Is the Supplemental Leverage Ratio a Welfare Improvement?

Alex von Hafften
FMI

UW-Madison

February 14, 2022

Motivation

- Under Basel I and II, U.S. banks were subject to a risk-weighted capital requirement.

Motivation

- Under Basel I and II, U.S. banks were subject to a risk-weighted capital requirement.
- During the 2008 financial crisis, simple leverage ratios predicted financial distress better than risk-weighted capital ratios.

Motivation

- Under Basel I and II, U.S. banks were subject to a risk-weighted capital requirement.
- During the 2008 financial crisis, simple leverage ratios predicted financial distress better than risk-weighted capital ratios.
- Under Basel III, large U.S. banks are now subject to both a risk-based capital requirement and a simple leverage requirement.

Motivation

- Under Basel I and II, U.S. banks were subject to a risk-weighted capital requirement.
- During the 2008 financial crisis, simple leverage ratios predicted financial distress better than risk-weighted capital ratios.
- Under Basel III, large U.S. banks are now subject to both a risk-based capital requirement and a simple leverage requirement.
- Recent research has highlighted that multiple capital requirements can distort bank behavior.

Motivation

- Under Basel I and II, U.S. banks were subject to a risk-weighted capital requirement.
- During the 2008 financial crisis, simple leverage ratios predicted financial distress better than risk-weighted capital ratios.
- Under Basel III, large U.S. banks are now subject to both a risk-based capital requirement and a simple leverage requirement.
- Recent research has highlighted that multiple capital requirements can distort bank behavior.
- **Research Question:** Was the introduction of the simple leverage ratio requirements a welfare improvement?

Bank Capital Requirement Primer

- Tier 1 risk-based capital (RBC) requirements:

$$\frac{E}{\vec{A} \cdot \vec{w}} \geq \theta_{RBC}$$

where

Bank Capital Requirement Primer

- Tier 1 risk-based capital (RBC) requirements:

$$\frac{E}{\vec{A} \cdot \vec{w}} \geq \theta_{RBC}$$

where

  - E is Tier 1 capital

Bank Capital Requirement Primer

- Tier 1 risk-based capital (RBC) requirements:

$$\frac{E}{\vec{A} \cdot \vec{w}} \geq \theta_{RBC}$$

where

  - E is Tier 1 capital
  - $\vec{A}$ is a vector of assets

Bank Capital Requirement Primer

- Tier 1 risk-based capital (RBC) requirements:

$$\frac{E}{\vec{A} \cdot \vec{w}} \geq \theta_{RBC}$$

where

  - E is Tier 1 capital
  - $\vec{A}$ is a vector of assets
  - $\vec{w}$ is a vector of risk weights

Bank Capital Requirement Primer

- Tier 1 risk-based capital (RBC) requirements:

$$\frac{E}{\vec{A} \cdot \vec{w}} \geq \theta_{RBC}$$

where

  - E is Tier 1 capital
  - $\vec{A}$ is a vector of assets
  - $\vec{w}$ is a vector of risk weights
  - θ_{RBC} is the minimum requirement

Bank Capital Requirement Primer

- Tier 1 risk-based capital (RBC) requirements:

$$\frac{E}{\vec{A} \cdot \vec{w}} \geq \theta_{RBC}$$

where

  - E is Tier 1 capital
  - $\vec{A}$ is a vector of assets
  - $\vec{w}$ is a vector of risk weights
  - θ_{RBC} is the minimum requirement

- Supplemental leverage ratio (SLR) requirement:

$$\frac{E}{\vec{A} \cdot \vec{1}} \geq \theta_{SLR}$$

Bank Capital Requirement Primer

- Tier 1 risk-based capital (RBC) requirements:

$$\frac{E}{\vec{A} \cdot \vec{w}} \geq \theta_{RBC}$$

where

  - E is Tier 1 capital
  - $\vec{A}$ is a vector of assets
  - $\vec{w}$ is a vector of risk weights
  - θ_{RBC} is the minimum requirement

- Supplemental leverage ratio (SLR) requirement:

$$\frac{E}{\vec{A} \cdot \vec{1}} \geq \theta_{SLR}$$

- The typical economic rationale for capital requirement is that banks take excessive risks due to limited liability and government deposit insurance.

Why require banks satisfy the SLR?

- Basel II allowed banks to determine risk weights using "internal-ratings based approach."

Why require banks satisfy the SLR?

- Basel II allowed banks to determine risk weights using "internal-ratings based approach."
- During the 2008 financial crisis, simple leverage ratios predicted financial distress better than risk-weighted capital ratios (Haldane and Madouros (2012), Demirguc-Kunt, Detragiache, and Merrouche (2010), Estrella, Park, and Peristiani (2000)).

Why require banks satisfy the SLR?

