Strengthening and Streamlining Bank Capital Regulation

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Three Principles for Capital Regulation

1. **Multiple constraints on minimum level of equity capital should be consolidated into a single constraint**
   - To avoid a "multiple tax regimes" problem where different banks face different capital charges for the same activity.
2. **Dynamic resilience: following an adverse shock, need to focus on recapitalizing banks—getting more dollars of equity into the banking system—rather than capital ratios**
   - To avoid excessive pressure to shrink assets.
3. **Address gaming of the rules not with more rules, but by giving regulator some flexibility to address contingencies ex post**
   - Example: if an asset category is growing very fast or becoming a dominant source of profits, stress tests should make pessimistic assumptions about its future performance.

- **We do not speak to optimal *level* of capital in the banking system**
  - A well-worn topic; we don't have much to add.
  - Like taking goal for aggregate tax revenues as given, and asking how to most efficiently raise.

Current Regime: Multiple Constraints on Bank Equity

- There are many: We focus on four.
- Implied capital charges (= $ equity/$asset) for asset *i*:
  - **Risk-based capital (RBC) requirement:** $K_i(RBC) = k_{RBC}{}^{*}w_i$

    Capital Charge for asset *i* — Capital Requirement — Risk weight for *i*
  - **Supplementary leverage ratio (SLR):** $K_i(SLR) = k_{SLR}$
  - **Post-stress RBC:** $K_i(RBC, STRESS) \approx k_{RBC,STRESS}{}^{*}w_i + NLR_i$

    Net loss rate for *i*
  - **Post-stress SLR:** $K_i(SLR, STRESS) \approx k_{SLR,STRESS} + NLR_i$

The Problem With Multiple Constraints

Proposition: Suppose banks differ along two dimensions:

(i) productivity when making loans in different categories; and

(ii) social costs associated with their failure.

And banks fail to fully internalize social costs of failure, such that capital regulation is necessary. Then:

- First-best regulation involves a single risk-based capital requirement for each bank.
- The required capital ratio k_b is bank specific: higher capital ratio for those banks whose failure involves higher social costs, as in G-SIB surcharges.
- But optimal cross-sectional risk weights are the same for all banks. That is, *relative* risk charges for different activities are the same.
- If instead different banks face different binding risk weights—as would be the case if, e.g. a non-risk-weighted leverage ratio binds for some of them—there is an industry-level distortion: activity migrates such that some banks do too much in categories where they are less productive.
- **Example:** Wells Fargo has an incentive to grow its securities business, and Goldman Sachs has an incentive to grow in traditional banking activities.

Table 1: Required Capital Ratios

	Required ratios (%)			
	Tier 1 Ratio	**SLR**	**CCAR Tier 1 Ratio**	**CCAR SLR**
G-SIBs:				
JPMorgan Chase	12.0	5.0	6.0	3.0
Bank of America	11.5	5.0	6.0	3.0
Citigroup Inc.	11.5	5.0	6.0	3.0
Morgan Stanley	11.5	5.0	6.0	3.0
Goldman Sachs	11.0	5.0	6.0	3.0
Wells Fargo	10.5	5.0	6.0	3.0
Bank of New York Mellon	10.0	5.0	6.0	3.0
State Street	10.0	5.0	6.0	3.0
Other Large BHCs:				
U.S. Bancorp	8.5	3.0	6.0	3.0
PNC Financial Services	8.5	3.0	6.0	3.0
Capital One Financial	8.5	3.0	6.0	3.0
HSBC North America	8.5	3.0	6.0	3.0
TD Group US	8.5	3.0	6.0	3.0

Table 1: Distance from Requirements

	Distance from Requirement (%)			
	Tier 1 Ratio	**SLR**	**CCAR Tier 1 Ratio**	**CCAR SLR**
G-SIBs:				
JPMorgan Chase	2.2	1.5	2.4	0.9
Bank of America	2.1	2.0	2.4	1.3
Citigroup Inc.	4.3	2.6	3.5	1.5
Morgan Stanley	8.5	1.4	4.3	0.2
Goldman Sachs	5.6	1.5	2.2	0.1
Wells Fargo	2.3	2.6	3.0	2.3
Bank of New York Mellon	4.5	1.0	5.6	1.8
State Street	4.7	0.9	3.1	0.6
Other Large BHCs:				
U.S. Bancorp	2.5	4.3	1.9	2.2
PNC Financial Services	3.5	5.6	1.6	2.4
Capital One Financial	3.1	5.5	1.1	2.4
HSBC North America	11.6	4.3	5.6	1.0
TD Group US	5.2	4.1	5.3	2.8

