

Potential Impacts of Recently Developed Capital Regulations on Banking Industry

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Abstract: In response to the 2008 financial crisis, international banking regulators have been imposing multiple capital, leverage and liquidity requirements on the banking industry which are significantly stricter than those under the pre-crisis regulatory framework, along with the new Basel III accord. The new standards aim to strengthen supervision and risk management in the banking sector. These standards which require banks to increase equity capital and their liquid reserves held as a buffer as well as to improve their capital quality would lead to substantial changes in their profitability, risk appetite and strategic planning of banks. This study comprehensively reviews the recently developed capital regulations for financial institutions and presents their potential impacts on individual firms and the overall banking sector.

Key words: Capital requirements, Basel III, bank regulations, liquidity, leverage ratio

INTRODUCTION

The financial industry substantially increased its risk-taking in the years leading up to the financial crisis in 2007-2008 for several reasons including deregulation (financial liberalization) to improve efficiency and increase competition, consolidation of businesses led by globalization and increased complexity of financial products. All of these changes occurred at a pace for which international and local regulators as well as risk managers were not given sufficient time to build and implement more prudent and robust risk management frameworks for institutions and this eventually led to the global crisis. In response to the crisis, increasing regulatory action to constrain risk-taking and improve the quality and quantity of capital and liquidity reserves of each financial institution became an important step to reduce the likelihood of distress for each market participant and the financial system. Although, some studies have argued against regulating banks (Fama, 1980; Ferrara, 1990), the recent financial crisis proved that tightening capital requirements and increasing banking supervision would be necessary to ensure sound financial systems that will eventually lead to a stable economy across the globe. Because excessive debt levels and insufficient liquidity buffers could make the financial system vulnerable to any large negative shock, banking regulation has evolved in two aspects: significantly increased equity requirements to withstand a substantial decline of the value of the banks' assets and a buffer of liquid reserves to handle short-term losses. These efforts

have been primarily driven by the Basel Committee on Banking Supervision (BCBS) and the Financial Stability Board (FSB) with emphases on balancing risk sensitivity, simplicity and comparability as well as improving the risk culture. Unfortunately, some studies have found that intensifying regulatory restrictions could result in decreased bank performance and banking system stability (Barth *et al.*, 2006, 2008) and so it is important to review the recently announced capital regulations for the banking industry and understand their potential impacts on the broad economy and each financial institution. Regarding the macroeconomic impact, Slovik and Cournede estimated the medium-term impact of Basel III implementation on annual GDP growth to be in the range of -0.05 to -0.15% point.

Regulatory capital is an external measure of capital adequacy and is defined as unexpected losses for a 1 year period with a 99.9% (a rating) confidence level. The Basel III international accord was established from the Basel II standard with changes including raising the risk-based capital ratio and introducing tougher liquidity and funding requirements. As responses to the 2008 financial crisis, Basel III requires banks to hold minimums of 4.5% of common equity (up from 2% in Basel II) and 6% of Tier 1 capital (up from 4% in Basel II) of Risk-Weighted Assets (RWA). Basel III introduces additional capital buffers such as a mandatory capital conservation buffer of 2.5% and a discretionary countercyclical buffer which allows national regulators to require up to another 2.5% of capital during periods of high credit growth. Basel III also introduces a Systemically Important Financial Institution (SIFI) capital requirement calling for 1.0-3.5% of additional

capital for certain large and interconnected financial institutions. In addition, Basel III introduces a minimum 3% leverage ratio and two required liquidity ratios. One is the Liquidity Coverage Ratio (LCR) which requires a bank to hold sufficient High-Quality Liquid Assets (HQLA) to cover its total net cash flows over 30 days. The other is the Net Stable Funding Ratio (NSFR) which requires the available amount of stable funding to exceed the required amount of stable funding over a 1 year period of extended stress. International and local regulators have determined that reliance on short-term wholesale funding is among the important indicators of the potential impact that the distress or failure of a firm will have on the financial system. Full compliance with Basel III requirements is expected to be completed by 2018.

The increase in capital holding for banking once all of these new and additional rules are implemented would mean that substantial changes will follow in terms of banks' profitability, risk appetite and strategic planning. Recently, many studies have tried to understand the relationship among bank capital, risk and profitability. Prior studies show mixed relations between risk and level of capital. Some studies present capital and risk as having a negative relationship (Jahnakhani and Lynge, 1980; Karels *et al.*, 1989; Besanko and Kanatas, 1996; Jacques and Nigro, 1997; Hellmann *et al.*, 2000; Repullo, 2004; Altunbas *et al.*, 2007; Agusman *et al.*, 2008) whereas others claim that a level of capital has a positive relationship with risk (Pettway, 1976; Shrieves and Dahl, 1992; Berger, 1995; Rime, 2001; Iannotta *et al.*, 2007; Shim, 2010). Previous studies on the relationship between capital and profitability also came to mixed conclusions. Several studies have found a positive relationship between capital and profitability (Berger, 1995; Jacques and Nigro, 1997; Rime, 2001; Iannotta *et al.*, 2007; Shim, 2010) and some have shown alternative results (Goddard *et al.*, 2010). This study reviews the recently developed capital regulations for financial institutions and explores their potential impacts on the broad industry when they are fully imposed. Capital, profitability and risk should be considered simultaneously when the impacts of regulatory changes are examined. As banks' balance sheets become more complex and businesses are operated across the globe, it becomes more complicated for regulators to identify and assess the effects of any change in regulations (Markham, 2010).

REGULATORY CAPITAL RECAP

The Basel regimes have evolved through multiple accords since the 1980s. Basel I was drafted in 1988 to establish a minimum level of bank capital based on

risk-weighting of various asset classes and was enforced in 1992 for G-10 countries (The G-10 countries include: Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, United Kingdom and United States). However, this first-ever international prudential regulatory agreement had limitations including lack of risk sensitivity. Risk exposures were captured at a broad asset class level for credit that included only five different risk weights varying from zero (cash) up to 100% (most corporate bonds) based on product and type of counterparty for credit. In 1996, a Market Risk Amendment (MRA) was introduced that allowed banks to use internal models to calculate capital against market risk for trading book assets.

Basel II was established in 2004 to revise and enhance the Basel I accord. Basel II was broader than Basel I in that it included market and operational risks. It brought all aspects of a bank's risk management and governance under a capital regulation regime through the three pillar approach in which P1 represents minimum capital, P2 represents capital adequacy and P3 represents market discipline. It also provided more granularity with regard to risk sensitivity by asset type in risk-weighted assets. This allowed banks to use internal models which are called advanced approaches for credit risk. These enhancements intended to align regulatory capital more closely with underlying risks against a simple "one size fits all" approach. Beginning with Basel II, RWAs were calculated using factors based on the banks experience and portfolio mix. However, Basel II had limitations on capital requirements to on-balance sheet assets. It still assigned a zero capital requirement for sovereign debt which could result a very large portion in sovereign debt being held by some banks.

