

# **Minimum capital requirements and the design of the new Basel accord.**

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# 1. Introduction

This paper is based on an ‘incentive based’ interpretation of the impact of minimum capital regulations.<sup>1</sup> These regulations are not usually binding constraints on bank portfolio decisions. Their primary impact is indirect, influencing portfolio decisions only as banks seek to avoid a future breach of minimum capital requirements. Because their impact is indirect, minimum capital requirements have a more modest impact on bank behaviour than is often assumed. Accurate tailoring of capital regulations to bank risk therefore also offers relatively small benefits and efforts to risk-adjust capital regulation may often not be cost effective.

Although not previously discussed in the academic literature, this is a commonsense perspective. Banks anticipate the possibility of running into difficulties with meeting regulatory capital requirements. To avoid regulatory interference they maintain buffers of additional capital over and above the required minimum level. At most times, and especially during the periods of balance sheet expansion when banks make the lending decisions that can subsequently trigger solvency problems, capital requirements do not directly constrain their behaviour.

This view of the incentive impact of capital regulation is acknowledged in the January 2001 consultation documents for the new Basel accord on credit risk.<sup>2</sup> But the present consultation documents largely reflect a conventional interpretation of capital requirements as a form of direct and powerful control over bank risk-taking. Incentives are addressed, via the third market discipline ‘pillar’ of the new accord, but the Basel committee fails to offer a coherent account of

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<sup>1</sup> This view is developed in recent research of mine. See Section 3 below, and for a recent academic article “Bank Capital Regulation as an Incentive Mechanism: Implications for Portfolio Choice”, *Journal of Banking and Finance* (forthcoming, 2001).

<sup>2</sup> The overview document, paragraph 42, states that “For the overwhelming majority of banks a buffer of capital, in excess of minimum regulatory capital requirements, is held in part because it is expensive to raise capital in difficult economic times. In a risk-sensitive capital environment, banks will continue to hold capital buffers and therefore the impact of capital requirements on lending decisions should not be overestimated.” (Basel Committee (2001))

the incentives created by capital requirements themselves and by the actions taken by regulators when a breach is observed.

This article assesses the new accord, allowing for these indirect incentive impacts of capital requirements on bank behaviour. My conclusions on the current proposals are critical. A major concern must be that the Basel committee has not provided any cost-benefit assessment and it remains unclear that the new accord represents the most cost-effective way to attain the overall objective of greater safety and soundness in the financial system. There is moreover confusion, most obviously in the proposals for the use of internal ratings, between minimum regulatory capital requirements and the level of capital that banks desire to hold. The extension of regulatory capital requirements to cover operational risk has not been shown to be necessary to improving safety and soundness and also threatens to divert managerial effort away from the control of other risks. As currently formulated, the new accord will shift supervisory resources away from low franchise-value high risk banks and onto high franchise-value low risk banks. Unless there is compensating increase in the efficiency of regulation or in the volume of resources devoted to regulation, there will be an overall weakening of regulatory discipline.

With these shortcomings, it is no surprise that industry and commentators are expressing reservations about both the details of the accord and the timetable for its adoption. Introduced in something close to its present form, the accord is unlikely to stand the test of time, and further major revision can be expected sooner rather than later.

The accord is still under consultation and the opportunity remains to make changes that will provide more encouragement to banks in developing their own systems for measuring and managing their risks. With a number of relatively simple corrections – most notably introducing a distinction between desired maximum capital set by the banks management and regulatory minimum capital set by the authorities – the new accord can still have major and lasting beneficial impact on the monitoring and control of bank risks.

The rest of this paper is organized as follows. Section 2 discusses the rationale for regulatory capital regulation from a cost- benefit perspective, emphasizing its role as a basis for intervention in a failing bank. Section 3 restates my own analysis of capital regulation as an incentive mechanism. Section 4 reviews and criticizes the main elements of the new accord. Section 5 offers suggestions for revision.

## 2. Costs and benefits of regulatory capital regulation

The general rationale for capital regulation is the promotion of the ‘safety and soundness of the financial system’. But the same can be said of many other forms of regulatory intervention (lender of last resort, deposit insurance, supervisory review, conditions for issue of licenses, etc.) The effectiveness of each particular regulatory instrument needs to be assessed in the light of both consequent benefits and associated costs.<sup>3</sup>

The consultation documents issued by the Basel committee are flawed because they fail to address the costs and benefits of the proposed new accord. The consultation assumes, without further examination, that it is desirable for capital requirements to be made more sensitive to the risk profile of banks. In fact if the private costs of risk-taking exceed the social cost (and I will below give good reasons why this will often be the case) then making bank capital regulation more risk-sensitive will decrease welfare. In any case making capital requirements more risk-sensitive increases direct and compliance costs. So even if the social costs of risk taking exceed the private costs of risk-taking, these costs may outweigh the welfare benefits of greater risk-sensitivity of capital requirements. The best policy may well be to make capital requirements entirely independent of risk-profile i.e. a return to simple unweighted leverage ratios.