Table 2: Risk weight assumptions

- These are averages across the 13 BHCs. Concept is to compute representative capital charges for similar asset portfolios

	C&I	Residential Mortgages	Other Mortgages	Credit Cards	Other Consumer	Treasuries
Risk weight (w_i)	100	50	100	100	100	0
$LOSS_i$ (2-year rate)	7.3	3.3	7.3	15.8	5.6	0.0
$NETREVENUE_i$ (1-year rate)	2.3	2.6	2.3	8.0	3.1	0.8
NLR_i (2-year rate)	2.7	-1.9	2.7	-0.2	-0.6	-1.7

$$NLR_i = (1-\tau) \times (LOSS_i - NET\text{-}REVENUE_i)$$

0 from Stress Test from Y9C Filings

Table 3: Estimated Capital Charges

- This is for a GSIB bank with a surcharge of 3.5% (i.e., JP Morgan)

	C&I	Residential Mortgages	Other Mortgages	Credit Cards	Other Consumer	Treasuries
Tier 1 Ratio (non G-SIB)	8.5	4.3	8.5	8.5	8.5	0.0
Tier 1 Ratio (highest G-SIB)	12.0	6.0	12.0	12.0	12.0	0.0
SLR (non G-SIB)	3.0	3.0	3.0	3.0	3.0	3.0
SLR (G-SIB)	5.0	5.0	5.0	5.0	5.0	5.0
CCAR Tier 1 Ratio	8.7	1.1	8.7	5.8	5.4	-1.7
CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3

Table 4: Estimated Capital Charges

- First, pick the most binding constraint (SLR, Tier 1, etc.) for each bank
- Then compute capital charge under that constraint $K_{bi} = k_b \times \omega_i$,

Capital Charge for asset i bank b

Minimum capital ratio for most binding constraint

Risk weight for i

G-SIB Banks:	Tightest constraint	C&I	Residential Mortgages	Other Mortgages	Credit Cards	Other Consumer	Treasuries
JPMorgan Chase & Co.	CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3
Bank of America Corporation	CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3
Citigroup Inc.	CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3
Morgan Stanley	CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3
Goldman Sachs Group, Inc.	CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3
Wells Fargo & Company	Tier 1 Ratio	10.5	5.3	10.5	10.5	10.5	0.0
Bank of New York Mellon Corporation	SLR	5.0	5.0	5.0	5.0	5.0	5.0
State Street Corporation	CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3
Other Large BHCs:							
U.S. Bancorp	CCAR Tier 1 Ratio	8.7	1.1	8.7	5.8	5.4	-1.7
PNC Financial Services Group, Inc.	CCAR Tier 1 Ratio	8.7	1.1	8.7	5.8	5.4	-1.7
Capital One Financial Corporation	CCAR Tier 1 Ratio	8.7	1.1	8.7	5.8	5.4	-1.7
HSBC North America Holdings Inc.	CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3
TD Group US Holdings LLC	CCAR SLR	5.7	1.1	5.7	2.8	2.4	1.3

Table 4: Estimated Capital Charges

- Now, allow multiple constraints to matter, putting some weight also on the constraint that is second-closest to binding (75%, 25%).

GSIB Banks:	Tightest constraint	Second tightest constraint	C&I	Residential Mortgages	Other Mortgages	Credit Cards	Other Consumer	Treasuries
JPMorgan Chase & Co.	CCAR SLR	SLR	5.5	2.1	5.5	3.3	3.0	2.3
Bank of America Corporation	CCAR SLR	SLR	5.5	2.1	5.5	3.3	3.0	2.3
Citigroup Inc.	CCAR SLR	SLR	5.5	2.1	5.5	3.3	3.0	2.3
Morgan Stanley	CCAR SLR	SLR	5.5	2.1	5.5	3.3	3.0	2.3
Goldman Sachs Group, Inc.	CCAR SLR	SLR	5.5	2.1	5.5	3.3	3.0	2.3
Wells Fargo & Company	Tier 1 Ratio	CCAR SLR	9.3	4.2	9.3	8.6	8.5	0.3
Bank of New York Mellon	SLR	CCAR SLR	5.2	4.0	5.2	4.4	4.3	4.1
State Street Corporation	CCAR SLR	SLR	5.5	2.1	5.5	3.3	3.0	2.3
Other Large BHCs:								
U.S. Bancorp	CCAR Tier 1	CCAR SLR	8.0	1.1	7.9	5.0	4.6	-0.9
PNC Financial Services Group	CCAR Tier 1	CCAR SLR	8.0	1.1	7.9	5.0	4.6	-0.9
Capital One Financial	CCAR Tier 1	CCAR SLR	8.0	1.1	7.9	5.0	4.6	-0.9
HSBC North America	CCAR SLR	SLR	5.0	1.6	5.0	2.8	2.5	1.8
TD Group US Holdings LLC	CCAR SLR	SLR	5.0	1.6	5.0	2.8	2.5	1.8

