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Calculating the Regulatory Surcharge for US G-SIBs

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Abstract

Bank regulatory bodies at both the global and local levels responded to the financial crisis of 2007-08 by requiring the largest, most inter-connected banks to hold extra layers of regulatory capital, in addition to the regulatory minimum of 4.5%, in the form of capital buffers. At the global level, the Financial Stability Board, in conjunction with Basel, updates its capital buffers, known as the G-SIB surcharge, on an annual basis. Regulatory bodies around the world, including the Federal Reserve Board in the United States, adopted their own frameworks around capital buffers. This paper examines the methodologies behind the global and US capital surcharges that are levied upon the eight largest, most inter-connected US banks and projects expected changes to the US G-SIB surcharges for 2023.

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[2] As an offering of GARP since 2012, the GARP Benchmarking Initiative (GBI) has provided the Financial Services Industry with an independent, non-partisan platform from which to conduct cross-border, regional or other studies on sensitive data in an efficient, secure, standardized way. GBI has completed over 100 studies to date on a range of risk management topics with participation from over 120 global financial services firms, including 75 large and internationally active banks (26 G-SIBs).

This analysis was done using the GBI P3+ Platform. The P3+ Platform is a repository of regulatory capital disclosure data from banks globally over the last decade, tools for monitoring and collecting new releases of regulatory data and a platform providing easy visualization and peer comparison of capital and liquidity ratios, risk weighted assets and detailed risk metrics. The platform covers over 100 banks in 22 countries and includes data from Pillar 3 disclosures, Basel High-Level Indicator disclosures and other regulatory reports, including FFIEC 101, FFIEC 102, Y-9C and Y-15 reports in the US.

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1 Introduction

Current regulatory capital requirements and capital adequacy standards applicable to the largest US banks[i] were enacted by the Federal Reserve Board (FRB) in 2013 in response to the 2007-2008 financial crisis. The regulation set a minimum required risk to Common Equity Tier 1 (CET1) capital ratio of 4.5% plus a "capital conservation buffer" equal to 2.5% of CET1 capital.

An amendment proposed by the FRB in 2014 and enacted at the beginning of 2015 established an additional risk-based capital surcharge for the largest, most interconnected US bank holding companies, otherwise known as Global Systemically Important Banks (G-SIBs). This G-SIB surcharge became binding on January 1, 2019, following a three-year phase-in period, and is reassessed annually by the FRB during the first quarter. The G-SIB surcharges in effect as of the date of this publication were released by the FRB in August 2021 with effect from October 1, 2021 through September 30, 2022.

A further tweak, adopted in March 2020, replaced the static "capital conservation buffer" with a "stressed capital buffer" meant to reflect results of the annual CCAR supervisory stress tests.

Accordingly, the minimum required capital for a bank designated as a G-SIB in the US has three components, one that is a fixed percentage and two that are floating.

There are currently eight G-SIBs regulated by the FRB – Bank of America, Bank of New York Mellon, Citigroup, Goldman Sachs, JPMorgan Chase, Morgan Stanley, State Street and Wells Fargo.

This white paper explains the methodologies for calculating the surcharge for US G-SIBs and projects expected changes to the surcharges for 2023. The analysis that follows leverages quarterly data published by the US G-SIBs and warehoused in the GBI Pillar 3+ database, analysis, and reporting platform to construct and track a pro-forma quarterly G-SIB surcharge for each bank and compare these pro-forma results with the actual annual surcharges published by the Federal Reserve Board.

2 US G-SIB Surcharge Methodologies

The US G-SIB surcharge is calculated according to two methodologies, commonly referred to as Method 1 and Method 2. Method 1 was set by the Financial Stability Board (FSB) in consultation with the Basel Committee on Banking Supervision (BCBS)[ii]. Method 2 was set by the Federal Reserve Board for US G-SIBs.

The FSB publishes the list of G-SIBs and the respective Method 1 capital surcharges each November. The surcharges are effective from January 1st of the 2nd year following their release. For example, capital surcharges the FSB published in November of 2021 take effect January 1, 2023.