### ***Benefits***

In order to address these issues we will discuss both the costs and benefits of capital regulation. There are three principal benefits. These are internalising external costs of bank failure that would otherwise not fall on management and shareholders; encouraging improvements in bank management and control ; and finally establishing a framework for regulatory intervention in a failing bank. Discussion of capital regulation all too often neglects the second and third benefits entirely and places too great an emphasis on the capital regulation as an external discipline on the probability of bank failure, relative to the discipline imposed by self-interested management and shareholders.

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<sup>3</sup> In the UK the Financial Services Authority is required to conduct a cost-benefit assessment of all new regulations it introduces, and will therefore presumably have to conduct such an analysis of the new Basel accord.

## Internalising the 'social' costs of bank failure

### **Capital requirements as a tool for reducing the probability of failure**

Unlike most other companies, bank management and shareholders do not bear the full costs of insolvency. There are additional external costs of a social nature including the insolvency of other institutions, the loss of valuable credit relationships with borrowers that are worth more than simply the profits that are made from them, and potential breakdown of systems of payment and settlement. Higher capital ratios, at the time loan decisions and other exposures are determined, reduce the probability of bank failure and hence the incidence of these external costs.

These externalities are exacerbated by bank 'moral hazard'. Experience of large scale banking sector problems demonstrates that regulatory authorities can almost always be relied upon to respond to the social costs of major bank failure by protecting depositors against loss of wealth and the banks themselves against the threat of insolvency. Anticipating such protection, the rates of return to depositors and other debt holders do not fully reflect the risk of bank insolvency. This moral hazard reduces further the extent to which the costs of bank failure are internalised in bank decision making.

This benefit of capital regulation depends upon an increase of regulatory capital requirements increasing total capital, and hence reducing the overall probability of bank insolvency. It does *not* depend on the regulatory requirements being adjusted to reflect the risks of every individual bank exposure. More accurate tailoring of capital requirements to bank risks *may* be justified if the overall level of capital in the institution is relatively low and hence the risk of insolvency is relatively high. In this situation the social costs of risk-taking can greatly exceed the private costs, and so making regulatory capital more risk-sensitive, if this were to restrain risk-taking, would be socially beneficial. There are however two objections to this prescription:

- The banks which most require regulatory discipline are those that are most undercapitalised and with the lowest expected income. Such weak banks seek to take risks and exploit the financial 'safety net'. But these are also the institutions that are most likely to ignore any regulatory requirements. Bank discipline via risk-sensitive capital requirements is least effective on those institutions which most need to be disciplined.
- An alternative policy – major across the board increases in capital for all institutions – can achieve the same benefits of lowering the probability of insolvency and so reducing

incentives for socially undesirable risk-taking. Which of these two policies – across the board increases in capital or increased risk-sensitivity – is preferable depends upon their effectiveness and the relative costs of regulatory capital and of increasing the risk-sensitivity of capital requirements.

In fact, as will be discussed below, there are good reasons for believing that regulatory capital is not particularly expensive while sophisticated adjustment to risk is costly, especially if the adjustment has to be monitored by supervisors in order to check on compliance with capital regulations. If regulators are concerned to reduce excessively high probabilities of bank failure, then the most cost-effective response is therefore most likely an increase in the overall level of minimum capital requirements not improved risk-sensitivity.

A related justification for improved risk-sensitivity of capital requirements is that the 1988 Basel accord distorts bank decision making. For example a recent Financial Times editorial states that “calculated capital requirements using a crude measure of credit exposure ... inevitably led to a distortions in lending practices as banks exploited the loopholes”.<sup>4</sup> The difficulty with this analysis is again that it is not a proper cost benefit assessment. It does seem to be true that, since the introduction of the 1988 accord, banks have tended to increase holdings of assets whose true risks were relatively high compared to their regulatory risk-weightings. But this development was simply a response to the relative risk and return on different asset classes and would probably have taken place even in the absence of any regulatory capital requirements. The use of more risk-sensitive regulatory capital requirements to discourage such portfolio shifts can only be justified if it can be demonstrated that bank decisions over these asset holdings did not sufficiently internalise the social externalities of bank failure *and* it can be shown that greater sensitivity of regulatory capital requirements would be a cost effective way of internalising these social externalities. As our discussion has already suggested, both these assumptions can be challenged.

