

## The GSIB Surcharge and Repo Markets

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In this post, I argue that despite the Fed's actions to expand the level of reserves in the wake of the volatility in September, repo rates will likely move higher at year-end as a result of the global systemically important bank (GSIB) capital surcharge. This will occur because many of the systemic indicators used in the calculation of GSIB capital surcharge are evaluated at the end of the year, thereby incentivizing banks to pull back from activities more easily terminated at year-end, such as repo market activities.

This analysis shows that the year-end adjustments have in the past been most pronounced for the complexity, interconnectedness, and cross-jurisdictional activity categories of the GSIB score. Moreover, there is a strong negative correlation between the magnitude of the year-end adjustments of the scores of these categories and the amount of repo market activities conducted by banks. Lastly, based on just-released third-quarter data, banks will have to make higher adjustments to their 2019 year-end scores than they did in the two prior year-ends to avoid an increase in capital requirements. As a result, repo rates may experience additional volatility at this year-end compared with prior years.

### What can the Fed do?

Although the Fed is providing term repo to primary dealers, including the broker-dealer subsidiaries of the GSIBs, and will offer such funding over year-end, that will do little to solve the problem: not a lack of funding for the GSIBs, but a lack of available GSIB balance sheet for the other institutions that usually borrow from them. There is not enough time to make any changes to the GSIB framework before year-end, since they would require at least a 60-day comment period. However, if the Fed publishes a revised stress capital buffer rule that would be in place for CCAR 2020 and confirms the removal of leverage-based ratios from post-stress requirements, this by itself would immediately free up some capital that could be deployed for low-risk activities such as repo at year-end.

Foreign central banks could also help ease strains in repo markets at year-end. Specifically, some foreign banks with a high demand for dollar-repo financing are not highly enough rated to borrow directly from money market mutual funds (MMFs). Those banks borrow from GSIBs which, in turn, borrow from MMFs, increasing GSIB balance sheets and therefore their systemic risk scores. If those banks got their funding from their central bank at a moderate interest rate at year-end instead, they would have less incentive to bid up repo rates, and GSIB balance sheet pressures would be eased.

### How is the GSIB surcharge calculated

The GSIB capital surcharge is another capital buffer that the largest domestic banks are required to hold, over and above the minimum risk-based capital requirements and other capital buffers. The surcharge is based on each bank's systemic score, defined as a weighted-sum of selected bank characteristics. The higher a bank's systemic score, the higher its capital surcharge.<sup>1</sup>

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<sup>1</sup> Currently, the GSIB surcharge is not part of the post-stress minimums in the stress tests. As a result, managing the GSIB surcharge is not a priority for the GSIBs more tightly bound by the stress tests than their point-in-time requirements. However, after the stress capital buffer proposal is finalized, the GSIB capital surcharge will also effectively be incorporated into bank stress-testing requirements, elevating the importance of managing systemic scores at the end of the year.

There are two ways to calculate the systemic risk indicator score. Method 1 is based on the international Basel Committee framework for identifying GSIBs and depends on five bank categories: size, interconnectedness, complexity, cross-jurisdictional activity, and substitutability. Method 2 only applies to U.S. GSIBs and replaces the substitutability indicator with a measure of a bank's reliance on short-term wholesale funding. Because the GSIB surcharge derived using Method 2 is always higher or the same as the one obtained under the Basel method, my analysis in this note is centered around the capital surcharges generated using Method 2.

The five bank categories under Method 2 include nine systemic indicators. Specifically, interconnectedness and complexity each have three systemic indicators, cross-jurisdictional activity has two, and size and reliance on short-term wholesale funding have one each. The nine systemic indicators are listed in Table 1. Seven of the nine systemic indicators are measured at year-end, the two exceptions being size and reliance on short-term wholesale funding. The systemic indicator under size—total exposures—is calculated using a combination of daily and monthly averages based on balance sheet information for the fourth quarter of each year. Specifically, on-balance-sheet exposures are based on daily averages during the fourth quarter, while off-balance-sheet exposures are based on monthly averages during the same period. The short-term wholesale funding systemic component is based on the average of daily data from the prior 12 months.

The mapping between the systemic scores and the capital surcharge is done in increments of  $\frac{1}{2}$  percentage point for each 100-bps range on bank systemic-risk scores, starting at 130 bps. For example, a bank with a score between 130 bps and 229 bps is subject to a capital surcharge of 1 percent, while a bank in the next band range—between 230 bps and 329 bps—is subject to one of  $1\frac{1}{2}$  percent. There is no upper limit on the maximum GSIB capital surcharge, but currently the bank with the highest score has a capital surcharge of  $3\frac{1}{2}$  percent.