The FSB published the first set of G-SIBs in November 2011 and released the first set of Method 1 surcharges in November 2012. The November 2011 list contained twenty-nine banks, including the eight US G-SIBs mentioned above. At the time of this writing, the FSB's November 2021 update lists thirty banks categorized as globally systemically important. The G-SIB institutional designation is owned by the FSB and BCBS and is binding at the national authority supervisory and regulatory levels. That said, alternative G-SIB capital surcharge methodologies may be set at the national level but are bound by Method 1. The alternative Method 2 G-SIB capital surcharge for the US G-SIBs is based upon a more conservative methodology.

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Both methodologies are formulaic and use a set of quantitative indicators deemed correlated with systemic importance. The final output of both methodologies, the G-SIB surcharge, is determined in two steps. The first step calculates a numeric score, known as a SiFi (Systemically Important Financial Institution) score, that is derived as a weighted sum of multiple systemic indicator scores. The second step maps the SiFi score to a matrix of surcharge percentages.

The systemic indicators used to calculate the SiFi score are bucketed according to six main categories.

- **Size:** measured as the total exposures under the Basel III leverage ratio
- **Interconnectedness:** measured with three components, (i) intra-financial system assets, (ii) intra-financial system liabilities, and (iii) securities outstanding
- **Cross-jurisdictional activity:** measured with two components: (i) cross-jurisdictional claims and (ii) cross-jurisdictional liabilities
- **Complexity:** measured with three components, (i) notional amount of OTC derivatives, (ii) Level 3 assets, and (iii) trading and available-for-sale securities
- **Substitutability (*used for Method 1 only*):** measured with three components, (i) assets under custody, (ii) payments activity, and (iii) underwritten transactions in debt and equity markets
- **Short-term Wholesale Funding (*used for Method 2 only*):** measured as the amount of short-term wholesale funding on a consolidated basis for each business day of the previous calendar year, with components weighted according to remaining maturity[iii].

For Method 1, each systemic indicator receives a score, calculated as:

$$\frac{Indicator\ Value}{Sample\ Total\ Value} \times 10{,}000\ (bps)$$

The sample total value is used to weight each individual bank's indicator value and is compiled annually by the BCBS using indicator values submitted by the world's largest 75 banks[iv] based upon each bank's Basel III leverage ratio exposure. In addition, the substitutability score is capped at 500 bps and a bank's score can be adjusted based on supervisory judgment.

For Method 2, each systemic indicator score is simply the indicator value.

For both methods, the SiFi score is calculated as the weighted sum of the systemic indicator scores, with the weights for each method shown in Table 1.

Substituting the short-term wholesale funding indicator represents a significant deviation from Basel and is meant to measure the extent to which a bank funds its balance sheet with short-term liabilities. Method 2 also puts much greater weight on Level 3 assets and Trading and AFS securities and much lower weight on derivatives and overall asset size. Level 3 assets are considered the most illiquid and most difficult to value.

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Table 1. SiFi Score Weightings Under Method 1 and Method 2

Category	Indicator	Method 1 Indicator Score Weight	Method 2 Indicator Score Weight
Size	Total exposures (Basel III Leverage Ratio)	20%	4.423%
Interconnectedness		20%	33.553%
	Intra-financial system assets	*6.66%*	*12.007%*
	Intra-financial system liabilities	*6.66%*	*12.490%*
	Securities outstanding	*6.66%*	*9.056%*
Substitutability		20%	
	Payment activity	*6.66%*	
	Assets under custody	*6.66%*	
	Underwritten transactions in debt and equity markets	*6.66%*	
Complexity		20%	191.501%
	Notional amount of OTC derivatives	*6.66%*	*0.155%*
	Trading and Available-For-Sale securities	*6.66%*	*30.169%*
	*Level 3 assets**	*6.66%*	*161.177%*
Cross-Jurisdictional		20%	19.203%
	Cross-jurisdictional claims	*10%*	*9.277%*
	Cross-jurisdictional liabilities	*10%*	*9.926%*
Short-term Wholesale Funding	Weighted short-term funding amount		100%

SiFi scores obtained under Method 1 and Method 2 are then mapped to a matrix of surcharge percentages shown in Table 2.