### **Private costs can lead to excessive caution on the part of banks.**

It is also arguable that the private costs of bank failure may exceed the social costs, resulting in bank decisions that are excessively cautious compared to what would be socially efficient, and

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<sup>4</sup> Financial Times, 23<sup>rd</sup> May 2001, page 26 [Editorial]. Date/ page to be checked.

suggesting that bank capital regulation, if anything, should encourage investment in relatively risky assets.

This may be true because there are two forms of private costs arising in the event of bank failure, which may be relatively less damaging from a social than a private perspective. The first of these costs are: loss of reputation and career disruption for bank management, =This is certainly a major cost to the incumbent management of the insolvent bank but may be a benefit to other managers who take advantage of resultant new career opportunities.<sup>5</sup> The second of these costs is loss of franchise value i.e. expected streams of future revenues that cannot be realised through the sale of bank assets.<sup>6</sup> Again the private costs may exceed the social cost, since other banks may be able to enter markets abandoned by the failed bank and take advantage of some of the lost revenues.

If these private costs of bank failure are substantial, and whether or not they exceed the corresponding social costs of failure, a bank that becomes short of capital and so is subject to financial distress will seek to reduce its risk exposures, for example by cutting off lines of credit, or reducing lending. If loss of capital occurs in a large number of banks then this can in turn create a sharp contraction of lending i.e. a so called ‘credit crunch’. Such a contraction may also be generated by an upward increase of capital requirements. This observation suggests that it is highly desirable that capital requirements remain relatively stable over the course of the economic cycle. A further reason for *not* making making regulatory capital requirements risk-sensitive.

The presence of these private costs implies that many banks –especially those with strong franchise-value and where management enjoy high levels of salary and prestige – have substantial incentives, operating independently of any regulatory capital requirements, to reduce the probability of insolvency to low levels. Bank capital regulation is therefore needed primarily for remaining low franchise-value high risk banks, those institutions that do not have incentives to discipline themselves. As already discussed, these are also the institutions that are least subject to

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<sup>5</sup> O’Hara (1983) provides a formal analysis of these costs.

<sup>6</sup> Franchise value appears in a number of theoretical and empirical studies, including Marcus (1984), .... And plays a central role in my own analysis of bank capital ratios. The next section discusses franchise value further.

regulatory capital discipline and where supervisory review and prompt corrective action are most needed in order to protect the safety and soundness of the banking system.

To conclude, it is clear that internalisation of the social costs of bank failure does not justify the changes to capital regulation proposed in the new Basel accord.<sup>7</sup> A much stronger case for the new accord is that, like previous Basel accords, it will promote improved standards of risk-management and internal control. We next address this benefit of capital regulation.

### Improving bank risk-management & internal controls.

A second benefit of minimum regulatory capital requirements is if they encourage banks to develop better systems of risk management and internal control. Bank insolvencies are commonly associated with failures of internal control. Individual bank employees exposing their bank to large amounts of risk or conducting major fraud have triggered well known individual bank failures, such as those of Barings Bank of Banco Ambrosiano. Inadequate controls over lending have also played a major role in exacerbating bank losses on lending to newly industrialised countries in the 1970s, to commercial property in the 1980s, and on a wide variety of loans in Japan, France, and elsewhere in the 1990s.

Where banks have good internal controls and are able to monitor and manage their risk exposures on an institution wide basis, failure is rare. The adequacy of controls is associated with both higher levels of franchise value and with good standards of corporate governance. Banks with high levels of expected income, and where shareholders have a strong influence over the operation of the institution, have strong incentives to protect themselves from the risk of insolvency and so operate effective internal systems of risk-management and control.

But in the case of other institutions – smaller banks, those banks with weaker franchises, i.e. relatively low levels of expected income and greater uncertainty of returns, or those where effective external shareholder or other market discipline is absent – internal controls can be weak. In this case by establishing standards for risk-management and control, standards that can be

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<sup>7</sup> Further justification for this conclusion is that the new Basel accord has been constructed so that the overall level of the regulatory capital in the system remains unchanged. Hence the average probability of bank failure, and the degree of internalisation of external costs, will be little changed under the revised accord.



externally monitored by supervisors and market participants, external capital regulation plays a significant role in addressing weaknesses of risk-management and internal control.

