The Impact of Basel III on Korean Financial Services
Disclaimer

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The report aims to be neutral about the need for and merits of the new Basel III regulation, and to be purely factual about its strategic implications on the Korean banking landscape. The implications are hypotheses on behalf of Oliver Wyman and do not necessarily reflect the FSS’s own judgments; neither do they promise nor preclude any FSS action.
Contents

1. Executive summary ........................................................................................................ 1
2. Introduction ................................................................................................................... 10
3. Background to regulatory changes ............................................................................. 11
   3.1. The global financial crisis: causes and impact ................................................. 11
      3.1.1. The subprime crisis ............................................................................. 11
      3.1.2. The global financial crisis ................................................................. 16
   3.2. Lessons from the crisis ...................................................................................... 18
   3.3. Revision of Basel II ......................................................................................... 20
4. Basel III details and market reaction ........................................................................... 22
   4.1. Definition of capital .......................................................................................... 23
      4.1.1. Criteria governing inclusion as regulatory capital .............................. 23
      4.1.2. Regulatory adjustments applied to regulatory capital ..................... 25
   4.2. Calibration and phase-in of capital requirements ........................................... 25
   4.3. Regulatory buffers, provisions and cyclicality ............................................. 26
      4.3.1. Capital conservation buffer ............................................................... 26
      4.3.2. Countercyclical capital buffer ............................................................ 27
      4.3.3. Forward-looking provisioning ............................................................. 28
   4.4. Counterparty credit risk capital requirements ............................................... 28
   4.5. Leverage ratio ................................................................................................. 29
   4.6. Liquidity proposals ........................................................................................... 30
      4.6.1. Liquidity coverage ratio ...................................................................... 30
      4.6.2. Net Stable funding ratio ...................................................................... 32
   4.7. Treatment of systemically important financial institutions ......................... 33
   4.8. Timing of implementation .............................................................................. 34
   4.9. Market-related monitoring tools .................................................................... 35
   4.10. Market reaction .............................................................................................. 36
      4.10.1. International market reaction ............................................................... 36
      4.10.2. Korean banks’ reaction ...................................................................... 39
5. Overview of the Korean banking market ................................................................... 41
   5.1. The three tier banking system ......................................................................... 41
   5.2. Strong capital positions ................................................................................... 42
   5.3. Financial holding group structure ...................................................................... 44
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.4. Reliance on wholesale funding</td>
<td>45</td>
</tr>
<tr>
<td>5.5. Consolidating market</td>
<td>50</td>
</tr>
<tr>
<td>5.6. Conclusion</td>
<td>52</td>
</tr>
<tr>
<td>6. Impact on the banking sector</td>
<td>53</td>
</tr>
<tr>
<td>6.1. Impact on the Korean banking sector</td>
<td>53</td>
</tr>
<tr>
<td>6.1.1. Balance sheet implications</td>
<td>53</td>
</tr>
<tr>
<td>6.1.1.1. Capital requirements and bank response</td>
<td>53</td>
</tr>
<tr>
<td>6.1.1.2. Short-term liquidity requirements and bank response</td>
<td>57</td>
</tr>
<tr>
<td>6.1.1.3. Long-term stable funding requirements and bank response</td>
<td>62</td>
</tr>
<tr>
<td>6.1.2. Impact on ROE</td>
<td>69</td>
</tr>
<tr>
<td>6.1.3. Analysis of ROE by product</td>
<td>71</td>
</tr>
<tr>
<td>6.1.4. Impact on the competitive dynamics of Korean financial services</td>
<td>78</td>
</tr>
<tr>
<td>6.1.4.1. Comparison of impact on national, regional, specialized and glocal banks</td>
<td>78</td>
</tr>
<tr>
<td>6.1.4.2. Impact on adjacent industries</td>
<td>79</td>
</tr>
<tr>
<td>6.1.5. The likely shape of Korean banking post-Basel III</td>
<td>81</td>
</tr>
<tr>
<td>6.2. Impact on overseas banking sectors</td>
<td>87</td>
</tr>
<tr>
<td>6.2.1. Capital impact</td>
<td>88</td>
</tr>
<tr>
<td>6.2.2. Liquidity impact</td>
<td>90</td>
</tr>
<tr>
<td>6.2.3. Combined capital and liquidity impact on ROE</td>
<td>93</td>
</tr>
<tr>
<td>6.3. Impact on Korea’s competitiveness as a financial hub</td>
<td>94</td>
</tr>
<tr>
<td>6.3.1. Korea’s current positioning as a regional financial hub</td>
<td>95</td>
</tr>
<tr>
<td>6.3.2. Restrictions on cross-border liquidity flows</td>
<td>97</td>
</tr>
<tr>
<td>6.3.3. Changes in competitive landscape</td>
<td>98</td>
</tr>
<tr>
<td>6.4. Macro-economic impact on Korea and globally</td>
<td>100</td>
</tr>
<tr>
<td>6.4.1. Costs</td>
<td>101</td>
</tr>
<tr>
<td>6.4.2. Benefits</td>
<td>107</td>
</tr>
<tr>
<td>6.4.3. Summary</td>
<td>109</td>
</tr>
<tr>
<td>7. Implications for Korean Banks’ finance and risk management</td>
<td>110</td>
</tr>
<tr>
<td>7.1. Compliance approach</td>
<td>111</td>
</tr>
<tr>
<td>7.2. Opportunistic information user</td>
<td>112</td>
</tr>
<tr>
<td>7.3. Best in class aspirations</td>
<td>114</td>
</tr>
<tr>
<td>7.4. Benefits and implementation challenges</td>
<td>118</td>
</tr>
<tr>
<td>7.5. Other capability refinements</td>
<td>119</td>
</tr>
</tbody>
</table>
7.6. Basel 3 investment priorities .............................................................. 120
8. Implications for regulators ................................................................. 122
  8.1. Specific local discretion available to the FSS................................. 122
    8.1.1. Countercyclical buffer ............................................................ 122
    8.1.2. Treatment of trade finance under liquidity ratios ............ 123
    8.1.3. Other areas of local discretion concerning liquidity ratios ......................................................... 124
    8.1.4. Treatment of HQLAs.............................................................. 125
      8.1.4.1. Central bank eligibility.............................................. 125
      8.1.4.2. Central bank reserves ............................................... 125
      8.1.4.3. Options for alternative HQLA treatment........... 126
  8.2. Timing of implementation ............................................................ 127
  8.3. Harmonization of existing standards with Basel III ..................... 128
  8.4. Treatment of specialized banks.................................................. 132
  8.5. Other possible actions by Korean policy-makers......................... 133
  8.6. Implications for ICAAP and SREP ............................................... 134
    8.6.1. More prescriptive capital levels ............................................ 135
    8.6.2. Stressed liquidity adequacy................................................... 139
    8.6.3. Summary............................................................................. 141
  8.7. Conclusion .................................................................................... 141
9. Additional regulatory changes ............................................................ 143
10. Final remarks .................................................................................... 147
Appendix A. Glossary............................................................................. 148
Appendix B. Further reading................................................................... 150
1. Executive summary

During the post-mortem following the global financial crisis, various gaps in existing banking regulation and risk management practices were identified, which permitted or exacerbated the impact of the crisis. This sparked a broad wave of global regulatory reform, of which we identify four key categories relevant to banks:

- Solvency and liquidity reforms, in particular market and counterparty credit risk and liquidity
- Reforms to reduce systemic risk, such as the Volcker rule preventing depository institutions from proprietary trading, and the mandatory creation of living wills to allow insolvent banks to be liquidated with minimal systemic impact
- Market structure and product reforms, such as the push towards central counterparty clearing of derivatives, consumer and investor protection measures, and controls over bank compensation
- Regulation in adjacent industries, such as hedge fund regulation and Solvency II

In addition, various policy makers have discussed other reforms, such as bank levies and increased taxes on banker bonuses, which are explicitly or implicitly aimed at forcing banks to repay taxpayers for the assistance they received during the crisis.

Those regulatory priorities surrounding the solvency and liquidity reforms resulted in two discussion papers released by the Basel Committee for Banking Supervision (BCBS) in December 2009; these became known unofficially as “Basel III”. The proposed standards, strengthening capital rules and introducing global liquidity risk requirements, were debated and analyzed until the final standards were released in December 2010. These and other amendments to existing prudential standards (e.g. changes to market risk) are now officially recognized as “Basel III” by the BCBS. In this report we focus on the impact of these on the Korean banking sector and economy, and the implications of this for Korean financial institutions and regulators.

The December 2009 proposals focused on six key priorities:

1. Raising the quantity and quality of capital to ensure a lower risk of insolvency and improve the ability of banks’ capital to absorb losses. This is enacted through: increasing the minimum Tier 1 ratio from 4% to 6%; introducing a minimum common equity requirement of 4.5% of RWAs; a mandatory capital conservation buffer of 2.5%; and imposing stricter deductions from available capital

2. Stricter capital requirements for counterparty credit risk and incentives to move over-the-counter derivative exposures to central counterparties. This increases risk-weighted assets, forcing banks to hold more capital against these exposures unless they are centrally cleared

3. Improved management and monitoring of bank and system-wide liquidity risk. This is achieved through two ratios, which must exceed 100%:
   - **A. Liquidity coverage ratio:** high quality liquid assets/30 day stressed cash outflows
B. Net stable funding ratio: available stable funding (the proportion of liabilities and equity which is assumed to remain for at least one year)/required stable funding (the proportion of assets which are assumed to remain on the balance sheet for at least one year)

4. Containing the build-up of excessive leverage, protecting against gaming of risk-based requirements and providing a safety-net in the case that risk-based capital models underestimate true risk. This is achieved through the introduction of a minimum leverage ratio, which must exceed 3%: Tier 1 capital/assets plus some contingent credit exposures (e.g. derivatives potential future exposure)

5. Reduction in pro-cyclicality through a countercyclical capital buffer of up to 2.5% and forward-looking provisioning

6. Reducing the probability and impact of failure of systemically important banks by creating special measures for those banks such as contingent capital requirements. The Basel Committee for Banking Supervision plans to finalize its recommendations in 2011

Concerns for Korean banks have mainly been centered on the liquidity proposals. Whilst Korean banks have strong capital positions and good capital quality, they have suffered from a structural shortage of liquidity in the market, with loan-to-deposit ratios (LDRs) well in excess of 100% until recently. The FSS and FSC, also concerned about the liquidity position of Korean banks, introduced a 100% LDR cap and short term local and foreign currency liquidity requirements, and since then banks have improved their positioning on these metrics. However, most Korean banks have expressed concern over the Basel III liquidity proposals.

Our analysis confirms that the banks' and regulators' concerns are warranted. Korea’s banks have enough capital to meet the more stringent capital requirements and leverage ratio but have a shortage of stable funding and in particular liquid assets, as shown in the chart below. Given the long time period for implementation these gaps may be closed relatively painlessly for some of the better-positioned banks; however, the shortfalls at an industry level and for the more poorly positioned banks are concerning.
The largest problem for Korean banks as a whole will be the liquidity coverage ratio, which stands at 80% for the industry. There is no silver bullet here, and to close the significant gap in High Quality Liquid Assets (HQLAs), banks will take a variety of actions:

- Restructuring existing liabilities to reduce HQLA requirements by lengthening the term of wholesale funding, increasing the proportion of “stable” retail deposits, which have lower HQLA requirements, and changing product structures to further reduce requirements.
- Replacing existing liabilities with more “Basel III-friendly” liabilities by reducing short term wholesale funding and raising additional retail deposits.
- Reducing additional sources of cash outflow by cutting unutilized lines to corporates and financial institutions.
- Acquiring government and corporate bonds in the market, both existing stock and, particularly, new issuances.

In addition, banks also have a sizeable shortfall in stable funding. Our analysis indicates that increasing the amount of direct corporate debt issuance and...

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1 These figures do not correspond exactly to the figures released by the FSC and FSS on December 16 as part of the Basel III Quantitative Impact Study (QIS). That analysis included five “Group 1” and three “Group 2” banks and relied on information produced by the banks themselves. Our figures are based on an outside-in analysis of all Korean banks for which publicly available data were available. Our analysis is also based on the final standards released in December 2010, after the QIS had been finalized.
avoiding balance sheet lending to those corporates could significantly close the gap. However banks will still need to take a variety of actions, some of which will also improve the LCR position.

- Restructuring existing assets to reduce required stable funding (RSF), by reducing the term of corporate lending and consolidating retail exposures with mortgages, to take advantage of the lower RSF allocated to mortgages
- Reducing the reliance on balance sheet lending (and eliminating RSF) through increased securitization, creation of mortgage funds and assisting more borrowing corporates to issue debt directly into the market
- Increasing available stable funding (ASF) by raising or retaining capital, as they may do to maintain capital buffers
- Increasing ASF by raising retail and corporate deposits, lengthening the term of wholesale funding past one year, and increasing the stickiness of retail deposits

In addition to these tactical actions aimed at reducing the liquidity and funding gaps, banks will respond to Basel III strategically in different ways, depending on their capital, liquidity and funding positions, business model and customer profile. Nevertheless, we see several trends emerging at a systemic level

- Greater consolidation: Basel III will likely be a catalyst for further consolidation as strong banks look to acquire weaker banks on favorable terms or improve their liquidity ratios by buying deposits. Financial groups will also increase their focus on non-traditional banking activities such as wealth management and insurance – which are not directly affected by Basel III – and may seek acquisitions in an attempt to diversify away from banking activities
- Better alignment of pricing practices with liquidity costs: banks will incorporate liquidity charges into their funds transfer pricing models and pass these costs onto customers. Loan pricing based on the three month CD rate may be phased out entirely as banks are forced to charge a liquidity premium for long term loans
- Renewed emphasis on the retail segment: in addition to attempting to attract more retail deposits, banks will try to improve and consolidate retail customer relationships in order to increase the stickiness of their deposits and consolidate loans into mortgage lines to reduce required stable funding
- Growth of the originate-to-distribute model: securitization and debt underwriting (rather than lending) have traditionally been driven by capital constraints, which the Korean banks have not had in recent times. Now, however, they are more attractive because of the new liquidity constraints
- Increased importance of central liquidity and clearing organizations: as well as increased capital requirements for counterparty credit risks, banks will receive very low capital requirements for exposures to a central counterparty. The creation of a Korean CCP would be a big win for banks who are allowed direct access to it

As a result of the need to close these liquidity gaps, banks will suffer a reduction in profitability equivalent to a 1% reduction in ROEs before any actions are taken to mitigate the impact. Relative to current low levels of profitability, this will come as a significant blow, and banks will attempt to mitigate this by passing the additional costs onto customers and reducing operating costs. The impact will be felt differently by different business units; due to the large increase in market risk and counterparty credit risk capital
requirements, derivatives products’ historical high profitability will be slashed. Trade finance products are also potentially adversely affected, depending on the FSS’s local implementation of the rules, while mortgages will also suffer a higher reduction in profitability unless the costs are passed through to borrowers.

The impact will not be felt equally by all banks; some banks will feel the pain and others will emerge relatively more strongly and become increasingly competitive in the new world. National and regional banks will be the least affected, with only modest amounts of additional liquid assets and funding required by particular banks. Specialized banks, on the other hand, have weaker capital ratios and liquidity positions due to their specific mandates and business models, and as a group will need to raise significant capital and funding if they are not granted regulatory concessions by the FSS (we note that concessions apply to these banks currently, e.g. they are not subject to the loan to deposit ratio requirement).

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<th>Figure 2: Basel III Impact on ROE and Attribution of Impact</th>
</tr>
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<tbody>
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<td>National banks</td>
</tr>
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<tr>
<td>Industry (All banks)</td>
</tr>
</tbody>
</table>

Source: FISI5, Oliver Wyman analysis

Within the specialized banks, each has its own specific problems. It is well known that some of the specialized banks have a heavy reliance on wholesale funding and therefore will be harder hit by the net stable funding ratio requirements. On the capital side, the cooperative banks will be impacted due to the legal structure of their cooperative capital, some of which does not meet the Basel III definition of common equity, while banks engaging heavily in trade finance will be vulnerable to the FSS’s local ruling on the liquidity requirements for trade finance products.

As the specialized banks were set up to serve particular market segments not well served by commercial banks, any problems for the specialized banks may have adverse flow-on impacts for particular sectors of the economy. Since the policy mandates of specialized banks lead them to feel a greater impact due to the Basel rules than commercial banks, the FSS will need to consider that strict,
blanket enforcement of the Basel III standards may ultimately cause the specific policy mandates to be undermined.

The direct impact of Basel III will be felt by banks and their supervisors, but other financial institutions will also be impacted indirectly, as they compete with banks for funds, assets and fees. Insurers will need to compete with banks for high quality securities, which they need to match their long-dated liabilities, and also for personal financial assets, where they will feel greater competition from banks’ deposit products. Banks will also be more careful not to “cannibalize” these bank deposits with life insurance products, meaning the dominant bancassurance channel will be less attractive. Basel III is also expected to trigger greater competition between the banking and the securities industries, across funding as they compete for personal financial assets, debt origination as banks seek to upgrade their DCM units as an alternative to lending, and the development of broader Global Markets franchise, where a new clearing business opportunity will emerge from the creation of central counterparties to which only a select few institutions will have access. These impacts will be far less severe than the direct impact on banks, but other financial institutions should understand the likely actions of banks and plan accordingly.

Korean banks as a whole will fare relatively well compared to banks in peer markets based on their capital and long term funding position, as shown in the chart below. They will be able to cover their capital and liquidity shortfalls more easily than Western and Japanese peers, and in turn suffer relatively less in terms of profitability. Relative to Hong Kong, Singaporean and Chinese banks, Korea’s banks are currently in a disadvantaged position due to their current low levels of profitability, though Basel III is likely to have limited impact on its positioning as the major banks in these countries are all relatively close to being able to meet the capital and long term stable funding requirements.
The costs of Basel III to the wider economy, based on our estimates of the ratios and shortfalls and the BIS Macroeconomic Assessment Group’s reports on the impact on the global economy, are also likely to be relatively minor. The report indicates that these may be the order of a 0.2-0.4% reduction in GDP after several years, though we stress that these figures are highly uncertain. The long terms benefits to the economy, in terms of lower risk of future banking crises and consequent recessions, are likely to significantly outweigh the costs. However, as discussed above, some of Korea’s major trade partners (particularly Japan) are likely to be more adversely affected by the regulations and therefore Korean exporters to those countries may in turn suffer.

Korea’s ambition to become a financial hub in Asia is also a concern for public policy makers. Basel III will have several effects on the relative attractiveness of financial hubs

- Putting banks across the world on a more equal footing. Korea’s capital deductions are closely aligned to Basel III’s and therefore Korea will benefit in a relative sense compared to countries whose current capital regulations are more relaxed

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2 MAG, Interim Report: An assessment of the long-term economic impact of stronger capital and liquidity requirements, August 2010

MAG, Final Report: Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements, December 2010

Also, see BIS, An assessment of the long-term economic impact of stronger capital and liquidity requirements, August 2010
Addressing global imbalances in liquidity. Inter-bank lending and funding are now discouraged, making countries with a surplus of liquidity more attractive and those with a shortage of liquidity less attractive. This also makes some offshore banking activities more difficult, and may reduce the competitiveness of particular offshore financial centers.

Competitive skews. Niche financial hubs focused on non-banking activities (e.g. funds management) will stand to benefit. In addition, some regulators – in particular in the US and the UK – have taken a much harder line on Basel III and other regulation, which is likely to reduce their competitiveness.

While on the world scale, Korean banks appear to be advantaged by Basel III, so too are its neighbors. In order to maintain Korea’s relative competitiveness as a financial center in Asia relative to these neighbors, Korean policy makers will need to ensure its banks are not placed at a disadvantage. Basel III is unlikely to have a significant impact on its positioning, but may be a trigger for policy makers to consider other aspects of financial service regulation in Korea, e.g. restrictions on cross-border liquidity flow, which could have a significant impact.

As well as adapting their business models to the new regulation, Korean banks will have to invest in finance and risk management by ensuring counterparty credit risk methodologies are in place, investing in MIS to compute liquidity ratios and monitoring metrics and raise capital and funding where necessary. We foresee three possible reactions to the new requirements: a compliance-driven approach, an opportunistic approach where banks use the compulsory investment to their own advantage, and a “best in class” approach, where banks take the opportunity to embed an upgraded risk appetite framework into strategic planning and improve their stress-testing and contingency plans. The benefits are clear, but there will be various operational challenges which banks need to overcome, in particular regarding data, IT, resourcing amid the competing priorities of existing initiatives and organizational challenges such as coordination and cultural change.

Like banks, the FSS and other public policy-makers will also have some important decisions to make going forward.

- **Regulatory parameters:** the FSS will have to make several decisions as to the parameters set in its local implementation of the liquidity rules. These will have a minor impact on banks overall but are nonetheless important decisions as they will have an impact on the relative profitability of various products.

- **Macrourdenmental responsibility:** Basel III hands to the FSS macroprudential responsibility through its setting of a countercyclical capital buffer and the supervision of banks’ liquidity positions. The Supervisory Review and Evaluation Process will now need to consider not just individual banks’ solvency position but also their liquidity position and overall financial system stability.

- **Specialized banks:** the treatment of specialized banks, as outlined above, is a crucial policy decision which will have a significant impact on the banking sector and the economy more broadly. This may require decisions on a case by case basis, as each specialized bank is unique and faces a different set of problems.

- **Harmonization of existing standards:** the FSS’s current liquidity and loan-to-deposit ratios are in some ways inconsistent with Basel III. The FSS may...
need to harmonize these metrics with Basel III or abandon them, recognizing that Basel III attempts to achieve the same outcomes and that needing to meet two conflicting sets of ratios may disadvantage Korean banks.

- **Other key policy decisions**: various actions are available to Korean policymakers to ease the burden on banks, such as the allowance of standing BOK liquidity facilities to qualify as HQLAs, greater government bond issuance, the allowance of covered bond issuance and tax breaks on deposits. Each of these can significantly reduce the burden on banks of meeting the liquidity requirements.

Basel III comes amid a wave of regulation sweeping the industry. The G20 has agreed upon various additional initiatives, some of which complement Basel III or clarify details which are not yet finalized (e.g. SIFI rules) and some of which are aimed at ensuring that banks continue to play a role in providing credit to the economy. As the latter can conflict with the soundness and stability principles of capital supervision, the FSS and other policy makers will need to find the right balance in applying the various rules.

The impact of Basel III on Korean banks may be less severe than first feared at the industry level, though will still be a concern for most banks as liquidity ratio gaps will have to be addressed by restructuring their balance sheets. For the specialized banks, and for over-the-counter derivatives products, the impact will be more severe. Banks will react in a variety of ways to the standards, which are likely to change the industry materially. In addition to their business models, important decisions must be made by banks around finance and risk management and, for the FSS and other policy makers, around how to implement and respond to the regulation, taking into account the impact on the broader economy and Korea’s positioning as a growing Asian financial hub. These decisions will become clearer over time as banks begin reporting on a Basel III basis and adapting their business models to suit the new world.
2. Introduction

At its 12 September 2010 meeting, the Group of Governors and Heads of Supervision, the oversight body of the Basel Committee on Banking Supervision, announced a package of regulatory reforms known collectively as “Basel III”. The capital reforms, together with the introduction of global liquidity standards, aimed to deliver the core of the global financial reform agenda and were endorsed by the Seoul G20 Leaders summit in November, before final standards were released by the BCBS in December. Oliver Wyman was engaged by the FSS to conduct a study into the impact of Basel III on Korean financial services.

Whilst these new rules aim to make the financial system more resilient and prevent a repeat of the global financial crisis, it is expected that the implementation of these rules will also incur a cost to the banking system and the broader economy. Furthermore, industry observers and Oliver Wyman alike believe that these new rules could introduce fundamental changes to bank balance sheets and business models. Banks will need to respond to these rules both strategically as well as tactically. Finally, in order for these rules to be well implemented, supervisors will need to strengthen their oversight.

This report is structured as follows

- In chapter 3 we set the scene by beginning with a summary of the causes and impacts of the global financial crisis of 2008-9 and the key gaps in existing banking regulation which were identified in the aftermath of the crisis and which regulators are seeking to address
- In chapter 4 we provide a detailed summary of the various components of the Basel III suite of regulation which have been developed over the last 18 months
- In chapter 5 we give a brief overview of certain key aspects of the Korean banking sector which are relevant in the context of Basel III
- In chapter 6 we consider several questions on the impact of Basel III: what will be the impact of the new regulations on the Korean banking system? How will this affect the Korean economy? How will Korea’s banks be impacted relative to international peers, and how will this affect Korea’s competitive position as a regional financial center?
- In chapter 7 we focus on the ways in which Korean banks need to improve their finance and risk management, considering responses by players of various levels of maturity
- In chapter 8, we discuss the implications for the FSS and other Korean policy makers in their implementation of the new rules
- In chapter 9, we summarize the additional financial reforms that were discussed during the G20 summit in Seoul

Finally, in chapter 10, we provide some final thoughts, reflecting on the analysis of the impacts in prior chapters.
3. Background to regulatory changes

3.1. The global financial crisis: causes and impact

3.1.1. The subprime crisis

In the early 2000s, the global economy entered an extended period of relatively benign conditions. The US had just emerged from the “dot-com bubble”, while Asia was very much on the road to recovery after the Asian Financial Crisis.

Figure 4: US and Asian GDP growth and unemployment rates

In the ensuing years, the US and many Western economies experienced a period of low inflation, low interest rates, and high consumption. This was partly enabled by the Federal Reserve’s loose monetary policy and the export-led, high-savings rates policies adopted by many Asian economies after the Asian Financial Crisis. Most notably, the entrance of China as a manufacturing power house helped to maintain low inflation for many western consumers with relatively cheap exports.
The increased manufacturing activity had also brought about increases in prices of raw materials, particularly in the oil industry. Together, the high current account surpluses of oil exporters and China have funded much of the deficit of the US, and helped to maintain the low interest rate environment. This cheap credit was largely absorbed by consumers and financial institutions.
The apparent macro-economic stability and competitive pressures encouraged further risk taking by financial institutions and investors. This lead to huge growth in the OTC derivatives markets alongside innovation and development of increasingly complex structured products, most notably collateralized debt obligations (CDOs), structured pools of assets that offered significantly high yields relative to their rating and perceived credit risk. These instruments were
often funded by banks via off-balance sheet vehicles such as special purpose vehicles (SPVs) and structured investment vehicles (SIVs) and led to a massive increase in leverage in the financial system, both through bank obligations to these vehicles and through the leverage inherent in many of the derivative products. This was made possible partly by the increased liquidity in the system, but also by the portfolio analytics that financial institutions had been developing over the years.

Low interest rates and surplus liquidity, the subsequently cheap credit and the search for yield led to a deterioration in credit discipline. Banks took on progressively more credit risk by lending to, for example, households with high debt-to-income ratios, leveraged buy-out firms and, in the US, to the sub-prime mortgage market. Given that mortgage lenders could readily sell off the risk from mortgages into the capital markets through mortgage-backed securities and CDOs – the originate-to-distribute model – the incentive (and regulation) to ensure high lending standards was absent. Furthermore, in the pursuit of higher returns, investors and banks looked to structured products along with high levels of gearing, whilst not fully understanding the associated default and correlation risks.

Figure 8: Sub-prime mortgage origination in the US

The explosion of liquidity in the mortgage market over a short-time period fuelled a rapid appreciation in residential property prices to unsustainable levels, with the US S&P Case-Schiller index rising 127% over the period 2000-2006. This extended benign environment of low interest rates and appreciating property prices encouraged home ownership, and made it lucrative for both subprime consumers to invest in real estate and financial institutions to fund such activities.

As central banks responded to the overheating economies by tightening monetary policy, interest rates rose to more normal rates by historic standards and mortgage payments became unaffordable for many subprime borrowers who had been sold adjustable rate mortgage products, often with low initial “teaser” rates; default rates climbed in 2006 and house prices began to fall rapidly. In early 2007, lenders and investors in mortgage securities began to
announce large losses on subprime exposures and panic began to spread globally.

Figure 9: US home price index

![Graph showing US home price index from 2000 to 2010.](image)

Source: Standard and Poors

Figure 10: Delinquency and foreclosure rates

US, 2000-2009

![Graph showing delinquency and foreclosure rates from 2000 to 2009.](image)

Source: Bloomberg and Standard and Poors
3.1.2. The global financial crisis

The drop in property prices was far reaching and unexpected in the US in two respects. Firstly, properties across the country had devalued rather than just being a local state economy phenomenon as with previous property cycles. Secondly, the devaluation was not limited to the subprime segment where the early defaults were observed, but instead the contagion effect encompassed the entire spectrum of residential mortgage sectors.

As defaults and losses continued to be revealed and house prices plummeted, issues spread from the asset side of bank’s balance sheets to the liability side as capital adequacy became a concern. Financial institutions suffered impacts from both the capital erosion from the increased credit losses, as well as increased capital requirements as the credit quality of their portfolios deteriorated from worsening borrower debt service burden due to higher interest rates and lower levels of credit risk mitigation due to devaluation of real estate collateral. Some financial institutions suffered more than others, in particular those that were over-levered with structured credit products on the assumption of a continuously rising property market. In early 2008, financial institutions attempted to reduce their leverage by selling these impaired instruments which in turn drove their prices to even lower levels. These prices observed in an arguably illiquid market impacted the mark-to-market accounting value of all similar instruments in other banks’ balance sheets globally, setting up a vicious cycle of urgent and forced sales and declining prices.

Attempts to recapitalize and reduce leverage proved unsuccessful for the most leveraged players. Consequently, many became insolvent or were acquired by larger peers. The threat of impending insolvency eroded investor confidence in
financial institutions, drastically increasing LIBOR spreads to unprecedented highs and sending equity prices rapidly downwards.

A third impact came in the form of reduced liquidity in the banking sector. In order to consolidate their capital bases, banks also reduced new credit originations and corporates and consumers alike started to hoard liquidity. Simultaneously, new and unexpectedly high losses were continually being reported and revised upwards by financial institutions, resulting in a severe dislocation in the inter-bank wholesale funding market. From September 2008 onwards, the severe and rapid withdrawal of liquidity from even the short-term funding markets, including the money markets, triggered another wave of insolvencies among institutions dependent on short-term funding.

The increased scarcity and cost of liquidity coupled with decreased capital adequacy thus resulted in a vicious cycle as illustrated in the diagram below.

In response, the official sector attempted to restore stability to the financial services sector and the wider economy. The final months of 2008 saw unprecedented government intervention across every sector of the industry globally, as the casualty list grew and the downturn spread beyond the financial sector to the “real economy”, with advanced economies suffering a deep recession lasting from mid-2008 until mid-2009.
According to the latest IMF estimates, total bank write-down will have exceeded US$2.2 TN between 2007 and the end of 2010,\(^1\) while advanced economies’ GDP fell by 4.5% between March 2008 and March 2009.\(^2\) Whilst a recovery is underway, growth is predicted to be below long-run averages as government stimulus continues to be gradually withdrawn.

### 3.2. Lessons from the crisis

The crisis has revealed certain gaps in the supervisory/governance landscape that contributed towards the severity of the GFC. These conditions in combination allowed the financial services sector to have increased its leverage to unsustainable levels in order to take advantage of the high liquidity environment in pursuit of higher ROE.

Specific lessons are as follows:

1. Too much emphasis on micro-prudential supervision with silo-ed regulation of various segments of the financial sector had created too small a regulatory perimeter: a shadow banking system had grown where risk was able to disappear from the view of regulators and grow unchecked. The structure of regulation also left scope for regulatory capital arbitrage through the transfer credit risk between silos, e.g. from the banking sector to insurance, with the overall effect of reducing capital requirements for the same amount of risk. This facilitated much of the extreme financial engineering which exacerbated the impact of the housing downturn.

2. There was a lack of focus on systemic risk by governmental and supranational bodies: although some systemic risk issues were identified to varying degrees by certain bodies, in the majority of jurisdictions no particular regulatory institution was mandated to monitor systemic risk at a macro-level, or equipped with prudential tools such as dynamic provisioning, additional prudential capital requirements, etc., to curb observable negative trends. Turning insight into action proved extremely difficult. Furthermore, actions to mitigate any build up of systemic risk that would be detrimental to growth faced strong political and industry objections, objections that prevailed in a large part due to a lack of a mandated systemic regulatory body.

3. Inadequate integration of macro-economic analysis with financial sector supervision meant that clear indicators of systemic fragility were missed: although monitoring and analysis of macro-economic conditions was relatively thorough, there was a disconnect in translating the prevalent macro-economic trends into their long term financial and micro-economic impacts and contributions to systemic risk. For example, it was not appreciated how long periods of low interest rates could lead to a less productive use of funds, i.e. to fuel the US housing bubble rather than supporting businesses. As such, no preventative regulation was created and the build up in leverage was allowed to continue.

4. Regulation such as mark-to-market accounting rules and the risk based capital adequacy rules of Basel II have both had a pro-cyclical impact on market conditions: the latter required banks to increase their capital ratios.

