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EXECUTIVE SUMMARY

Financial sector reforms are being considered to address the risks posed by large and complex financial institutions (LCFIs). *The vast majority of global finance is intermediated by a handful of these institutions with growing interconnections within and across borders. Common trends that contributed to the recent global crisis included sharp increases in leverage, significant reliance on short-term wholesale funding, growth of off-balance-sheet activities, maturity mismatches, and increased share of revenues from complex products and trading activities. The key objective of the financial sector reforms is to promote a less leveraged, less risky (or better cushioned), and thus a more resilient financial system that supports strong and sustainable economic growth.*

The recent proposals of the Basel Committee on Banking Supervision (BCBS) on capital standards represent a substantial improvement in the quantity and quality of capital *in comparison with the pre-crisis situation. The analysis of this paper suggests that, subject to usual caveats associated with limited data disclosures and availability, phase-in arrangements will allow most banks to move to these higher standards through earnings retention, assuming a modest economic and earnings outlook. It also suggests that should banks generate strong earnings in the coming years, and distribute lower dividends, they could rebuild common equity capital ratios faster than required under the current phase-in periods.*

The analysis of the paper also suggests that the new capital standards will have a significant impact on investment-banking-type activities*, including through tighter requirements for trading book exposures. Investment banking activities will also be affected by a host of other regulatory initiatives, including the new accounting rules and higher standards for securitization, derivatives, and trading businesses, as well as measures to restrain certain activities. Yet, LCFIs with an investment banking focus have flexible business models and can adjust their strategies easily to mitigate the effects of the regulatory reforms, notwithstanding a multitude of regulations affecting their activities. The ultimate effect of the reforms on business models remains to be seen until the regulations take their final shape.*

A key challenge, therefore, is to ensure that tighter bank regulations achieve a material reduction in systemic risk, while not unduly dampening financial intermediation. *This will require strong efforts to avoid a shifting of risks to unregulated sectors or to less-regulated locations that would lead to a build-up of systemic risk. It will also require efforts to coordinate reforms to avoid layering of regulations that could unintentionally weaken the ability of the financial sector to support the economic recovery. Given the cross-border reach and systemic importance of most LCFIs—the principal focus of this paper—the critical need will be for international cooperation to ensure effective cross-border supervision; steps to ensure forceful market discipline on "too important to fail" institutions; effective monitoring of key markets to capture emerging risks; prompt and early corrective action for weak institutions; and global coordination to establish effective resolution and burden-sharing mechanisms to deal with failed cross-border institutions.*

I. INTRODUCTION

1. The recent crisis revealed the significant risks posed by large, complex, and interconnected institutions and the fault-lines in the regulatory and oversight systems. Over the past two decades preceding the crisis, banks in advanced countries significantly expanded in size and increased their outreach globally. In many cases, they moved away from the traditional banking model toward globally or regionally active large and complex financial institutions (LCFIs).[1] The vast majority of cross-border finance was (and still is) intermediated by a handful of these institutions with growing interconnections within and across borders. Common trends ahead of the recent crisis included a sharp rise in leverage, significant reliance on short-term wholesale funding, significant off-balance sheet activities, maturity mismatches, and increased share of revenues from complex products and trading activities. In some important countries, regulatory ratios were not sensitive to the build-up of various risks and capital was inadequate or of insufficient quality to provide a buffer.

2. Significant reforms are being considered internationally and domestically to rectify these deficiencies and failures, in order to safeguard the stability of the financial system going forward. The key objective is to promote a less leveraged, less risky (or better cushioned), and thus a more resilient financial system that supports strong and sustainable economic growth. The bulk of the proposals have focused on revising existing regulations applicable to banks and to influence the extent and consequences of their risk taking. These include enhancing the quality and quantity of capital and liquidity buffers, strengthening risk assessment, and enhancing the supervision and governance of financial institutions. Reforms are also being considered to reduce the systemic risk contribution of LCFIs. These initiatives include proposals to impose charges on systemically important LCFIs, to facilitate resolution of cross-border institutions, and measures that affect the structure, organization, or scope of the activities of LCFIs. Work is also underway to design and calibrate specific macro-prudential tools that will address procyclicality.

3. A key challenge for policymakers is to ensure that the changes in banks' business strategies in response to tighter regulations do not result in a further build-up of systemic risks in the "shadows;" that is, either in unregulated sectors or in locations with less onerous regulatory standards. Important safeguards are therefore needed to mitigate these unintended consequences, while also ensuring to minimize adverse effects on banks' capacity to support the economic recovery.

4. This paper aims to provide policy recommendations to mitigate these risks, based on an analysis of a sample of LCFIs. Where data are publically available, it provides

[1] LCFIs could be defined as diversified cross border financial firms with complex organizational and management structures whose large scale activities cross national borders and sectoral boundaries. The group of LCFIs covered in this paper includes a broader range of institutions that may be either globally or regionally systemic, and is not based on a Fund view of global systemically important financial institutions (G-SIFIs).

a quantitative analysis of the effects of the proposals on LCFIs, assuming that their business models remain unchanged. It also provides a qualitative analysis of the impact on LCFIs' business strategies and how different business models (commercial, investment, and universal) may react to, and be affected by, the regulations. The analysis uses publicly available data and focuses exclusively on implications for LCFIs and their business strategies. It hence differs from the strictly confidential quantitative impact studies (QIS) conducted by national authorities (based on supervisory data) under the auspices of the Basel Committee on Banking Supervision (BCBS), as well as from other studies that aim to estimate the potential macroeconomic impact of proposed regulatory changes.[2]

5. The paper is organized as follows. Section II presents a brief overview of vulnerabilities that built up over the last couple of decades and the regulatory reforms that have been proposed to address them. Section III explores the likely effects of regulatory reform proposals on a sample of LCFIs, and how different regions and business models (commercial, investment, universal banking) may be affected by the regulations. Section IV then analyzes qualitatively, based on extensive discussions with LCFIs and regulators, the likely impact of regulatory reform proposals on LCFIs' business lines and potential consequences of these changes on the financial system and the macroeconomy going forward. Section V concludes with a discussion on policy implications and the safeguards that policymakers could put in place to limit unintended consequences for the soundness of the financial system and its ability to support sustainable economic growth.

II. The Regulatory Reform Proposals—Background

6. The recent financial crisis revealed deep structural weaknesses in the global financial system, calling for substantial changes to the regulatory framework. This section presents a brief overview of vulnerabilities that developed over the last couple of decades and the reforms that have been proposed to address them.

A. Weaknesses Leading Up to the Crisis

7. The financial landscape and the business models of financial institutions in advanced economies changed significantly in the run-up to the crisis. Financial institutions across the world, especially in advanced countries, evolved, particularly intensively after 2000, in ways that made them more vulnerable to potential adverse shocks:

- **LCFIs became larger, highly complex and leveraged, and relied increasingly on short-term wholesale funding** (Figure 1). Lack of transparency and limited disclosure of the types and locations of risks made it difficult to assess the extent of

[2] The recent studies include the macroeconomic impact assessments of the Institute of International Finance (June 2010), BCBS Macroeconomic Assessment Group (July 2010), and Long Term Economic Impact Group (August 2010).

exposures and potential spillovers. To lower costs, institutions switched from deposits to other funding sources, such as money market mutual funds, short-term commercial paper, and repos. The trading book in LCFI assets displaced loans as the most important asset group, reducing the importance of net interest income, and raising the share of trading assets in total assets (from 20 percent in 2000 to above 40 percent in 2008 for US, European and UK LCFIs). In most countries regulatory ratios did not capture the build-up of risks, and capital was inadequate or of insufficient quality to provide a buffer.

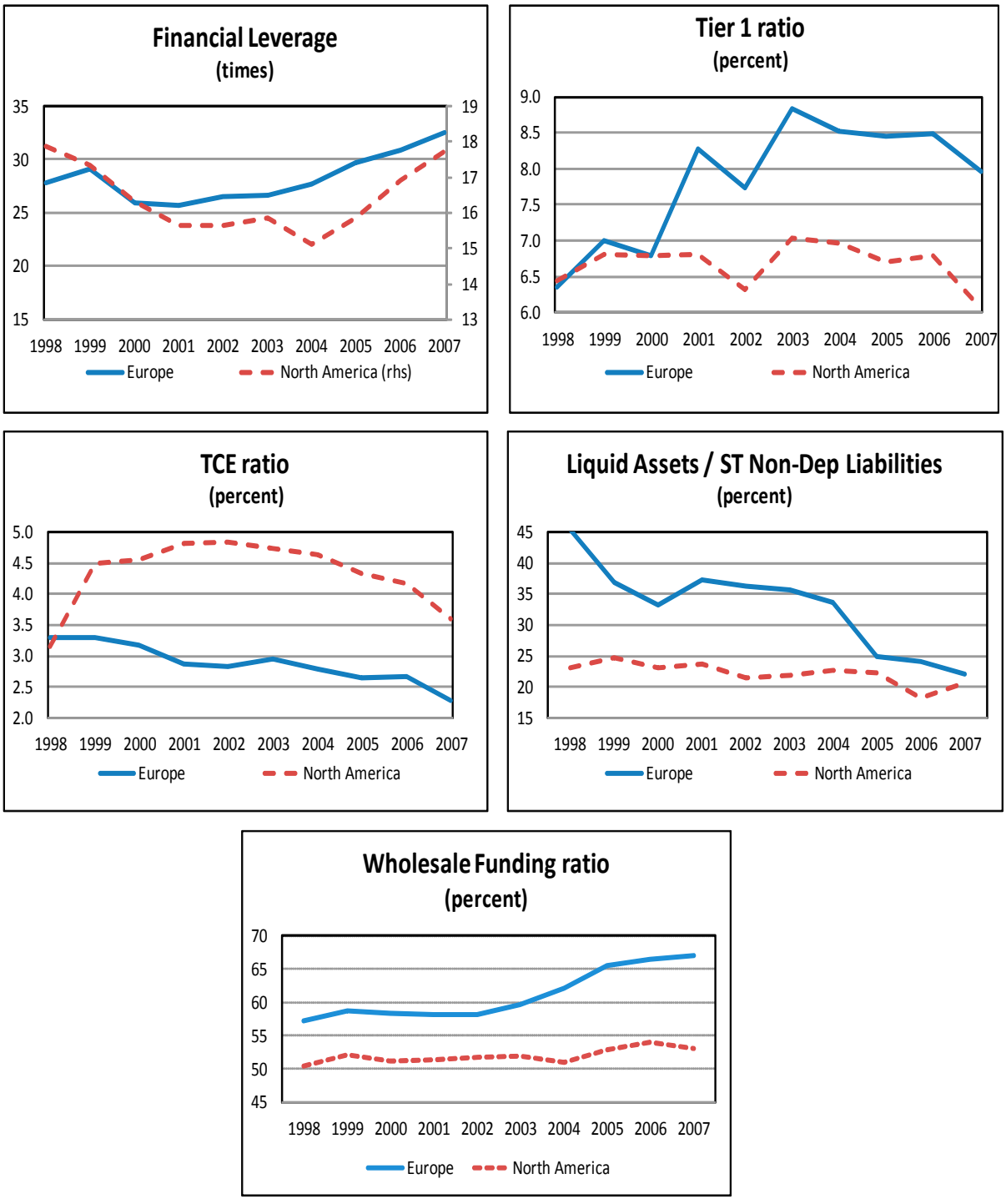
- **LCFIs also became heavily interconnected, facilitating propagation of the shocks across the system, domestically and globally**. Cross-border interlinkages also increased and financial activity concentrated in a small, core set of LCFIs in the years before the crisis (Figure 2). In addition to the important links between (bank and nonbank) LCFIs through the funding side, asset side interlinkages also grew due to increased sophistication and complexity of instruments, and their interconnectedness (IMF 2010a).

