

# Pressure for changes in capital adequacy regulation of banks

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The financial crisis that began in 2007 and expanded in 2008 has underscored the importance of banks' capital adequacy. Although the new capital adequacy framework for banks, Basel II, which was finalised in the years preceding the crisis, can hardly be blamed for the crisis, the crisis has made clear the need for certain improvements in the new framework. Minimum capital requirements will most likely rise, and there is a need to reduce the contribution of capital requirements to procyclicality in the financial system. However, the view has also been expressed that capital requirements may not be the most efficient way of ensuring the safety of banks. These proposals focus on the idea that there should be arrangements in place that secure sufficient supply of capital to banks when it is most needed, ie when a crisis hits. This article reviews the recent discussion on capital requirements in the aftermath of the crisis.

The first international accord aimed at harmonising the minimum capital requirements for banks in different countries, now referred to as Basel I, was agreed in 1988. Basel I can be viewed as having been successful in putting an end to the 'race to the bottom', a practice whereby internationally active banks could have a competitive advantage from residing in a jurisdiction that imposed relatively low capital requirements.

Basel I requires banks to hold capital equal to at least 8% of their risk-weighted assets. In Basel I, the risk weight on corporate loans, for instance, is 100%, which implies that banks must, at a minimum, hold capital equal to precisely 8% of their corporate credit assets. There are corresponding individualised risk weights in Basel I on broad categories of credit risk, such as retail loans. However, it quite soon became apparent that such broad measures of risk were insufficient to measure banks' true risks. Such crude risk measures also appeared to be lagging behind the development of risk measurement techniques within the leading banks.

## Basel II capital requirements

### *Overview of the Basel II framework*

The first major change to the Basel I framework was an amendment in 1996 that improved the calculation of capital requirements relating to banks' market risks in regard to their trading books. The amendment permitted the use of banks' own value-at-risk models to measure market risks when setting capital requirements.

The use of banks' own models represented an important philosophical change and paved the way for the major revision of the capital framework in 2004, Basel II. Basel II is mainly about reforming the risk weights on banks' credit risk assets, although operational risks were also



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added as an entirely new risk category against which capital requirements are set. Although Basel II does not allow the use of banks' own credit value-at-risk models in determining capital requirements,<sup>1</sup> the idea was adopted that banks could use their own internal customer ratings and themselves estimate the average probabilities of a customer defaulting in each rating class. Under Basel II, these input values determined by the bank are fed along with some other risk parameters through a special mathematical formula provided in the Basel II framework, which then ultimately determines the capital requirements against the bank's credit assets.

In addition to the reform of minimum capital requirements specifically on credit assets, the Basel II framework also contains two other pillars. The second pillar gives structure to the supervisor's holistic review process of a bank's overall capital adequacy and capitalisation planning. If severe shortcomings are identified, the second pillar enables the supervisor to require additional capital. The third pillar aims to facilitate and strengthen the functioning of market discipline via increased reporting requirements.

The bottom line of the Basel II framework is that it aims to determine banks' capital requirements on the basis of bank-specific risks and

therefore makes use of similar risk-measurement techniques to those the leading banks themselves have been developing and using. Basel II does not aim to explicitly measure systemic risks and how individual banks contribute to them. The implicit idea behind Basel II is that measuring the risks of large banking institutions on a stand-alone basis, and requiring capital accordingly, is also the best way to contain systemic risk. The financial crisis of 2007–2008 has challenged this view. At the minimum, the crisis has revealed the need to somehow deal with banks' liquidity risks, which are not currently covered by Basel II's minimum capital requirements.

The EU has implemented Basel II in the form of a Capital Requirements Directive (CRD) that has been in force since 2007. In the United States, the process of implementing Basel II is still in progress.