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\(^1\) IMF, *Global Financial Stability Report*, October 2010

\(^2\) Source: IMF
in the face of increasing risks. To do so banks had to reduce their lending which contributed to a subsequent dry up of liquidity in the markets

5. Regulatory arbitrage in the shadow banking system masked the extent of leverage built-up in the financial system: off-balance sheet structures such as SPVs and SIVs, unregulated vehicles such as hedge funds and the lack of transparency in OTC markets for derivatives with inherent leverage all contributed to systemic risk. Discrepancies between the capital requirements of banks and insurers, together with the ability to move assets off-balance sheet via SPVs and SIVs allowed banks to re-distribute assets to minimize their capital requirement levels whilst actual risk exposure remained static. For example, Lehman Brothers was reportedly “well capitalized” in its last quarterly filing before default

6. Over-reliance on credit rating agencies meant credit risk measurement was effectively outsourced: rating agencies failed to fulfill their mandate of providing ratings that are independent, objective and of the highest possible standard. Failure to understand credit default risks and risk correlation of structured products resulted in a mispricing of risk as the agencies wrongly issued high ratings to senior tranches of structured credit products. Given that certain funds and institutions are required by regulation to only invest in highly rated products (e.g. pension funds), failure of appropriately rating the risk resulted in excess risk being taken on by such investors. The problem was further exacerbated the fact that the originators of the structured products pay the credit rating agencies for ratings, thus giving rise to a conflict of interest

7. Over-reliance on market discipline meant investors failed to price in higher risk as financial institutions increased their leverage: structured credit products, lowered credit underwriting standards and moves into the subprime mortgage market all contributed in combination to increased risk. Investors in financial institutions encouraged them to seek ever fatter margins to deliver higher short term ROE believing markets were efficiently pricing risk

8. Financial institutions were allowed to grow too big to become manageable and too big to fail: by leveraging themselves highly, financial institutions were able to deliver both asset growth and higher short term ROEs. This in turn created an illusion that the largest and fastest growing financial institutions had come of age and required less supervision, rather than more, in response to greater systemic risk to the broader economy. The crisis also revealed certain gaps in the governance and risk management culture within the financial institutions themselves. These in combination allowed the financial institutions to pursue their highly levered strategy rather than changing direction before it reached the unsustainable levels that led to the crisis

9. There was misplaced reliance on sophisticated models and advanced financial engineering: products design and pricing were allowed to become increasingly complex on the back of increasingly sophisticated MIS and mathematical models which few in the industry truly understood. The benign, stable economic environment meant that these models were never tested through the cycle. As implicit assumptions in the models failed to be robust when the macroeconomic environment changed, few financial institutions understood the severity of likely credit losses even after the crisis had taken hold for some time

10. Inadequate risk governance in a rapid growth environment had resulted in business managers becoming the dominant voice at the credit table:
prudent risk managers were viewed as being out of the market. In many cases, risk managers also did not understand the sophisticated models and their underlying implicit assumptions developed by the risk analysts and accepted the model output on faith. This meant that risk managers too had failed to serve in their intended role to enforce strong risk governance in business decisions.

11. Incentives were too short term and encouraged risk taking amongst business managers to deliver higher ROEs: since few understood the models and risks involved, investors in the financial services sector were rewarding business managers who increased the financial institution’s leverage rather than penalizing them for excessive risk taking. The strong competition for higher ROE in the entire organization also meant that risk managers had little incentive to be the lone voice of dissent.

The result of these gaps in combination meant that financial institutions continued to increase their leverage with “unstable funds” on the basis of sophisticated models that only worked under assumptions of a continuously rising asset market. Financial institutions did not have the mechanism and incentives in place to question those business decisions and the models used to support such decisions. When the underlying model assumptions failed to hold, capital adequacy eroded faster for these over-levered financial institutions, with the situation exacerbated by the rapid exit of those “unstable funds” that the financial institutions had relied upon to lever themselves.

Given the cost of the GFC to the world economy, apart from the governance changes required to address the gaps in the supervisory landscape and internal governance of the financial institutions, additional measures that regulate how financial institutions manage their capital and liquidity have been considered at an international level to help prevent a future occurrence of a similar crisis.

### 3.3. Revision of Basel II

In July 2009, the Basel Committee for Banking Supervision first released revisions to the Basel II market risk framework, including the use of stressed value at risk (VaR) capital calculations. These revisions, commonly referred to as “Basel II.5,” were followed by a press release in September 2009, in which the Committee laid out the groundwork for Basel III by identifying five other priorities to address the gaps found in the existing regulatory framework:

- **Raise the quality, consistency and transparency of the Tier 1 capital base.** The predominant form of Tier 1 capital must be common shares and retained earnings. Appropriate principles will be developed for non-joint stock companies to ensure they hold comparable levels of high quality Tier 1 capital. Moreover, deductions and prudential filters will be harmonized internationally and generally applied at the level of common equity or its equivalent in the case of non-joint stock companies. Finally, all components of the capital base will be fully disclosed.

- **Introduce a leverage ratio as a supplementary measure to the Basel II risk-based framework with a view to migrating to a Pillar 1 treatment based on**

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6 BCBS, *Comprehensive response to the global banking crisis, 7 Sep 2009*
appropriate review and calibration. To ensure comparability, the details of
the leverage ratio will be harmonized internationally, fully adjusting for
differences in accounting

- Introduce a minimum global standard for funding liquidity that includes a
  stressed liquidity coverage ratio requirement, underpinned by a longer-
term structural liquidity ratio

- Introduce a framework for countercyclical capital buffers above the
  minimum requirement. The framework will include capital conservation
  measures such as constraints on capital distributions. The Basel Committee
  will review an appropriate set of indicators, such as earnings and credit-
based variables, as a way to condition the build up and release of capital
  buffers. In addition, the Committee will promote more forward-looking
  provisions based on expected losses

- Issue recommendations to reduce the systemic risk associated with the
  resolution of cross-border banks

In addition, the Committee also committed to assess the need for a capital
surcharge to mitigate the risk of systemic banks.

The details of the September 2009 paper were refined through subsequent
revisions. In particular, the core of the regulations involving new capital and
liquidity standards were first articulated in December 2009 and, after much
debate, finalized in December 2010. In the next chapter, we discuss the
contents of these standards and the market reaction.

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4. Basel III details and market reaction

In this chapter, we summarize the key components of Basel III, and discuss the response from banks and other market players. The chart below shows the major themes of the Basel III regulations, which we will expand on in subsequent sections.

Table 1: Key points from Basel III papers (December 2010)

<table>
<thead>
<tr>
<th>Theme</th>
<th>Philosophy</th>
<th>Key components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tier 1 capital</td>
<td>Stricter rules governing acceptable forms of capital to ensure banks are in a better position to absorb losses</td>
<td>Minimum common equity requirement set at 4.5% in addition to Tier 1 ratio of 6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Various deductions to common equity where capital is not deemed to be loss absorbing</td>
</tr>
<tr>
<td>2. Cyclicality</td>
<td>Counter-cyclical framework to encourage the building of capital buffers</td>
<td>Capital Conservation Buffer of 2.5% added to common equity, and 0-2.5% Countercyclical buffer on top of this depending on national circumstances</td>
</tr>
<tr>
<td></td>
<td>Forward-looking provisioning to transparently capture actual losses and reduce pro-cyclical</td>
<td>EL-based provisioning</td>
</tr>
<tr>
<td>3. Risk coverage (CCR)</td>
<td>Stricter capital requirements for counterparty credit risk exposures</td>
<td>CVA capital charge for mark to market credit losses</td>
</tr>
<tr>
<td></td>
<td>Capital incentives to move OTC derivative exposures to central counterparties</td>
<td>Increase of counterparty credit risk charges for trades with other financials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use of stressed expected positive exposure EPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New charges for wrong way risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capital incentives to move OTC derivative exposures to CCP</td>
</tr>
<tr>
<td>4. Liquidity</td>
<td>Improved management and monitoring of banks – and systemic-wide liquidity risk</td>
<td>30-day Liquidity Coverage Ratio requirement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Net Stable Funding Ratio requirement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Common set of monitoring metrics to assist supervisors in identifying bank/system-wide trends</td>
</tr>
<tr>
<td>5. Leverage</td>
<td>Aim to contain the build-up of excessive leverage, protect against gaming of risk-based requirements and help address model risk</td>
<td>Initial 3% minimum Tier 1 capital/assets ratio (maximum leverage 33:1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Basel II netting of derivatives allowed</td>
</tr>
<tr>
<td>6. Systemic risk</td>
<td>To reduce the probability and impact of failure of systemically important banks</td>
<td>Contingent capital proposal under consultation, to be finalized in December</td>
</tr>
</tbody>
</table>

We remark that the Basel II.5 revisions to the market risk framework are also considered to be part of the BIS’s Basel III package. These Basel II.5 regulations significantly increase market risk capital requirements through the requirements for VaR to be calculated using market data from a period of market stress, and an incremental risk charge to account for default and migration risk of credit instruments in the trading book, in addition to that captured in banks’ VaR models. We do not discuss these regulations in detail as market risk RWAs are low for the Korean banks; however, we do consider the

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8 Ibid
impact of these and the Basel III CCR regulations together when assessing the impact on trading book RWAs and derivatives products in chapter 6.

4.1. Definition of capital

The failure of banks’ capital to absorb losses during the GFC revealed that the definition of capital under the existing capital framework was no longer adequate. Increasing the quality of capital, and not merely the quantity, was therefore seen as priority. In order to ensure that banks are in a better position to absorb losses on both a going-concern and gone-concern basis, Basel III redefines capital as follows:

- Tier 1 capital must help a bank to remain a going concern
- Tier 2 capital must provide loss absorption on a gone-concern basis

Tier 1 capital will predominantly consist of common shares and retained earnings, Tier 2 will be simplified to just one category and Tier 3 will be abolished to ensure that market risks are covered with the same quality of capital as credit and operational risks.

4.1.1. Criteria governing inclusion as regulatory capital

The predominant form of Tier 1 capital will be common shares plus retained earnings and accumulated other comprehensive income net of regulatory adjustments, collectively referred to as Common Equity (CE). As the highest form of loss-absorbing capital, Common Equity represents the most subordinated claim on the liquidation of a bank and must take the first and proportionately greatest share of any losses on a going concern basis.

The remainder of Tier 1 capital, referred to as Additional Tier 1 capital, must be subordinated, have fully discretionary non-cumulative dividends or coupons and have neither a maturity date nor an incentive to redeem. Innovative hybrid instruments with an incentive to redeem (currently limited to 15% of Tier 1) will be phased out over ten years, commencing 1 January 2013.

Tier 2 capital must be subordinated to depositors and general creditors, have no incentive to redeem and have an original maturity of at least 5 years. Recognition in regulatory capital will be amortized in the last 5 years of maturity.
Figure 12: Key aspects of criteria governing inclusion as regulatory capital

<table>
<thead>
<tr>
<th>Tier 1 capital (going concern capital)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a) Common Equity Tier 1</strong> includes capital instruments (and resulting stock surplus) satisfying the following criteria, subject to regulatory adjustments</td>
</tr>
<tr>
<td>▪ Represents most subordinated claim in liquidation</td>
</tr>
<tr>
<td>▪ Entitled to (unlimited and variable) claim of residual assets proportional to share of issued capital, after senior claims are paid</td>
</tr>
<tr>
<td>▪ Principal is perpetual and never repaid outside of liquidation</td>
</tr>
<tr>
<td>▪ No expectation to buy back or redeem, distributions non-obligatory</td>
</tr>
<tr>
<td>▪ Takes first and proportionately greatest share of losses as they occur</td>
</tr>
<tr>
<td><strong>b) Additional Tier 1</strong> includes instruments (and resulting surplus) satisfying the following</td>
</tr>
<tr>
<td>▪ Issued and paid in; no maturity or incentive to redeem</td>
</tr>
<tr>
<td>▪ Subordinated to depositors, general creditors and subordinated debt</td>
</tr>
<tr>
<td>▪ Full dividend/coupon discretion, no credit sensitive dividend feature</td>
</tr>
<tr>
<td>▪ In event of insolvency, cannot contribute to liabilities exceeding assets</td>
</tr>
<tr>
<td>▪ If classified as liability, absorbs principal loss via (i) conversion to common shares or (ii) write-down, at pre-specified trigger point</td>
</tr>
<tr>
<td>▪ May be callable by issuer with supervisory approval, after minimum 5 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tier 2 capital (gone concern capital)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tier 2 capital</strong> includes instruments (and resulting surplus) satisfying the following</td>
</tr>
<tr>
<td>▪ Issued and paid in; subordinated to depositors and general creditors</td>
</tr>
<tr>
<td>▪ Minimum 5 years original maturity, amortised recognition as regulatory capital in last 5 years of maturity, with no incentives to redeem</td>
</tr>
<tr>
<td>▪ Investors cannot accelerate scheduled payments (coupon or principal) outside of bankruptcy or liquidation; no credit-sensitive dividend feature</td>
</tr>
<tr>
<td>▪ May be callable by issuer with supervisory approval, after minimum 5 years</td>
</tr>
</tbody>
</table>

For each element of capital (CE, Additional Tier 1 and Tier 2), qualifying minority interest of a fully consolidated subsidiary that is also a bank is recognized up to the lesser of 1) the minimum capital requirement of the subsidiary, and 2) the portion of the minimum capital requirement of the consolidated entity that is attributable to minority shareholders. The portion of minority interest in excess of minimum requirements is to be deducted in proportion to minority interest share.
4.1.2. Regulatory adjustments applied to regulatory capital

The following adjustments are applied to regulatory capital

Table 2: Regulatory adjustments to Tier 1 capital

<table>
<thead>
<tr>
<th>Category</th>
<th>Adjustment to CE</th>
<th>Key aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goodwill and intangibles</td>
<td>Deducted 100%, net of deferred tax liability</td>
<td>• Option to use IFRS definition of intangible assets rather than local GAAP</td>
</tr>
<tr>
<td>Cash flow hedge reserves</td>
<td>Deducted if hedged item is not fair valued on balance sheet</td>
<td>• Must relate to projected cash flows on balance sheet in order to be recognized</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Positive amounts deducted and negative amounts added back</td>
</tr>
<tr>
<td>Shortfall in provisions to expected losses</td>
<td>Deducted 100%</td>
<td>• Deduction amount not to be reduced for any tax effects from provisions rising to level of expected losses</td>
</tr>
<tr>
<td>Gain on securities transactions</td>
<td>Deducted 100%</td>
<td></td>
</tr>
<tr>
<td>Effects of change in own credit risk</td>
<td>Deducted 100%</td>
<td>• Previous exclusion is extended to cover gains and losses resulting from changes in the fair value of liabilities which are due to changes in a bank's own credit risk</td>
</tr>
<tr>
<td>Defined benefit pension assets</td>
<td>Deducted 100%, net of deferred tax liability</td>
<td>• Assets to which bank has unrestricted and unfettered access can offset deduction (with supervisory approval), but subject to risk weight as if owned directly by the bank</td>
</tr>
<tr>
<td>Unrealized gains and losses</td>
<td>Included if on balance sheet</td>
<td>• Unrealized gains and losses on debt instruments, loans and receivables, equities, own use properties and investment properties recognized on balance sheet should be included in CE</td>
</tr>
<tr>
<td>Treasury stock</td>
<td>Deducted 100%</td>
<td>• Long positions may be deducted net of short positions only if no counterparty risk is involved</td>
</tr>
<tr>
<td>Reciprocal cross holdings</td>
<td>Deducted 100% by a “corresponding deduction approach”, i.e. deducted from the same component of capital for which the capital would qualify if issued by the bank itself</td>
<td></td>
</tr>
<tr>
<td>Mortgage servicing rights</td>
<td>Applied “threshold deduction”, i.e. recognized up to 10% CE after adjustments and up to 15% total CE stock combined with deferred tax assets arising from temporary differences and “significant” unconsolidated investments</td>
<td>• Recognized portion is subject to 250% risk weight and excess amount is deducted 100% from CE</td>
</tr>
<tr>
<td>Deferred tax assets</td>
<td>Applied threshold deduction if arising from temporary differences</td>
<td>• Full deduction otherwise (may be netted with deferred tax liabilities only if netting allowed by taxation authority)</td>
</tr>
<tr>
<td>Unconsolidated investments in other financial institutions</td>
<td>Applied “threshold deduction” for “significant” investments (exceeding 10% of issued share capital) if common shares; otherwise applied a corresponding deduction approach</td>
<td>• If not “significant”, included up to 10% CE and risk weighted; excess amount applied a corresponding deduction approach</td>
</tr>
<tr>
<td>Securitization exposures, etc.</td>
<td>Previous 50-50 deductions (securitization exposures, equity exposures under PD/LGD approach, investments in commercial entities) are included in capital and applied 1250% risk weight instead</td>
<td></td>
</tr>
</tbody>
</table>

4.2. Calibration and phase-in of capital requirements

The crisis also revealed than many banks were undercapitalized and therefore increasing the quantity of capital was also a priority. Minimum requirements for CE, Tier 1 and Total Regulatory Capital (the sum of Tier 1 and Tier 2 capital)
have been calibrated to 4.5% (after regulatory adjustments), 6%, and 8% of risk-weighted assets (RWAs), respectively. The proposed calibration represents a strengthening of capital requirements from Basel II, which currently stand at 2% (before regulatory adjustments) of RWAs for CE and 4% of RWAs for Tier 1. The minimum requirement for Total Regulatory Capital has not changed.

CE and Tier 1 capital requirements will be phased in between 1 January 2013 and 1 January 2015, by 0.5% increments each year. Recognition of minority interest and regulatory adjustments to capital will also be phased in, beginning 1 January 2014 by 20% increments each year and to be fully effective by 1 January 2018.

4.3. Regulatory buffers, provisions and cyclicity

One of the factors that led to the crisis, as outlined above, was the rapid growth of credit in a long, benign economic period. In particular, banks were permitted (and encouraged by the market) to seek higher ROEs by reducing capital ratios and provisioning levels during the good times. When credit losses began to increase, some banks did not have adequate capital buffers and provisions to absorb those losses and maintain their capital positions. In addition, procyclical capital and provisioning requirements exacerbated the problem, forcing banks to reduce the availability of credit and increase provisions as the cycle turned for the worse. Therefore, various counter-cyclical measures were proposed to ensure that banks prepare adequately during the benign parts of the cycle for the inevitable downturn(s) ahead.

4.3.1. Capital conservation buffer

A capital conservation buffer has been proposed above the regulatory minimum capital requirements in order to ensure that the banking sector as a whole adopts best practice on capital conservation. When a bank wears down its capital conservation buffer, capital conservation requirements will be imposed so that distribution (in form of dividend payouts, share repurchases, discretionary Tier 1 payments and bonus payments to staff) will be limited, allowing the bank to rebuild the buffer and strengthen its capital position. The capital conservation requirements will increase in severity as the bank continues to erode its buffer and its capital levels approach the minimum requirement, according to the table below.

### Table 3: Individual bank minimum capital conservation standards

<table>
<thead>
<tr>
<th>CE Tier 1 ratio</th>
<th>Minimum capital conservation ratios (expressed as a percentage of earnings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5%-5.125%</td>
<td>100%</td>
</tr>
<tr>
<td>&gt;5.125%-5.75%</td>
<td>80%</td>
</tr>
<tr>
<td>&gt;5.75%-6.375%</td>
<td>60%</td>
</tr>
<tr>
<td>&gt;6.375%-7.0%</td>
<td>40%</td>
</tr>
<tr>
<td>&gt;7.0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: BCBS, Basel III: A global regulatory framework for more resilient banks and banking systems, Dec 2010
The buffer will be applied at the bank holding company level, and regulators will have the option of also applying the measure at the bank level.

Calibration for the capital conservation buffer has been proposed at 2.5% of RWAs, to be met with CE after regulatory adjustments are applied. This raises Basel III’s total CE requirement to 7% of RWAs. Capital conservation buffers will be phased in, starting from 0.625% on 1 January 2016 to reach 2.5% by 1 January 2019.

### 4.3.2. Countercyclical capital buffer

In order to protect the banking sector from periods of excess aggregate credit growth, a countercyclical capital buffer will extend the capital conservation buffer range to levels deemed appropriate by authorities in each jurisdiction. The size of the countercyclical capital buffer is to be defined as a percentage of RWAs and determined by regulators in each jurisdiction; the buffer may be expanded or reduced according to credit exposure levels. Basel III proposes the use of the aggregate private sector credit/GDP ratio as a reference point for buffer decisions. The capital conservation requirements for the countercyclical buffer ranges are shown below

<table>
<thead>
<tr>
<th>CE Tier 1 (including other fully loss absorbing capital)</th>
<th>Illustrative: CE Tier 1 ratio (assuming 2.5% countercyclical buffer)</th>
<th>Minimum capital conservation ratios (expressed as a percentage of earnings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within first quartile of buffer</td>
<td>4.5%-5.75%</td>
<td>100%</td>
</tr>
<tr>
<td>Within second quartile of buffer</td>
<td>&gt;5.75%-7.0%</td>
<td>80%</td>
</tr>
<tr>
<td>Within third quartile of buffer</td>
<td>&gt;7.0% 8.25%</td>
<td>60%</td>
</tr>
<tr>
<td>Within fourth quartile of buffer</td>
<td>&gt;8.25%-9.5%</td>
<td>40%</td>
</tr>
<tr>
<td>Above top buffer</td>
<td>&gt; 9.5%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: BCBS, *Basel III: A global regulatory framework for more resilient banks and banking systems*, Dec 2010

Internationally active banks will be subject to bank-specific buffers, determined by the weighted average of the buffers in the jurisdictions in which they have credit exposures, where the weights are given by the sizes of the exposures. Jurisdictional reciprocity will apply, in the sense that regulators will be expected to promptly disclose their own buffer levels to counterparts in other jurisdictions, and to enforce their own banks to respect the buffers in other jurisdictions.

The countercyclical capital buffer will be calibrated within a range of 0-2.5%, to be met by CE or other fully loss absorbing capital. The maximum countercyclical buffer requirement will be introduced according to the same phase-in schedule as the capital conservation buffer, i.e. starting at 0.625% on 1 January 2016, to increase linearly to 2.5% by 1 January 2019.

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9 BCBS, *Guidance for national authorities operating the countercyclical capital buffer*, Dec 2010
4.3.3. **Forward-looking provisioning**

Counter-cyclical provisioning practices are to be strengthened through the following initiatives:

- A change in accounting standards towards an Expected Loss (EL) approach (endorsing the IASB’s EL approach, and subject to further discussion)
- Updating supervisory guidance to be consistent with such a change
- Addressing disincentives to provisioning in the Basel II regulatory capital framework (by deducting 100% from CE any shortfall of provisions to EL, rather than 50% each from Tier 1 and Tier 2 currently under Basel II)
- Promoting stronger disclosures of banks' provisioning practices

4.4. **Counterparty credit risk capital requirements**

Counterparty credit risk was identified as an area where insufficient capital had been held. As individual financial institutions (e.g. Lehman Brothers) began to fail, counterparty exposures caused a ripple through the industry as losses on those exposures were taken by other banks. In other cases (e.g. AIG), the counterparty credit exposures were a key rationale for government bail-outs, to avoid catastrophic, industry-wide affects. In the AIG case, in particular, capital requirements against many RMBSs were effectively nullified through the use of credit derivatives; many large European and US banks were awarded a reduction in their own capital requirements since their underlying credit exposure had been hedged in a contract with AIG and they did not hold sufficient capital for the risk of AIG’s defaulting on its contracts. Therefore, increasing the counterparty credit risk capital requirements was seen as a priority to reduce systemic risk and to ensure banks capitalize themselves adequately for the risk of counterparty failures.

For a more comprehensive coverage of risk, particularly of off-balance sheet and derivatives exposures, a series of changes have been proposed to strengthen Counterparty Credit Risk (CCR) capital requirements, related risk management practices and asset correlations. Under the new CCR capital requirements, calculation of Expected Positive Exposure (EPE) must incorporate stressed parameters, Credit Valuation Adjustment (CVA) losses will be captured using a bond equivalent method, and specific wrong way risk will incur an explicit Pillar 1 capital charge. Asset value correlations with large (over $100 BN in assets) regulated financial institutions and with any unregulated financial institutions will incur a 1.25x multiplicative factor. There are also various requirements around the recognition and management of collateral and increased incentives to use central counterparties (CCPs) to clear OTC derivatives.
Table 5: Changes to counterparty credit risk measurement

<table>
<thead>
<tr>
<th>Item</th>
<th>Key aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stressed Effective EPE</td>
<td>Effective Expected Future Exposure (EPE) should be the greater of Effective EPE using current data and Effective EPE using a stressed calibration, with stress parameters calculated over a 3 year period of increased credit spreads</td>
</tr>
</tbody>
</table>
| CVA capital charge               | Credit Value Adjustment (CVA) capital charge for mark-to-market losses associated with a deterioration in counterparty creditworthiness  
|                                  | Bond equivalent approach to be used. IMM and Specific Interest Rate VaR model approved banks to use Advanced CVA risk capital charge; others to use standardized CVA risk capital charge with  
|                                  | – Weighted average effective maturity  
|                                  | – Single name CDS hedges recognized |
| Wrong way risk                   | Explicit Pillar 1 capital charge for each counterparty for which there exists an explicit legal relationship that gives rise to measurable specific wrong way risk |
| Asset value correlation          | Imposes a 1.25x multiplier on the asset value correlation of exposures to regulated financial institutions with over $100 BN in assets, and all unregulated financial institutions of any size (e.g. banks, broker dealers, insurance, hedge funds, financial guarantors) |
| Collateral recognition and management | Increased margin periods for risk to 20 days for netting sets containing either (i) more than 5,000 trades, or (ii) OTC derivatives or illiquid collateral  
|                                  | Revised shortcut method for estimating EPE on collateralized exposures  
|                                  | Various collateral management requirements  
|                                  | Increased haircuts for repo transactions using securitization collateral (vs. corporate debt); re-securitizations no longer eligible as collateral  
|                                  | PD estimates for highly leveraged counterparties to reflect performance of their assets based on period of stressed volatility |
| Exposures to central counterparties | Standards for central counterparties under development  
|                                  | Capital requirements for bank exposures to CCPs to be finalized after consultative process in 2011; proposed 2% risk weight |
| CCR management                   | Higher standards for stress testing, model validation and back testing of models |

4.5. Leverage ratio

The leverage ratio – the ratio of high quality capital to assets – is intended to be a simple, transparent, non-risk based measure that is calibrated to act as a credible supplementary measure to the risk based requirements of Basel II. As highlighted above in section 0, too much reliance was put on risk-based models which in some cases under estimated the risk. For this reason, the leverage ratio was suggested as a “back-up” capital requirement to reduce model risk and prevent excessive leverage.

Using the new definition of Tier 1 capital (after regulatory adjustments) as the relevant capital measure, a minimum 3% ratio of Tier 1 capital to exposure (gross assets plus off balance sheet exposures and loan equivalent for derivatives) has been proposed for the “parallel run” period from January 2013 to January 2017, and will be subject to testing and studies relative to risk-based requirements.

In calculating the exposure measure, all assets are to be included using the accounting balance sheet. Repo style transactions will be included according to the accounting measure of exposure, netted as in Basel II. All derivatives (including credit derivatives) will be netted as in Basel II and converted to a “loan equivalent” amount. Off-balance-sheet (OBS) items will be included using uniform (100%) credit conversion factors (CCFs), with a 10% CCF for those items that are unconditionally cancellable.
Table 6: Leverage ratio

<table>
<thead>
<tr>
<th>Category</th>
<th>Key aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition and calibration</td>
<td>• Measure of total exposure over high quality capital</td>
</tr>
<tr>
<td></td>
<td>• Intended to supplement risk based capital requirements, and to be comparable across different jurisdictions</td>
</tr>
<tr>
<td></td>
<td>• <strong>Minimum 3% Tier 1</strong> calibration to be tested during “parallel run” period from January 2013 to January 2017</td>
</tr>
<tr>
<td>Pillar 1, 2 and 3 requirements</td>
<td>• Initially Pillar 2, migration to Pillar 1 by January 2018 subject to review</td>
</tr>
<tr>
<td></td>
<td>• Pillar 3 disclosures required; disclosure template to be developed during supervisory monitoring period starting 1 January 2011 and bank level disclosure to begin 1 January 2015</td>
</tr>
<tr>
<td>Capital measure</td>
<td>• Basel III definition of Tier 1 capital, after regulatory adjustments</td>
</tr>
<tr>
<td>Exposure measure: on balance sheet items</td>
<td>• Include all assets (net of provisions and valuation adjustments) and repo style transactions (Basel II netting allowed)</td>
</tr>
<tr>
<td></td>
<td>• Collateral and guarantees must not reduce on-balance sheet exposures, nor can deposits be used to reduce loan exposures</td>
</tr>
<tr>
<td>Exposure measure: derivatives</td>
<td>• All derivatives to be converted consistently to “loan equivalent” amount by applying a simple measure of potential future exposure based on the standardized factors of the Current Exposure Method</td>
</tr>
<tr>
<td></td>
<td>• Netting rules based on the Basel II Framework</td>
</tr>
<tr>
<td>Exposure measure: off balance sheet items</td>
<td>• Off-balance sheet items included using uniform (100%) credit conversion factors (CCFs): commitments (including liquidity facilities), direct credit substitutes, acceptances, standby LCs, trade LCs, failed transactions and unsettled securities</td>
</tr>
<tr>
<td></td>
<td>• Unconditionally cancellable OBS items included at 10% CCF</td>
</tr>
</tbody>
</table>

4.6. Liquidity proposals

Liquidity was a key missing element from Basel II. While regulators and banks were aware of this and progress was already being made, the crisis highlighted the urgent need for liquidity standards as liquidity issues led to the failure or bailing-out of various FIs during the crisis. In order to raise the resilience of banks to potential short-term and long-term liquidity shocks, two new standards have been proposed to be used in liquidity risk supervision for internationally active banks: the Liquidity Coverage Ratio, a short-term measure of liquidity calculated under a specified acute stress scenario, and the Net Stable Ratio Funding Ratio, a longer-term complement that addresses structural liquidity mismatches.

4.6.1. Liquidity coverage ratio

The Liquidity Coverage Ratio (LCR), defined as the ratio of an institution’s stock of unencumbered, high quality liquid assets to net cash outflows over a 30-day period under a specified acute liquidity stress scenario, intends to prepare banks with sufficient high quality liquid assets that would enable them to survive under stress for 30 days, during which time it is assumed that the management or regulators will be able to intervene appropriately. The scenario was designed based on actual circumstances experienced in the global financial crisis, and entails the following institution-specific and systemic shocks:

- A significant downgrade of the institution’s public credit rating
- A partial loss of deposits
- A loss of unsecured wholesale funding
- A significant increase in secured funding haircuts; and
- Increases in derivative collateral calls and substantial calls on contractual and non-contractual OBS exposures, including committed credit and liquidity facilities

Following an observation period to commence on 1 January 2011, the LCR will be introduced on 1 January 2015.

For an asset to qualify as part of the stock of high quality liquid assets (HQLA) in the numerator of the LCR, it must be available to the bank Treasury, unencumbered and freely available to group entities. The asset must also satisfy a set of fundamental and market-related characteristics for liquidity, and be available to be converted into cash in the currency and jurisdiction where liquidity is required in the event of stress.

Net cash outflows in the denominator of LCR are cumulative cash outflows net of cumulative cash inflows (capped at 75% of outflows) during the specified stress period. Calculating the cumulative cash outflows consist of two parts: the outstanding balances of various types of liabilities are multiplied by specified percentages that are expected to run off, and various off-balance sheet commitments are multiplied by specified draw-down amounts. Contractual cash inflows are also included for fully performing retail, wholesale and reverse repos secured by illiquid assets.
### Table 7: Liquidity Coverage Ratio

<table>
<thead>
<tr>
<th>Category</th>
<th>Key aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity Coverage Ratio (LCR) =</td>
<td></td>
</tr>
<tr>
<td>Stock of liquid assets</td>
<td>Represents ability to withstand 30-day liquidity needs of stress scenario, including both institution-specific and system-wide shocks</td>
</tr>
<tr>
<td>30 day stressed outflows</td>
<td>To be recalibrated following an &quot;observation phase&quot; beginning in 2011 before being finalized</td>
</tr>
<tr>
<td>Stock of high quality liquid assets (HQLA): Levels 1 &amp; 2</td>
<td>“Level 1” liquid assets include cash, central bank reserves, government bonds, qualifying corporate/covered bonds (with haircut), qualifying sovereign-backed instruments with 0% Basel II risk weight, domestic sovereign debt for non-0% risk weighted sovereigns in foreign currency (if matches bank’s operating currency needs)</td>
</tr>
<tr>
<td></td>
<td>“Level 2” liquid assets can be up to 40% of the stock of liquid assets, and include</td>
</tr>
<tr>
<td></td>
<td>– At 15% haircut, sovereign, central bank, and public sector entity assets with 20% Basel II risk weight</td>
</tr>
<tr>
<td></td>
<td>– At 15% haircut, corporate and covered bonds rated AA- or higher, not issued by bank</td>
</tr>
<tr>
<td>30 day stressed cash outflows</td>
<td>5% run-off retail/SME deposits if &quot;stable&quot; (determined by established relationships or transactional accounts); 10% if &quot;less stable&quot;; 0% if term deposits maturing in &gt;30 days with significant penalty for withdrawal</td>
</tr>
<tr>
<td></td>
<td>25% run-off for portion of unsecured wholesale funding maturing in &lt;30 days qualifying as “operational” (used for custody, clearing, and settlement activities); 5% for that amount fully covered by deposit insurance</td>
</tr>
<tr>
<td></td>
<td>75% run-off non-operational unsecured wholesale funding from non-financial entities</td>
</tr>
<tr>
<td></td>
<td>100% run-off non-operational unsecured wholesale funding from financial institutions</td>
</tr>
<tr>
<td></td>
<td>0% run-off for secured funding if backed by Level 1 assets; 15% if backed by Level 2 assets; 25% if counterparty is a domestic sovereign, central bank, or public sector entity; 100% all other</td>
</tr>
<tr>
<td></td>
<td>5% drawdown on unutilized credit and liquidity lines to retail/SME; 10% if credit lines to non-financial entities; 100% if liquidity lines to non-financial entities or credit and liquidity lines to financial institutions</td>
</tr>
<tr>
<td></td>
<td>100% requirement of collateral to cover derivatives contracts for a 3-notch downgrade, net derivatives payables, contractual outflows, maturing asset-backed securities, asset-backed commercial paper, etc.</td>
</tr>
<tr>
<td></td>
<td>20% requirement for collateral valuation change</td>
</tr>
<tr>
<td></td>
<td>Regulator discretion on liquidity needs for derivatives valuation change and contingent liabilities</td>
</tr>
<tr>
<td>30 day stressed cash inflows (capped at 75% of cash outflows)</td>
<td>50% for contractual inflows from outstanding retail and non-financial corporate exposures (100% if from financial institutions)</td>
</tr>
<tr>
<td></td>
<td>0% reverse repos and securities borrowing if backed by Level 1 assets; 15% if Level 2; 100% all other</td>
</tr>
<tr>
<td></td>
<td>0% credit or liquidity facilities and operational deposits held at other financial institutions</td>
</tr>
<tr>
<td></td>
<td>100% net derivatives receivables; regulatory discretion on other contractual cash inflows</td>
</tr>
</tbody>
</table>

#### 4.6.2. Net Stable funding ratio

The Net Stable Funding Ratio (NSFR) measures the amount of funding that is expected to be stable over a one-year time horizon under conditions of extended stress, based on liquidity risk factors assigned to assets and OBS liquidity exposures. The NSFR intends to ensure that banks hold sufficient stable liabilities to support their long-term assets, and will be introduced as a minimum standard by 1 January 2018.

