

# INTERNATIONAL FINANCE SPRING 2014

## CROSS BORDER FINANCIAL REGULATION: CAPITAL ADEQUACY

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The Basel Committee on Banking Supervision (Basel Committee) was established by the central banks of the G10 countries<sup>2</sup> in 1974 after Bankhaus Herstatt and the Franklin National Bank of New York suffered large foreign exchange losses.<sup>3</sup> The work of the Committee led to the development of the Basel Committee's Core Principles for Effective Banking Supervision (included in Chapter 4 of the Course Materials). Capital Adequacy is a significant component of the Basel Committee's work, and Principle 16 addresses capital adequacy and states:

The supervisor sets prudent and appropriate capital adequacy requirements for banks that reflect the risks undertaken by, and presented by, a bank in the context of the markets and macroeconomic conditions in which it operates. The supervisor defines the components of capital, bearing in mind their ability to absorb losses. At least for internationally active banks, capital requirements are not less than the applicable Basel standards.

The concept of bank capital is related to the concept of debt-equity ratios in non-financial firms. Firms can finance their activities through raising equity capital (issuing shares), through issuing debt securities or borrowing money or through reinvesting profits. Shareholders receive dividends only if the firm makes profits (and the Board of Directors decides to pay dividends) whereas interest payments are a business expense. In a liquidation lenders and holders of debt securities will receive the principal they are owed before the shareholders receive any funds. Equity capital functions as a cushion to protect creditors. Capital adequacy has been a focus of domestic bank regulation, and is an important aspect of prudential regulation or supervision. Bank supervisors use capital as a component of assessing bank safety and soundness: CAMELS ratings for banks, invented in the US in the 1970s as part of the US regulators' Uniform Financial Institutions Rating System and exported to other jurisdictions, focus on Capital adequacy, Asset quality, Management administration, Earnings, Liquidity and Sensitivity

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<sup>2</sup> Belgium, Canada, France, Italy, Japan, the Netherlands, the United Kingdom, the United States, Germany, Sweden, and Switzerland. Luxembourg is an associate member.

<sup>3</sup> BIS, A Brief History of the Basel Committee (Jul. 2013) at <http://www.bis.org/bcbs/history.pdf> .

to Market Risk.<sup>4</sup> The aim of the CAMELS ratings (which are not publicized)<sup>5</sup> is to identify those banks which are at risk of failure. But domestic regulators' approach to capital adequacy may vary: the Basel standards are designed to harmonize approaches to capital adequacy. Originally, at least in part, the harmonization of capital adequacy standards was designed to level the playing field between banks in different jurisdictions:<sup>6</sup> the US and the UK felt that Japanese banks, which were not subject to capital adequacy requirements but which did benefit in the 1980s from a state guarantee, were competing unfairly with US and UK banks which were subject to capital adequacy requirements and which did not have the same guarantee from their home states. As a practical matter after the Accord was implemented the markets wanted US and UK banks to hold more capital than Japanese banks because Japanese banks still benefitted from a state guarantee. Subsequently Japan changed this policy and did allow banks to fail.

US banks have been required to maintain a proportion of deposits as reserves as cash or as deposits with the Federal Reserve, although over time banks developed ways of reducing the impact of reserve requirements ( for example, eurodollar deposits were not subject to reserve requirements and banks developed sweep accounts domestically to limit the impact of reserve requirements). A simple reserve requirement like this is designed to require a proportion of the deposits a bank takes in to be put in safe assets (cash and deposits with the federal reserve) rather than being used in risky activities such as bank lending (note that from the perspective of a bank a loan to a customer is an asset which produces revenue). But a reserve requirement focuses on holding back a proportion of deposits from being lent on. A capital adequacy requirement focuses on the relationship of capital (equity investments by shareholders) to bank assets (such as loans).

The Basel Capital Accord, which was approved by the Governors of the central banks of the G10 countries in 1988, mandated a minimum ratio of **capital to risk-weighted assets** of 8% for internationally active banks. A bank which held \$100 of assets risk-weighted at 100%

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<sup>4</sup> See, e.g., Federal Reserve Board Press Release, Dec. 1996 at <http://www.federalreserve.gov/BoardDocs/press/general/1996/19961224/default.htm>.

<sup>5</sup> Interagency Advisory on the Confidentiality of the Supervisory Rating and Other Nonpublic Supervisory Information (Feb. 28, 2005) at <http://www.fdic.gov/news/news/press/2005/pr1805a.html> .

<sup>6</sup> See, e.g., BIS, A Brief History of the Basel Committee at p 2 ("There was a strong recognition within the Committee of the overriding need for a multinational accord to strengthen the stability of the international banking system and to remove a source of competitive inequality arising from differences in national capital requirements.")

would need to have at least \$8 of capital. A bank which held \$100 of assets risk-weighted at 50% would need to have at least \$4 of capital.

### The **1988 BASEL ACCORD**:

For internationally active banks, capital should equal at least 8% of risk weighted assets.

Note that different bank regulators could apply this requirement in different ways: some might apply an across the board 8% requirement and others might vary the level of capital required depending on their assessment of the riskiness of banks' activities. Generally the Accord allowed a lot of discretion in implementation, both because the standards were drafted in a way that allowed for flexibility in implementation and because they had no legal effect. The Basel capital adequacy standards are standards or statements of best practice rather than rules. As we have seen the transnational standard-setters, including the Basel Committee have become more concerned with the details of how different regulators have implemented the standards over time.<sup>7</sup>

### **Capital:**

The Accord distinguished between Tier 1 and Tier 2 capital.

**Tier 1 capital**, which was equity and equity-like capital, should represent at least 4% of the bank's capital. Equity-like capital could be perpetual non-cumulative preference shares and disclosed reserves (e.g. retained earnings).

Preference shares (which were not recognized in all jurisdictions) allow their holders to receive some sort of preferential dividend before the holders of common stock receive their dividends, but note that in order to count as Tier 1 capital these shares had to be perpetual (not redeemable, thus existing indefinitely like common stock) and non-cumulative (so that if in one year the holders did not receive dividends they would not be able to make up the missing dividends in a future year when dividends were paid).