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Table 2. SiFi Score Surcharge Mapping Under Method 1 and Method 2

Method 1 Score	Surcharge	Method 2 Score	Surcharge
0-129	0%	0-129	0%
130-229	1.0%	130-229	1.0%
230-329	1.5%	230-329	1.5%
330-429	2.0%	330-429	2.0%
430-529	2.5%	430-529	2.5%
530-629	3.5%	530-629	3.0%

Note that the surcharge mappings are identical for scores up to 529, but for scores over 529:

- The Method 1 surcharge increases by 1% for every 100 bps
- The Method 2 surcharge increases by 0.5% for every 100 bps

The G-SIB surcharge assigned by the FRB is the greater of the Method 1 surcharge and the Method 2 surcharge.

Using the GBI Pillar 3+ database, we can calculate the Method 2 surcharge for each quarter and compare it with the Method 1 surcharge reported by the FSB each year. Tables 3, 4 and 5 show the effective Method 1 surcharge, the corresponding calculated Method 2 surcharge and the difference between two, respectively. Table 5 shows Method 2 to be the more conservative methodology since inception (apart from State Street starting in Q1 2020 where the two methodologies are equal).

Table 3. Effective Method 1 Surcharge for US G-SIBs

US G-SIB	2019	2020	2021	2022
Bank of America	2.0%	1.5%	1.5%	1.5%
BNY Mellon	1.0%	1.0%	1.0%	1.0%
Citigroup	2.0%	2.0%	2.0%	2.0%
Goldman Sachs	1.5%	1.5%	1.5%	1.0%
JPMorgan Chase	2.5%	2.5%	2.5%	2.0%
Morgan Stanley	1.0%	1.0%	1.0%	1.0%
State Street Corporation	1.0%	1.0%	1.0%	1.0%
Wells Fargo	1.5%	1.5%	1.5%	1.0%

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Table 4. Calculated Method 2 Surcharge for US G-SIBs

US G-SIB	2019	2020	2021	2022
Bank of America	2.5%	2.5%	2.5%	2.5%
BNY Mellon	1.5%	1.5%	1.5%	1.5%
Citigroup	3.0%	3.0%	3.0%	3.0%
Goldman Sachs	2.5%	2.5%	2.5%	2.5%
JPMorgan Chase	3.5%	3.5%	3.5%	3.5%
Morgan Stanley	3.0%	3.0%	3.0%	3.0%
State Street Corporation	1.5%	1.5%	1.0%	1.0%
Wells Fargo	2.0%	2.0%	2.0%	2.0%

Table 5. Difference between Calculated Method 2 and Effective Method 1 Surcharges for US G-SIBs

US G-SIB	2019	2020	2021	2022
Bank of America	0.5%	1.0%	1.0%	1.0%
BNY Mellon	0.5%	0.5%	0.5%	0.5%
Citigroup	1.0%	1.0%	1.0%	1.0%
Goldman Sachs	1.0%	1.0%	1.0%	1.5%
JPMorgan Chase	1.0%	1.0%	1.0%	1.5%
Morgan Stanley	2.0%	2.0%	2.0%	2.0%
State Street Corporation	0.5%	0.5%	0.0%	0.0%
Wells Fargo	0.5%	0.5%	0.5%	1.0%

For Goldman Sachs and Morgan Stanley, the average difference corresponds to a 1.56% increase in the G-SIB surcharge over that assigned under Basel. For the big money center banks – Bank of America, Citigroup, JPMorgan Chase, and Wells Fargo – the average difference corresponds to a 0.91% increase, and for the custodial banks – BNY Mellon and State Street – a 0.38% increase.

Beyond the calculation of the Method 2 SiFi score and surcharge mapping, there is an additional feature to the FRB's approach to setting the effective G-SIB surcharge for each US G-SIB.

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At the beginning of year T, the FRB performs an initial Method 2 assessment using each bank's prior year-end indicators (Q4 T-1 data). However, the effective date of the indicative surcharge depends on whether it shows an increase or decrease from the existing surcharge. If the adjustment shows a decrease, the new G-SIB surcharge takes effect on January 1 of the year T+1. If the adjustment shows an increase, the new surcharge takes effect on January 1 of the year T+2, unless the surcharge of the Method 2 assessment in year T+1 (based on Q1 T+1 data) is a decrease in which case this surcharge is used. In effect, this gives banks a 1-year grace period to bring the score back down.