The NSFR is defined to be the ratio of the Available Stable Funding (“ASF”) to the Required Stable Funding (RSF). ASF is defined as the sum of capital,
preferred stock and liabilities with maturities at least one year and any otherwise “stable” (as defined in the LCR) deposits that are expected to remain in an extended firm-specific stress event. RSF is defined as the amount of stable funding required by supervisors based on an institution’s liquidity exposures.

The ASF and RSF are calculated by first classifying the carrying value of an institution’s equity and liabilities into categories, then applying relevant weights (called “factors”) and finally taking the sum of the weighted amounts. The following table lists the proposed categories and factors.

**Table 8: Net Stable Funding Ratio**

<table>
<thead>
<tr>
<th>Category</th>
<th>Key aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Stable Funding Ratio (NSFR)</td>
<td>- Minimum Net Stable Funding Ratio of 100% to be introduced as a standard by 2018</td>
</tr>
<tr>
<td></td>
<td>- Measures longer-term (over 1 year) liquidity needs under firm-specific stress</td>
</tr>
<tr>
<td></td>
<td>- To be recalibrated following an “observation phase” beginning in 2011</td>
</tr>
<tr>
<td>Available Stable Funding (ASF)</td>
<td>Available Stable Funding weights and sums the following</td>
</tr>
<tr>
<td></td>
<td>- 100% Tier 1 and Tier 2 capital instruments</td>
</tr>
<tr>
<td></td>
<td>- 100% liabilities with maturities &gt;1 year</td>
</tr>
<tr>
<td></td>
<td>- 90% “stable” retail/SME deposits (non-maturity and/or term deposits with maturities under 1 year) expected to stay with the institution for an extended period in an idiosyncratic stress event; 80% “less stable” retail and SME deposits</td>
</tr>
<tr>
<td></td>
<td>- 50% unsecured wholesale funding from non-financial corporates, sovereigns, central banks, public sector entities (non-maturity and/or term deposits with maturities under 1 year)</td>
</tr>
<tr>
<td>Required Stable Funding (RSF)</td>
<td>Required Stable Funding weights and sums the following</td>
</tr>
<tr>
<td></td>
<td>- 0% cash, money market instruments and securities with exact offsetting repo</td>
</tr>
<tr>
<td></td>
<td>- 0% unencumbered short-term unsecured actively-traded instruments and securities with maturity &lt;1 year</td>
</tr>
<tr>
<td></td>
<td>- 0% non-renewable loans to financial institutions with maturity &lt;1 year</td>
</tr>
<tr>
<td></td>
<td>- 5% undrawn committed credit and liquidity facilities</td>
</tr>
<tr>
<td></td>
<td>- 5% unencumbered debt issued/guaranteed by sovereigns, central banks, multilateral development banks with 0% Basel II risk weight; 20% if issued/guaranteed by such entities with 20% Basel II risk weight</td>
</tr>
<tr>
<td></td>
<td>- 20% unencumbered non-financial senior unsecured corporate and/or covered bonds (maturity &gt;1 year) with central bank eligibility rated AA- or higher; 50% if rated from A+ to A-</td>
</tr>
<tr>
<td></td>
<td>- 50% loans with maturity &lt;1 year to non-financial corporates, sovereigns, central banks and PSEs</td>
</tr>
<tr>
<td></td>
<td>- 50% unencumbered gold</td>
</tr>
<tr>
<td></td>
<td>- 65% residential mortgages/loans qualifying for 35% Basel II risk weight, or other loans with maturity &gt;1 year to non-financial entities with 35% or lower risk weight</td>
</tr>
<tr>
<td></td>
<td>- 85% loans with maturity &lt;1 year to retail/SME clients</td>
</tr>
<tr>
<td></td>
<td>- 100% all assets not included above; regulatory discretion for contingent funding</td>
</tr>
</tbody>
</table>

**4.7. Treatment of systemically important financial institutions**

To reduce the potential for systemic issues caused by the failure of individual financial institutions and the need for taxpayer bail-outs of those institutions, it was proposed that financial institutions which are “too big to fail”, or
“systemically important” in the terminology adopted by regulatory bodies, be subject to stricter regulatory requirements. The Financial Stability Board (FSB) is leading the reform agenda for the global regulation of Systemically Important Financial Institutions (SIFIs); various measures are to be finalized and put in place over 2011 and 2012. As part of this, the BCBS is developing a framework for ensuring higher loss absorbency of capital for SIFIs, including capital surcharges, contingent capital and bail-in debt.

In August 2010, the BCBS released a consultative document entitled “Proposal to ensure the loss absorbency of regulatory capital at the point of non-viability”. The proposal argues that there are benefits of having subordinated debt, since holders of such debt prefer less risk to equity holders and the cost of funding is lower than that of common equity. Subordinated debt is also loss absorbing on a gone concern basis, i.e. in liquidation. The problem arises, however, when the bank is deemed “too big to fail” and is bailed out by a public sector injection of common equity, as happened often during the crisis. In these cases, the subordinated debt holders assume no losses, as they would if the bank were allowed to fail, and thus the public sector is supporting not just the depositors, but also the subordinated debt holders.

The proposal requires

- All internationally active banks to have a clause in non-common Tier 1 and Tier 2 capital instruments that requires them to be written off on the occurrence of a trigger event
- Trigger event to be the earlier of a public sector injection of capital, or a decision by relevant authorities that a write-off, without which the firm would be unviable, is necessary
- The trigger even to be specified in all jurisdictions where the instruments are to be classed as regulatory capital
- Compensation to be only paid in the form of common equity in the bank or its parent, and the bank must have prior authorization to do this; the common equity must be issued before any public sector injection, to avoid dilution of the latter

The list of Global SIFIs is expected to be released by the FSB in mid-2011; the BCBS plans to finalize its recommendations on loss absorbency by December 2011.

4.8. Timing of implementation

Timing of the implementation has been deliberately phased in over a long period to avoid a sudden shock to the system and the consequent economic impact from banks’ reaction.
1. Tier 1 Capital

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase out unqualified capital instruments</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
<td>70%</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>Phase in deductions from Common Equity</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Common Equity Capital Ratio</td>
<td>3.5%</td>
<td>4%</td>
<td>4.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Tier 1 Capital</td>
<td>4.5%</td>
<td>5.5%</td>
<td>6.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Risk coverage (CCR)

<table>
<thead>
<tr>
<th></th>
<th>Minimum standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum total capital including CC buffer</td>
<td>10.5%</td>
</tr>
<tr>
<td>Minimum Common Equity + CC buffer</td>
<td>9.875%</td>
</tr>
<tr>
<td>Capital Conservation Buffer</td>
<td>9.125%</td>
</tr>
<tr>
<td>Countercyclical buffer (extends CC buffer)</td>
<td>8.625%</td>
</tr>
<tr>
<td>Capital Conservation Buffer</td>
<td>8%</td>
</tr>
<tr>
<td>Countercyclical buffer (extends CC buffer)</td>
<td>8%</td>
</tr>
<tr>
<td>Capital Conservation Buffer</td>
<td>7%</td>
</tr>
</tbody>
</table>

3. Liquidity

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Observation period</th>
<th>Minimum standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity coverage ratio</td>
<td>No phase-in period announced</td>
<td></td>
</tr>
<tr>
<td>Net Stable Funding Ratio</td>
<td>Supervisory monitoring</td>
<td>Capital UC disclosed starts 2015</td>
</tr>
</tbody>
</table>

4. Leverage ratio

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Minimum standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leverage ratio</td>
<td>Pillar 1</td>
</tr>
</tbody>
</table>

5. Cyclicality

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Minimum standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Conservation Buffer</td>
<td>0.625% 1.25% 1.875% 2.5%</td>
</tr>
<tr>
<td>Countercyclical buffer (extends CC buffer)</td>
<td>According to national circumstances; 0 – 2.5% common equity</td>
</tr>
<tr>
<td>Minimum Common Equity + CC buffer</td>
<td>3.5% 4% 4.5% 5.125% 5.75% 6.375% 7%</td>
</tr>
<tr>
<td>Minimum total capital including CC buffer</td>
<td>8% 8% 8% 8.625% 9.125% 9.875% 10.5%</td>
</tr>
</tbody>
</table>

6. Systemic Risk

Details to be announced in December

4.9. Market-related monitoring tools

The final Basel III liquidity standard adds five monitoring tools to be tracked by regulators. This is in order that there is a consistent set of metrics which can be applied consistently and which banks must report to their supervisors. These are briefly described here.
Table 9: Liquidity monitoring tools

<table>
<thead>
<tr>
<th>Category</th>
<th>Key aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractual maturity mismatch</td>
<td>• Contractual cash and security inflows and outflows from all on – and off-balance sheet items, mapped to defined time bands based on their respective maturities</td>
</tr>
<tr>
<td></td>
<td>• Identifies gaps between the contractual inflows and outflows of liquidity for defined time bands, providing insight into extent of maturity transformation. These maturity gaps indicate how much liquidity a bank would potentially need to raise in each of these time bands if all outflows occurred at the earliest possible date</td>
</tr>
<tr>
<td>Concentration of funding</td>
<td>• Within various maturity buckets, banks must report</td>
</tr>
<tr>
<td></td>
<td>- Funding liabilities sourced from each significant counterparty (&gt; 1% of balance sheet)/Bank’s balance sheet total</td>
</tr>
<tr>
<td></td>
<td>- Funding liabilities sourced from each significant product/instrument/Bank’s balance sheet total</td>
</tr>
<tr>
<td></td>
<td>- List of asset and liability amounts by significant currency (&gt;5% of liabilities)</td>
</tr>
<tr>
<td></td>
<td>• Identifies sources of wholesale funding that are of such significance that withdrawal of this funding could trigger liquidity problems. Like credit portfolios, banks will now be expected to consider the diversification in their funding base; where concentrations exist, these will be explicit to regulators</td>
</tr>
<tr>
<td>Available unencumbered assets</td>
<td>• Available unencumbered assets that are marketable as collateral in secondary markets and/or eligible for central banks’ standing facilities. In other words, banks will report all assets which can reasonable be sold off or repo-ed in a bank level liquidity crisis, recognizing assets outside the scope of HQLAs. Items must be reported for each significant currency, and estimates of likely haircuts must be made</td>
</tr>
<tr>
<td></td>
<td>• Provides supervisors with data on the quantity and key characteristics, including currency denomination and location, of banks’ available unencumbered assets</td>
</tr>
<tr>
<td>LCR by significant currency</td>
<td>• Foreign Currency LCR = Stock of high-quality liquid assets in significant currency/Total net cash outflows over a 30-day time period in each significant currency (&gt; 5% of liabilities)</td>
</tr>
<tr>
<td></td>
<td>• Amount of total net foreign exchange cash outflows should be net of foreign exchange hedges</td>
</tr>
<tr>
<td></td>
<td>• Allows the bank and the supervisor to track potential currency mismatch issues</td>
</tr>
<tr>
<td>Market-related monitoring tools</td>
<td>• Supervisors to monitor data at the level of market-wide information, information on the financial sector and bank-specific information, including</td>
</tr>
<tr>
<td></td>
<td>- Market-wide information: includes equity indices, debt markets, FX, commodities and other product indices</td>
</tr>
<tr>
<td></td>
<td>- Information on the financial sector: equity and debt market info, including indices</td>
</tr>
<tr>
<td></td>
<td>- Bank-specific information: equity prices, CDS spreads, money market trading prices, funding roll-overs and prices, debenture and subordinated debt yields</td>
</tr>
<tr>
<td></td>
<td>• Market data can be used as early warning indicators</td>
</tr>
</tbody>
</table>

No standards are set for these, as they are meant simply to supplement the liquidity ratios in providing regulators with transparent information to aid in supervision.

4.10. Market reaction

4.10.1. International market reaction

The far reaching and costly impact of the US subprime and global financial crisis made it evident that some regulatory changes would be required to limit the probability of recurrence of such a crisis in the future. Many market participants understood as much and were directionally supportive of the broad changes proposed under what is collectively known as Basel III, though
most disagreed with the specifics of the proposed changes or were concerned by the lack of detail on some key issues in the December 2009 consultative document. As Basel III is currently being designed and refined, many aspects have understandably been viewed to be “crude” or “incomplete” and need further detailing. In that context, market participants responded to the December 2009 consultative documents and much of the market feedback\textsuperscript{10} influenced the July 2010 Annex. Despite the softening of the proposal in the final December version, some of the market concerns still apply and the more strategic concerns have been summarized below.

**Pillar 1 vs. Pillar 2 treatment**

This concern stems from the apparent contradiction between the risk-sensitive spirit of Basel II and crude leverage and liquidity ratios that do not take into account the individual portfolios of different financial institutions. While the leverage and liquidity ratios are still useful from a regulatory point of view, a formulaic, one size fits all, Pillar 1 approach could unfairly penalize banks with well collateralized, diversified portfolios. Bank feedback suggested that the assessment could be best conducted as part of the (more flexible) Pillar 2 process.

**Extent of public disclosure**

Banks expressed concerns that public disclosure, for the liquidity ratios, in particular, could result in a self-fulfilling vicious cycle when the market misunderstands some of the signals. For example, a financial institution could have a declining but strong liquidity ratio that is the result of normal business decisions, but misinterpreted as a weakening position that leads to a run on the bank. Instead, it has been suggested (by Deutsche Bank) that such ratios be reported only to the regulator, and only pass/fail signals provided to investors.

**Timing of implementation**

Banks feared that investors may already expect banks to conform to the proposed capital and liquidity ratios as a result of the announcement, and would expect it of all financial institutions in the market once some financial institutions started reporting the new ratios. This could in effect result in new, higher minima at a time when banks have not had time to adapt and when the global economy is still in a fragile state; however, well capitalized banks have already begun disclosing to investors that they can meet the new standards, and as yet we have not seen evidence of this.

**Changing role of banks and central banks**

Banks argued that the new liquidity ratios would inefficiently lock up significant amounts of liquidity in the banking sector. Given the reliance on the banking system to provide liquidity to the wider economy, this reduced velocity would in turn reduce the effectiveness of the central banks’ monetary policy for regulating the economy. This is particularly true for countries with limited float of highly liquid assets, such as Australia.

**Unequal economic landscape**

Emerging markets and Europe are relatively more reliant on the banking sector for financing needs than the US due to the less developed debt and capital

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\textsuperscript{10} See http://www.bis.org/publ/bcbs165/cacomments.htm for detailed list of comments received
Emerging markets also have higher economic growth rates which bank lending helps to fuel. Banks and their lobby groups argued that in emerging markets, the economic need for the new ratios is therefore less and the impact will be felt more strongly than in the US, and may unnecessarily disadvantage emerging markets financial institutions. Bank lending capacity would be limited, which would lead to an unintended drag on these economies. We note that as most Asian banking systems – with the notable exception of Korea – have excess liquidity (see Figure 16), this would not be a concern in Asia.

Dependency on accounting standards

The application of the proposed rules is dependent on the local accounting standards (with notable differences between IFRS and US GAAP) that are inconsistent across geographies, and may disadvantage international financial institutions that are required to comply with more stringent home accounting regulations.

Systemically relevant banks

Using size as a single measure to determine whether banks are systemically relevant may be too crude, and instead other dimensions such as business mix, diversification, geographical scope and quality of risk management could also be considered.

The risk coverage measures of Basel III, for example, apply a higher asset value correlation to all large banks for counterparty credit risk; if higher correlations are applied across other asset classes, liquidity placements could be forced onto smaller banks that may not have the capacity to absorb the excess liquidity. This could be detrimental to some basic banking activities such as trade finance, especially when smaller financial institutions – as suggested by the submissions – may not have the capacity and capability to manage the associated risks.

Pro-cyclical rules

The liquidity rules are likely to exacerbate the pro-cyclicality of liquidity. As a crisis begins to emerge, wholesale investors will naturally hoard their liquidity which would in turn squeeze the liquidity position of financial institutions. This would have the further effect of reducing credit originations and set up a vicious cycle of hoarding liquidity. With the proposed liquidity rules, this would likely result in pools of trapped liquidity amongst the full range of market participants in both good and bad times.

The proposed leverage and liquidity rules are both in combination also prone to self-fulfilling vicious cycles as discussed above. As capital is eroded going into a crisis, the disclosure of stressed leverage ratios would increase the cost of raising more capital and liquidity and thus further stress the leverage and liquidity ratios. As such, the proposed leverage and liquidity rules need to be assessed in combination in order to minimize any perverse increase in cyclicality rather than to achieve more stable through the cycle capital and liquidity adequacy.

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11 The European Banking Federation compares 2/3 of funding requirements met by banks in Europe against 1/3 in US
4.10.2. Korean banks’ reaction

As part of the study, we interviewed several market participants to discuss their reactions to Basel III regulation and the strategic impact they expected on their operations. The bank representatives universally demonstrated a high degree of sensitivity to the new Basel regulation. They also all appeared to be very familiar with the regulation’s likely impact on their bank’s financials, as well as the need to rebalance the balance sheet through select strategic initiatives. At the time of the interviews most of our counterparts either had already submitted their QIS report, or were in the process of finalizing it.

Expecting the solvency implications to be modest at best, our interview counterparts commented particularly on the severity of the new liquidity rules and the need for the existing liquidity regulation to be harmonized with the new Basel III rules, given their inconsistency. Whilst the interviewees obviously expected different magnitudes of impact on their respective banks, given the different balance sheet structures the above listed banks have, many felt that the new rules were unduly harsh in the Korean context. As a result there was an expectation that the FSS, FSC and Korean policy makers would apply their leeway to reduce the negative implications where possible when implementing the Basel III rules in Korean banking regulation.

Korean banks had also submitted comments to the BIS on the December 2009 consultative documents. The concerns summarized below represent the Korean specific details as have been voiced by the local banks.

Definition of T1

Several Korean banks expressed concern over the exclusions to and deductions from common equity

- Several submissions were made regarding the grandfathering period for hybrid instruments issued prior to December 2009. The ten year grandfathering period announced in September should allow plenty of time for Korean banks to build up additional capital
- NACF requested that its cooperative capital be considered part of common equity, even though not strictly common equity according to the Basel III definition
- National discretion was also called for in relation to deductions, e.g.
  - extending the maximum allowance of investments in unconsolidated financial institutions (now allowed up to a threshold of 10% of the bank’s own common equity)
  - consistency of items such as deferred tax assets, goodwill and intangible assets with national accounting standards

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12 See [http://www.bis.org/publ/bcbs165/cacomments.htm](http://www.bis.org/publ/bcbs165/cacomments.htm) for a detailed list of comments received

13 Basel III requires that in order for capital instruments to qualify as CE, the principal must never be repaid outside of liquidation. Although cooperative capital is repaid to members who withdraw from the cooperative, withdrawal is infrequent; in addition, cooperative’s capital is classified as equity under IFRS, which allows consideration of instruments that are repaid only when a member has died, retired, or resigned
Leverage ratio

Banks expressed concerns over the 100% CCF applied to OBS items for calculation of the leverage ratio. Two banks suggested using standardized CCFs to facilitate international comparability and better reflect contingent liabilities without being overly punitive.

LCR

Given the likely impact of the liquidity ratios, there was a lot of concern regarding both the LCR and the NSFR. Suggestions included

- Additional instruments as HQLAs for the LCR calculation, including bank debentures and bonds issued by PSE-owned banks with 0% Basel II risk weight
- Reduced run-off rates/drawdown rates for commitments
- More objective guidelines to distinguish between “stable” and “less stable” deposits
- Classification as retail deposits by IBK of the portion of its Small and Medium Industry Finance Bonds (“SMIF Bonds”) held by retail investors
- Exercising of national discretion and phase-in period (met in the September release by the BCBS)\(^{14}\)

NSFR

- Admission as stable funding of financial institutions’ deposits of a transactional nature; these receive limited recognition in the LCR, with only a 25% run-off assumed, but not in the NSFR
- Exercising of national discretion and phase-in period (met in the September release by the BCBS)\(^{15}\)

\(^{14}\) BCBS, \textit{Group of Governors and Heads of Supervision announces higher global minimum capital standards}, 12 Sep 2010

\(^{15}\) Ibid
5. Overview of the Korean banking market

Before we begin discussing the impact on Korean banks, this chapter gives a brief overview of the Korean banking market as is relevant in the context of Basel III. Particular features we discuss are

- **Three tier banking system**: national, specialized and regional banks will all be impacted differently by Basel III

- **Strong capital positions, despite declining profitability**: ROEs declined from above 15% pre-crisis to just 6% in 2009, as in particular higher credit losses combined with reduced NIM. In spite of low profitability, Korean banks have maintained and even increased their strong capital positions during the recent turbulence through capital increase

- **Financial holding group structure**: the largest banks have converted to financial holding groups, meaning insurers and securities firms are not owned directly by those banks; deduction of minority interests and non-consolidated FI holdings therefore is not a big concern

- **Reliance on wholesale funding**: Korean banks’ loan-to-deposit ratios far exceeded 100% until the FSS announced a new 100% cap. The banks’ ratios have declined more recently, but Korean banks still do not enjoy the flood of liquidity available in much of Asia

- **Consolidating market**: mature markets typically experience slowing growth and increasing consolidation within the sector; while the Korean financial services market continues to grow strongly, the market has shown a trend towards consolidation in the past decade, and recent industry announcements appear to support this trend. Korean financial services could potentially undergo a major transformation due to these and other consolidations

5.1. The three tier banking system

There are three distinct tiers of players: seven national banks, five specialized banks, and six regional banks. They are different in nature and therefore, throughout this report, we separately consider the impact on these three groups of banks.

National banks are the largest by asset size with approximately 61% of total banking RWAs. Despite differences in focus, they typically offer a full suite of products and services to all customer segments across Korea. Within this group we also consider a subset, the “glocals”, i.e. locally incorporated subsidiaries of global banking groups (Citibank Korea and Standard Chartered First Bank).

Specialized banks are significant in size, with combined 31% of RWAs, but are very different in their nature of business. They are owned by Korean government entities (though two are structured as co-operatives) and were set up for specific economic purposes. They include

- **National Agricultural Cooperative Federation (NACF)**: co-operative bank, providing banking services to the agricultural sector
- Industrial Bank of Korea (IBK): bank mandate to supporting the development of the SME sector
- Korea Development Bank (KDB): bank mandate to supporting Korea's major strategic industries
- Export-Import Bank of Korea (Eximbank): export credit agency, set up to assist Korean exporters
- National Federation of Fisheries Cooperatives (NFFC): co-operative bank, providing banking services to the fisheries sector

The specific nature of the specialized banks puts them at a disadvantage relative to commercial banks, in the context of Basel III’s liquidity standards. Firstly, they all have particular skews in credit assets according to the segments they serve and their mandates, which affect both liquidity ratios. On the funding side, they may suffer from greater reliance on wholesale funding or reduced funding options. We discuss this in more detail later in the report.

Regional banks are much smaller, with a combined market share of 7%, and operate within specific regions of Korea. Regional banks focus on retail deposits, loans and project financing. Their businesses are usually focused on a specific region so that the deposits are based on the regional residence and loans are normally for regional business and real estate development.

### 5.2. Strong capital positions

Korea banks are generally well-capitalized under Basel II rules, with significant buffers over their minimum capital requirements of 4% (core capital ratio, or Tier 1 ratio) and 8% (total regulatory capital ratio); it appears at first glance that the Korean banks will have few problems with the new capital rules.

**Figure 13: Tier 1 and BIS capital ratio**

2Q 2010

![Bar chart showing Tier 1 and BIS capital ratio for different banks.](chart.png)

Source: FISIS
These capital ratios have been on a rising trend, driven in part by increased capital levels and efforts to reduce RWAs in the wake of the crisis, as well as large banks’ recent moves to IRB status.

**Figure 14: Evolution of Tier 1 ratio**
KRW TN

ROEs, however, have declined significantly as a result of the global financial crisis, from over 15% in 2005-7 to just 6% in 2009. In an effort to ensure growth in capital levels despite the drop in earnings, the banks responded by raising additional capital to improve their capital ratios; this will not be sustainable indefinitely and asset growth therefore may be constrained until Korean banks' profitability returns to more normal levels.
5.3. Financial holding group structure

Basel II capital rules may apply to a bank entity, a bank and its subsidiaries levels or at the financial group level. The FSS’s capital rules state that they apply to banks at a consolidated level that does not include any insurance subsidiaries. In this report, therefore, we focus on balance sheets consolidated up to the bank level, which generally contains most of the true banking activities within a financial group but excludes insurance, securities or other subsidiaries.

As outlined above, partially owned financial institutions are a potential issue for banks under Basel III due to the deduction of minority interests (above the subsidiaries’ regulatory minimum capital) and investments in unconsolidated financial institutions above certain thresholds. Financial holding group structures, therefore, are advantaged under Basel III relative to structures where the bank is the head of the group.

Many of the large banks in Korea have formed financial holding groups, which also tend to house life insurers and securities firms. An example of this structure is shown below. Large, partly-owned subsidiaries tend to be owned by financial group holding companies rather than banks, with banks mainly holding small, offshore banking subsidiaries. This structure positions the Korean banks well for Basel III since the deductions for holdings in FIs are relatively minor.
5.4. Reliance on wholesale funding

As the recent global liquidity crisis demonstrated, short term wholesale funding is extremely volatile and can evaporate very quickly when signs of trouble surface. Banks can no longer rely on rolling over short term wholesale funding to fund long term loans; according to the net stable funding ratio requirements, they must maintain stable liabilities, either through retail deposits or longer term wholesale funding.

Korean banks suffer from a structural shortage of deposits due to a level of savings in the form of deposits which is insufficient to fund their loan books. In the chart below, we see that this issue is shared by European and Australian banks, but that US and other Asian banks tend to have lower loan-to-deposit ratios (LDRs). Consequently, Korean banks rely significantly on wholesale funding in the form of bond issuance and other borrowings. Korean banks will have to change the composition of their liabilities which could be very costly.

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56 For direct comparison, the ratio here is defined differently to the FSS’s definition, which excludes CDs and foreign currency items
High LDRs are a relatively recent phenomenon in Korea, as shown by the chart below. Deposit growth has been much slower than loan growth over the period, particularly from 2005-2008 after the credit market recovered after the credit card crisis in 2003-4. As a result, the LDRs of Korean banks worsened from 73% in 2001 to a high of 126% in 2007.\footnote{FSC, Regulation on Banks’ Loan-to-Deposit Ratios, 26 Mar 2010}
Following these years of aggressive lending by Korean banks, the FSC announced plans to cap the LDR of banks at 100% in an effort to “minimize liquidity risk and restrain competitions of excessive external expansions”. Under this regulation, banks have a four-year grace period to bring their LDR in line. Another notable feature is that Certificates of Deposit (CDs) are not considered part of the deposit base for LDR calculation.

After the introduction of the LDR regulation, banks have started to change their funding structure. Generally banks have started to reduce CDs and bank debentures, and to increase time deposits, offering better services and higher interest rates to customers. As a result, LDRs have fallen, and as of September 2010, the industry level LDR of applicable banks has improved to below 100%. Analysts have commented that the four-year grace period should be long enough for banks to rebalance loans and deposits without significant erosion of net interest margin (that is, relatively low risk of deposit rate competition).

Funding composition and LDRs varies significantly between banks. As the chart below shows, some of the specialized banks are significantly more reliant on wholesale funding than their national peers; we therefore expect these banks to suffer much more due to the Basel III liquidity standards than their national and regional peers. We note that, with the exception of NACF, the 100% LDR cap does not currently apply to specialized banks; in implementing Basel III nationally, the FSS will have an important decision to make as to how to treat the specialized banks.

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18 Ibid
19 FSS, 예대율 규제 도입 발표(‘09.12 월) 이후 은행권 예대율 동향, 9 Nov 2010
Other liquidity standards

In addition to the LDR, the FSS has also introduced several other liquidity standards. The long-term foreign funding ratio applies to those banks with outstanding foreign currency loans exceeding US$50 MM, and seeks to ensure that banks procure sufficient long-term funding to cover their long-term loans. The standard is defined as foreign currency-denominated funding with maturity >1 year divided by foreign currency-denominated loans with maturity >1 year. Industry-wide figures have historically been well above the minimum requirement, which, previously 80%, was raised to 90% in January 2010 and again to 100% in July 2010.
The FSS also recently imposed KRW and foreign currency short term liquidity ratios, to reduce the risk of banks collapsing during an acute liquidity crisis. These ratios are liquid assets divided by liquid liabilities where “liquid” means less than one month for the KRW ratio and less than three month for the foreign currency ratio (originally one month, but loosened to three). The FSS requirements are 100% and 85% for KRW and foreign currency ratio respectively. The industry as a whole meets the short term ratio requirements, meaning that the banks have enough cash, securities and placements with other banks to honor their short term liabilities during an acute crisis. Given that interbank placements are not counted as HQLAs under Basel III, however, we expect banks may have a problem meeting the LCR requirements.
5.5. Consolidating market

We consider five distinct groups of financial sectors based on the level of economic development and the penetration of financial services in the economy: emerging markets, transitioning markets, mature markets, financial services-driven economies and super-mature markets, as shown for major Asia-Pacific financial sectors in the chart below. Countries in emerging markets and transitioning markets tend to have relatively low penetration of financial services and low level of GDP per capita. China, Malaysia and Indonesia have high financial services share of GDP by global standards for their level of GDP per capita, in part due to the significant income disparity present in these countries; nevertheless, we generally expect such countries to have low financial services penetration.

Korea is one of several mature markets, which are characterized by relatively high GDP per capita and modest financial services share of GDP. As GDP grows, this group tends to move towards becoming either financial services-driven economies – which Korea is targeting through its promotion of Seoul and Busan as financial hubs – or super-mature markets like the US, which have high level of GDP per capita but have not followed the path towards become FS-driven economies and hence have a more modest level of financial services penetration.
Mature markets typically have high penetration of financial services, growth that is beginning to slow, and increasing levels of consolidation. As the Korean economy has grown strongly over the last decade, we have not yet seen evidence of slowing growth; loans grew 62% in the 5 years to 2009, against GDP growth of 23% over the same period. A comparison with other mature markets indicates that Korea is still relatively less concentrated than many developed markets as seen in Figure 22; we do however, see a trend towards consolidation. The top banks in Korea have increasingly taken up market share over the past decade, and recent market events indicate a continuation of this trend: Hana Financial Group recently agreed to purchase private equity fund Lone Star’s majority stake in KEB to form what would be the third largest banking group in Korea, while the government is reportedly trying to privatize other publicly owned banks. Also, we observe that the path towards consolidation has been characterized by step changes between relatively steady periods; this shows that a major crisis or large industry change can be a trigger for consolidation, and Basel III may be a catalyst for additional consolidation if large banks seek to acquire regional or savings banks in order to access their strong deposit bases for liquidity purposes. We discuss this further in section 6.1.50.
5.6. Conclusion

In summary, we expect Korean banks to be largely untroubled by the capital requirements proposed in Basel III, though in the long term, poor profitability may be a concern as continued growth cannot be funded through retained earnings. On the liquidity side, but banks have seen an amelioration of their liquidity ratios since the FSS has imposed a 100% cap on LDRs and introduced short term liquidity ratio requirements. The impact will vary significantly between banks, however; we expect the specialized banks in particular to struggle under the liquidity framework as a result of their relatively lower deposit base. Finally, continued consolidation is a possible scenario if banks look to M&A as a short-cut to building up their deposit bases.
6. Impact on the banking sector

6.1. Impact on the Korean banking sector

6.1.1. Balance sheet implications

In this section, we consider the impact of Basel III capital and liquidity requirements on banks’ balance sheets, and discuss ways in which banks can respond to the new regulations.