#### **Which systemic indicators are subject to the largest adjustments at year-end?**

To determine which systemic indicators banks are more likely to manage at the end of the year, the change in the score of each specific indicator in past years is regressed on a set of control variables and a set of GSIB-related indicators—namely, whether the bank is a GSIB, if it is close to the bucket threshold, and if it is year-end. The control variables include other bank characteristics that may influence year-end adjustments, such as the bank's CET1 ratio in the prior quarter, the share of high-quality liquid assets to total assets, and the size of the bank's repo book.

Table 1 shows the estimated adjustment at year-end for each indicator available in the Banking Organization Systemic Risk Report (the FR Y-15 form). Overall, the four GSIBs each year with scores close to the lower and upper end of the band ranges tend to reduce their Method 2 score by more than 35 bps in the last quarter relative to prior quarters on average. The complexity category explains more than a 20-bps reduction, while the scores of the interconnectedness and cross-jurisdictional activity categories decline approximately  $7\frac{1}{2}$  bps each on average. As expected (because they are not calculated on a year-end basis), the score of the size and short-term wholesale funding categories remain essentially unchanged in the last quarter.

Table 1 also presents the year-end changes in scores across the systemic indicators that define the complexity, interconnectedness, and cross-jurisdictional categories. Under the complexity category, the magnitudes are particularly significant for over-the-counter (OTC) derivatives and trading assets, with reductions in scores at year-end of 12 bps and  $7\frac{1}{2}$  bps, respectively. For the interconnectedness category, the reduction in scores is strongest for intra-financial system liabilities and securities outstanding. On the liability side, the magnitudes are most significant for borrowings from non-depository financial institutions and OTC derivative contracts with other financial institutions that have a negative fair value. For banks' own securities, the year-end adjustment is strongest for common equity and senior unsecured debt securities. The adjustment for cross-jurisdictional activity is close to being equally split between claims and liabilities, with reductions of about  $2\frac{3}{4}$  bps and  $4\frac{1}{2}$  bps, respectively.

**Table 1: Estimated Average Year-End Adjustments by a Bank Close to a GSIB Bucket Threshold (in basis points)**

Category		Systemic Indicator		Specific Indicators	
Size	<b>-0.8</b>	Total Exposures	<b>-0.8</b>	On-balance sheet exposures	-0.5
				Derivative exposures	<b>-0.6</b>
				SFT exposures	0.4
				Other off-balance sheet exposures	-0.1
Interconnectedness	<b>-7.3</b>	Intra-Financial System Assets	-1.6	Funds deposited with or lent to other FI	0.6
				Unused portion of committed lines extended to other FI	-0.1
				Holdings of securities issued by other FI:	
				Secured debt securities	0.0
				Senior unsecured debt securities	-0.1
				Subordinated debt securities	0.0
				Commercial paper	0.0
				Equity securities	-0.6
				Net positive current exposure of SFTs with other FI	0.0
				OTC derivative contracts with other FI that have a positive fair value:	
				Net positive fair value	<b>-0.3</b>
				Potential future exposure	<b>-1.3</b>
				Intra-Financial System Liabilities	-3.3
				Deposits due to other FI:	
				Deposits due to DIs	0.0
				Deposits due to non-depository FI	-1.9
				Borrowings obtained from other financial institutions	-0.2
				Unused portion of committed lines obtained from other FI	0.0
				Net negative current exposure of SFTs with other FI	-0.1
				OTC derivative contracts with other FI that have a negative fair value:	
				Net negative fair value	0.1
				Potential future exposure	<b>-1.2</b>
Securities Outstanding	-2.5				
Secured debt securities	0.1				
Senior unsecured debt securities	-0.4				
Subordinated debt securities	0.0				
Commercial paper	0.0				
Certificates of deposit	-0.3				
Common equity	<b>-1.6</b>				
Preferred shares	-0.1				
Complexity	<b>-20.3</b>	OTC Derivative Contracts	<b>-11.7</b>	OTC derivative contracts cleared through a central counterparty	<b>-7.5</b>
				OTC derivative contracts settled bilaterally	<b>-4.2</b>
		Trading and AFS Securities	<b>-7.6</b>	Trading securities	<b>-7.1</b>
				AFS securities	0.3
Level 3 Assets	-1.2				
Assets valued for accounting purposes using Level 3 measurement inputs	-1.2				
Cross-Jurisdictional Activity	<b>-7.2</b>	Cross-Jurisdictional Claims	<b>-2.8</b>		
		Foreign claims on an ultimate-risk basis	<b>-2.8</b>		
		Cross-Jurisdictional Liabilities	<b>-4.4</b>		
Foreign liabilities (excl. foreign liabilities to related offices)	<b>-2.9</b>				
Local liabilities in local currency	-1.5				
Short-Term Wholesale Funding	-0.3				
Method 2 Score	<b>-35.7</b>				

**Note:** The year-end adjustment is estimated as the sum of coefficients in a regression of changes in each indicator on a dummy for the last quarter of the year, a dummy variable noting if the bank is a GSIB and a dummy indicating if the GSIB's score is close to a bucket threshold. Value in bold indicate significance at the 1% level. Standard errors are robust to heteroskedasticity and clustered at the bank level.

