Homework #1: Introduction to capital and getting familiar with data

General instructions

- Form groups of 2-3 max people. These groups will stay throughout the rest of the course. Individual work is enoucouraged.
- 1 homework per group is to be returned to the grader. Acceptable formats: MS Excel (unless explicitly specified otherwise), with comments embedded. One question per tab. One file only per team, name of the file should contain the number/name of the homework and the group number that the TA will provide you with.
- Please provide names of all the group participants on the first tab in each homework.

Homework #1

Part 1: market data

- Select the following market variables:
    - A major foreign exchange rate and two minor foreign exchange rates
    - A yield curve (sovereign, swap, or a corporate) with 1,2,3,5,7,and 10 year nodes (corporates might have less, but no fewer than 5 points on a curve)
    - A commodity name for spot trading and its three futures nearby
    - A bond total return index
- Download 5 years of daily historical data for all market variables, graph them all with clear marks and comment on the data quality.

Part 2. Select one US GSIB for each team.

- Using available sources (the data is in public domain – google it), download the latest available 2y of RWA by type (example provided for a couple GSIBs below) and run bar charts of their RWAs for the latest available quarter. Comment on the capital structure and its trends transpiring from those charts. Please note that the 2021 4Q data would not be available until April.
- Run a pie chart of the RWAs (for any quarter available) for the same GSIB.

This is just examples of how RWAs would look when you find them….

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Table 4: Risk-Weighted Assets by Exposure Category

$ in millions	As of March 2020	December 2019	Section Reference
Credit RWAs			
Wholesale Exposures	$ 215,645	$ 193,368	Credit Risk
Retail Exposures	18,410	16,594	Credit Risk
Cleared Exposures	4,228	3,599	Credit Risk
Other Assets	37,341	35,570	Credit Risk
Equity Exposures	50,001	58,389	Equity Exposures in the Banking Book
Securitization Exposures	7,384	6,900	Securitizations in the Banking Book
Subtotal: Credit RWAs subject to the 6% add-on	333,009	314,420	
6% add-on[1]	19,981	18,865	
Credit Valuation Adjustment	48,901	27,794	Credit Risk
Total Credit RWAs	401,891	361,079	
Market RWAs			
Regulatory VaR	13,465	8,933	Market Risk
Stressed VaR	45,608	30,911	Market Risk
Incremental Risk	5,088	4,308	Market Risk
Comprehensive Risk	2,186	1,191	Market Risk
Specific Risk	18,875	19,043	Market Risk
Total Market RWAs	85,222	64,386	
Total Operational RWAs	118,813	119,188	Operational Risk
Total RWAs	$ 605,926	$ 544,653	

1. The Capital Framework requires that a 6% add-on be applied to all components of our Credit RWAs other than the Credit Valuation Adjustment (CVA) component.

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Table 2: Advanced Approaches Risk-Weighted Assets

In millions of dollars	March 31, 2020	December 31, 201
Credit Risk-Weighted Assets:		
Wholesale Exposures	$ 420,053	$ 367,2
Retail Exposures:		
Residential Mortgage Exposures	31,686	32,9
Qualifying Revolving Exposures	120,711	125,3
Other Retail Exposures	25,647	27,3
Total Retail Exposures	$ 178,044	$ 185,5
Securitization Exposures	$ 35,563	$ 36,9
Central Counterparty Exposures	12,228	9,4
Equity Exposures:		
Equity Exposures Subject to the Simple Risk Weight Approach	21,420	23,5
Equity Exposures to Investment Funds	3,120	3,3
Total Equity Exposures	$ 24,540	$ 26,9
Other Exposures[(1)]	$ 79,056	$ 78,1
Total Credit Risk-Weighted Assets Subject to Supervisory 6% Multiplier[(2)]	$ 749,484	$ 704,3
Supervisory 6% Multiplier	$ 44,969	$ 42,2
Credit Valuation Adjustments (CVA)	45,037	24,9
Total Credit Risk-Weighted Assets	$ 839,490	$ 771,5
Market Risk-Weighted Assets:		
Regulatory Value-at-Risk (VaR)[(3)]	$ 9,117	$ 5,3
Regulatory Stressed Value-at-Risk (SVaR)[(4)]	19,088	11,7
Incremental Risk Charge (IRC)[(5)]	4,266	2,5
Comprehensive Risk Measure (CRM)	3,253	1,4
Standard Specific Risk Charge (SSRC)	29,439	26,4
Securitization Charges[(6)]	11,296	7,6
Other[(7)]	2,456	2,1
Total Market Risk-Weighted Assets	$ 78,915	$ 57,3
Operational Risk-Weighted Assets	$ 305,731	$ 306,7
Total Risk-Weighted Assets	$ 1,224,136	$ 1,135,5

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Risk-weighted assets by U.S. Basel III exposure category

$ in millions		At March 31, 2020[1]
Credit risk RWA:		
Wholesale exposures	$	162,562
Retail exposures:		
Residential mortgage		2,547
Qualifying revolving		20
Other retail		2,795
Securitization exposures:		
Subject to Supervisory Formula Approach		2,868
Subject to Simplified Supervisory Formula Approach		9,368
Subject to 1,250% risk weight		48
Cleared transactions		2,515
Equity exposures:		
Subject to the Simple Risk-Weighted Approach		19,284
Subject to the Alternative Modified Look-Through Approach		523
Other assets[2]		30,164
Credit valuation adjustment		40,303
Total credit risk RWA[3]	$	272,998
Market risk RWA:		
Regulatory VaR	$	7,843
Regulatory stressed VaR		14,881
Incremental risk charge		5,054
Comprehensive risk measure		904
Specific risk:		
Non-securitizations		17,295
Securitizations		8,650
Total market risk RWA[4]	$	54,627
Total operational risk RWA		100,157
Total RWA	$	427,782