FIGURE 1

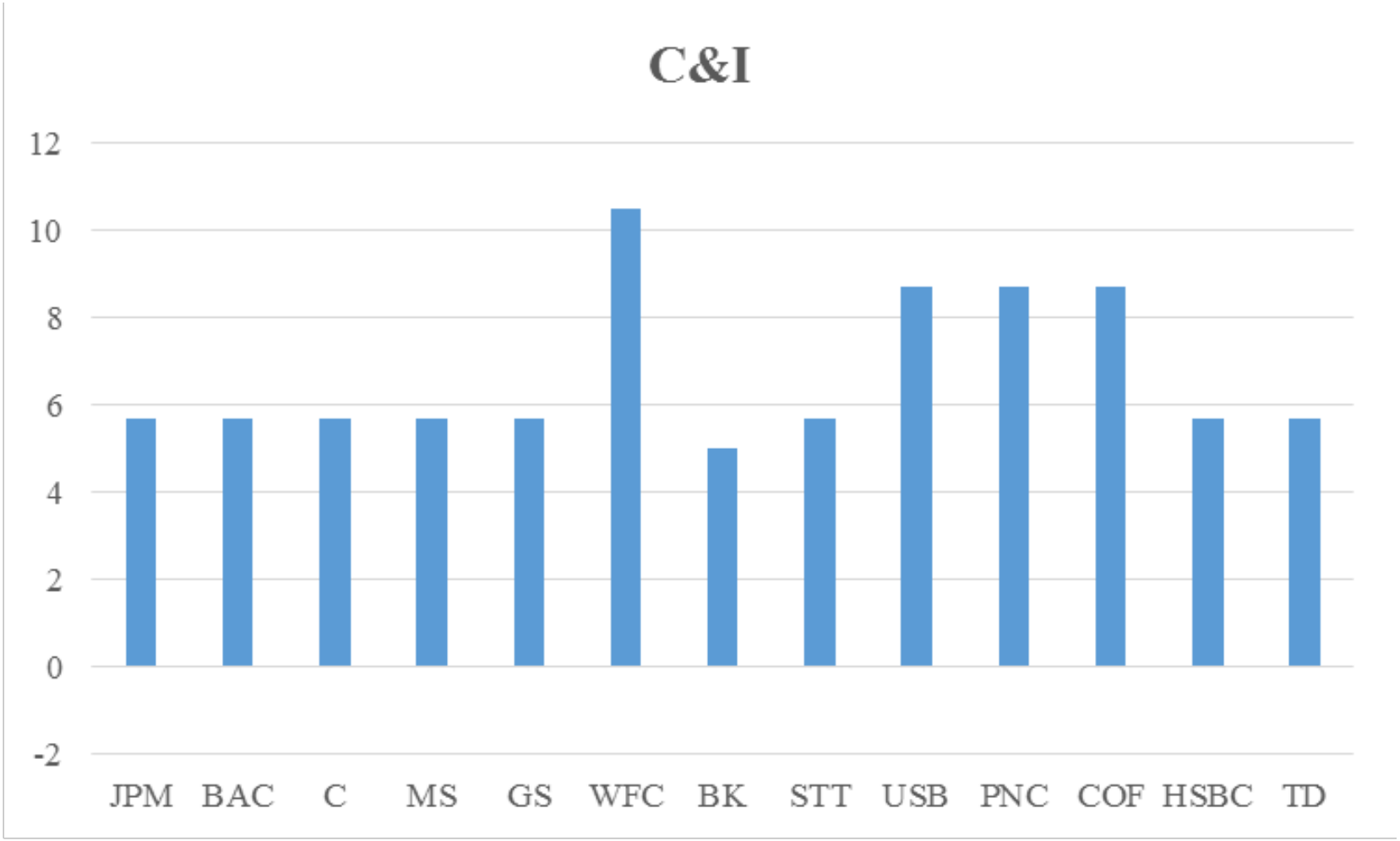


FIGURE 1

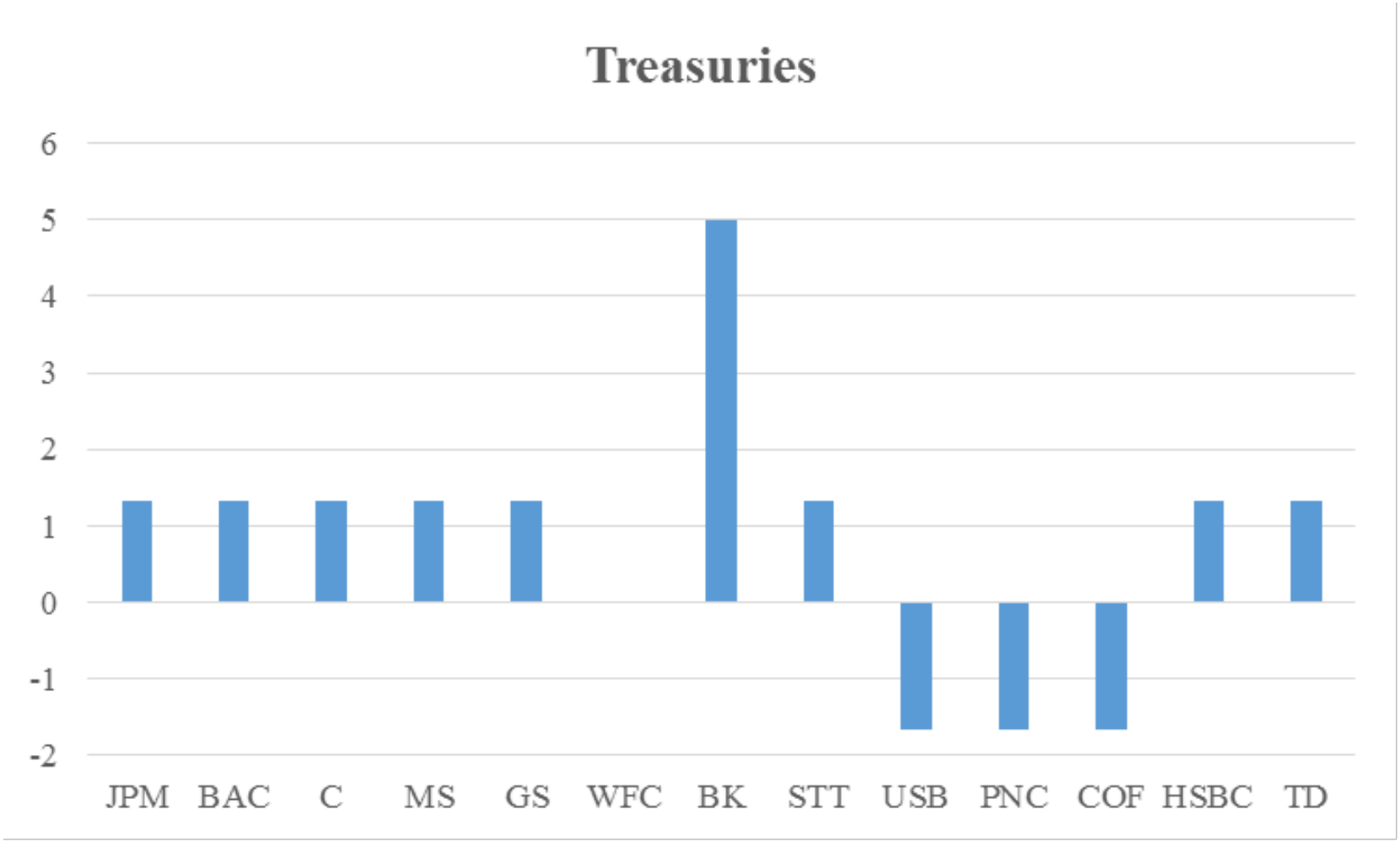

Treasuries
6
5
4
3
2
1
0
-1
-2
JPM
BAC
C
MS
GS
WFC
BK
STT
USB
PNC
COF
HSBC
TD

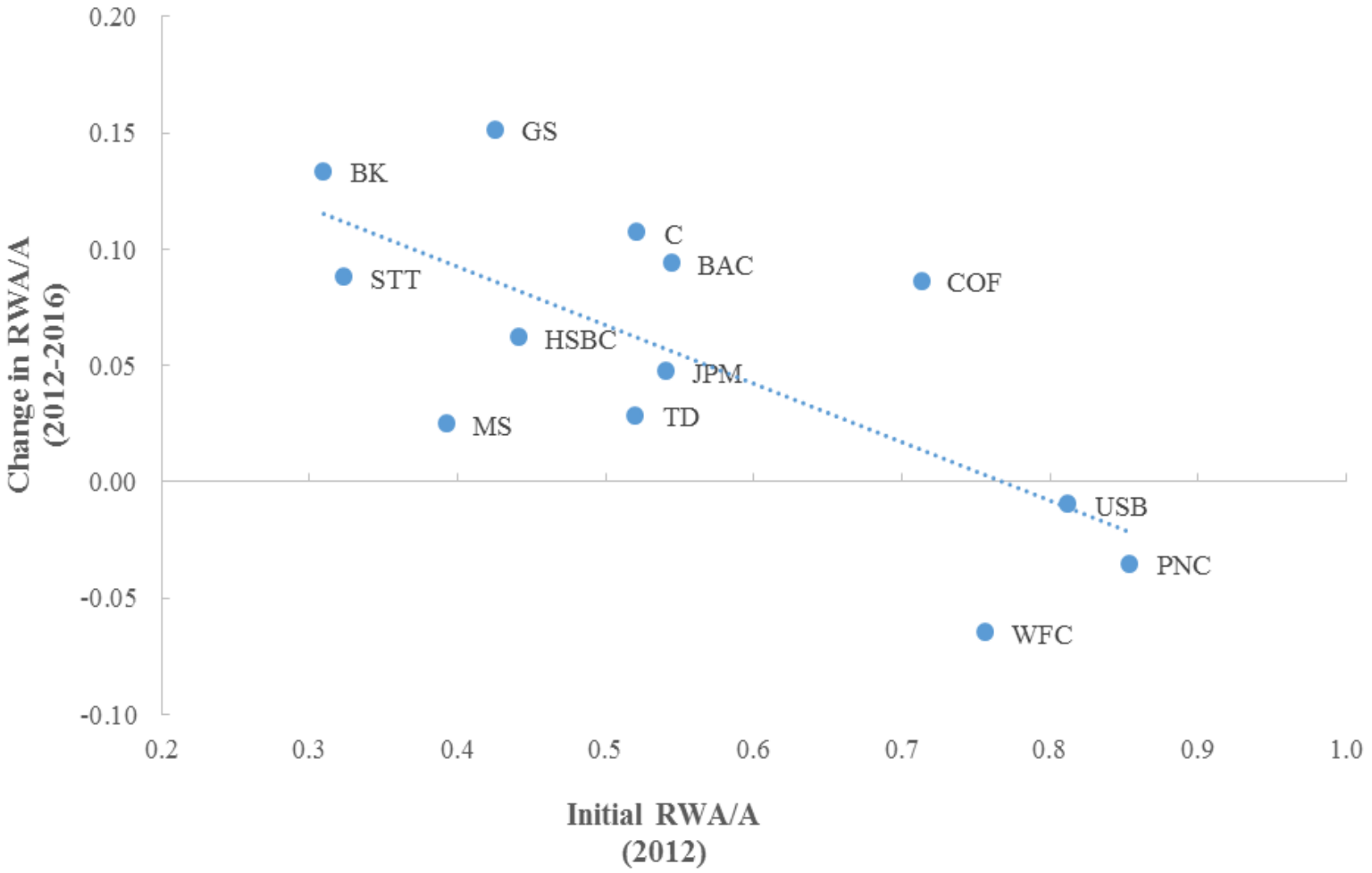
TABLE 5: *RELATIVE* RISK WEIGHTS

- **Scale by Capital Charge on C&I:**

GSIB Banks:	Tightest constraint	C&I	Residential Mortgages	Other Mortgages	Credit Cards	Other Consumer	Treasuries
JPMorgan Chase & Co.	CCAR SLR	100	19	99	49	42	23
Bank of America Corporation	CCAR SLR	100	19	99	49	42	23
Citigroup Inc.	CCAR SLR	100	19	99	49	42	23
Morgan Stanley	CCAR SLR	100	19	99	49	42	23
Goldman Sachs Group, Inc.	CCAR SLR	100	19	99	49	42	23
Wells Fargo & Company	Tier 1 Ratio	100	50	100	100	100	0
Bank of New York Mellon Corporation	SLR	100	100	100	100	100	100
State Street Corporation	CCAR SLR	100	19	99	49	42	23
Other Large BHCs:							
U.S. Bancorp	CCAR Tier 1 Ratio	100	13	100	67	62	-19
PNC Financial Services Group, Inc.	CCAR Tier 1 Ratio	100	13	100	67	62	-19
Capital One Financial Corporation	CCAR Tier 1 Ratio	100	13	100	67	62	-19
HSBC North America Holdings Inc.	CCAR SLR	100	19	99	49	42	23
TD Group US Holdings LLC	CCAR SLR	100	19	99	49	42	23

Figure 2: Convergence In Bank Balance Sheets

