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Delving Deeper Into Global Trading Banks' Risks And Rewards: A Study Of Public Disclosures

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Delving Deeper Into Global Trading Banks' Risks And Rewards: A Study Of Public Disclosures

Tougher regulatory requirements, particularly as they pertain to capital, have caused some of the biggest global banks to scale back their trading businesses to ensure that profitability clears their cost of capital. Although this has enabled a few select banks with scalable trading operations to increase their market share, the overall trend has been a decline in sales and trading as a percentage of banks' total revenues—a development that has reduced some of the market risks related to banks' trading operations from their 2007-2008 peaks, in our view. That said, we believe trading risks remain significant, and could destabilize banks that don't manage them properly.

To gauge how banks' trading operations and related risks have evolved following the financial crisis, Standard & Poor's Ratings Services studied public disclosures for the 15 largest rated banks globally with substantial trading operations (eight in Europe, six in North America, and one in Asia-Pacific), identifying changes in revenue composition from trading, market share, pricing power, risk appetite, and potential tail risk since 2008. The overall decline in trading activities and better management of their risk, combined with the fact that our ratings already incorporate the risks inherent in trading operations, means we don't envision making changes to our ratings specifically from this analysis. However, changes in a bank's risk profile, over time, could lead to rating actions.

Overview

- We have carried out a study of public disclosures by the 15 rated banks with the largest global trading operations to assess changes in the risk of their trading activities.
- Trading as a percentage of overall revenue has declined for most of these banks over the past five years, and trading risks have subsided from their excessive precrisis levels, largely because of stricter regulation and lower market volumes. However, the risks are still significant, in our view, and could destabilize banks that don't manage them well.
- We don't expect to take any imminent rating actions on these banks based on developments in their trading activities, but changes in their risk profiles, over time, could lead to positive or negative rating actions.

Assessing trading risk at banks can be a difficult endeavor because trading positions, especially derivatives and less-liquid securities, are very complex and opaque. Moreover, the value at risk (VaR) models and other internal models that aim to measure market risks can be inaccurate and inconsistent, particularly in relation to peers. And a significant market disruption may render fair values, which are the basis for many derivatives and securities, unreliable and difficult to measure.

Notably, two recent Bank for International Settlements (BIS) trading surveys that analyzed risk-weighted assets for market risk showed substantial discrepancies across banks in measuring VaR and also showed that regulatory capital requirements for market risk vary among global banks. An October 2013 BIS paper ("Fundamental Review of The Trading Book—Second Consultative Document") outlines, among other things, certain proposals to improve the accuracy and consistency of bank trading risk-weighted assets, in order to make them more commensurate with risk.

We believe this is a step toward further consistency across banks, but more clarity is necessary (see "Basel's Proposed Overhaul Of Capital Requirement Calculations For Banks' Trading Risk Is Only A Step Toward Greater Consistency," published Jan. 31, 2014). Although VaR has certain limitations--and thus, in isolation, may provide an incomplete picture of a bank's trading risk--we still believe it has value when considered with other factors in determining market risk. That said, we do not base our analysis on ratios alone, not least because some can be the result of a multitude of different influences, some positive and some negative, which we detail in Appendix 3.

For all of the banks we rate that have sizable trading operations (constituting more than 35% of revenues), we assign a "moderate" score for "risk position," (see section 111 of "Banks: Rating Methodology And Assumptions," published Nov. 9, 2011, our bank criteria, for the description). In general, through the assessment of risk position, we refine our view of a bank's risk beyond the conclusion reached in the capital and earnings analysis. This assessment reflects the potential for "tail risk" to materialize in stressed market conditions and acknowledges the complexity and opacity of trading operations.

Key Components Of Our Public Disclosure Study

In general, when assessing a bank's trading operations, we review the results from its stress and scenario testing; its policies, risk limits, practices, and organizational structure in trading risk management; and supplemental VaR data. As part of the study, we looked at a variety of areas to assess the risks embedded in major global banks' trading operations using public disclosures, including:

- The risk/reward relationship between trading revenues and changes in market share (which help us determine a bank's business position, as our criteria defines the term)
- Bank management's risk appetite (to determine risk position, as our criteria defines the term)
- The quality of risk management (which informs a bank's risk position); and
- Potential tail risks (which also inform the risk position)

We compared the 15 largest trading banks in these areas, using measures that rely on public information. Comparisons are through 2013, with some exceptions due to data availability.

Findings

Overall, compared with the global financial crisis and the year after (2009), banks have lowered their risk profiles in the areas we studied. Specifically, trading banks, for the most part, have fewer Level 3 trading assets (which are relatively less-liquid assets that are more difficult to price), less-volatile one-day trading revenue, fewer unprofitable trading days, and fewer back-testing exceptions.

We believe the safer risk profiles that the study indicates are the result of a tougher regulatory environment and banks shedding riskier assets and improving their risk controls, but the improvements have also coincided with more benign market conditions. In the years since the crisis, in most western markets, aside from periodic market disruptions related to geopolitical events, stock markets have rebounded and bond market volumes have grown, as volatility measures fell and interest rates remained at or near historical lows. However, tougher regulatory requirements on

capital market activity have compromised some banks' business models, which have contributed to the downgrades of certain banks with large trading operations (see "Mainly Negative Rating Actions Taken On 4 Large European Banks," published July 3, 2013).

Our Current Bank Ratings Already Incorporate Shifts In Trading Activities

We believe that, while new regulations, combined with bank management teams' lower risk appetites, have helped mitigate trading risks since the crisis, significant risks are still embedded in banks' trading operations. All of our risk position scores for banks with the largest trading operations (35% or higher of total revenue) are currently "moderate" (see table 1). In addition, it is atypical for a bank with a sizeable trading operation to warrant a risk position score above "adequate." We note that if the risk profile of a bank's trading activities changes significantly, it could lead to downward rating actions.

Table 1

Ratings Distribution							
Bank Name	Business Position	Capital and Earnings	Risk Position	Funding	Liquidity	SACP	Operating company ICR
Bank of America Corp.	Strong	Adequate	Moderate	Average	Adequate	bbb+	A
Barclays Bank PLC	Adequate	Adequate	Adequate	Average	Adequate	bbb+	A
BNP Paribas	Very strong	Adequate	Adequate	Average	Adequate	a	A+
Citigroup Inc.	Strong	Adequate	Adequate	Average	Adequate	bbb+	A
Credit Suisse AG	Adequate	Strong	Moderate	Average	Adequate	a-	A
Deutsche Bank AG	Adequate	Adequate	Moderate	Average	Adequate	bbb+	A
Goldman Sachs Group Inc.	Strong	Adequate	Moderate	Average	Adequate	bbb+	A
HSBC Holdings PLC	Very strong	Adequate	Strong	Above Average	Adequate	a+	AA-
JPMorgan Chase & Co.	Very strong	Adequate	Adequate	Average	Adequate	a	A+
Macquarie Bank Ltd.	Adequate	Adequate	Moderate	Average	Adequate	bbb+	A
Morgan Stanley	Strong	Adequate	Moderate	Average	Adequate	bbb+	A
Royal Bank of Canada	Strong	Adequate	Strong	Average	Adequate	a+	AA-
Royal Bank of Scotland PLC	Adequate	Adequate	Moderate	Average	Adequate	bbb	A-
Societe Generale	Strong	Adequate	Adequate	Average	Adequate	a-	A
UBS AG	Adequate	Strong	Moderate	Average	Adequate	a-	A

Larger Trading Businesses Lead To More Volatile Revenues

The first part of our study was to gauge the percentage of overall revenues each bank derived from trading. Data on revenue derived solely from sales and trading (excluding origination) is not available consistently across banks on a global basis. As such, for those banks that don't disclose publicly, we assume that 18%-20% of the trading revenue was the result of origination (in line with the levels for banks that do disclose this information), and we have reduced these banks' trading revenue accordingly. According to our data, The Goldman Sachs Group Inc., Morgan Stanley, Credit Suisse AG, and Deutsche Bank AG rely most heavily on sales and trading among their large peer trading banks (see table 2). Conversely, in our view, Royal Bank of Canada relies less on trading revenue.