The supplemental revisions to Basel 2, Basel 2.5 or MRA was established in July 2009 and enhanced the measurements of risks related to securitization and trading book exposures. It included extensive revisions to market risk rules, Incremental Risk Charge (IRC), stressed value at risk and trading book securitizations. It superseded Basel I market risk rules and created new market risk measures including Stressed VaR (SVaR), true 10 days VaR, Comprehensive Risk Measure (CRM) and IRC. Basel 2.5 was fully implemented in January 2012.

Basel III was reached in the wake of the financial crisis in 2010 to seek extension of capital requirements to off-balance sheet assets. The new rule increases capital ratios with stricter RWA standards and introduces new regulatory requirements on leverage and liquidity. It also simplifies the definition of a Common Equity Tier 1 (CET1) capital which serves as the numerator of the capital ratio. However, this new accord has its own limitations. Under Basel III, risk weightings receive relatively little attention

and calculations of regulatory capital rely on a large number of estimated and calibrated parameters such as default probability and Loss Given Default (LGD) parameters not to mention a set of parameters required to estimate in the model of portfolio value at risk for measuring risk and regulatory capital in the trading book.

BASEL III FRAMEWORK AND CAPITAL REGULATION

The Basel III accord is a global regulatory standard on bank capital adequacy, stress testing and market liquidity risk agreed upon by the members of BCBS in 2010-2011; it includes a series of enhancements to Basel II. The accord was developed in response to a number of deficiencies in existing regulations revealed through the financial crisis. Basel III tried to strengthen bank capital requirements and introduced a set of new regulatory requirements on bank liquidity and bank leverage. With the multiple regulatory capital ratios stated below, Basel III requires banks to hold minimums of 4.5% of common equity (up from 2% in Basel II) and 6% of Tier 1 capital (up from 4% in Basel II) of RWA:

- Common Equity Tier 1 ratio (CET1)
- Tier 1 capital ratio (Tier 1)
- Total capital ratio
- Tier 1 leverage ratio
- Supplementary Leverage Ratio (SLR)

In the prior Basel framework, a bank could report a strong Tier 1 capital ratio while having a weak tangible common equity ratio. Because credit losses and write downs come directly out of retained earnings and therefore common equity, banks should be backed by a high-quality capital base. Changes in the definition of capital under Basel III include the following:

- Phase out of contingent capital and convertible capital instruments
- Deduction of net pension asset
- Recognition of pensions as Other Comprehensive Income (OCI)
- Capital deductions (securitization, certain equity exposures, etc.) assigned by risk weighting 1,250%
- Each of the following items may not be greater than 10% of the common equity component of Tier 1 capital. Any marginal amount in which these items collectively exceed 15% of Tier 1 common equity after the application of all deductions is subject to a full deduction

- Mortgage Servicing Rights (MSR)
- Significant (>10% of issued share capital) investments in common shares of unconsolidated financial institutions
- Deferred Tax Assets (DTA)

Basel III counterparty credit risk involves the following updates:

- Subject to a Credit Valuation Adjustments (CVA) charge for mark-to-market losses associated with the deterioration of a counterparty's creditworthiness
- Higher risk weight for large or unregulated financial entities and highly leveraged counterparties
- Higher collateral haircuts and margin for large, complex and illiquid derivatives
- Inclusion of wrong way risk
- Requirement to use central counterparties instead of direct ones for many transactions with financial institutions

Basel III introduces additional capital buffers that would be in addition to the regulatory minimums:

- Capital conservation buffer: lowest of CET1, Tier 1 and total capital ratios, less regulatory minimums
- Countercyclical buffer: set by regulators in response to supervisory information indicating an increase in systemic risk
- Global Systemically Important Bank (G-SIB) or SIFI buffer: subject to an annual review and annual update of scoring metrics by the FSB to identify firms of global systemic importance and resulting capital surcharges which can vary across designated banks. The US G-SIB surcharge proposal introduced in November 2014 will be higher than FSB's

The buffers would be in the form of additional CET1 and would need to be in excess of the following to avoid restrictions on capital actions and executive bonuses:

- Capital conservation buffer of 2.5%
- Discretionary countercyclical buffer that allows national regulators to require up to another 2.5% of capital during periods of high credit growth. Currently this buffer is set at zero
- G-SIB (or SIFI) buffer with capital surcharges of 1-3.5% for certain larger and more interconnected financial institutions

In addition, Basel III introduces a minimum 3% leverage ratio and two required liquidity ratios. The LCR

requires a bank to hold sufficient HQLAs to cover its total net cash flows over 30 days. The NSFR requires the available amount of stable funding to exceed the required amount of stable funding over a 1 year period of extended stress. Adrian and Brunnermeier pointed out that banks' liquidity mismatch which is managed by accessing the interbank markets could be a high risk when there is a liquidity shortage in the market. The distress of other institutions would cause contagion effects. Table 1 presents the regulatory capital transition through 2019.

Common Equity Tier 1 (CET1) ratio: A capital ratio is a measure of a bank's financial strength as a function of its capital divided by its risk weighted assets. The predominant form of Tier 1 capital must be common shares and retained earnings. The capital ratio is defined as follows:

$$\text{Capital ratio} = \frac{\text{Qualifying capital}}{\text{Risk weighted assets}}$$

Tier 1 capital is one of the primary measures used by national regulators such as the Federal Reserve Board (FRB) and the office of the comptroller of currency to measure the financial strength of a banking organization. Tier 1 common capital is Tier 1 capital less preferred stock, qualifying trust-preferred securities, hybrid securities and qualifying non-controlling interest in subsidiaries. After the financial crisis, regulators began to focus on Tier 1 common capital as a proxy for overall financial strength. Table 2 presents the details of qualifying captials for each type of capital. Figure 1 shows the regulatory capital minimums for reporting on actual books and records fully phased in.