The impact analysis in this section was conducted via an outside-in approach, for the most part relying on publicly available data. In some cases, however, we have had to supplement the data with assumptions based on our own experience. We remark that the analysis could yield different outcomes depending on the assumptions used; in particular, those assumptions regarding items subject to regulatory discretion are discussed in Section 8.1.

6.1.1.1. Capital requirements and bank response

As a whole, Korean banks are relatively unscathed by the new capital regulations, due to strong capital positions and good capital quality. Most Korean banks have historically relied on common equity as the main form of regulatory capital. The narrower definition of capital under Basel III therefore does not represent a significant change for Korean banks. (We discuss deductions later in this section.) Exceptions to this are the cooperative banks, which rely on forms of capital that do not fall under the definition of Common Equity (see section 4.10.2).

In addition to sound positions across all three capital ratios, we observe that the abundance of Tier 1 capital, combined with relatively small derivatives activity compared to some of the largest global banks, translates directly to leverage ratios well above the 3% minimum requirement.20

Among the three capital ratios, Tier 1 represents the greatest constraint for most banks. The subsequent discussion thus focuses on Tier 1 requirements.

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20 For the exposure measure here we use assets, off balance sheet exposures and derivatives potential future exposures according to the Basel II current exposure method
Figure 23: Basel III capital ratios and leverage ratio
June 2010

In addition to narrowing the definition of capital, Basel III seeks to improve the quality of capital through additional deductions. The FSS has already imposed in its capital standard, however, deductions beyond those required by Basel II – for example, goodwill, intangibles and deferred tax assets are fully deducted – and this has served to mitigate the effect of new deductions proposed under Basel III. A comparison of FSS and Basel III deductions is shown below.

Table 10: Regulatory adjustments to capital

<table>
<thead>
<tr>
<th>Category</th>
<th>Basel III deductions</th>
<th>Existing FSS deductions</th>
<th>Incremental change to Tier 1 ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority interests</td>
<td>Allowable up to minimum capital requirement of subsidiary</td>
<td>None</td>
<td>Deduct portion in excess of requirement in subsidiary in proportion to minority interest share</td>
</tr>
<tr>
<td>Goodwill and intangibles</td>
<td>Deducted 100% from CE</td>
<td>Deducted 100% from Tier 1</td>
<td>No change</td>
</tr>
<tr>
<td>Investments in own shares</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash flow hedge reserves</td>
<td>Deducted 100% from CE</td>
<td>None</td>
<td>Deduct 100% from CE</td>
</tr>
<tr>
<td>Defined benefit pension assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects of change in own credit risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hybrid bonds</td>
<td>Deducted 100% from CE (previously recognized up to 15%)</td>
<td>Recognized as CE up to 30% (15% if subject to rate raising condition), remainder as Additional Tier 1 capital</td>
<td>Deduct remaining 70% (or 85%) from CE</td>
</tr>
</tbody>
</table>
### Category
- Deferred tax assets (arising from temporary differences)
  - Basel III deductions: Applied threshold deduction
  - Existing FSS deductions: Deducted 100%
  - Incremental change to Tier 1 ratio: Add back to CE that portion up to 10% CE (after deductions), and apply 15% combined threshold of total CE stock
- Unconsolidated investments in other FIs exceeding 10% of issued share capital
  - Basel III deductions: Applied threshold deduction
  - Existing FSS deductions: Deducted 50-50 from Tier 1 and Tier 2
  - Incremental change to Tier 1 ratio: Add back 50% to Tier 2, and to CE that portion up to 10% CE (after deductions), and apply 15% combined threshold of total CE stock
- Mortgage servicing rights
  - Basel III deductions: On-balance sheet portion recognized as CE
  - Existing FSS deductions: Deducted 100%
  - Incremental change to Tier 1 ratio: Add back 100% of on-balance sheet portion to CE
- Unrealized gains and losses
  - Basel III deductions: Apply 1250% risk weight (previously deducted 50-50 from Tier 1 and Tier 2 capital)
  - Existing FSS deductions: Deducted 50-50 from Tier 1 and Tier 2 capital
  - Incremental change to Tier 1 ratio: Add back 50-50, and add 1250% to RWA instead
- Securitization exposures
- Equity exposures under PD/LGD approach
- Investments in commercial entities

### Incremental change to Tier 1 ratio
- Positive change
- Negative change

In terms of impact on Korean banks’ Tier 1 capital ratio, the following adjustments are noteworthy:

- Adjustments increasing Tier 1 capital ratio
  - The on-balance sheet portion of unrealized gains and losses (previously deducted 100% from Tier 1 capital) is now recognized
  - Unconsolidated FI investments (previously deducted 50-50 from Tier 1 and Tier 2 capital) and deferred tax assets (previously deducted 100%) are recognized up to a threshold

- Adjustments reducing Tier 1 capital ratio
  - The most significant new deduction under Basel III is the deduction of hybrid bonds, outstanding amounts of which sum to about KRW7.5 TN across the industry
  - Previous 50-50 deductions (including securitization exposures, equity exposures and investments in commercial entities) are no longer deducted from capital but are instead applied a 1250% risk weight

In addition, RWAs increase under Basel III due to market risk and CCR charges, though the changes are relatively minor for Korean banks, which tend to have low levels of market risk.

These various impacts are summarized in the diagram below. We can see that the removal of hybrid bonds is the largest driver of a reduction in the Tier 1 ratio; not all banks have issued these instruments, however, meaning that the impact will not be felt evenly across the market.

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21 We have assumed this to be an average of 150% add-on to market risk, +/- 50%
Figure 24: Breakdown of Basel III impact on Tier 1 capital
June 2010, all Korean banks

Despite healthy capital surpluses at most banks, it is likely that Korean banks will continue to maintain capital buffers beyond the regulatory minimum as they have done in the past. Korean banks have historically maintained higher capital levels than Western peers – in part due to their more concentrated portfolios, as well as their exposure to a more cyclical economy – and may continue to do so as Western banks increase capital levels. Exactly how much additional capital banks will raise is uncertain, however, and we have defined the following three scenarios in order to capture this uncertainty:

- Mild scenario assumes banks hold the minimum required capital, i.e. capital is only raised to meet Basel III minimum requirements.
- Expected scenario assumes banks maintain current buffer over Tier 1 minimum before the application of 2.5% capital conservation buffer. As Tier 1 minimum increases from 4% to 6% (before capital conservation buffer), we assume banks raise an additional 2% in capital.
- Adverse scenario assumes banks maintain current buffer over Tier 1 minimum after the application of 2.5% capital conservation buffer. Tier 1 minimum increases from 4% to 8.5% (after capital conservation buffer) and therefore we assume banks raise an additional 4.5% in capital.
Raising additional capital, however, may prove difficult in the near future, especially as ROEs have fallen sharply in recent years, to around 6% in 2009 (see Figure 15). This limits the extent to which retained earnings could be used to fund these buffers. (We note, however, that the long implementation period means ROEs are likely to recover somewhat before regulations come into place.) Although banks were able to improve Tier 1 ratios over the course of 3Q 2010 by an average of 0.42% to a record high of 11.75%, much of this was due to a reduction in the size of foreign currency balance sheets driven by a stronger KRW, which will not be sustainable going forward. Improved earnings or capital raisings, therefore, will ultimately be necessary to build up these buffers.

6.1.1.2. Short-term liquidity requirements and bank response

We estimate the industry LCR to be around 80%, meaning there is a significant shortfall in HQLAs. The impact varies considerably across the industry, although most (but not all) national banks (average LCR of 84%) and specialized banks (average LCR of 61%) will be affected. Regional banks as a group are well positioned, with 4 out of 6 banks meeting the 100% requirement.

Figure 25: LCR by banking segment
June 2010

A key driver for the discrepancy in the LCR between banks is the extent of wholesale exposures, especially to financial institutions, which tend to be more HQLA-intensive. Whereas retail deposits are subject to only a 5-10% run-off factor, wholesale funding is subject to a run-off of 25-75% if from non-financial corporates, or 75-100% if from financial institutions. Also, committed credit lines to non-financial corporates are subject to a 10% drawdown factor, or 100% for financial institutions, compared to 5% for retail. Thus it is no surprise that the retail-heavy regional banks come out strongest and wholesale-dependent specialized banks weakest, with national banks in between.

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22 FSS, ‘10.9 월말 국내은행의 BIS 비율 현황, 3 Dec 2010
Banks will respond in a variety of ways to the new regulations. There will be several “quick wins”, as well as some more structural adjustments, to reduce the requirements for HQLAs. Also, banks will have to acquire more liquid assets, with the premium paid for deposits over those liquid assets hitting the bottom line directly.

Firstly, banks will attempt to reduce the 30-day stressed outflow though a combination of actions, including:

- Restructuring existing liabilities to be more “Basel III-friendly”
  - Lengthening the term of wholesale funding. Although it will be difficult to extend the terms for much of the funding < 30 days, some of the < 30 day funding will be longer-term deposits or placements with less than 30 days remaining. Extending the initial term of these or extending at 30 days remaining would ensure more favorable treatment (i.e. reduce run-off to zero) under the LCR
  - Attempting to increase the proportion of stable deposits through measures such as salary-crediting and product cross-sell to retail customers. Whilst retail deposits make up a large chunk of the liability base of most banks, and therefore the retail deposit run-off is significant, the marginal benefit of doing this is small since it only reduces the run-off from 10% to 5%
  - Changing product structures, e.g. imposing harsher penalties for breaking of retail term deposits (the proposals treat retail term deposits the same, regardless of maturity, unless they legally preclude early withdrawal or contain substantial break-costs in excess of a loss of interest). A significant proportion of assumed deposit run-off is for
retail deposits > 30 days so the opportunity is large; on the other hand, harsher penalties will make such deposits harder to sell and banks will have to pay higher interest for them

- Replacing existing liabilities with more “Basel III-friendly” liabilities
  - Raising additional retail deposits. This also requires retail investors to divert their portfolios away from other assets – likely to varying degrees, depending on the nature of those assets – and towards deposits. See section 6.1.1.3, where we discuss this in the context of the NSFR.
  - Reducing short term FI funding. This should happen naturally to some extent, as banks who today place money with other banks will now seek to acquire government and corporate bonds to hold their excess liquidity, since money placed with other banks receives no credit as HQLAs; as banks place less short term money with each other, system HQLA requirements will be reduced significantly, as those short term deposits account for over 20% of HQLA requirements based on today’s balance sheets. However, there will be a more structural shift away from the rolling over of short (e.g. three month) funding.

- Reducing additional sources of cash outflow
  - Cutting commitments to corporate and other FIIs. Banks will seek to withdraw any unutilized lines as these now incur a liquidity risk penalty as well as a capital charge. Alternatively, banks will charge for these unused lines and customers will naturally reduce them.

Secondly, banks will increase their stock of high quality liquid assets, through a combination of

- Acquiring government and corporate bonds in the market; this may be difficult without an increase in the supply of these assets. The majority are held by the Korean government and BOK, or by insurers who need long-dated assets to match their liabilities. It would be relatively easier to acquire these assets from retail investors and corporates, especially as deposit rates are likely to become more attractive to those investors, though these investors hold much smaller volumes of HQLA-qualifying securities. Therefore it is clear that this will not be sufficient to close the gap.
Acquiring new issuances of government and corporate bonds. Historically banks have not captured a large share of the Korean government and corporate debt market, with net acquisitions averaging only 18% (KRW11 TN) of the total net issuances over the period 2005-2009. However, as they are likely to bid more competitively in future and have until 2015 to close the considerable gap, this is likely to be sufficient to close the gap which cannot be closed through changing the liability structure.
Figure 28: Share of net issuances of government and corporate bonds captured by banks

![Bar chart showing share of net issuances of government and corporate bonds captured by banks from 2005 to 2010.](chart)

Source: Bank of Korea, Oliver Wyman analysis

- Holding money with the BOK overnight rather than placing it with other banks; at a system level, this will reduce overall liquid asset requirements as banks will have fewer short term liabilities to each other. However, as no interest is generally paid on BOK reserves, this will come at a significant cost to banks

In summary, there are various measures which banks can take to close the gap; the relative sizes of these are shown below.
In addition to overall LCR, Basel III monitoring standards require that banks report LCR in each significant foreign currency, as per Section 4.10. We think foreign currency positions for the Korean banks will be weak; having calculated a rough proxy\(^\text{23}\) for LCR based on foreign currency balance sheets and compared against the corresponding calculations based on aggregate balance sheets, we have found that, on average, foreign currency positions amount to about 60% of aggregate positions across the industry. We note, however, that this result may be obscured by the fact that the analysis covers all foreign currency; in reality, the metric will likely be reported in US$ only for most banks, and banks for which no single foreign currency qualifies as “significant” may not be required to report their foreign currency LCR positions at all. In addition, as foreign currency LCR is a monitoring tool without a strict minimum requirement, we expect limited impact beyond an increased awareness of the need for foreign currency liquidity management.

### 6.1.1.3. Long-term stable funding requirements and bank response

At the industry level, the NSFR is expected to be around 93%, representing a sizeable gap in Long Term Stable Funding. Compared to the LCR, the results for the NSFR are more consistent across the industry. The majority of banks are better positioned in terms of stable funding than in terms of short-term liquidity; in fact, most national and regional banks are not too far behind requirements, with several banks exceeding 100%. The brunt of the impact is borne by the specialized bank.

\(^\text{23}\) Given insufficient foreign currency balance sheet data, we have taken the quantity \((\text{cash + due from banks + securities})/(\text{deposits + borrowings + bonds payable})\) as a proxy for LCR.
NSFR hinges on whether assets and liabilities fall on the short or long side of the 1 year maturity threshold. On the ASF side, all liabilities with maturity > 1 year are recognized 100%; however, only deposits from non-financial clients – retail, SME, corporate and government – receive (partial) recognition for the < 1 year portion as well. It follows that having a larger proportion of non-financial deposits leads to higher NSFR. The chart below shows the breakdown of ASF for the different bank types. We can see that whereas the commercial banks rely on retail and non-FI corporate deposits for the majority of their ASF, the proportion is much smaller for the specialized banks.
On the RSF side, most assets require 100% of stable funding, but there are a few exceptions. Notably, loans to non-financial clients are eligible for a lower RSF factor (50% if corporate, 85% if retail) if maturing in < 1 year, and retail residential mortgages, and other loans to non-financial entities with risk weight 35% or lower, are eligible for 65% RSF regardless of maturity; hence a large proportion of these assets on the balance sheet drives NSFR in the positive direction. Again, the breakdown of RSF, shown below, is consistent with the results for NSFR; we observe that such assets constitute the largest proportion in the national banks and the smallest in the specialized banks.
Banks with a stable funding gap, or those wishing to maintain a larger buffer above the minimum, will react in several ways. (Many of these responses will give rise to systemic trends, which we discuss in more detail in section 06.1.5)

Firstly, banks will attempt to reduce the required stable funding though a combination of actions, including

- Restructuring existing assets to be more “Basel III-friendly”
  - Reducing the term of corporate lending where possible. This will happen naturally to some degree once Korean banks inevitably start charging customers for liquidity, and will increase the cost of long term borrowing to companies and individuals, meaning demand for longer term debt will fall
  - Combining retail exposures with mortgages, e.g. replacing credit cards with home equity lines of credit (HELOCs), and securing other loans with residential property. This reduces the required stable funding from 85% (if <1 year) or 100% (if >1 year) to 65%

- Transferring assets from the balance sheet
  - Securitizing mortgages and other assets. Despite recent efforts to increase the size of Korea’s securitization market, it remains under-penetrated relative to many other countries, possibly due to the fact that Korea’s banks have not faced significant capital constraints. Now, however, they will face new liquidity constraints which will act as an additional incentive to securitize. We note that mortgage securitization will not completely solve the problem, as the specialized banks with the largest funding gaps have the lowest proportion of mortgages. However, it would enable the other specialized banks to reduce their funding gaps and allow most commercial banks to close their gaps.
Creating listed, non-redeemable mortgage funds, which could ease some of the burden. (Unlisted mortgage funds suffered during the crisis as redemptions could not be met, and mostly had to be frozen; demand for such products therefore has dried up.) Creating this new asset class for investors could be a way to attract additional retail and corporate funding, which is more efficient than raising deposits and on-lending the funds. Basel III provides strong incentives for increased lending by the non-bank sector, which may lead to such product innovation.

Investing in DCM capabilities to take advantage of client revenues and cross-sell opportunities while keeping loans off the balance sheet. The shortfall in net stable funding will be met partially by additional debt issuance if borrowing corporates issue more debt as a result of higher loan

24 Canadian boutique lender Firm Capital Corporation has set up such a fund, called Mortgage Investment Trust, which is listed on the Toronto Stock Exchange
pricing from banks. Given this additional debt issuance would have to be absorbed over seven years before the NSFR comes into play in 2018, the market is likely to be able to absorb additional debt issuance which would significantly help the affected banks, to the extent that they have large corporate loans suitable for bond issuance.

![Figure 34: Korean corporate debt issuance 2000-2010](image)

Secondly, banks will have to increase their available stable funding, through a combination of

- Raising or retaining capital; although Korean banks’ capital positions are strong, they are likely to raise additional capital to maintain buffers. As discussed in section 6.1.1.1, we have assumed a base case of 2% additional capital issuance by each bank; as capital receives 100% ASF recognition, this would close the NSFR gap on a dollar for dollar basis.

- Raising retail and corporate deposits; this requires retail investors to divert their portfolios from other assets and will therefore require more attractive interest rates, at a cost to the banks; banks will also have varying success at converting different asset classes to deposits. Below we discuss how likely banks are to be able to attract deposits away from different asset classes.
Figure 35: Assets held outside banks by individuals and non-FI corporates
June 2010, KRW TN

- Banks capture 2/3 of the non-FI deposits in Korea, meaning that there is room to increase the deposit base though the long term nature of the non-bank deposits may make it difficult to move that liquidity in the near future.
- Even greater stickiness for life insurance policies in existence, though banks may be able to divert a small share of the new savings policies towards deposits instead.
- Banks will not be able to offer returns comparable to the equity markets to attract significant liquidity from there.
- In comparison, securities and money in trust are liquid enough to be converted into long term deposits if interest rates were attractive enough.

Lengthening the term of wholesale funding past one year; this could include increasing the initial term of funding, or extending the funding once the remaining duration is one year. In either case this is likely to incur significant costs as the yield curve steepens amid more demand for long term funding.

Attempting to change retail product structures for those customers’ deposits maturing in less than one year to qualify as “stable”, as discussed above. This would increase the recognition as ASF from 80% to 90%, but also reduces required HQLAs under the LCR.

In summary, there are various measures which banks can take to close the gap; the relative sizes of these are shown below.
6.1.2. **Impact on ROE**

Here we assess the impact on ROE assuming banks meet the capital and liquidity gaps purely by:

- Raising common equity capital
- Converting assets and securities to high quality liquid assets, with a reduction in yield of 0.5%
- Replacing shorter term funding with longer term funding at an additional cost of 0.6%

As per the discussion above, we recognize that there are many actions banks may take which will mitigate the ROE impact; they will also pass some of these costs onto borrowers and attempt to reduce operating costs to retain profitability.

Given that most national and regional banks are relatively well positioned for meeting the capital and liquidity standards, it is not surprising that the corresponding impact on profitability is minimal. Specialized banks, however, will face significant downward pressure on ROEs due to their capital and liquidity shortfalls, although this does not apply evenly across banks.
We expect minimal impact on ROE due to capital raisings up to minimum requirements. However, the estimated add-ons to ROE impact due to additional bank-discretionary capital buffers may be significant as shown below – particular when we consider the low starting points for national and regional banks – though the negative impact will be partly mitigated for some banks as the additional capital would lead to a reduction in LTSF shortfall. The impact on the specialized banks is larger predominantly because of the greater funding shortfall; for regional banks, on the other hand, the larger impact is reflective of higher starting ROEs.
6.1.3. Analysis of ROE by product

We have analyzed typical asset-side products which are important for Korean banks and are affected by the regulation, as shown below.

**Retail**
- Mortgages: retail lending secured on residential property
- Credit cards: revolving cards to retail customers, not including corporate cards

**Commercial and corporate lending**
- SME loans: term loans with full utilization
- Corporate loans: term loans with full utilization
- Working capital lines: revolving facilities, e.g. bills, overdrafts (SME and Corporate)
- Specialized lending: large ticket secured lending – largely project finance, but also object finance, commodities finance, IPRE and HVCRE

**Trade finance**
- Letters of Credit: an LC is issued by the bank on behalf of an importer to guarantee payment by the importer to an exporter. It is an unfunded product, i.e. when a facility is drawn no cash is actually given to the customer. On the date specified, the bank pays the exporter and receives funds from the importer.
- Letters of Credit with Trust Receipt: having required an LC to import goods, an importer may wish for funding to finance the goods until they can be on-sold or turned into output which can be sold. In this arrangement the trust receipt for the goods serves as collateral for the short term loan. Thus this product is really an LC plus a short term, secured loan.
- Financial Guarantees: *e.g.* a standby letter of credit, promising to meet all payments in the event of payment default by the importer. This product is always fully utilized but unfunded, and creates a contingent obligation for the bank.

- Factoring: the bank purchases the exporter’s receivables at a discount, assuming the credit risk of the importer(s).

**Markets**

- FX derivatives: flow and structured. The maturities are generally short term, with nearly all under 1 year, as longer dated contracts are typically classed as rates. In 2008, amid huge won volatility, banks recorded heavy losses and faced mis-selling suits from Knock-In-Knock-Out currency options (KIKOs). This debacle has caused such products’ popularity to fall recently, though it remains to be seen whether such a market will return.

- Rates derivatives: flow and structured. Maturities are longer term as banks use these for asset-liability management.

We first analyze in detail the impact of the liquidity and capital proposals on the credit products. Separately, we consider the implication of the proposals on markets products. Note that all of our analysis is before management action; banks will attempt to raise prices and cut costs to reduce the apparent ROE impacts, which may in some cases completely reverse the profitability impacts of the regulation. The actual reduction in ROE will be determined by the relative bargaining power of shareholders, customers and employees.

**Credit products**

As liquidity and capital positions vary materially between banks, we show estimates here under the three scenarios[^25] defined below, since the impact on profitability depends heavily on the banks’ positioning with regard to the ratios.

Firstly, we vary the liquidity ratios to reflect the different positioning of banks; note that “mild” does not represent the strongest bank’s position according to a ratio, nor does “adverse” represent the weakest bank’s position. Secondly, we vary the parameters applied to contingent liabilities, which are left up to local supervisory discretion and affect trade finance products. For the mild case we assume 0% and for the adverse case we assume the same parameters used for undrawn corporate credit lines. Our expected case is 0% which we use for simplicity, though we recognize the FSS could take various positions on this parameter; we discuss this in more detail later in chapter 8. Finally, we vary the additional capital banks will raise as a buffer, as discussed previously.

[^25]: The expected case corresponds approximately to our bank level model used to obtain the results of sections 6.1 and 6.1.2
Table 11: Parameters for credit product scenarios

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mild</th>
<th>Expected</th>
<th>Adverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCR</td>
<td>90%</td>
<td>80%</td>
<td>70%</td>
</tr>
<tr>
<td>NSFR</td>
<td>95%</td>
<td>90%</td>
<td>80%</td>
</tr>
<tr>
<td>Drawdown on contingent liabilities (LCR)</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>Stable funding requirements for contingent liabilities (NSFR)</td>
<td>0%</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>Additional capital raised</td>
<td>0%</td>
<td>2%</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

Under our mild scenario, product profitability is hardly affected, with minor costs hitting various products through the liquidity ratios, but with small magnitude. Under our expected scenario, however, the main impact comes from additional capital raising; exceptions are mortgages, for which stable funding requirements begin to eat into the thin margins, and Letters of Credit with Trust Receipt, which are penalized in the LCR because of the certain cash outflows defined in the product (i.e. when the LC is paid, a short term loan is immediately extended to the importer, converting the off balance sheet component into a balance sheet loan.) Liquidity positions are stronger under the expected scenario, and therefore limited additional liquid assets or long term funding requirements will hit profitability.
Figure 39: Impact of Basel III on credit product ROEs – by component
All figures in percentage points, based on 2009 industry estimates
The ROE impact due to increasing capital will be largely determined by banks themselves. We have assumed in our expected scenario that banks maintain current Tier 1 capital buffers, less the compulsory 2.5% capital conservation buffer. Pressure to maintain current capital buffers (and therefore raise additional capital) may come from debt holders, as banks around the world increase capital levels and Korean banks may also need to in order to compete for wholesale funding.

Under the adverse scenario, more significant skews in product economics begin to occur as we assume lower liquidity ratios and therefore a larger impact from HQLA requirements and RSF. In particular, we assume that the FSS’s treatment of contingent liabilities is the same as undrawn credit limits, rather than the generous scenario where they accrue no LTSF or HQLA requirements. This has a large impact on letters of credit, equivalent to a ~1.5% reduction in ROE, or ~4.5% when combined with the capital impact.

Whereas banks can to some extent control their own destiny regarding the capital impacts, the impact on trade finance products of the liquidity ratios are determined directly by the FSS, since it has discretion over the treatment of contingent liabilities. Given the importance of trade to the Korean economy, an overly conservative treatment here may cause trade in general to become more expensive and ultimately hurt Korea’s economy, assuming costs are likely to be, at least in part, passed onto customers. Another potential impact is an increase in open account trade as importers and exporters demand for trade finance falls with increasing costs. As we see below, the increase in product fees
required in order for banks to maintain their ROEs could be significant in the expected and particularly the adverse scenarios.

Table 12: Potential impact of liquidity ratios on trade finance product pricing (bps relative to limit)

<table>
<thead>
<tr>
<th>Impact on pricing to maintain current ROEs</th>
<th>Mild</th>
<th>Expected</th>
<th>Adverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import LC only</td>
<td>–</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Import LC + TR</td>
<td>&lt;5</td>
<td>35</td>
<td>65</td>
</tr>
<tr>
<td>Financial guarantees (BB-rated corporate)</td>
<td>–</td>
<td>50</td>
<td>120</td>
</tr>
<tr>
<td>Factoring</td>
<td>&lt;5</td>
<td>35</td>
<td>80</td>
</tr>
</tbody>
</table>

These estimates are uncertain for three main reasons. Firstly, we note that a significant part of the increase is due to the assumption of banks' capital buffers so the impact could be lower if banks do not attempt to maintain their capital buffers due to higher Pillar 1 requirements. Secondly, the impact of the liquidity ratios will be considerably more adverse for banks with weaker liquidity (or capital) positions and more mild for those with strong liquidity and capital positions. Finally, banks may not fully pass on the costs to clients; particularly in the adverse scenario we see this as highly unlikely. How much banks internalize vs. passing onto their clients is likely to differ significantly from bank to bank depending on their own liquidity positions and strategic objectives.

Markets products

Derivatives products are affected by the liquidity ratios, but the impact from the 100-200% increase in capital requirements dwarfs these effects. Whilst the impact of the increase in RWAs is small for Korean banks, at a product level the impact will be large, significantly reducing currently high ROEs. We therefore focus on the capital impacts in our discussion of derivatives products. We also assume the same capital buffer scenarios as for credit products, as per the scenarios below.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mild</th>
<th>Expected</th>
<th>Adverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWA increase</td>
<td>100%</td>
<td>150%</td>
<td>200%</td>
</tr>
<tr>
<td>Additional capital raised</td>
<td>0%</td>
<td>2%</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

As shown in the chart below, Rates ROEs will decrease by ~15-20% from 2009 levels, depending on the scenario, while FX ROEs will reduce by ~20-30%. This is a factor of high starting ROEs, as indicated in the chart, and a one–to two-fold increase in capital requirements (holding the revenue constant, a doubling in capital requirements will halve the ROE).
Figure 41: Impact of Basel III on derivatives ROEs – by component
All figures in percentage points, based on 2009 industry estimates

The majority of the impact is due to the increase in market risk (considered by the Basel Committee to be part of the Basel III package even though not part of the standards) and counterparty credit risk capital under Basel III. Neither banks nor the FSS have much control over the impact, other than passing onto customers the true cost of the risk transfer provided.

The remaining reduction in profitability will come from the additional capital banks raise to preserve buffers over the regulatory minima. As discussed above for credit products, this can be controlled to some extent by the banks, and will depend largely on the extent to which debt holders require banks to maintain higher capital ratios than their overseas peers.

Likely responses by banks are:

- Accepting lower profitability; passing the full cost onto customers would be extremely difficult given the magnitude of the change. This will not be a threat to overall bank profitability for most banks, though will hit harder those with larger derivatives operations.

- Passing costs onto customers, reducing demand for derivatives in the corporate market or pushing these activities outside the banking sector. In the former case the corporate sector may start to reduce hedging their FX risk, absorbing some currency risk themselves; this may be a concern for the FSS if corporate exposure to the volatile KRW becomes a threat to the real economy.

- Reducing operational costs; in particular, salaries and bonuses are likely to fall as bankers bring less value to the bank.
A combination of these factors is likely to eventuate; where the most pain will be felt is uncertain. The large reduction in profitability suffered by derivatives and, depending on the FSS’s interpretation of the liquidity rules for contingent liabilities, trade finance may have flow-on effects to corporate lending. Banks have traditionally used corporate lending as a loss-leader to capitalize on lucrative cross-sell opportunities. Both the corporate lending itself and particularly those cross-sold products are now more expensive for banks to provide. Where banks cannot act as underwriters and must continue to be lenders, the price of corporate lending may increase even more than its own long term funding requirements suggest.

6.1.4. Impact on the competitive dynamics of Korean financial services

6.1.4.1. Comparison of impact on national, regional, specialized and global banks

The impact of Basel III will vary a lot between banks; some banks will feel the pain while others will emerge relatively more strongly and become increasingly competitive in the new world. Here we examine the national, specialized and regional banks in more detail, and consider the winners and losers in the post-Basel III world.

National banks appear relatively mildly affected by Basel III, needing only modest liquid assets, funding and capital to be raised. With an average LCR of 86% and NSFR of 99%, these banks should have no problem meeting the requirements by the Basel III deadlines with some small changes in their deposit bases and security portfolios, and their ROEs will suffer minimally (albeit coming from low starting point), declining from 6.2% to 5.8%. With strong capital ratios, they also have surplus capital to take advantage of weaker players who may seek to merge in order to meet the requirements. National banks are likely to increase their market share, as their largest competitors, the specialized banks, are forced to cut back on lending growth due to liquidity shortfalls. The market will move closer towards an effective oligopoly, enabling these large banks to reap rewards for their size and reach. Their universal business models will also allow them to adapt well to the new world, increasing focus on the more profitable segments and products.

Within the national banks, we also consider the glocals, i.e. Citibank Korea and Standard Chartered First Bank. While their combined NSFR position (92%, though we note that there are significant differences between the two banks here) is slightly weaker than the Korean-owned national banks, the glocals’ combined LCR position of 121% is much stronger, and they will also benefit from the reduced competitiveness of the specialized banks. In terms of profitability, SCFB has a larger share of its credit portfolio in mortgages than other banks, which, as we have seen in section 6.1.3, are adversely impacted by the NSFR, depending on banks’ ability to pass these costs onto borrowers. SCFB also has among the largest exposures to derivatives, which will be particularly hard hit due to the large increase in capital requirements.

Specialized banks, on the other hand, have weaker capital ratios and liquidity positions than other banks and will need to raise significant capital and funding if they are not granted some concessions by the FSS (we note that concessions apply to these banks currently, e.g. they are exempt from the loan-to-deposit ratio, and this will be a key decision for public policy makers, as we
shall discuss in section 6.3.) The overall ROE impact on specialized banks is severe, with a 2.5% reduction to 3.7%, on a 2009 basis.

Specific examples of issues the specialized banks will face include

- A stable funding gap. This may have particularly adverse effects for those parts of the economy supported by those banks; e.g. the SME segment may suffer disproportionately if IBK needs to back out on lending and other banks cannot fill the gap

- The cooperative banks may either need a concession on the common equity ratio, or a restructure in their capital requiring a change in their constitutions, as a significant amount of their co-operative capital does not qualify as common equity

- Whilst our modeling does not include Korea Eximbank, given potential impact on trade finance (see below), it will also suffer disproportionately depending on the implementation of the liquidity ratios by the FSS

As the specialized banks were traditionally set up to serve particular market segments either not well served by commercial banks, or deserving of strategic investment by the government, any problems for the specialized banks may have adverse flow-on impacts to specific segments of the economy. Without any regulatory concessions, the specialized banks would likely have to start mimicking the national banks by competing in the retail deposit market and diversifying their products away from the client segments they currently serve.

The FSS and Korean policy makers will therefore have to think hard about whether those specialized banks still serve the purpose in the economy for which they were originally intended and whether they should continue to be supported through government support and regulatory concessions, or begin to shift away from their mandates, a process which may involve merging with other banks.

**Regional banks** enter Basel III with high profitability relative to the industry and lending-focused business models which are well-suited to Basel III. On average they have an LCR of 98% and NSFR of 93%, and all maintain capital surpluses, resulting in an ROE reduction of just 0.3% to 10.8% before capital buffers are taken into account.

National and specialized banks will now compete more aggressively for deposits, however, meaning regional banks' cost of funding will increase over time and have to be passed onto borrowers in order to maintain current levels of profitability; alternatively, it may be harder for these banks to attract enough deposits, as they have the past, with the stronger competition they will face in future. In more extreme cases, national and specialized banks may look to acquire the deposit books of the regionals in order to improve their own funding positions.