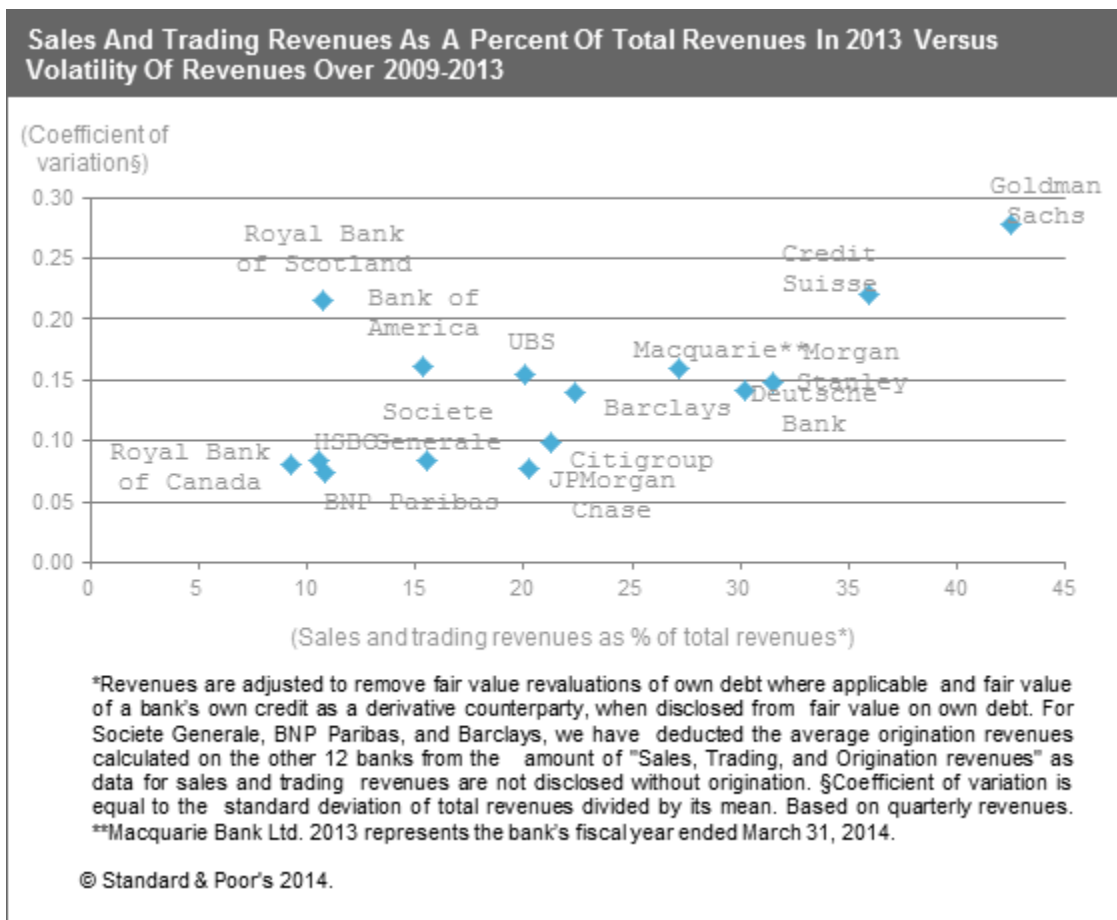
Our study showed that a higher percentage of trading revenue generally led, over time, to greater revenue volatility (see table 2 and chart 1). The exceptions were Bank of America Corp. and The Royal Bank of Scotland Group PLC (RBS), which had highly volatile revenues despite relatively lower sales and trading revenue. We believe this was largely the result of the banks paring back noncore businesses, largely in order to boost capital ratios. In the case of RBS, this also reflects the transition of the bank toward a business model with a smaller share of investment banking in total revenues.

Table 2

Sales And Trading Revenues As A Percent Of Total Revenues*				
(%)	Coefficient of variation†	2013	2012	2011
Goldman Sachs	0.28	42	48	53
Credit Suisse	0.22	36	36	30
Morgan Stanley	0.15	32	41	36
Deutsche Bank	0.14	30	34	32
Macquarie Bank Ltd.**	0.16	27	24	14
Barclays	0.14	22	25	21
Citigroup	0.10	21	22	16
JPMorgan Chase	0.08	20	20	20
UBS	0.15	20	16	16
Societe Generale	0.08	16	16	14
Bank of America	0.16	15	16	13
BNP Paribas	0.07	11	12	11
Royal Bank of Scotland	0.21	11	9	9
HSBC	0.08	11	9	9
Royal Bank of Canada	0.08	9	11	8
15-group total‡	0.14	20	21	19

*Revenues are adjusted to remove fair value revaluations of own debt where applicable and fair value of bank's own credit as a derivative counterparty, when disclosed from fair value on own debt. For Societe Generale, BNP Paribas, and Barclays, we have deducted the average origination revenues calculated on the other 12 banks from the amount of "Sales, Trading, and Origination revenues" as data for sales and trading revenues are not disclosed without origination. †Coefficient of variation is equal to the standard deviation of total revenues divided by its mean. ‡Average for all 15 banks listed in the table. **Macquarie Bank Ltd.--2013, 2012, and 2011 represent the bank's fiscal years ending March 31, 2014, 2013, and 2012, respectively.

Chart 1



Features That Indicate The Strength Of A Bank's Trading Operation

To study the strength of a bank's sales and trading operations, we primarily considered two features: sales and trading market share and risk-adjusted sales and trading revenue.

Shifts in market share

Given the changes in regulatory capital rules, some banks have pared back their sales and trading businesses. In order to earn an adequate return, banks need to have sufficient scale and higher volume (see "Today's Shrinking Investment Banks Might Leave Stronger Shares And Margins For A Few Giants," published Dec. 17, 2012). As a result, some banks have been able to pick up sales and trading revenue from their large trading peers since 2010 (see table 3). We also believe that most of the large trading banks have picked up market share from second-tier national or regional competitors. Compared with their largest peers, the banks that seem stronger, in terms of sales and trading market share, versus their 2010 position, are JPMorgan Chase & Co. and Citigroup Inc. Although we view a gain in trading market share as a positive for that line of business, if such gains in market share resulted in an excessive amount of sales of trading revenue with respect to other lines of business, this would lead us to a more unfavorable view of it.

Table 3

Sales And Trading Revenues Market Shares*				
(%)	2013	2012	2011	2010
JPMorgan Chase	14.6	13.6	15.0	11.3
Citigroup	11.8	11.6	9.6	10.7
Goldman Sachs	10.5	11.6	11.7	11.8
Bank of America	9.8	9.8	9.2	10.0
Deutsche Bank	9.2	10.2	10.7	10.0
Morgan Stanley	7.5	7.3	8.5	6.5
Credit Suisse	7.4	7.1	6.3	7.6
Barclays	7.2	8.2	7.8	8.0
HSBC	5.0	4.4	4.6	4.2
UBS	4.4	3.2	3.5	6.4
BNP Paribas	4.0	4.4	4.6	4.8
Societe Generale	3.5	3.3	3.3	3.2
Royal Bank of Scotland	2.3	2.5	3.1	3.1
Royal Bank of Canada	1.8	2.0	1.6	1.9
Macquarie Bank Ltd.**	1.0	0.7	0.5	0.5
15-group total sales and trading and origination revenues (mil. US\$)	138,902	145,256	128,597	170,443

*Revenues are adjusted to remove fair value revaluations of own debt where applicable and fair value of bank's own credit as a derivative counterparty, when disclosed from fair value on own debt. For Societe Generale, BNP Paribas, and Barclays, we have deducted the average origination revenues calculated on the other 12 banks from the amount of "Sales, Trading and Origination revenues" as data for sales and trading revenues are not disclosed without origination. Market shares represent the percentage of sales and trading revenues of the entity compared to the total sales and trading revenues of the 15 banks peer group used for the purpose of the article. The data excludes the activity of smaller players and thus are potentially a source of increasing market shares for some of the banks listed above. The information as presented is not to suggest that all financial institutions in the table are competing with each other in the same markets for the same share. For example, Macquarie's business model aims at to be full service in its Australian home market but only to operate in a relatively small number of sales and trading product lines globally. **Macquarie Bank Ltd.--2013, 2012, 2011, and 2010 represent the bank's fiscal years ended March 31, 2014, 2013, 2012, 2011, respectively.

Sales and trading revenues adjusted for risk

Another important consideration for business strength is whether or not the banks are pricing trading revenue correctly on a risk-adjusted basis. Our study looked at the ratio of sales and trading revenues to risk-adjusted capital (RAC) risk-weighted assets (RWA) for trading assets. RAC is Standard & Poor's proprietary capital metric and is a key component of our bank criteria (see "Banks: Rating Methodology And Assumptions," published Nov. 9, 2011, and "Bank Capital Methodology And Assumptions," published Dec. 6, 2010).