#### *Did capital adequacy requirements contribute to the crisis?*

Some commentators have argued that the current crisis has partly been driven by, or may at least have been exacerbated by, the new Basel II framework. However, this critique may not be entirely fair. An opposite view may have some merit, in that an earlier replacement of Basel I with Basel II could have alleviated some of the developments that contributed to the crisis. Indeed, as Basel II came into force in Europe only in 2007 and is still not in use in the United States,

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<sup>1</sup> This was considered by the Basel Committee but rejected because it was felt that credit value-at-risk models were not yet in a sufficiently mature state of development.

blaming Basel II for the crisis seems misplaced.

Cannata and Quagliariello (2009) consider the arguments that Basel II contributed to the crisis. These include i) the procyclicality of capital requirements, ii) rating methodologies and rating-related conflicts of interest in determining capital requirements, and iii) capital arbitrage in the form of utilising shortcomings in the regulatory framework in order to minimise one's capital requirements.<sup>2</sup> They end up concluding that, in most cases, the accusations that Basel II would have contributed to the crisis are too stark. Nonetheless, it is quite clear that the crisis has revealed shortcomings in Basel II that will have to be dealt with in order to reduce the likelihood and severity of future crises. Such corrective action is already on the way and is discussed in more detail below.

## Lessons from the crisis for capital adequacy regulation of banks

### *Quantity and quality of capital was too low*

When considering the adequacy of capital, we must distinguish between the two key roles of bank capital (see eg Financial Services Authority, 2009). Firstly, in the event of a bank failure, the role of capital is to protect the claims of creditors, depositors and taxpayers (a 'gone concern' approach).

<sup>2</sup> For a more complete list and discussion see Cannata and Quagliariello (2009).

Secondly, their capital structure and capital adequacy affect banks' behaviour and hence the economy as a whole (a 'going concern' approach). In particular, sudden, large and unexpected credit and valuation losses may force undercapitalised banks to constrain lending to households and businesses. Weakly capitalised and highly leveraged banks may also take excessive risks in boom periods preceding financial crises, as stockholders in levered firms may gain when the business risk increases.

It is clear that prior to the current crisis banks' capital levels were too low, at least in the going concern sense. Many banks and other financial institutions increased their risk-taking and observable and hidden leverage and decreased the size of their capital buffers. Once the risks materialised, central banks and treasuries had to provide enormous public support to prevent the financial system from collapsing and to maintain bank lending to the real economy. Banks in the United States, United Kingdom, euro area, Scandinavia and Switzerland had raised new capital worth close to USD 1,000 billion to end-2009 Q2, much of which from public sources (IMF, 2009).

In addition to the quantity of bank capital, the composition of bank capital also matters. In the years before the crisis – in response to strong investor demand for high-yield securities – banks increased their issuance of hybrid capital instruments (hybrids) that contain features of

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both debt and equity. Under certain criteria, these hybrids could be included in the highest quality class of the banks' own capital, original own funds (Tier 1 capital).

Banks' highest quality capital should be their 'last line of defence' and include instruments that are permanently available to fully absorb their losses and protect their creditors and depositors. However, the eligibility criteria and limits on the use of hybrids were not uniform across countries. As a consequence, investors increasingly called the quality, consistency and transparency of banks' current Tier 1 capital into question and began to use other definitions of capital, such as core capital, consisting mainly of common equity. To reduce uncertainty, provide a level playing field and limit regulatory arbitrage, the definitions of different types of own funds in the capital requirements must be clarified and made as uniform as possible across jurisdictions.

#### *Many major risks were insufficiently covered*

Capital requirements provide the wrong incentives to banks if the amounts of capital required against holding certain types of assets or providing certain commitments are not commensurate to their riskiness. For example, banks have been required to hold very low levels of capital against their trading book assets, which are bought and held mainly for the purpose of selling

them in the near term. The original reason for their light capital requirements was the presumption that trading books mainly included liquid assets that can be rapidly sold, eg government bonds. However, over the years prior to the crisis and partly as a result of regulatory arbitrage, the composition of banks' trading books changed as banks began to hold less liquid and more risky assets. The inadequate capital requirements against trading book assets became evident, especially in the early stages of the crisis, when most bank losses were related to precisely those assets.