- **Financial intermediation increasingly shifted to, and became interconnected with, the nonbank ("shadow banking") sector, as a natural consequence of securitization** (Figure 2). These relatively unregulated financial activities grew in large part to avoid regulatory requirements affecting banks. This increased the distance between borrowers and the ultimate debt owners, and reduced banks' incentives to monitor and screen borrowers. At the same time, banks and shadow banks remain interconnected through funding links and activities of bank affiliates in the shadow banking system.

8. The global financial crisis revealed that financial sector regulation, risk assessment, and resolution authority did not keep up with these changes.[3] Regulations did not fully capture the set of risks banks were exposed to, particularly market, liquidity, and funding risks, and the regulatory oversight framework was not sufficiently wide to capture the build-up of vulnerabilities in the shadow banking system. Many banks lacked adequate governance practices and risk management systems, and supervision was not effective in identifying and correcting these deficiencies. Resolution efforts of weak banks were hampered by the complexity and interconnectedness of the financial institutions, both domestically and across borders. Radical reforms were, therefore, needed to strengthen the stability and resilience of the global financial system and prevent the recurrence of a systemic crisis.

[3] See, among others, Claessens et al. (February 2010); Viñals et al. (May 2010 and October 2010).

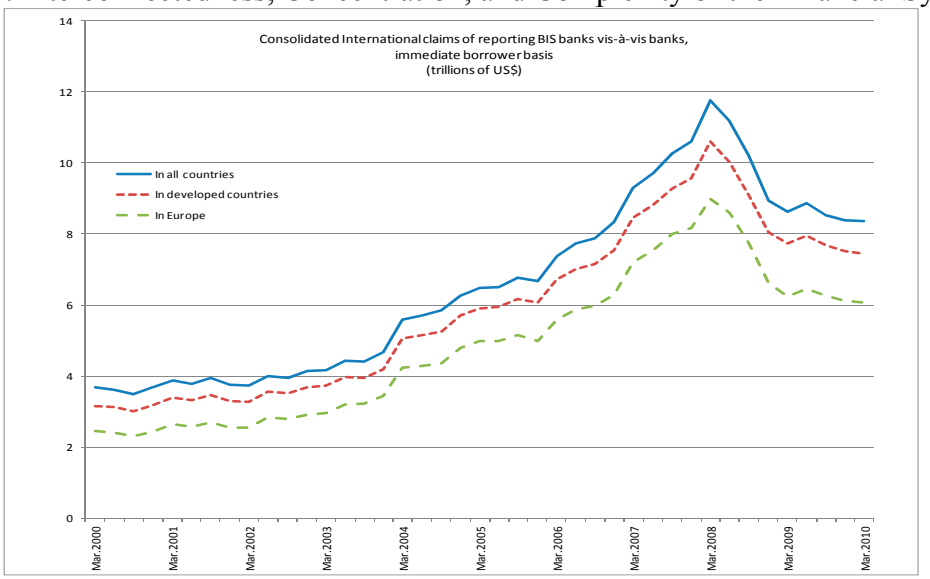
Figure 1. Selected Financial Indicators Leading Up to the Crisis[1]

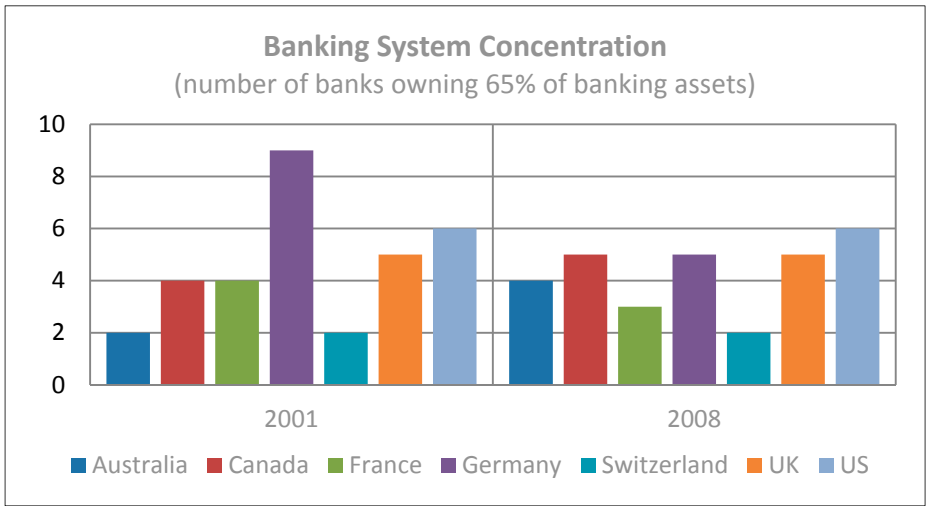


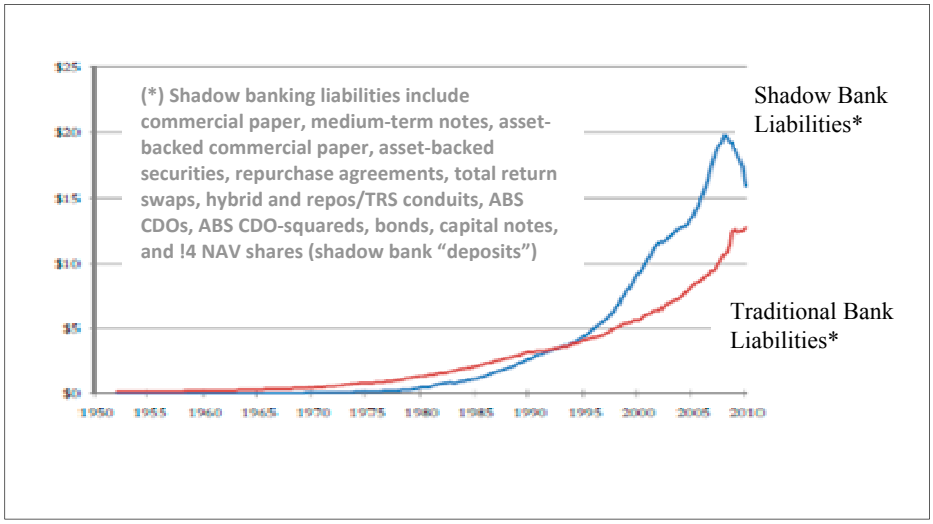
Source: Bloomberg and IMF Staff estimates.

[1]Financial leverage stands for the ratio of Total Assets to Total Common Equity (not adjusted for differences in accounting rules), Tier 1 ratio for Tier 1 Capital to Risk Weighted Assets, TCE ratio for the ratio of Tangible Common Equity to Tangible Assets, and Wholesale Funding ratio stands for Non-deposit to Total Liabilities.

Figure 2. Interconnectedness, Concentration, and Complexity of the Financial System







Source: Bloomberg, EIU, BIS, U.S. Flow of Fund Accounts as of Q1 2010 (FRB) and FRBNY.

B. Main Regulatory Reform Proposals

9. In its April 2009 declaration, the G-20 group of countries agreed on a set of reforms to strengthen the financial system (Appendix Table 5). The regulatory reforms have focused so far primarily on improving the resilience of individual institutions and sectors. Regarding the banking sector, the Basel Committee on Banking Supervision (BCBS) provided in end-2009 guidelines and recommendations to improve the resilience of banks, some of which were agreed upon by September 2010.[4]

10. The key components of the BCBS proposals are: (i) higher and better quality capital (mostly common equity, with better loss absorption features); (ii) better risk recognition for market and counterparty risks; (iii) a non-risk based leverage ratio as a backstop measure; (iv) tighter liquidity standards, including through a liquid asset buffer for short term liquidity coverage and a longer term stable funding requirement to limit maturity mismatches; and (v) capital conservation buffers.

11. The new capital standards are a substantial improvement in comparison with the pre-crisis situation.

- Common equity will represent a higher proportion of capital and thus allow for greater loss absorption. In particular, the required minimum will increase to 4.5 percent from the generally observed 2 percent under existing standards and will be complemented by an additional 2.5 percent capital conservation buffer (composed of fully loss absorbing capital—i.e., equity), which would restrict distributions in the form of dividends or bonus payments as banks approach the minimum (Table 1).

- The amount of intangible and qualified assets that can be included in capital will be limited to 15 percent (details are provided in Annex I).[5] The implementation period is phased in from 2013, with a gradual introduction of the deductions from 2014, to reach a common equity target at 7 percent by 2019 (including the capital conservation buffer).

- This increase in the level of capital comes on top of an increase in the capital requirements for trading book exposures, counterparty credit risk, and exposures to other financial institutions.[6] Banks are expected to comply with the revised requirements for better risk recognition and capital coverage by end-2011. These

[4] BCBS (December 2009); BIS (July 26, 2010); and BCBS Press Release (September 12, 2010).

[5] These include deferred tax assets (DTAs), mortgage servicing rights (MSRs), significant investments in common shares of financial institutions, including insurance subsidiaries, and other intangible assets.

[6] See BCBS (July 2009).

changes are expected to reduce incentives for regulatory arbitrage between banking and trading books.

- A leverage ratio of 3 percent will be introduced alongside current regulations on a trial basis starting 2013, with implementation and migration to Pillar 1 by 2018.[7]

Table 1. BCBS Capital and Liquidity Standards
(In percent, all dates are as of January 1)

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Leverage ratio	Supervisory monitoring		Parallel run 2013-17 Disclosure starts January 1, 2015					Migration to Pillar 1	
Minimum common equity capital ratio			3.5	4.0	4.5	4.5	4.5	4.5	4.5
Capital conservation buffer						0.625	1.25	1.875	2.50
Minimum common equity plus capital conservation buffer			3.5	4.0	4.5	5.125	5.75	6.375	7.0
Phase-in deductions from CETI (including amounts exceeding the limit for DTAs, MSRs, and financials)				20	40	60	80	100	100
Minimum Tier 1 capital			4.5	5.5	6.0	6.0	6.0	6.0	6.0
Minimum total capital			8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum total capital plus conservation buffer			8.0	8.0	8.0	8.625	9.25	9.875	10.5
Capital instruments that no longer qualify as noncore Tier 1 capital or Tier 2 capital			Phased out over 10-year horizon beginning 2013						
Liquidity coverage ratio (LCR)	Observation period begins				Introduce minimum standard				
Net Stable Funding Ratio (NSFR)		Observation period begins						Introduce min standard	

Source: BCBS, Press Release, September 12, 2010.

12. Global liquidity standards are another key element of the regulatory reform. The Liquidity Coverage Ratio (LCR) aims to ensure that internationally active banks have up to 30 days of high quality liquid assets to meet short term institution specific and systemic

[7] In several countries, such as Canada, Switzerland, and the United States, the leverage ratio is part of the regulatory requirements.

stresses, and to guard against a run on a bank's wholesale liabilities, including secured funding.[8] It will be implemented in January 2015 after an observation period beginning in 2011. The Net Stable Funding Ratio (NSFR) is designed to promote longer term funding of assets in times of stress to reduce banks' dependence on volatile funding sources. It will become a minimum standard by January 2018, after an observation period starting in 2012, and further calibration of the underlying parameters (details are provided in Annex 2).[9]

13. However, much less progress has been made overall in developing regulations with a macro-prudential approach. These would be needed to dampen the tendency for financial institutions to behave procyclically and to properly account for the systemic risks posed by individual financial institutions, including non-banks. The BCBS has requested comments on the basis for computing countercyclical risk weights, and more generally, how to construct countercyclical capital charges. Various proposals under consideration to reduce contribution of systemically important financial institutions (SIFIs) to systemic risk are listed in Table 2. Some countries (e.g., Switzerland, the United Kingdom, and the United States) are already implementing policies to address risks posed by SIFIs.