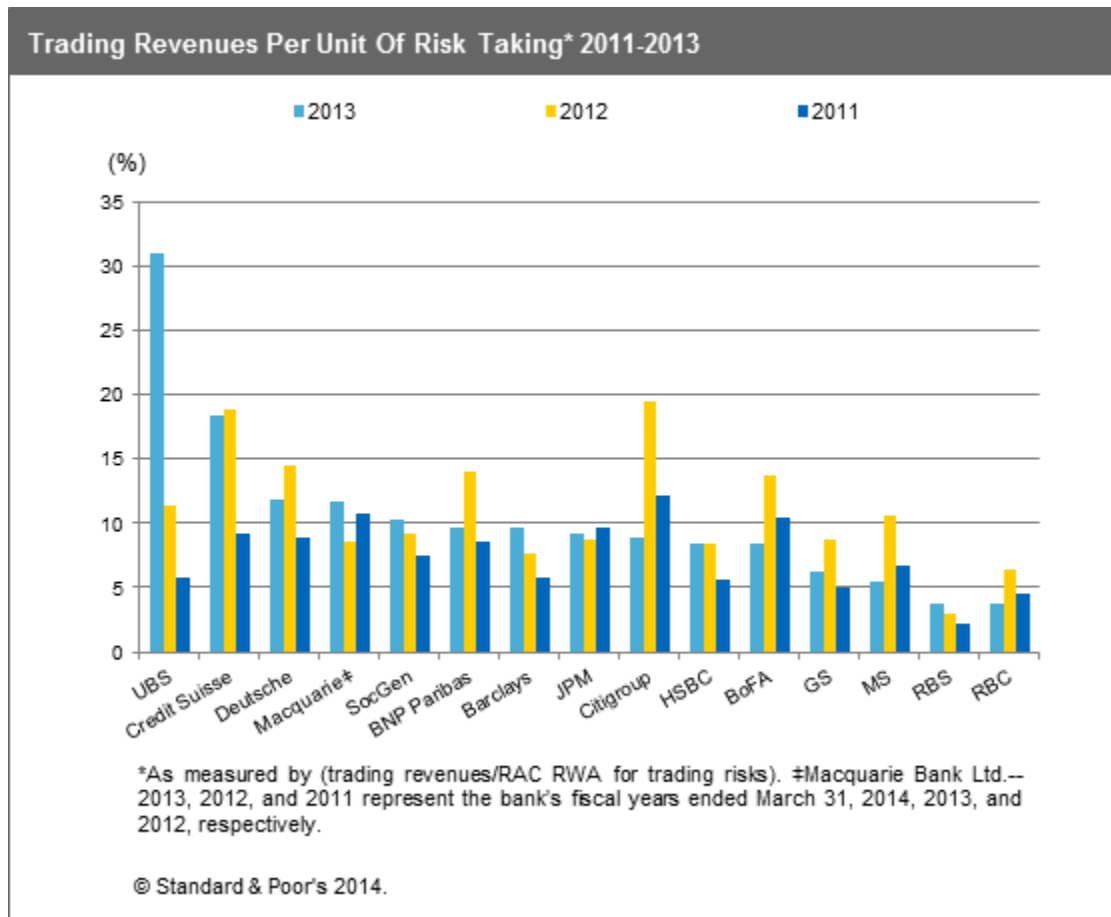
In computing the ratio of sales and trading revenues to RAC RWA for trading risks, when the information was available, we adjusted trading revenues for the fair value revaluations of a bank's own debt and the fair value of its own credit as a derivative counterparty to capture trading revenue from true business activity. Three banks in the sample do not explicitly report underwriting revenues separately from sales and trading revenues. For these, we assumed that underwriting revenues as a percentage of total sales and trading matched the average figures for the 12 banks for which we did have this information. We also used the regulatory calculation of VaR rather than management's VaR because regulatory VaR is more consistent across banks.

Our RAC RWA for trading risks takes into account all trading positions, whether banks include them in their VaR

model or not (for example, RAC RWA includes positions accounted for under the standardized approach). This neutralizes, to some extent, banks' choices regarding the scope of their VaR model, but discrepancies could still exist (see Appendix).

This measure, trading revenues/RAC RWA for trading risks, helps inform us about the business position of a bank. The sharp rise in the UBS ratio in 2013 reflects a 30% year-on-year rise in reported trading revenues due to strong equity trading and a concurrent fall in average regulatory one-day VaR.

Chart 2



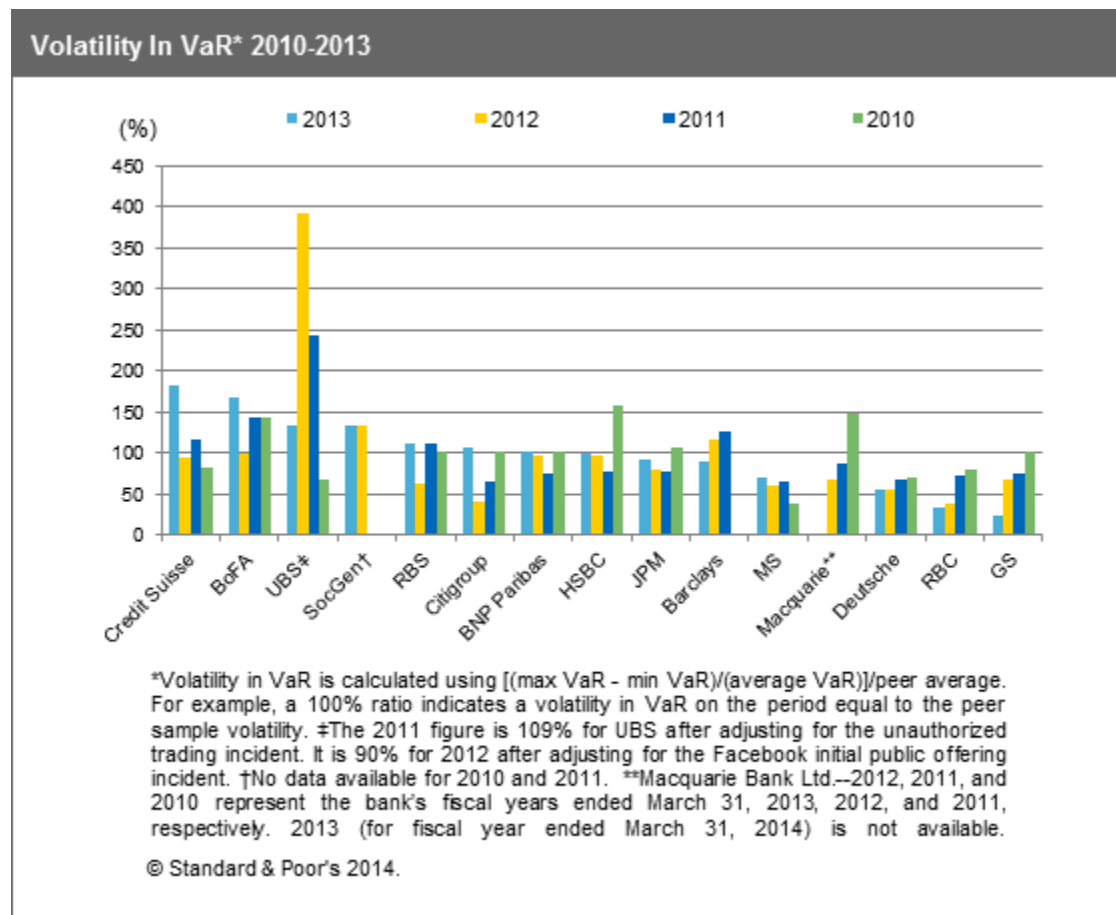
Measures That Indicate A Bank's Risk Appetite

Some banks could reflect well in pricing power (resulting in strong trading revenues, on average), in part because they're ready to seize business opportunities whenever they present themselves, including in risky times. The measures we considered to help assess a firm's risk appetite include the volatility in VaR, stressed VaR, and daily trading revenues, as well as the extent to which a bank holds directional positions. These four measures of risk appetite have helped inform us about the risk position of the firm.

Volatility in VaR

Although VaR varies during the year with movements in the market, we expect large international players' volatility in regards to market movement to be roughly similar. Therefore, if a bank has much greater volatility in its VaR than its peers, this could suggest the bank has increased its trading positions aggressively during the period under review, seizing what it perceived to be business opportunities (such as the trading of large equity blocks). This could signal a higher risk appetite relative to other banks. We have used the ratio $(\text{max VaR} - \text{min VaR}) / \text{average VaR}$ as a proxy for the volatility in VaR because the VaR standard deviation over a given period is generally not available.

