Derivatives and Systemic Risk: It's Also about Jobs

Derivatives are the least understood component of systemic risk. Derivatives pose issues of size, measurement and behavior unlike loans. They string the biggest banks together in ways unseen three decades ago and even undermine job creation. Government officials may have had to bail in 2008, but nobody can claim that there will be no more bailouts until derivatives are better understood and managed.

Size Matters – Twice

Dodd-Frank focuses on size, measured by balance sheet assets starting at a $50 billion threshold. Under U.S. accounting most derivatives activity is booked off-balance sheet. Because the largest banks have major off-balance sheet activities, comparing their financial profiles requires lots of digging.

The Federal Reserve publishes a list of the top bank holding companies under its jurisdiction, ranked by balance sheet assets. Each bank name is a hyperlink to its regulatory reports. Here is the 2013 list.

Top Fifty Bank Holding Companies as of December 31, 2013
(Source: Federal Reserve System's National Information Center)

1	JPMORGAN CHASE & CO. (1039502)	NEW YORK, NY	$2,415,689,000
2	BANK OF AMERICA CORPORATION (1073757)	CHARLOTTE, NC	$2,104,995,000
3	CITIGROUP INC. (1951350)	NEW YORK, NY	$1,880,382,000
4	WELLS FARGO & COMPANY (1120754)	SAN FRANCISCO, CA	$1,527,015,000
5	GOLDMAN SACHS GROUP, INC., THE (2380443)	NEW YORK, NY	$911,595,000
6	MORGAN STANLEY (2162966)	NEW YORK, NY	$832,702,000
7	AMERICAN INTERNATIONAL GROUP, INC. (1562176)	NEW YORK, NY	$541,329,000
8	GENERAL ELECTRIC CAPITAL CORPORATION (1631915)	NORWALK, CT	$523,973,465
9	BANK OF NEW YORK MELLON CORPORATION, THE (3587146)	NEW YORK, NY	$374,310,000
10	U.S. BANCORP (1119794)	MINNEAPOLIS, MN	$364,021,000
11	PNC FINANCIAL SERVICES GROUP, INC., THE (1069778)	PITTSBURGH, PA	$320,596,232
12	CAPITAL ONE FINANCIAL CORPORATION (2277860)	MCLEAN, VA	$297,282,098
13	HSBC NORTH AMERICA HOLDINGS INC. (3232316)	NEW YORK, NY	$290,013,881
14	TEACHERS INSURANCE & ANNUITY ASSOCIATION OF AMERICA (1607170)	NEW YORK, NY	$250,494,214
15	STATE STREET CORPORATION (1111435)	BOSTON, MA	$243,028,090
16	TD BANK US HOLDING COMPANY (1249196)	CHERRY HILL, NJ	$234,621,843
17	BB&T CORPORATION (1074156)	WINSTON SALEM, NC	$183,009,992
18	SUNTRUST BANKS, INC. (1131787)	ATLANTA, GA	$175,380,779
19	AMERICAN EXPRESS COMPANY (1275216)	NEW YORK, NY	$153,387,000
20	ALLY FINANCIAL INC. (1562859)	DETROIT, MI	$151,167,000
21	CHARLES SCHWAB CORPORATION, THE (1026632)	SAN FRANCISCO,	$143,642,000