III. Implications of the Reform Initiatives for LCFIs

14. This section provides an illustrative analysis of the impact of the new capital and liquidity requirements on a sample of LCFIs.[10] The key objective is to explore how banks and their business strategies are affected by the proposed regulations given the structure of their main activities and business lines. The analysis covers the impact of the regulations on capital (definition and market risk) and liquidity requirements (NSFR). The potential implications of the Leverage Ratio and Liquidity Coverage Ratio (LCR) are not analyzed quantitatively due to a lack of access to detailed data required to estimate these ratios. The sample includes 20 countries with a total of 62 banks from three regions (15 from Asia, 33 from Europe, and 14 from North America), and three business models

[8] As announced by BCBS in July 2010, eligible liquid assets include Level 1 assets (cash, central bank reserves, and high-quality sovereign debt) and Level 2 assets (high-quality corporate and covered bonds and nonzero risk weighted sovereign debt subject to haircuts and a cap). The BCBS also announced that a carve-out should be granted to countries where banks face structural constraints in meeting the minimum LCR because of low government debt. The rules provide for some flexibility, while limiting country specific exemptions and minimizing regulatory arbitrage opportunities.

[9] LCR, defined as the ratio of Stock of High Quality Liquid Assets to Net Cash Outflows over a 30-day horizon, is required to be at least 100 percent. The NSFR, defined as the ratio of Available Stable Funding (ASF) to Required Stable Funding (RSF), is also required to be at least 100 percent (see Annex 2 for details).

[10] Given limited publically available data on a consistent basis, especially on components of bank capital, a standard set of assumptions common to all banks were used where needed. Further details on the methodology are provided in Annex I.

(34 commercial; 19 universal, and 9 investment banks).[11] [12] The sample banks account for more than $24 trillion of risk-weighted assets (RWA), and more than $2.6 trillion of Tier 1 regulatory capital as of year-end 2009.[13] Annex I provides sample and definitional details.

Table 2. Measures to Reduce the Systemic Risk Contribution of SIFIs

Measures to reduce the probability and impact of failure of SIFIs	• Capital and/or liquidity surcharges based on measure of systemic importance • More intense supervision of SIFIs • Risk-based levies on non-core funding (based on systemic risk contribution)
Measures to improve the capacity to resolve SIFIs	• Living wills (resolution plans to map out how to safely wind-down institutions in case of failure) • Financial stability contribution linked to a credible and effective resolution scheme • Special resolution schemes that give power to the supervisors to break up banks • Contingent capital and bail-in proposals—as means of providing further going-concern loss absorbency and reducing government bailouts • Cross-border resolution frameworks and burden-sharing arrangements • Subsidiarization/ring-fencing domestic financial institutions from cross-border risks (especially if the previous option proves unviable)
Measures to strengthen the core financial market infrastructure to reduce contagion	• Requiring OTC derivatives to be traded through central counterparties
Structural measures	• Narrow banking that would restrict deposit taking institutions to invest in a limited set of safe assets • Other limits or restrictions on the size and/or scope of banks (e.g., in the United States, the Volcker rule, restrictions on derivative activities of banks).

A. Impact of the Capital Requirements

15. The underlying quality and comparability of the capital structure differ significantly across the sample LCFIs and countries. The total amount of assets with weak going-concern loss-absorbency characteristics is high on average, if compared to banks' core Tier 1 capital, varying significantly across banks and countries.[14] As of end-2009:

[11] Geographies are mapped based on banking groups' country of residency: Asia (Australia, China, India, Japan, and Korea); Europe (Austria, Belgium, France, Germany, Greece, Italy, Nordics, Portugal, Spain, Switzerland, UK); and North America (U.S. and Canada).

[12] Business models are based on banking groups' principal source of income (commercial banks: lending activity; universal banks: lending, insurance, and other services; and investment banks: trading/advisory/asset management activity).

[13] End-March 2010 in the case of Japanese banks (given a different reporting cycle).

[14] These assets include goodwill, minority interests, investments in unconsolidated subsidiaries, the value of DTAs, MSRs, and other intangible assets (see Annex I).

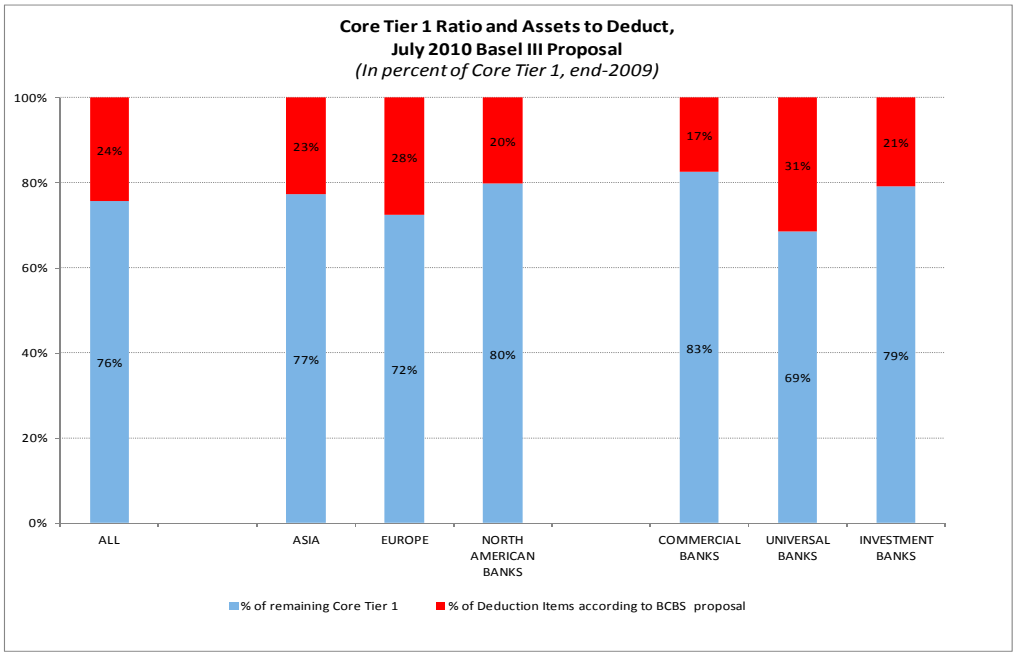
- Such assets represent, on average, about 35 percent of banks' core tier 1 capital, ranging between 5 to 60 percent of core capital across countries.

- European banks have the highest ratio of these assets (38 percent), followed by North American banks (33 percent), and Asian banks (32 percent), though with wide variations within each region.

- By business models, universal banks with a range of different business lines have the highest ratio (45 percent of total core Tier 1), followed by investment banks (32 percent), and commercial banks (26 percent).

16. According to the new standards, banks will be required to deduct most of such assets from the common equity component of capital, which will improve the quality of capital. Assets with low absorption capacity will be limited to 15 percent of core Tier 1 capital. Based on an analysis of the individual LCFIs, about 24 percent of core Tier 1 of the sample LCFIs, on average, will be eliminated from the definition of regulatory capital—a substantial strengthening of the quality of capital (Figure 3). The shares vary widely across countries, from less than 5 percent to more than 30 percent, reflecting banks' business characteristics. For example, some banks have large investments in unconsolidated subsidiaries, reflecting a universal banking model; and others have large minority interests, reflecting sizable operations abroad. Universal banks that carry out a range of different business activities (subject to deductions for minority interests, insurance subsidiaries, and mortgage servicing rights) experience the largest deductions from capital (31 percent), compared with commercial and investment banks (17 percent and 21 percent, respectively).

Figure 3. Implications of BCBS Proposals on Quality of Capital



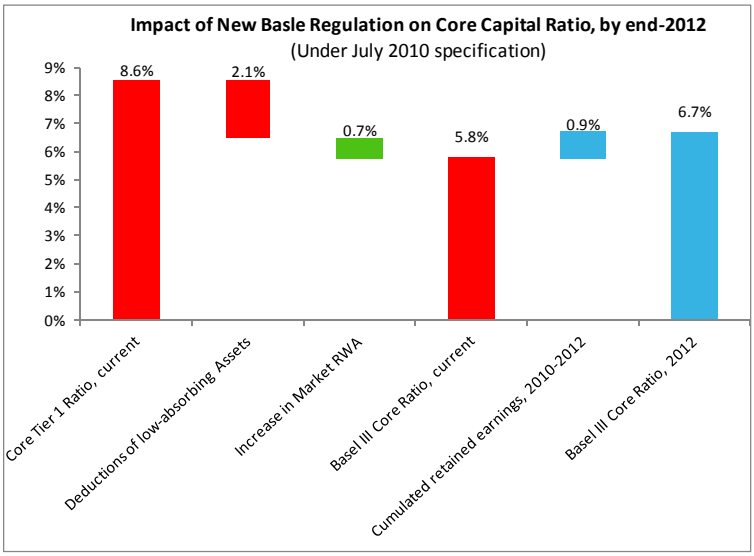
Source: Company reports, Fitch Database, and staff estimates based on data for sample LCFIs.

17. If applied immediately, the proposed deductions would lower the core Tier 1 capital ratio of the average sample LCFI from 8.6 percent in 2009 to 6.7 percent, and after incorporating changes in market risk provisions, to 5.8 percent (Figure 4). Investment banks are impacted the most by the regulation on market risk weights (given the significant share of trading and securitization in their business mix), followed by universal banks, which also carry out investment bank type activities (Figure 5). The effect on capital ratios from the two sources (capital definition and market risk) could be partially offset if banks retain earnings that they can accumulate over the next few years until the start of implementation.

18. The dispersion of the likely impact of the Basel capital regulations across different regions and business mix suggests that:

- **The new regulations would have the largest effect on European and North American banks overall, followed by Asian banks.** In North America, the drop in core capital would reflect the significant impact of increased market RWA, while in Europe the most significant impact would come from asset deductions (given the large concentration of universal banks with significant subsidiaries in the region and involvement in bank-insurance businesses).[15]

Figure 4. Breakdown of the Impact of Various Deductions on Core Tier 1 Capital

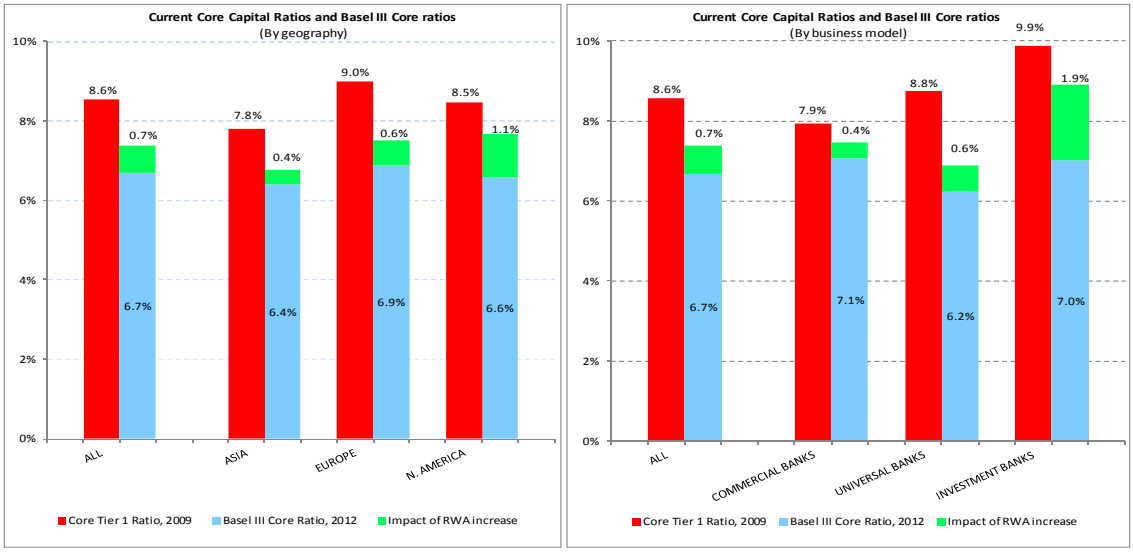


- **The proposals would affect more significantly the investment and universal banks, reducing the differences across core capital ratios for different business models** (Figure 5). For the sample of banks, the core capital ratios of investment,

[15] The low impact of the deductions across Asian banks is not homogeneous, with Japanese banks affected more than other Asian banks, given the large deductions related to minority interests and net DTAs.

universal, and commercial banks would fall from 9.9 percent, 8.8 percent, and 7.8 percent to 7.0 percent, 6.2 percent, and 7.1 percent, respectively, following the adjustments. Traditional commercial banks would be the least affected, with their simpler business focus, while banks with significant investment banking activities would experience larger reductions, owing particularly to higher market risk-weighted assets. Universal banks would also be affected by a combination of increased risk weights associated with their trading business and deductions related to minority interests and insurance business.