Crude as they were, the simple risk-weightings of the 1988 Basel accord forced bank management to address, very often for the first time, the question of whether the returns obtainable on their assets could justify the associated risks. Moreover banks that failed to manage their capital and come close to infringing the minimum requirements have been penalised heavily by the markets through deterioration in the cost and availability of external finance.

The 1996 Basel accord on market risk, and the European Union's capital adequacy directive (CAD) was a further catalyst, supporting the introduction of portfolio wide systems for measuring market Value at Risk (VaR) in investment banking.

The last decade and a half have seen considerable advances in the measurement of bank credit risk and the development of new opportunities for managing credit risk for example through securitisation or the writing of credit derivatives. The current consultation on the new Basel accord seeks to encourage banks to progress from standardised procedures where credit risk assessment is based on class of asset, through various levels of internal rating based modeling that allow for the quality of individual assets. These developments will, in turn, increase the safety and soundness of the banking system. It is therefore appropriate that the minimum regulatory capital requirements for credit risk should be revised, so as to provide greater incentive for the proper measurement and management of credit risks.

But how, exactly, are capital requirements to be used to encourage better standards for measuring and managing credit risk? The internal models approach introduced by the 1996 Basel accord and CAD, exemplifies one approach, that of offering institutions the opportunity to use their own internal risk-management systems for the computation of regulatory capital requirements. This provides an incentive to develop internal models, provided that they result in an overall reduction of capital requirements. But other more direct incentives can be envisaged that do not involve the use of the bank's own systems for computing regulatory capital charges. For example all banks could be subject to simple standardised calculations of capital charges for credit risk, with significant reductions in the overall requirement for those banks that can demonstrate that they have in place a satisfactory system for measuring and managing their portfolio risks.

The current Basel consultation does not discuss what form of incentive can best promote improvements to internal systems for measuring and managing credit risk, without at the same time sacrificing regulatory discipline.

### Providing a basis for intervention before insolvency has occurred.

The final benefit of minimum capital requirements is that they provide a basis for regulatory intervention in a troubled bank before insolvency has occurred. Regulatory authorities can require that a bank recapitalise, through new issue, a merger with a stronger institution, or other balance sheet restructuring. Without such regulation, the regulators will typically have to await until insolvency is threatened before taking action.

This benefit of regulatory capital requirements is best achieved when capital ratios:

- reflect up to date information about the financial soundness of the bank and in particular are computed according to accounting standards which force recognition of loan losses as soon as they can reasonably be foreseen
- are simple computations where success or failure in meeting the requirements can be easily assessed;
- do not alter substantially over time, except when there are major shifts of assets onto or off the balance sheet.

The experience of the 1980s savings and loan crisis in the US, illustrates how major increases in the losses associated with bank failure can mount, when regulators do not intervene to close down failing institutions at the earliest opportunity. The 1991 FIDICIA act in the US attempts to deal with this forbearance problem by setting legislative defined sequence of interventions in a troubled institution. The effectiveness of this sequence relies in turn on accurate measures of capital adequacy on both a simple leveraged and risk-adjusted basis.

No other country has introduced an equivalent statutory framework for regulatory intervention. But regulatory capital requirements, especially when they are published, are still a useful discipline forcing regulators to respond to financial difficulties of individual institutions, and imposing also a market discipline ( a decline of equity values and in the

availability of funding together with an increase in funding costs) on institutions that fail to observe the minimum levels of capital.

The possibility of shifting to internal ratings based computations of internal capital offered in the new Basel accord, creates potential problems for intervention in troubled institutions. Capital ratios will shift over time, as assets are re-rated. While supervisors will be closely watching the techniques used to determine ratings, banks may be able to manipulate ratings so as to avoid regulatory intervention. There must be a concern that the the new Basel accord, as it is currently framed, will erode the ability of regulators to intervene in troubled institutions.

### **Costs**

As with other financial regulations, we can distinguish three components of the costs of a new regime of capital regulation:- the direct costs of operating the regulations, the costs of compliance i.e. the costs of meeting the regulations that would not be borne by banks were the regulations left unchanged; and any indirect costs that arise because of any restrictions to competition created by the regulatory change.<sup>8</sup>

The direct costs of minimum capital regulation increase directly with the degree of complexity of the regulations. The 1988 accord involved relatively low direct costs, because risk-weighted capital could be calculated readily from basic balance sheet information including a breakdown of loan assets. The standardised approach of the new Basel accord is not much more complex and involves little significant increase of direct costs. Direct costs are considerably higher, when ratings are computed according to internal ratings or using credit risk models, because supervisors must devote resources to ensuring that the ratings or model used to compute the requirements are sound. Supervisors face great problems in recruiting staff qualified to monitor the risk-mangement of individual banks, so high levels of salary must be paid and there is always a risk that supervisory checks on such bank systems prove to be inadequate.