### 6.1.4.2. Impact on adjacent industries

The direct impact of Basel III will be felt by banks and their supervisors. As we have discussed in previous sections, however, banks will respond in a variety of ways to meet the new requirements with the least possible reduction in their profitability. This will obviously have flow-on impacts for customers as banks seek to pass on some of the costs of the regulation in their pricing. It will also have an indirect impact on adjacent industries which compete with banks for funds, assets and fees. Therefore, though the impact is much more significant on banks, given the competitive relationship across sectors in the financial
services industry it is worth considering how these adjacent industries themselves might be affected.

Insurance activities are unaffected by Basel III per se, but the competitive dynamic between banks and insurers is likely to be affected. Firstly, Korean banks will respond to the liquidity rules by aiming to capture a higher share of government and well-rated corporate bonds and thus compete more fiercely with Korean life insurers who traditionally depend on long-dated bonds to match their liabilities. This is likely to affect the availability of and potentially the pricing of these bonds. However, we expect this impact to be very mild compared to other factors that will eventually affect the Korean debt capital markets, such as the yield environment and the asset-yields of Korean life insurance portfolios.

Relatively more material might be the competition for retail personal financial assets. We have seen that Korean banks will want to both increase their retail deposits, competing with other financial firms for personal financial assets, and they will want to lengthen the duration of deposit commitments. This will put them in competition with insurance investment products. Since much of these investment-oriented life insurance products are sold through bancassurance channels we can assume that banks, when under relative pressure to attract retail deposits, will be more careful not to “cannibalize” these bank deposits with life insurance products.

Of course, the impact on insurers is dependent on how the banks react to Basel III. As we highlighted in section 06.1, banks will respond in a variety of ways; some of these will have more impact on insurers and some will have less. For example, if banks are able to securitize a greater percentage of mortgages, their funding requirements will be reduced and there will be less pressure for them to raise additional deposits, meaning insurers will face less stiff competition for retain investors’ assets. Similarly, if banks are able to restructure their liabilities to reduce their requirements for HQLA holdings, this will result in less downward pressure on HQLA yields.

Basel III is also expected to trigger greater competition between the banking and the securities industries, across funding, direct financing origination, and the development of broader Global Markets franchise. As banks strive to strengthen their deposit base, against the structural shift towards consumers moving their deposits to higher-yielding asset classes such as mutual funds, banks are expected to take significant measures on multiple fronts: 1) the competition will become more intense in the area of high yielding and hybrid deposit products such as CMAs that have experienced rapid growth at least up until the financial crisis, 2) banks will more aggressively target the wallets of high net worth individuals and offer products/services that compete head-on against securities firm’s wealth management businesses, and 3) more broadly banks and bank-led financial groups will seek greater convergence between retail banking and retail securities industries.

On the debt origination side, as banks seek to reduce long-term credit exposures without severing debt financing relationships with clients, banks are expected to be more active in facilitating direct financing, an area traditionally dominated by securities firms in Korea. In parallel, banks are expected to become more aggressive in cross-selling FX (for non-KRW exposures) and swaps products related to DCM origination, in a way stemming the ambitions by Korean securities firms to expand their fixed income platforms.

Meanwhile, the implementation of Basel III will lead to substantial economic (i.e. pricing) advantages provided to counterparties with higher credit ratings. In the extreme sense, the lower-rated counterparties might not even be able to
access some of the larger central counterparty facilities directly due to the minimum credit rating and capital requirements for membership. Korean banks with structurally higher credit ratings than most of the securities firms, with the right ambitions and the right capabilities, are expected to squeeze out the securities firms across most of the wholesale Sales and Trading businesses, with the exception of ring-fenced proprietary position taking businesses. This will not happen overnight, but in the medium/long-term these trends will be very evident.

Like insurance, the impact on securities firms and the capital markets will be dependent on the suite of actions taken by banks; the additional competition for personal financial assets and the extent to which banks push into DCM origination will depend on a variety of factors and have consequent implications for securities firms and other capital markets participants.

Another, more general point is that Basel III will increase the cost of banking activities (we estimate a ROE impact of ~1% for the industry) but only for banks. Any players in the shadow banking industry and therefore not subject to Basel III will gain a competitive advantage from the regulation. As we note in chapter 0, however, regulation of the shadow banking industry is another priority the G20 will address and therefore the advantages of such regulatory arbitrage may be short-lived.

6.1.5. The likely shape of Korean banking post-Basel III

Banks will respond to Basel III in different ways, depending on their capital, liquidity and funding positions, business model and customer profile, as discussed above. Nevertheless, we see several potential trends emerging at the systemic level

- Greater consolidation amongst banks
- Better alignment of pricing practices with liquidity costs
- Renewed emphasis on the Retail segment
- Growth of the originate-to-distribute model
- Increased importance of central liquidity and clearing organizations

Greater consolidation amongst banks

As discussed in section 0, the market is already in a state of consolidation with or without Basel III. The regulation will increase the likelihood of further consolidation as large imbalances between banks’ funding positions create clear balance sheet synergies.

- Banks with poor funding positions may find that a merger with more strongly positioned banks is the only solution to the stable funding gap
- In particular, larger banks with strong capital positions but poor funding positions could look to acquire the deposit bases of smaller regional banks, and even savings banks, as a way to boost their net stable funding ratio instead of depending on organic growth
- More broadly, banks with very strong capital positions and good liquidity positions may find themselves well placed to acquire smaller targets,
especially those that are more adversely affected by the new regulations and have difficulty covering their gaps.

Overall, given the relatively strong capital positions and slightly weaker liquidity positions in the Korean banking system, this implies that smaller banks with strong liquidity positions but without very strong capital positions could be very desirable in the medium term before the new regulations take effect. Larger Korean banks with weaker liquidity positions would of course be the most aggressive acquirers of said smaller banks, especially those larger banks with strong capital positions, but potential acquirers are not limited to domestic players and foreign banks looking to establish a foothold in Korea could also be interested in said smaller bank targets.

For the banks with the weakest liquidity positions currently under government ownership, substantial changes to the business model may be required to improve their funding positions before these banks can be privatized, unless acquiring banks have extremely strong liquidity positions to cover the stable funding gaps.

Financial groups will also increase their focus on non-traditional banking activities such as wealth management and insurance, in an attempt to diversify away from the banking activities which will now be less profitable. Acquisitions therefore may also target this diversification, with an eventual migration towards a financial services industry dominated by few large financial conglomerates.

**Better alignment of pricing practices with liquidity costs**

Basel III provides a strong incentive for banks to charge customers for liquidity risk by placing a dollar cost on it; each marginal dollar of RSF or HQLA requirements will hit the bottom line. Alternatively, under liquidity constraints, each marginal dollar of lending will preclude another dollar lent to another customer. Banks are likely to adapt to this quickly, by incorporating liquidity costs into internal product transfer pricing (we discuss this in chapter 7) and consequently this will flow through to customer/product pricing. Examples of this include:

- Charging for unused lines; despite carrying a capital charge, banks have in the past been willing to extend large, sometimes unnecessary commitments to customers. Now that these are penalized with both a HQLA and stable funding requirement, banks will attempt to cut these lines or pass the increased costs onto the customer.

- Imposing higher break-costs for retail term deposits; under the LCR, retail term deposits can be subject to the same 5% or 10% run-off as demand deposits. Banks can reduce the run-off assumption to zero by legally structuring their term deposits to preclude early withdrawal or enforcing early withdrawal penalties greater than a loss of interest.

- A move away from three month loan pricing; Korean banks have traditionally run a negative ALM gap, where the duration of liabilities is greater than the duration of assets. This is driven by loan pricing based on the three month CD rate. Under Basel III, however, banks may face significantly steeper yield curves, making it even more uneconomical for them to “subsidize” borrowers’ practice of rolling over short term three-month funding for loan purposes that have significantly longer maturities (see case study below).
Case study: ALM

Following the collapse of Lehman brothers, the sudden drop in the 3-month CD rate (on which Korean banks price most loans) caused a sharp drop in NIMs, as banks were unable to adjust deposit rates as quickly as loan rates; this, along with credit and trading losses, had a significant impact on bank ROEs.

Figure 42: Impact of Basel III on derivatives ROEs – by component

The problem was exacerbated by the unique situation of negative duration gap among Korean banks. Banks generally operate under a positive duration gap because this allows them to profit from the slope of the yield curve in a normal, upward sloping yield curve environment. In the case of the Korean market, banks generally have an asset duration close to three months, due to their pricing loans on the three month CD rate, but a liability duration of three to six months; the duration of assets is therefore less than that of liabilities, a peculiar feature of the Korean market.

In an upward-sloping yield curve environment, a negative duration gap tends to reduce profitability, as the transfer price for loans is lower than that for deposits, i.e. the bank’s treasury makes a negative spread. As the yield curve steepens (as observed between August 2008 and January 2009 following the collapse of Lehman Brothers), this impact becomes more significant. As illustrated in the graph below, the gap between 3-month and 6-month interbank rates widened by approximately 60bps, causing a compression of NIM by the same amount for a bank with an asset duration of three months and a liability duration of six months.

Source: ECOS and FiSIS, Oliver Wyman analysis
In addition, the various new regulations and high capital and liquidity requirements will increase the cost of bank lending, which will ultimately be passed onto borrowers, at least partly if not fully. According to the Macroeconomic Assessment Group's global study, a one percentage point increase in capital should result in an increase in lending spreads of around 15 basis points (unweighted median figure). This will, of course, not be felt evenly across products; long term corporate lending will attract 100% RSF and therefore spreads are likely to increase more than for mortgages, with RSF 65%. Note also that these are based on studies from various countries and the impact will be differently felt in Korea.

Figure 43: Yield curves
Inter-bank rate (KORIBOR)

Under Basel III, the yield curve is likely to steepen as the demand for long term funding increases; banks will also need to lengthen the term of their funding for NSFR purposes, meaning the yield curve spread between the duration of assets and liabilities will be even larger. In addition, long term loans now incur stable funding requirements. This will provide strong incentives for Korean banks to break away from 3-month loan pricing and start charging customers for liquidity; we see this as a natural part of the evolution of the Korean banking, for which Basel III is a catalyst.

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26 BIS Macroeconomic Assessment Group, Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements – Final report, Dec 2010
Renewed emphasis on the Retail segment

Though Korean banks have a sizeable gap in stable funding, this is small relative to their current deposit base. As discussed, this shortfall could be met by attracting a greater share of retail and corporate assets, with retail deposits being the more attractive option for improving the banks’ liquidity positions. In the past, banks have lost share to direct equity investments and securities firms offering mutual funds and cash management accounts, which are in many ways like deposit accounts. In the chart below, we see how the proportion of personal financial assets held in deposits has declined significantly over the last several years, at the expense of direct investments and home equity.

Figure 44: Personal Financial Assets

![Chart showing personal financial assets over time, with significant declines in deposits and increases in direct investments and home equity.](chart)

Source: BOK and Oliver Wyman proprietary PFA model

This trend will need to change, with the Korean banking sector competing for a larger share of the Retail wealth against other non-banking financial institutions. Banks can of course offer higher rates on deposits as a way to attract more market share. As deposit rates rise, it is natural that investors will allocate a greater share of their assets to deposits. Product innovation will also separate winners from losers. Banks have released various new deposit products over the last 2-3 years, including online deposits and hybrid term deposits, which pay lower rates on maturity than traditional term deposits in exchange for higher rates upon early withdrawal.27

Future innovation will likely occur with Basel III in mind, for example bundled deposits products which are designed to increase customer stickiness and also qualify as stable. As banks, in pursuit of favorable treatment under the liquidity

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27 We note, however, that such hybrid deposits, like ordinary term deposits, qualify as “less stable” under Basel III liquidity rules. Banks are now incentivized to move in the opposite direction by sufficiently increasing penalties for early withdrawal to incur a 0% run-off assumption.
rules, seek to maintain customer relationships across multiple products, customers are likely to find the most competitive pricing coming from a package of products. Clear examples are

- Cross-sell for deposit customers: as discussed above, deposits from customers with deep relationships can be classified as stable deposits for liquidity ratio purposes. Banks are therefore likely to offer attractive pricing on such products to reap the liquidity benefit on deposits

- Home equity line of credit: as discussed above, rolling credit cards and other retail loans into a mortgage through a line of credit will ensure those loans carry lower RSF than as stand-alone loans. Again, retail borrowers may find a package of products from a single provider will result in more competitive pricing than available separately

Acquiring stable funding from the non-banking financial institutions and product innovation are likely the most attractive options for banks with weaker branch networks and Retail penetration to cover their stable funding gap. As they raise Retail deposits, Korean banks can reduce their reliance on wholesale funding from other financial institutions and corporates, and banks with stronger capital positions can rely less on bank bond issuance. The improved liquidity position may also provide greater flexibility to seek to increase the duration of such funding, rather than rely on rolling over short term funding.

For smaller banks with strong liquidity positions, the ability of the Korean banking sector to compete more actively for a larger share of the Retail wealth to make more liquidity available to the larger banks at the Korean banking system level may be one approach to reduce the incentive for the larger banks to acquire said smaller banks.

**Growth of originate-to-distribute model**

Where banks encounter a shortage of liquidity, raising more deposits and longer term funding to close the funding gap is one solution; another is moving assets off the balance sheet. In particular, we have discussed two solutions

- Increased mortgage securitization: as shown in Figure 33, Korea’s securitization penetration, while high relative to other Asian countries, is low relative to many Western markets; increasing this may be an efficient way to deliver low cost housing finance to consumers

- Debt capital markets business: long term corporate lending has long been an unprofitable business, relying on cross-sell to make it worthwhile. Banks will seek to originate debt for other investors in preference to retaining them on balance sheet which is likely to be driven by broadening of spreads between direct financing and indirect financing by corporates

Overall, Korean banks are likely to continue existing efforts to act as the originator of debt to maintain client relationships but this is likely to entail reducing the associated long term stable funding requirements through off-loading the exposures from the balance sheet. This additional volume of offloaded credit will need to be absorbed by non-bank investors; as per Figure 34, it can likely be absorbed by investors at the right price.

The ability to deepen the Korean debt market would be important to the larger Korean banks with weaker liquidity positions to reduce their stable funding requirements as it may be difficult to acquire enough smaller players to cover their stable funding gaps, especially since the Korean banking system is short on stable funding. Furthermore, the origination of more high quality bonds
would also improve the supply of HQLA for the overall Korean banking system, thus allowing for a stronger liquidity position.

**Increased importance of central liquidity and clearing organizations**

Under Basel III banks will be faced with a strong disincentive to provide each other with liquidity lines, as they incur 100% HQLA requirements for such lines, or place liquidity with each other, as this gets zero recognition as HQLAs. Banks will be increasingly reliant on the BOK, therefore, to act as receiver of short term excess liquidity and to provide liquidity in the case of a liquidity crisis faced by one bank (in a systemic liquidity crisis, of course, the BOK’s role as lender of last resort would be unchanged.) This will have clear implications for the BOK in terms of its own balance sheet.

Also, the new standards provide, through increased capital requirements for counterparty credit risk, a strong incentive for participants to move clearing onto central counterparties. The Basel Committee released in December a consultative document on capital requirements for central counterparties, proposing a risk weight of 2%. While the exact risk weight remains uncertain, it is clear that the benefit of central clearing will be large. A central counterparty would be beneficial for the banks in terms of lower capital requirements and also beneficial for system stability as central clearing reduces systemic risk. Korean financial institutions with the ambitions to emerge as global dealer banks would certainly need to start accessing central counterparties particularly for G3 currency trades. There are also on-going debates around setting up a local central counterparty partly for facilitating KRW-denominated trades and trades by local counterparties of lesser credit qualities.

In combination, this implies that the manner in which banks interact with each other may change in the future, with more interbank activities being carried out through central organizations rather than directly between individual banks. This may result in a secondary benefit of reducing the burden for individual banks to make the market as greater transparency may result from the activities of the central organization and also likely create a more level playing field across larger and smaller banks.

**6.2. Impact on overseas banking sectors**

In this section, we assess the impact of Basel III on overseas banking sectors; the analysis here will form the basis for our discussion of Korea’s aspiration to become a regional financial center in Asia in section 6.3. We have analyzed the following banks:

- **US**: Citi, JP Morgan, Bank of America, Goldman Sachs, Morgan Stanley
- **Europe**: RBS, Barclays, Standard Chartered, HSBC, Soc Gen, BNP Paribas, Deutsche Bank, ING, Credit Suisse, UBS, Santander, BBVA, Unicredit, Intesa San Paolo
- **Singapore**: DBS, UOB, OCBC
- **Hong Kong**: Hang Seng, BOCHK

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28 BCBS, *Capitalisation of bank exposures to central counterparties - consultative document*, 20 Dec 2010
Korea: 9 national and specialized banks
China: ICBC, BOC, CCB, BoCom
Japan: Nomura, Mizuho, MUFG, SMFG
Australia: Westpac, CBA, NAB, ANZ

Subsequent sections represent analysis we have conducted based on 2009/10 balance sheets as available, assuming the Basel III regulations come in immediately. Note that, as we have only considered the major banks in each market, we are covering a different percentage of the banking market in each country/region, depending on the relative level of concentration; therefore, the absolute sizes of any capital and liquidity gaps are not directly comparable across markets.

6.2.1. Capital impact

In terms of capital, large Korean banks are among the least impacted of the banks in the markets we have analyzed. Korean banks currently meet all three capital ratio requirements under Basel III, and broadly there is a large surplus of capital in the industry; in part this is due to the existing capital deductions required by the FSS, meaning the impact on Korean Tier 1 ratios is relatively minor. Banks in Hong Kong and Singapore similarly also have large capital surpluses, while banks in China have sufficient capital but will have limited buffers under the new regulation.

Big banks in major markets such as the US, Europe and Australia, on the other hand, face moderate to large capital shortages and will be pressured to raise additional capital going forward.

Japanese banks, with Tier 1 capital less than half of the new 8.5% requirement, stand out with by far the largest Tier 1 gap to close among the banks considered. Japanese banks will thus be hard hit by the Basel III deductions and thus are expected to undergo significant restructuring to mitigate the impact, reducing the common cross-shareholdings which are deducted from capital under Basel III.

Among the three capital ratios, Tier 1 is the most stringent constraint for major banks across most markets, consistent with our observation in Korea; we therefore focus our discussion here on the Tier 1 ratio and gap. (We note that the actual Tier 1 gap will be the greater of the gaps created by the Tier 1 and leverage ratios. While on a simple, Tier 1 capital to assets basis, most overseas banks are upwards of the 3% requirement, some banks – especially in US and Europe – are known to have considerable derivatives exposures; actual leverage ratios may be substantially lower as a result. Due to the difficulty of accurately estimating derivatives exposures, we have not extended the leverage ratio analysis to the overseas banks.)

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29 Hong Kong here excludes HSBC, which is included in the European figure. If we include HSBC, results are significantly less positive.
In reality there is a long transition period, as highlighted in section 0. Depending on asset growth – which in some markets may remain depressed for some time – banks may therefore be able to close the capital gap through retained earnings. We have therefore compared the capital gap to 2009 retained earnings, with the following observations:

- In Europe and the US, given that credit growth is likely to be depressed in the near future as it has most recently and the regulations take some time to come into effect, many banks will find that the capital deficit of 2-4 years’ ROE may be closed relatively easily through retained earnings; the gap will mean however that any plans for expansion will have to be put on hold or funded with new capital-raising.

- Hong Kong and Singapore banks are in similarly strong capital positions relative to Koreans, which is likely to support those markets’ current positioning as regional financial hubs.

- While the huge Chinese banks have manageable Tier 1 gaps, they are also seeing continued rapid growth in loan demand. They will require either very strong profitability or external capital in order to close the gap while continuing grow their balance sheets.

Source: Bankscope, Annual reports, Oliver Wyman analysis

1. Impact if full Basel III package were implemented immediately on 2009 balance sheets
2. Impact study conducted on a pro forma basis using same pre-tax incremental cost of HQLA and stable funding; List of banks: Korea: 9 national and specialized banks; Singapore: DBS, OUB, OCBC; Australia: ANZ, CBA, NAB, Westpac; China: ICBC, BoC, CCB, BoCom; HK: Hang Seng, BoCHK; US: Citi, JPM, BoA, GS, MS; Japan: Nomura, Mizuho, MUFG, SMFG; Europe: RBS, Barclays, SC, HSBC, SocGen, BNPP, DB, ING, CS, UBS, Santander, BBVA, Unicredit, Intesa

3. Surplus and shortfall are calculated on a netted basis, i.e. taking the surplus in some banks to offset the shortfall in others.
For Japanese banks, significant restructuring and/or capital raising is required; they should pose no threat to Korean banks in the foreseeable future.

Australian banks face a capital gap of considerable size, but have continued to experience domestic credit growth, meaning their Tier 1 gap will be harder to close through retained earnings alone, despite strong profitability.

Of course, we recognize that 2009 ROEs are depressed in many of these markets (including Korea) as a result of the GFC and relative profitability may change significantly over the next few years (alternatively, in some markets if may deteriorate even further as credit costs continue to mount). We also recognize that banks are likely to build up buffers over the minimum requirements, so in reality more capital will be needed than these gaps imply.

Figure 46: Tier 1 gap in years of 5-year average retained earnings
2009, Major banks in each market

Source: Bankscope, Annual reports, Oliver Wyman analysis

1. Tier 1 gap in years of 5-year average (2005-2009) retained earnings = (shortfall Tier 1/current Tier 1)/(5-year average ROE x (1-5-year average dividend payout ratio)); assumes no loan growth

6.2.2. Liquidity impact

We begin by comparing the short-term liquidity impact across markets. Short-term liquidity is only a concern for banks in a few specific markets; banks in US, Europe, Hong Kong and China fare well under the LCR, with surplus HQLAs, and thus will be impacted only minimally. Likewise, Singaporean banks, collectively just below 100% in LCR, will find it relatively easy to fill their HQLA shortfall.

Korean banks, as discussed earlier, have a considerable HQLA gap to cover. The gaps are even larger for banks in Japan and Australia, though the impact for Australian banks is expected to be mitigated somewhat as regulators apply alternative HQLA measures to address the systemic shortage of government bonds (these alternative measures are discussed in section 8.1.4.3).
We note, however, that a shortfall in HQLAs caused by a poor LCR is unlikely to cause systemic issues. Not only can it be filled relatively easily by depositing reserves with central banks (although doing so would hit banks’ profitability where gaps exist, which we consider in section 6.2.3) but supervisors are also able to apply the alternative methods allowed by Basel III (e.g. central bank repo facilities; see section 8.1.4) where needed. The LCR for major foreign currencies may be relatively harder to meet for some banks that rely on wholesale funding, but initially this will just be a monitoring tool so it is less likely to place a restriction on banks’ activities.

The NSFR, on the other hand, may cause major problems for banking systems in which there is a structural shortage of deposits and banks are reliant on wholesale funding. Banks in such markets need to raise retail deposits, lengthen wholesale funding or reduce lending, with potential flow-on impacts for the broader economy.

US banks are advantaged relative to European banks in this regard, with no urgent need to restructure the deposit gathering business, especially in light of the implementation timeline of Basel III. European banks will be adversely affected by the net stable funding requirements, with significant pressure to change the composition of their balance sheets. This will involve raising the quality and quantity of deposits, lengthening the term of funding, potentially reducing the term of loans, and moving loans off the balance sheet through securitization and reducing the level of asset-based business.

Hong Kong and Singapore banks are in a similar position to the US banks, with ratios close to 100%; with no significant surplus they will need to consider their
funding strategies carefully, but will not be immediately constrained by the NSFR.

Korean banks face a small shortfall, which will be concentrated in the specialized banks in particular. Along with Chinese banks, Korean banks have no urgent need to raise huge volumes of deposits, but some will need to reassess their funding strategies and most will need to restructure their liabilities somewhat; in the long run, future asset growth may be constrained by deposit growth. Australian banks, however, have a large shortage of stable funding; this has received the attention of policy makers and Australia’s Treasurer has recently announced that covered bonds, which are common in Europe, will be allowed as a way for banks to access stable funding. Japanese banks have a large surplus of funding, and therefore their attention will be on the capital issues discussed above.

**Figure 48: Net stable funding ratios**

<table>
<thead>
<tr>
<th>Country</th>
<th>NSFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>100%</td>
</tr>
<tr>
<td>Europe</td>
<td>120%</td>
</tr>
<tr>
<td>HK</td>
<td>140%</td>
</tr>
<tr>
<td>Singapore</td>
<td>80%</td>
</tr>
<tr>
<td>Korea</td>
<td>60%</td>
</tr>
<tr>
<td>China</td>
<td>40%</td>
</tr>
<tr>
<td>Japan</td>
<td>20%</td>
</tr>
<tr>
<td>Australia</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: Bankscope, Annual reports, Oliver Wyman analysis

1. Impact if full Basel III package were implemented immediately
2. Impact study conducted on a pro forma basis using same pre-tax incremental cost of HQLA and stable funding; List of banks: Korea: 9 national and specialized banks; Singapore: DBS, OUB, OCBC; Australia: ANZ, CBA, NAB, Westpac; China: ICBC, BoC, CCB, BoCom; HK: Hang Seng, BoCHK; US: Citi, JPM, BoA, GS, MS; Japan: Nomura, Mizuho, MUFG, SMFG; Europe: RBS, Barclays, SC, HSBC, SocGen, BNPP, DB, ING, CS, UBS, Santander, BBVA, Unicredit, Intesa

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6.2.3. Combined capital and liquidity impact on ROE

The capital and liquidity ratios affect profitability in three ways:

- Lower leverage because of the higher capital requirements reduces ROE for a given level of return on assets.

- A gap in HQLAs caused by the LCR requirement means banks need to place additional assets in low-yielding securities and central bank reserves.

- A gap in stable funding caused by the NSFR requirement means banks will have to lengthen the average term of their funding, resulting in a move up the yield curve.

Of course, banks may mitigate the impact through any of the actions discussed in section 6.1.1.

European banks will be adversely affected due to the shortages in capital and stable funding, while US banks will suffer mainly due to their poorer capital positions. Hong Kong and Singapore banks, with capital surpluses and, in the case of Singapore, a minimal shortfall of stable funding, are significantly better off, and likely to support the continued strength and attractiveness of their respective banking markets.

Korean banks will suffer moderately due to the stable funding gap in the specialized banks and the HQLA gap across the industry. Chinese banks will face a modest absolute capital shortfall, though their high in-going profitability will allow them to continue building their capital base without much trouble.

Japanese banks recorded negative ROE in 2009, which is not likely to change drastically in the near term, with or without Basel III. Australian banks will suffer most, with shortages on capital ratios and both liquidity ratios. Long term deposits and capital will have to be raised and directed into high quality securities, reducing profitability.
6.3. Impact on Korea’s competitiveness as a financial hub

Here we consider the impact of Basel III on Korea’s on-going ambition to become a regional financial hub. Korea set up a financial hub initiative in 2003 with the goal of turning Seoul and Busan into regional financial hubs in Northeast Asia and in 2008 the FSS created an organization called Fn Hub Korea to attract global financial companies into the Korean market and assist overseas expansion of domestic financial companies.

We first discuss Korea’s current positioning as a financial hub, followed by a brief discussion of recently imposed restrictions cross-border capital and liquidity flows. Then, referring back to our analysis in the previous section, we discuss how the comparative impact of Basel III on Korean and overseas banks may change Korea’s relative positioning as a regional financial hub. Note: typically we refer to cities as financial hubs rather than countries, and therefore a lot of the discussion centers on cities rather than countries. When we refer to Korea in this context, therefore, we really mean Seoul and Busan.
6.3.1. Korea’s current positioning as a regional financial hub

We consider four classes of financial hubs:

1. **Global**: New York and London

2. **Regional/specialist**: financial hubs serving an entire region with significant business outside the country, e.g., Hong Kong and Singapore, or serving a narrow niche globally (e.g., Geneva)

3. **Regional aspirants**: largely national financial centers, sometimes supporting other smaller nearby countries and often aspiring to become regional hubs, e.g., Seoul, Shanghai, Tokyo and Sydney

4. **Offshore**: often specialized hubs, typically advantaged by tax and limited restrictions on certain types of business, e.g., Jersey, Guernsey and Cayman Islands. We do not discuss these in detail as they are less relevant from the point of view of Korea’s aspirations to become a regional hub

New York and London, the global hubs, are characterized by world-class business environment, headquarters and/or significant branches for all global banks, an extensive and capital markets infrastructure and full coverage across the various segments of financial services. These are in a class of their own, with such established reputations and massive scale that Korea cannot hope to compete with them in the medium term.

Hong Kong and Singapore, the true regional hubs in Asia, have established themselves as attractive bases for both global and pan-Asian players and are exporters of financial services. Although these global and regional hubs are far ahead of Korea by many standards, they are key forces behind the reshaping of the international financial services landscape under Basel III, and form an important component of our subsequent comparative discussion of Korea’s competitiveness as a financial hub.

Korea (mainly Seoul and to a lesser extent Busan) currently stands as a vibrant regional aspirant in Asia, aspiring for regional hub status. Over the recent decades, Korea’s economy has grown rapidly, and various financial controls have been liberalized in an effort to increase foreign direct investment in Korea. Korea is already an active player in global financial markets; the Korean Exchange in Busan, for example, is already one of the world’s leading derivatives exchanges, with KOSPI200 futures and options some of the most frequently traded products in the world. In addition, Korea recently sealed a free trade agreement with the US, which, along with China and Japan, is one of Korea’s major trade partners.

In Asia-Pacific, China, Japan, and Australia are other notable markets with one or more significant local financial centers, each seeking to grow its presence in Asia. While China and Japan, Korea’s two closest neighbors and the world’s second and third largest economies, have larger financial sectors than Korea, each falls short of achieving regional hub status due to its own set of issues. China remains a closed market, albeit with gradual and steady progress towards liberalization, with restrictions on most banking activities and controls over cross-border capital flows. Japan, on the other hand, has had a relatively stagnant economy for two decades, and as we shall see later in this chapter its banks have significant problems with their balance sheet structures. Like Korea, Australia’s financial services providers are predominantly locally focused, though Australian banks have recently been expanding into Asia, with ANZ’s
efforts hitting particularly close to home with its recent (unsuccessful) bid for KEB. Although each of these centers has attracted a large number of global banks to locate, these are generally dedicated to serving the national market, with little regional booking or export of financial services.

Z/Yen’s authoritative Global Financial Index incorporates availability of skilled personnel, the regulatory environment, access to international financial markets, availability of business infrastructure, access to customers, corporate tax rates, operational costs, language, culture, and attractiveness to ex-pats. Its latest report from September 2010 shows that Korea is well behind at present relative to those financial centers with which it competes. While the report does mention that Seoul is one of the centers most likely to more significant in future, so are most of the other Asian competitors, with Shenzhen, Shanghai, Singapore ranked above Seoul.

Table 13: Comparison of key financial centers

<table>
<thead>
<tr>
<th>Global financial center index rank</th>
<th>Type of hub</th>
<th>Key financial centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Global</td>
<td>London</td>
</tr>
<tr>
<td>2</td>
<td>Global</td>
<td>New York</td>
</tr>
<tr>
<td>3</td>
<td>Regional/specialized</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>4</td>
<td>Regional/specialized</td>
<td>Singapore</td>
</tr>
<tr>
<td>5</td>
<td>Regional aspirant</td>
<td>Tokyo</td>
</tr>
<tr>
<td>6</td>
<td>Regional aspirant</td>
<td>Shanghai</td>
</tr>
<tr>
<td>7</td>
<td>Regional/specialized</td>
<td>Chicago</td>
</tr>
<tr>
<td>8</td>
<td>Regional/specialized</td>
<td>Zurich</td>
</tr>
<tr>
<td>9</td>
<td>Regional/specialized</td>
<td>Geneva</td>
</tr>
<tr>
<td>10</td>
<td>Regional aspirant</td>
<td>Sydney</td>
</tr>
<tr>
<td>24</td>
<td>Regional aspirant</td>
<td>Seoul</td>
</tr>
</tbody>
</table>

Table 14: Centers likely to become more significant in the next few years

<table>
<thead>
<tr>
<th>Rank</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shenzhen</td>
</tr>
<tr>
<td>2</td>
<td>Shanghai</td>
</tr>
<tr>
<td>3</td>
<td>Singapore</td>
</tr>
<tr>
<td>4</td>
<td>Seoul</td>
</tr>
<tr>
<td>5</td>
<td>Beijing</td>
</tr>
<tr>
<td>6</td>
<td>Hong Kong</td>
</tr>
</tbody>
</table>

Basel III will have several effects on the relative attractiveness of financial hubs

- Putting banks across the world on a more equal footing in terms of leverage and cost of capital; for some countries with tighter standards today (either their supervisors’ interpretation of Basel II or national regulations), banks will be relatively better off in the future. Conversely, banks in countries with looser standards today may have to increase the level and quality of their capital significantly; these countries will be less attractive as financial
hubs due to the removal of regulatory arbitrage. As we discussed in section 6.1.1.1, Korea’s capital deductions are closely aligned to Basel III’s and therefore Korea will benefit in a relative sense

- Addressing global imbalances in liquidity; countries with a structural shortage of liquidity were in the past able to borrow from countries with excess liquidity. Inter-bank lending and funding are now discouraged, however, making countries with a surplus of liquidity more attractive and those with a shortage of liquidity (e.g. Korea) less attractive. This will tend to harm the competitiveness of Korean banks relative to regional peers in any international expansion; however, it will also mean that the potential for competition from foreign banks in the domestic Korean market is reduced. Finally this also makes some offshore banking activities more difficult, and may reduce the competitiveness of particular offshore financial centers

- Competitive skews; as impacts on different financial services providers and different banking products differ, financial hubs will be affected in different ways. For example, due to Luxembourg’s focus on asset management administration – largely unaffected by Basel III – its relative positioning as a hub will improve; bank-heavy markets will be harder hit. Korea is a diversified hub with a large banking sector and therefore we expect to see it suffer relative to some specialist hubs, though it is in limited competition with these anyway

In addition, some regulators – in particular in the US and the UK – have taken a much harder line on regulation outside of Basel III and have indicated they will engage in “more intrusive” supervision of banks, including customer protection measures, restriction on banker bonuses etc. Special bank and/or bonus taxes are also a concern in these markets. Whilst these are not strictly Basel III related, they come alongside it as additional regulatory restrictions. Relative to the US and the UK, Korea may benefit depending on the extent of such regulation enforced.