At the core of Basel is a process of attributing risk weightings based on asset type, risk-weighted assets. Basel regulations determine that different asset classes have different associated risks and both on and off-balance sheet assets receive risk weightings. The Basel rules allowed banks to use internal models for trading book assets only in 1996 and it was extended to the banking book in 2004. Basel III requires advanced banks to calculate capital ratios under both the so-called standardized approach and the advanced framework which apply their own risk models validated by supervisors and will be held to the lower of the two measures. Advanced banks are defined as financial institutions having assets exceeding \$250 billion with the most advanced risk management and risk modeling skills. The standardized measure is a regulatory defined method that establishes risk weights corresponding to different types of assets. Basel III Standardized (B3S) RWAs became effective in January 2015 and are intended to replace Basel I standardized risk weights. Risk weights are broadly applied across the banks' exposures

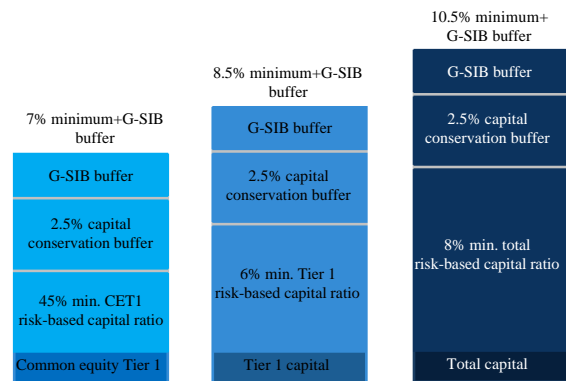


Fig. 1: Regulatory capital ratio minimums

Table 1: Regulatory capital transition

2014	2015	2016	2017	2018	2019
US B3A reporting begins	US B3S reporting SLR reporting begins	Capital surcharges Phase-in begins	LCR 100% phase-in	SLR fully effective	Minimum capital Requirements fully effective
	LCR 80% phase-in	LCR 90% phase-in			

Table 2: Qualifying capital

Common equity Tier 1	Tier 1 capital	Total capital
Common equity	Common equity Tier 1	Tier 1 capital
Retained earnings	Add	Subordinated debt
Accumulated OCI	Perpetual preferred stock	Excess reserves
Less	Related surplus	Cumulative perpetual preferred stock
Goodwill and intangibles	Less	Qualifying minority interests
GL on cash flow hedges	Investment in own shares	
Financial liabilities and derivatives	Insurance underwriting subs min	
Defined benefit pension assets	Investment in capital of financial entities	
Disallowed deferred tax assets		
10-15% deductions threshold (DTA, MSAs, significant investments in financial institutions above threshold)		

and are insensitive to the relative risks of the obligor. The standardized approach includes credit and market risk but excludes operational risk and CVA. The advanced measure is based on internal models of Probability of Default (PD), LGD, Exposure at Default (EAD) and/or maturity of exposure (M) to calculate risk-weighted assets that would experience greater volatility under stress. Basel III advanced (B3A) RWAs became effective in January 2014. The advanced approach includes credit risk, market risk, operational risk and CVA. The standardized risk weights are less risk sensitive than advanced and as a result would be less volatile under stress.

Reducing RWAs could be achieved through selling off or running down business areas and/or changing the mix of business to those with lower risks. However, although it improves the denominator (less assets, thus increasing the ratio), there are costs. In the short-term, sales of assets may only be achieved at less than face value whereas in the long-term, income sources may be reduced.

Basel III Tier 1 common ratio: The Basel III Tier 1 common ratio is calculated as follows:

$$\text{Tier 1 common ratio} = \frac{\text{Tier 1 common capital}}{\text{Credit risk RWA} + \text{Market risk RWA} + \text{Operational risk RWA}} > 7.0\%$$

Tier 1 common capital:

- Several deductions receive 1250% RW
- Stricter criteria for Tier 1
- Focus on common equity

Credit risk RWA: For example, retail, wholesale and securitization:

- Stressed inputs for derivative exposure
- Increased AVC
- Increased margin period of risk
- Charge for wrongway risk
- Charge on CVA

Market risk RWA: For example, interest rate, trading and equity. It remains the same as in Basel 2.5:

- Requirement for incremental default risk measure and comprehensive risk measure
- New factors for standard specific risk
- Additions to list of ineligible products

Operational risk RWA: For example, fraud, damage to physical assets. It remains the same as in Basel II.

Calculated using Advanced Measurement Approach (AMA). For example, fraud, damage to physical assets.

Capital ratio: The 7% minimum is derived from the 4.5% Basel III international minimum +2.5% conservation buffer. Additions to the ratio minimum are:

- Capital conservation buffer
- Countercyclical buffer
- SIFI buffer

Capital conservative buffer: During the financial crisis, many banks continued to make discretionary bonus payments or capital distributions even as capital levels deteriorated. Banks will be required to maintain a capital conservative buffer of 2.5% to be considered well-capitalized under the Prompt Corrective Action (PCA) framework in the US. The rationale is that banks should build capital buffers outside the stress period that can be drawn down as losses are incurred. Moreover, maintaining buffers would reduce the discretion of banks to lower capital levels through the distribution of earnings. The buffer which is applied at the consolidated level, must be held in tangible common equity. Capital conservation levels should be met to avoid any PCA as described in Table 3. Table 4 shows that banks may not pursue distribution policies and should conserve some or all earnings if they are under minimum conservation ratios. For example, a bank with a Tier 1 common ratio of 5.6% must conserve 80% of its earnings and payout no >20% in dividends and bonus payments unless it was able to raise capital in the private sector equal to the amount above the constraint it wishes to distribute. The time line for the minimum risk based capital ratios is shown in Table 5.

Countercyclical buffer: Capital regulation can have a negative impact through the business cycle; regulation

Table 3: Levels of capital conservation buffer and corresponding penalties imposed for capital distributions and discretionary bonus payments

Capital conservation buffer	Allowed capital distributions and discretionary bonus payments
Buffer > 2.500%	No limit imposed
2.500% ≥ buffer > 1.875%	Up to 60% of eligible retained income
1.875% ≥ buffer > 1.250%	Up to 40% of eligible retained income
1.250% ≥ buffer > 0.625%	Up to 20% of eligible retained income
0.625% ≥ buffer	No distributions or bonus payments allowed

Table 4: Minimum conservation ratios

Tier 1 common ratio (%)	Earnings (%)
4.500-5.125	100
>5.125-5.750	80
>5.750-6.375	60
>6.375-7.000	40
>7.000	0

Table 5: Capital conservation buffer

Minimum risk based capital ratios	Percentage			
	2016	2017	2018	2019
Conservation buffer	0.625	1.25	1.875	2.50
CET1 w/buffer (4.5% as of 2015)	5.125	5.75	6.375	7.00
T1 w/buffer (6% as of 2015)	6.625	7.25	7.875	8.50
Total capital w/buffer (8% as of 2015)	8.625	9.25	9.875	10.50

Table 6: Minimum conservation ratios assuming a 2.5% countercyclical requirement

Tier 1 common ratio (%)	Earnings (%)
4.50-5.75	100
>5.75-7.00	80
>7.00-8.25	60
>8.25-9.50	40
>9.50	0

should impose more stringent capital requirements during good times that could be lessened for bad times. The countercyclical buffer was introduced as the mechanism to increase the capital conservation buffer during times of excessive credit growth to ensure that banks' capital requirement considers the macroeconomic environment. National regulators will monitor credit growth, determine the build-up of system-wide risk and implement the requirement when circumstances warrant and release it as risk dissipates. Regulators must announce the decisions to raise the buffer by up to 12 months in advance. Internationally active banks may be subject to a bank-specific buffer reflecting the geographic composition of its portfolio of credit exposures. Banks must publicly disclose their buffer requirements including the geographic breakdown of their private sector credit exposures used in the calculation of the buffer requirement. The buffer of up to 2.5% is based on the determination by the national regulators and it is currently set at 0% in the US. Table 6 presents the minimum conservation ratios assuming a 2.5% countercyclical requirement.