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<sup>8</sup> For further discussion see Isaac Alfons and Peter Andrews 'Cost-benefit analysis in financial regulation: how to do it and how it adds value', *Financial Regulation and Compliance*, November 1999

Compliance costs are those additional resources, devoted to computing capital ratios and making these calculations available to external audit or supervisory inspection, that would not be required by the banks were there no minimum capital regulations. Costs of compliance will vary considerably, depending upon the nature of the regulatory capital calculations. Using a standardised 'building block' approach these costs are generally fairly small.

An important exception is that even under a standardised approach computing the appropriate charges for off-balance sheet exposures may be costly, especially if the interpretation of the rules is not clearly established and the supervisors must be contacted to determine the application of minimum capital standards. The compliance costs may indeed be so high, in the case of derivatives or other off-balance sheet exposures, that banks avoid certain contracts altogether. This in turn may inhibit the hedging of risks.

The use of external ratings for determining minimum capital requirements will introduce some additional costs, since a rating must be paid for. Compliance costs of internal ratings are relatively small, provided that the bank in any case have been operating the rating system for its own management purpose and is able to use the same system both for management control and for regulatory purposes.

Another compliance cost associated with regulatory capital requirements is that they force banks to operate with lower levels of debt and higher levels of equity or other risk-absorbing capital. This is a cost if equity capital is more expensive than debt. However standard corporate financial theory suggests that these costs are rather small.<sup>9</sup> There is a tax advantage to debt, since interest payments are deductible. But this is not a 'social' cost, it is rather simply a transfer from bank shareholders to the fiscal authorities. If there is concern over the magnitude of this transfer, then regulatory capital requirements could themselves be made tax-deductible at some appropriate rate of interest (e.g. that on long term government debt)

Debt is also less expensive than equity because it plays a role in disciplining bank management – reducing the so called 'agency costs of equity' i.e. the opportunity that high levels of equity

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<sup>9</sup> For further discussion of this point see Richard A Brealey "Bank Capital requirements and the control of Bank Failure" in Bank of England Centre for Central Banking Studies (2001), *Financial Stability and Central Banks*, Routledge

capital give to management to pursue goals other than the maximisation of shareholder value. Regulatory intervention may however be a substitute for such discipline and if this is the case the cost of regulatory capital is not substantially higher than that of debt.

This is the theory. In practice regulatory capital may often appear to management to be more expensive than debt. Suppose equity market valuations are widely believed to be based on return on equity or earnings per share, without any adjustment for the ratio of debt and equity on the balance sheet. In this case reducing equity and increasing debt, provided this shift does not threaten financial distress, will be expected to raise market valuations. Regulatory capital may therefore be perceived by management as a cost, since it requires them to have more equity on the balance sheet than they would otherwise choose.

Minimum capital requirements do not appear to act as a significant barrier to competition, so indirect costs are relatively small. In this context it should also be noted that restrictions on competition that lead to increased bank profitability may actually promote safety and soundness. Thus indirect costs might actually be interpreted as an indirect benefit. But since they are in any case small, they can be safely ignored.

To conclude it can be seen that there are a variety of costs associated with regulatory capital requirements. Both direct costs and to a somewhat lesser extent compliance costs increase with the complexity of regulatory capital requirements. At the same time the impact on overall funding costs, of substituting regulatory capital for deposits or other debt are relatively small.

### **3. Capital regulation as an incentive mechanism**

I now briefly describe my own analysis of capital regulation as an incentive mechanism. More detailed analysis is provided in Milne and Whalley (1999, 2001) and in Milne (2001).

#### ***Regulatory minimum versus desired maximum capital adequacy***

##### **Banks hold a buffer of free capital to avoid regulatory intervention**

The basic insight explored in my work is that bank capital regulations are not (usually) a constraint on bank behaviour. Banks are forward looking. They also seek to avoid regulatory interventions, such as a requirement that they recapitalise or adjust their asset portfolio to comply with capital requirements. Such an intervention is costly because it distorts bank decisions and

uses up scarce senior management time. In my formal analysis I model the regulatory intervention as a forced recapitalisation, imposed at some fixed cost  $\gamma$  on bank shareholders, whenever regulatory capital is found to have fallen to the minimum required level. In their efforts to avoid this cost  $\gamma$  banks hold a buffer of capital that comfortably exceeds the regulatory minimum.