6.3.2. Restrictions on cross-border liquidity flows

Korea has recently increased its cross-border financial controls. In the diagram below, we see that Asian markets are generally less open than Western markets to cross-border liquidity flow, forcing banks to adopt a multi-local approach rather than relying upon a single banking hub. Korea is more or less on par with Japan, Hong Kong and Singapore in terms of cross-border liquidity flows, while China remains heavily restricted.
### Changes in competitive landscape

From the point of view of its positioning as a financial center, Korea does not appear to be materially better or worse off due to Basel III. While Korean banks do seem to have a clear advantage against US and European banks in terms of capital and stable funding, the same is true of banks in most of the other Asian markets; thus this advantage will be of limited consequence. However, Basel III may affect Korea's positioning indirectly by motivating policy makers to...

**Table:**

<table>
<thead>
<tr>
<th>Currency exchange</th>
<th>Short-term money market</th>
<th>Listed equity/bond investment</th>
<th>Medium/long-term bank lending</th>
<th>FDI and M&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>China</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Japan</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>HK &amp; Singapore</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>US, Europe, Australia</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

- ✓ Few restrictions
- ✂ Implicit restrictions
- ✈ Heavy restrictions

Source: Oliver Wyman analysis

Most recently, however, restrictions have been tightened in order to prevent excess liquidity from the West – e.g. as a result of quantitative easing – causing volatility in the Korean economy, including:

- Strengthening of currency derivatives restrictions, and public flogging of (foreign) banks involved in selling restricted currency derivatives
- Increased taxes on interest and capital gains on treasury and central bank bonds
- Strengthened oversight of foreign capital flows and the potential reintroduction of tax on foreign investments
- Introduction of a bank levy on foreign currency wholesale funding, especially short term wholesale funding

There are clear macroeconomic reasons for Korea to adopt such policies – e.g. to protect the economy from hot money flows and associated asset bubbles – but such controls also make it more difficult for a country to establish itself as a financial hub. In particular, it would be difficult for Korea to tighten controls and hope to compete with Hong Kong and Singapore as a regional hub.
reconsider other aspects of Korea’s financial services regulations and instilling an element of caution in Korean banks’ plans for regional expansion.

Many banks in the US and Europe will need to implement structural changes to their balance sheets in order to comply with the new regulations, which will erode profitability. Between the two markets, Europe will be more severely impacted under Basel III; the US is relatively better positioned, but its attractiveness as a banking market may continue to decline due to low profitability and its sluggish economic outlook. Korean banks will be less adversely affected than banks in these markets, but due to limited direct competition with these banks, Korean banks have little to gain from this.

Closer to home, Hong Kong and Singapore are likely to remain attractive as the leading financial hubs in Asia, and we expect to see the gap close between these Asian hubs and their global rivals in the West. Banks in Hong Kong and Singapore have advantages in capital and liquidity positions, operate in more open financial markets and have higher ingoing ROEs that will allow them to focus on expanding their regional influence and presence. This will not only improve the competitiveness of the Hong Kong and Singapore banks, but may also improve the reach and competitiveness of Hong Kong and Singapore as more important financial centers in Northeast and Southeast Asia, respectively. “Glocal” banks, who have located themselves here, are likely to continue to find these attractive hubs for their Asian operations. Relative to Hong Kong and Singapore, Korea’s banks, and Korea’s position as a financial hub, will be comparatively disadvantaged, but the domestic financial services market in Korea is unlikely to be affected due to the dominance of large, domestically focused players.

Among the current regional aspirants in Asia-Pacific, China is the most advantaged in the race to achieve regional hub status. While Chinese banks are not as well positioned in terms of capital and liquidity adequacy, their much higher ROEs and rapid growth over the past decade means that the competitiveness of China as a financial center has been increasing rapidly. While there is still a significant journey ahead for Chinese banks before they become credible regional players in Asia, their strong momentum, without any significant Basel III shortfalls, implies that the relative competitiveness of Chinese banking compared to Korean banking will continue to tilt in favor of China in the near future. In particular, as Chinese domestic credit growth slows, Chinese banks will start to look externally and may pose a threat to their much smaller Korean neighbors.

Although disadvantaged relative to China, Korea may be able to move closer to or even leapfrog the other aspiring regional hubs, Australia and Japan. Australian banks will have significant funding and capital issues to tackle as a result of Basel III, and Japan is likely to need a complete overhaul of banking capital structures to improve its capital ratios.

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31 We include here Citibank Korea and Standard Chartered First Bank as Korean banks.
Figure 50: Overview of capital and liquidity positions
2009, Major banks in each market

<table>
<thead>
<tr>
<th>Country</th>
<th>Tier 1 ratio</th>
<th>Stable funding ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>9%</td>
<td>60%</td>
</tr>
<tr>
<td>Singapore</td>
<td>8%</td>
<td>80%</td>
</tr>
<tr>
<td>Australia</td>
<td>7%</td>
<td>100%</td>
</tr>
<tr>
<td>China</td>
<td>6%</td>
<td>120%</td>
</tr>
<tr>
<td>HK</td>
<td>5%</td>
<td>140%</td>
</tr>
<tr>
<td>Japan</td>
<td>4%</td>
<td>120%</td>
</tr>
<tr>
<td>Europe</td>
<td>6%</td>
<td>100%</td>
</tr>
<tr>
<td>US</td>
<td>7%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Source: Bankscope, Annual reports, Oliver Wyman analysis
1. Impact if full Basel III package were implemented immediately
2. Impact study conducted on a pro forma basis using same pre-tax incremental cost of HQLA and stable funding; List of banks: Korea: 9 national and specialized banks; Singapore: DBS, OUB, OCBC; Australia: ANZ, CBA, NAB, Westpac; China: ICBC, BoC, CCB, BoCom; HK: Hang Seng, BoCHK; US: Citi, JPM, BoA, GS, MS; Japan: Nomura, Mizuho, MUFG, SMFG; Europe: RBS, Barclays, SC, HSBC, SocGen, BNPP, DB, ING, CS, UBS, Santander, BBVA, Unicredit, Intesa

Overall, the relatively healthy capital and liquidity positions of the Korean banking system, coupled with its relative isolation from the neighboring financial centers, means Korea should not be significantly impacted in its aspirations to become regional financial hub. However, Basel III may be a trigger for policy makers to consider other aspects of financial service regulation in Korea, e.g. restrictions on cross-border liquidity flow, and Korean banks will need to balance their domestic agenda against their regional aspirations. Cross-border liquidity transfer is made more difficult under Basel III through disincentives for interbank lending and implicit foreign currency LCR requirements; this will be exacerbated in Korea by the cross-border capital and liquidity controls, such as the bank levy on foreign currency non-deposit liabilities. We believe this will result in a further cementing of the dominance of large, domestic-focused banks in Korea; in addition, any plans for regional expansion by Korean banks may be dampened by the higher priorities of ensuring stable funding in a competitive market, and adjusting internal and external pricing to improve profitability in the post-Basel III world.

6.4. Macro-economic impact on Korea and globally

The costs and benefits of capital and liquidity controls are intuitive, though quantification is extremely difficult. Stricter requirements reduce the
probability and severity of banking crises, which have adverse implications for economic growth. On the other hand, stricter requirements increase the cost of credit to consumers and businesses, lowering investment and consumption. Whilst the benefits accrue when a would-be crisis is avoided, the costs are incurred immediately as banks increase the cost of borrowing to consumers and businesses. We will first discuss costs in section 6.4.1, followed by benefits in section 6.4.2, and arrive at a summary in section 0.

In identifying likely costs and benefits for the Korean economy as a result of Basel III, we rely primarily on two reports published by working groups within BIS. These reports were based on a variety of academic studies conducted on the topic as well as participation by a comprehensive selection of regulators and central banks, and therefore provide good starting points for discussion. The first, by the Long-term Economic Impact working group (LEI), was considered by BIS and G20 during calibration of the requirements for its assessment of the long term economic impact of Basel III; in particular, the LEI report assesses the impact of liquidity ratios as well as various capital levels, and discusses benefits as well as costs. The second report is due to the Macroeconomic Assessment Group (MAG), which provides a more detailed analysis on the impact of higher target capital levels. In addition to these reports, we also provide references to other economic studies where available.

6.4.1. Costs

According to the LEI report, the industry average Basel III common equity ratio in 2010 stood at 9%; as discussed in section 6.1.1.1, we assume that banks raise an additional 2% equity to maintain capital buffers (i.e. TCE ratio increases from 9% to 11%).

The LEI report assumes that the increased cost of holding more capital and liquidity is passed through to customers in the form of increased lending spreads, which fully offset the reduction in bank ROE as a result of higher capital and liquidity requirements. It does not assume any credit rationing, i.e. a reduction in lending will naturally occur as a result of the higher cost of credit but beyond this lending will not be restricted. The change in spreads is then mapped to a reduction in output. While this is convenient for modeling purposes, it is unlikely that banks would be able to fully pass through costs to their customers. Therefore, we may consider this to be a sort of upper bound.

Assuming only a 2% increase in the TCE ratio from 9% to 11%, the LEI report (see table below) estimates a 26 basis point increase in spread and a median reduction in output of 0.20%. Including the impact of meeting the NSFR requirements, the median impact according to the report would be 0.33%, or

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33 BIS Long-term Economic Impact working group, Assessment of the macroeconomic impact of stronger capital and liquidity requirements, 18 Aug 2010

34 BIS Macroeconomic Assessment Group, Final report on the assessment of the macroeconomic impact of the transition to stronger capital and liquidity requirements, 17 Dec 2010
0.25% taking into account the reduction in RWAs as a result of changes in the composition of assets. The analysis, however, is based on an aggregate balance sheet across 13 OECD countries and is therefore dominated by European and US banks, with lower levels of capital and, in the case of European banks, worse funding positions (as we have seen in section 6.2.2); it is not therefore fully representative of Korean banks’ positions and given the average NSFR of 93%, we may reasonably expect the impact to be milder in Korea. The analysis also fails to address the impact of meeting the LCR requirements other than the increase in liquid assets assumed in order to meet the NSFR.

The MAG report estimates a median GDP impact of a one percentage point increase in capital levels 25 quarters after implementation (the maximum cumulative impact) of 0.17%. If we assume a two percentage point increase in capital and ignore non-linearity, this translates to a total impact of 0.34%, similar to the reduction in output indicated by the August report. This report also indicates that higher growth is likely to resume after 35 quarters, and the reduction after a longer period of time is substantially less.

Various other studies have been done concerning the macroeconomic cost of Basel III, particularly in Europe, and these are summarized as follows
Table 15: Empirical Evidence on the Macroeconomic Effects of Basel III

<table>
<thead>
<tr>
<th>Paper</th>
<th>Countries</th>
<th>Method</th>
<th>Measures</th>
<th>Ensuing Drop in GDP Growth or Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS LEI (2010)</td>
<td>Very large sample of numerous studies on numerous countries/regions</td>
<td>Long-term steady state analysis, different models</td>
<td>1-percentage-point increase in the ratio of capital to risk-weighted assets</td>
<td>Steady state output loss: 0.09%</td>
</tr>
<tr>
<td>BIS MAG (2010)</td>
<td>Similar to above; some overlaps</td>
<td>Many different methodologies: large structural macro models, reduced-form vector autoregressions, DSGE models</td>
<td>As above</td>
<td>Drop in median GDP level (weighted, across all papers) after 18 quarters: 0.16% (transition period of 4 years) 0.13% (transition period of 8 years); ranging from 0.07% to 0.30% (excluding outliers); international spillovers: 0.02%</td>
</tr>
<tr>
<td>Bank of England (2010)</td>
<td>UK</td>
<td>Production function approach</td>
<td>6-percentage-point increase in the ratio of capital to risk-weighted assets</td>
<td>Long-term decline of GDP trend growth: 0.6%</td>
</tr>
<tr>
<td>Barrell et al. (2009)</td>
<td>UK</td>
<td>Cost/benefit analysis, structural models + NIGEM</td>
<td>1-percentage-point increase of capital</td>
<td>Long-term steady state output decline: 0.08%</td>
</tr>
<tr>
<td>IIF (2010) – interim report</td>
<td>US, euro area, Japan</td>
<td>Balance sheet models; profit and loss models; bank capital supply models; macro bloc</td>
<td>Different scenarios with and without regulation</td>
<td>Drop in GDP level 2011–2015: between 2.6 % (US) and 4.3 % (euro area) Drop in GDP level 2011–2020: between 2.7 % (US) and 4.4 % (euro area)</td>
</tr>
<tr>
<td>IIF (2010)</td>
<td>US, euro area, Japan</td>
<td>As above</td>
<td>As above</td>
<td>Update from above. Cost of redefinition of capital requirements revised downward by 30% (without specifying the expected decline in GDP)</td>
</tr>
<tr>
<td>IHS (2010)</td>
<td>Austria</td>
<td>Macroeconomic growth models, sample-based estimate of potential decline in loan volumes in Austria</td>
<td>Decline in loan volume by 10% or 20%</td>
<td>Decline in GDP level after 5 years: between 1.26% (loan volume 10% lower) and 2.48% (loan volume 20% lower) Drop in GDP level after 10 years: between 2.83% (loan volume 10% lower) and 5.66% (loan volume 20% lower)</td>
</tr>
<tr>
<td>Bank Austria (2010)</td>
<td>Austria</td>
<td>Profit and loss account</td>
<td>Additional capital needs of between EUR 19.2 BN and EUR 34.9 BN</td>
<td>No GDP effects Bank profits drop to ½ (best-case scenario) or turn into losses (worst-case scenario) Lending spreads increase by 6 to 14 basis points for corporate loans and by 13 to 30 basis points for household loans</td>
</tr>
<tr>
<td>FBF (2010)</td>
<td>Euro area</td>
<td>Estimated drop in loan volume</td>
<td>New tier 1 ratio and new net stable funding ratio</td>
<td>Drop in GDP level: 1.5% in the short term more than 6% in the long term</td>
</tr>
<tr>
<td>La Caixa (2010)</td>
<td>Spain</td>
<td>Estimated drop in loan volume, using ECB elasticities</td>
<td>Shortfall in core capital: €48 BN, new stable funding: €300 BN</td>
<td>Long-term drop in GDP level: between 5% (most likely scenario) and 1.6% (best-case scenario)</td>
</tr>
</tbody>
</table>


1. See “Appendix B: Further reading” at the end of this document for complete references to the papers mentioned

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2. Selected results

While these reports collectively provide an interesting spectrum of assessments of the macroeconomic impact of Basel III in the countries considered, for the purposes of estimating the impact on output for Korea, we focus on the BIS reports in order to avoid skews arising from the different capital and stable funding positions between Korean and European banks. According to these reports, the expected reduction in output felt after several years is likely to be in the order of 0.2-0.4%. In our opinion the impact in Korea is likely to be milder than indicated globally, as the banks are relatively well positioned under Basel III based on their net stable funding ratios. There are several key factors, however, which could lead to a lower estimate of costs

- Bank actions to reduce requirements for HQLAs and LTSF may substantially reduce the gaps with minimal flow-on impact; the remaining gaps therefore may pose a lower burden on the economy that the analysis indicates. In our opinion, this effect is likely to be significant
- Secondly, the above figures assume an increase in banks’ common equity ratios of 2%, whereas banks may not seek to maintain buffers and therefore the increase in their capital levels – and the consequent impact on output – may be smaller
- The analysis assumes full pass-through of the higher funding costs/lower yield from investments to loan rates. However, the burden is also likely to be shared in part by shareholders and debt holders, who will accept lower returns due to the lower riskiness of banks, and employees, as banks attempt to reduce operational costs. Again, we feel that the impact of this will be significant
- To the extent that greater intermediation is provided by the non-bank sector in future, the estimated macroeconomic costs will be lower. Regulation of the shadow-banking sector, however, is likely to mitigate this

Similarly, there are a number of factors that could lead to higher costs

- Shifting of risk into the non-regulated sector could reduce the financial stability benefits and actually increase volatility in the overall economy. As indicated above, however, regulation of the shadow banking sector should ensure that this is not the case
- The results of the impact of regulatory requirements on lending spreads are based on aggregate balance sheets within individual countries, so that they do not consider the incidence of the requirements across institutions. Given that the Korean banks’ liquidity positions are very different and the stable funding shortfall is concentrated in the specialized banks, the impact is likely to be substantially larger for Korea, particularly in the areas served by the specialized banks. It is impossible to estimate how much greater the costs could be as a result of this
- As the Korean economy is heavily dependent on trade, an adverse scenario for trade finance profitability will tend to have a more negative impact on the Korean economy than other economies. Also, as we have discussed in section 6.2, many foreign banks are likely to be hit more severely than their
Korean counterparts; where this results in a reduction in output in those countries, there will be a flow-on impact for Korea. Of particular concern for Korea is Japan, which accounts for ~20% of Korea’s trade and whose banks need to restructure or raise significant additional capital.

Overall, whilst the impact on Korean output is highly uncertain, the FSS and other Korean policy makers may be reasonably comfortable that the overall impact on Korea’s economy is likely to be minor. There are plenty of actions banks will take to reduce the costs below the 0.2-0.4% indicated by the BIS reports, and in addition, banks may not be able to fully pass costs through to consumers; in other words, the reduction in profitability suffered by the banks will absorb some of the impact without passing it through to the “real” economy. The major downside is the way in which the impact will fall heavily on the specialized banks, which each serve a particular vital segment (or segments) of the economy. This reiterates the fact that FSS and policy makers will need to think hard about how they implement the standards across the different segments of the banking industry.
## Table 16: Steady state output loss due to regulatory tightening

<table>
<thead>
<tr>
<th>Increase in TCR/RWA ratio relative to current level</th>
<th>Target liquidity tightening relative to current level</th>
<th>Euro area DSGE models with bank capital</th>
<th>Euro area DSGE models without bank capital</th>
<th>United States DSGE and VECM models with bank capital</th>
<th>United States DSGE models without bank capital</th>
<th>Italy, United Kingdom Semi structural models, without bank capital</th>
<th>Average</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
<th>Median</th>
<th>Number of models</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>0.29</td>
<td>0.24</td>
<td>0.10</td>
<td>0.29</td>
<td>0.29</td>
<td>0.25</td>
<td>0.20</td>
<td>0.04</td>
<td>0.70</td>
<td>0.20</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0.53</td>
<td>0.49</td>
<td>0.25</td>
<td>0.57</td>
<td>0.58</td>
<td>0.47</td>
<td>0.35</td>
<td>0.07</td>
<td>1.10</td>
<td>0.33</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0.81</td>
<td>0.72</td>
<td>0.35</td>
<td>0.83</td>
<td>0.84</td>
<td>0.68</td>
<td>0.50</td>
<td>0.07</td>
<td>1.58</td>
<td>0.50</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>NSFR, fall in RWA</td>
<td>0.34</td>
<td>0.34</td>
<td>0.20</td>
<td>0.40</td>
<td>0.45</td>
<td>0.37</td>
<td>0.30</td>
<td>0.00</td>
<td>1.07</td>
<td>0.25</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>NSFR, fall in RWA</td>
<td>0.63</td>
<td>0.61</td>
<td>0.35</td>
<td>0.72</td>
<td>0.73</td>
<td>0.61</td>
<td>0.44</td>
<td>0.08</td>
<td>1.47</td>
<td>0.42</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>NSFR, fall in RWA</td>
<td>0.86</td>
<td>0.86</td>
<td>0.50</td>
<td>0.96</td>
<td>0.99</td>
<td>0.80</td>
<td>0.56</td>
<td>0.08</td>
<td>1.85</td>
<td>0.59</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>NSFR, no change in RWA</td>
<td>0.49</td>
<td>0.48</td>
<td>0.29</td>
<td>0.56</td>
<td>0.56</td>
<td>0.51</td>
<td>0.40</td>
<td>0.07</td>
<td>1.52</td>
<td>0.33</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>NSFR, no change in RWA</td>
<td>0.73</td>
<td>0.72</td>
<td>0.49</td>
<td>0.82</td>
<td>0.83</td>
<td>0.72</td>
<td>0.52</td>
<td>0.07</td>
<td>1.83</td>
<td>0.50</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>NSFR, no change in RWA</td>
<td>0.96</td>
<td>0.96</td>
<td>0.59</td>
<td>1.06</td>
<td>1.09</td>
<td>0.92</td>
<td>0.63</td>
<td>0.07</td>
<td>2.05</td>
<td>0.65</td>
<td>13</td>
</tr>
</tbody>
</table>

Source: BIS, "An assessment of the long-term economic impact of stronger capital and liquidity requirements"
6.4.2. Benefits

Cost of banking crises

The studies referred to by the LEI report estimate that the cost of banking crises are typically, on a discounted basis, from ~20% to well over 100% of pre-crisis output, as per the table below, with a median across all studies of ~60%. The impact of the banking in Korea following the Asian crisis is one of the examples cited, with results extremely variable but broadly consistent with international examples. Costs appear higher in more developed countries, and therefore the report would point to the cost of future banking crises in Korea in future being, if anything, higher than in 1997. We assume a cumulative cost of 60%.

Probability of banking crises

The LEI report uses three models to estimate the reduction in the probability of banking crises which could be achieved by higher levels of capital and liquidity. The impact of Basel III depends on three core elements as per the table below

- Initial level of capital
- Change in capital held by banks
- Increase in liquidity position

Table 17: Average annual probability of a crisis for different modeling approaches (all numbers in %)

<table>
<thead>
<tr>
<th>Tangible common equity over risk-weighted assets</th>
<th>No increase in liquidity</th>
<th>Increase in deposits over total liabilities</th>
<th>Increase in liquid assets over total assets</th>
<th>Increase in liability side liquidity; and increase in liquid asset ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models incorporating changes in liquidity assets (reduced-form models)</td>
<td>10</td>
<td>20</td>
<td>12.5</td>
<td>25</td>
</tr>
<tr>
<td>6</td>
<td>5.8</td>
<td>4.6</td>
<td>4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>7</td>
<td>4.1</td>
<td>2.9</td>
<td>2.4</td>
<td>3.3</td>
</tr>
<tr>
<td>8</td>
<td>2.8</td>
<td>1.8</td>
<td>1.5</td>
<td>2.3</td>
</tr>
<tr>
<td>9</td>
<td>2.0</td>
<td>1.1</td>
<td>0.9</td>
<td>1.6</td>
</tr>
<tr>
<td>10</td>
<td>1.5</td>
<td>0.7</td>
<td>0.6</td>
<td>1.2</td>
</tr>
<tr>
<td>11</td>
<td>1.1</td>
<td>0.4</td>
<td>0.4</td>
<td>0.9</td>
</tr>
<tr>
<td>12</td>
<td>0.8</td>
<td>0.3</td>
<td>0.3</td>
<td>0.7</td>
</tr>
<tr>
<td>13</td>
<td>0.6</td>
<td>0.2</td>
<td>0.2</td>
<td>0.5</td>
</tr>
<tr>
<td>14</td>
<td>0.5</td>
<td>0.1</td>
<td>0.1</td>
<td>0.4</td>
</tr>
<tr>
<td>15</td>
<td>0.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td># models</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: BIS Long-term Economic Impact working group, An assessment of the long-term economic impact of stronger capital and liquidity requirements, Aug 2010

1. Unweighted averages across models

---

35 Cumulative discounted losses until the end of the crisis range between 9% and 50% of output; allowing for permanent effects, these are larger
2. When bank capital is not included in the model, each 1 percentage point increase in the capital ration is translated into a 13 basis point increase in the spread.

3. Meeting the NSFR without considering the impact on RWA is assumed to translate into a 25 basis point increase in lending spreads while taking the synergies of liquidity and capital regulation into account reduces the cost to 14 basis points.

As discussed earlier in section 6.1.1, we assume that banks will increase target Tier 1 levels from 9 to 11%. Based on our analysis in section 6.1.1.3, on average banks have a net stable funding ratio of 93% and will require ~8% additional stable funding on current levels, assuming no reduction in requirements can be made. Banks will also have to acquire a greater stock of high quality liquid assets to meet the liquidity coverage ratio. Our analysis from section 0 also indicates an industry LCR of 80%, meaning the increase in liquid assets required is 25% on current levels, assuming banks make no efforts to reduce requirements. The LEI report (see table above) gives approximations for an increase in liability side liquidity of 10% (roughly equivalent to closing the NSFR gap) and the ratio of liquid assets to total assets of 25% to address the shortfall in HQLAs; in this case there would be an estimated 1.8% reduction in the probability of crises, from 2.0% to 0.2%. Assuming the cost of banking crises is 60% of output, this represents an annual benefit to the economy of 1.1%.

Compared to the reduction in output as a result of higher lending spreads, this benefit appears large. Like the estimation of costs, however, these figures are subject to a high level of uncertainty. There are several key factors could lead to a higher estimate of benefits:

- Reducing the amplitude of the business cycle is likely to be beneficial and may be enhanced through the countercyclical capital buffer schemes, though this is not captured in the MAG’s modeling. With its more cyclical economy, this impact is likely to be especially pronounced in Korea.

- Individuals and business are often willing to pay far more than the expected losses of extreme events to insure against them due to risk-aversion. Measuring benefits on an expected basis, therefore, undervalues the benefits in a risk-averse society.

- The expected costs of crises are based on data from historical episodes featuring large-scale government intervention to minimize the negative effects on output. In the absence of such intervention, the costs of banking crises are likely to be significantly higher. In addition, as discussed, the costs tend to be greater for developed economies, and Korea was hit particularly badly by the Asian Financial Crisis; it may be that the benefit in avoiding future crises in Korea is substantially larger than assumed.

- To the extent that higher capital and liquidity requirements also reduce the severity of crises, and not just the probability, the benefits will be higher. This is indeed likely to be the case, as banks with higher levels of capital can absorb more losses, and therefore fewer banks are likely to default and those that do will return a greater level of capital to debt holders.

Similarly, there are a number of factors that could reduce the benefits:

- The existing literature may overestimate the costs of banking crises for reasons including overestimation of the underlying growth path prior to the crises and failure to fully control for factors other than a banking crises that may contribute to output declines during the crisis and beyond.

- Capital and liquidity requirements may be less effective in reducing the probability of banking crises than suggested by the approaches used in the study. This would reduce the overall net benefits for a given level of the.
requirements. In particular for Korea, as seen in the Global Financial Crisis, banking crises may be driven by external factors and increased levels of capital and liquidity, while they may reduce the severity of a crisis, cannot prevent its occurrence.

Overall, it is very difficult to say whether these factors may lead to a lower or higher assessment of benefits than is actually likely. Regardless, we feel that the benefits are likely to be substantially higher than the costs in the long term.

6.4.3. Summary

While the benefits appear to easily outweigh the costs, it is important to realize that the costs will hit the economy immediately as capital and liquidity levels are ramped up and lending spreads increase. The benefits, on the other hand, will accrue only in the future as would-be future crises are avoided. The benefits are also highly uncertain, firstly because the study was across various Basel Committee countries, secondly because our estimates of Korean banks’ positions are subject to a modest level of uncertainty and our discussion here relies on the assumption of a capital buffer to be held by the banks, and thirdly because of issues in the underlying analysis used by BIS in its reports.

Maximum annual costs are likely to be no higher than 0.2-0.4% of GDP. (Again there is significant uncertainty around this figure as we have discussed.) These costs will hit the Korean economy directly over several years but against consistent recent real GDP growth of 3-5% over the last several years (other than recent volatility caused by the financial crisis), this is unlikely to be of significant concern to Korean policy makers. All in all, we believe that the reduction in volatility caused by a more resilient banking sector is likely to benefit the Korean economy in the long term.
7. Implications for Korean Banks’ finance and risk management

The changes introduced through the proposed Basel III regulations serve to highlight the importance of strong capital and liquidity adequacy management. However, unlike the Basel II Pillar 1 regulations which had required most banks to make similar investments towards improving risk modeling analytics and quantification (e.g. under IRB and IMM), banks could potentially have more diverse reactions to the Basel III regulations. Broadly speaking, these reactions can be classified into three groups:

- **Compliance approach**
  - Some banks may take a pure minimum compliance approach, partly because there is still some uncertainty about the implementation of the regulations (particularly on the liquidity ratios) and partly because the significant drain on their resources means they may have little additional capacity for more strategic initiatives.

- **Opportunistic information user**
  - The additional granularity of information available from the improved liquidity MIS (e.g. stability of deposits), could easily be used for portfolio segmentation. Some banks would be eager to use this more granular segmentation for reporting and management purposes, and have not done so in the past only because of the required investments into data cleansing (which they now have to do out of compliance anyway).

- **Best in class aspirations**
  - Banks that aspire to be best-in-class would however look beyond the regulatory requirement of Basel III and focus on the lessons learnt from the Global Financial Crisis to better understand what investments are necessary into enhancing its finance and risk management capabilities in order to avoid the pitfalls experienced by some Western banks in the run-up to the GFC.

In addition to the above three types of reaction, Korean banks may also work more actively to “improve” their asset and liability classification in the same way that some banks have been actively looking for RWA savings that result from correcting misclassified assets. The higher capital requirements would provide greater incentive to find those RWA savings, while the liquidity ratio requirements would encourage banks to engage in a similar exercise across a broader category of balance sheet items (e.g. in the classification of corporate deposits as operational or non-operational).

The following sub-sections (7.1 to 7.3) will first describe the range of likely reactions, before discussing the benefits and implementation challenges associated with each approach towards the end of this chapter (in section 7.4).
7.1. Compliance approach

At a minimum requirement, banks will need to respond in four ways

- Ensure that necessary risk models are in place, namely the methodology for counterparty credit risk (CCR) and changes to market risk models
- Make the necessary investments into MIS to compute the new liquidity ratios and liquidity monitoring metrics, which span a wider range of asset and liability types than currently captured in most IRB capital engines
- Make the necessary investments into forecasting the contractual cash flows that feature in the computation of the LCR
- Where there is a capital shortfall from the revised RWA coverage, capital quality, Tier 1 ratio or leverage ratio, additional capital will need to be raised, or RWAs reduced. Similarly where there is a shortfall of liquidity and stable funding for the LCR and NSFR, additional liquidity will need to be raised, or the balance sheet will have to be changed to meet the requirements

The methodology for counterparty credit risk (CCR) is relatively straightforward and many banks across Asia have already begun their developing CCR models well before the release of the December 2009 Basel III documents. Some banks are also already reporting notional trading limits in their customer level credit reports so there is unlikely to be any significant implementation challenge for most Korean banks.

The process of computing the new liquidity ratios and monitoring metrics may require significant investments in MIS, data cleansing and reconciliation for regulatory reporting purposes. Banks have several years before the standards are in force, but must begin reporting the LCR for observations purposes immediately. Whilst the requirements are relatively straightforward to meet on an ad hoc basis, there is a significant challenge in adapting systems to be able to produce the results on a regular and timely basis, while avoiding excessive manual labor. A clear obstacle to this is that the efforts will compete for resources against other on-going Basel II efforts (particularly on Pillar 2), changes to risk models as highlighted above and parallel IFRS projects.

In addition, the computation of the LCR will also require banks to incorporate the effects of contractual future cash flows, rather than just focusing on a static balance sheet. For compliance oriented banks, the investments into cash flow forecasting would likely center around the impending contractual cash flows from a static requirement portfolio perspective, based on the cash outflows that the bank is already committed to and cash inflows that it is entitled to. This would exclude changes in the cash flow situation that arises from the typical future transactions that are part of the on-going business.

Given the relatively good capital and liquidity positions of the Korean banks, meeting the minimum capital and liquidity adequacy will likely not be a challenge for Korean banks beyond the need to improve their LCR which can be achieved by placing more deposits with the central bank over the coming years (unless more eligible bonds are made available in the Korean market). Some of the Korean banks may also want to increase their Tier 1 ratios further to maintain a larger buffer over the minimum requirements than Westerns banks. Together, holding more capital and the lower returns from central bank deposits will stress the bank ROEs and may make it more difficult for Finance to raise capital externally, though investors may be willing to accept lower dividends in return for the lower risk that comes with higher capital and liquidity adequacy.
As such, it is likely that at a minimum the Finance department of most Korean banks will be devoting resources towards the MIS required to compute the new regulatory ratios, with some of the Korean banks with lower capital and liquidity adequacy needing to communicate to the market about impact of the new regulations in order to better manage investor ROE and dividend expectations.

### 7.2. Opportunistic information user

While the Korean banks do not appear to have any significant capital and liquidity adequacy shortfall, the efforts towards developing counterparty credit risk (CCR) methodologies and developing clean MIS on liquidity segmentation does allow the banks to use the information in a systematic fashion to further strengthen their portfolio management capabilities.