		CA	
22	FIFTH THIRD BANCORP (1070345)	CINCINNATI, OH	$129,685,180
23	STATE FARM MUTUAL AUTOMOBILE INSURANCE COMPANY (3840207)	BLOOMINGTON, IL	$129,337,906
24	UNITED SERVICES AUTOMOBILE ASSOCIATION (1447376)	SAN ANTONIO, TX	$122,342,355
25	RBS CITIZENS FINANCIAL GROUP, INC. (1132449)	PROVIDENCE, RI	$122,257,732
26	REGIONS FINANCIAL CORPORATION (3242838)	BIRMINGHAM, AL	$117,661,732
27	BMO FINANCIAL CORP. (1245415)	WILMINGTON, DE	$111,073,727
28	UNIONBANCAL CORPORATION (1378434)	SAN FRANCISCO, CA	$105,900,020
29	NORTHERN TRUST CORPORATION (1199611)	CHICAGO, IL	$102,947,333
30	KEYCORP (1068025)	CLEVELAND, OH	$92,991,716
31	M&T BANK CORPORATION (1037003)	BUFFALO, NY	$85,162,391
32	BANCWEST CORPORATION (1025608)	HONOLULU, HI	$83,527,474
33	DISCOVER FINANCIAL SERVICES (3846375)	RIVERWOODS, IL	$79,339,664
34	SANTANDER HOLDINGS USA, INC. (3981856)	BOSTON, MA	$77,144,021
35	BBVA COMPASS BANCSHARES, INC. (1078529)	HOUSTON, TX	$71,965,476
36	DEUTSCHE BANK TRUST CORPORATION (1032473)	NEW YORK, NY	$66,926,000
37	COMERICA INCORPORATED (1199844)	DALLAS, TX	$65,356,580
38	HUNTINGTON BANCSHARES INCORPORATED (1068191)	COLUMBUS, OH	$59,476,344
39	ZIONS BANCORPORATION (1027004)	SALT LAKE CITY, UT	$56,031,127
40	CIT GROUP INC. (1036967)	LIVINGSTON, NJ	$47,138,960
41	NEW YORK COMMUNITY BANCORP, INC. (2132932)	WESTBURY, NY	$46,688,287
42	E*TRADE FINANCIAL CORPORATION (3412583)	NEW YORK, NY	$46,279,856
43	UTRECHT-AMERICA HOLDINGS, INC. (2307280)	NEW YORK, NY	$46,095,773
44	HUDSON CITY BANCORP, INC. (2367556)	PARAMUS, NJ	$38,607,354
45	FIRST NIAGARA FINANCIAL GROUP, INC. (2648693)	BUFFALO, NY	$37,643,867
46	POPULAR, INC. (1129382)	SAN JUAN, PR	$35,749,000
47	PEOPLE'S UNITED FINANCIAL, INC. (3650152)	BRIDGEPORT, CT	$33,200,224
48	NATIONWIDE MUTUAL INSURANCE COMPANY (3828072)	COLUMBUS, OH	$32,675,758
49	MUTUAL OF OMAHA INSURANCE COMPANY (1583836)	OMAHA, NE	$32,233,999
50	JOHN DEERE CAPITAL CORPORATION (3843075)	RENO, NV	$31,676,590

As can be seen in the ranking, a gap of nearly half a trillion dollars exists between the six largest bank holding companies and the next, more-traditional commercial bank – Bank of New York Mellon Corporation.

The other concentration at the top – derivatives – can be seen in the following table, which compares the notional values of derivatives and credit derivatives with the balance sheet assets for the U.S.-based banks classified as systemic. The table also presents another snapshot compiled by the Fed – a comparison of the derivatives portfolios of each bank as a percentage of its balance sheet assets. The largest banks – excluding Wells Fargo – are highly concentrated in both measures of "systemic" and have been since before the bubble burst. Most other traditional banks hardly engage in derivatives at all.

Derivatives Portfolios of the Biggest Bank Holding Companies Compared to Assets: Concentrations at the Top
Source: Federal Reserve Bank Holding Companies (BHC) Peer Reports
(Consolidated)

		$ Billions 2013		% 2013	$ Billions 2013	Derivatives as a % of Assets		
						2013	2012	2011
	Year-End 2013 Rank by Assets	Derivatives (Notional Amount)	Total Assets	% of Derivatives Held for Trading	Credit Derivatives as Guarantor	BHC Peer Report %	BHC Peer Report %	BHC Peer Report %
PEER 1 GROUP AVERAGE*				48		40	43	113
JPMorgan Chase	1	64,984	2,416	99	2,697	2,690	2,683	2,881
Bank of America	2	53,031	2,105	96	1,329	2,519	2,653	3,028
Citigroup	3	61,165	1,880	100	1,143	3,253	2,765	2,577
Wells Fargo	4	4,744	1,527	92	20	311	250	244
Goldman Sachs*	5	50,535	912	100	1,430	5,544	4,339	4,789
Morgan Stanley*	6	43,833	833	100	1,405	5,264	5,279	6,302
Bank of New York Mellon	9	1,193	374	98	0	319	326	417
U.S. Bancorp	10	105	364	67	2	29	35	31
PNC Financial Services	11	376	321	44	3	117	119	143
State Street Corporation	15	1,135	243	99	0	467	421	643
BB&T Corporation	17	59	183	33	0	32	40	39
Suntrust Banks	18	222	175	84	2	127	153	173
Fifth Third Bancorp	22	63	130	80	1	49	61	61
Regions Financial Corp.	26	74	118	81	1	63	83	124
BMO Financial Corp	27	24	111	81	0	22	19	25
Unionbancal Corporation	28	64	106	93	0	60	61	59
Northern Trust	29	233	103	97	0	226	222	244
Keycorp	30	67	93	78	0	72	87	80
M&T Bank Corporation	31	21	85	87	0	25	26	22
Bancwest Corporation	32	16	84	65	0	19	21	19
Comerica	37	20	65	92	1	31	33	29
Huntington Bancshares	38	26	59	60	0	44	49	44
Zions Bancorporation	39	4	56	91	0	6	6	10