Other related justifications for holding a buffer of free capital can be provided. Banks management may wish to hold a “war chest” of capital, allowing them freedom to make acquisitions or other major investments without having to concern themselves with balance sheet constraints. A substantial buffer may also help maintain their credit standing. For all these reasons banks will wish to avoid infringing the regulatory requirements and almost always hold capital in excess, often substantially in excess of regulatory requirements. Where regulatory requirements are breached they are often breached by a margin. Almost never do banks hold exactly the minimum amount of regulatory capital. (See Table 1).

**Table 1: Distribution of Basel risk-weighted total capital ratio**

All OECD banks reporting this ratio to Fitch-IBCA: Required minimum level 8%

	1999	1998	1997	1996
<i>Number of banks</i>	2456	2453	2232	2110
<i>1 percentile</i>	6.0	6.9	7.3	7.4
<i>5 percentile</i>	9.0	9.1	9.0	9.0
<i>10 percentile</i>	10.0	9.9	9.9	9.7
<i>25 percentile</i>	11.0	10.9	11.0	11.0
<i>Median</i>	12.7	12.9	13.2	13.1
<i>Mean</i>	16.4	16.8	16.7	16.9

Source: Fitch-IBCA CD-ROM database, August 2000

My analysis shows that in this situation, when they seek to avoid the costs of a regulatory intervention, actual bank capital falls (almost always) between two extremes, the regulatory minimum and some desired maximum or target level. Costs of issuing new capital prevent banks from replenishing their capital instantaneously. They instead use retained earnings to gradually build up capital towards the desired level. Occasionally however weak performance drives down their level of capital towards the regulatory minimum. Because they hold a buffer of free capital, sufficient to protect them from frequent regulatory intervention, it is only very occasionally that capital ratios fall below the regulatory minima and typically bank capital will be at or close to the desired maximum level.

## **Strong banks hold substantial buffers, weak banks inadequate buffers**

My analysis also shows that the incentives to hold a buffer of free capital depend very much on the strength of the bank. A bank with a substantial franchise value will always recapitalise, rather than undergo an insolvency and bear the subsequent loss of franchise value to shareholders. For such a bank regulatory intervention and forced recapitalisation is relatively costly. Even for fairly large discrepancies between the costs of equity capital and debt finance, such banks choose to hold substantial buffers of free capital and only very rarely are subject to regulatory intervention.

A weak bank on the other hand, with little franchise value, will pay capital out to shareholders rather than risk losing that capital by keeping it inside the bank. Following a regulatory intervention it will also become insolvent rather than recapitalise. Such a bank holds an inadequate buffer of free capital and – assuming vigilance on the part of supervisors – only survives a relatively short period before it is closed down by regulators.

This divergence in the behaviour of strong and weak banks reflects the disciplining role of franchise value. ‘Banks with something to lose’ seek to avoid insolvency by maintaining substantial buffers of free capital. When, as is usually the case, they hold substantial buffers of free capital close to their desired level, then regulatory capital requirements have only a minor impact on their behaviour. When capital declines due to an adverse earnings shock, then regulatory capital requirements begin to affect their behaviour; and they also take further steps to reduce their exposure to risk.

## ***Regulatory capital requirements have only a modest impact on bank portfolios.***

My analysis also offers a further insight of relevance to the design of the new Basel accord. Interpreting them as forward looking incentive mechanisms, regulatory capital requirements often have only a fairly modest impact on bank portfolio allocation. Where returns are realisable in liquid markets – as will be the case with most market risks – then any bank struggling to meet regulatory capital requirements can do so simply by realising its position. In this case ex-ante capital requirements do not alter bank portfolio decisions at all. I have shown (Milne (2001) that the 1988 capital requirements, contrary to received wisdom, probably introduced no distortion in the allocation of bank assets between AA corporates (weighted at 100%) and OECD sovereigns (weighted at 0%) for the simple reason that both these exposures are highly liquid and therefore unaffected by capital requirements.