**Using counterparty credit risk methodology**

With the quantification of the credit risk side of the trading exposure (i.e. CCR), there are several benefits. Firstly, some banks may take a more holistic view of the credit risk limits and include CCR under the management of traditional credit limits owned by Lending Units and approved by Credit Risk. While this may require some organizational change with Trading Desks needing to obtain earmark credit limits from Lending Units before taking trading positions against the bank’s customers, this has the benefit of being able to consolidate the lending and trading credit risk exposures for easier control by Credit Risk. Furthermore, when combined with the investment book (including both bonds and direct equity investments), this would allow Portfolio Management to have a more accurate picture of the total risk exposure that the bank has against each customer across the range of products, and its contribution towards economic capital requirements. As such, Portfolio Management may employ CCR as a metric to adjust the trading limits for each customer depending on the exposure that the bank is already taking in other parts of the business.

Secondly, this improved view of customer risk will enable banks to better measure customer-level profitability, which will in turn enable banks to enhance pricing, RM performance management and allocation of risk capacity to individual corporate entities (we discuss enhancements to risk appetite in more detail later). This improved view of customer and RM profitability will allow banks to better incentivize their RMs towards improved performance.
Finally, as central counterparties are set up, a business will be created for wholesale banks in clearing derivatives for corporate and other financial institutions that are not members of the central clearing house. This clearing business presents both threats and opportunities; the local banks will have to compete with glocomals, whose state-of-the-art systems provide them with an advantage, and all banks will have to compete with any non-banks (e.g. insurers) who have direct access to the central counterparty and move into this business. On the other hand, there is a large opportunity for banks with good CCR systems to offer customers premium clearing services, extending credit to them rather than asking them to match the central counter-parties’ margin calls. Therefore, as well as allowing banks to better manage their risks, the CCR system may open additional revenue opportunities.

Using the liquidity segmentation MIS

The process of calculating the liquidity ratios and monitoring metrics will require banks to systematically classify certain assets and liabilities according to their respective liquidity buckets for all major currencies and identify asset-liability mismatches and various durations and concentrations of funding. For example in the case of deposits, the standards will require a combination of (a) the remaining maturity of the deposit, (b) the details of the depositor, and (c) the stability of the deposit based on a number of different criteria (e.g. number of products per depositor, length of relationship, product type).

Of the three pieces of information used in the liquidity ratios, the first is relatively straightforward and readily available to Finance (though the Business Unit that took in the deposit may be used as a proxy for the business nature of the depositor). However, the calculation of aggregate deposits per depositor, entity or group of entities and the criteria used to determine the stability of the deposit may require additional information that may not be systematically electronically captured, may have poor data quality, or require a very tedious data mapping process, which may have made this last important piece of information effectively unavailable to Finance in the past.

Independent of Basel III, the ability to incorporate such segmentation schemes into portfolio reporting would provide a much better understanding of the drivers of liquidity in the portfolio, and thus to improve the management of the portfolio's liquidity. For example, customers with longer relationships and a larger number of products are likely to be more stable and therefore cross-selling to existing customers may be more beneficial than attracting new customers “hot money”. As such, Korean banks that have in the past been constrained by the quality of the segmentation data will benefit from the MIS exercise aspect of implementing Basel III, and in fact such banks will likely take the opportunity to piggyback the process and incorporate a number of other useful segmentation dimensions.

In addition to the improved segmentation capability, the introduction of regulatory HQLA requirements and RSF differentiated across different product types will affect the relative product economics. This is less of an issue for the Korean banks who have healthy LCR and NSFR as the impact is theoretical unless there is a significant change in the balance sheet structure. However for other banks where there may be a liquidity shortfall, particularly for NSFR which is the more costly of the two ratios to rectify, this skew in relative product economics will mean that banks who do not want to accept a lower ROE would rethink their product strategies and compete more aggressively for credit products that have lower RSFs.

This may then compel some Korean banks (including those with sufficient liquidity) to incorporate the implicit cost of the RSF into their FTP over the yield.
curve. In fact, Finance departments and Product Managers that have encountered push-backs from Lending Units on the use of liquidity premium charge may well take advantage of the regulatory requirements to justify said liquidity premiums to be incorporated into the lending product economics.

<table>
<thead>
<tr>
<th>Interest rate</th>
<th>Maturity</th>
<th>Yield curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan FTP factoring RSF</td>
<td>Deposit FTP factoring run-off</td>
<td></td>
</tr>
</tbody>
</table>

Overall, Korean banks that want to revisit their product strategies could take advantage of the new regulations to better understand their product economics (with CCR affecting trading products profitability and the liquidity premiums affecting both loan and deposit products profitability). This would in turn require more investments into modeling and reporting the risk-adjusted product economics.

7.3. Best in class aspirations

Looking beyond Basel III, the Global Financial Crisis highlighted the importance of having sufficient capital and liquidity for the risk profile of the bank. In other words, banks trying to avoid some of the mistakes highlighted by the GFC would do well to have an explicit risk appetite statement that governs what level of capital and liquidity adequacy the bank should have, and this risk appetite statement needs to be supported by the ability to project capital and liquidity requirements under a number of forward-looking scenarios rather than a static adequacy snapshot based on today’s balance sheet.

Risk appetite statement

A well-defined and understood risk appetite statement (RAS) has been in use by leading players and is now required by regulators in response to the GFC. The RAS should serve as a key communication tool between stakeholders that sets out the bank’s risk appetite consistent with its risk capacity. At a superficial level, the RAS needs to spell out what level of capital and liquidity adequacy the bank must maintain, and this could be communicated using the same metrics within the Basel II and III regulations, or through other more intuitive metrics.

Amongst leading institutions, the RAS goes beyond focusing on risk control and limitation associated with capital and liquidity adequacy ratios, and instead extends to address the risk-reward balance that is appropriate for the bank as well as the various stakeholders, both internal and external.
However, the mere creation of the RAS is not sufficient in itself, and risk appetite needs to integrate with capital management and corporate strategy in the planning process in order to be embedded in real, operational business decisions.
Capital and liquidity planning, stress testing and contingency management

The experience of the GFC highlights very well the importance of looking beyond the current “good year” and to plan ahead for the capital and liquidity requirements in the coming years, including being prepared for pessimistic scenarios. This would also correspond to certain concepts in the Basel III regulations such as the potential for supervisors to enforce a counter-cyclicality capital buffer in good years and to use stress run-offs for the LCR. As such, there is a real need for banks to actively manage the evolving demand and supply of their financial resources (see illustration on managing capital demand and supply below).
However, as mentioned above, it is not sufficient for banks to merely project what the likely demand and supply for capital and liquidity are in the coming years as it is important to understand how those projections can differ across a range of potential scenarios that the bank needs to be prepared for (see illustration on liquidity stress testing below). In fact, stress testing is very useful for understanding how well the bank’s capital and liquidity will hold up should the more pessimistic outlook materialize, and banks may include more severe stress scenarios than implied by the Basel III regulations.

Of course it would be economically impractical to hold the levels of capital and liquidity that such stress test models would suggest are required to protect the bank against the most severe scenarios. Leading banks do not respond by holding significantly more capital and liquidity for unlikely events, but rather aim to be better prepared for them should they be unavoidable. Contingency plans are set in place (see illustration contingency planning for liquidity shortfall below) and triggered by early warning signals to ensure that contingent capital and liquidity is raised for the bank to stay within the risk tolerance stated in its RAS.
Contingency plan

Key features
- Convene funding crisis management team to direct implementation of plan
- Internal and external communications plan
- Guidelines for extension of deposit and borrowing maturities
- Recognition of stress level (i.e. appropriate management of size and composition of balance sheet commensurate with crisis)

Bank activates liquidity contingency plan

Increased loan demand

ALCO recommends execution of contingency processes as outlined in plan

Liquidity sub-committee assesses severity and calls emergency ALCO meeting

Treasury escalates early warning signs triggered to ALCO’s liquidity sub-committee

Therefore, the most progressive Korean banks are likely to mobilize both their Finance and Risk departments to enhance their capital and liquidity planning and forecasting capabilities, and developing appropriate contingency plans consistent with their risk capacity. They would further link their risk taking capacity and strategy to their corporate strategy through the articulation of a well-defined and understood risk appetite statement. Amongst such banks, the integration of the financial, risk and business strategy would have profound impact on the way the bank operates to maximize returns without exceeding its risk capacity.

7.4. Benefits and implementation challenges

As would be expected, the effort required to implement the more advanced capabilities are significantly greater, but the rewards for successful implementation are also correspondingly greater. Below summarizes some of the benefits and challenges associated with implementing the above discussed capabilities.

<table>
<thead>
<tr>
<th>Implementation challenges</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance approach</td>
<td></td>
</tr>
<tr>
<td>• MIS</td>
<td>• Considerable efforts to develop and reconcile the MIS required to compute the various ratios</td>
</tr>
<tr>
<td></td>
<td>• In particular, there must be a process for maintaining data integrity and monitoring adequacy levels on an on-going basis</td>
</tr>
<tr>
<td></td>
<td>• Improved information on the bank’s financial situation, particularly for banks who still have fairly basic liquidity management capabilities for modeling liquidity risk</td>
</tr>
</tbody>
</table>
### Implementation challenges

<table>
<thead>
<tr>
<th>Capital and liquidity adequacy</th>
<th>Where shortfalls may exist, raise additional resources to cover said shortfalls</th>
<th>High capital and liquidity adequacy results in “safer” banks for equity and debt holders</th>
</tr>
</thead>
</table>

### Opportunistic information user

<table>
<thead>
<tr>
<th>CCR methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likely resistance to organizational change associated with ownership of limits (and grey areas where customer has trading relationship without a lending relationship)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liquidity segmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation segmentation dimensions not fully aligned with business management dimensions, and difficult to articulate what segmentation matter</td>
</tr>
<tr>
<td>Danger of portfolio managers asking for too much additional data or missing out on key data</td>
</tr>
<tr>
<td>Data quality management will be challenging as formal processes are being developed to check and maintain data integrity</td>
</tr>
</tbody>
</table>

### Best in class aspirations

<table>
<thead>
<tr>
<th>Risk appetite statement (RAS)</th>
<th>Articulating and agreeing on a common RAS</th>
<th>Better alignment of risk-reward trade-off in the front office where business decisions are being taken</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Translating said RAS into manageable metrics, as well as key performance indicators</td>
<td>Better coordination of risk-reward priorities across risk, finance and business managers</td>
</tr>
</tbody>
</table>

| Planning, stress testing, contingency management | Coordinating remedial action when variation from plans outside of a single business unit control occurs (e.g. loans growing faster than deposits resulting in liquidity shortfall from target) | Allows for better central monitoring of portfolio risk indicators while allowing flexibility for decentralized decision taking |

### 7.5. Other capability refinements

The areas of capability enhancement discussed so far are not exhaustive, and merely represent functionalities that may be relevant to Basel III. Beyond this, there are many adjacencies where further enhancements could also be made which either feed into the Basel III analysis or use its output, e.g.

- Upgrading to the Internal Models Method (IMM) for counterparty credit risk; given the large systems investments this would only be likely for the banks with the largest derivatives activities
- Incorporating the updated capital and liquidity risk costs into performance measurement frameworks – banks who have moved to RAROC or Economic Profit performance management models may now find that regulatory capital and funding become the main constraints, and performance management frameworks need to be adjusted accordingly
- Portfolio and balance sheet management and optimization; as significant constrains are now imposed by capital and funding requirements,
management and CFOs will need to ration these scarce resources across businesses and customers more selectively.

Banks’ ICAAP will also be affected by the change. We discuss this in conjunction with SREP in section 8.6.

7.6. Basel 3 investment priorities

While some banks may aim for a best in class approach for their Basel III aspirations, there may be other banks that choose to follow the lesser path represented by the compliance approach. Where this is the case, the benefits in terms of overall system stability are much smaller; from the regulator’s point of view, therefore, it would thus be ideal if as many Korean banks as possible aim for the best in class approach or the opportunistic information user approach in order to enjoy the business benefits from their investments, rather than just the compliance approach. However like in the case of the Basel II investments, some banks may be reluctant to aim for a bigger investment than the compliance approach for myriad reasons, e.g.

- Silo management, or have not considered business benefits – in such cases, it is imperative for Korean banks to consider any such significant investments in the broader context of what business benefits and enhancements to existing finance and risk capabilities is possible, and in the process establish a business case for developing the various business, finance and risk applications discussed in this section.

- Focused on details and perfect accounting, rather than behavioral change – as is often the case with any new MIS requirements, there would be some information gaps or challenges to linking some legacy systems that contain information for some of the older accounts that have not been migrated. These challenges may account for a significant portion of the fee and time investment for full compliance. It is thus imperative for Korean banks to understand the trade-off between full compliance with 100% accurate information vs. the materiality of getting perfect MIS on these segments, and potentially getting regulatory approval for ‘good enough’ MIS to free up internal resources for investing in the business, finance and risk applications that affect new business generation and portfolio management.

- Overall resource and compliance fatigue – as will be discussed in chapter 9, Korean banks will need to comply with more impending regulations than just Basel III, let alone the existing regulations with on-going investments (such as Basel II master plan implementation). Some banks would find it extremely challenging to deploy sufficient technical staff and devote sufficient senior management attention for all these regulations, and need to prioritize senior management attention between competing demands for their time from running the business vs. compliance vs. investments into finance and risk capabilities. This may be the most challenging obstacle and regulators can do much to rationalize the burden for Korean banks to comply with similar but different international and local regulations on capital and liquidity management.

Hence, while it desirable that all Korean banks focus on the business benefits and use Basel III as an opportunity for further enhancing their Basel II master plans for upgrading a range of finance and risk capabilities, this will need to be balanced against opportunities costs from such investments, particularly in the demand for senior management attention. Korean banks and regulators will thus need to determine what the priorities are for each bank, which will likely
be different and dependent on what other finance and risk gaps exist in individual banks. The FSS will want to take an active interest in the decisions made by each bank and, with additional powers given to supervisors for more intensive supervision under the recent G20 agreements (we discuss this in chapter 9), will have greater power in influencing these investments in finance and risk management. This is just one implication for the FSS and other policy makers; there are many others which we discuss in detail in the next chapter.
8. Implications for regulators

In this chapter we consider the various decisions the FSS and fellow Korean policy makers will need to make. We distinguish between various types of decisions:

- Specific local supervisor discretion available to the FSS: parameters or treatments identified in the Basel II standards to be set by the FSS or with allowance for amendment by the FSS
- Timing of implementation
- Harmonization of exiting standards with Basel III
- Treatment of specialized banks
- Other possible actions by Korean policy makers: options available not related to national implementation of Basel III which will nevertheless reduce the burden on the banking system
- Implications for the Supervisory Review and Evaluation Process

We consider the direct impact on Korean banks, the economy and on Korea’s competitiveness as a financial services center.

8.1. Specific local discretion available to the FSS

Basel III leaves a handful parameters open to regulatory discretion in each jurisdiction. Most of these parameters are directionally the same, i.e. while regulators are free to adopt standards more stringent than laid out in Basel III, they have limited methods at their disposal for a more lenient interpretation. In addition, most of the decisions open to the FSS – with the exception of implementing a countercyclical capital buffer or liquidity ratios greater than 100% – will have only a minimal impact on the overall ratios. This is deliberate as Basel III aims, amongst its other core objectives, to create a more consistent banking regulation framework around the world.

8.1.1. Countercyclical buffer

Part of the goal of Basel III was to resolve inconsistencies in the definition and quality of capital across jurisdictions; hence few provisions are made for regulatory discretion concerning capital. The FSS can, however, impose a 0-2.5% countercyclical buffer as appropriate to reduce cyclicality and therefore enhance system stability (see section 4.3.2). A sensitivity analysis is shown in the table below; we note that requiring higher minimum capital levels (another item open to regulator discretion)\(^36\) will have similar impact if applied across the system. As the countercyclical buffer is a key parameter, we discuss it separately along with the implications for the Supervisory Review and Evaluation Process in section 0.

\(^36\) BCBS, Basel III: A global regulatory framework for more resilient banks and banking systems, Dec 2010, footnote 16
Table 18: Bank level impact of the countercyclical buffer

<table>
<thead>
<tr>
<th>Countercyclical buffer</th>
<th>0%</th>
<th>0.5%</th>
<th>1%</th>
<th>1.5%</th>
<th>2%</th>
<th>2.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE impact</td>
<td>-0.04%</td>
<td>-0.08%</td>
<td>-0.12%</td>
<td>-0.19%</td>
<td>-0.33%</td>
<td>-0.48%</td>
</tr>
</tbody>
</table>

8.1.2. Treatment of trade finance under liquidity ratios

As discussed in section 6.1.3, trade finance products, such as letters of credit and guarantees, involve the banks taking on contingent obligations to their customers’ trade partners. The treatment of “other contingent funding obligations” (drawdown under the LCR and RSF)\(^{37}\) are key parameters in determining the profitability of trade finance products, because trade finance fees are generally much smaller than balance sheet lending margins, and therefore equivalent liquidity requirements would have a larger impact on ROE. (Trade finance products tend to have very low credit risk and these contingent obligations rarely require funding.) The parameters applied should presumably be less than or equal to those applied to corporate credit commitments (10% drawdown under LCR and 5% RSF), since they are less likely to turn into balance sheet exposures than these undrawn credit lines. We therefore test scenarios between 0% and these levels. We note that the FSS may apply different parameters for different products, if desired, based on the likelihood of these requiring funding in a liquidity crisis.

The overall bank impact is relatively small, given these contingent funding liabilities are small relative to the balance sheet; the main impact is in product profitability, as discussed in section 6.1.3.

Table 19: Bank level impact of LCR parameter for other contingent funding liabilities, including trade finance

<table>
<thead>
<tr>
<th>LCR parameter</th>
<th>0%</th>
<th>5%</th>
<th>10%</th>
<th>15%</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCR</td>
<td>80.0%</td>
<td>78.1%</td>
<td>76.4%</td>
<td>74.7%</td>
<td>73.1%</td>
</tr>
</tbody>
</table>

Table 20: Bank level impact of NSFR parameter for other contingent funding liabilities

<table>
<thead>
<tr>
<th>NSFR parameter</th>
<th>0%</th>
<th>2.5%</th>
<th>5%</th>
<th>7.5%</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSFR</td>
<td>92.5%</td>
<td>92.3%</td>
<td>92.0%</td>
<td>91.8%</td>
<td>91.6%</td>
</tr>
</tbody>
</table>

The product level impact on trade finance products is more significant, however, since this parameter determines some or all of their LCR and NSFR requirements. Assuming the industry average LCR of 80% and NSFR of 93%, and an additional voluntary bank capital buffer of 2%, increasing the LCR parameter from 0% to 10% results in a 0.8% decline in the ROE of letters of credit; the

\(^{37}\) BCBS, Basel III: International framework for liquidity risk measurement, standards and monitoring, Dec 2010, paragraph 100; Table 3
impact on other products is smaller. The impact of increasing the NSFR parameter from 0% to 5% results in a 0.1% decline.

The Korean economy is heavily reliant on trade and therefore a reduction in the profitability of these products is a concern for the economy in general, as banks are likely to respond by passing costs onto customers. A maximum impact of 0.9% is unlikely to be a major concern; we note, however, that banks with weaker liquidity and funding positions will suffer a greater reduction in profitability. For example, for a bank with an LCR of 70% and NSFR of 80% (our adverse product scenario), and an additional voluntary bank capital buffer of 2%, increasing the LCR parameter from 0% to 10% results in a 1.2% decline in the ROE of letters of credit and the impact of increasing the NSFR from 0% to 10% results in a 0.5% decline.

8.1.3. Other areas of local discretion concerning liquidity ratios

In addition to the above, regulators may also

- Require higher system-wide minimum liquidity levels, or apply more stringent requirements for individual banks depending on liquidity risk profile.
- Set higher deposit run-off rates as appropriate to capture jurisdiction-specific behavior in stress periods, e.g. specify buckets of “less stable” deposits (e.g. foreign currency, deposits not covered by insurance, etc).

Internationally active banks are subject to retail/SME deposits treatment of host jurisdiction (unless unspecified, or if home jurisdiction applies more stringent treatment – both cases in which home jurisdiction treatment would apply); hence adopting more stringent requirements here may have implications on the competitiveness of the banking sector of a given market.

Table 21: Bank level impact of moving “stable” deposits to “less stable”

<table>
<thead>
<tr>
<th>Action</th>
<th>None</th>
<th>Move 10% of “stable” deposits to “less stable”</th>
<th>Move 20% of “stable” deposits to “less stable”</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCR</td>
<td>80.0%</td>
<td>79.5%</td>
<td>79.1%</td>
</tr>
<tr>
<td>NSFR</td>
<td>92.5%</td>
<td>92.4%</td>
<td>92.2%</td>
</tr>
</tbody>
</table>

38 Ibid, paragraph 6
39 Ibid, paragraph 14
40 Ibid, paragraph 55
Table 22: Bank level impact of applying higher deposit run-off rates

<table>
<thead>
<tr>
<th>Action</th>
<th>None</th>
<th>Apply 20% run-off to 10% of “less stable” deposits</th>
<th>Apply 30% run-off to 10% of “less stable” deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCR</td>
<td>80.0%</td>
<td>79.2%</td>
<td>78.5%</td>
</tr>
</tbody>
</table>

- Specify (non-0%) liquidity requirement for market valuation changes on derivative transactions, where inflows and outflows may be netted for transactions that are executed under the same netting agreement.\(^\text{41}\)

Table 23: Bank level impact of liquidity requirement for derivatives valuation change

<table>
<thead>
<tr>
<th>Requirement</th>
<th>0% (illustrative)</th>
<th>20% (expected)</th>
<th>50%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCR</td>
<td>80.4%</td>
<td>80.0%</td>
<td>79.4%</td>
<td>78.3%</td>
</tr>
</tbody>
</table>

- Determine recognition percentages for other contractual cash inflows, as appropriate to each type of inflow in each jurisdiction (but cannot include inflows related to non-financial revenues).\(^\text{42}\)

8.1.4. Treatment of HQLAs

One of the most significant ways in which regulators may adopt a more favorable approach concerns the stock of HQLAs.

8.1.4.1. Central bank eligibility

HQLAs should ideally be central bank eligible\(^\text{43}\) for intraday liquidity needs and overnight liquidity facilities. For jurisdictions in which central bank eligibility is extremely limited, regulators may allow non-central bank eligible assets to count as HQLA – but only if these assets satisfy all other stated HQLA criteria.\(^\text{44}\) Notable among these criteria is the requirement that the assets must not be issued by financial institutions; in the Korean context, central bank eligibility for HQLA therefore does not extend to bonds issued by government owned banks.

8.1.4.2. Central bank reserves

Regulators may specify extent to which central bank reserves can be drawn in times of stress (and thereby qualify as HQLA).\(^\text{45}\)

\(^{41}\) Ibid, paragraph 103
\(^{42}\) Ibid, paragraph 118
\(^{43}\) Ibid, paragraph 21
\(^{44}\) Ibid, footnote 8
\(^{45}\) Ibid, footnote 9
8.1.4.3. Options for alternative HQLA treatment

Recognizing that insufficient HQLAs may exist for certain currencies, Basel III proposes three ways in which regulators may mitigate the HQLA shortfall issue.

Table 24: Options for alternative HQLA treatment

<table>
<thead>
<tr>
<th>Alternative treatment</th>
<th>Applicable to</th>
<th>Key aspects</th>
</tr>
</thead>
</table>
| 1. Provide contractual committed liquidity facilities from the relevant central bank, with a fee | Currencies for which insufficient HQLAs exist | • Contractual arrangement between central bank and commercial bank with maturity >30 days  
• Central bank may not revoke contract prior to maturity, or apply ex-post credit decisions  
• Fee must be charged regardless of amount drawn, and set so that the net yield on assets used to secure facility should be similar to net yield on representative HQLA portfolio, after adjusting for material differences in credit risk |
| 2. Recognize foreign currency HQLAs | Currencies for which insufficient HQLAs exist | • Liquidity mismatch positions should be justifiable and controlled within limits agreed with the regulator |
| 3. Recognize additional Level 2 HQLAs with higher haircuts | Currencies for which insufficient Level 1 HQLAs, but sufficient Level 2 HQLAs, exist | • Recognition up to prescriptive limit of HQLA stock (TBD)  
• Additional assets must incur higher haircuts than Level 2 HQLAs |

Immediately following the release of the final Basel III standards, Australia announced that the Reserve Bank of Australia will provide secured liquidity facilities to banks to cover the systemic shortfall in HQLAs. However, only certain jurisdictions are eligible for such treatment, with prescriptive quantitative thresholds under discussion by BCBS; Korea is not likely to qualify given the size of its government bond market, which, as a share of GDP, is the largest in Asia ex-Japan.

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46 Ibid, paragraphs 45-49
8.2. Timing of implementation

The proposal allows for acceleration of implementation of the standards in local jurisdictions but not delay. Our analysis is based on June 2010 balance sheets, assuming the regulations were fully implemented immediately. It is clear that a speedier implementation would create a larger burden for the banks. The Macro-economic Assessment Group’s analysis suggests that accelerating the implementation of the capital reforms (analogous to banks’ raising capital buffers) from eight years to four or even two years would have a limited impact on the reduction in output. On the other hand, the MAG’s analysis highlights the large benefits in systemic stability which, on an expected value basis, outweighs the reduction in output caused by implementation of the standards.

We anticipate, however, that the impact would be severe for the specialized banks, however, whose gaps in liquidity and capital are much more significant than for the national and regional banks. An accelerated implementation may force them to merge with banks in stronger capital and/or funding position; the FSS should bear individual banks in mind when setting the implementation schedule.

Implementing the reforms sooner than the BCBS timeline may also impact Korea’s competitiveness as a financial services center. Whilst potential new entrants to Korea are unlikely to make long term investment decisions based on short term differences in regulation, it may reduce the competitiveness of Korea’s banks for the period until other jurisdictions implement the standards.

48 Macroeconomic Assessment Group, Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements – Final report, 17 Dec 2010
8.3. Harmonization of existing standards with Basel III

Broadly speaking, the Basel III liquidity standards are analogous to the existing FSS liquidity standards. They seek to achieve similar goals, with the Basel III standards a more complex version informed by actual events observed during the crisis (e.g. bank runs) and the FSS standards more simple, accounting ratios. A detailed comparison of the ratios is as follows

Table 25: Comparison between FSS and Basel III liquidity ratios

<table>
<thead>
<tr>
<th>Short-term liquidity</th>
<th>Long-term liquidity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ratio</strong></td>
<td><strong>1-month KRW ratio</strong></td>
</tr>
<tr>
<td><strong>Definition</strong></td>
<td><strong>Assets &lt; 1 mo</strong></td>
</tr>
<tr>
<td><strong>Minimum requirement</strong></td>
<td>100%</td>
</tr>
<tr>
<td><strong>Maturity threshold</strong></td>
<td>1 month</td>
</tr>
<tr>
<td><strong>Currency</strong></td>
<td>KRW only</td>
</tr>
<tr>
<td><strong>Timing of implementation</strong></td>
<td>Amended to 1mo: 31 Oct 2008</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td></td>
</tr>
</tbody>
</table>

□ FSS standard □ Basel III standard
On the short-term liquidity side, the LCR is analogous to the 1-month KRW liquidity ratio, with the same maturity threshold and minimum requirement, though LCR is calculated using more robust measures for both the numerator (HQLA rather than all assets with maturity <1 month) and denominator (net 30-day stressed funding run-offs rather than all liabilities with maturity <1 month), and takes into account foreign currencies in addition to KRW. Likewise, the foreign currency LCR corresponds to the 3-month foreign currency liquidity ratio, with minor differences in maturity threshold, minimum requirement, and currencies considered.

On the long-term liquidity side, the NSFR seeks to achieve the same purpose as the FSS loan-to-deposit ratio – to address issues of structural liquidity in banks by ensuring that long-term assets are covered by the “right” forms of funding – with a few notable differences in interpretation. For the asset measure, the former considers all assets on the balance sheet, whereas the latter zeroes in on loans as a proxy for assets. For the funding measure, the NSFR relies on a > 1 year remaining maturity threshold, with limited recognition for “stable” forms of deposits < 1 year, whereas the LDR makes a distinction between deposits and other forms of funding, excluding CDs from deposits. Finally, the NSFR considers all currencies, whereas the LDR is limited to KRW. We note that the LDR also constrains loan growth over the long run to the rate of growth in deposits; in other words, unsustainable credit growth can no longer be funded by short term, wholesale placements. The NSFR also achieves this to some extent but recognizes long term non-deposit funding as stable and penalizes non-retail deposits.

The NSFR is more similar in definition to the long-term foreign funding ratio, sharing the same maturity threshold and minimum requirement, though the latter only considers a small fraction of the balance sheet.
The FSS liquidity standards have served well as an interim measure, but the FSS will need to consider whether they are still necessary once Basel III
standards – which provide a more refined measure of liquidity, taking into account differences in the nature of securities, loans and deposits – are implemented. In fact, however analogous the two liquidity standards are to each other, having two different standards in place at the same time will put undue pressure on banks, and the FSS will have to find a way to harmonize between the two standards. For instance, LDR comes head to head with the Basel III ratios concerning the following points

- Certificates of deposit. LDR does not recognize certificates of deposits, providing a disincentive for banks to accumulate CDs. NSFR does not recognize CDs, either, since the vast majority of CDs mature in < 1 year, but CDs are attractive under the LCR as they do not allow withdrawal prior to maturity (minimum 30 days). This means that CDs are only subject to run-off for that portion set to mature within 30 days even if they qualify as retail, whereas other “less stable” deposits would be subject to a 10% run-off for the portion with maturity >30 days as well

- Wholesale deposits. For purposes of LDR, all deposits are treated the same, regardless of maturity and depositor type, and thus deposits from retail clients are no more attractive than deposits from other banks, and neither do long-term deposits receive any more favorable treatment than overnight deposits. LCR and NSFR, however, apply differentiated treatment both by maturity and by depositor type, forcing banks to be selective in accumulating deposits. For instance, non-operational deposits from financial institutions, with maturity <30 days, are expected to run off at 20x the rate of stable retail deposits, and long-term wholesale deposits (>30 days for LCR, >1 year for NSFR) are more attractive than short-term retail deposits

- Non-deposit wholesale funding. From the LDR perspective, non-deposit wholesale funding is irrelevant. The case is similar for LCR, which applies 75-100% run-off to wholesale funding, but the portion of wholesale funding with maturity > 1 year is an important source of stable funding under NSFR, as it receives full ASF recognition

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49 CDs are not covered by deposit insurance, and hence do not qualify as “stable” retail deposits under normal circumstances
In fact, the adoption of Basel III liquidity standards would result in a change in the new funding strategies that many banks had adopted in anticipation of the LDR requirement. As discussed in section 5.4, Korean banks responded promptly when the requirement was announced in December 2009, scrambling to reduce the industry average LDR by 13.1%p to 99.3% by September 2010 (with 10 banks below 100%). Over the same period, CDs dropped by KRW61 TN, a 58% decrease, and bank debentures by KRW15 TN, while time deposits increased by KRW93 TN across the industry. While a shift from wholesale funding to deposits is positive from a general liquidity risk point of view, for future compliance with Basel III standards banks cannot indiscriminately accumulate deposits, but instead must concentrate efforts on certain types of deposits over others.

Despite industry-wide concerns over these conflicting demands, the FSS has denied media speculation on the phase-out of LDR. Harmonization is necessary, not only to prevent adverse effects on economy as banks are squeezed to reduce their loan books in an attempt to simultaneously meet conflicting standards, but also to not compromise the competitiveness of the Korean FS sector relative to other markets, which will surely be affected if the standards continue to exist in parallel.

### 8.4. Treatment of specialized banks

As discussed in section 6.1.1, the specialized banks would have significant capital, liquidity and funding gaps if the regulation came into effect immediately. The impact varies substantially for each of the banks, with each having its own particular issues, but as a collective group they are significantly worse off than their national and regional counterparts. Currently, the FSS’s liquidity ratio requirements do not apply to the banks; the Basel III standards apply to all banks, though clearly the specialized banks may need some concessions in order to remain compliant.

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50 FSS, 예대율 규제 도입 발표(’09.12 월) 이후 은행권 예대율 동향, 17 Oct 2010
Without regulatory concessions, the specialized banks may have to pursue drastic measures to meet their capital and liquidity requirements, some of which may involve merging with other banks. (As noted earlier, there have been reports that the government is already trying to privatize some of its banking assets.) This would have potential adverse consequences on the segments of the economy they serve, as we have discussed in section 8.0.

8.5. Other possible actions by Korean policy-makers

Various actions are available to Korean policy-makers to ease the burden on the financial system, by increasing the supply of either HQLAs or stable funding available to banks. Some key responses which could have a large impact are:

- Greater government bond issuance would increase the supply of liquid assets and provide Korean banks with an easy source of HQLAs. The rapid development of Korea's bond market following the Asian financial crisis is a testament to the success of government policy in issuing bonds partly in order the ensure systemic stability; the Singapore Government Securities market is another good example of a government debt market created somewhat artificially for the purpose of financial system stability. However, this would increase public debt beyond what is needed (for comparison, the total HQLA gap is equivalent to ~6% of Korea's GDP), increasing the interest burden on the Korean economy. In addition, increased Korean sovereign debt may harm Korea's sovereign rating. As indicated in Figure 51, Korea's public debt is not particularly low relative to GDP and an increase in government bonds should not be necessary.