- Basel II allowed banks to determine risk weights using "internal-ratings based approach."
- During the 2008 financial crisis, simple leverage ratios predicted financial distress better than risk-weighted capital ratios (Haldane and Madouros (2012), Demirguc-Kunt, Detragiache, and Merrouche (2010), Estrella, Park, and Peristiani (2000)).
- Concerns grew that banks were "gaming the system" through internal models and risk-shifting within risk weight buckets.

Why require banks satisfy the SLR?

- Basel II allowed banks to determine risk weights using "internal-ratings based approach."
- During the 2008 financial crisis, simple leverage ratios predicted financial distress better than risk-weighted capital ratios (Haldane and Madouros (2012), Demirguc-Kunt, Detragiache, and Merrouche (2010), Estrella, Park, and Peristiani (2000)).
- Concerns grew that banks were "gaming the system" through internal models and risk-shifting within risk weight buckets.
- The SLR was incorporated in Basel III and Dodd-Frank as a "belts and suspenders" approach to address these concerns.

How multiple capital requirement could distort bank behavior?

Greenwood, Kashyap, Stein, and Sunderam (BPEA, 2017) argue that multiple capital requirement may distort bank behavior.

- The tightest constraint may differs across on banks.

How multiple capital requirement could distort bank behavior?

Greenwood, Kashyap, Stein, and Sunderam (BPEA, 2017) argue that multiple capital requirement may distort bank behavior.

- The tightest constraint may differs across on banks.
- The tightest constraints determine the marginal capital costs for different activities.

How multiple capital requirement could distort bank behavior?

Greenwood, Kashyap, Stein, and Sunderam (BPEA, 2017) argue that multiple capital requirement may distort bank behavior.

- The tightest constraint may differs across on banks.
- The tightest constraints determine the marginal capital costs for different activities.
- Banks respond to these incentives and engage more in activities with lower capital costs (all else equal).

Greenwood et al (2017): Example

- The marginal capital charge for different tightest constraints and different activities:

	Residential Mortgages	Treasury
(CCAR) SLR[1]	1.1	1.3
Tier 1 RBC	5.3	0.0

[1](CCAR) SRL is the estimated SLR after the stress test scenario is applied.

Greenwood et al (2017): Example

- The marginal capital charge for different tightest constraints and different activities:

	Residential Mortgages	Treasury
(CCAR) SLR[1]	1.1	1.3
Tier 1 RBC	5.3	0.0

- The tightest constraint for Goldman Sachs is the (CCAR) SLR $\Longrightarrow$ comparative advantage in residential lending.

[1] (CCAR) SRL is the estimated SLR after the stress test scenario is applied.

Greenwood et al (2017): Example

- The marginal capital charge for different tightest constraints and different activities:

	Residential Mortgages	Treasury
(CCAR) SLR[1]	1.1	1.3
Tier 1 RBC	5.3	0.0

- The tightest constraint for Goldman Sachs is the (CCAR) SLR $\Longrightarrow$ comparative advantage in residential lending.
  - Goldman Sachs is the archetypal investment bank and only became a bank holding company in 2008.

[1] (CCAR) SRL is the estimated SLR after the stress test scenario is applied.

Greenwood et al (2017): Example

- The marginal capital charge for different tightest constraints and different activities:

	Residential Mortgages	Treasury
(CCAR) SLR[1]	1.1	1.3
Tier 1 RBC	5.3	0.0

- The tightest constraint for Goldman Sachs is the (CCAR) SLR $\Longrightarrow$ comparative advantage in residential lending.
    - Goldman Sachs is the archetypal investment bank and only became a bank holding company in 2008.
    - In 2016, it opened *Marcus*, a retail banking platform.

[1](CCAR) SRL is the estimated SLR after the stress test scenario is applied.

Greenwood et al (2017): Example

- The marginal capital charge for different tightest constraints and different activities:

	Residential Mortgages	Treasury
(CCAR) SLR[1]	1.1	1.3
Tier 1 RBC	5.3	0.0

- The tightest constraint for Goldman Sachs is the (CCAR) SLR $\Longrightarrow$ comparative advantage in residential lending.
  - Goldman Sachs is the archetypal investment bank and only became a bank holding company in 2008.
  - In 2016, it opened *Marcus*, a retail banking platform.
- The tightest constraint for Wells Fargo is the Tier 1 RBC requirement $\Longrightarrow$ comparative advantage in holding Treasuries.

[1] (CCAR) SRL is the estimated SLR after the stress test scenario is applied.