Leverage ratio: Asset sales through securitization and other structural facilities along with internal model based RWA calculations helped banks achieve high leverage ratios with their capital ratios well above the required ratios (Eken, 2006). The excessive build-up of on and off balance sheet leverage in the banking system was turned quickly into destabilizing deleveraging processes during the financial crisis. The Basel III leverage ratio was introduced as a credible supplementary measure to the risk-based capital requirement with a simple and non-risk based measure. It requires banks to maintain a minimum 3% Tier 1 leverage ratio that considers both on-balance sheet assets and off-balance sheet exposures.

Table 7: Levels of enhanced Supplementary Leverage Ratio (SLR) and corresponding penalties imposed for capital distributions and discretionary bonus payments

SLR buffer	Allowed capital distributions and discretionary bonus payments
Buffer > 2.0%	No limit imposed
2.0% ≥ buffer > 1.5%	Up to 60% of eligible retained income
1.5% ≥ buffer > 1.0%	Up to 40% of eligible retained income
1.0% ≥ buffer > 0.5%	Up to 20% of eligible retained income
0.5% ≥ buffer	No distributions or bonus payments allowed

Supplementary Leverage Ratio (SLR): The SLR represents the implementation of the Basel III leverage ratio by the US banking agencies. The SLR framework requires advanced approach-banks (advanced approach banks are defined as institutions with \$250 billion in total consolidated assets or \$10 billion of on-balance sheet foreign exposures; a foreign institution's US Intermediate Holding Company (IHC) that has \$250 billion in total consolidated assets or \$10 billion of on-balance sheet foreign exposures, regardless of whether the IHC is also a Banking Holding Company (BHC) to maintain a minimum SLR of 3%. Particularly, G-SIBs and their US Insured Depository Institution (IDI) subsidiaries must hold at least 5% SLR (3% minimum+2% buffer; 6% SLR for each IDI subsidiary where 3% minimum+3% surcharge) to be considered well-capitalized under enhanced SLR standards (eSLR). The eSLR and revisions to the denominator of SLR were finalized in April and September 2014, respectively and they are applicable to bank holding companies with at least \$700 billion in total consolidated assets or at least \$10 trillion in assets under custody and its IDI subsidiaries. Both SLR and eSLR are expected to be fully implemented in January 2018:

$$SLR (\%) = \frac{\text{Tier 1 capital}}{\text{Total leverage exposure}} \geq 3\%$$

As shown above, the denominator of SLR, the total leverage exposure, consists of on-balance sheet assets, derivative exposures, repo-style transaction exposures and other off-balance sheet exposures. The US leverage ratio takes into account only on-balance sheet assets and so off-balance sheet exposures would make differences between SLR and the US leverage ratio from the perspective of the denominator. All US banking organizations and foreign institutions' US Intermediate Holding Companies (IHCs) are subject to maintain a minimum 4% of US leverage ratio.

Similar to the Basel III risk-based capital conservation buffer, Table 7 shows that any US G-SIB not meeting the minimum SLR of 5% will be subject to restrictions on its ability to make capital distributions and discretionary bonus payments to executives. However, the industry has

expressed concerns about the usefulness of the leverage ratio, especially in situations where it acts as a binding constraint, rather than a complementary ratio alongside other capital ratios. The non-sensitive nature of the calculation may incentive banks that invest in riskier assets to achieve higher returns on capital. Moreover, inclusion of off-balance sheet items could make the ratio difficult to calculate from disclosed information and also make the ratio more complex.

Liquidity regulation: Funding long-term assets with short-term liabilities is one of the main functions banks provide to the economy but this liquidity mismatch could cause bank liquidity risk during a liquidity stress scenario. The 2008 financial crisis was largely defined as a liquidity crisis, meaning that when facing uncertainty about the value of assets as collateral and the condition of counterparties, investors refused to offer new short-term lending or even extend existing credits. With this defining characteristics of the last crisis, liquidity risk management has become one of the top priorities for regulators since the crisis. BCBS published Principles for Sound Liquidity Risk Management and Supervision in 2008 which presents detailed guidance on the risk management and supervision of funding liquidity risk (BCBS, 2008). The Basel Committee and the US banking agencies developed two quantitative liquidity standards to measure and regulate funding and liquidity, the LCR and the NSFR-to guard against future liquidity crises. These standards complement the bank capital framework and resolution mechanism in which they are designed to mitigate the risk associated with banks' reliance on unstable funding structures and encourage them to evolve into more resilient and robust funding models. The committee published two LCR documents aiming to promote the short-term resilience of a bank's liquidity risk profile by ensuring

that it has sufficient HQLAs to survive a significant stress situation lasting 30 days. The committee also published two NSFR documents to reduce funding risk over a longer time horizon by requiring banks to conduct their business with funding from sources that are sufficiently stable to mitigate the risk associated with future funding stress.

Liquidity Coverage Ratio (LCR): Each institution is required to hold sufficient HQLAs such as central bank reserves, government bonds and more liquid corporate instruments that can be converted easily and quickly into cash with little or no loss of value in an amount equal to or greater than its projected cash outflows minus its projected cash inflows during a 30 days stress period (Table 8). The ratio of a firm's liquid assets to its projected Net Cash Outflows (NCO) is known as the LCR which identifies the amount of unencumbered HQLAs that a bank holds which can be used to offset the next cash outflows it would confront under a short-term stress circumstance specified by supervisors. LCR consists of two components as follows:

- Total stock of HQLAs
- Total NCOs = total projected cash outflows-total projected cash inflows

$$LCR = \frac{\text{Total stock of HQLAs}}{\text{Total NCOs over the next 30 days}} \geq 100\%$$

Under the LCR, a bank must hold a buffer of HQLAs sufficient to cover NCOs during a 30 days stress scenario. The LCR also encourages banks to reduce the use of very short-term wholesale funding that increases the buffer requirement because holding the buffer is costly. Under the US rule implementing the LCR, the requirements would