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<sup>7</sup> Consider, e.g., the IMF/World Bank FSAP process, the Financial Stability Board's Peer Reviews, and the Basel Committee's Regulatory Consistency Assessment Programme (RCAP).

**Tier 2 capital** included hybrid (debt/equity) capital, loan loss reserves, and subordinated debt and should represent a maximum of 100% of Tier 1.

Loan loss reserves are problematic: they should represent reserves which are kept in case loans go bad, but might represent reserves set aside with respect to known losses or risks (in which case they should not really count as capital).

### **Risk Weightings:**

**0%** : (a) Cash; (b) Claims on central governments and central banks denominated in national currency and funded in that currency; (c) Other claims on OECD<sup>8</sup> central governments and central banks; (d) Claims collateralized by cash of OECD central-government securities or guaranteed by OECD central governments

**0, 10, 20 or 50%** (at national discretion): (a) Claims on domestic public-sector entities, excluding central government, and loans guaranteed by or collateralized by securities issued by such entities;

**20%** : (a) Claims on multilateral development banks and claims guaranteed by, or collateralized by securities issued by such banks; (b) Claims on banks incorporated in the OECD and claims guaranteed by OECD incorporated banks; (c) Claims on securities firms incorporated in the OECD subject to comparable supervisory and regulatory arrangements, including in particular risk-based capital requirements, and claims guaranteed by these securities firms; (d) Claims on banks incorporated in countries outside the OECD with a residual maturity of up to one year and claims with a residual maturity of up to one year guaranteed by banks incorporated in countries outside the OECD; (e) Claims on non-domestic OECD public-sector entities, excluding central government, and claims guaranteed by or collateralized by securities issued by such entities; (f) Cash items in process of collection

**50%** : (a) Loans fully secured by mortgage on residential property that is or will be occupied by the borrower or that is rented

**100%**: (a) Claims on the private sector (b) Claims on banks incorporated outside the OECD with a residual maturity of over one year; (c) Claims on central governments outside the OECD (unless denominated in national currency - and funded in that currency); (d) Claims on

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<sup>8</sup> Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

commercial companies owned by the public sector; (e) Premises, plant and equipment and other fixed assets; (f) Real estate and other investments (including non-consolidated investment participations in other companies); (g) Capital instruments issued by other banks (unless deducted from capital); (h) all other assets

**Contingent Liabilities:** credit conversion factors (which vary with the likelihood that the credit exposure will occur) were to be applied to determine credit equivalent amounts and these were then risk-weighted.

**Weaknesses of the Accord:**

- Risk weightings do not encourage banks to be careful about credit allocation, and are very rough
- The rules favor OECD entities
- Valuation issues : “Minimum capital requirements for banks are of little use if the accounting conventions used to value banks' assets are flawed.”<sup>9</sup>
- The rules may limit the amount of credit available, or at least affect who has access to credit
- The 1988 Accord only deals with credit risk (market risk was subsequently addressed).<sup>10</sup>
- People asked whether financial innovation should be driven by regulation rather than by customers' needs.
- There were doubts as to whether the Accord effectively harmonized prudential rules because of the scope for interpretation of the requirements and possibilities of difference in application.

In order to deal with some of the problems with the original Basel Accord the Basel Committee worked on refining the provisions of the Accord and, with the publication of proposals for amendment in 1999 and subsequent consultations in 2001 and 2003 and on the basis of assessments of the quantitative impact of the new standards, its work led to the development of

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<sup>9</sup> Andrew Crockett, Speech: International Standard Setting in Financial Supervision, (Feb. 5, 2003) at <https://www.bis.org/speeches/sp030205.htm>.

<sup>10</sup> Basel Committee, Amendment to the Capital Accord to Incorporate Market Risks (2005) at <http://www.bis.org/publ/bcbs119.pdf> .

**Basel II.**<sup>11</sup>**Basel II** focused on:

1. Minimum capital requirements, which sought to refine the measurement framework set out in the 1988 Accord.
2. Supervisory review of an institution's capital adequacy and internal assessment process.
3. Market discipline through effective disclosure to encourage safe and sound banking practices.

The Basel Committee wrote:<sup>12</sup>

The fundamental objective of the Committee's work to revise the 1988 Accord has been to develop a framework that would further strengthen the soundness and stability of the international banking system while maintaining sufficient consistency that capital adequacy regulation will not be a significant source of competitive inequality among internationally active banks. The Committee believes that the revised Framework will promote the adoption of stronger risk management practices by the banking industry, and views this as one of its major benefits. The Committee notes that, in their comments on the proposals, banks and other interested parties have welcomed the concept and rationale of the three pillars (minimum capital requirements, supervisory review, and market discipline) approach on which the revised Framework is based. More generally, they have expressed support for improving capital regulation to take into account changes in banking and risk management practices while at the same time preserving the benefits of a framework that can be applied as uniformly as possible at the national level.

In developing the revised Framework, the Committee has sought to arrive at significantly more risk-sensitive capital requirements that are conceptually sound and at the same time pay due regard to particular features of the present supervisory and accounting systems in individual member countries. It believes that this objective has been achieved. The Committee is also retaining key elements of the 1988 capital adequacy framework, including the general requirement for banks to hold total capital equivalent to at least 8% of their risk-weighted assets; the basic structure of the 1996 Market Risk Amendment regarding the treatment of market risk; and the definition of eligible capital.

A significant innovation of the revised Framework is the greater use of assessments of risk provided by

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<sup>11</sup> Basel II: International Convergence of Capital Measurement and Capital Standards: a Revised Framework (Jun. 2004) at <http://www.bis.org/publ/bcbs107.pdf> .