Chart 3

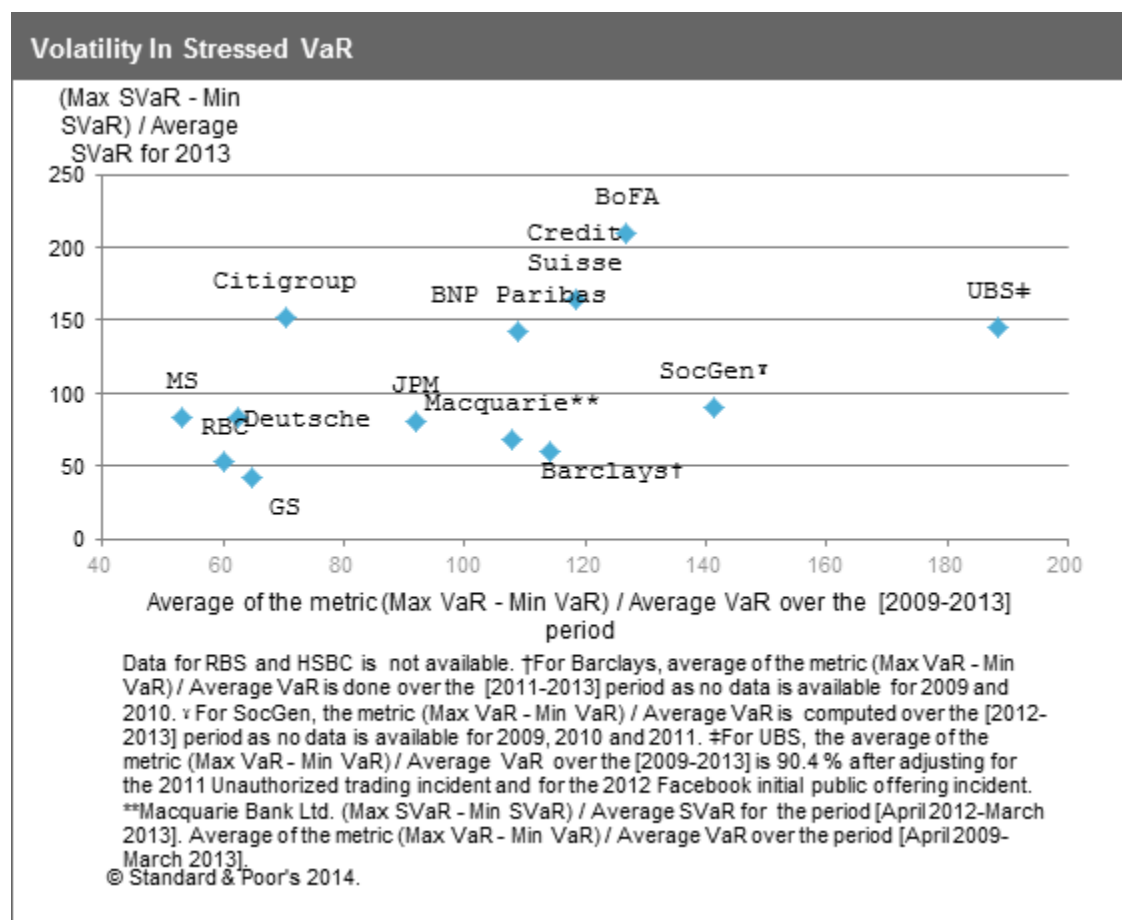


Volatility in stressed VaR

Stressed VaR, which measures the potential consequences of the trading book under more volatile market conditions (for example, in 2008), follows the same principle as the previous measure but with the advantage that it neutralizes the impact of changes in market volatility because the market conditions don't change—they remain the same, corresponding to the stressed event being captured (see "Basel 2.5 Increases The Squeeze On Investment Banking Returns," published May 14, 2012). The ratio is calculated as follows: $(\text{maxed stressed VaR} - \text{min stressed VaR}) / \text{average stressed VaR}$. This ratio is a better illustration of a bank's risk taking than the VaR model because this ratio does not factor in current market conditions, making the risk-taking of the bank more evident. As a result, as data for stressed VaR over a longer time period become publicly available, we expect this measure will be more useful than

one based on a nonstressed VaR.

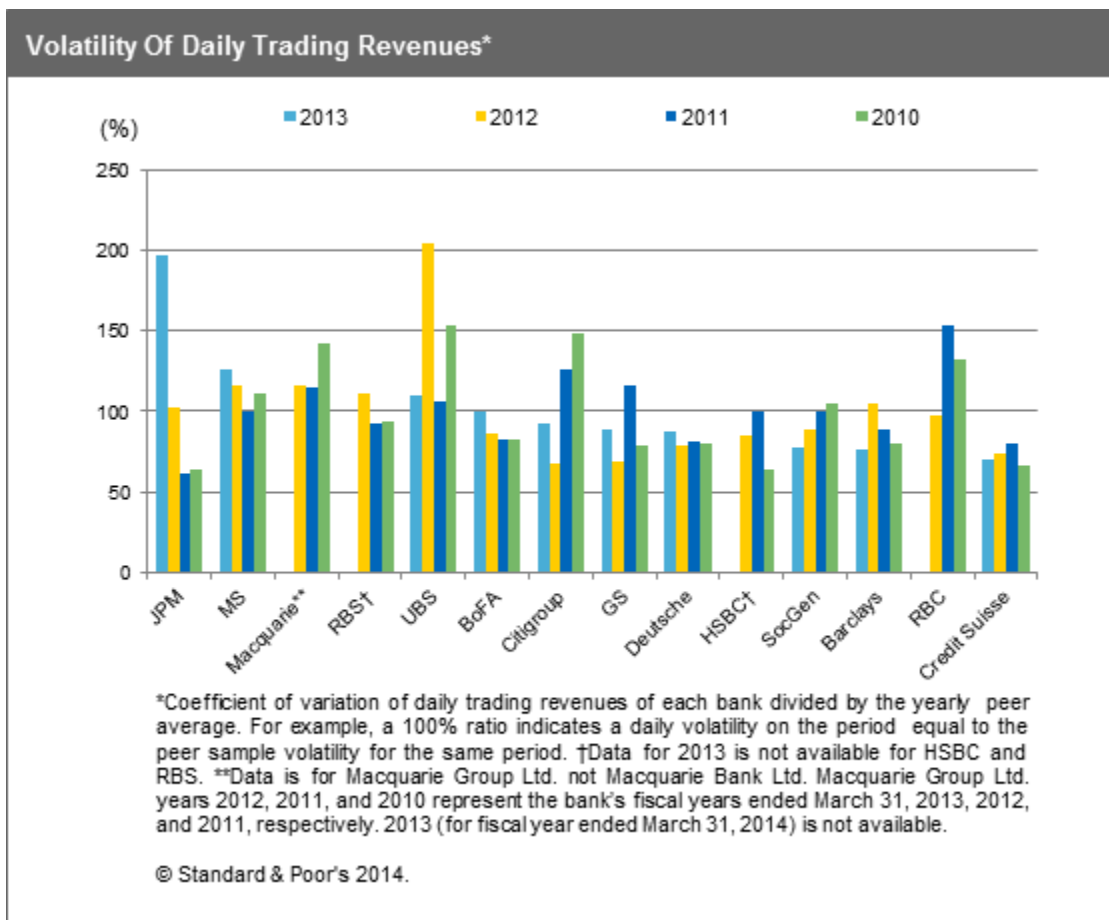
Chart 4



Volatility of daily trading revenues

We view greater volatility in daily trading revenues than peers as a potential signal of a higher risk appetite, which can lead to a destabilization of revenues. This is because a bank with strong views about the future evolution of interest rates or other market parameters may take directional positions, at least at certain times. A bank can reap large profits when its position proves right, or incur large losses when it's wrong. As such, daily trading revenues are typically more volatile for risk-seekers than for banks with smaller risk appetites.

Chart 5



We also look at how often a bank changes its set of limits (including VaR limits) and how often it operates close to the limits. All else being equal, a high utilization rate of limits and frequent changes in setting limits could indicate a higher risk appetite than peers.

The Quality Of Risk Management And The Ability To Measure Risks

Some bank management teams may have a high risk appetite but are fully aware of the risks they take, quantifying them accurately and hedging against them as necessary. Two measures for assessing risk-management skills that we used for this study are the number of back-testing exceptions and the number of days that trading losses exceed profits ("negative P&L"). Banks may have other internal models (including stress tests) and processes to manage and report on risk, and their risk limits are an important part of the risk-management process. We do not attempt to quantitatively compare banks' limit procedures, escalation policies, or other risk-management tools, but we do consider them qualitatively in our analysis of risk position generally.