### What is the impact on repo markets?

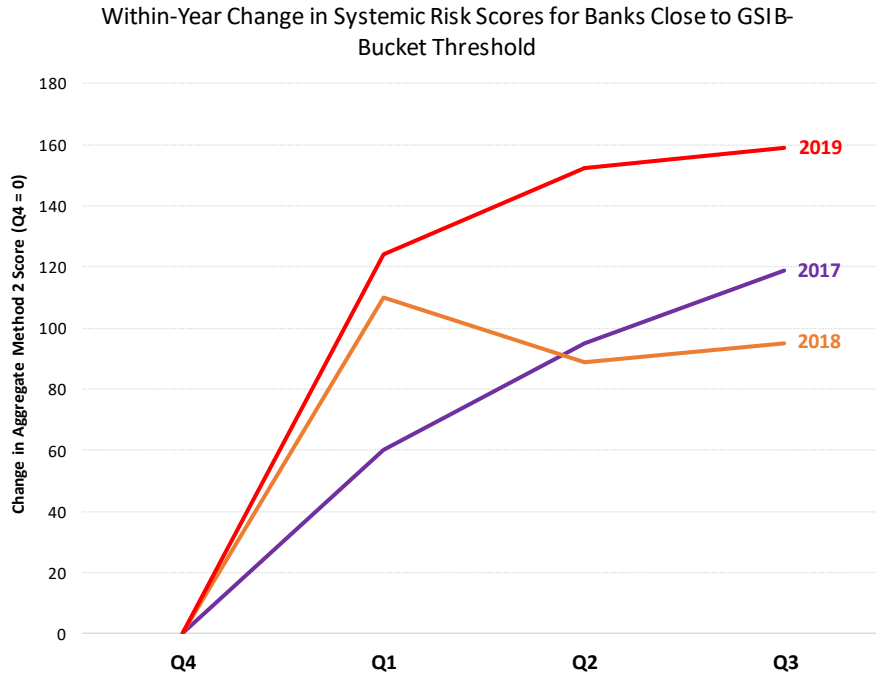
It is well known that repo transactions are an activity that banks can adjust at year-end, because many of those exposures are overnight and banks can reduce such funding when their systemic risk scores are being evaluated. Also, repos are often done between two financial institutions and account for a significant portion of lending to foreign entities. Therefore, the termination of repos at year-end reduces the scores of at least two of the categories measured at year-end: interconnectedness and cross-jurisdictional activity.

To test this hypothesis, I regressed the change in scores on banks' size of repo activities in the previous quarter (to mitigate endogeneity issues) and the interaction between the size of repo activity and a dummy variable that represents the fourth quarter. The objective is to show that banks with larger repo activity are also the ones reducing the scores the most at year-end. Not surprisingly, I find that there is a statistically significant negative correlation between the change in interconnectedness and cross-jurisdictional activity scores at year-end and the size of repo transactions on banks' books. The same result also holds for the change in the complexity score, perhaps because some repos are also booked as trading assets.

In summary, these results are consistent and support the claim that capital market activities such as repo-style transactions help banks reduce their GSIB scores, because these are short-term exposures that can be terminated more easily at year-end.

### How far are GSIBs from their prior year-end scores?

The level of GSIB scores in the third quarter gives a sense of the adjustment that banks will need to make at the end of the year. It is also useful to see if the needed adjustment is materially different from the changes observed in the two prior year-ends.



In December 2018, repo rates more than doubled to almost 5¼ percent as a result of banks' balance sheet management at year-end. The line chart suggests that the increase on repo rates will likely be higher this year-end. Specifically, the aggregate Method 2 score of the four GSIBs that have a stronger incentive to manage their scores at year-end is currently 160 bps above the level at the end of 2018. A year ago, the aggregate Method 2 score was less than 100 bps above the level at the end of 2017. Thus, banks will need to make more changes to their balance sheet at year-end to avoid an increase in capital requirements.

Table 2 shows that the complexity and interconnectedness categories account for most of the increase in the GSIB scores until the third quarter of 2019, so dislocations will also arise in other markets such as foreign exchange basis swaps.

**Table 2: Within-year Change by GSIB Category**

	2017:Q3	2018:Q3	2019:Q3
Size	9	5	15
Interconnectedness	26	1	41
Complexity	16	48	67
Cross-jurisdictional activity	46	30	29
Short-term wholesale funding	21	11	8
<b>Method 2</b>	<b>119</b>	<b>95</b>	<b>159</b>

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