<sup>12</sup> Basel II: International Convergence of Capital Measurement and Capital Standards: a Revised Framework (Jun. 2004) at <http://www.bis.org/publ/bcbs107.htm> .

banks' internal systems as inputs to capital calculations. In taking this step, the Committee is also putting forward a detailed set of minimum requirements designed to ensure the integrity of these internal risk assessments. It is not the Committee's intention to dictate the form or operational detail of banks' risk management policies and practices. Each supervisor will develop a set of review procedures for ensuring that banks' systems and controls are adequate to serve as the basis for the capital calculations. Supervisors will need to exercise sound judgements when determining a bank's state of readiness, particularly during the implementation process. The Committee expects national supervisors will focus on compliance with the minimum requirements as a means of ensuring the overall integrity of a bank's ability to provide prudential inputs to the capital calculations and not as an end in itself.

The revised Framework provides a range of options for determining the capital requirements for credit risk and operational risk to allow banks and supervisors to select approaches that are most appropriate for their operations and their financial market infrastructure. In addition, the Framework also allows for a limited degree of national discretion in the way in which each of these options may be applied, to adapt the standards to different conditions of national markets. These features, however, will necessitate substantial efforts by national authorities to ensure sufficient consistency in application. The Committee intends to monitor and review the application of the Framework in the period ahead with a view to achieving even greater consistency. In particular, its Accord Implementation Group (AIG) was established to promote consistency in the Framework's application by encouraging supervisors to exchange information on implementation approaches.

The Committee has also recognised that home country supervisors have an important role in leading the enhanced cooperation between home and host country supervisors that will be required for effective implementation. The AIG is developing practical arrangements for cooperation and coordination that reduce implementation burden on banks and conserve supervisory resources. Based on the work of the AIG, and based on its interactions with supervisors and the industry, the Committee has issued general principles for the cross-border implementation of the revised Framework and more focused principles for the recognition of operational risk capital charges under advanced measurement approaches for home and host supervisors.

It should be stressed that the revised Framework is designed to establish minimum levels of capital for internationally active banks. As under the 1988 Accord, national authorities will be free to adopt arrangements that set higher levels of minimum capital. Moreover, they are free to put in place supplementary measures of capital adequacy for the banking organisations they charter. National authorities may use a supplementary capital measure as a way to address, for example, the potential uncertainties in the accuracy of the measure of risk exposures inherent in any capital rule or to constrain the extent to which an organisation may fund itself with debt. Where a jurisdiction employs a supplementary capital measure (such as a leverage ratio or a large exposure limit) in conjunction with the measure set forth in this Framework, in some instances the capital required under the

supplementary measure may be more binding. More generally, under the second pillar, supervisors should expect banks to operate above minimum regulatory capital levels.

The revised Framework is more risk sensitive than the 1988 Accord, but countries where risks in the local banking market are relatively high nonetheless need to consider if banks should be required to hold additional capital over and above the Basel minimum. This is particularly the case with the more broad brush standardised approach, but, even in the case of the internal ratings-based (IRB) approach, the risk of major loss events may be higher than allowed for in this Framework.

The Committee also wishes to highlight the need for banks and supervisors to give appropriate attention to the second (supervisory review) and third (market discipline) pillars of the revised Framework. It is critical that the minimum capital requirements of the first pillar be accompanied by a robust implementation of the second, including efforts by banks to assess their capital adequacy and by supervisors to review such assessments. In addition, the disclosures provided under the third pillar of this Framework will be essential in ensuring that market discipline is an effective complement to the other two pillars.

The Committee is aware that interactions between regulatory and accounting approaches at both the national and international level can have significant consequences for the comparability of the resulting measures of capital adequacy and for the costs associated with the implementation of these approaches. The Committee believes that its decisions with respect to unexpected and expected losses represent a major step forward in this regard. The Committee and its members intend to continue playing a pro-active role in the dialogue with accounting authorities in an effort to reduce, wherever possible, inappropriate disparities between regulatory and accounting standards.

The revised Framework presented here reflects several significant changes relative to the Committee's most recent consultative proposal in April 2003. A number of these changes have already been described in the Committee's press statements of October 2003, January 2004 and May 2004. These include the changes in the approach to the treatment of expected losses (EL) and unexpected losses (UL) and to the treatment of securitisation exposures. In addition to these, changes in the treatments of credit risk mitigation and qualifying revolving retail exposures, among others, are also being incorporated. The Committee also has sought to clarify its expectations regarding the need for banks using the advanced IRB approach to incorporate the effects arising from economic downturns into their loss-given-default (LGD) parameters.

The Committee believes it is important to reiterate its objectives regarding the overall level of minimum capital requirements. These are to broadly maintain the aggregate level of such requirements, while also providing incentives to adopt the more advanced risk-sensitive approaches of the revised Framework. The Committee has confirmed the need to further review the calibration of the revised Framework prior to its implementation. Should the information available at the time of such review reveal that the Committee's objectives on overall capital would not be achieved, the Committee is prepared to take



actions necessary to address the situation....

The Committee has designed the revised Framework to be a more forward-looking approach to capital adequacy supervision, one that has the capacity to evolve with time. This evolution is necessary to ensure that the Framework keeps pace with market developments and advances in risk management practices, and the Committee intends to monitor these developments and to make revisions when necessary. In this regard, the Committee has benefited greatly from its frequent interactions with industry participants and looks forward to enhanced opportunities for dialogue. The Committee also intends to keep the industry apprised of its future work agenda...

One area where the Committee intends to undertake additional work of a longer-term nature is in relation to the definition of eligible capital. One motivation for this is the fact that the changes in the treatment of expected and unexpected losses and related changes in the treatment of provisions in the Framework set out here generally tend to reduce Tier 1 capital requirements relative to total capital requirements. Moreover, converging on a uniform international capital standard under this Framework will ultimately require the identification of an agreed set of capital instruments that are available to absorb unanticipated losses on a going-concern basis. The Committee announced its intention to review the definition of capital as a follow-up to the revised approach to Tier 1 eligibility as announced in its October 1998 press release, "Instruments eligible for inclusion in Tier 1 capital". It will explore further issues surrounding the definition of regulatory capital, but does not intend to propose changes as a result of this longer-term review prior to the implementation of the revised Framework set out in this document. In the meantime, the Committee will continue its efforts to ensure the consistent application of its 1998 decisions regarding the composition of regulatory capital across jurisdictions.