The diverging growth rates of banks' risk-weighted assets – which determine capital requirements in the Basel II framework and thus reflect the regulatory assessment of the riskiness of assets – and their total assets suggest that the risk coverage of the capital requirements has, in general, been insufficient (Chart 1).

As Chart 1 shows, the total assets of the 10 largest global banks more than doubled between 2002 and 2007 Q2. Risk-weighted assets, in contrast, grew only moderately. Thus, the chart suggests that the sample banks' assets became safer towards 2007 Q2. In retrospect, the evolution of risk was precisely the opposite.

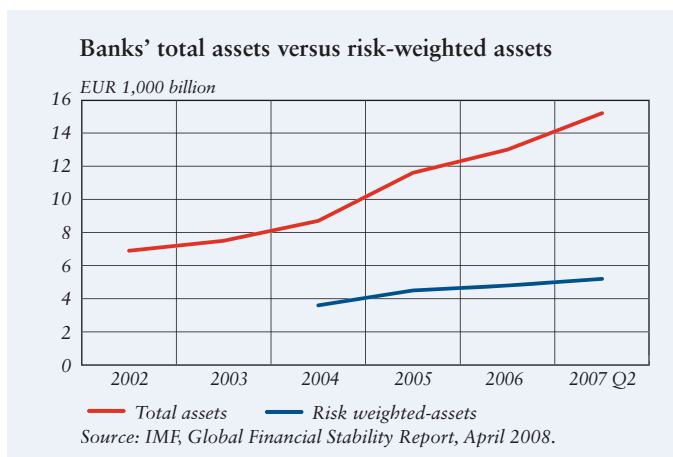
There are clearly many reasons why the risk-based capital requirements failed to capture the increase in banks' risks. These include a large increase in banks' lightly capitalised trading assets, credit risk transfer and

insufficient focus of capital requirements on systemic risks.

The capital requirements also failed to capture many off-balance-sheet risks typical to an originate-to-distribute model of banking. Ideally, under an originate-to-distribute model, securitisation of loans allows banks to distribute risks to sophisticated end-investors outside the banking system. This reduces the risk for the banking system as a whole. However, much of the risk of securitisation remained on banks' balance sheets. In actual fact, the main motivation for much of the securitisation seems to have been the avoidance of capital requirements (see Acharya and Schnabl, 2009).

The capital requirements for securitised instruments, and especially for the complex resecuritised instruments that banks held on their balance sheets, were, in retrospect, very low. Moreover, banks transferred a large amount of securitised instruments to ostensibly legally separate shell companies (conduits), which financed themselves by issuing short-term asset-backed commercial paper (ABCP) and to which the banks provided back-up credit lines. The required capital against this liquidity enhancement was also low. The failure of conduits and other corresponding off-balance-sheet vehicles suggests that radical changes are needed in the regulation and supervision of securitisation, resecuritisations and banks' off-balance risk-taking.

Chart 1.



### *Procyclicality of capital requirements*

Well before the recent crisis many academics were concerned about the increasing procyclicality of the banking sector that could result from the new Basel II rules. The crisis has now brought this concern onto the policy agenda.

In principle, all kinds of capital requirements are potentially procyclical. The mechanism works as follows. As the economy falls into recession, banks' regulatory capital requirements may become restrictive as increasing credit losses shrink their capital base. As new external capital is typically hard to come by in a recession, at least at short notice, the banks may have to adjust to the situation by reducing lending. This may further fuel the economic downturn. Risk-sensitive capital requirements such as Basel II reinforce this effect, as banks' asset risks tend to rise in a recession, which

leads to increasing capital requirements. This concern is certainly justified. Nonetheless, so far it has been difficult to empirically prove the Basel II rules have actually exacerbated the credit crunch during the recent crisis. It is particularly hard to disentangle credit demand effects from credit supply effects during the crisis.