Figure 5. Adjusted Core Tier 1 Capital Ratios for Capital Definition and Rise in RWA



Source: Company reports, Fitch Database, and staff estimates based on data for sample LCFIs.

19. The phased implementation of the BCBS proposals should allow most banks sufficient time to close the capital gap through earnings retention. BCBS has allowed for a gradual phase-in period to avoid the need for abrupt adjustments to banks' balance sheets (see Table 1).[16] During the first years of implementation, the new regulation would thus have a minimal impact. The number of banks failing to meet the new target (including the 2.5 percent of capital conservation buffer) would reach about 10 by 2019 (Table 3). These estimates, however, are based on assumptions of relatively modest earnings growth and do not take into account the possibility that banks which expect to fall short of requirements could raise new capital or increase the proportion of earnings applied to building up capital.

[16] Banks could issue new capital, reduce balance sheet size through further deleveraging, increase product pricing, rebuild capital through earning retention and limited dividend distribution, or use a combination of these different options to meet the higher requirements. During 2009-10, several of the large banks in the sample, both in Europe and in the United States, issued additional capital to raise their capital ratios and continued to deleverage.

20. The capacity of banks to meet the capital requirements will thus depend on their starting level of capitalization, and their ability to rebuild capital through earnings retention or acquire fresh capital. Under a scenario of no earnings retention, the banks in the sample would require about $360 billion additional capital to comply with the 7 percent core capital ratio. The number of banks failing to meet the 7 percent target would increase to 48 banks by 2019 under this scenario (see Table 3 and Figure 6).[17] [18] Universal banks would need the greatest amount of additional capital, while banks with significant investment banking activities would benefit from high starting capital levels following the recent rounds of capital-raising.

Table 3. The Impact of the Gradual Phase-in Period[1]

(All dates as of January 1 of respective year)

Number of Banks Below Minimum Common Equity Common Ratio (incl. Capital Conservation Buffer)				
	Without Retained Earnings	With Retained Earnings	Thresholds: Capital to reach Minimum Common Equity Cap Ratio + Cap Conservation Buffer	Phase-In Deductions from Common Equity Tier 1
2013	0	0	3.50%	0%
2014	0	0	4.00%	20%
2015	1	0	4.50%	40%
2016	4	1	5.125%	60%
2017	17	2	5.75%	80%
2018	32	6	6.375%	100%
2019	48	10	7.00%	100%

[1] Estimates with earnings at 50 percent of average 2004-07 earnings per bank; and earning retention rate at 60 percent.

21. A number of messages can be drawn from the analysis:

- Most banks in the sample should be able to meet the higher target mainly through earnings retention, provided a modest earnings outlook. Banks can—as has been the case—issue additional capital and/or reduce dividend payments to build further their capital buffers. Should banks generate good earnings in the coming years, and distribute lower dividends, they could rebuild common equity capital ratios even faster than required under the current phase-in periods. This is important for increasing banking sector resilience, to absorb any future potential shocks ahead.

- An eventual phasing out of the permanent "15 percent allowance" for qualified and intangible assets might be considered to further enhance the quality and comparability

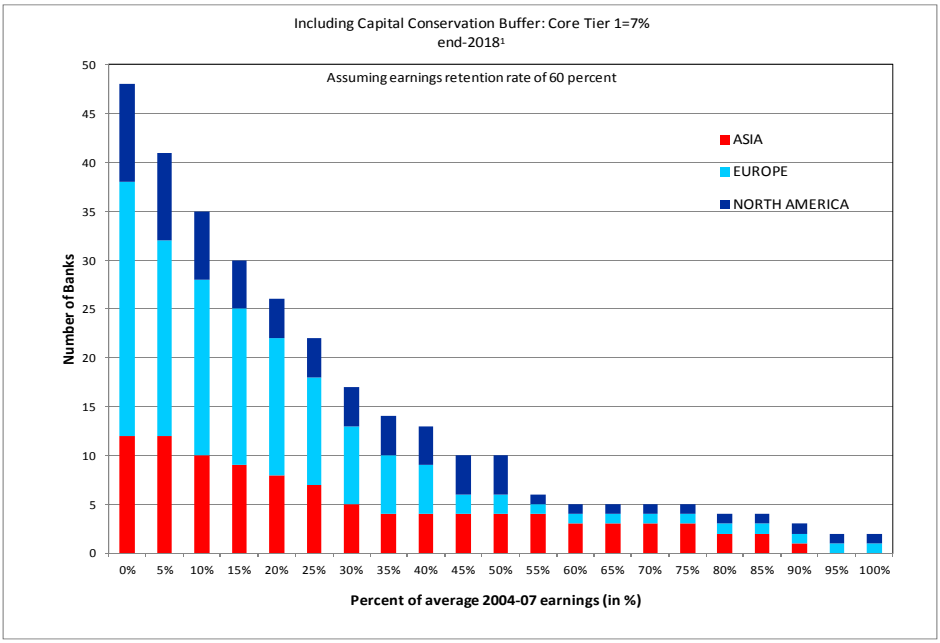
[17] Bloomberg market consensus estimates suggest that by 2012, the LCFIs in the sample would generate earnings in excess of the 2004–2007 average.

[18] For the purposes of this analysis, risk-weighted assets are kept constant over the phase-in period.

of capital; first, however, a careful analysis would be needed of its implications for banks' earnings and capital generation capacity.

- These implications should be considered as part of the overall reform package, which includes other aspects of the Basel and other regulatory proposals (e.g., counter-cyclical buffers, systemic surcharges and levies), as well as various national reform proposals that would also introduce additional capital requirements on banks.

Figure 6. Banks Falling below Basel Common Equity Ratio, Various Earnings Assumptions



Source: Company reports, Fitch Database, and staff estimates based on data for sample LCFIs.

B. Impact of the Liquidity Proposals

22. Industry estimates, covering a limited set of U.S. and European banks, suggest that most banks would meet the LCR criteria, and for banks that do not yet meet the criteria, the liquidity gap may be limited and manageable (Table 4, panel 1). A comprehensive staff analysis of the impact of LCR has proven difficult given the lack of publically disclosed information (in particular data on short term cash flows). Using the Liquid Assets (cash plus government securities) to Total Assets ratio as a proxy measure of liquidity coverage shows that Asian banks have the best short-term liquidity position, followed by European banks. The favorable position of Asian banks broadly reflects their simpler balance sheet structures with limited amount of complex securities, and a stronger funding profile skewed towards deposits; within these regions there is variation, with some countries having low ratios due to structural shortage of government securities. Across business models, commercial banks tend to have the lowest ratios, likely reflecting the duration of their loan portfolio.

Table 4. IMF and Analyst Estimates of the Impact of Liquidity Proposals

Effects of Basel III Regulatory Changes on the Liquidity Coverage Ratio in Large Global Banks

Region	Number of Banks	LCR		Liquidity Gap (US$ billion)	
		Dec. 2009 Prop.	Jul. 2010 Amend.	Dec. 2009 Prop.	Jul. 2010 Amend.
JPMorgan February 17 and July 29					
EU	12	130.6%	155.3%	$56	$12
US	4	148.1%	189.5%	$140	$17
Total	16	134.4%	163.4%	$196	$29

Effects of Basel III Regulatory Changes on the Net Stable Funding Ratio in Large Global Banks

Region	Number of Banks	NSFR		Funding Gap (US$ billion)	
		Dec. 2009 Prop.	Jul. 2010 Amend.	Dec. 2009 Prop.	Jul. 2010 Amend.
IMF					
Europe	34	74.2%	89.0%	NA	$3,549
Asia	14	90.8%	112.0%	NA	$164
North America	14	109.1%	127.0%	NA	$72
JPMorgan February 17 and July 29					
EU	12	90.7%	104.3%	$1,165	$410
US	4	133.0%	139.6%	$0	$0
Total	16	98.6%	112.5%	$1,165	$410
MS January 27					
EU	40	87.0%	NA	$2,161	NA
CS May 14					
EU	29	85.6%	NA	$1,873	NA
Barclays June 1					
EU	18	85.0%	NA	$1,881	NA
HSBC July 27					
France	3	NA	96.7%	NA	$88

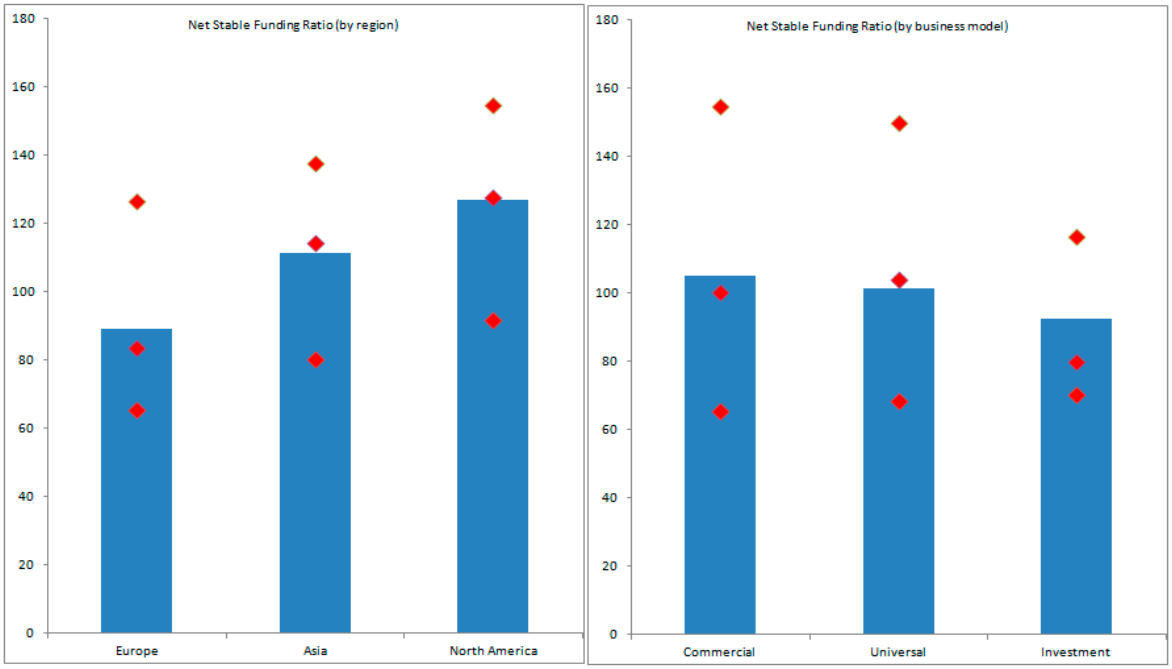
Source: Various analyst reports and staff estimations based on sample LCFIs.

23. An illustrative analysis of the impact of NSFR on the sample of LCFIs suggest a wide variation in banks' ability to meet the required 100 percent level (see Figure 7 and Annex 2 for a description of the methodology):

- **European banks would be most affected by the NSFR requirement** (in part reflecting greater reliance on wholesale funding and high loan-to-deposit ratios; Figure 8). Most North American banks and some Asian banks already meet the 100 percent NSFR criterion. The average NSFR is 89 percent for European banks, 112 percent for Asian banks, and 127 percent for North American banks, compared to the 100 percent requirement under the Basel proposals. Compared to other banks in the sample, North American banks, on average, have a high share of securities on the asset side, and above average share of deposits.

- **The regional aggregation masks the variation within the regions.** In Europe, a majority of the sample banks does not meet the 100 percent criteria, but some banks have much lower ratios than others, for example those with large amounts of long term lending on the asset side of their balance sheets and high dependence on wholesale funding. A similar structure is observed in some Asian banks that have a high share of wholesale funding to finance long term assets.