The Committee also seeks to continue to engage the banking industry in a discussion of prevailing risk management practices, including those practices aiming to produce quantified measures of risk and economic capital. Over the last decade, a number of banking organisations have invested resources in modelling the credit risk arising from their significant business operations. Such models are intended to assist banks in quantifying, aggregating and managing credit risk across geographic and product lines. While the Framework presented in this document stops short of allowing the results of such credit risk models to be used for regulatory capital purposes, the Committee recognises the importance of continued active dialogue regarding both the performance of such models and their comparability across banks. Moreover, the Committee believes that a successful implementation of the revised Framework will provide banks and supervisors with critical experience necessary to address such challenges. The Committee understands that the IRB approach represents a point on the continuum between purely regulatory measures of credit risk and an approach that builds more fully on internal credit risk models. In principle, further movements along that continuum are foreseeable, subject to an ability to address adequately concerns about reliability, comparability, validation, and competitive equity. In the meantime, the Committee believes that additional attention to the results of internal credit risk models in the

supervisory review process and in banks' disclosures will be highly beneficial for the accumulation of information on the relevant issues.

## **Basel II: 1. Minimum Capital Requirements**

### **Risk Weighting**

Basel II set out two different mechanisms for assessing risk weightings: a standardized approach any bank could adopt and an internal ratings based approach for more sophisticated banks.

#### **A. Standardized Approach**

There is a more flexible approach to risk weighting using credit ratings where available. For example: Loans to corporates are risk weighted at 100% if unrated (by a credit rating agency). If rated, the risk weighting varies from 20% to 150% depending on the rating . However: "At national discretion, supervisory authorities may permit banks to risk weight all corporate claims at 100% without regard to external ratings. Where this discretion is exercised by the supervisor, it must ensure that banks apply a single consistent approach, i.e. either to use ratings wherever available or not at all. To prevent "cherry-picking" of external ratings, banks should obtain supervisory approval before utilising this option to risk weight all corporate claims at 100%."

The standards might reduce credit for smaller businesses. Basel II provided for **regulatory retail portfolios** to be risk-weighted at 75% (except for past due loans). These portfolios would include loan exposures to individuals and small businesses where individual exposures are limited and where the regulator is satisfied that the diversification justifies the 75% risk weighting.

Loans secured on residential property are weighted at 35% (but supervisors can increase based on local conditions) and loans secured on commercial real estate are weighted at 100%.

National regulators are responsible for recognizing credit rating agencies (in the Accord these are referred to as **external credit assessment institutions** (ECAI)) on the basis of criteria relating to: objectivity, independence, international access/transparency, disclosure, resources

and credibility.

Basel II encouraged banks to use credit risk mitigation techniques (to a greater extent than the 1988 Accord did) provided that the techniques meet standards of legal certainty:

All documentation used in collateralised transactions and for documenting on balance sheet netting, guarantees and credit derivatives must be binding on all parties and legally enforceable in all relevant jurisdictions. Banks must have conducted sufficient legal review to verify this and have a well founded legal basis to reach this conclusion, and undertake such further review as necessary to ensure continuing enforceability.

**B. Internal Ratings Based (IRB) Approach** (for the largest banks which supervisors allow to use this approach)

Basel II says: “Subject to certain minimum conditions and disclosure requirements, banks that have received supervisory approval to use the IRB approach may rely on their own internal estimates of risk components in determining the capital requirement for a given exposure. The risk components include measures of the **probability of default (PD)**, **loss given default (LGD)**, **the exposure at default (EAD)**, and **effective maturity (M)**. In some cases, banks may be required to use a supervisory value as opposed to an internal estimate for one or more of the risk components.”

Banks are to identify their banking book exposures in a number of different categories of exposure with different risk characteristics (e.g. corporate exposures, sovereign exposures, bank exposures, retail exposures).

There are two versions of the IRB approach: the **Foundation** Approach and the **Advanced** Approach: “Under the foundation approach, as a general rule, banks provide their own estimates of PD and rely on supervisory estimates for other risk components. Under the advanced approach, banks provide more of their own estimates of PD, LGD and EAD, and their own calculation of M, subject to meeting minimum standards. For both the foundation and advanced approaches, banks must always use the risk-weight functions provided in this

Framework for the purpose of deriving capital requirements.”

### **Operational Risk**

Basel II requires banks to have capital in respect of **operational risk**: “Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk.”

### **2 Supervisory Review**

This pillar emphasises that bank managements should develop internal capital assessment processes and that supervisors should assess how effectively they assess their capital needs. In addition, banks should think about risk management techniques other than capital. Under this pillar banks should particularly focus on aspects of risk that are not in fact or not entirely captured under the first pillar (eg credit concentration risk, business and strategic risk). Basle II says that supervisors should expect banks to operate with more than the minimum required amount of capital as a buffer.

### **3 Market Discipline**

The market discipline pillar involves banks making detailed disclosures about the characteristics of their capital and how they assess capital adequacy in order to enable the market to assess the adequacy of their capital.

Basel II had its critics. For example, one paper identified the following criticisms: <sup>13</sup>

The proposed regulations fail to consider the fact that risk is endogenous. Value-at-Risk can destabilise an economy and induce crashes when they would not otherwise occur.

Statistical models used for forecasting risk have been proven to give inconsistent and biased forecasts, notably under-estimating the joint downside risk of different assets. The Basel Committee has chosen poor quality measures of risk when better risk measures are available.

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<sup>13</sup> Jón Daniélsson, Paul Embrechts, Charles Goodhart, Con Keating, Felix Muennich, Olivier Renault and Hyun Song Shin, An Academic Response to Basel II, LSE Financial Markets Group Special Paper No. 130 (May 2001).

Heavy reliance on credit rating agencies for the standard approach to credit risk is misguided as they have been shown to provide conflicting and inconsistent forecasts of individual clients' creditworthiness. They are unregulated and the quality of their risk estimates is largely unobservable.

Operational risk modelling is not possible given current databases and technology even if a meaningful definition of this risk were to be provided by Basel. No convincing argument for the need of regulation in this area has yet been made.