In order to reduce the potential procyclicality of Basel II, regulators are considering whether to make average capital requirements and banks' actual capital levels more consistent with the business cycle; ie to raise them in booms and lower them in busts (see also eg Repullo and Suarez, 2008). Nonetheless, when considering such improvements to Basel II, regulators should not forget the merits of risk-sensitive capital requirements. Jokivuolle, Kiema and Vesala (2009) argue that properly designed risk-sensitive capital requirements can enhance credit allocation, which in turn may have an alleviating effect on procyclicality (see also Boissay and Sørensen, 2009).

#### *There was too little attention to systemic risks*

One of the main overall lessons of the crisis is that systemic risks that threaten the functioning of the financial system and the economy as a whole were not sufficiently taken into account in macroeconomic policies, regulation or supervision. In capital regulation, as in other regulation, the focus was on the safety of

individual institutions. The risks that stemmed from the collective behaviour of financial institutions and other economic actors were not adequately addressed. A key global policy objective must therefore be to reorient prudential regulatory frameworks to have a systemic focus.

There are two main sources of systemic risk (see eg Bank of England (2009), Chapter 3). Firstly, in the upswing phase of the economic cycle, households, financial corporations and non-financial corporations have a collective tendency to increase leverage and take excessive risks. In contrast, in the downswing, they become excessively risk-averse. Secondly, individual banks fail to take into account the spillover effects (externalities) of their actions on the risks of other financial institutions and the financial system as a whole. For example, a failure of a large financial institution would be likely to cause serious difficulties for other financial institutions through bilateral exposures, reputational concerns or panics.

Capital requirements are among the potential macroprudential policy instruments that could be used to reduce these systemic risks. The Bank of England (2009) suggests that policy-makers could set capital surcharges on top of current microprudential capital requirements to dampen the boom phase of the economic cycle. These surcharges could be applied to the overall capital requirements. Alternatively, in the upswing, capital-

ratio risk weights could be increased for certain exposures, such as housing loans, to restrain lending to an overheated economic sector (see Tucker, 2009). In the downswing, capital requirements would be relaxed to support bank lending.

Capital surcharges could also be used to reduce the systemic risk related to a failure of large and interconnected banks. The role of capital surcharges would be to force banks to internalise the costs of their failure on other parts of the financial system and provide incentives for banks to reduce their size and connectivity to other financial institutions. The institution-specific systemic surcharges could potentially depend on variables such as balance sheet size, the size of a bank's interbank liabilities or a value of its trading assets (see Bank of England (2009), Chapter 5).

Overall, the debate on the potential merits and shortcomings of capital requirements as macroprudential tools has only just begun and is likely to intensify in the coming months.

### **Reforms to the capital adequacy framework**

The Basel Committee on Banking Supervision announced in November 2008 a comprehensive strategy to reform the Basel II framework to reduce the weaknesses revealed by the financial crisis. The planned reforms aim, among other things, to increase the overall level of capital in the banking system, strengthen capital

requirements concerning trading-book and off-balance-sheet exposures, enhance the quality of Tier 1 capital, build larger capital buffers into the capital framework, supplement risk-based capital requirements with a simple gross measure of banks' leverage and strengthen Pillar 2 requirements on banks' risk management and governance practices.

Some of the announced steps have already been taken. In July 2009, the Basel Committee introduced tightened capital requirements for banks' trading books, with the aim of capturing some risks that the previous rules failed to address and reducing the incentives for regulatory arbitrage between the banking and trading books. In addition, the Committee increased the capital requirements against complex resecuritisations (CDOs of ABS). The new rules also prevent a bank from recognising external ratings in calculating its capital requirements when those ratings are at least partly based on its own guarantees or support. Thus, if a securitisation exposure (eg the ABCP issued by a conduit that the bank sponsors) is rated AAA and that rating is at least partly due to a guarantee provided by the bank itself, the bank should not benefit from its self-guarantee in its regulatory capital calculation.

According to a recent quantitative impact study conducted by the Committee, the changes will result in a more than three-fold increase in banks' capital requirements against market risk. The new requirements

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should be implemented no later than the end of 2010. The Basel Committee also raised Pillar 2 standards to address the flaws in banks' risk management practices and tightened the Pillar 3 disclosure requirements related to securitisation exposures and sponsorship of off-balance-sheet vehicles.