Figure 7. Estimates of NSFR across Geographies and Business Models[1]



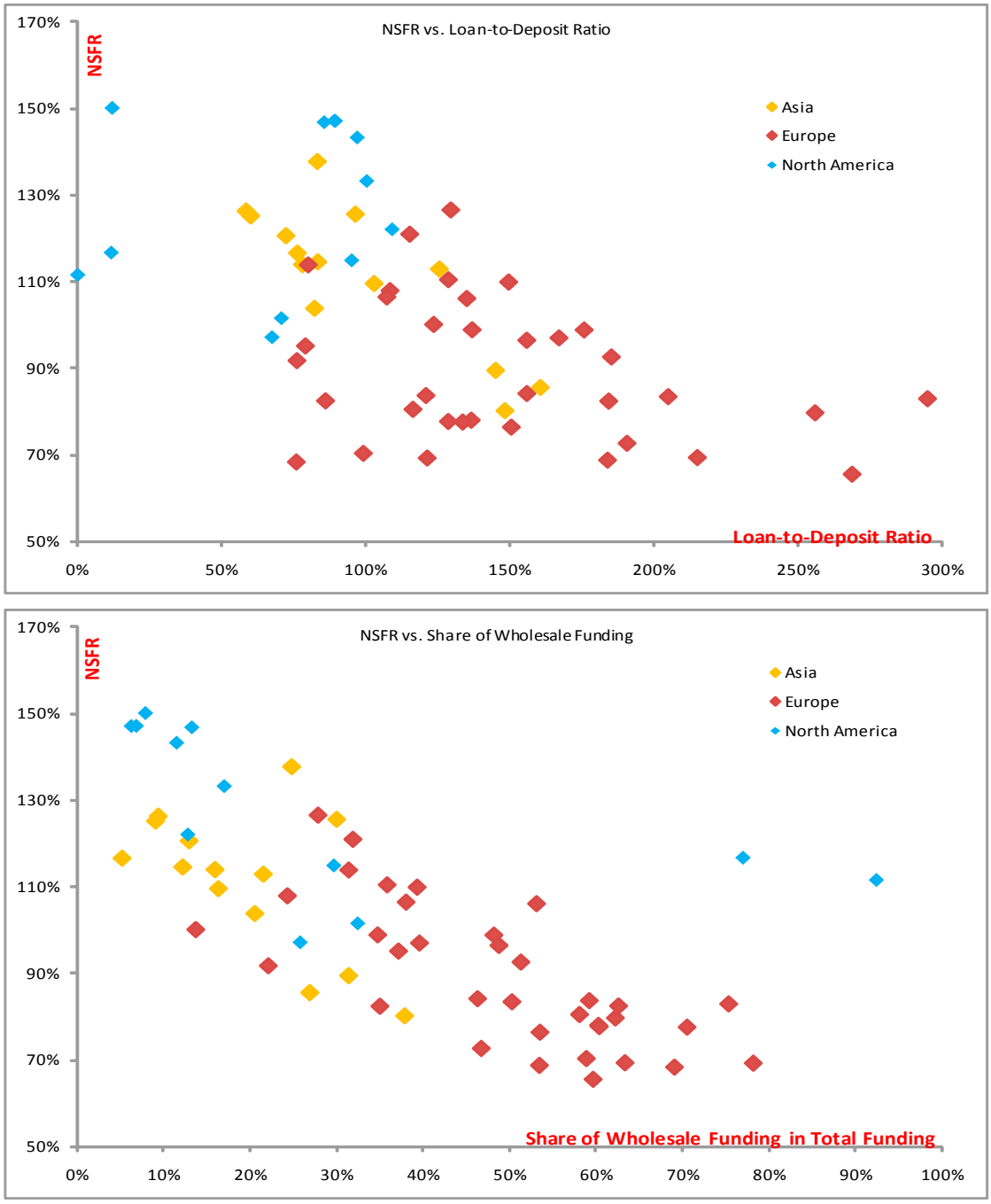
[1] The diamonds represent the minimum, median, and maximum values, respectively, for each bar.
Source: Bankscope, and staff estimates based on data for sample LCFIs.

24. To improve their funding profiles and meet the NSFR requirement, banks could change their funding mix (by issuing term funding and/or raising more customer deposits) and/or reduce their assets. It is likely that banks will adopt a combination of the three options in meeting the requirements. Changing the maturity structure toward long-term debt will require banks to pay the term premium. Attempts to fill the funding shortfall with deposits would be a challenge given competition in local deposit markets and difficulties associated with building branch networks. Shrinking assets may be costly in terms of foregone market share and profitability. The ultimate choice of the funding mix will likely depend on individual circumstances and ongoing market conditions.

25. Going forward, some banks may face challenges in meeting the new regulatory requirements as market conditions change:

- **Increase in funding costs.** Banks globally need to rollover a large amount of debt in the coming years—IMF (2010b) estimates that nearly $4 trillion of bank debt is due to mature in the next 24 months, which is likely to put upward pressure on borrowing costs for banks, thereby making it costlier to issue term debt. Furthermore, part of the debt maturing in the coming years is government-guaranteed and will likely be refinanced at a higher cost as authorities wind-down monetary policy support measures. Finally, banks' refinancing and balance sheet restructuring efforts could face competition from heavy government and corporate debt issuance.

Figure 8. NSFR vs. Loan-to-Deposit Ratio and Share of Wholesale Funding



Source: Bankscope and staff estimates based on data for sample LCFIs.

- **Structural shift in funding patterns and higher cost of issuance.** A more robust regulatory framework coupled with stronger capitalization should lead to lower risk premium for debt issuance. However, increased burden-sharing of losses with bondholders (e.g., due to private sector involvement in burden sharing via instruments

that convert debt to equity)[19] may be associated with a higher cost of debt, as the severity and probability of losses increase. If senior bond-holders are impacted by the final regulation, banks may either have to pay a greater premium to investors, or face increased competition for deposits.

- **Risk management.** Banks, particularly those that are globally active, may face additional funding challenges if tighter liquidity requirements lead to a greater tendency toward decentralized operations and limit banks' ability to move excess liquidity within banking groups. Also, in jurisdictions where banks manage their liquidity risks by holding liquid assets other than government bonds, banks' liquidity risk profiles may be affected by the LCR that treats such assets less favorably than government securities, though some arrangements are being considered for countries where banks face structural constraints in meeting the minimum LCR given low government debt. Finally, increased holdings of government securities to meet the LCR target may raise challenges in an environment of increased sovereign risk.

IV. Implications for Banks' Business Strategies

26. The new Basel package is not "business model neutral," and, as intended, will have a higher direct impact on investment banking activities. The final proposal with a long phase-in period for capital and deferred introduction of the liquidity ratios should allow for a smoother implementation of the tighter rules, put less pressure on banks' ability to do maturity transformation, and reduce the calls for substantial deleveraging or passing the associated higher cost of funding on to customers. Meeting the requirements of the Basel package will, therefore, be relatively less difficult for banks that focus on commercial banking activities, providing them with more time to adjust. In contrast, banks' derivatives, trading, and securitization activities, which will be subject to tighter capital requirements from end-2011, will be more costly under the Basel requirements, as intended, ensuring a better reflection of the associated risks by the liquidity and capital requirements.[20]

27. Investment banking activities will also be affected by a host of other regulatory initiatives in addition to the Basel requirements, which will add to the need for higher capital (Figure 9):

- **Securitization business** is affected by the new accounting rules, which require originators to consolidate some securitized transactions onto bank balance sheets, and by reforms that reduce issuer incentives to securitize (e.g., 5 percent risk retention rule for originators to maintain a "skin in the game"). Combined with higher Basel

[19] BCBS (August 2010).

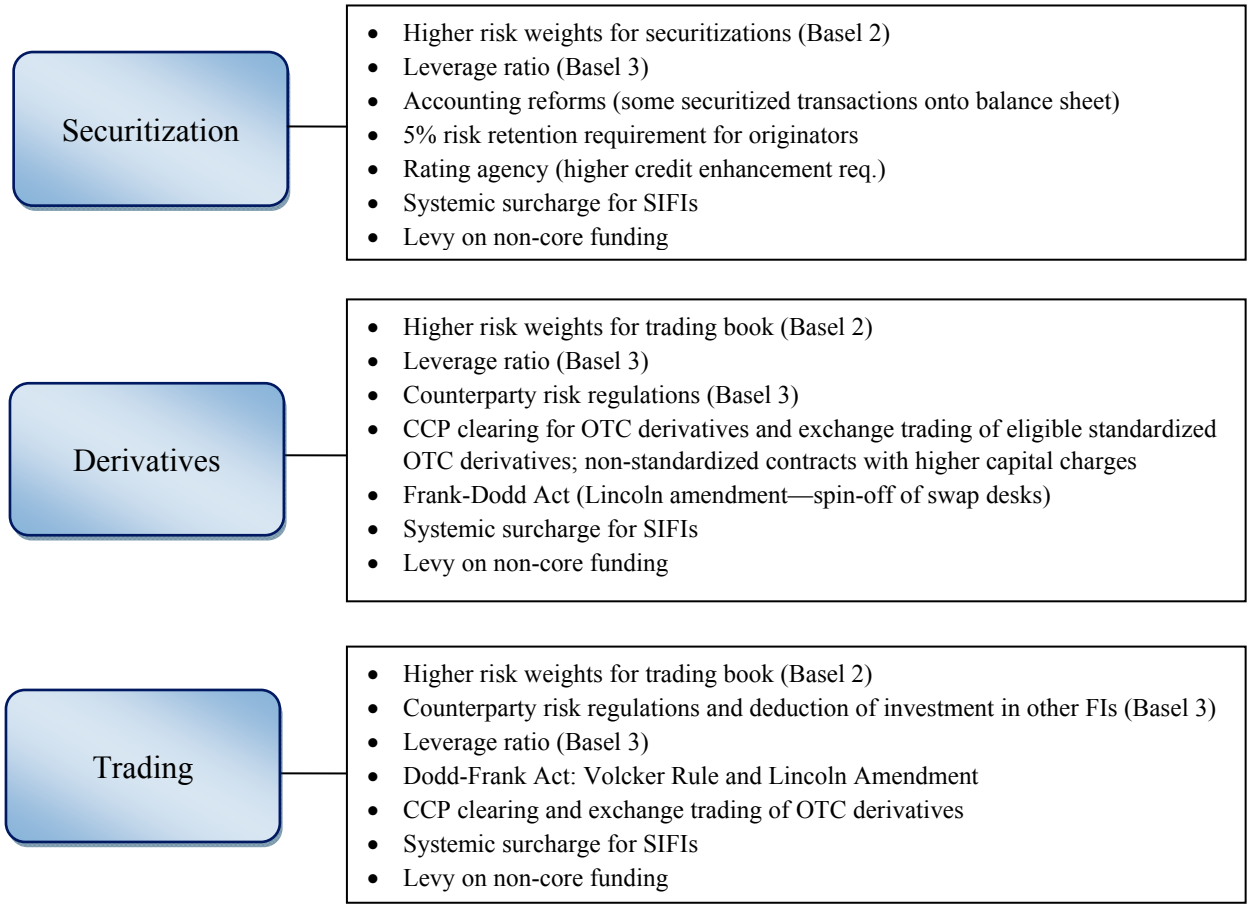
[20] See Appendix I Table 6 for industry views on the potential impact of various regulatory proposals on banks' business models.

risk weights, these reforms are expected to limit the profitability of, and the incentives to do, riskier securitization business.

- Similarly, **derivatives business** will also be more affected by various global proposals (e.g., exchange trading and CCP clearing of OTC derivatives) and national initiatives (e.g., pushing banks' derivatives business to separately capitalized nonbank subsidiaries, as envisaged in the U.S. Dodd-Frank Act). These regulations will affect the investment and universal banks most active in derivatives business, while attempting to limit adverse effects on legitimate transactions (e.g., hedging) through various exemptions.

- Finally, the cost and profitability of the **trading business** are also affected by higher Basel risk weights for the trading book, as well as by various global and national proposals (including, for example, the Volcker rule that limits proprietary trading and investment in, or sponsorship of, private equity and hedge funds (Box 1), and market infrastructure reforms that regulate OTC derivatives trading).