Financial regulation is inherently procyclical. Our view is that this set of proposals will, overall, exacerbate this tendency significantly. In so far as the purpose of financial regulation is to reduce the likelihood of systemic crisis, these proposals will actually tend to negate, not promote this useful purpose....

From our point of view, the new proposal goes a long way towards addressing some of the main defects of the existing accord by, for example, suggesting more risk-sensitive capital ratios, taking into account the increased importance of risk mitigation techniques and emphasising supervision and market discipline...

Our main worries are centred around the devolution of the calculation of capital charges to banks' own internal risk forecasting models. These rely heavily on value-at-risk (VaR) and related methodologies, which we argue are insufficient for this purpose.

Firstly, existing risk models treat risk as a fixed exogenous process. This, however, is not the case. Market volatility is, in part at least, the outcome of interaction between market players and is thus endogenous. This endogeneity may matter enormously in times of crisis. By failing to recognise it, existing models produce inaccurate risk predictions and it is not clear how this systemic dimension of risk is to be treated in the proposals. In so far as it relies on increased transparency under its pillar III, we argue that such a policy may in fact exacerbate crises. More importantly, we present evidence that VaR regulation can destabilise an economy and induce crashes when they would not otherwise occur.

Secondly, VaR is a misleading risk measure when the returns are not normally distributed, as is the case with credit, market and, in particular, operational risk. Moreover, it does not measure the distribution or extent of risk in the tail, but only provides an estimate of a particular point in the distribution. Existing VaR models generate imprecise and widely fluctuating risk forecasts. All these shortcomings can be addressed by existing methods. Yet these are ignored in the new proposal.

The proposed 'standard approach' to credit risk differentiates assets not only according to obligor but also according to riskiness, proxied by credit rating agencies' assessment of the obligor. This approach represents an improvement only to the degree that corporations are rated and that ratings properly reflect risk, of which we are not convinced. The proposed reform will also induce procyclical capital charges, which will lead to overlending in booms and underlending in recessions.

Furthermore, we are not convinced of the justification for, and feasibility of, holding regulatory capital against operational risk. In contrast to market and credit risk, operational risk is predominantly

idiosyncratic, rendering the need to regulate in order to prevent contagion moot. Any estimation of operational risk is severely hampered by an absence of data and the difficulties of properly defining such a vague concept.

The increased flexibility afforded to regulators under the proposal's pillar II may create incentives for an uneven regulatory landscape if its implementation is not subject to careful international monitoring, which is probably unlikely to occur.

Perhaps our most serious concern is that these proposals, taken altogether, will enhance both the procyclicality of regulation and the susceptibility of the financial system to systemic crises, thus negating the central purpose of the whole exercise. Reconsider before it is too late.

The Basel Committee has been involved in an ongoing process of developing the capital adequacy standards since the adoption of the 1988 Accord and continued to consider possible changes to the standards after the adoption of Basel II. Basel II did not prevent the global financial crisis, and in the wake of the crisis the Basel Committee developed Basel III.

### **BASEL III**

Here is an outline of the new provisions in Basel III:<sup>14</sup>

In September 2010, the Group of Governors and Heads of Supervision announced higher global minimum capital standards for commercial banks. This followed an agreement reached in July regarding the overall design of the capital and liquidity reform package, now referred to as "Basel III". In November 2010, the new capital and liquidity standards were endorsed at the G20 Leaders Summit in Seoul. The new proposed standards were set out in Basel III: International framework for liquidity risk measurement, standards and monitoring, issued by the Committee in mid-December 2010. A new capital framework revises and strengthens the three pillars established by Basel II. The accord is also extended with several innovations, namely: • an additional layer of common equity – the capital conservation buffer – that, when breached, restricts payouts of earnings to help protect the minimum common equity requirement; • a countercyclical capital buffer, which places restrictions on participation by banks in system-wide credit booms with the aim of reducing their losses in credit busts; • proposals to require additional capital and liquidity to be held by banks whose failure would threaten the entire banking system; • a leverage ratio – a minimum amount of loss-absorbing capital relative to all of a bank's assets and off-balance-sheet exposures regardless of risk weighting; • liquidity requirements – a

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<sup>14</sup> From BIS, A Brief History of the Basel Committee at pp. 4-5.

minimum liquidity ratio, intended to provide enough cash to cover funding needs over a 30-day period of stress; and a longer-term ratio intended to address maturity mismatches over the entire balance sheet; and • additional proposals for systemically important banks, including requirements for augmented contingent capital and strengthened arrangements for cross-border supervision and resolution.

In January 2012, the Group of Central Bank Governors and Heads of Supervision (GHOS) endorsed the comprehensive process proposed by the Committee to monitor members' implementation of Basel III.

The process consists of the following three levels of review :

- Level 1: ensuring the timely adoption of Basel III;
- Level 2: ensuring regulatory consistency with Basel III; and
- Level 3: ensuring consistency of outcomes (initially focusing on risk-weighted assets).

The Basel Committee has worked in close collaboration with the Financial Stability Board (FSB) given the FSB's role in coordinating the monitoring of implementation of regulatory reforms. The Committee designed its programme to be consistent with the FSB's Coordination Framework for Monitoring the Implementation of Financial Reforms (CFIM) as agreed by the G20.

These tightened definitions of capital, significantly higher minimum ratios and the introduction of a macroprudential overlay represent a fundamental overhaul for banking regulation. At the same time, the Basel Committee, its governing body and the G20 Leaders have emphasised that the reforms will be introduced in a way that does not impede the recovery of the real economy.

In addition, time is needed to translate the new internationally agreed standards into national legislation.

To reflect these concerns, a set of transitional arrangements for the new standards was announced as early as September 2010, although national authorities are free to impose higher standards and shorten transition periods where appropriate. The new, strengthened definition of capital will be phased in over five years: the requirements were introduced in 2013 and will be fully implemented by the end of 2017.

Capital instruments that no longer qualify as non-common equity Tier 1 capital or Tier 2 capital will be phased out over 10 years beginning 1 January 2013.