Number of back-testing exceptions

A back-testing exception is an instance in which actual trading losses on a given day have exceeded the VaR. In theory, actual trading losses greater than VaR at the 99% confidence level should occur no more than two or three

times a year. A high level of back-testing exceptions (relative to peers or in absolute) generally reflects deficiencies in the VaR model. For example, the VaR model may not adequately capture "basis risk" (for example, in a hedging strategy, the risk that offsetting investments don't move in tandem, leaving the bank with some exposure in the positions it holds) because the set of risk factors underpinning the VaR model is not granular enough. In this regard, all banks appear to have improved significantly from 2008: The average number of back-testing exceptions across the sample fell to just one for each bank in 2013 (with eight banks reporting no back-testing exceptions at all), down from 18 in 2008.

Although we view trading conditions over the past four years as much more benign than in 2008, there have still been difficulties. The reduction in back-testing exceptions, in our opinion, is the result of a concerted effort, largely imposed by regulators, to reduce risk. In our studies, we have adjusted the number of back-testing exceptions (see Appendix) in order to compare banks that report VaR figures at different confidence levels.

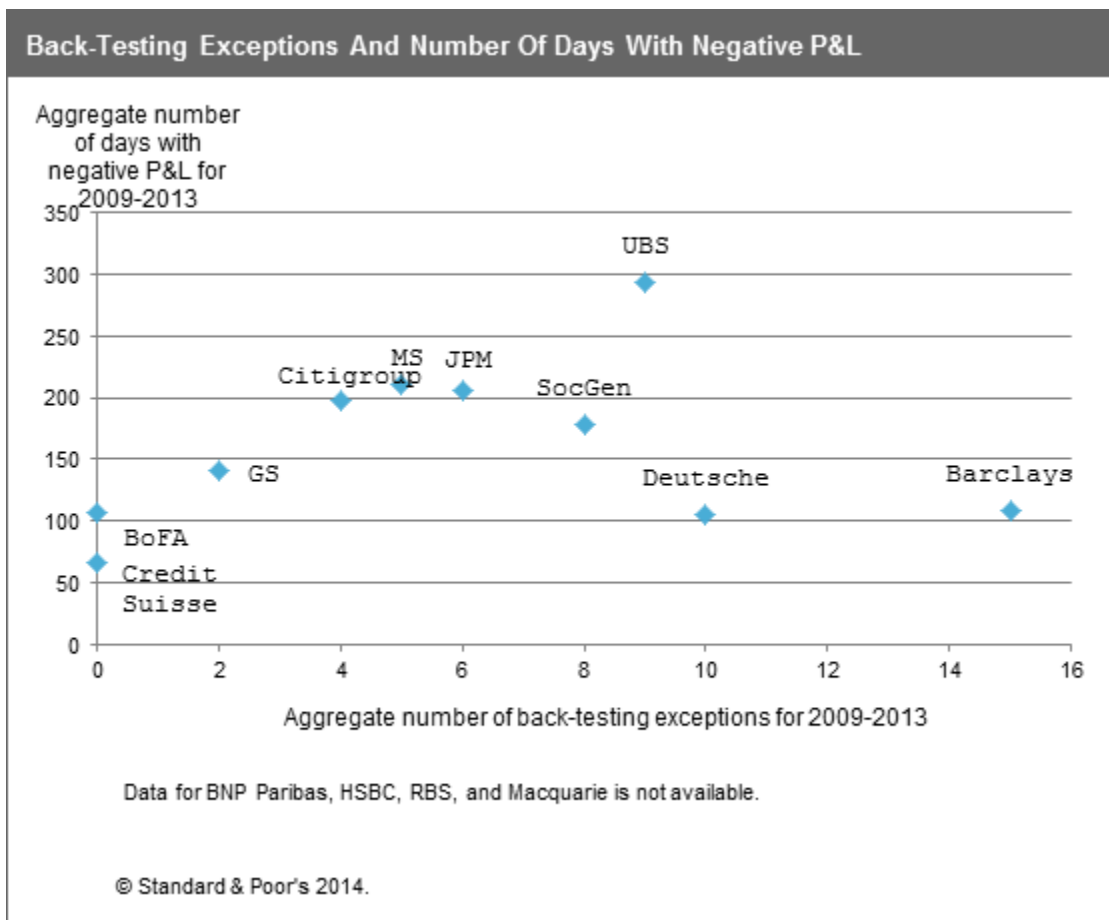
Number of days with negative trading P&L

A higher number of losses than peers could signal a higher risk appetite, exposing the firm to a change of market conditions from one day to the other (for good or for worse). However, it could also reflect poor risk management. The bank may not have adequately quantified the risk it is taking and therefore hasn't put the appropriate hedges in place.

For all the banks in our study, the number of days of trading losses has fallen since 2008 (see chart 6). That said, this measure continues to vary widely among different banks.

These two measures help inform us about a firm's risk position.

Chart 6



Measures That Signal Potential Tail Risks

We looked at a few key measures to gauge the potential vulnerability of a firm in stressed market conditions, at a time when liquidity dries up and basis risks materialize. While a bank could exhibit low risk at a given point in time (which a low VaR figure might indicate), its risk position could deteriorate very quickly in stressed market conditions. To assess potential tail risks, we looked at the ratios of Level 3 assets / trading assets, stressed VaR / VaR, and exposure at default (EAD) on counterparty risks / trading revenues.

Level 3 assets / trading assets

The fair values for Level 3 assets are model based, measured by the bank (because the valuation inputs used to derive fair values can't be observed in the market). Therefore, their valuation is very sensitive to a change in management assumptions and to the way the models are calibrated. Positively, in a move toward greater disclosure about Level 3 assets, many banks now report information about model assumptions and sensitivities.

Notwithstanding that Level 3 inputs should reflect the assumptions that the market would use, all else being equal, a large proportion of Level 3 trading and derivative assets exposes the bank to mispricing and to a future revision of the assumptions underpinning the valuation of these assets. In our view, Level 3 assets are also less liquid than other

assets and are prone to significant price declines, should credit issues arise. As such, a high ratio of Level 3 assets may suggest potential large tail risks. (Our definition of Level 3 assets, for the purposes of this study, is the sum of Level 3 trading assets and Level 3 derivatives.)

Suggesting a decrease in tail risk since 2009, the average ratio over the sample was 7% at the end of 2013, versus 13% at the end of 2009. However, Level 2 assets (which use observable market data for valuation purposes), also could be prone to a sharp decline in price, should markets become illiquid. We believe it would be helpful for banks to provide market sensitivity public disclosures for Level 2 instruments, which would be useful for comparative purposes (see "What's Fair Value? Reducing Valuation Uncertainty Could Boost Confidence In U.K. Banks--And Global Peers," published March 7, 2013).