Figure 9. Various Regulatory Proposals Affecting Investment Banking Activities



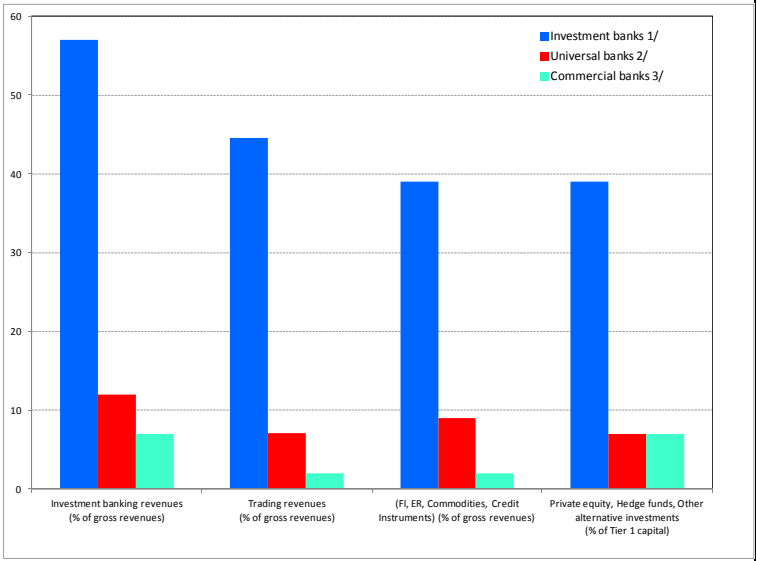
Box 1. Potential Implications of Selected Provisions in the Dodd-Frank Act on U.S. Banks

The Volcker rule, an important component of the U.S. Dodd-Frank Act (passed in June 2010) may have implications for the riskier investment banking business. The rule imposes a ban on proprietary trading and a curb on sponsoring or investing in private equity, hedge funds, and other alternative investment funds, subject to certain transition periods and exemptions. It also contains provisions related to derivatives clearing, trading, margins, and infrastructure. The ban on proprietary trading will affect banks with significant investment banking activities, assuming a narrow definition of proprietary trading in the supplementing regulations. The curb on sponsoring or investing in private equity, hedge funds, and other alternative investment funds and the other provisions related to derivatives would also have a strong impact on such banks' revenues if supplementing regulations are restrictive. However, LCFIs may reorganize their business activities in response (for example by locating businesses in their asset management companies or to hedge funds). Thus it is too early to judge the overall impact of the new rules. The Frank-Dodd Act will affect not only U.S. banking institutions but also foreign banks' affiliates in the United States that are organized as bank holding companies (or subsidiaries of foreign banks), especially those with investment banking activities.

The impact of the ban on proprietary trading on U.S. and foreign banks' profitabity will depend on the stringency of its implementation. For U.S. banks, Figure below indicates that total investment banking revenues—comprising of trading and investment income revenues—represented 57 percent and 12 percent of gross revenues in investment and universal banks in 2009, respectively, while commercial banks relied much less on investment banking revenues, which represented only seven percent of gross revenues. If 10 percent of total investment banking revenues consists of proprietary trading revenues in all U.S. banks as estimated by bank analysts, the restriction on proprietary trading would affect mostly investment and universal banks.

The curb on sponsoring or investing in private equity, hedge funds, and other alternative investment funds may have an impact on investment bank revenues by capping bank exposures to such activities. U.S. banks cannot have more than three percent of the fund's equity after its inception. Moreover, U.S. banks cannot hold more than three percent of their Tier 1 capital in investments in private-equity and hedge funds. The disclosure of U.S. banks' principal investments in annual reports in Figure indicates that investment banks are over the three-percent aggregate cap of Tier 1 capital by a very large extent while universal and commercial banks are closer, implying that the loss of revenues from alternative investments will be much more pronounced for banks with significant investment banking activities compared with other banks.

Other provisions in the Frank-Dodd Act involving derivatives activities may also add some pressure on investment banking revenues' and limit leverage embedded in derivatives (in particular, provisions requiring mandatory margin for uncleared swaps, mandatory clearing and trading of elegible standardized swaps, registration, and regulation of swap market participants and facilities). At end-2009, revenues from trading in fixed income, exchange rate, commodities, and credit instruments (FICC) amounted to 39 percent of gross revenues in investment banks while they were smaller in universal and commercial banks. As part of FICC revenues corresponds to OTC derivatives trading in swap instruments, the requirements above will initially have a negative impact on investment banking. However, as swap markets become more liquid and bid-ask spreads tighter, the loss of revenues may be offset by larger trading volumes in swap instruments.



Source: Banks' annual reports and staff analysis.

28. The regulatory reforms also affect banks with a "universal banking" focus carrying out an array of activities ranging from retail banking to insurance, leasing, and investment banking.

- Banking groups undertaking a combination of **commercial and investment banking** activities will be affected by various other reform measures (e.g., those that propose to break up banks or prohibit certain activities). While limiting these activities may not be costly from an economic point of view, the reduced ability to benefit from diversification and compensate low margin activities with investment income could reduce banks' ability to generate retained earnings and resilience to adverse economic shocks.

- Groups undertaking **insurance and banking** business under one roof (the banc-assurance model in Europe) could also be pressured by the combined impact of the Basel rules and Solvency II,[21] which is likely to lower the capital benefits associated with this model—an intended consequence of the reform measures. Partial recognition of insurance participations in common equity may serve to smooth out the real sector implications for the banking systems heavily reliant on the *bancassurance* model.

- **Globalized banks with a diversified set of business** lines may also be affected by other structural reform initiatives, including standalone subsidiarization (SAS) and living wills.[22] By establishing effective firewalls between various parts of a banking group, SAS could affect the group's ability to manage liquidity and capital, reducing its capacity to serve large customers and sustain a diversified corporate structure; this may affect more global banks with a centralized business model, compared with banks with a retail oriented business model that is more decentralized.[23] While encouraging a more streamlined corporate structure, living wills may limit the diversification benefits of groups with different business lines.

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[21] Solvency II, the updated set of regulatory requirements for insurance firms that operate in the European Union, is scheduled to come into effect in late 2012, and is likely to increase insurance capital needs and reduce fungibility of insurance capital.

[22] Living wills are recovery and resolution plans for large banks that map out how to safely wind-down institutions in case of failure, encouraging, in effect, simpler and more streamlined corporate structures. SAS requires banking groups to be organized as constellations of self-sufficient national subsidiaries, with effective firewalls between the parent and the affiliates, each holding sufficient capital/liquidity to survive alone. The key objective of the two proposals is to facilitate easier and less costly resolutions of large banking groups, by compartmentalizing risks and making individual group parts more resilient to shocks, respectively.

[23] See Fiechter et al. (2010).

29. Ultimately, the impact of the reforms on LCFIs will depend on the flexibility of their business models and how they adjust to the changes. Banks with limited flexibility on the asset side of their balance sheets and with less diversified sources of earnings may have a harder time adjusting to the new regulatory environment. On the contrary, banks with major investment banking focus may be able to restructure their activities to reduce the effects of the regulatory reforms, notwithstanding a multitude of regulations affecting their activities. With their flexible balance sheet structures, they can capture the most profitable segments to generate robust cash flows and earnings, buy or sell assets with relative ease, shift their operations rapidly, and manage capital by shrinking assets and repositioning them away from the most capital intensive activities.

30. Such adjustments in banks' business strategies could have unintended consequences that could potentially increase systemic risk:

- **Some activities may move toward the less regulated shadow banking sector,**[24] as the regulatory cost to banks to undertake such activities increases (e.g., certain types of loans, leases, trading, and derivatives).[25] However, there is the possibility that the risk to the banking system would remain given the interconnectedness of banks with nonbank entities through the funding relationships and their nonbank subsidiaries. While supervision could help contain these vulnerabilities, its ability may be limited without a widening of the regulatory perimeter.

- **Moreover, absent careful global coordination of the implementation of stricter rules, some businesses may be prompted to move to locations with weaker regulatory frameworks.** In some countries, the slow progress in reaching international consensus, combined with domestic policy concerns, have resulted in the adoption of national regulatory reform packages (e.g., taxation and compensation regimes in Europe and the U.S. Dodd-Frank Act). This may encourage global banks that are active in various jurisdictions to consider moving their activities to minimize regulatory costs, affecting, in turn, the capacity to monitor and manage systemic risks.[26]

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[24] Shadow banks are intermediaries between investors and borrowers, profiting either from fees or differences in interest rates between those paid to the investor and received from the borrower (e.g., securities broker-dealers, hedge funds, special purpose vehicles (SPVs), conduits, money market funds, monolines, and other nonbank financial institutions that do not accept deposits and are not subject to the same regulations as depository banks (Adrian and Shin, 2009). Shadow banks have high levels of leverage and maturity mismatches and are subject to similar market, credit, and liquidity risks as banks, but with no direct/indirect access to a lender of last resort. They could fail if they are unable to refinance their short term liabilities.

[25] There are press reports that suggest, for example, that a number of LCFIs have been closing and/or transferring their proprietary trading activities to asset management arms or to hedge funds.

[26] There are some press reports that some global universal banks may move their operations out of jurisdictions that introduced tougher measures to others that do not have such regulations.

V. Summary and Policy Implications

31. The current BCBS proposals on capital requirements represent a substantial improvement in the quality, quantity, and comparability of bank capital. Illustrative calculations suggest that most banks can meet the more stringent capital requirements through earnings retention, provided a modest earnings outlook. As the global financial system stabilizes and the world economic recovery is firmly entrenched, there may be room to phase out intangible and qualified assets completely and scale back the transition period (both subject, first, to a careful impact analysis of the possible implications). This would increase further banking sector resilience to absorb any future shocks that may lie ahead, while limiting incentives to take excessive risks in the interim. The implications of these reforms, nonetheless, need to be considered as part of the overall package including other aspects of the Basel proposals (e.g., countercyclical buffers), as well as other ongoing reform proposals that could introduce additional costs on banks. Careful assessments of the cumulative and joint impact of the overall reform package need to be conducted.

32. Going forward, some banks may face challenges in meeting the liquidity requirements in the current global environment. While for most banks, the adjustment may be manageable, given that implementation will take place over a number of years, a number of factors may put pressure on funding costs, including: funding pressures from a large amount of debt coming due in a few years, higher interest rates as authorities wind-down monetary policy support measures, and competition from government debt issuance.

33. A key challenge for policymakers is to ensure that potential adjustments in business strategies to tighter capital and liquidity requirements do not generate systemic risks. Overall, the new rules are more stringent on investment banking business. While this is intended, in order to create cushions appropriate for the risks taken, it is likely that banks with a major focus on such activities may shift some activities to the unregulated shadow banking sector or their businesses to jurisdictions with less onerous regulatory requirements.

34. These factors argue for a number of safeguards to ensure that recent reforms are consistent with the objective of mitigating systemic risk:

- **There is a continuing need for policymakers to restructure or resolve weak banks.** To strengthen the banking system's resilience to shocks and turn it again into an engine of global growth, policymakers need to ensure that banks are well capitalized, have access to stable funding, and can earn self-sustaining profits on core activities. This will require pursuing orderly and globally consistent regulatory reform; making progress in designing regulations with a macro-prudential focus; and strengthening oversight of the financial system.

- **Supervision needs to be more intensive to prevent a new cycle of leveraging and excessive risk taking**. This is particularly important during the period before banks fully build up their liquidity and capital buffers. Supervision needs to be proactive to identify and monitor systemic risks with due attention to understanding the business models and risks assumed by LCFIs.

- **The regulatory perimeter needs to be widened.** Such widening should permit effective monitoring of risks that banks and nonbank institutions may undertake, regulation of all systemically important institutions that conduct banking activities, and close monitoring of markets and instruments used by financial institutions. This will need to be accompanied by a strengthening of market infrastructure (including through well-managed CCPs) and risk management capacity of financial institutions. Also, regulation and oversight needs to take into account not just the safety and soundness of individual institutions but the risks they pose to the system as a whole.