*Goldman Sachs and Morgan Stanley are in Fed BHC Peer Group 9 (Atypical and second-tier). Goldman moved from Group 1 to 9 in 1Qtr 2012.

A Measurement Morass

Loans involve one-sided credit exposures. Derivatives are bilateral. Once the cash goes out the door when a bank extends a loan, the goal is to make sure the customer repays the loan. Core competencies in traditional commercial banking are credit analysis and loan structure. Derivatives' core competencies involve very sophisticated math, modeling, counterparty risk management and understanding cross-border legal frameworks. Derivatives also involve complex and changing regulatory environments, particularly with the onset of Basel III and central clearing.

Each derivative, whether intended as a hedge or as speculation, is an independent legal contract, one that trades exposures. (Credit derivatives, which are primarily insurance contracts with unique issues, are excluded here.)

Interest rate swaps, the most common type of derivative, typically trade fixed-rate interest payments for floating-rate interest payments over terms that can extend to thirty years, occasionally longer. Even though the counterparties pay only the net amount of their respective obligations to each other over that long period, interest rate levels and yield curve shapes can change in any direction. One party may owe the other during one accounting period followed by the reverse in the next.

The Office of the Comptroller of the Currency (OCC) publishes a quarterly derivatives report with extensive information on FDIC-guaranteed bank activities and additional information on bank holding companies. While the biggest banks argue against limiting derivatives, claiming they are essential to the economy and corporate clients, Graph 1 in the OCC's fourth quarter 2013 derivatives report illustrates both visually and in numbers that "end users" have always comprised about 3% of derivatives trading. Nearly all derivatives trading is dealer to dealer.

Netting is a valuable contractual tool to reduce bilateral credit exposures in derivatives contracts. In practice the Lehman bankruptcy revealed the complications of realizing all the netting assumptions modeled across the globe. Each bank discloses in its annual 10-K its derivatives gross exposures and the reductions provided through netting. The OCC derivatives report's Graph 5B shows the substantial use of netting to reduce exposures among U.S. banks over the past 15 years. Netting was assumed to reduce exposures by 62% at the end of 1998, increasing to 92% by the end of 2013. Basel III imposes very specific requirements for the use of netting. These include, for example, only between the same specific legal entities and using the same currency. While addressing the weaknesses seen in the Lehman failure, the latest layer of regulations demand greater compliance resources and more detailed record keeping.

Looking at the concentrations, some point out that the notional amount is merely a measurement device. The interest payments swapped are only a percentage of the notional amount. The issue was raised during the deliberations of the Financial Crisis Inquiry Commission. U.S. regulators often use 3% of notional amount as a rule-of-thumb assumption of market risk, the real concern. The Bank for International Settlements publishes semi-annual statistics for both notional and market values of global bank derivatives portfolios. Dividing the published market values by the notional amounts shows that this rule isn't far off under normal market conditions. Market values were 4% of notional amounts in 2003 and 2004 and even declined to 2% in 2006. But market values popped up to 6% of notional amounts in 2008. The OCC's fourth quarter 2008 report noted that government intervention actually increased credit exposures to a degree. As was the case of the collapse of hedge fund Long-Term Capital Management in 1998, nearly everyone was a seller in 2008, and correlations in bank models were disturbed. Whether one shrinks the measurement of derivatives activity to 3% or 10% of notional amounts, the picture remains the same. The biggest banks rather exclusively dominate the derivatives markets. The OCC has noted this in each of its quarterly reports.

If bank models show such vast reductions in exposures, regulators and the public need to be confident in the models' assumptions and ability to measure risk during difficult periods. Even the most respected of the major banks have had challenges in fully understanding their derivatives risks. Recently, the Federal Reserve rejected resolution plans of the major banks. The January 15, 2014, *Progress Report on Counterparty Data* from the Senior Supervisors Group to Mark Carney, Chairman of the Financial Stability Board, conveyed that all the world's largest banks have a ways to go. The top six U.S.-based bank holding companies are included in this report.