Chart 7

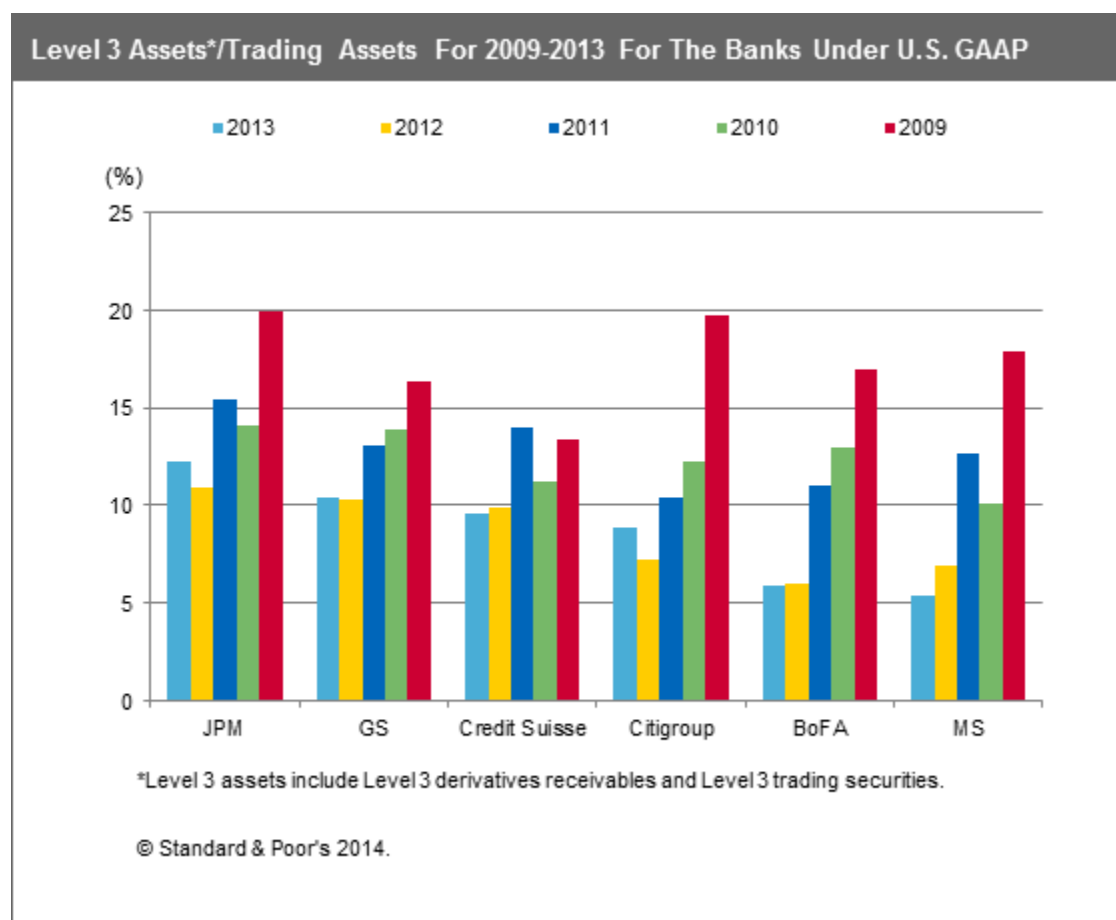
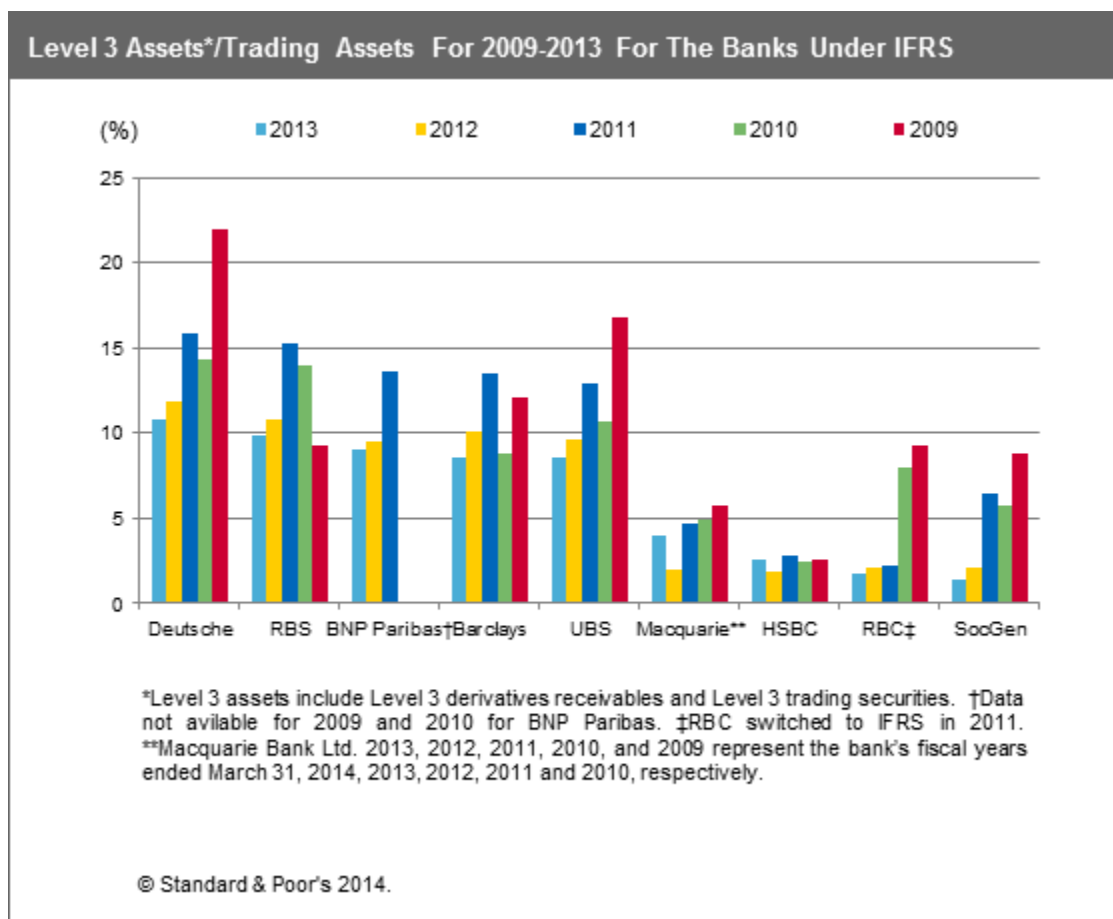


Chart 8



Stressed VaR / VaR

This measure shows the losses a bank might expect to suffer in its trading book if market conditions were to deteriorate to the levels we observed during the period underpinning the stressed VaR (which is generally 2008). It is therefore an indicator of potential tail risk (see charts 9 and 10). EU regulators have chosen the stressed VaR as of year-end 2013 as the level of market risk that would prevail for banks in the EU stress tests (adverse scenario).

Chart 9

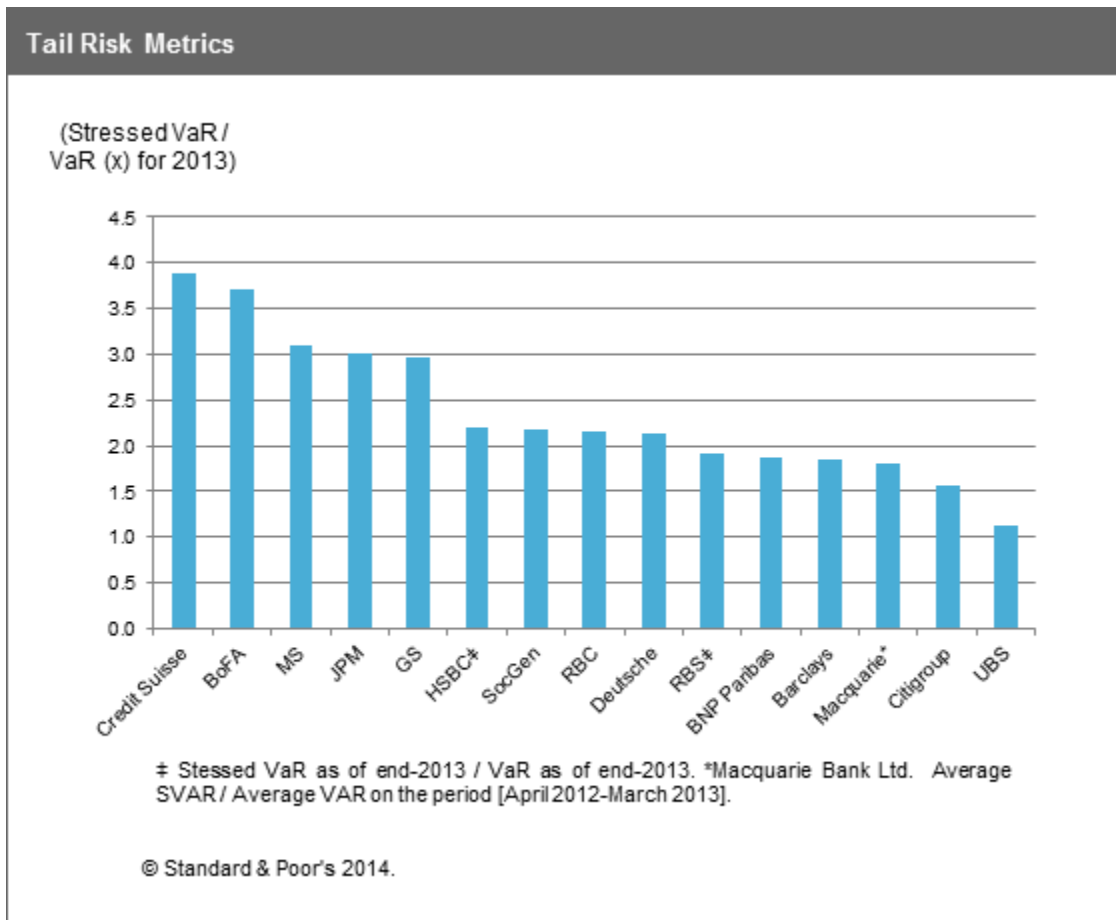
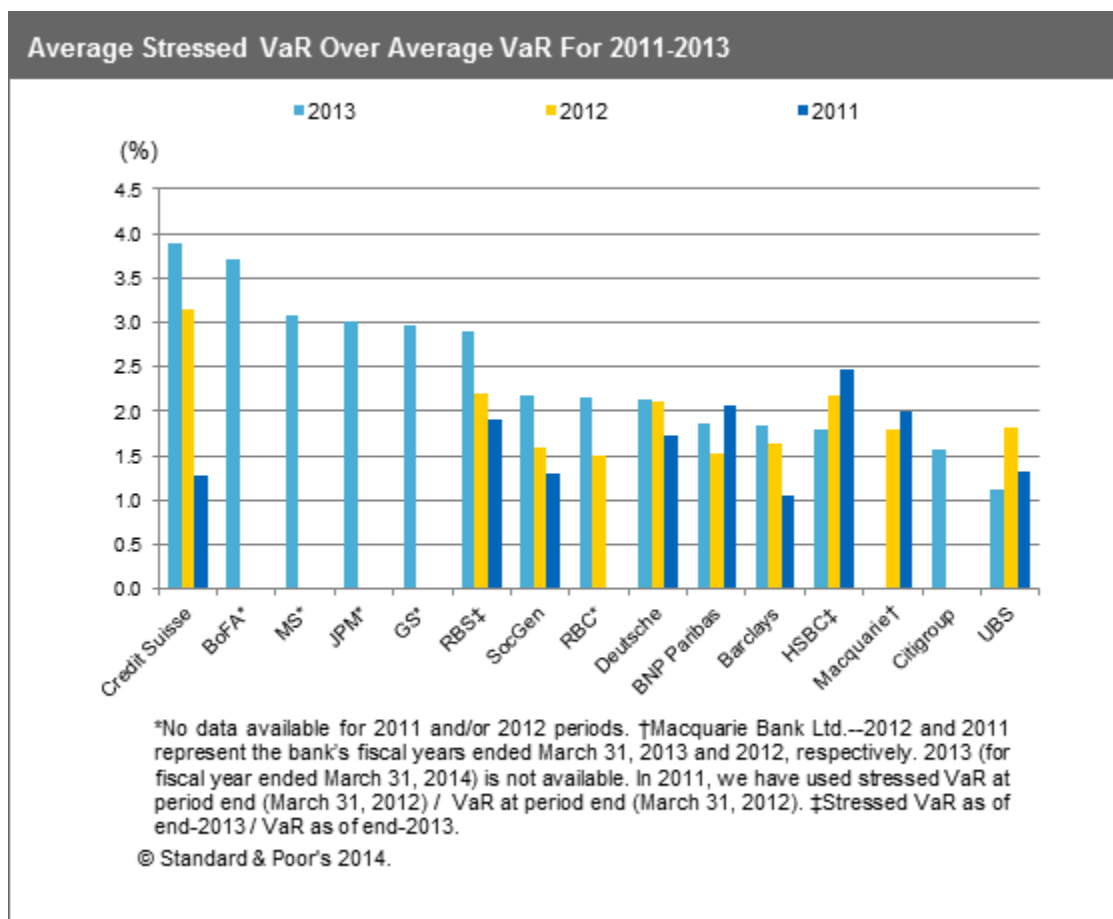