- **The need for coordination of policies, as well as of their implementation, is greater than ever**. Given the global reach of markets and institutions, effective coordination among national authorities and standard setting bodies will be critical. This will be needed to maintain level playing fields and contain regulatory arbitrage, and to ensure that the cumulative impact of various regulatory initiatives does not stifle financial innovation and growth.

- **Finally, agreement on cross-border resolution regimes should be a top priority.** Despite the very positive steps that are being considered to strengthen LCFIs, future failures are inevitable. The BCBS and FSB are developing proposals to address the resolution of too important to fail institutions, and an enhanced cross-border coordination framework for resolution has been proposed by the Fund (IMF 2010c). Early steps should be taken to make these latter proposals operational among a small set of countries that are home to most cross-border financial institutions. The complexity of reaching agreement on effective frameworks for resolving cross-border institutions means that moving forward on these issues will require political commitment at the highest levels.

Appendix I: Table 5. The Rationale of Proposed Regulatory Reforms

		Reducing Probability of Default of Individual Banks	Reducing Systemic Loss, Given Default or Loss at Individual Banks	Reducing Unexpected Systemic Losses through Structural Measures
Micro-prudential: Addressing idiosyncratic risks	Objectives	• Make all banks more resilient to idiosyncratic risks • Improve incentives for prudent risk management at all banks	• To the extent that all banks are more resilient to idiosyncratic risks, the potential for stress or failure of one bank to cause multiplicative losses to the rest of the system is reduced	• Make all banks more resilient to idiosyncratic risks
	Instruments	• Better quality of capital • Better risk recognition • Higher minimum risk-based CAR • Non-risk-based leverage ratio • Robust liquid assets buffer (LCR) • Limits (NSFR)/levies on volatile funding • Other direct limits on risk exposures • *Intensive, proactive, discretionary supervision (Pillar 2)*	• Measures in column on the left	• Narrow banks • Limit size/scope of banks (Volcker rule, Lincoln amendment) • Ring-fencing at national level
Macro-prudential: Addressing **time dimension** of systemic risk (pro-cyclicality)	Objectives	• Recognize, earlier in the cycle, expected losses and risks building up in good times • Limit effective leverage • Dampen swings in leverage and maturity mismatch over the cycle • Reduce incentives for exuberant lending and excessive maturity mismatch in upswings	• Limit the buildup of systemic vulnerabilities and contagion channels (e.g., leverage, complexity, interconnectedness) in upswings	• Limit banks' scope for contributing to financial system procyclicality
	Instruments	• Above micro-prudential measures • Forward-looking provisions on loans, valuation reserves on marked-to-market assets • Limits on LTV, minimum haircuts on collateral • Reduce procyclicality of Basel II	• Measures in column on the left that limit the buildup of effective leverage and/or maturity mismatches in upswings • *Intensive, proactive, discretionary supervision (Pillar 2)*	• Narrow banks • Limit size/scope of banks (Volcker rule, Lincoln amendment) • Ring-fencing at national level • *Intensive, proactive, discretionary supervision (Pillar 2)*

		Reducing Probability of Default of Individual Banks	Reducing Systemic Loss, Given Default or Loss at Individual Banks	Reducing Unexpected Systemic Losses through Structural Measures
		capital requirements • Capital conservation rules • Countercyclical capital buffers • Limits (NSFR)/levies on volatile funding • *Intensive, proactive, discretionary supervision (Pillar 2)*		
Macro-prudential: Addressing **cross-sectional dimension** of systemic risk (network risk)	Objectives	• Make SIFIs more resilient to idiosyncratic risk • Internalize externalities created by SIFIs (reduce implicit subsidy) • Improve incentives for prudent risk management at SIFIs and to lower spillover effects	• Limit contagion channels across the system: complexity, interconnectedness • Improve the resolvability of SIFIs. • Lower the probability of key providers of interbank funds hoarding liquidity • Provide incentives to lower spillover effects and for more robust funding networks	• Limit banks' scope for becoming too big, too complex, or too interconnected to fail • Limit banks' scope for generating negative spillovers
	Instruments	• Capital/liquidity surcharges based on systemic riskiness/non-resolvability • More intensive supervision of SIFIs • Contingent capital requirements • Going-concern bail-in of creditors • *Intensive, proactive, discretionary supervision (Pillar 2)*	• Limits (NSFR)/levies on volatile funding • Other measures in column on the left that limit the buildup of leverage • Living wills • Adequate resolution powers (including to break up SIFIs during resolution) • Power to break up SIFIs in normal times • Cross-border resolution frameworks • Burden-sharing arrangements • Subsidiarization • *Intensive, proactive, discretionary supervision (Pillar 2)*	• Force OTC derivatives to be traded through central counterparties • Limit size/scope of banks (Volcker rule, Lincoln amendment) • Ring-fencing at national level • *Intensive, proactive, discretionary supervision (Pillar 2)*

Table 6. Industry Views on the Potential Impact of Regulatory Initiatives on Business Models

MEASURE	BUSINESS MODEL IMPACT
Basel Measures	
Capital Definition	• **In general**, tighter capital definition is expected to lead to a scaling down, or shift out, of the activities that are more capital intensive (hence expensive) • **Deduction of minority interests**: could reduce involvement of foreign global banks in emerging markets • **Deduction of investment in insurance subsidiaries**: would affect the integrated banc-assurance model and could induce banks to separate their insurance business from the banking group possibly reducing synergies • **Deduction of participations in other financial institutions**: may discourage holding stakes in other financial institutions, market making, and underwriting • **Deduction of mortgage servicing rights:** may affect mortgage lenders, raise mortgage rates, and discourage securitization • **Deduction of pension liabilities**: would penalize banks with large pension liabilities • **Higher capital needs resulting from tighter regulations:** Could induce banks to pass on the cost to customers (raising lending/product rates), and reduce balance sheet size (including through cut back in lending). Banks attempt to shift focus from high capital intensive activities toward less capital intensive business that are attractive from risk-return point of view
Leverage Ratio	• If leverage ratio is binding, it may cause further deleveraging and lead to further cuts in lending as banks shrink their balance sheet size • May encourage banks to shift to more risky activities to compensate lower profitability from shrinking asset size, given the lack of risk sensitivity of the measure. Banks may also only keep high quality assets and very risky assets to boost returns, and nothing in between
Liquidity Coverage Ratio (LCR)	• May induce banks to reduce lending so as to hold more liquid assets eligible for LCR (mainly government securities) • Like capital, would push banks to hold more liquid assets whose returns are lower, and affect profitability • May lead to greater tendency toward decentralized operations in local jurisdictions that trap pools of liquidity and limit global banks' ability to move excess liquidity across borders within a banking group—switch from more integrated centralized business models toward decentralized standalone banking models
Net Stable Funding Ratio (NSFR)	• Limit banks' ability to do maturity transformation—a core function of banks—hence a major shift in their business models, with corporate sector or other non-bank actors doing maturity transformation outside the banking system • May hurt retail banking, reducing capacity to lend to the private sector (for households and corporates) to meet the longer term funding requirements • Increased competition for customer deposits may reduce the stability of deposits as depositors could be tempted to "shop around" to get the best rates
Counterparty risk regulations	• Reduce banks' interactions with each other and market-making • If not calibrated appropriately, affect adversely derivative business and hedging
Higher risk weights for trading and for securitized products (July 2009)	• Reduce business in certain trading activities with complex structures toward core business • Potential reduction in ability of large trading firms to facilitate deep, liquid markets and provide hedging tools • Possible delay in rehabilitation of securitization markets
Structural Reform Initiatives	
Measures on the size and scope of bank activities (Volcker Rule of the Frank-Dodd Bill)	• Impact banks that have large trading (and proprietary trading) activities, and sponsorship/investment in hedge and equity funds • Risk of shift of trading activity to unregulated nonbanks • Shrink banks' proprietary trading books and their stakes in hedge funds and private equity.
Derivatives spin off to separately capitalized	• Affect the business models of investment and global banks most active in derivatives business (including on European banks operating under a BHC structure in US); while the final bill is

MEASURE	BUSINESS MODEL IMPACT
subsidiaries (Lincoln Amendment of Frank-Dodd Bill)	less onerous than initially, it may drive the activity into less regulated nonbank institutions or foreign peers (level playing field concerns with respect to foreign peers and nonbank financial institutions) • U.S. LCFIs would become less competitive vis-à-vis European banks because the latter will continue to have the economies of scale (i.e., OTC netting with other parts of their franchise) and (ii) continue with under-collateralization in OTC products • Derivatives business would become more costly for banks (if it results in banks having to "spinoff" clients' OTC books to a sub, and keep a book for their own OTC trades, this would create fire-walls between the 2 books, raising collateral costs sizably) • May introduce implementation hurdles (intra-group transfers, unwinding of existing contracts, capitalization of subs), though in its final form existing swaps are grand-fathered over a 2-year phase-in period • Would hinder hedging/risk management activities by banks and their customers
OTC derivatives to CCPs	• Impact investment and global banks with the largest share in derivatives business • High capital impact for collateral (initial & variation margin) and higher charges for nonstandard derivatives contracts would increase the cost of derivatives business, potentially causing banks to shrink such business and nonbank institutions to pick it up • May create competitiveness considerations in the derivatives market
Systemic surcharge	• Possible for the market to interpret it as an indicator of TBTF and reinforce implicit state support • May discourage business models that seek to take advantage of efficiencies of scale or scope
Levy on non-core funding based on contribution to systemic risk	• Discourage non-core funding models and create disincentives for being a SIFI • International consistency and level playing field considerations (may be important when there is no coordination among national regulators) • Risk of double taxation in different jurisdictions (when there is no coordination) • Could result in efficiency losses associated with economies of scale
Living wills	• May ease winding down by creating simple bank structures but risk losing diversification benefits
Standalone subsidiarization	• Implications for global banking group structure and universal model and the single passport regime in Europe • Would reduce ability to manage risk with liquidity/capital trapped locally—a significant change for global integrated centralized business model • Constraints on the ability to move capital and liquidity limit ability to serve large customers, affecting the business models of large global banks • Greater cost for global banks with substantial operations in regions with structurally higher wholesale funding requirements; if a greater proportion of capital has to be raised at the local subsidiary level, overall funding costs are likely to be higher as investors assume more risk

Source: Discussions with key representatives of U.S. and European LCFIs, rating agencies, and analyst reports.

ANNEX I: IMPACT OF NEW BASEL RULES ON BANKS' CAPITAL ADEQUACY: METHODOLOGICAL ANNEX

Scope and limitations of the analysis

The scope of the analysis is to explore the overall impact of the new BCBS capital standards for a representative group of LCFIs. The analysis is based on an array of assumptions that seek to address the lack of sufficiently detailed publically available data on the various components of banks' capital bases, and attempts to be as realistic as possible, basing most of the assumptions on market evidence and taking into consideration regulatory specificities. However, given the lack of access to granular country-specific data on a consistent basis, a standard set of assumptions common to all banks are used, where needed. Because the exercise focuses only on a limited number of banks for each country, the results should not be taken as representative of a country's banking system.

Furthermore, due to lack of publicly available data, the analysis does not take into consideration the full array of the new elements introduced by the BCBS regulatory standards. Notably, defined pension assets and other minor items could not be deducted from capital, given the lack of sufficient data. Likewise, the increase in risk-weighted assets from future counterparty credit risk requirements could not be simulated.

Methodology

The analysis covers a sample of 62 banks, with appropriate representation by business model and by geography. As of year-end 2009, these banks held more than US$2,400 billion in total risk-weighted assets, and more than US$2.6 billion in Tier1 equity. Banks have been clustered as follows:

- **By geography**: 15 Asian banks; 33 European banks; and 14 North American banks. Mapping has been based on banking groups' country of residency: Asia (Australia, China, India, Japan, and Korea); Europe (Austria, Belgium, France, Germany, Greece, Italy, Nordics (Sweden, Denmark, Norway), Portugal, Spain, Switzerland, UK); and North America (U.S. and Canada).