Table 8: High Quality Liquid Assets (HQLA) based on the US

Levels	HQLA-level 1 and 2 liquid assets
1	Assets are not subject to haircuts or quantitative caps and generally include Certain securities that are claims on or guaranteed by a sovereign entity, a central bank or other international entities that are assigned a 0% risk weight under the US Basel III standardized approach capital rules. Generally, includes all OECD sovereign debts unless they have defaulted or were restructured in the previous 5 years Excess reserves held at the fed Securities issued or guaranteed by the US treasury Securities issued or guaranteed by a US agency whose obligations are explicitly guaranteed by the full faith and credit of the US government Withdrawable reserves held at a foreign central bank
2	Assets are subject to prescribed haircuts and can account for no >40% of an institution's total HQLA's
2A	Assets which are subject to a 15% haircut include Claims on or guaranteed by a US Government Sponsored Enterprise (GSE) such as Fannie Mae and Freddie Mac Claims on or guaranteed by a sovereign entity or a Multilateral Development Bank (MDB) that is assigned a 20% risk weight under the US Basel III standardized approach capital rules
2B	Assets which are subject to a 50% haircut and can account for no >15% of an institution's total HQLA's, generally include Certain publicly-traded corporate debt securities issued by non-financial companies Certain publicly-traded equities issued by non-financial companies that are included in the Standard and Poor's 500 (S&P 500) Index or an equivalent index

Table 9: Measures of capital adequacy

Types	Measure	Objective	Risk types measured	Confidence level
Regulatory	Basel III	Regulatory compliance	Credit (excluding country) Market (excluding interest rate) Operational (advanced only)	99.9% of unexpected losses
Internal	Economic capital	Risk-adjusted performance measurement	Credit Market Operational Country Inter-risk diversification	99.97% of expected and unexpected losses
Leverage	Leverage ratio and supp. leverage ratio	Additional regulatory compliance measure beyond capital ratios	Not risk sensitive Basel III Tier 1 capital/total assets Supplementary leverage includes extensive off-balance sheet exposure	N/A
Liquidity	Liquidity coverage ratio	Promotes short term resilience of a banks liquidity risk profile	High quality liquid assets Net cash outflows	N/A

apply to banking organizations with total consolidated assets of \$250 billion or more or total consolidated on-balance-sheet foreign exposures of \$10 billion or more and less stringent requirements for those with \$50 billion or more in total consolidated assets. The LCR would not apply to banks with total assets of less than \$50 billion. Table 9 reports the measures of adequacy for different capital types.

Net Stable Funding Ratio (NSFR): Banks as financial intermediation are inherently vulnerable to liquidity risk of both an institution-specific and market nature. During the financial crisis, many banks experienced difficulties in liquidity and funding even though they met the capital requirements then in effect. These difficulties in some cases created substantial contagion effects on the broader financial system. One lesson from the financial crisis is the need to limit over-reliance on volatile short-term borrowings to fund illiquid assets. As a way to build a more resilient financial sector, the BCBS recently published new funding rules on the so-called NSFR to begin on January 1, 2018 aiming to make lenders more robust by keeping them from relying heavily on short-term borrowing to fund long-term loans. The rule is meant to measure the amount of long-term, stable sources of funding employed relative to the liquidity profiles of assets funded and the potential for contingent calls on funding liquidity arising from off-balance sheet commitments and obligations. The NSFR requires banks to fund long-term loans from sufficiently stable sources-in other words, sources that will not dry up in a stress environment such as high-quality capital and term deposits-to mitigate the risk of future stress. As a consequence, banks will have to hold enough cashor assets that can reliably be converted into cash to cover their expected outflows over a 1 year horizon to stand an extended stress scenario as shown below:

$$NSFR = \frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}} \geq 100\%$$

where, available amount of stable funding represents:

- Capital (100%)
- Preferred stock >1 year maturity (100%)
- Liabilities >1 year maturity (100%)
- Stable deposits and unsecured wholesale funding <1 year (90%)
- Less stable deposits (80%)
- Unsecured wholesale funding <1 year provided by non-financials (50%)
- All others (0%)

and required amount of stable funding covers:

- Cash, securities, FI loans <1 year (0%)
- Undrawn commitments (5%)
- Unencumbered securities (5-50%)
- Retail loans (85%)
- All other assets (100%)

Under the NSFR, bank assets such as gold, mortgages and other loans are assigned different weightings to determine the extent to which they must be backed by so-called stable funding sources. This complements the LCR by looking beyond a 30 days period. Regulators developed the NSFR alongside the LCR, another short-term measure to ensure that banks have enough liquid assets to withstand a shock loss of access to funding markets such as the one that followed the collapse of Lehman Brothers in 2008. The final rules require lenders to back bank loans with residual maturities of <6 months with 10% stable funds. The standard also includes some changes to the rules for assets posted as an initial margin for derivatives contracts and reduces the allowed amount of offsetting of derivative assets by derivative liabilities.

Total Loss Absorption Capacity (TLAC): To ensure that taxpayers are not left on the hook when banks collapse, the November 2014 proposals from the FSB, a group of global regulators, formed a new minimum standard for TLAC. The proposals require G-SIBs to strengthen their “loss-absorbing capacity” or financing cushions by issuing equity or long-term debt equivalent to 16-20% of their risk-weighted assets which would be at least twice the Basel III total risk-based capital of 8% and the banks must separately meet other capital buffers already set by international regulators. A firm specific TLAC requirement would be determined by considering individual bank’s recovery and resolutions plans, systemic footprints, business models, risk profiles and organizational structures.

TLAC aims to ensure that the cost of any systemically important bank’s collapse is born by its investors not taxpayers by forcing G-SIBs to maintain a sufficient financial cushion to absorb losses in the case of failure and enable resolution authorities to implement a resolution strategy that minimizes the impact on the wider financial system. That could force some banks to add tens of billions of dollars in new capital, although, it will not come into effect until January 1, 2019 at the earliest.

Regulators in several countries including the US, see the FSB proposal as a key component to end the “too big to fail” mentality and reduce the risk that the collapse of a large bank would damage the financial system. Individual countries’ regulators are expected to follow their own rules. The federal reserve is also expected to publish a more stringent, debt-focused proposal in the near future, requiring at least half of the loss-absorbing capacity for US banks to come from debt. A significant portion of banks’ senior unsecured may disappear. The junior notes are designed to convert to equity or be written down when an issuer’s capital ratio falls to a pre-set level. Under the plan, at least one-third of the funding would have to be unsecured long-term debt that could be converted to equity in the event of failure with investors sharing in the firm’s losses.

Global Systemically Important Banks (G-SIBs): With the interconnected nature of today’s financial system the potential failure of a single large financial institution could have a significant impact on the broader system throughout the global economy. The financial crisis and the failure of some large, globally active, financial institutions left some national authorities in the position of having to financially intervene to support, using public funds, some of these “too big to fail” entities in order to prevent severe disruption to banking and financial

systems as well as global and domestic economies. The resultant moral hazard of these bail-outs, created from an expectation of future support should similar circumstances arise, may inadvertently increase risk-taking and potentially reduce market discipline at these key banks. Such potential inequality may actually increase the probability of further market stress going forward. As a consequence the G20 leaders charged the FSB with the task of developing a policy framework to address the “negative externalities” potentially created by SIFIs. In consultation with the FSB, a framework for G-SIBs was first issued by the BCBS in November 2011 and subsequently updated in July 2013. The Basel III reforms spearheaded by the BCBS require G-SIBs or SIFIs to have an additional loss absorbency to improve the resiliency of banks and banking systems. The global share of activity and systemic risk that a bank poses to the larger financial system is used to determine the Higher Loss Absorbency (HLA) requirement which will be phased in starting 2016.