The Committee has also made progress in other elements of the Basel II reform (see Financial Stability Board, 2009). Headway has been made on a revised definition of capital, which will be evaluated in a quantitative impact study in 2010. The introduction of a leverage ratio as a supplement to the risk-based capital requirements is also progressing. The Committee is also preparing a proposal to build banks' countercyclical capital buffers. In December 2009, the Committee issued for consultation a large package of proposals to strengthen global capital regulations and to introduce a global minimum liquidity standard for internationally active banks. An impact study on the revisions to capital requirements and the calibration of the overall capital level will be conducted in the first half of 2010.

As a response to the financial crisis, the EU amended its Capital Requirements Directive for the first time in October 2008. The originators of securitised products were required to retain some of the securities they issue, the criteria for the eligibility of hybrid capital instruments as a part of banks' overall capital was clarified, the

rules on banks' large exposures were tightened and supervisors were required to establish 'colleges of supervisors' for banking groups that operate in multiple EU countries. The Directive was further amended in July 2009, when higher capital requirements for banks' trading books and resecuritisations were adopted in the EU. In addition, banks are required to have sound remuneration practices, and this will be supervised in the Pillar 2 supervisory process.

## Discussion

The global financial crisis has manifested itself to a large extent as a liquidity crisis. As a consequence, capital adequacy is not the only part of banking regulation that needs to be reformed. It is equally important to ensure banks have sufficient liquidity on their balance sheets. As discussed above, new regulatory initiatives have already been taken in this regard. Nonetheless, risks that first materialise as liquidity risks are often embedded in the credit and market risks that banks take. In the recent crisis, such a root cause was largely the subprime mortgages whose capital requirements turned out to be insufficient. This aspect emphasises the primary role played by capital requirements in ensuring the safety of banks.

However, the recent crisis has also reminded us of how difficult it may be to correctly measure banks' true risks and set capital requirements accordingly. Most of the current risk



measurement models would probably suggest there was only a tiny probability that the potential losses to banks experienced in this crisis would actually materialise. This puts the pressure on developing new models – perhaps adopting entirely new approaches to risk measurement modelling – that can incorporate severe crisis scenarios with more realistic probabilities.

Another concern with raising capital requirements from their current level is that this may lead to inefficiencies in financial intermediation. It may be that achieving a sufficient level of bank safety solely via high capital requirements is too costly a solution from the social point of view. New crises always tend to follow new patterns, at least in part, which may be missed by protective measures such as capital requirements. For these reasons, many leading academics have floated the idea of contingent capital arrangements that would not necessitate holding large capital buffers on banks' balance sheets in normal times. One form of this would be debt-equity swaps, ie bank debt being automatically converted to bank equity as a result of some pre-specified trigger event related to systemic risk, or subject to supervisory discretion. Other such ideas include capital insurance (see Kashyap, Rajan and Stein, 2008) and tradable insurance credits subject to public guarantees (see Caballero and Kurlat, 2009).

Common to contingent capital ideas is that they focus more on containing a potential crisis and could therefore be compared to fire sprinklers rather than measures to prevent fire.

## Conclusions

In this article we have reviewed some aspects of the discussion on reforming banks' minimum capital requirements in the wake of the global financial crisis. The overall level of capital requirements will most likely rise, and they will probably conform to business cycle fluctuations by being raised in economic booms and lowered in downturns. On the other hand, linking capital requirements to the systemic risk of individual institutions seems rather difficult at the moment.

Achieving better financial stability without sacrificing too much of the efficiency of the financial system is a very demanding goal. The best policy to achieve this goal will probably involve a mix of policy measures, not only reformed capital requirements. Other key measures could include liquidity regulations governing banks and an enhanced framework for restructuring failed banks.

*Keywords: Basel II, capital requirements, financial crisis, procyclicality, systemic risks*

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