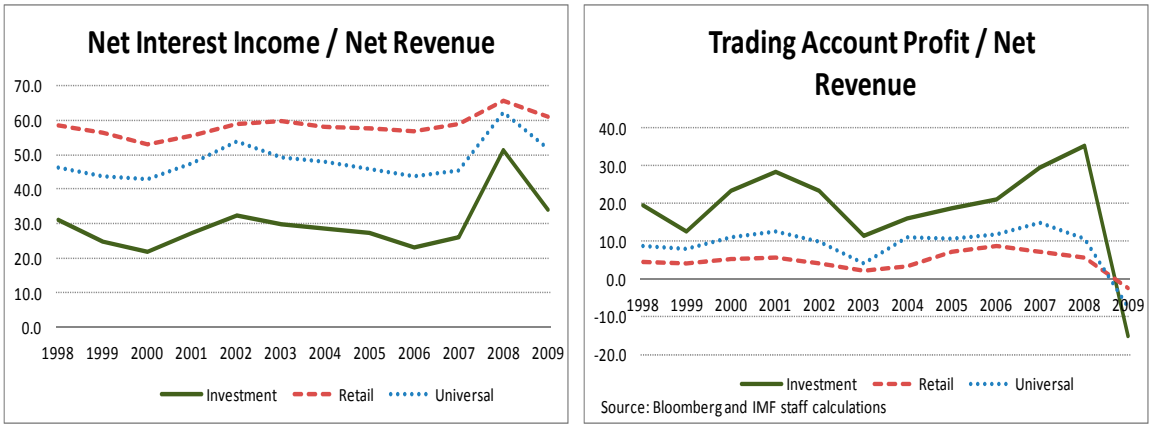
- **By business model**: 34 Commercial banks; 19 Universal banks; and 9 Investment banks. Mapping has been based on banking groups' principal activity (for commercial banks: lending activity; for universal banks: an array of lending, insurance, and other services; for investment banks: trading activity/advisory/asset management services) (see Figure 10 which confirms such categorization).

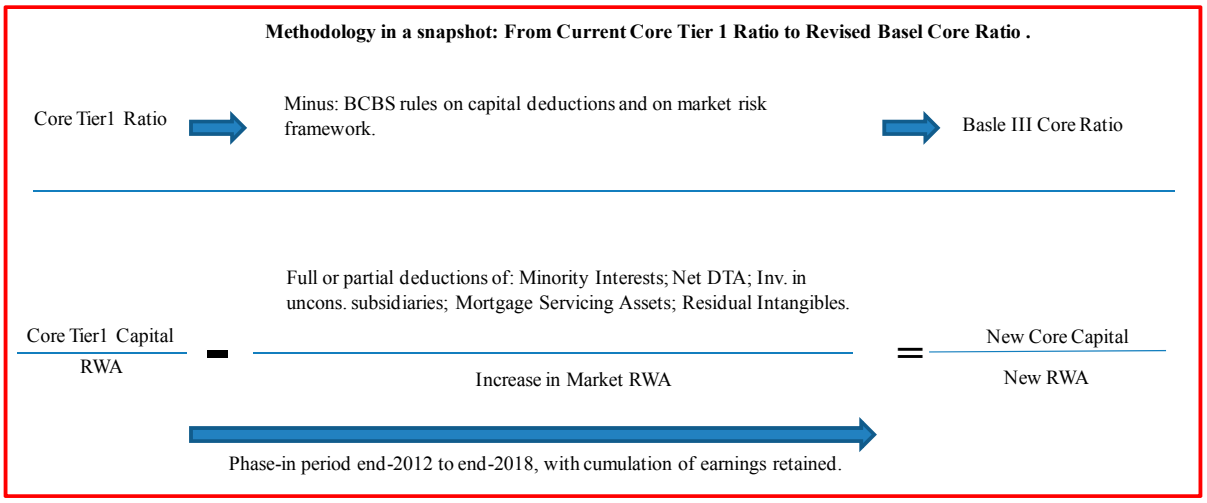
For each bank, a "Basle III Core Ratio" is estimated following the proposed new BCBS rules on capital deductions and on market risk framework.[27] As a starting point, as a best approximation to the BCBS' concept of "Common Equity Capital Ratio," banks' published

[27] See BCBS (2009a, 2009b).

"Core Tier1 Ratio" was taken (see Le Leslé, 2010, for definitions of various capital concepts).

Figure 10. Composition of LCFI Revenues





As far as **market risk-weighted assets** are concerned, the analysis follows the BCBS indication that "market risk capital requirements will increase by an estimated average of three to four times for large internationally active banks," and increases them by three times, bank by bank.

As far as **capital deductions** are concerned, the new BCBS rules are applied by deducting, from each bank's Core Tier1 ratio (data as of end-2009[28]), the following items: minority interests; net deferred tax assets; investments in unconsolidated subsidiaries (including the insurance business); mortgage servicing assets (for U.S. banks); and residual intangibles. We try to take into account the cases where such items are already deducted from capital based on common regulatory practices—whether from Tier 1 capital or from a combination of Tier

[28] End-March 2010 in the case of Japanese banks.

2 and Tier 1 capital.[29] Also, partial recognition is allowed into core capital of certain items, in line with the BCBS amendments published July, 2010 (see Box 2). The phase-in timetable announced by BCBS in September, 2010, has been used to compute the new ratios (Table below).

Box 2. Definition of Items Subject to Change in July 2010 Revisions

Under the new Basel requirements, the definition of capital will contain only a limited amount of certain intangibles and qualified assets. The assets and the corresponding equity components with a low absorption capacity include goodwill (representing the amount a bank has paid or would pay over book value to acquire another bank); minority interests (representing partial ownership of a part of the banking group by outside parties); investments in unconsolidated subsidiaries (including other financial institutions); the value of deferred tax assets (DTA) arising from time differences or loss carry-forwards; mortgage servicing rights (MSRs, representing income related to servicing mortgages that banks have originated and sold to third parties); and other intangible assets. The following items are subject to partial recognition:

Minority Interests—The book value of third party shareholdings in consolidated subsidiaries within a group. As specified in July 2010 announcement, banks are required to deduct the subsidiary's capital which is in excess of the required minimum, taking into account the respective minority shares of each subsidiary.

Deferred Tax Assets (DTAs)—DTAs represent the difference between current tax charges or credits recognized by tax authorities and total taxes recorded in financial statements. DTA usually relates only to timing differences between financial reporting and tax recognition of specific assets or liabilities, often related to unrealized gains and losses that may not crystallize in a stress scenario. DTAs can also relate to annual losses carried forward to offset against future taxable income of the bank or its subsidiaries to reduce the tax charge. DTAs relating to losses carried forward are dependent on the bank or its subsidiaries making future annual profits, so may not be available to absorb losses in stressed conditions. Under the July 2010 proposals, banks could recognize up to 10 percent of DTAs arising from timing differences as core capital (also capped at 15 percent for the aggregate of DTAs, MSRs and significant investments in common shares of unconsolidated financial institutions). The deductions are limited only to tax losses that are carried forward, while excluding DTAs that arise from timing differences up to a limit.

Mortgage servicing rights (MSRs). MSRs refer to income related to the servicing of mortgages that banks have originated and sold to third parties. Historically, MSRs tended to make a relatively good quality capital given that MSRs' value is tightly linked to the present value of the expected net future cash flows of servicing assets, and that there is an active market for trading MSRs. However, high concentrations of MSRs in the capital base of some banks prompted their deduction from core capital. Under the July 2010 amendment, banks could recognize up to 10 percent of MSRs, capped at 15 percent for the aggregate of DTAs, MSRs and significant investments in common shares of unconsolidated financial institutions.

Significant investments in common shares of unconsolidated financial institutions. Such investments, similar to the MSRs, are also subject to deduction, aimed at limiting a group from having both a bank and an insurance company under one corporate roof. Such ownerships have been motivated by assumed capital benefits of banks' owning insurers based on presumed risk diversification benefits, while the crisis has shown that risks to which banks and insurers are exposed were highly correlated. Under the July specifications, in line with treatment for MSRs, banks can also count up to 10 percent of significant investments in common shares of unconsolidated financial institutions.

[29] Current regulatory rules for deductions may vary on a country-by-country basis. We assumed them to be normalized based on the common practices.

For each year of the phase-in period, the expected retained earnings are included in each banks' core capital ratio. To this end, given the average of what banks earned in the four years prior to the crisis (2004–2007), different percentages have been used in terms of earnings performance (e.g., if banks earn on average 30 percent of what they earned in the 2004–07 period). Earnings retention is assumed to be at 60 percent of net income.

Basel III Capital Phase-in Arrangements - as proposed by BCBS

(All dates as of January 1 of respective year)

	Leverage Ratio	Min Common Equity Cap Ratio	Cap Conserv Buffer	Min Common Equity Cap Ratio + Cap Conserv Buffer	Phase-In Deductions from CET1
2012					
2013	Supervisory Monitoring	3.50%		3.50%	0%
2014	Parallel Run (Jan 1 2013 - Jan 1 2017) Disclosure starts Jan 1 2015	4.00%		4.00%	20%
2015		4.50%		4.50%	40%
2016		4.50%	0.625%	5.125%	60%
2017		4.50%	1.25%	5.75%	80%
2018		4.50%	1.875%	6.375%	100%
2019	Migration to Pillar 1	4.50%	2.50%	7.00%	100%

Source: BIS Press Release, *"Group fo Governors and Heads of Supervision accounces higher global minimum capital standards"*, September 12 2010.

ANNEX II: ASSESSING THE IMPACT OF NSFR

Net Stable Funding Ratio (NSFR) is a ratio of available to required stable funding. The available stable funding (AFS) is a weighted sum of funding sources according to their stability features. Similarly, the required stable funding (RSF) is a weighted sum of uses of funding sources according to their liquidity. To calculate the required amount of stable funding, specific RSF factors would be applied to the assets and off balance sheet activity (or potential liquidity exposure). The RSF factor represents the proportion of the exposure that should be backed by stable funding: the more liquid the asset, the lower the RSF factor. Table below provides a summary of definitions and coefficients defined by the Basel proposal and those used in calculating the NSFR.

Basel Proposal	December 09	July 10	Used in NSFR Calculations	December 09	July 10
Available Stable Funding	Availability Factor		**Available Stable Funding**	Availability Factor	
Tier I	100%		Equity	100%	
Tier II	100%		Subordinated debt and hybrid capital	100%	
Stable deposits of retail and small business customers (residual maturity < 1y)	85%	90%	Demand deposits	77.5%	85%
Less stable deposits of retail and small business customers (residual maturity < 1y)	70%	80%			
Wholesale funding by non-financials (residual maturity < 1y)	50%		Bank deposits	50%	
Other preferred shares, capital instruments in excess of Tier II and other liabilities with maturity > 1y	100%		Saving deposits	100%	
All other liabilities and equity not included above	0%		Residual funding	40%	
Required Stable Funding	Required Factor		**Required Stable Funding**	Required Factor	
Cash	0%			0%	
Securities and non-renewable loans to financials with remaining maturity < 1y; short-term actively traded instruments	0%				
Debt issued or guaranteed by sovereign and IFIs	5%		Government securities	5%	
Unencumbered non-financial senior unsecured corporate bonds rated at least AA, maturity ≥ 1y	20%		Investment securities	20%	
Unencumbered listed equity securities or non-financial senior unsecured corporate bonds rated at least A-, maturity ≥ 1y; loans to non-financial corporate clients, maturity < 1y; gold.	50%		Equity investment	50%	
Retail loans, maturity < 1y	85%		Customer loans, maturity < 1y	85%	
Mortgages	100%	65%			
All other assets	100%		Customer loans, maturity > 1y	100%	75%
			Residual assets	80%	
Off-Balance sheet exposures	10%	5%	Contingent liabilities	10%	5%

Source: BCBS 2009 and IMF.

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