This framework proposes an assessment methodology for identifying G-SIBs and calibrates the magnitude of a Higher Loss Absorbency (HLA) capital requirement to be used as a buffer to reflect the greater risks each institution poses. The HLA, expressed in terms of CET1 would apply to a G-SIB according to its perceived degree of systemic importance. The G-SIB requirements will be phased in beginning January 2016 with full implementation of a total surcharge on January 2019 (in the same manner as the capital conservation buffer).

G-SIB implementation: The buffer ranges from 1.0-2.5% of the Tier 1 common ratio and is determined by the assessment of a given bank against five broad categories with allowance for a judgmental overlay. The FSB has annually identified a group of G-SIBs using a scoring methodology that results in placement into five buckets where the highest bucket function as a disincentive for a bank to increase systemic importance. Each bucket indicates the additional amount of capital required to be held by G-SIBs as a percentage of RWA. The methodology gives equal weights of 20% to each of the five categories of systemic importance described in the section on G-SIB indicator methodology. Except for the size category, the BCBS has identified multiple indicators in each of the other four categories with each indicator equally weighted within its category. For instance, where there are two indicators in a category, each indicator is given weights of 10% where there are three, the indicators are each weighted 6.67% (i.e., 20/3). For each bank, the score for a particular indicator is calculated by dividing

the individual bank amount (expressed in EUR) by the aggregate amount for the indicator summed across all banks in the sample. From these results the banks identified as G-SIBs are assigned in four different buckets depending upon their systemic importance scores.

US regulators have issued a Notice of Proposed Rulemaking (NPR) for US G-SIBs proposing a higher capital rule which builds on the G-SIB capital surcharge framework established by BCBS. A firm identified as a G-SIB on the proposal would calculate its G-SIB surcharge under two methods and take the higher of the two surcharges. Similar to the BCBS's framework, the first method considers a bank's size, interconnectedness, cross-jurisdictional activity, substitutability and complexity. The second would also use similar inputs but would replace substitutability with the use of short-term wholesale funding and would generally result in significantly higher surcharges than the FSB/BCBS level. Under the new framework, an estimated surcharge for G-SIBs would range from 1.0-4.5% of a firm's total RWA. Under the Basel III rules announced in 2010, large banks are subject to a base requirement of capital equivalent to 7% of their RWA by 2019 (the Basel II rule required banks to hold 2% of common equity against RWA). The Fed's proposal is expect to take JPMorgan Chase to 11.5%, Citigroup to 10.5% and Bank of America, Morgan Stanley and Goldman Sachs to 9.5% capital ratios. The proposal would be phased in beginning on January 1, 2016, becoming fully effective starting 2019.

Domestic Systemically Important Banks (D-SIBs):

The framework developed to this end extends not only to G-SIBs but also to banks that are systemically important at the domestic level. In October 2012, the BCBS issued a principles-based framework for the assessment of Domestic Systemically Important Banks' (D-SIBs')

capital surcharges. This framework allows for national discretions to be applied to accommodate the structural characteristics of each domestic jurisdiction and its banks. The aim of the D-SIB framework is to reduce the probability of D-SIB failure by increasing their going concern loss absorbency (buffer) and to raise the level of regulatory supervision and scrutiny applied to such entities.

Guidance on the individual national regulatory treatment of D-SIBs is incomplete and at various stages of development. When implemented, it could be inconsistent and may also be subject to change. Table 10 presents D-SIB headlines and potential surcharges for several countries and Fig. 2 shows comparative CET1 D-SIB treatments among sample countries. To date, the primary consistency that does come from all of these publications is that the same indicators-size, interconnectedness, substitutability and complexity which are specified within the G-SIB methodology (with the exception of global cross-jurisdictional activity) will be considered by the

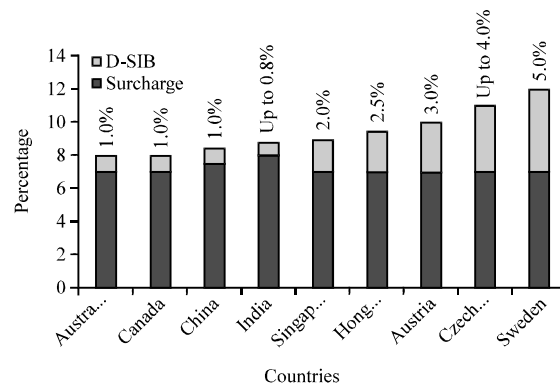


Fig. 2: Comparative CET1 D-SIB treatment by sample countries

Table 10: D-SIB headlines and potential surcharge by sample countries

Countries	Headlines	D-SIB potential surcharges	Reason for inclusion
Australia	Regulatory emphasis on domestic economy impacts	1%	Low level impact, essentially causing capital requirements at same level of G-SIB 'Bucket 1'
Singapore	Incorporation of foreign banks with large retail presence required	2%	Override applied upon base indicators where retail presence exists
India	G-SIB classification considered for domestic branches	0.8%	Could result in 2.5% surcharge applied to those branches in India for assets held in India rather than the relatively small (local) D-SIB charge
Hong Kong	G-SIB classification may lower requirement for domestic branches	1-2.5%	Range of surcharges applied at domestic level
Sweden	Early introduction of CET1 requirement accompanied by higher D-SIB than that published by BCBS for G-SIB	5%	Potential challenge to published G-SIB requirements through domestic regulatory research
Czech republic	May consider cross-activity in domestic assessment	Up to 4%	Regulator observation of G-SIB requirements at the lower end
Austria	Early introduction of CET1 requirement accompanied by restriction to cross-border lending	3%	Additional restrictions other than capital surcharge
China	D-SIBs identified and surcharge applied since 2010	1%	Early implementation of D-SIBs charge
Canada	CET1 of 7% requirement accelerated to January 2013. D-SIBs identified and surcharge introduced to apply from 1/1/2016	1%	Earlier implementation than 2019
United states	Supplementary Tier 1 surcharge for complex transactions	3%	Indicates impacts on smaller US competitors

local regulators. However, variation comes in the weightings applied and the level of supervisory judgment applied thereafter. FSB/BCBS are developing a program to review the implementation and adherence to the D-SIB requirements across the national jurisdictions. This peer review is due to start no later than mid-2015.