Turning to the minimum capital requirements, the higher minimums for common equity and Tier 1 capital are being phased in from 2013, and will become effective at the beginning of 2015. The schedule will be as follows: • The minimum common equity and Tier 1 requirements increased from 2% and 4% levels to 3.5% and 4.5%, respectively, at the beginning of 2013. • The minimum common equity and Tier 1 requirements will be 4% and 5.5%, respectively, starting in 2014. • The final requirements for common equity and Tier 1 capital will be 4.5% and 6%, respectively, beginning in 2015. The 2.5% capital conservation buffer, which will comprise common equity and is in addition to the 4.5% minimum requirement, will be phased in progressively starting on 1 January 2016, and will become fully effective by 1 January 2019. The leverage ratio will also be phased in gradually. The test (the so-called "parallel run period") began in 2013 and will run until 2017, with a view to migrating to a Pillar 1 treatment on 1 January 2018 based on review and appropriate calibration. The liquidity coverage ratio (LCR) will be

phased in from 1 January 2015 and will require banks to hold a buffer of high-quality liquid assets sufficient to deal with the cash outflows encountered in an acute short-term stress scenario as specified by supervisors. To ensure that banks can implement the LCR without disruption to their financing activities, the minimum LCR requirement will begin at 60% in 2015, rising in equal annual steps of 10 percentage points to reach 100% on 1 January 2019. The other minimum liquidity standard introduced by Basel III is the net stable funding ratio. This requirement, which will be introduced as a minimum standard by 1 January 2018, will address funding mismatches and provide incentives for banks to use stable sources to fund their activities.

Here are extracts from a recent speech by **Andrew Haldane** of the Bank of England discussing macro-prudential financial regulation:<sup>15</sup>

Since the crisis, financial regulation has become explicitly macro-prudential ... This is an expression much-used, but generally little-understood. In a nutshell, it means that policymakers have begun using prudential means to meet macro-economic ends.

Those macro-economic ends include tempering swings in credit and leverage – the classic credit cycle. The credit cycle is a long-established feature of the financial landscape... The credit cycle is every bit as regular as the business cycle. But it differs from the business cycle in two critical respects: its amplitude is at least twice as large and its duration at least twice as long. Both are important for the design of macro-prudential policy regimes. The larger amplitude of the credit cycle is one reason why credit booms have, more often than not historically, resulted in banking crises .. Because financial crises cause large and long-lived disruption to the economy, this suggests a strong empirical link between credit cycles and macroeconomic destabilisation. Or, put differently, curbing the credit cycle appears to be an important ingredient of broadly-based macro-economic stability.

In principle, monetary policy could be used to curb the credit cycle. In practice, the differing duration and synchronicity of the credit and business cycles means this is unlikely to work well. Pre-crisis experience illustrates well just that point. At the same time as the wider economy was operating in cruise control, credit markets were in overdrive. Hitting these two birds – one flying high, the other low - with one (monetary policy) stone would have defied even the most astute marksman...

What is needed, in these instances, is a second instrument... This is where macro-prudential policy comes in. One of the aims of macro-prudential policy is to act counter-cyclically on the credit cycle, constraining credit booms and cushioning busts.. In this role, macro-prudential policy is complementing monetary policy in its role of stabilising the macro-economy. Macro-economic policy then becomes, in

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<sup>15</sup> Andrew Haldane, Ambidexterity, speech delivered at the American Economic Association Annual Meeting, Philadelphia on 3 January 2014 (Mar.14, 2014)



effect, two-handed or ambidextrous.

Since the crisis, this two-handed approach to policy has been taken up actively by a number of countries internationally ... For example, counter-cyclical prudential policy is now baked into new international regulatory rules. The so-called Basel III reforms introduced for the first time a "Counter-cyclical Capital Buffer" (CCB) to be adjusted to counteract the credit cycle... While a small step for mankind, this is a giant one for bank regulators.

It is also, inevitably, something of a step into the unknown. What will be the impact of changes to the CCB on credit and growth? Will the two arms of policy (monetary and macro-prudential) be better than one? And, if so, what institutional arrangements best deliver those benefits?

...consider the behaviour of some euro-zone crisis countries. In the run-up to monetary union, monetary policy was loosened significantly in a number of the peripheral European countries whose interest rates converged on core euro-area countries.... between 1995 and 1999 interest rates fell by between 3 and 6 percentage points in Ireland, Spain and Portugal. And in Greece between 1995 and 2001, interest rates fell by a remarkable 16 percentage points.

Whether by coincidence or causality, what happened next in credit markets in these countries was dramatic. The credit gaps in each of Spain, Portugal, Ireland and Greece widened significantly and continued widening through the early part of this century .. By 2008, these credit gaps stood at over 25 percentage points in Greece and Portugal, almost 40 percentage points in Spain and over 50 percentage points in Ireland. It is unlikely that any of these countries have previously seen credit booms on this scale.

It is useful again to rerun history and ask how macro-prudential policy might have looked over this period... At their peak, Minsky rule paths for bank capital are more than twice their actual levels in Spain and three times their actual level in Ireland. Macro-prudential stringency would have counteracted the loosening of monetary policy.

For those peripheral European economies that experienced a credit boom, it is plausible to think a tighter macro-prudential stance would have helped reduce the severity of the global crisis of 2008 and the euro-area crisis of 2010. Tighter capital standards would have slowed pre-crisis credit growth, tempering the boom. And the extra capital built up in the European banking system would have helped contain some of the collateral damage from the resulting credit bust. In short... the boom-bust cycles in credit and GDP in the euro-area would plausibly have been much less severe had policy been ambidextrous. ... In response to the crisis, short-term interest rates in major advanced economies fell rapidly to their floor and have remained there ... Aided and abetted by programmes of quantitative easing, real long-term rates have followed suit, falling to historically unprecedentedly low levels.. These responses from monetary policy were a natural reaction to the opening-up of sizable output gaps in many advanced economies. Extraordinary times called for extraordinary measures.

Whether by coincide or causality, what has happened since in financial markets has been striking. The

risk-taking cycle in some advanced economies has decisively turned. For example, issuance in the US high-yield market reached a record high in 2013, with half coming in a “covenant-lite” form .. This is evidence of a renewed “hunt for yield” among investors...