> *Five years after the financial crisis, firms' progress toward consistent, timely, and accurate reporting of top counterparty exposures fails to meet both supervisory expectations and industry self-identified best practices. The area of greatest concern remains firms' inability to consistently produce high-quality data.* (*Executive Summary*)

Regulators are being held to a high standard of responsibility not only to oversee systemic risk, but also to be the predictors of when bubbles are building. They are very reliant upon the banks' modeling quality to bear this burden. Comfort cannot be taken by assumptions based upon normal markets. Bailing is demanded when crises occur. The OCC's 2013 report noted that the bank holding companies' trading was robust in recent years as markets recovered. The derivatives trading banks achieved trading revenues in 2013 of $53.8 billion, up from $48.8 billion in 2012. The picture wasn't quite as rosy in 2008. In the OCC's fourth quarter 2010 report, the first year to present annual holding company trading revenues, bank holding companies lost $53.5 billion in 2008, despite the bailing. They bounced back to positive revenues of $68.4 billion in 2009 and $61.0 billion in 2010.

Credit Ratings: The Ties That Bind

Assumptions creep into risk capital modeling through credit assessments and bank credit ratings. Credit assessment is an essential component of measuring capital adequacy, but it presents many challenges.

All the largest banks state in their 10-Ks that the rating agencies assume some degree of government support in assigning ratings. In other words, their assigned ratings are higher than their underlying, stand-alone ratings. Moody's explicitly removed this assumption in the bank holding company ratings in November 2013. But the global financial community, including any person or body doing credit assessment is caught in the grey area between claiming "no more bailouts" and naming large financial institutions systemically significant.

One challenge can be seen in the ratings Moody's assigned last fall. Although the assumption of government support was eliminated, the difference between the bank holding company ratings and the ratings of the respective FDIC-guaranteed bank subsidiary is wider than typical for a holding company and operating subsidiary (one notch). The government of course explicitly supports the banking subsidiary through its FDIC guarantee. The following table shows how Moody's notched these two entities at the time of these rating actions.

Moody's November 14, 2013 Bank Credit Ratings

Holding Company/FDIC-Guar Bank	Holding Company Rating	Bank Credit Rating	Number of Notches Difference
Bank of America/Bank of America, N.A.	Baa2	A2	3
Citigroup/Citibank, N.A.	Baa2	A2	3
Goldman Sachs/Goldman Sachs Bank USA, N.A.	Baa1	A2	2
JPMorgan Chase/JP Morgan Chase Bank, N.A.	A3	Aa3	3
Morgan Stanley/Morgan Stanley Bank, N.A.	Baa2	A3	2

Where a derivatives contract is booked has significant financial implications, and not just for the counterparty. Since derivatives grew out of interest rate swaps used historically primarily by the larger commercial banks, most derivatives were booked in the traditional commercial banks' FDIC-guaranteed banking subsidiary at the end of the 1990s. When the three big investment banks became bank holding

companies (Goldman and Morgan Stanley) after Lehman's collapse or were acquired (Merrill Lynch), the derivatives of some of these three investment banks – but not all – were moved over time into their FDIC-guaranteed subsidiary. According to the OCC quarterly derivatives report, the following table shows where derivatives are now booked with the largest U.S.-headquartered, systemic banks. The percentage represents the derivatives shown in the commercial bank table divided by the derivatives in the holding company table.

Percentage of Derivatives Booked in FDIC-Guaranteed Bank

Bank Holding Company	Percentage
Bank of America	70
Citigroup	98
Goldman Sachs	91
JPMorgan Chase	100
Morgan Stanley	6
Wells Fargo	101

The mixed percentages have implications. First is fairness – having an even playing field. A major implication is the impact on the capital calculation. The notching differences between booking a derivative at the holding company level and booking it in the FDIC-guaranteed bank amount to real money. Each bank discloses in its 2013 10-K the amount of additional collateral and termination payments that would have to be made should the rating agencies downgrade the ratings by one or two notches. Citigroup had details on a one-notch downgrade. The methods of presentation or calculation may not be precisely comparable, but illustrate that the impact of a single-notch downgrade would be at least $1 billion, rising in amount as the credit profile declines. Some may think this is a rounding error for a bank this size, but raising additional capital in choppy markets when the bank's profile is in decline is how systemic banks can spiral down and/or affect their clients and counterparties.