- Regress $\Delta_{2012\text{-}2016}$ (RWA/A) vs. $(\text{RWA/A})_{2012}$: $\beta = -0.25$; $\rho = -0.71$.
- Can instrument for $(\text{RWA/A})_{2012}$ with old $(\text{RWA/A})_{2002}$: $\beta = -0.23$.



What About Regulatory Arbitrage?

- A leading motivation for the enhanced role of the leverage ratio: banks were seen to be gaming the risk-based capital rules.
  - One reason why simple leverage measures were better predictors of distress than risk-weighted capital ratios.
- But not clear you can fix the gaming of one rule by adding more rules.
- Fundamentally, a timing problem: regulator moves first, sets rules in stone. Banks then get to move, knowing the rigid rule.
- Suggests it would be better if regulators could fill in some contingencies flexibly ex post, after conditioning on observed bank behavior.
- A potentially important role for stress testing.

Dynamic Resilience

Proposition: Optimal regulation in the wake of an adverse shock can be characterized as follows:

- Cross-sectional risk weights are unchanged from the steady-state case.
- There is temporary "capital-ratio relief": the required capital ratio is set at a lower value than the steady-state optimum.
- Banks must be forced to raise new dollars of external equity: the regulator requires banks to have equity which is higher (and therefore closer to the long-run first-best value) than they would choose they were only facing the ratio-based capital requirement.

Policy Recommendations

- **Dial back the Supplementary Leverage Ratio**
  - Either by lowering the required leverage ratio (currently at 5%) or by excluding Treasuries and reserves from denominator.
  - Use other tools to discourage regulatory arbitrage, and to generally increase capital for biggest banks.

- **Integrate risk-based capital requirement and post-stress requirement into a single constraint**
  - Add a "stress capital buffer"—that depends on losses in the stress scenario—to the baseline risk-based requirement.

- **Design stress test scenarios with regulatory arbitrage in mind**
  - Look at asset categories that have grown rapidly, or standout profit centers; then stress the associated exposures more stringently.
  - Also, be generally more sensitive to the kinds of data that you wouldn't want to bake into a hard rule—e.g. bank stock returns and CDS spreads.

- **Basel-style risk weights should be simple and not model-based**
  - Should be based on "standardized" metrics; use stress tests as ex post method for conditioning on more granular dimensions of risk.

Policy Recommendations

- **Consider increasing G-SIB surcharges**
  - Heterogeneity in these surcharges makes good sense—as long as relative cross-sectional risk weights are kept aligned.
  - A better way to express a hawkish stance on banking-system capital—and big banks in particular—than the SLR.
- **Make use of countercyclical properties of stress capital buffer**
  - A vehicle for relaxing the capital-ratio requirement after an adverse shock.
  - Per the dynamic-resilience principle.
- **Strengthen CCAR process and infrastructure with focus on dynamic resilience**
  - Need to be fully confident in legal authority and institutional resolve to force new equity issues after a large adverse shock.
  - This was one of the key design aspects of the original 2009 stress test—the SCAP.
- **Other dynamic resilience tools: Resolution authority and contingent convertibles**
  - Single-point of entry resolution approach that converts holding company debt into equity is effectively a late-trigger contingent convertible.