We do not need to run a counter-factual experiment to determine the macro-prudential responses to these emerging pressures. A number of countries have already taken preventative macro-prudential action to forestall excessive risk-taking... These measures are intended to forestall too rapid an accumulation of credit. In short, macro-prudential stringency is seeking to counteract any adverse risk-taking consequences of loose monetary policy.

In the UK, the Bank of England’s Monetary Policy Committee (MPC) has been pursuing a policy of extra-ordinary monetary accommodation. Recently, there have been signs of renewed risk-taking in some asset markets, including the housing market. The MPC’s macro-prudential sister committee, the Financial Policy Committee (FPC), has been tasked with countering these risks. Through this dual committee structure, the joint needs of the economy and financial system are hopefully being satisfied. Some have suggested that having monetary and macro-prudential policy act in opposite directions – one loose, the other tight – somehow puts the two in conflict ... That is odd. The right mix of monetary and macro-prudential measures depends on the state of the economy and the financial system. In the current environment in many advanced economies – sluggish growth but advancing risk-taking - it seems like precisely the right mix. And, of course, it is a mix that is only possible if policy is ambidextrous.

Basel III does have its critics. It will take a long time to implement. And it carries forward Basel II’s backwards-looking risk-weighting approach: assets that were not risky in the past will not be risky in future.<sup>16</sup> Plus it invites gaming.<sup>17</sup> Haldane and others have argued that it is excessively complex.

Some argue in favor of a simple leverage ratio. For example, **Adrian Blundell-Wignall, Paul Atkinson & Caroline Roulet** write:<sup>18</sup>

Basel III... is a vast improvement over Basel II, which created an across-the-board cut in capital for

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<sup>16</sup> Felix Salmon, The biggest weakness of Basel III (Sep. 15, 2010).

<sup>17</sup> *Id.*

<sup>18</sup> Adrian Blundell-Wignall, Paul Atkinson & Caroline Roulet, Bank Business Models and the Basel System: Complexity and Interconnectedness, 2013/2 Financial Market Trends 1, OECD (2014).

banks prior to the largest crisis since the 1930s. The BCBS proceeded to revise Basel II by adding on to it a vast set of complex new rules. The primary focus of the BCBS is on capital rules applied to risk-weighted assets; it has not been charged with examining the structural business models of banks to which these capital rules apply. By necessity the process has been one of policy “on the run”, which was not able to benefit from any evidence-based research. As more and more data on banks since the crisis comes to hand this situation is changing, and the relative importance of business model factors and capital and liquidity rules in influencing the riskiness of banks can be tested...

There are two broad paths to bank failure: fundamental insolvency and/or liquidity crises typically arising from counterparty risk. A sudden decline in asset values (if properly marked to market) can wipe out bank capital. But the very risk of this in a crisis makes counterparties unwilling to lend, which is especially problematic when banks need cash and/or liquid securities to meet margin calls for derivatives transactions, repos and other collateral needs. This depends very much on the structural business model of banks. Bad assets, on the other hand, are easier to hide, particularly when they are illiquid, rely on mark-to-model valuations and/or are held to maturity in banking books. These assets may take many years to mature, at which time their true recovery value is realised. If it is below the previously reported value write-downs will follow, and this can go on for some years after a crisis. Banks in this position (latent insolvency with bank and regulatory forbearance) are often forced into deleveraging and asset sales. Less important banks are sometimes forced to fail, though this discipline has been more common in the USA than in Europe. Where banks are systemically important, governments do intervene to lessen the deadweight losses to the economy from a systemic crisis, and this sort of implicit guarantee can lead to the under-pricing of risk, causing leverage and counterparty risk to be higher than it would otherwise be. The bank is rewarded if the strategy works and the taxpayer bears the risk alongside shareholders if it fails.

Historically, policy makers have at times, particularly in the USA, combined capital rules with policies that constrain the business models of banks (such as Glass-Steagall). But this was gradually undermined by the great push for deregulation in the past few decades. At the national level regulators are implementing the capital rules in different ways and are also combining this with some attempts to constrain certain aspects of what banks actually do, i.e. banks’ business models (Vickers, Volcker, Liikanen, and Swiss “separability” requirements)....

The FDIC in the USA has long pointed to the problems with the Basel risk-weighting approach, which creates only the “illusion of capital adequacy”. The Collins Amendment to the Dodd-Frank Act, drafted by the FDIC, removes trust-preferred securities from Tier 1 capital and establishes that there be two floors for insured deposit institutions, bank and thrift holding companies and systemically important non-bank financial companies: i) not less than the generally applicable risk-based capital leverage ratio requirements; and ii) not quantitatively lower than these requirements as they were in effect for insured depository institutions as of the date of the enactment of the bill. In July 2013 the FDIC and the US

Federal Reserve issued a joint statement referring to research that shows that the Basel III 3% leverage ratio would have done little to ameliorate the last crisis, and that 8 TBTF US insured bank holding companies would have to meet a 5% leverage rule, and 6% for insured depository institutions inside such groups, in order to be considered “well capitalized” for prompt corrective action purposes. At the same time the Volcker Rule was enacted to take up the issue of bank separation of certain risky business activities – the latter indicating agreement with those believing that bank risk could not be left to the Basel III standards alone.