Chart 10



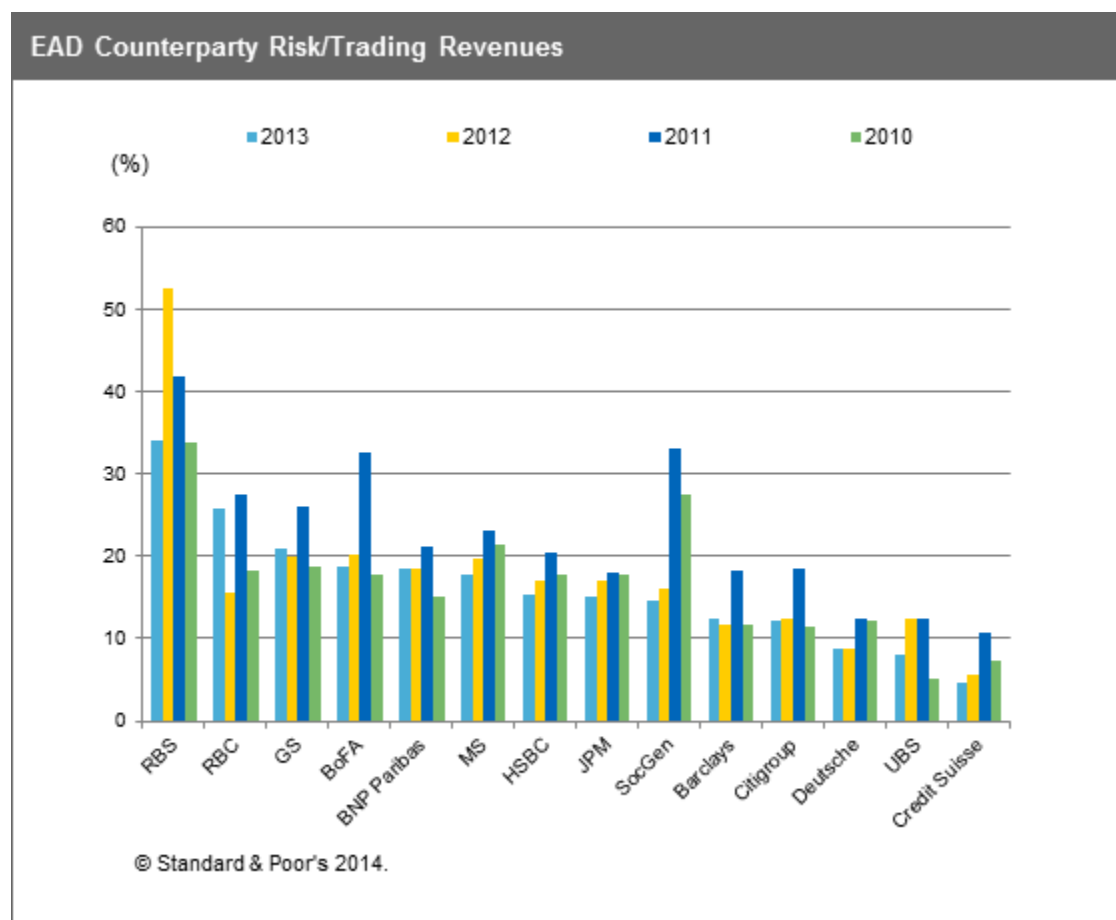
EAD counterparty risk / trading revenues

Derivatives transactions give rise to counterparty risk (related to entities with which transactions are made, such as swap counterparties). When compared with credit risk in the banking book (for example, for loans or bonds), the potential loss from the default of counterparties creates additional uncertainty. This is because, in contrast to loans or bonds, the EAD depends on the value of relevant market parameters at the time the bank replaces the transactions when a counterparty is under stress (for example, interest rates for an interest-rate swap). The current mark-to-market measure of a swap could be close to zero at a given time, while, by the time the bank realizes that its counterparty has defaulted and then replaces the swap in the markets, interest rates may have gone in the wrong direction for the bank, leading to losses.

In the most widely used regulatory approach (the current exposure method, or CEM), regulators capture this risk by defining the regulatory EAD as the current marked-to-market measure of the position (net of collateral that the counterparty posted) plus an add-on value. However, the add-on may be insufficient if the default occurs in a stress scenario (or if the default causes a stress scenario), creating substantial tail risk in this respect. Likewise, a few banks compute EAD on counterparty risk by using internal models (generally known as the "expected positive exposures" models, which, in our view, because of the lack of transparency, add some uncertainty regarding the calculation of the exposure). The higher the ratio of EAD to trading revenue, the greater the potential exposure to losses by the bank in a

highly stressed scenario, in our view (see chart 11).

Chart 11



We have also looked at other indicators of tail risk, such as the ratio of accounting credit value adjustment (CVA) to EAD on counterparty risk. The accounting CVA is a provision against counterparty risk (the risk that the creditworthiness of derivatives counterparties may deteriorate in times of stress). In many instances, in our view, a low ratio versus peers could be the result of too low of a provision. Based on our reviews of market participants, banks generally do not revalue the accounting CVA using the full set of credit default swap prices for their counterparties. This results in an accounting CVA that could spike in times of stress (and require the bank to post additional CVA reserves, hurting P&Ls), so the lower the ratio of accounting CVA/EAD counterparty risk, the greater the potential exposure to tail risk, assuming the counterparties are of similar creditworthiness.

These measures of potential tail risks have helped inform us about the risks our RAC model doesn't cover, which may be relevant to our assessment of the banks' risk position (see section 111 of "Banks: Rating Methodology And Assumptions," for a fuller discussion of risk position).

Appendix 1: Sample

Our sample consisted of 15 banks with significant investment banking operations:

Eight banks in Europe: Deutsche Bank, Barclays, Royal Bank of Scotland, HSBC, Credit Suisse, BNP Paribas, UBS, and Société Générale.