Even where bank exposures are illiquid, as is typical of most commercial bank assets, capital requirements will generally still have only a modest impact on lending decisions *because of the relatively small divergence between the long run costs of regulatory capital and of debt finance*. Consider a well capitalised institution that can treat insolvency or even a breach of the minimum capital requirements as a remote and unlikely possibility. For such a bank under Basel 1988 rules an investment of \$100mn in a totally illiquid asset with a 100% risk-weighting will need to be backed by \$8mn of equity or other risk-absorbing capital, plus some additional capital buffer that is determined independently of regulatory capital requirements. Supposing rather generously that the real cost of regulatory capital is 200 basis points higher than the real cost of debt, then the regulatory requirement imposes a 16 basis point increase (8% of 200) on the overall cost of funding this asset. This calculation suggests that the portfolio impact of capital requirements while not negligible, are relatively small compared, for example, to fluctuations in market rates of interest.

My analysis also supports the claims, made earlier, that strong banks discipline themselves while regulatory capital requirements do not control weak banks that require external discipline. For strong banks with substantial franchise value, investment in risky assets is further discouraged because holding them on balance sheet requires an increase in the buffer of free capital over and above the desired regulatory minimum. The required increase of the capital buffer depends on the riskiness of the income generated by the asset, and its correlation with the entire portfolio of the bank, but not on the regulatory capital requirement. Thus strong banks are discouraged from investing in risky assets, regardless of that assets regulatory capital risk-weighting.

Weak banks, on the other hand, benefit from investing in risky assets, regardless of regulatory capital requirements. The threat of future regulatory intervention is an ineffective discipline on such a bank, since their behaviour is based on exploiting the bank safety net i.e. hoping to gain from the upside of returns on risky assets while knowing that they are protected from any downside by shareholder limited liability. Provided that they are able to finance their investments by obtaining insured deposits or other guaranteed debt finance, they will then invest in relatively risky assets. Standard regulatory capital requirements are irrelevant to this decision, since the regulator is unable to impose any effective discipline on a failing bank. Only if deposit insurance and any other guarantees on debt finance are removed, so that the bank must compete for deposit or debt finance, or if there is a direct supervisory intervention, is the bank restrained from excessive risk-taking.



## 4. The new accord

### *A brief outline*

The new accord, s developed in the June 1999 and January 2001 consultation documents, has the following main features:

- The standardised risk-weightings are being redefined, so they will depend upon external ratings, according to the following schema:

**Table 2: proposed risk weightings (%) in the new Basel accord**

Credit assessment	Sovereign exposures	Bank exposures option 1 (based on sovereign rating)	Banks exposures option 2 (based on own rating) <i>long term claims &gt; 3 months</i>	Banks exposures option 2 (based on own rating) <i>short term claims &lt; 3 months</i>	Corporate exposures
AAA- AA-	0	20	20	20	20
A+ to A-	20	50	50	20	50
BBB+ to BBB-	50	100	50	20	100
BB+ to BB-	100	100	100	50	100
B+ to B-	100	100	100	50	150
Below B-	150	150	150	150	150
Unrated	100	100	50	20	100

Here national regulatory authorities will have the option of applying one of two different schemes for the risk-weighting of inter-bank claims, option 1 using the rating of the sovereign state where the banks are incorporated or option 2 using the rating of bank counter parties.

The Basel committee has developed a number of recommendations for implementing these revised standardised risk-weightings, including guidance for dealing with multiple ratings, use of export credit ratings for otherwise unrated sovereigns, the application of 150% weights to certain other high risk exposures. Residential mortgages will continue to be weighted at 50% but commercial mortgagegs will be weighted at 100%. The standard treatment of certain categories of asset (equity holdings, venture capital, retail assets) is still under discussion. Assets not elsewhere specified will continue to be weighted at 100%.

- As an alternative to the use of these standardised risk weightins, the January 1999 consultation also recommends two forms of Internal Rating Based (or IRB) approaches to

determining regulatory capital charges on banks, sovereigns, and corporate exposures. It is intended that banks, as they develop their risk-management systems, will move from the simple standardised approach, first to the simpler “foundation” IRB where probabilities of default are based on internal ratings but where losses given default (LGDs) are determined by regulatory rules for each asset category; and then onto a more sophisticated “advanced” IRB where losses given default will also be based on the banks own internal ratings. It is anticipated that this evolution will allow a reduction in overall capital charges. The application of IRB to certain asset classes, such as project finance, is still under discussion.

