6.9	\$1.0	\$0.0	\$17.2	
PNC Financial	\$2.0	\$0.2	\$0.5	\$9.6	
Capital One	\$0.9	\$0.0	\$0.4	\$1.5	
HSBC North America	\$1.1	\$0.0	\$46.7	\$2.1	
State Street	\$59.1	\$20.4	\$0.0	\$0.0	
TD Bank US Holding	\$2.4	\$0.0	\$0.0	\$0.0	
BB&T Corp	\$1.0	\$0.0	\$0.7	\$4.8	
Suntrust	\$0.6	\$0.1	\$1.2	\$10.0	
American Express	\$0.1	\$0.0	\$0.0	\$0.0	
Ally Financial	\$0.3	\$0.0	\$0.0	\$0.0	
Fifth Third	\$1.2	\$0.2	\$0.0	\$5.4	
RBS Citizens	\$2.8	\$0.0	\$0.0	\$0.0	
Regions Financial	\$0.8	\$0.0	\$6.1	\$38.6	
BMO Financial	\$5.2	\$0.3	\$1.6	\$6.7	
Unionbanca Corp	\$1.1	\$0.1	\$0.0	\$0.0	
Northern Trust	\$33.0	\$5.6	\$0.0	\$0.0	
Keycorp	\$1.0	\$0.1	\$0.9	\$4.5	
M&T Bank	\$1.6	\$0.1	\$0.0	\$25.8	
Bancwest Corp	\$0.4	\$0.0	\$0.0	\$0.0	
Discover Financial	\$0.3	\$0.0	\$0.0	\$0.0	
Santander Holdings USA	\$0.0	\$0.0	\$0.0	\$0.0	
BBVA Compass	\$0.2	\$0.0	\$7.5	\$72.5	
Deutsche Bank Trust	\$58.5	\$0.0	\$0.0	\$0.0	
Comerica Incorporated	\$0.2	\$0.1	\$0.0	\$1.5	
Huntington Bancshares	\$0.3	\$0.1	\$0.1	\$0.9	
Zions Bancorporation	\$0.4	\$0.0	\$0.0	\$0.2	
Total	\$1,101.9	\$89.0	\$419.3	\$1,967.5	