Six banks in North America: Citigroup, Bank of America, JPMorgan, Morgan Stanley, Goldman Sachs, and Royal Bank of Canada.

One bank in Asia: Macquarie.

Appendix 2: Certain Technical Assumptions We Made In This Article

1) We used a "square root of time" rule to scale up a one-day VaR to another horizon. For example, in line with market practice, we converted a reported 10-day VaR into a one-day VaR by dividing the 10-day VaR by square root of 10 (3.2). In line with market practice, we also used the percentiles of the Gaussian distribution to scale up a VaR at a 95% or a 98% confidence level into a 99% VaR. For example, we multiply the VaR at the 95% confidence level by 1.41 to get the VaR at the 99% confidence level.

2) Statistically harmonized number of back-testing exceptions:

In our experience, European banks generally calculate VaR at a 99% confidence level, which means that we can expect two or three back-testing exceptions a year. U.S. banks generally report VaR at a 95% confidence level, which means we can expect more back-testing exceptions during a year. In this study, we have harmonized the number of back-testing exceptions across banks (neutralizing the confidence level chosen for the VaR) according to the methodology defined in "exceptions to the rule" (January 2010, Risk Magazine). The number of VaR exceptions follows a binomial distribution.

3) Volatility of daily trading revenues:

Banks generally report the breakdown of daily trading revenues by buckets (for example, two trading days with revenues in the [-100 million;-80 million] bucket, four trading days in the [-80 million; -60 million bucket] and so on). Assuming that daily trading revenues in a given bucket are the midbucket figure and defining a common format for buckets (so that data across banks are comparable), we can constitute a distribution of daily trading revenues for each bank in the sample. We have assessed the volatility of daily trading revenues as the coefficient of variation of each distribution (standard deviation divided by the average).

Appendix 3: Potential Limitations Of The Trading Measures We Considered As Part Of The Study

General:

- A December 2013 BIS survey on trading risks (in addition to a January 2013 survey) has shown substantial discrepancies in measuring VaR and regulatory capital requirements for market risk between banks. This is the result of several factors (notably regarding look-back periods or regarding the granularity of risk factors). The BIS survey shows that, for a diversified portfolio, the VaR and market risk capital requirements overall can be half what they are for the bank with the most conservative VaR model. This could make some of the trading measures we use less comparable (for example, our RAC RWA for trading risk is based on regulatory capital requirements).

Volatility in VaR:

- Changes in the measure over years, for a given bank, provide only limited information because they could be mostly the result of changes in market volatility. Hence, a lower measure over time is likely mostly because of lower market volatility (as opposed to reduced risk appetite).
- A particularly high level of volatility in VaR can also reflect substantial derisking over a given period or a prudent move by management at a time of perceived higher risk on the horizon. We have also looked at the five-year average of this measure to mitigate the impact of a derisking strategy that occurred in a given year.
- Methodological differences in VaR models could also make banks less comparable. For example, some banks (such as Credit Suisse) use exponential weighting techniques whereby the most recent data in the "look-back" period are given more weight than the older data. This results in a more responsive VaR model because the VaR model more quickly picks up increases in market volatility. It could result overall in higher VaR volatility within the year than peers.
- A higher volatility of VaR than peers could reflect the materialization of large operational risk incidents in a given period. UBS's experience in 2011 is an example of this (with the unauthorized trading incident) and again in 2012 (with the materialization of operational risk linked to the Facebook IPO).

Volatility in stressed VaR:

- This measure can only be computed for a bank in a Basel 2.5 jurisdiction. Therefore, it is only available since 2012 for non-U.S. banks and since 2013 for U.S. banks.
- A particularly high ratio can also reflect substantial derisking over a year.

Volatility of daily trading revenues:

- Some banks could hedge some of their trading risk outside of the trading book (for example through macro-hedges). These banks could display a larger volatility of the trading daily P&L, while daily revenues, for the bank as a whole, could be more stable.
- Some banks also moved illiquid assets out of the trading book to reduce P&L volatility.

Number of back-testing exceptions:

- Banks do not always report whether they conduct back testing with "hypothetical" daily P&L or with actual daily P&L. Compared with actual P&L, "hypothetical" P&L is the result on any day T of positions that were included in the scope of the VaR model at the end of day T-1. It excludes intraday gains and losses as well as any fees booked upfront at day T and corresponding to new transactions made the same day. It also excludes daily gains/losses on positions that are not included in the scope of the regulatory VaR model. "Hypothetical" P&L is generally lower than actual P&L, so the number of back-testing exceptions measured with hypothetical P&L is generally higher than the number of back-testing exceptions measured by actual P&L.

Number of days with negative P&L:

- Banks are not always consistent in what type of trading revenues they include in daily P&L figures. For example, some banks include debt valuation adjustment (DVA), while other banks do not. UBS reports that its total number of days with negative P&L was 20 in 2013 with DVA included, versus nine for the same year with DVA excluded. Likewise, some banks report the P&L used for the back-testing of VaR models (excluding intraday revenues and fees booked upfront on client-driven trades), while others will include all trading revenues.
- Some market parameters (such as correlations) that are part of the valuation of complex derivatives products are not observable every day. When they are observable, banks value their positions using the latest observable parameters. This change in observability could give rise to valuation changes and, therefore, to daily gains and losses on the day the bank implements the changes. In order to avoid excessive volatility in P&L, some banks smooth out the impact of parameter changes over a given period (rather than implementing all the changes in one day). When banks smooth out changes leading to a decrease in marked-to-market valuations over a longer period (rather than entirely in one day), this could lead to a greater number of days within the year with negative P&L.
- In our experience, banks generally do not book upfront the whole fees that they generate on day one of complex transactions. They recognize that part of the valuation of the products they have sold to customers--and, hence, part of the fees that they have generated on selling these products--hinge on relatively unobservable market parameters. In order to account for the fact that some of the fees could be lost eventually as market parameters become observable, banks generally book upfront (at the date transactions with customers occur) only a part of the fees and place the residual in reserves (called "day-one profit"). The banks release "day-one profit" reserve into P&L gradually when the transactions mature or when the market parameters underpinning the valuations become more observable. The policy of the bank regarding the amortization of "day-one profit" could eventually lead to more days in the year with negative P&L.
- Banks taking losses on selling legacy positions could see an increase in the number of days of negative P&L in later years.

Stressed VaR / VaR:

- This measure can only be computed for a bank in a Basel 2.5 jurisdiction.
- The measure is likely to produce relatively benign results for sovereign exposures (as 2008 was not, in our view, a period of stress for sovereigns in the eurozone, for example) and, to a lesser extent, for commodities.
- The stressed VaR theoretically can be "gamed" by an entity to some extent. For example, buying "out of the money" put options (the strike price of the option is lower than the current market price of the underlying security) on a company that was under stress in 2008 could artificially cut the stressed VaR on a portfolio, but it is less likely that it is an efficient hedge, should a crisis occur tomorrow (assuming that same company is no longer under stress today).

EAD counterparty risk / trading revenues:

- Banks using regulatory-approved internal models for measuring counterparty risk (so called "expected positive exposures" models; EPE) see their EAD decrease under Basel 2, compared with banks using the most widely used CEM method. All else being equal, the former tend to exhibit lower EAD-to-trading revenues ratios than the latter. We note that Basel III has removed some of the differences by requiring banks to compute the EPE under stressed conditions (the so-called "stressed EPE").

Related Criteria And Research

External publications

- Fundamental Review of the Trading Book – A Revised Market Risk Framework, BIS, October 2013
- Regulatory Consistency Assessment Programme (RCAP) – Second report on risk-weighted assets for market risk in the trading book, BIS, December 2013
- Regulatory Consistency Assessment Programme (RCAP) – First report on risk-weighted assets for market risk in the trading book, BIS, January 2013

On RatingsDirect

- Basel's Proposed Overhaul Of Capital Requirement Calculations For Banks' Trading Risk Is Only A Step Toward Greater Consistency, Jan. 31, 2014
- Today's Shrinking Investment Banks Might Leave Stronger Shares And Margins For A Few Giants, Dec. 17, 2012
- The Weakness In Capital Markets Revenues Appears More Structural Than Cyclical, July 2, 2012
- Banks: Revised Market Risk Charges For Banks In Our Risk-Adjusted Capital Framework, June 22, 2012
- Basel 2.5 Increases The Squeeze On Investment Banking Returns, May 14, 2012
- Banks: Rating Methodology And Assumptions, Nov. 9, 2011
- Bank Capital Methodology And Assumptions, Dec. 6, 2012
- Trading Losses At Financial Institutions Underscore Need For Greater Market Risk Capital, April 15, 2008
- Lifting The Lid On Traded Market Risk, Oct. 31, 2006

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