The US has introduced the Comprehensive Capital Analysis and Review (CCAR) exercise and approves the capital plans of 18 bank holding companies (BHC). The capital required is based on rigorous stress testing exercises. The US has doubled the amount of capital held by these 18 BHCs (to USD 792 bn at the end of 2012 from USD 393 bn in 2008). In mid-December 2012 the USA has proposed rules to deal with the operation of large foreign bank organizations (FBOs) in the USA.<sup>19</sup> They will be required to create intermediate holding companies (IHCs) comprising all US banking and non-banking operations, and all US rules on leverage, separation, etc. will apply to the IHCs (but not to branches). These IHCs would therefore (if the changes are implemented) face much tougher rules than in their home countries: US Basel III application, liquidity and leverage rules. These separated IHCs would also miss out on wider group netting benefits for derivatives and repos. The equal treatment of IHCs is consistent with the OECD view that all financial promises should be treated equally in regulations, at least in the USA. The UK follows Basel III, but puts more weight on national micro and macro prudential regulation to be conducted within the Bank of England. As with the USA, recent speeches by the Bank of England have expressed grave reservations about the Basel III approach to capital rules, and the need to look at bank business models alongside them. The Prudential Regulatory Authority (PRA) is working with individual UK banks to implement capital plans consistent with the recommendations of the Bank of England’s new Financial Policy Committee (FPC). Where necessary, and based on stress tests, banks have to meet capital standards more exacting than Basel III. Following Lloyds, RBS and Nationwide reviews, the most recent plan announced for Barclays includes new capital issuance, a disclosure plan for dividends and the achievement of a 3% leverage ratio by June 2014 – some four years before the Basel III implementation of such a ratio. Recognising that Basel III leaves business model risk issues on the table, the UK authorities have approved the ring-fencing of retail banking in the Vickers report. Europe’s CDR IV follows Basel III more closely than in most other jurisdictions. However, following the 2011 stress tests, ministers at the EU summit in October of that year, agreed that a subset of 71 banks in the stress test should meet a CET1 ratio of 9% by 30 June 2012. Europe also aims to move to a banking union with one rule book and a Single Supervisory Mechanism. The ECB will be the main

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<sup>19</sup> This is a reference to the proposed rules excerpted in Chapter 4 of our materials. We also looked at excerpts from the final rule.

supervisor, working with national authorities, though some uncertainty remains about the funding of a single resolution fund. The ECB would notify the single resolution board, who would notify national authorities and resolution would occur with a bail in of perhaps 8% of unsecured creditors. As a pre-requisite for the ECB taking on this role there is to be a “Comprehensive Assessment” of Europe’s Banks with capital needs assessed including dealing with forbearance in respect to bad assets. The problem with respect to the “tougher” 9% goal and the comprehensive assessment, is that banks can meet the target easily by adjusting (with their models and use of derivatives) the ratio of RWA to total assets (TA). The Basel ratio is not demanding due to this slippage, and greater credibility would be achieved if the test was based on a clean leverage ratio concept. Europe too has recognised that Basel III does not address business model risk issues with its Liikanen report. Questions of capital and leverage must be considered alongside counterparty risk arising from bank business model issues: they are interdependent. This view is based on detailed empirical research using large panels of bank data... Since the Basel III reform process started there are literally thousands of pages of additional documentation. This certainly adds to bank administrative costs, where armies of analysts are employed in risk control and compliance divisions; but the most important question really concerns whether despite all the complexity it is likely to be the most effective approach to avoiding future crises.

There are two very basic problems with Basel III.

First it is too complex, allowing large banks plenty of room to manipulate it both with their models and derivatives thereby avoiding effective control on leverage...

Second ... Basel III has not dealt with bank business model issues that are at the heart of TBTF under-pricing of risk and the interconnectedness that is associated with it. Instead the BCBS puts its faith into the capital and liquidity rules, while moving derivatives towards exchanges and CCPs to handle counterparty risk and will alleviate the need for banks to hold capital where this is achieved...

The financial system is a system of promises, so the most basic regulatory principle for financial markets should be that those promises are always treated in the same way, no matter how they are measured with models, transformed and/or shifted around in the global markets with derivatives. Basel III has continued with the Basel II IRB approach relying on banks own modelling of the riskiness of assets for the capital rule, and hence one should not be surprised that banks will report vastly different levels of capital to support an identical portfolio of assets. In a sense there is always going to be different Basel III for every bank in the world. Furthermore, banks can still shift the promises around by transforming risk with derivatives (particularly CDS) to minimise their capital costs – including shifting them beyond the jurisdiction of bank regulators – e.g. to the insurance or hedge fund sectors in a least regulated jurisdiction....

These problems related to complexity and leverage could be removed by moving to a simple adequate leverage ratio, and leave banks’ VaR modelling to their own internal risk controls without requiring it to be encompassed in (and hence contaminated by) the regulatory framework. Leverage, a key component

of bank risk, would be controlled directly, and would depend only on appropriate accounting rules. Unfortunately, however, the 3% Tier 1 leverage ratio “back-up” goal being considered by the BCBS for 2019 is too lax. It allows leverage of 33-times capital and, in addition, banks are permitted to net derivatives transactions when calculating the leverage ratio. This latter arrangement has always puzzled the present authors: netting is a settlement concept, particularly in the event of default, and it does not in any way protect a bank from market risk. Hence netted derivatives are not an appropriate basis on which to base ex-ante capital rules....

The process of arbitraging the Basel capital rules and embracing the innovations in structured products resulted in the rapid growth of wholesale funding of securities (including repos) hedged by CDS.

Derivatives had many advantages for TBTF banks:

- Shifting ownership of assets enabled both the regulatory and tax system to be arbitrated. CDS hedging to reduce capital requirements. And use of interest rate swaps and CDS to arbitrage the tax system (at the very heart of the structured products business).
- TBTF banks meant that counterparty failure was highly unlikely to result in positions not being paid out – and certainly this belief was proved valid with the AIG bailout by the US government. Risk was under-priced. TBTF implicit guarantees affect CDS and other spreads, and these spreads are built into bank internal risk modelling, systematising the under-pricing of risk.
- With respect to defaults, both US and EU law exempted all credit collateralised with securities and any derivatives from the “automatic stay in bankruptcy” and rules on cross-default clauses. The institutions dealing with these products could in effect front-run all others in the case of defaults – pushing the risk to other creditors and the taxpayer – a phenomenon certainly illustrated in the Lehman default.

While GSIFI banks are the core of the derivatives origination business, most banks were drawn into funding securities with repos, hedging them with CDS, and moving into the fee-for-sale securitisation businesses. Many mortgage institutions competed for loans to securitise assets, driving yields down and moving into ever more marginal borrowers. In this respect it is more correct to say that capital markets banking caused the sub-prime crisis, rather than the latter causing a crisis in the former.