As mentioned, the final G-SIB surcharge is equal to the greater of the Method 1 surcharge and the Method 2 surcharge.

For each US G-SIB i, let $S_{i,1}^T$ be the Method 1 G-SIB surcharge set by the FSB for year T (based on year T-2 data), let $\hat{S}_{i,2}^T(t)$ be the Method 2 surcharge calculated by FRB for year T based on year t data and let S_i^T be the actual G-SIB surcharge implemented by FRB for year T. Then, the actual G-SIB surcharge implemented by the FRB is set as follows:

$$S_i^T = max\left\{S_{i,1}^T, min\left\{\hat{S}_{i,2}^T(T-2), \hat{S}_{i,2}^T(T-1)\right\}\right\}$$

Table 6 shows the G-SIB surcharge components since 2019, as well as the current forecast for 2023 based on Q1 2022 data for each bank. As shown, based on the Q1 2022 data for calculating Method 2, the 2023 G-SIB surcharge for Citigroup, Goldman Sachs and JPMorgan Chase would each increase 0.50%.

Given the timing considerations in the Method 2 surcharge calculations, these 2023 G-SIB surcharge increases correspond to increases in the underlying systemic risk fundamentals for these banks in 2020. Looking at the breakdown of the Method 2 SiFi scores at year-end 2019 and year-end 2020, we can see the underlying drivers of the surcharge increases in each case.

- **Citigroup:** SiFi score increase of 60.8 resulted primarily from increases in scores for Cross-Jurisdictional Liabilities (15.2), Size (13.8) and Level 3 assets (13.2).
- **Goldman Sachs:** SiFi score increase of 36.9 resulted primarily from increases in scores for Size (7.2), Cross-Jurisdictional Liabilities (7.1), Cross-Jurisdictional Claims (6.6), and Level 3 assets (5.4).
- **JPMorgan Chase:** SiFi score increase of 109.9 resulted primarily from increases in scores for Size (29.3), Cross-Jurisdictional Claims (23.9), and Inter-Financial System Liabilities (22.7).

Figures 1, 2, and 3 show a breakdown of the changes in the Method 2 SiFi scores for Citigroup, Goldman Sachs and JPMorgan Chase, respectively, between December 2019 and December 2020.

3 Summary

The G-SIB surcharge is designed to require an additional buffer of capital for the largest, most interconnected banks. In the US, the G-SIB surcharge is derived from two methods: Method 1 set by the Financial Stability Board / Basel and Method 2 set by the Federal Reserve Board.

Since its full implementation in 2019, Method 2 has been the more conservative methodology resulting in higher surcharges for the US G-SIBs relative to Basel. Given the timing and announcement of both the

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Method 1 and Method 2 calculations and a grace period provided by FRB for surcharge increases, forecasting changes to the surcharge for the US G-SIBs requires careful consideration of the underlying systemic risk fundamentals over various time horizons.

We will continue to monitor and report quarterly via our Pillar 3+ platform our estimates of the Method 2 surcharges and resulting expected surcharges for the US G-SIBs.

Table 6. G-SIB Surcharge Derivation History with Current 2023 Surcharge Forecast for US G-SIBs