Greenwood et al (2017): Example

- The marginal capital charge for different tightest constraints and different activities:

	Residential Mortgages	Treasury
(CCAR) SLR[1]	1.1	1.3
Tier 1 RBC	5.3	0.0

- The tightest constraint for Goldman Sachs is the (CCAR) SLR $\implies$ comparative advantage in residential lending.
  - Goldman Sachs is the archetypal investment bank and only became a bank holding company in 2008.
  - In 2016, it opened *Marcus*, a retail banking platform.
- The tightest constraint for Wells Fargo is the Tier 1 RBC requirement $\implies$ comparative advantage in holding Treasuries.
  - Modern-day Wells Fargo was created from mergers of large regional banks with mostly retail banking activities.

[1] (CCAR) SRL is the estimated SLR after the stress test scenario is applied.

Greenwood et al (2017): Example

- The marginal capital charge for different tightest constraints and different activities:

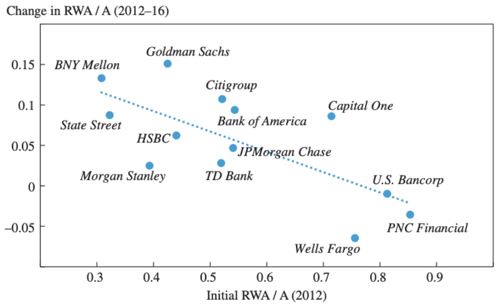
	Residential Mortgages	Treasury
(CCAR) SLR[1]	1.1	1.3
Tier 1 RBC	5.3	0.0

- The tightest constraint for Goldman Sachs is the (CCAR) SLR $\Longrightarrow$ comparative advantage in residential lending.
  - Goldman Sachs is the archetypal investment bank and only became a bank holding company in 2008.
  - In 2016, it opened *Marcus*, a retail banking platform.
- The tightest constraint for Wells Fargo is the Tier 1 RBC requirement $\Longrightarrow$ comparative advantage in holding Treasuries.
  - Modern-day Wells Fargo was created from mergers of large regional banks with mostly retail banking activities.
  - Its investment banking subsidiary date only back to 2009 and has grown substantial in recent years.

[1](CCAR) SRL is the estimated SLR after the stress test scenario is applied.

Greenwood et al (2017): Convergence in Balance Sheets

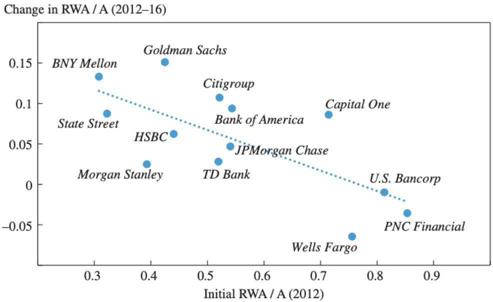
Greenwood et al. (2017) provide evidence that the balance sheets of large U.S. banks converged



- Risk density is the ratio of risk-weight assets to total assets.

Greenwood et al (2017): Convergence in Balance Sheets

Greenwood et al. (2017) provide evidence that the balance sheets of large U.S. banks converged



- Risk density is the ratio of risk-weight assets to total assets.
- Compared to their peers, banks with lower risk densities in 2012 saw larger increases in their risk densities in 2012-2016.

Possible Approach

- Banks with insured deposits, limited liability, and heterogeneous productivities across activities invest in safe securities and types of risky loans.

Possible Approach

- Banks with insured deposits, limited liability, and heterogeneous productivities across activities invest in safe securities and types of risky loans.

- Bank creditors and regulators have imperfect information about the riskiness of the banks' loan portfolios.

Possible Approach

- Banks with insured deposits, limited liability, and heterogeneous productivities across activities invest in safe securities and types of risky loans.
- Bank creditors and regulators have imperfect information about the riskiness of the banks' loan portfolios.
- Regulators impose a risk-based capital requirement based on observables.

Possible Approach

- Banks with insured deposits, limited liability, and heterogeneous productivities across activities invest in safe securities and types of risky loans.
- Bank creditors and regulators have imperfect information about the riskiness of the banks' loan portfolios.
- Regulators impose a risk-based capital requirement based on observables.
- Regulators can also impose a simple leverage requirement:

Possible Approach

- Banks with insured deposits, limited liability, and heterogeneous productivities across activities invest in safe securities and types of risky loans.
- Bank creditors and regulators have imperfect information about the riskiness of the banks' loan portfolios.
- Regulators impose a risk-based capital requirement based on observables.
- Regulators can also impose a simple leverage requirement:
  - **Benefit:** Addresses excessive risk-taking based on unobservables.

Possible Approach

- Banks with insured deposits, limited liability, and heterogeneous productivities across activities invest in safe securities and types of risky loans.
- Bank creditors and regulators have imperfect information about the riskiness of the banks' loan portfolios.
- Regulators impose a risk-based capital requirement based on observables.
- Regulators can also impose a simple leverage requirement:
  - **Benefit:** Addresses excessive risk-taking based on unobservables.
  - **Cost:** Distorts to cross-sectional capital allocation.