- More sophisticated methods have been introduced for computing regulatory capital when banks engage in risk mitigation, through either the use of financial securities as collateral on loans or through the use of certain eligible categories of credit derivative (total return swaps and credit default swaps). These calculations lead to lower capital charges where credit mitigation is in place, subject to retaining charges for maturity and currency mismatch, and setting a lower floor on the reduction of capital to allow for legal and other residual risks.
- Further specific provisions have been introduced in relation to asset-backed securitisation, ensuring that a reduction of capital charges is only possible when there is a “clean break” and the special purpose vehicle to which assets are transferred does not have recourse on the originating bank.
- In addition to these alternative methods for computing risk-weightings for credit risk, additional components of regulatory capital will now also be computed for the market risk of assets held on “banking book” (and thus excluded from the trading book assets still subject to the 1996 Basel accord on market risk) and for operational risk. In the case of operational risk three alternative schema for computing capital charges are also proposed, ranging from a simple institution wide calculation to one based on both asset classes and lines of business.
- As well as making the calculations of regulatory capital more sophisticated (the so called ‘pillar 1’ of the new accord) a greater role will also be given to *supervisory review* (pillar 2) and *market discipline* (pillar 3). Under pillar 2 supervisors will have the responsibility for assessing capital of individual institutions and have the power to impose higher capital requirements where they believe there are weaknesses in the risk management and control. Under pillar 3 banks will be required to make a variety of disclosures, both about their

systems of risk-management and control and about their capital management and capital ratios.

### ***Concerns and comments***

From the perspective of my own research, I identify a number of serious concerns with the proposed new accord.

1. Costs and benefits , as discussed in section 2, are not clearly addressed. Far too great an emphasis is placed on achieving the goal of greater risk sensitivity of capital requirements, without any arguments or evidence to justify this goal.
2. “Hardwiring” The accord generally assumes that bank risk-taking is determined by regulatory capital requirements, and does not consider the role of capital regulations as incentives that have an indirect effect on banks because they anticipate and wish to avoid future breaches of the requirements.
3. No clear distinction is drawn between minimum regulatory capital requirements, and the banks desired capital. Internal methodologies, such as IRB, are appropriately used for computing desired capital. Asking banks to use them to compute their minimum regulatory capital rather than their desired maximum capital risks creating major confusions in the risk-management functions of the banks.
4. The possibility of amplification of business cycle fluctuations, from the introduction of the IRB approach, is not taken sufficiently seriously.
5. The increased complexity of the new rules, and the direct costs of monitoring the IRB approach, will place heavy demands on supervisory resources and increase compliance costs. The greatest risk is that supervisory resources will be diverted away from the supervisory review of relatively weak low-franchise value banks onto strong high-franchise value banks who will be amongst the first to shift to the IRB approach. Overall regulatory discipline could be seriously weakened.

Despite these concerns I identify a number of positive features in the new accord. In particular the emphasis on supervisory review, provided it is appropriately targeted, is very welcome. With the right supervisory staff, facing the right career incentives (a major qualification) , supervisory review offers the opportunity to intervene early and in an effective manner to deal with problem

institutions. Market discipline is also welcome, although I remain concerned that the range of disclosure proposed in the new accord is so broad that it will confuse rather than illuminate market participants.

## **5. Some practical suggestions for the new Basel accord**

### ***Distinguish capital requirements from desired capital***

I conclude by making some simple practical suggestions for revision of the new accord, that will better enable it to achieve its overall goal of improving the safety and soundness of the financial system.

It will be much more appropriate if internal methodologies, such as the proposed IRB approaches or any future allowance for portfolio wide credit risk modelling, is used to determine banks' desired capital ratios not their regulatory minimum capital. As argued at length above, there is no net benefit to making regulatory capital requirements risk sensitive. The very serious objection that IRB will exacerbate the business cycle will also be eliminated.

Removal of risk sensitivity of minimum capital requirements is essential if they are to continue to play their essential role as a basis for regulatory intervention.

Banks should then be asked to use best available models to set desired capital and publish a plan and time scale for achieving that desired level of capital. Market discipline would severely punish any bank that was not able to justify and explain any failure to attain their targets. Regulators should offer substantial discounts (of the order of 20-30%, not 2-3% as in the current consultation) for banks that introduce effective credit risk management of this kind.

Operational risk and market risk should be excluded from the required regulatory minimum, but banks offered the maximum discount on regulatory capital must include operational and market risk in their own calculations of their desired capital.

Tax deductibility of regulatory capital (and corresponding increase in requirements for minimum regulatory capital) should be considered.

Finally, and very importantly, the scope of supervisory review must be adjusted, to clearly focus scarce supervisory resources onto the monitoring of weak banks with low incomes, low capital, and high risk.