Additional Collateral That Would Be Posted or Termination Payments Made in the Event of a One- or Two-Notch Downgrade ($ Millions)

	One-Notch Downgrade	Two-Notch Downgrade
Bank of America	1,302	4,101
Citigroup	2,600	
Goldman Sachs	911	2,989
JPMorgan Chase	1,492	4,120
Morgan Stanley	1,522	3,321

How much does derivatives modeling contribute to risk-based capital adequacy? It helps to see how derivatives weigh into the capital adequacy equation. First, a measure of credit exposure is determined, then a percentage of the exposure is included in the denominator – the risk-based assets. (The capital is in the numerator.) Under Basel II, still in effect, true exchange traded derivatives have a zero weighting if the exchange is the bank's legal counterparty and the contract is marked to market daily. (Basel III is adding nuances.) For A-level credit ratings and above the weighting is 20%. For derivative exposures to entities rated lower that an A the weighting is 50%. That is the basic overview.

Based upon 2010 year-end regulatory reports, the top six bank holding companies' risk-weighted derivatives were 8% of their total risk-weighted assets. (The ratings of some banks have deteriorated since this time-consuming analysis.) The same percentage for the first six banks at the bottom of the systemic

threshold of the Fed's list of top bank holding companies at the time (i.e. just over the $50 billion threshold) was zero. There were no measurable derivatives portfolios among those banks.

Given that the largest banks' primary derivatives counterparties are each other, regulators have been assigned the task of trying to measure how much of an impact this assumption has on bank capital measurement. Regulators also have to assess the banks' internal models, used for regulatory capital calculations, compared to the official rating agency credit ratings.

Derivatives' Creeping Impact on Jobs

Under the law of unintended consequences, derivatives encroach on bank lending and therefore on jobs through the practice of using collateral to mitigate credit risk. Collateral has been used to support bank loans for centuries. Its use to support derivatives is a new phenomenon.

Because a party to a derivatives contract wants to be assured that its counterparty will be able to meet its contractual obligations over the entire tenor of the contract, they sign an agreement called a Master Agreement that covers risk mitigation. They each are required to post collateral to cover market risk and credit risk. If a counterparty's credit profile weakens over the term of the contract, it may be required to post additional collateral.

The International Swaps and Derivatives Association (ISDA) developed the Master Agreement, now used globally. They also do a margin survey each year. As can be seen below, reported collateral posted against global derivatives contracts has exceeded $2 trillion – primarily cash – over the past three years. The ISDA estimates that over $3 trillion is actually posted to support derivatives trades.

Derivatives and Their Collateral
As of Year End
In $ Billions

	Derivatives*	Reported Collateral**	Estimated Collateral**
2013	710,182	2,170	3,171
2012	632,579	2,666	3,700
2011	647,777	2,459	3,652
2010	601,046	1,984	2,934
2009	614,674	2,150	3,151
2008	547,983	2,649	3,957
2007	595,738	1,470	2,126
2006	418,131	924	1,335
2005	299,261	922	1,329
2004	258,628	854	1,209
2003	197,167	707	1,017
2002	141,665	491	719
2001	111,178	289	437
2000	95,199	145	250
1999	88,202	138	200

* Bank for International Settlements, Quarterly Review, OTC Derivatives, Table 19
** International Swaps and Derivatives Association 2014 Margin Survey

Whereas traditional U.S. commercial banks lend against FDIC-guaranteed deposits, banks cannot lend as easily against collateral posted to support derivatives. Counterparty risks shift on a daily basis. Collateral moves in and out of the bank. The $2- to $3-trillion number is a global number, but a large percentage covers U.S. trades. In a September 22, 2008, letter to the U.S.'s top regulators and Treasury Secretary, American Bankers Association President and CEO Edward Yingling stated that "$1 of bank capital supports $7.6 of bank lending." Just a quarter of the reported $2 trillion in collateral would represent potential lending of $3.8 trillion. Obviously, many derivatives are very useful, but this illustrates the shift in market structure away from traditional lending, particularly to smaller businesses by smaller banks and toward a financially engineered trading system.

These numbers and issues demonstrate why ring fencing as a regulatory tool is so difficult. How does one isolate a bank subsidiary in the eyes of an investor and allow it to continue as a going concern when its holding company has exhausted all access to the capital markets? If government policy aims at avoiding bailouts, market structures need to prevent bubbles. Finding the right regulatory structure that balances essential uses for derivatives with a vibrant commercial lending industry is essential to economic growth.

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