		2019	2020	2021	2022	2023
Bank of America	$S^T_{\text{BofA},1}$	2.0%	1.5%	1.5%	1.5%	1.5%
	$\hat{S}^T_{\text{BofA},2}(T-2)$	2.5%	2.5%	3.0%	3.0%	3.5%
	$\hat{S}^{T-1}_{\text{BofA},2}(T-1)$	2.5%	2.5%	2.5%	2.5%	2.5%
	S^T_{BofA}	2.5%	2.5%	2.5%	2.5%	2.5%
BNY Mellon	$S^T_{\text{BNY},1}$	1.0%	1.0%	1.0%	1.0%	1.0%
	$\hat{S}^T_{\text{BNY},2}(T-2)$	1.5%	1.5%	1.5%	2.0%	1.5%
	$\hat{S}^{T-1}_{\text{BNY},2}(T-1)$	1.5%	1.5%	1.5%	1.5%	2.0%
	S^T_{BNY}	1.5%	1.5%	1.5%	1.5%	1.5%
Citigroup	$S^T_{\text{C},1}$	2.0%	2.0%	2.0%	2.0%	2.0%
	$\hat{S}^T_{\text{C},2}(T-2)$	3.0%	3.0%	3.5%	3.5%	3.5%
	$\hat{S}^{T-1}_{\text{C},2}(T-1)$	3.0%	3.0%	3.0%	3.0%	3.5%
	S^T_{C}	3.0%	3.0%	3.0%	3.0%	3.5%
Goldman Sachs	$S^T_{\text{GS},1}$	1.5%	1.5%	1.5%	1.0%	1.5%
	$\hat{S}^T_{\text{GS},2}(T-2)$	3.0%	3.0%	3.0%	3.0%	3.5%
	$\hat{S}^{T-1}_{\text{GS},2}(T-1)$	2.5%	2.5%	2.5%	2.5%	3.0%
	S^T_{GS}	2.5%	2.5%	2.5%	2.5%	3.0%
JPMorgan Chase	$S^T_{\text{JPM},1}$	2.5%	2.5%	2.5%	2.0%	2.5%
	$\hat{S}^T_{\text{JPM},2}(T-2)$	4.0%	4.0%	4.0%	4.5%	5.0%
	$\hat{S}^{T-1}_{\text{JPM},2}(T-1)$	3.5%	3.5%	3.5%	3.5%	4.0%
	S^T_{JPM}	3.5%	3.5%	3.5%	3.5%	4.0%
Morgan Stanley	$S^T_{\text{MS},1}$	1.0%	1.0%	1.0%	1.0%	1.0%
	$\hat{S}^T_{\text{MS},2}(T-2)$	3.0%	3.0%	3.0%	3.0%	3.0%
	$\hat{S}^{T-1}_{\text{MS},2}(T-1)$	3.0%	3.0%	3.0%	3.0%	3.0%
	S^T_{MS}	3.0%	3.0%	3.0%	3.0%	3.0%
State Street	$S^T_{\text{SS},1}$	1.0%	1.0%	1.0%	1.0%	1.0%
	$\hat{S}^T_{\text{SS},2}(T-2)$	1.0%	1.0%	1.0%	1.5%	1.0%
	$\hat{S}^{T-1}_{\text{SS},2}(T-1)$	1.5%	1.5%	1.0%	1.0%	1.5%
	S^T_{SS}	1.0%	1.0%	1.0%	1.0%	1.0%
Wells Fargo	$S^T_{\text{WF},1}$	1.5%	1.5%	1.5%	1.0%	1.0%
	$\hat{S}^T_{\text{WF},2}(T-2)$	2.0%	2.0%	2.0%	1.5%	1.5%
	$\hat{S}^{T-1}_{\text{WF},2}(T-1)$	2.0%	2.0%	2.0%	2.0%	1.5%
	S^T_{WF}	2.0%	2.0%	2.0%	1.5%	1.5%

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Figure 1. Breakdown of Changes to the Method 2 SiFi Score from YE 2019 to YE 2020 for Citigroup