Revised securitization framework: Aiming to address several weaknesses in the Basel II securitization framework and strengthen the capital standard for securitization exposures held in the banking books in terms of reducing hierarchical complexity and the number of approaches, BCBS and the International Organization of Securities Commissions (IOSCO) published revised capital requirements for Asset-Backed Securities (ABS) that are set to take effect in January 2018. The shortcomings of the Basel II securitization framework includes mechanistic reliance on external ratings, lack of risk sensitivity for highly-rated securitization or low-rated senior securitization exposures, cliff effects and insufficient capital for certain exposures. The most significant revisions with respect to the Basel II securitization framework relate to changes in the hierarchy of approaches; the risk drivers used in each approach; and the amount of regulatory capital banks must hold for exposures to securitization. The requirements include how banks should estimate the likelihood of losses on ABS and involve a floor to limit how low these predictions can drop.

The Basel II framework consists of two hierarchies-the Standardized Approach (SA) aimed at less sophisticated banks and the Internal Ratings-Based approach (IRB) aimed at more sophisticated banks-and allows for more granular assessments of the relevant risks associated with securitization exposures. The revised hierarchy aims to reduce reliance on external ratings as well as simplify the framework by limiting it to the three primary approaches. It relies on the information that is available to the bank and on the type of analysis and estimation that it can perform on a specific transaction whereas in Basel II, it depended on the role of the bank in the securitization-investor or originator or on the credit risk approach that the bank applies to the type of underlying exposures. The Securitization Internal Ratings-Based Approach (SEC-IRBA) is at the top of the revised hierarchy and can be used with a Supervisory-Approved Internal Rating Model. This is followed by the Securitization External Ratings-Based Approach (SEC-ERBA) if credit ratings are permitted to be used in the jurisdiction and the Securitization Standardized Approach (SEC-SA) which generally uses a more conservative calibration. In addition, an explicit

adjustment to the maturity of a securitization tranche has been introduced as an additional risk driver to address shortcomings of the Basel II framework such as the sharp cliff effect in marginal capital charges. The Basel II framework assigned risk weights according to the external rating of the exposure, the seniority and granularity of the underlying pool. The revised rule extends it to consider additional risk drivers including tranche thickness of non-senior tranches (i.e., the size of the tranche relative to the entire securitization transaction) and tranche maturity. Moreover, the presence of caps to risk weights of senior tranches and limitations on maximum capital requirements aim to ensure consistency with the underlying IRB framework and not to punish securitization of low credit risk exposures. The committee also issued a set of proposed criteria for identifying “simple, transparent and comparable” asset-backed debt.

Capital floors (a framework based on the standardized approaches):

Several studies have raised concerns about widespread differences in banks’ average risk weights. The Basel committee has conducted the regulatory consistency assessment analysis for market and credit risks. Among the variations across banks in average RWAs for credit risk (credit risk accounts for 77% of the overall RWA variations at the bank level) which is based on the IRB approach to credit risk, the Basel study highlights that approximately, one quarter of the variation is driven by diversity in both bank and supervisory practices. The study investigates this practice based differences and shows that risk weight variation could cause the capital ratios for some outlier banks to vary by as much as two percentage points or 20% in relative terms even though most of the banks lie within 1% point of the 10% benchmark.

BCBS published draft plans in December 2014 to set a capital floor and reinforce a standardized method to measure potential losses in order to counter any possibility for banks to manipulate internal models to reduce their capital requirements. The capital floor based on the standardized approaches aims to enhance the comparability of capital outcomes across banks and ensure the level of capital above a certain level. The committee is working on the rules regarding when and how internal models can be used to estimate credit, market and operational risk-weighted assets to ensure that banks do not game the system. The regulators have suspected that banks might reduce the amount of capital to hold for any amount of risk by using internally developed models. The committee also plans to ban banks from using internal models to measure the risk of losses on

asset-backed debts held in their trading books. Basel III requires banks to meet minimum capital requirement equivalent to 7% of RWA. The proposed capital floor aims to prevent capital requirements from falling below a certain percentage based on a standardized approach.

THE POTENTIAL IMPACTS OF BASEL III CAPITAL RULES

The following are expected potentially impact the broad banking and financial sector as the substantially reinforced capital rules become implemented in the near future as planned.

Mortgage Servicing Rights (MSRs) and significant investments in non consolidated financial firms become less attractive given the new deduction methodology: The treatment of MSRs under the Basel III capital rule has led banks to exit the mortgage servicing business recently. Regulators finalized the Basel III rule in 2013 and the MSR capital requirements are slated to be phased in over two years starting in January 2015. The rule caps MSRs at 10% of capital and raises the risk-weighting to 250% from 100%. Banks have suggested changes to make the Basel III capital rule less burdensome by raising the 10% cap and have also asked that the risk-weighting for MSRs be returned to 100%.

Creation of a new type of security to absorb losses is expected: With Basel-based FSB and national regulators demanding that the world's biggest lenders hold hundreds of billions of dollars of securities that can be written off in a failure as a way to end an era of "too big to fail," a need for loss-absorbing senior bonds is anticipated. The FSB seeks the biggest banks to have equity and debt securities equivalent to as much as 25% of their RWAs to be written off or converted to equity in a crisis.

Potential adverse effects of liquidity rules are anticipated: Banks would potentially have the tendency to maintain capital even in periods of financial stress because they may fear that dropping below the certain liquidity levels would project weakness to the market. Based on how the new liquidity regime affects banks in the next downturn, regulators would need to carefully develop a supervisory approach to its liquidity rules in order to avoid any unforeseen adverse effects that could be serious with an illiquid market. In addition, the NSFR rule proposed by BCBS requires a certain amount of available stable funding on hand to meet liquidity needs beyond the 30 days standard imposed by the LCR.

The liquidity condition in the local region could be tighter: The Asian Development Bank (ADB) expressed

a concern in its quarterly Asia bond monitor that liquidity conditions in the region would probably be tightening because of the higher capital requirements under Basel III regulations. Because the capital that banks are required to hold against risk assets would be significantly higher, this will reduce the liquidity of the region's local-currency corporate bond market. Low-rated local-currency corporate bonds are assumed to be riskier assets.

Tougher fed capital rules may lower returns for US firms: The federal reserve board laid out a plan to further strengthen the capital positions of the largest, most systemically important US bank holding companies. Eight US firms would currently be identified as G-SIBs under the proposal: Bank of America Corporation, The Bank of New York Mellon Corporation, Citigroup Inc., The Goldman Sachs Group, Inc., JPMorgan Chase and Co., Morgan Stanley, State Street Corporation and Wells Fargo and Company. A more stringent US requirement than the global agreements may lower returns for shareholders of US lenders compared to those of firms in other parts of the world, thus placing them at a disadvantage against non-US firms. Particularly, the extra capital requirements could be heavier for firms that are more dependent on short-term wholesale funding from the markets, rather than deposits which the Basel committee did not consider for its rule. The extra capital requirement could be as high as 4.5% of Risk-Weighted Assets (RWA) on top of the baseline 7% defined under the Basel III rule. This is higher than the 2.5% maximum levy on G-SIBs set internationally and less complex banks would be required to hold the baseline capital ratio of 7% set by the BCBS.