- Paying interest on Bank of Korea reserves would mean there is a less adverse profitability impact for banks with a shortage of HQLAs. If a bank with an LCR of less than 100% is unable to restructure its liabilities to reduce stressed cash outflows, it must increase its stock of HQLAs. Where it cannot purchase government and high quality corporate bonds freely in the market, e.g. because many banks are trying to do the same, while insurers also need those assets to match their long-dated liabilities, it may have no choice but to hold additional reserves with the central bank. Of course, the interest paid to banks would represent a transfer of wealth to those banks from the BOK; ultimately, taxpayers would bear the cost of this.

- Allowing the issuance of covered bonds would provide an additional source of stable funding. Covered bonds are common in Europe for mortgage funding. Korean banks have KRW270 TN of mortgages on their books, requiring KRW175 TN of stable funding. Therefore, even a small issuance of covered mortgage bonds relative to the total volume of mortgages on banks' books would be significant relative to the stable funding gap. Access to covered bonds provides an additional asset class for investors and may increase the total level of funding, particularly since the bonds are secured. Australia's treasurer recently announced that covered bonds would be allowed in Australia as a way for banks to tap into the large pool of managed assets there, to provide lenders with
cheaper source of funding and increase system stability. One concern with covered bonds, previously used to justify their disallowance in Australia, is that secured liabilities rank above the claims of depositors. This concern should be lesser in Korea since most deposits are insured (there is no deposit insurance in Australia other than temporary government guarantees put in place during the crisis). Another concern may be the side affect that covered bonds may fuel mortgage growth and consequently house prices, exacerbating housing bubble concerns. However, covered bonds have been successful in many markets (see Figure 33) and, as seen in Australia, may be embraced in more markets given the more difficult funding challenged faced by banks in the post-crisis world.

- Tax breaks on deposits would increase the attractiveness of these to investors; this has been also recommended in a recent tax review in Australia, but was significantly watered down by the government to have minimal impact. As discussed in section 0, Korean individuals allocated approximately 23% of their assets into cash and deposits in 2009. Increasing this by just 3.5% – equivalent to levels seen before 2004 – would close the stable funding gap, even assuming that all the additional deposits were “less-stable”, at-call deposits. Of course, a major drawback with this option is the foregone tax revenue; tax increases would likely have to be made elsewhere to offset the lost revenue. Whilst this may be economically good policy, as discovered in Australia, changes to taxation can become extremely political and therefore it may be a difficult on the part of Korean policy makers to convince the public of its merit.

Such actions may not necessary in order for Korean banks to remain compliant in the Basel III world. However, any actions taken to ease the impact on banks and adjacent industries will improve Korea’s positioning as a financial sector and may ultimately have benefits for the wider economy. On the other hand, the cost of Basel III must ultimately be borne by someone; where policy makers intervene to reduce the burden on banks, the cost will be passed onto taxpayers. Therefore there is an important cost-benefit analysis policy makers must carry out for each of these possible responses and for any other actions under consideration.

8.6. Implications for ICAAP and SREP

At a high level, the Internal Capital Adequacy Assessment Process (ICAAP) and Supervisory Review and Evaluation Process (SREP) are very similar in objective, with the former being the internal version and the latter the external version of a process surrounding a holistic assessment of the bank's capital adequacy. Even under Basel II, banks are already required to assess their overall capital adequacy in relation to their risk profile and have a strategy for maintaining their capital levels. In addition, they are required to have a comprehensive assessment of risk types, with liquidity

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risk as one of the explicitly stated risk types. Viewed from this perspective, the proposed Basel III regulations on capital and liquidity adequacy thus do not add substantially to the existing Basel II requirements in spirit; banks and supervisors should continue to use ICAAP and SREP to examine capital and liquidity adequacy implications of not just stress tests but also planned changes such as acquisitions, balance sheet restructurings, major strategic moves, etc..

The formalization of the new rules will, however, affect the process and adequacy benchmarks for ICAAP and SREP, in particular where the following two key changes are concerned

- More prescriptive capital levels from higher Tier 1 ratio, explicit leverage ratio and prescribed capital buffers
- Explicit stressed liquidity adequacy considerations

Due to the silo-ed and compliance-focused nature of some ICAAP functions, banks may, at least in the short term, find it convenient to separate their ICAAP from the strategic balance sheet management issues raised Basel III; we have observed this in several European banks. Supervisors should make it a priority to encourage banks to fully incorporate the strategic balance sheet thinking prompted by Basel III into their ICAAP; in order to do so, some supervisors may find it necessary to revise current ICAAP frameworks to explicitly include the new capital and liquidity requirements of Basel III.

### 8.6.1. More prescriptive capital levels

With the higher Tier 1 ratio coupled with more stringent capital quality requirements, it becomes more important to consider the Tier 1 ratio as an explicit metric for ICAAP and SREP (rather than just the total capital ratio as many banks may have done in the past) as the Tier 1 will become more of a binding constraint for most Korean banks under adverse scenarios. Moreover, the leverage ratio also sets a floor capital requirement against credit exposure independent of the economic benefits of maintaining a book of lower risk borrowers and products and having more diversified portfolios.

The higher capital requirements may also have some methodology implications. For banks that adopt a bottom up approach to economic capital requirements by risk types, the impact would be minimal since the total economic capital requirements would simply be compared against a higher regulatory capital requirement. For banks that start with the regulatory capital requirements and include an add-on for certain risk types, then the higher starting point would of course affect the calibration of the required add-on.
However, the bigger conceptual change comes from the introduction of the capital conservation buffer and the countercyclical buffer. Instead of just ensuring that the bank remains solvent under stressed conditions, the capital conservation buffer makes explicit that the bank should now maintain at least a 6% Tier 1 ratio under such stressed conditions (assuming the buffer wears down completely), and 8.5% under normal conditions (if the bank is able to support a full 2.5% buffer). In addition, the countercyclical buffer means that banks will need to be prepared to further raise capital levels to 11% should local supervisors be concerned about an economic bubble. This in essence prescribes the minimum standard for banks to manage capital levels across the cycle.

Figure 53: Capital requirements across the cycle

Basel III creates some important decisions for regulators in SREP in this regard. The first few concern the systemic aspect of the countercyclical buffer
At what point is the introduction of a countercyclical buffer appropriate, and what should it be? In addition to having a mandate for micro-prudential regulation, supervisors now have a tool for macro-prudential supervision. Bank capital buffers now represent a tool for controlling the economy which sits alongside existing monetary and fiscal policy. Therefore, whilst the BCBS has published guidelines\(^52\) outlining five key principles for setting the buffer, supervisors will need to consider the interaction with these and arrive at a decision in conjunction with central banks and finance ministries. This will be a decision based on several factors including GDP growth, asset price growth, credit growth, CDS spreads and other metrics.

Under what conditions will the requirement that banks hold a countercyclical buffer be relaxed? In the case where a recession has occurred and losses suffered, it would be a comparatively straightforward condition. However, if the market simply appears to be no longer over-heated, there is less clarity as to when and how fast the buffer could prudently be released, especially in light of the 12-month lead time required to raise the buffer again.

To what extent should regulators disclose their view of market conditions and rationale for setting the countercyclical buffer levels? There is an expectation within the principles of the Basel III regulations that regulators provide regular, periodic (e.g. annual) updates on the market outlook and the signals that they employ in order to provide greater certainty and stability in the market which is desirable. However, excessive transparency can be challenging both because opinions will clearly differ on the outlook (across government bodies that have different emphasis and concerns, and between regulators and banks) and may become distracting by creating a macroeconomic outlook forecasting burden for the regulators and the need to defend the outlook to the banking sector.

On the other hand, the fact that the Basel III capital buffers are mostly intended to apply at a system-wide level means supervisors who prefer a more granular approach will face additional decisions.

As the new capital buffers come into play, how should regulators recalibrate their expectations on appropriate capital buffer levels? Supervisors will need to take into account the fact that banks are now required to hold a 2.5% capital conservation buffer above minimum requirements. Additional recalibration will be needed to consider the fact that internationally active banks will effectively be subject to a weighted average of the countercyclical buffers in the host jurisdictions of their credit exposures.

In the event that a countercyclical buffer is put in place, how should additional Pillar 2 buffers be reduced to avoid “double-counting”? The guidelines for operating the countercyclical buffer indicate that current Pillar 2 buffers put in place due to systemic issues should be effectively replaced by the countercyclical buffer. However, Pillar 2 buffers for

\(^{52}\) BCBS, *Guidance for national authorities operating the countercyclical capital buffer*, 16 Dec 2010
bank-specific issues such as concentration risk should continue to apply on top of any countercyclical buffer

- How should regulators view segment-specific cycles and the capital requirements of specialized banks? The countercyclical buffers are targeted at the macroeconomic level and the buffers should be applied to all banks simultaneously. However, industry cycles differ and banks do not have the same portfolio composition, especially amongst specialized banks. There may therefore be some confusion as to what the appropriate treatment would be for a specialized bank that is particularly exposed to an over-heating segment (e.g. commercial property), whether this warrants a bank-specific countercyclical buffer requirement or to require an analogous requirement under Pillar 2 ICAAP. The UK Financial Services Authority (FSA) has addressed a similar question by introducing bank-specific capital planning buffers (CPB); see case study below

- How should regulators determine domestic (or global, if applicable) SIFIs, and how stringent should these additional SIFI requirements be? And, if imposed, how should these additional SIFI requirements interact with other Pillar 2 capital buffers, e.g. the countercyclical buffer and bank – or segment-specific buffers? As we have discussed in section 4.7 (and will discuss again in the context of additional regulatory changes in chapter 9), the international standards for SIFIs under the Basel III framework have yet to be finalized; however, some supervisors have already begun to implement additional SIFI regulations in their own jurisdictions to preempt the spread of the potential systemic risks posed by these institutions. Notably, the Swiss Financial Market Supervisory Authority (FINMA) has imposed, for UBS and Credit Suisse, a 10% common equity requirement and 19% total regulatory capital requirement, where contingent convertible bonds are allowed up to 3%.53 While the SIFI issue is particularly salient in Switzerland – UBS and Credit Suisse each have balance sheets larger than the Swiss GDP, and both are expected to qualify as Global SIFIs – and the FINMA does have a reputation for taking the lead on financial regulatory reform, SIFI regulation will become increasingly relevant for supervisors in other jurisdictions too

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53 FINMA, Commission of Experts submits package of measures to limit “too big to fail” risks, 4 Oct 2010; Hildebrand, Philipp, Follow the Swiss lead to avoid another Lehman, Financial Times, 5 Oct 2010
Case study: The FSA capital planning buffer

In September 2010, the UK Financial Services Authority (FSA) updated its policy on capital planning buffers (CPBs) as part of its stress testing framework. The CPB, like the Basel III capital buffers, is intended as a Pillar 2 buffer that can absorb losses in times of stress (due to events outside the bank’s immediate control) and ensure that banks can meet minimum capital requirements at all times. However, the CPB differs from the Basel III buffers in that it is a firm-specific approach, and is to be determined based on firm-level analysis of fluctuations in capital resources and requirements. We compare key aspects of the buffers in the table below.

Table 27: Basel III capital buffers vs. FSA capital planning buffer

<table>
<thead>
<tr>
<th>Buffer scope</th>
<th>Basel III countercyclical and capital conservation buffers</th>
<th>FSA capital planning buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting the buffer (size and timing)</td>
<td>Determined (in the case of the countercyclical buffer) by the supervisor based on macroeconomic indicators</td>
<td>Determined by the bank based on analysis of its own capital resources vs. requirements, with supervisory dialogue</td>
</tr>
<tr>
<td>Drawing down of the buffer</td>
<td>Bank-specific drawdown beyond supervisory allowance will incur prescribed consequences on capital conservation requirements (see Table 4)</td>
<td>Bank to notify supervisor of drawdown; supervisor to intervene when deemed necessary</td>
</tr>
</tbody>
</table>

Although the FSA has yet to converge on a few aspects of the CPB – in particular, it has yet to resolve how the CPB would be harmonized with the Basel III buffers, though it has stated that the CPB is not intended to be additive to any internationally agreed capital buffers – the underlying considerations of the CPB highlights the difficulty in balancing between the use of a (macro) system-wide buffer as provided by Basel III vs. more focused (micro) tools that are tailored to certain bank portfolio compositions or even specific to individual banks.

8.6.2. Stressed liquidity adequacy

While liquidity risk is an explicitly stated risk type to consider under Pillar 2 (and hence a consideration under ICAAP and SREP), there is no explicit requirement on how this should be conducted (see case study below for a brief history of the liquidity adequacy framework). Traditionally, many banks have relied on ad hoc analyses to segment their deposit base into core deposits and volatile deposits to better understand their liquidity positions; however, deposits are often classified according to run-off assumptions based on patterns observed during good times rather than under stressed conditions. The proposed run-off rates under Basel III now provide a set of regulatory parameters that can be used for understanding the bank’s liquidity adequacy under stressed conditions. In addition, the monitoring standards will mean that banks need to report to their supervisors a variety of other metrics – e.g. cash-flow mismatches – which should also be incorporated into their Pillar 2 processes. For banks that have already been modeling their liquidity positions under stressed run-offs, the proposed parameters would have a relatively minor methodology impact and instead represents a recalibration exercise only.

FSA, PS10/14: Capital planning buffers: Feedback on CP09/30 and final rules, Sep 2010
Case study: The FSA Individual Liquidity Adequacy Standards (ILAS)

Liquidity risk management is not a new concept; the Australian Prudential Regulatory Authority (APRA) had published such standards as early as 2000. However, the Global Financial Crisis brought liquidity adequacy to the forefront of regulatory concerns, following which supervisors across the globe began to seek to establish such a framework through a series of regulatory efforts. Notable developments include a revised “Prudential standard APS 210 – Liquidity” from APRA in January 2008, the “Principles for sound liquidity risk management and supervision” by BCBS in September 2008, and the “Strengthening liquidity standards” policy statement by the FSA in October 2009. The ideas put forth in these documents were very much taken into account in the discussions preceding the Basel III liquidity rules finalized in December 2010, which constitute the most comprehensive liquidity adequacy framework to date.

Among these various developments, the Individual Liquidity Adequacy Standards (ILAS) introduced in the FSA’s October 2009 statement are of particular interest due to the consistency with the existing ICAAP and SREP frameworks. The ILAS includes the Individual Liquidity Adequacy Assessment (ILAA), analogous to ICAAP as shown in the table below, and the Supervisory Liquidity Review Process (SLRP), the liquidity version of SREP.

### Table 28: FSA ILAA vs. ICAAP

<table>
<thead>
<tr>
<th>ILAA</th>
<th>ICAAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Assessment of liquidity risk and mitigation by firm</td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td>Adequacy of management processes and liquidity resources – qualitative and quantitative</td>
</tr>
<tr>
<td><strong>Quantitative</strong></td>
<td>Sets out an assessment of liquidity buffer required by the firm</td>
</tr>
<tr>
<td><strong>FSA interface</strong></td>
<td>Feeds into the SLRP process. Ongoing monitoring against Individual Liquidity Guidance (ILG) via regulatory reporting</td>
</tr>
<tr>
<td><strong>Stress testing</strong></td>
<td>Liquidity stress testing policies, process, and methodologies. Three prescribed scenarios: idiosyncratic, market-wide, and combination</td>
</tr>
</tbody>
</table>

Source: FSA, ILAA Workshop, 17 Jun 2010

1. The Individual Capital Guidance (ICG) refers to the FSA’s articulation of a bank’s Pillar 2 capital buffer requirement based on results from SREP. The proposed Individual Liquidity Guidance (ILG) refers to the analogous liquidity requirement.

The ILAS is due for calibration soon, while parts of it may undergo change, we expect that the general framework is here to stay. Moreover, its use by the FSA highlights the importance of liquidity risk, and the need to think of liquidity adequacy (rather than just capital adequacy) under the cross-risk types of stress test scenarios.

Although the prescriptive nature of the Basel III stressed liquidity framework somewhat reduces the need for supervisory review, supervisors will have to consider the following implications:

- The liquidity ratio and monitoring tool submissions will provide supervisors with a standardized set of data to allow better comparison across institutions and, if supervisors coordinate, jurisdictions.

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55 APRA, Prudential Standard APS 210 – Liquidity, Sep 2000
56 FSA, Liquidity calibration statement, 18 Nov 2010; FSA, Liquidity calibration statement Q&A, 18 Nov 2010
Supervisors’ assumptions of stressed outflows can now be informed by the LCR parameters in addition to their own assumptions; in other words, the Basel III liquidity standards provide an additional level of comfort.

- Supervisors will need to determine, and revise as necessary, the monitoring tools required to be reported by banks. Whilst we would anticipate a standardized list as per the liquidity standard (see section 4.9), this will be adapted and ad hoc measures reported as the macroeconomic situation changes. This does not represent a significant departure from current practices apart from the creation of an initial, standardized requirement.

### 8.6.3. Summary

We have so far discussed some of the decisions that supervisors will face due to the more prescriptive capital levels and the stressed liquidity adequacy considerations of Basel III. Given that some aspects of Basel III are currently still under debate, we expect the list of these decisions to evolve as the regulations take on their final shape. And as we have seen through case studies, some supervisors have chosen to take matters into their own hands and fill in where gaps exist in the unfolding new regulatory framework; the list of decisions will change to reflect such actions as well.

### 8.7. Conclusion

As discussed in this chapter, the FSS and other Korean policy-makers have many decisions to make which will directly impact the extent of the burden on the banking system. There are several elements where the Basel III regulations call for local supervisor discretion, and where the FSS will have to determine its own parameters or treatments in the Korean version of the regulation. Additionally it must decide on the timing of the regulation, how to harmonize its existing liquidity rules with the new regulation and how to treat the specialized banks relative to the commercial banks. Finally, decisions are available to other Korean policy makers to ease the burden on banks should the outcome be worse than expected.

As discussed in section 8.1, the local supervisor discretion outlined by the Basel committee has limited potential to ease the burden on banks, but local supervisors may enforce stricter regulation where desired. Given the current positioning of the banks, any stricter requirements – e.g. liquidity ratios above 100%, or accelerating the timing of the implementation – would create a significant burden on the banks. Softening the regulations, on the other hand, will ease the pain for the commercial banks but the specialized banks will continue to suffer. Likewise, actions taken by other policy makers could ease the burden on the system, but may not solve the problem for the specialized banks. The actions taken in relation to the specialized banks, therefore, will be a key decision for the FSS and other Korean policy-makers.

Finally, the ongoing monitoring of banks by the FSS will also need to change as a result of the regulation. The regulations provide greater clarity over
acceptable levels of capital at various points in the economic cycle; on the other hand, the FSS will take on macro-prudential supervisory responsibilities in relation to capital adequacy. In additional to its current measures, it will have to monitor stressed liquidity metrics and new monitoring tools for liquidity. The regulations are likely to require additional resources due to the increased level of monitoring but will improve the ability of the FSS to execute its dual roles of ensuring bank solvency and improving system stability.
9. Additional regulatory changes

At the Seoul meeting in November, the G20 agreed on a large agenda of financial supervisory reforms aimed at addressing the shortcomings identified during the crisis (and discussed above in section 3.2). This agenda included ratifying and implementing Basel III and a number of reforms which extend or complement the Basel III changes (e.g. the creation of central clearing houses, which will help banks meet the new CCR requirements) but also some recommendations aimed at ensuring that banks continue to play a role in providing credit to the economy. As the latter can conflict with the soundness and stability principles of capital supervision, the FSS and other policy makers will need to find the right balance in applying the different rules.

In the following section, we briefly discuss the other components of the G20 Seoul agreement and their impact on Korean financial institutions.

Firstly, there are several regulatory issues which will have a direct impact on banks and other financial institutions.

- Stricter regulation for those institutions deemed to be Systemically Important Financial Institutions (SIFIs). This was mentioned in the original Basel III documents but the specific rules for both designating SIFIs and the extra requirements for them will not be announced until later this year. The process is being led by the FSB with assistance from the BCBS, with the following priorities identified:
  - First, and foremost, improvements to resolution regimes to ensure that any financial institutions can be resolved without disruptions to the financial system and without taxpayer support
  - Second, a requirement that SIFIs, and particularly Global SIFIs (G-SIFIs), have additional loss absorption capacity beyond the Basel III standards to reflect the greater risks that these institutions pose to the global financial system
  - Third, more intensive supervisory oversight for financial institutions which may pose systemic risk
  - Fourth, stronger robustness standards for core financial infrastructure to reduce contagion risks resulting from the failure of individual institutions
  - Fifth, peer review by an FSB Peer Review Council of the effectiveness and consistency of national policy measures for G-SIFIs, beginning by end-2012.

- Standard for sound compensation. Developed by the FSB, the standard covers: governance, including the composition of the Board compensation committee and its relationship with the risk committee; the requirements for risk staff bonuses to be independent of business unit performance; the requirement for adequate capital to be retained

\[57\] Financial Stability Board, [www.financialstabilityboard.org](http://www.financialstabilityboard.org)
as a priority over bonus payments; the requirements for variable compensation to be risk-adjusted for capital and liquidity risk, partially paid on a deferred basis and mostly comprised of equity or equity-linked instruments; disclosure requirements; and requirements for supervisors

- Convergence of international accounting standards between the International Accounting Standards Board and the US Financial Accounting Standards Board, due to be completed by the end of 2011

- OTC derivatives market reforms, led by the FSB. Its report in October highlighted the following priorities
  - Greater standardization, encouraged through introducing incentives and, where appropriate, regulation
  - Central clearing of all standardized derivatives in order to mitigate systemic risk, addressing mandatory clearing requirements; risk management requirements for the remaining non-centrally cleared markets; and supervision, oversight and regulation of CCPs
  - An analysis by the International Organization of Securities Commission (IOSCO) by end-January 2011 identifying the actions that may be needed to fully achieve a the desired level of central clearing
  - Comprehensive, reliable and uniform reporting of all OTC derivatives transactions to trade repositories to allow authorities to better monitor the market

Overall, we think the impact of these on banks' balance sheets and business activities and the consequent impact on other financial institutions will be modest relative to the issues discussed in chapters 6 and 7. However, there will be a significant compliance burden, which will place a temporary drain on resources and compete with Basel III for management attention.

The SIFI standards will potentially have a significant impact on some financial institutions. They will affect all financial institutions deemed to be systemically important in two main ways. Firstly, an additional compliance burden which will add some cost but is unlikely to be a significant drain in the long term (though upfront systems investments may be required). Secondly, the requirements for greater loss-absorbing capacity of SIFIs may mean there will be restrictions on non-common equity capital, including subordinated debt. The cost of issuing such instruments will rise for SIFIs relative to non-SIFIs and result in lower profitability or balance sheet restructuring. Korean banks in general have strong capital ratios and a large proportion of common equity capital, meaning the impact should be relatively mild relative to banks in some peer markets. In addition, while the national banks may be considered SIFIs in a Korean context – to be determined by Korean policy makers – they are unlikely to be listed as G-SIFIs, which are likely to have stricter rules enforced upon them. We note that Citi and Standard Chartered are likely to appear on the G-SIFI list, and therefore they may be at a relative disadvantage, depending on how the rules cascade to subsidiaries.

The compensation standards will affect all banks, and more or less describe best practice governance and incentives when it comes to compensation.
This may require minor adjustments but is unlikely to result in significant changes that will affect the relative competitiveness of banks or the economy more generally.

Convergence of accounting standards will make financial institutions across the world more comparable with US institutions. Korean banks are already adopting K-IFRS and are dedicating significant resources to this. Whilst we do not expect the convergence with US standards to have a significant impact, the ongoing K-IFRS initiative itself will continue to place a substantial compliance burden on banks. As Basel III will also require a significant commitment of finance resources, these two regulatory reforms will compete for internal resources and management attention.

As discussed in section 7.2, the OTC derivatives reforms will ensure that only large, well capitalized institutions will have access to the central clearing house. Therefore, a business opportunity will emerge for those CCP member banks to perform clearing services on behalf of other institutions. Combined with the requirement for better management of non-centrally cleared counterparty credit risks, this will result in investment by banks in their CCR systems, which will be recouped in lower capital requirements and potentially additional revenue through clearing services. These banks will also have to conform to the standards required to be a CCP member, though we do not foresee this being a significant burden on Korea’s largest banks.

There are other implications for the FSS and policy makers in addition to supervision of the additional financial institution requirements discussed above. Many of these involve systemic issues, requiring input from various policy making bodies, and coordination with international bodies such as the IMF and FSB.

- Initiatives to support SMEs, given their important role in economic development; this creates a dilemma for the FSS and FSC in implementing the Basel III standards across all banks. In particular, IBK supports the SME segment. As noted in Figure 18, however, it has a much higher loan to deposit ratio – and, consequently, a larger stable funding gap – than other Korean banks

- Proposals to aid emerging economies, fight protectionism and promote trade and investment. In particular these initiatives include the availability of trade finance to emerging markets. This will be a consideration for the FSS in its setting of the LCR and NSFR parameters for trade finance, which we discussed in section 0

- International assessment and peer review of national implementation conducted by the IMF and FSB, and identification of non-cooperative jurisdictions; the FSS will need to coordinate with the IMF, FSB and other national supervisors in its implementation of Basel III and other standards. However, given the good alignment of Korean standards with Basel II currently, we do not anticipate this will cause issues for the FSS or Korean banks

- IMF reforms and foreign exchange controls. Finally, coordination will be needed between the FSS, FSC, BOK and international bodies on the IMF reforms. These include governance, surveillance, strengthened global safety nets (i.e. credit and liquidity lines), less currency intervention by
central banks (in particular competitive devaluation) and greater vigilance against currency volatility, in order to mitigate the excessive volatilities of flows into emerging markets.

Finally, there are particular items which still require work throughout 2011 and beyond, on whose impact we can only speculate:

- **Consumer protection.** This has only been implemented locally thus far (e.g. in the US Dodd-Frank legislation) but the FSB will report prior to the next G20 summit on recommendations including disclosure, transparency and education; protection from fraud, abuse and errors; and recourse and advocacy. This will require action by banks and the FSC.

- **Regulation of the shadow banking sector.** The FSB will provide recommendations on regulation for the shadow banking sector by mid-2011. Clearly, removal of regulatory arbitrage will allow greater competitiveness of banks relative to securities firms, insurers, hedge funds etc. and potentially greater consolidation of activities within banks as a result. New resources are likely to be needed within the FSS to monitor the additional activities, and those responsible will need to coordinate with banking supervisors to ensure consistency and fairness.

- **Further work on macro-prudential policy frameworks:** the FSB, IMF and BIS are to conduct further work on these frameworks, including tools to mitigate the impact of excessive capital flows. The FSS, FSC, BOK and other Korean policy makers will need to consider these frameworks in their ongoing discussion of macro-prudential supervision, as discussed in section 8.6.
10. Final remarks

Whilst we have seen that the impact of Basel III on the Korean banks will be relatively modest at the system level and for the economy more broadly (at least when compared to some other markets such as Japan) the impact on some individual banks will be significant. Banks will need to take swift action to respond effectively to this regulation, and given the increased competitive pressure this regulation is likely to have across financial institutions, early mover advantages will be significant while procrastination might adversely affect laggard banks.

Korean banks will need to rethink their balance sheet structures and develop their strategies and business plans with explicit consideration of their balance sheet impact. Strategies will need to be sought that reduce requirements for additional stable funding and liquid assets. The term of wholesale funding will need to be increased, deposit structures will need to be strengthened, necessitating enhanced deposit gathering initiatives, and a greater amount of High Quality Liquid Assets will need to be held, putting banks in more direct competition with insurers.

Aside from a review of strategy and business plans, Korean banks will need to enhance their finance and risk management activities, with Treasury finding a greater leadership position in business planning, funding strategy and strategic balance sheet management. Whilst many banks might content themselves with Basel III compliance, we foresee that banks integrating finance and risk more strongly into strategy and planning will be relatively strengthened as they are more likely to derive long-term sustainable and profitable business strategies.

The FSS, FSC and other policy makers will be pressed to make hard choices as to how to apply the leeway that Basel III regulation provides, as their actions can greatly influence the overall impact of the new rules on Korean banks’ financial prospects; these choices are therefore likely to affect the shape of the Korean financial services landscape going forward. For one, Korean policy makers will have an immediate need to harmonize existing liquidity rules with the new Basel liquidity regulation; they will also need to set the countercyclical capital buffer, an important macroeconomic decision which will require coordination between various policy makers. Finally, they will need to acknowledge the fact that the policy mandates of specialized banks mean they will be more impacted by Basel III than the commercial banks, and that these mandates might ultimately be undermined unless action is taken.
Appendix A.  Glossary

ASF: Available Stable Funding
BCBS: Basel Committee for Banking Supervision
BIS: Bank for International Settlements
BOK: Bank of Korea
CCF: Credit Conversion Factor
CCP: Central Counterparties
CCR: Counterparty Credit Risk
CE: Common Equity
CVA: Credit Valuation Adjustment
DCM: Debt Capital Markets
EPE: Expected Positive Exposure (counterparty credit risk)
FI: Financial Institution
FISIS: Financial Statistics Information System
FS: Financial Services
FSA: Financial Services Authority (UK)
FSS: Financial Supervisory Service
FSC: Financial Services Commission
GFC: Global Financial Crisis
HQLA: High Quality Liquid Asset
IMM: Internal Model Method (counterparty credit risk)
ICAAP: Internal Capital Adequacy Assessment Process
LC: Letter of Credit
LCR: Liquidity Coverage Ratio
LDR: Loan to Deposit Ratio
MAG: Macro-economic Analysis Group
NSFR: Net Stable Funding Ratio
OBS: Off Balance Sheet
OTC: Over The Counter (non-traded derivatives transactions)
PSE: Public Sector Entity
QIS: Quantitative Impact Study
RWA: Risk Weighted Asset
RSF: Required Stable Funding
SIFI: Systemically Important Financial Institutions
SME: Small and Medium Enterprise
SREP: Supervisory Review and Evaluation Process
Appendix B. Further reading

Basel III documents by BCBS

Final documents
- Basel III: A global regulatory framework for more resilient banks and banking systems, Dec 2010
- Basel III: International framework for liquidity risk measurement, standards and monitoring, Dec 2010
- Guidance for national authorities operating the countercyclical buffer, 16 Dec 2010

Consultative documents yet to be finalized
- Countercyclical capital buffer proposal, 16 Jul 2010
- Proposal to ensure the loss absorbency of regulatory capital at the point of non-viability, 19 Aug 2010
- Capitalization of bank exposures to central counterparties, 20 Dec 2010

“Basel II.5” documents
- Revisions to the Basel II market risk framework, Jul 2009
- Guidelines for computing capital for incremental risk in the trading book, Jul 2009
- Amendments to the Basel II market risk framework announced by the Basel Committee, 18 Jun 2010

Background to the financial crisis
- OECD, The financial crisis: reform and exit strategies, Sep 2009

**Quantitative impact studies**

- BCBS, *Results of the comprehensive quantitative impact study*, 16 Dec 2010
- CEBS, *Results of the comprehensive quantitative impact study*, 16 Dec 2010
- FSS, *바젤 III 규제영향평가 결과 및 파급영향*, 16 Dec 2010

**Macroeconomic impact assessments**

- Fédération Bancaire Française, *FBF comments on the consultative documents published by the BCBS*, 16 Apr 2010
- La Caixa, *The impact for Spain of the new banking regulations proposed by the Basel Committee*, 14 Jun 2010
- IIF, *Interim report on the cumulative impact on the global economy of proposed changes in the banking regulatory framework*, Jun 2010
- Bank Austria, *Lehren aus der Krise, neue Herausforderungen*, 16 Jul 2010
- BIS Macroeconomic Assessment Group, *Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements – Final report*, 17 Dec 2010

**Additional regulatory changes**

- BCBS, Principles for sound liquidity risk management and supervision, Sep 2008
- BCBS, Principles for sound stress testing practices and supervision, May 2009
- FSA, PS09/16: Strengthening liquidity standards: including feedback on CP08/22, CP09/13, CP09/14, Oct 2009
- FSA, PS09/20: Stress and scenario testing: feedback on CP08/24 and final rules, Dec 2009
- FSA, Individual Liquidity Adequacy Assessment (ILAA) Workshop, 17 Jun 2010
- U.S. Senate Committee on Banking, Housing, and Urban Affairs, Brief summary of the Dodd-Frank Wall Street Reform and Consumer Protection Act, Jul 2010
- U.S. Senate Committee on Banking, Housing, and Urban Affairs, Summary: Restoring American Financial Stability, Jul 2010
- FSA, PS10/14: Capital planning buffers: feedback on CP09/30 and final rules, 24 Sep 2010
- FINMA, Final report of the Commission of Experts for limiting the economic risks posed by large companies, 30 Sep 2010
- FSS 거시감독국, G20 금융규제 논의결과 및 정책적 시사점, Nov 2010
- Oliver Wyman, The Future of Asian Banking Volume 1: The Shaken and the Stirred: How regulation and economic policy will transform Asian banking, 7 Dec 2010
- SIFMA and Oliver Wyman, The Volcker Rule: Considerations for implementation of proprietary trading regulations, 22 Dec 2010

Presentations from conference “G20 서울 정상회의 이후 국내 금융규제 환경 변화” in Seoul, 7 Dec 2010
- IMF, Challenges facing supervision
- FSS 거시감독국, G20 이후 국내 금융감독 강화방안
- Korea Institute of Finance, G20 금융규제 개혁의 주요 내용과 국내은행에 대한 영향
- Korea Capital Market Institute, 자본시장 부문의 규제환경 변화와 향후 정책방향
- Korea Insurance Research Institute, G20 금융규제 개혁과 보험산업의 대응
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