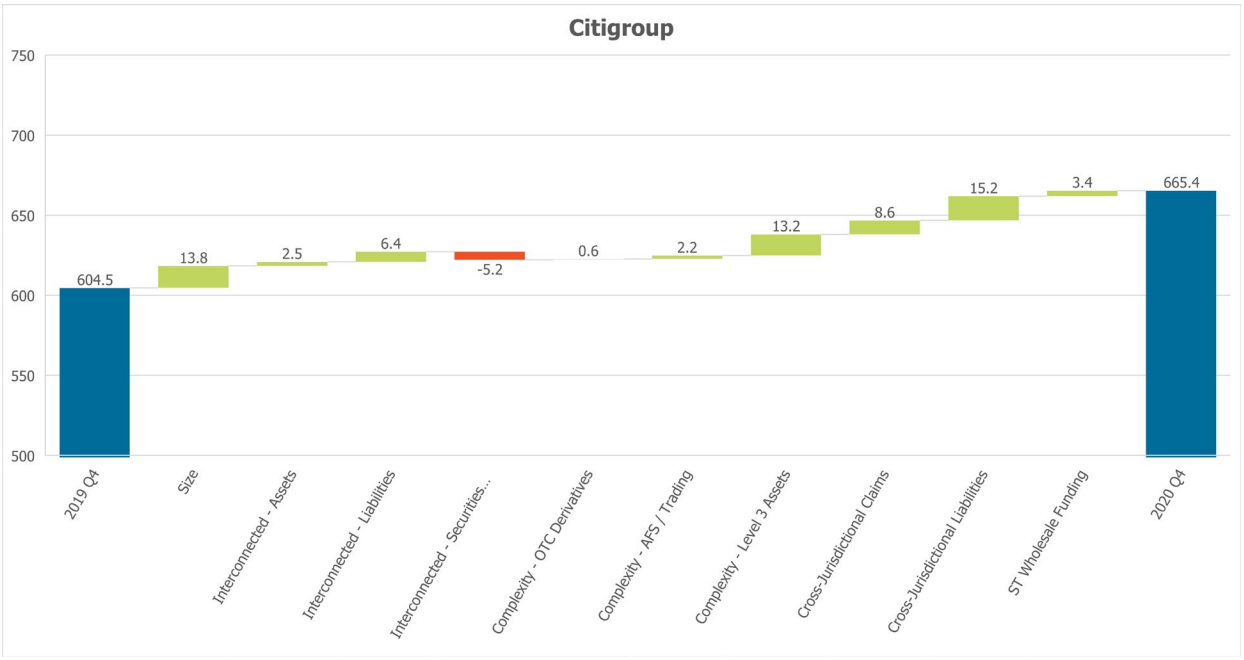
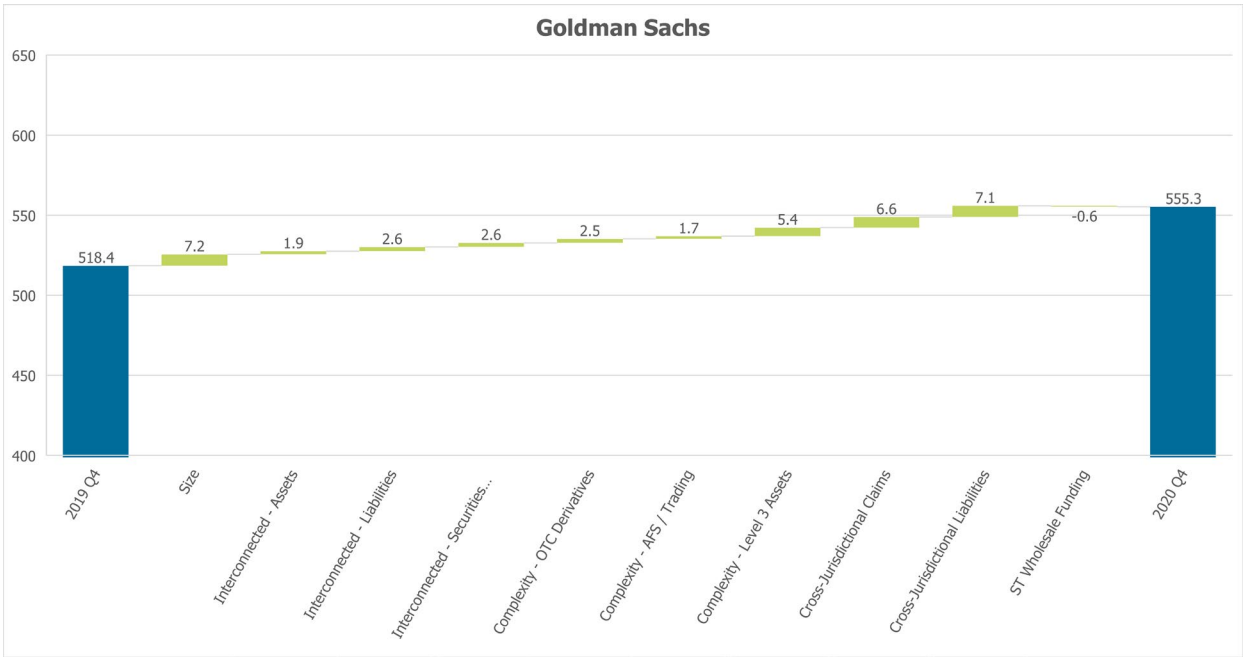
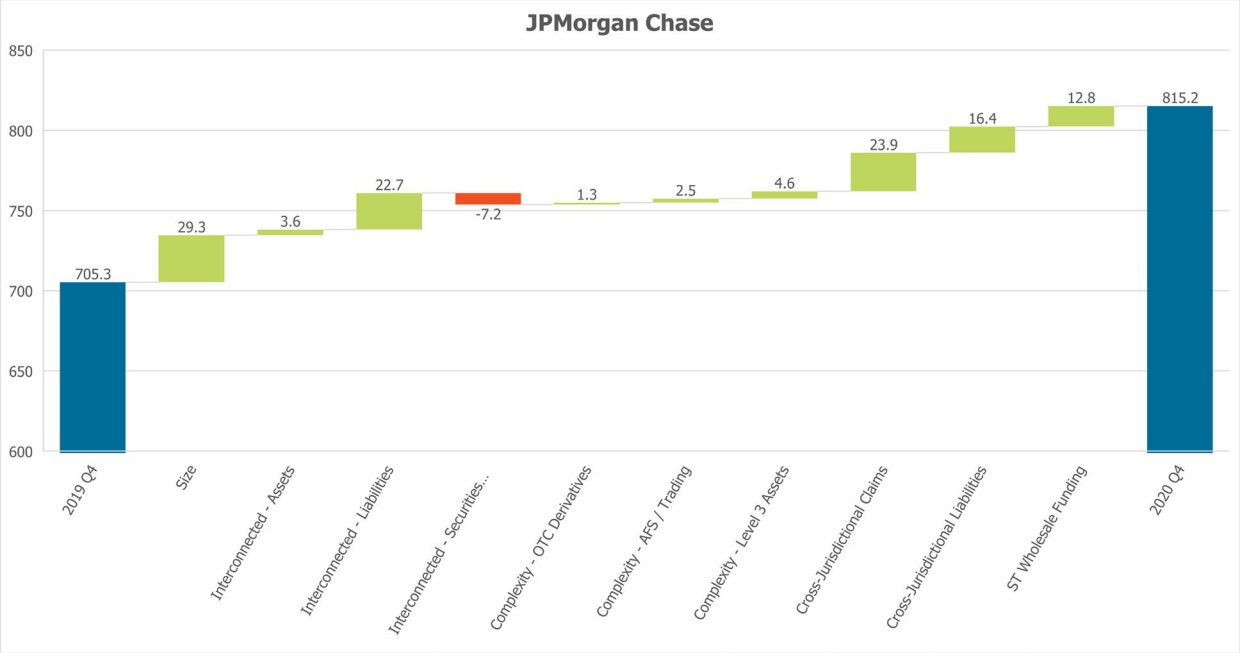


Figure 2. Breakdown of Changes to the Method 2 SiFi Score from YE 2019 to YE 2020 for Goldman Sachs



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Figure 3. Breakdown of Changes to the Method 2 SiFi Score from YE 2019 to YE 2020 for JPMorgan Chase



[i] *Under the Federal Reserve Board's capital framework, bank holding companies and US intermediate holding companies with $100 billion or more in total consolidated assets.*

[ii] *The overall G-SIB assessment methodology, published by the BCBS in July 2013, Global Systemically Important Banks: Updated Assessment Methodology and the Higher Loss Absorbency Requirement, outlines the process by which a bank may be categorized as a G-SIB and, if so, the applicable Method 1 capital surcharge. The BCBS published an updated assessment methodology in 2018 that went into effect January 1st of this year, Global Systemically Important Banks: Revised Assessment Methodology and the Higher Loss Absorbency Requirement.*

[iii] *12 CFR 217.406, Short-Term Wholesale Funding Score.*

[iv] *All prior year G-SIBs are included, so the final set of banks may exceed 75 banks.*

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