In addition, the firms are not encouraged to fund from institutional investors in short-term contractors to satisfy the new requirements; they would need to hoard profits by delaying dividend increases and stock buybacks. Falling below the minimum capital standard would forbid a bank from paying dividends or bonuses. It is still unclear whether the Fed will force banks to maintain these capital levels for annual stress tests and the Comprehensive Capital Analysis and Review (CCAR) which subject balance sheets to a hypothetical economic stress scenario to determine how they endure. If banks are expected to maintain the proposed capital level during a financial crisis, they will have to add even more capital to their non-stress levels.

International comparisons could be more difficult owing to inconsistency of rules among countries: The objective of the Basel committee is to define a uniform minimal set of rules for transnational banking regulations that would

allow establishment of a safe and sound international banking system. At the same time each regulatory authority has a mandate to maintain the stability of the banking system in its own nation. With many countries taking different approaches, international comparisons of the rules are difficult. For example, the Swiss regulator has asked its two local G-SIBs, Credit Suisse and UBS to have twice the capital level—a total of 19%—set by Basel while defining capital more loosely. Key components of the regulation Switzerland imposed are as follows:

- Minimum CET1 per Basel III: 4.5%
- Additional Capital Conservation Buffer (CCB): 8.5%
- Progressive Systemic Surcharge (PSS): 6% (akin to G-SIB surcharge)
- Baseline requirement (4.5%) and 5.5% CCB buffer should be held in common equity

Particularly, when a large multinational bank becomes a threat to global financial stability, international coordination on how to bail out the bank could be a difficult task. A committee on setting clear rules for burden sharing among countries, suggested by Goodhart and Shoenmaker (2006), might not be a feasible option to solve this problem.

Tougher capital rules are expected for asset-backed debt: There is some concern that the revisions of the securitization framework published by BCBS which will come into effect in January 2018, might lead banks to shun investments in securitized debt.

The impacts of TLAC could be various across banks on different continents: The US banks will be largely unaffected by the FSB proposals because they issue bonds out of holding companies rather than their operating businesses. However, European banks which generally do not have holding companies will be more affected. Under the 2010 Dodd-Frank law, the operating subsidiaries of the US banks around the world will still function even if the holding company faces significant losses. Losses would be absorbed by the holding company's shareholders and debt holders. The parent's assets would be transferred to a new "bridge" company and the long-term debt would convert to equity in the new firm. Thus, bonds issued by holding companies will cost more to issue than those from operating units.

Funding from uninsured deposits could be more expensive: Deposits can be withdrawn at any time. If a vast amount of deposits are requested by clients at once or over a short period during a stressed time, it will leave

a firm short of cash. Approximately, 4 trillion dollars in deposits at banks in the US were uninsured which were mainly large deposits from big corporations, big hedge funds or insurers and smaller banks. The new liquidity and capital requirements established by the international regulators and the Federal Reserve are designed to make banks robust for sudden outflows of deposits in a crisis. Under this measure, the banks are required to maintain enough high quality assets to cover expected outflows of deposits over 30 days.

The new rule assumed that various types of deposits would have different paces of withdrawal. Under the new regime, the banks should keep reserves of as much as 40% for certain corporate deposits and as much as 100% against deposits from financial firms such as hedge funds. Thus, funding from large and uninsured deposits which was conventionally considered to be one of the most attractive funding sources would be more expensive (less profitable) for banks which would push some large clients to move money from deposit accounts toward more risky options such as short-term bond funds or uninsured money-market funds because banks would begin to charge fees on accounts that have been free. At the same time, it is likely to make wholesale funding much cheaper than deposits which would push banks toward riskier sources of funding and thus undermine the objectives of regulators.

The rule will be more likely to have little impact on retail deposits because they are insured up to \$250,000 by the Federal Deposit Insurance Corporation (FDIC). The banks are required to hold reserves equal to as little as 3% of the sums of retail deposits.

Increased capital and liquidity requirements could result in less available capital for lending and slowdown of economic growth: Banks' role in liquidity transformation is that it transforms short-term liabilities into longer-term partially illiquid assets (Diamond and Dybvig, 1983, 1986). Nicole claim that liquidity requirements can reduce bank lending significantly and the costs of capital and liquidity requirements become larger than the benefits of these regulations beyond a certain requirement threshold. Elliott also concludes that an increase in the ratio of common equity would raise bank lending spreads and so a higher interest rate charged on bank loans would lead to a drop in loan demand.

Potential directions in evolution of international and domestic capital framework: This study presents some potential discussions with respect to directions of future changes in the international and domestic capital regulation framework:

- Increase the risk-based capital ratio to (probably 10% or higher) beyond the current level of 8%
- Shift toward simpler and more leverage-based capital standards from modeling and a risk weighting-based framework. Regulators plan to reduce reliance on internal and external models. A bank of England study shows that the simple leverage ratio could be a better predictor of bank failures than the risk-weighted assessments (Haldane and Madouros, 2012). The leverage ratio will be more important for a stress test because it reveals weak banks. The lower the ratio, the weaker the bank
- Revamp the capital requirements for credit, market and operational risk
- Require more transparency and disclosures on risk assessment methods for a better and more consistent comparison across different banking organizations. There are some concerns expressed regarding consistency across firms about how the Basel risk weights were calculated by each bank

CONCLUSION

The banking industry is expected to experience significant shifts in capital regime over the next few years. International and domestic regulators are now aware of the flaws with models and risk weights exposed during and after the recent financial crisis and hence, the changes to capital requirements include reducing reliance on internal or external models and moving toward tougher capital standards based on simple and hardline capital ratios. Substantial increases in a bank's capital holding requirements would lead to major changes in its profitability, risk appetite, capital management and strategic planning. In addition, the focus of international regulators is shifting toward a system that relies on a simpler leverage ratio rather than modeling and risk weighting. Moreover, as a way to require banks to be more transparent regarding how they determine risk-weighted assessments, the Basel committee has been demanding greater disclosures from banks on how they assess credit or operational risk and how they arrive at their conclusions; eventually such disclosures will allow regulators to compare one bank to another in terms of capitalization. This study reviews recently announced capital regulations for financial institutions and discusses their potential impacts on the broad banking industry. Because banks play a special role in the economy to transform risk, maturity and liquidity for funding assets and generate investments to meet a variety of needs from individuals and corporations (Corrigan, 1982, 2000; Diamond and Dybvig, 1986), understanding and

assessing any possible effects of new bank regulations becomes critical to ensure globally sound and stable economies.

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