

Some Aspects of Regulatory Capital

Jeremy Richardson
and Michael Stephenson

FSA OCCASIONAL PAPERS IN FINANCIAL REGULATION

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SOME ASPECTS OF REGULATORY CAPITAL

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FSA Occasional Paper

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Introduction

This paper addresses three questions. What is the purpose of regulatory capital requirements for different types of financial service firms? How can capital¹ best be used as one of the tools of regulation? What impact do capital requirements have? These questions are of considerable importance at the time of:

- the creation of the UK's single financial services regulator, the FSA, and the consequent development of the single Handbook² of rules and guidance for all firms³;
- the development of the FSA's model for assessing the risks posed to the objectives of regulation by all firms and across all markets, prioritising those risks and allocating its resources to different regulatory tools accordingly⁴;
- for banks, building societies and investment firms, the work being done to address the perceived shortcomings in the 1988 Basel Capital Accord⁵, and the parallel work in the EU⁶; and

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- 1 We do not attempt to define "capital" at the outset. As will become apparent, regulatory capital requirements are expressed in many different ways, and different instruments are counted by different regulators as capital. Full detail is contained in the rulebooks and guidance of the constituent parts of the FSA: for an overview, see "Background" in section 1 below.
 - 2 The Handbook will come into effect at the same time that the Financial Services and Markets Bill ("the Bill") is enacted. This date, which is expected to be in the fourth quarter of 2000, is referred to in this paper (as elsewhere) as "N2". Capital requirements will be set out in the Prudential Sourcebook, one component of the Handbook. An Interim Prudential Sourcebook is planned for N2, which will not give any scope for more far-reaching changes in capital requirements of the type foreshadowed in Section 1 below. However, such changes will be possible in the Integrated Prudential Sourcebook, currently proposed for implementation in 2002.
 - 3 Throughout this paper the term 'firm' is used to denote any entity (company, mutual, partnership or sole trader) which is (or will be after N2) regulated by the FSA.
 - 4 The FSA has recently published "A New Regulator for the New Millennium", which includes an outline proposal of how such a model could operate, and sets out the programme of work that will be needed to develop and implement it: see FSA (2000b).
 - 5 See Basel Committee (1988) for details of the Accord, and Basel Committee (1999b) for the proposals to replace it.
 - 6 See European Commission (1999) for the EU proposals.

- for insurers⁷, the work being done by the EU to review the solvency margin.

It should be stressed that this paper is not intended as a definitive statement of the FSA's views on future policy implementation, but rather as a set of ideas to stimulate debate. This particularly applies to the first section, which sets out some preliminary thinking on a possible broad framework within which the FSA could set capital requirements for regulated firms. Before the FSA could translate this into detailed proposals for firms' capital requirements as part of the single Handbook, further work would be needed on the practical implementation of the theoretical framework suggested here. Among other things, any changes the FSA makes to its capital regime will have to fit within the constraints of the FSA's international obligations, mainly the minimum standards imposed by European Directives and by the Basel Committee. All three sections of the paper point the way to further work that needs to be done, rather than aiming to be the last word on any subject. In any case, the FSA will be consulting all interested parties at key stages as more specific proposals develop out of this work.

The first part of the paper, **The Structure of Capital Requirements**, attempts to build a coherent theoretical framework for regulatory capital requirements across all types of financial business. It starts from first principles on the basic rationale for regulation, and describes the various ways in which regulators can use capital requirements to help meet the objectives of regulation.

The paper aims in this way to explore the balance between arguments about harmonisation and level playing fields on the one hand, and the reasons for diversity on the other⁸. A single set of requirements cannot work for all types and sizes of firm. But the FSA will have to be clear on where to draw the line between types of firm, and the analysis below represents a first attempt at this.

There are currently some 40 different categories of firm in the prudential rulebooks of existing regulators in the UK. The paper draws out the common themes which run

7 Throughout the paper, the term 'insurers' refers to both insurance companies and friendly societies.

8 Unfortunately, theoretical models of the financial sector that are rich enough to encompass the diversity of financial intermediation seen in practice become highly complicated very quickly. There is a large theoretical literature focusing on banks and their prudential supervision; for reviews of this, see for instance Freixas and Rochet (1997), and Dewatripont and Tirole (1994).

across different types of business and suggests that FSA-authorised firms could be placed into the four categories below, broadly aligned to the importance of preventing their failure and the impact if failure were to occur. If this broad categorisation were accepted, it could then provide a context for considering capital requirements. Some further differentiation within these categories may also be appropriate.

- Firms which are of material importance to others (which we describe as Type A). Mostly, these are firms which are of such a kind or such a scale (either in relation to the financial system as a whole or to an important market sector) that were they to fail the impact of their failure would be large and the failure would be likely to cause loss not just to their own customers but to those of other firms as well, and to the rest of the economy. The main focus of capital for such firms should be to reduce the risk of failure. A question for consideration is whether there could also be some other large firms that should be treated in the same way (ie Type A) simply because of the scale of the impact of their failure on their own customers.
- Firms which are not of such major significance, but where failure would cause direct loss to their customers. These are divided into two sub-categories (Types B and C). Capital rules for such firms should reflect the fact that there is less concern with preventing failure as opposed to reducing the loss that customers would suffer if failure occurs.
- Firms for which the consequences of failure are limited: there are no customers who are in a relationship with the firm that would lead to a direct loss (Type D firms). Rather the risk to customers comes from the consequences of bad advice or mis-selling. In the regulation of these firms, capital may play a minor role compared to other tools of regulation.

So capital is a more effective tool for some firms than for others. And the basis for setting capital is also likely to need to be different for different types of business – for some a fixed flat-rate capital requirement may be appropriate, whereas for others, high quality, risk-based capital requirements may be necessary. Capital is not the only answer; indeed it should be regarded as only mitigating risk, with the primary focus being on management and systems and controls. At the very least, without some assurance that the firm's systems for monitoring and measuring risk are adequate, the regulator cannot even be sure that the notional reported capital strength reasonably reflects the true risk position of the firm. As well as choosing the right balance of regu-

latory tools, regulators also need to take account of other mechanisms which are not part of the regulatory armoury, but which can also help them achieve their objectives. Market discipline is one important example: if the market is in a position to judge that a firm is weakly capitalised or poorly run, it may penalise the firm in various ways, such as charging a higher rate for borrowing, or discounting the firm's share price.

For those firms where capital is an important component of the regulatory approach, the most effective way to address concerns about a change in risk profile may include varying the individual firm's capital requirements. This is the theme of the second part of the paper, **Setting Differentiated Capital Ratios**.

Currently, the approach of varying capital requirements between individual institutions only applies for the most part to two groups of FSA-regulated institutions: banks and building societies. The basic concept is that there is a common risk measurement regime for firms of a common type, but that there is scope to vary the overall capital "multiplier". There are two reasons why it is interesting to consider this subject now.

First, the FSA will have a new power under the Financial Services and Markets Bill to vary capital requirements across the full range of authorised firms, and may decide, in line with the thinking in the first part of the paper, to extend this to sectors where this is not currently done. In consulting on how it should design its Prudential Sourcebook⁹, the FSA has said that prudential "standards should be set by reference to the objectives of prudential supervision which depend, for example, on the extent to which a firm's business involves liabilities to customers and counterparties and its significance within the financial system. Within certain sectors, we shall also differentiate by individual firm..."¹⁰.

Second, the proposed revision of the Basel Accord includes the concept of Supervisory Review, and within this there is the suggestion that supervisors may vary banks' capital

9 See FSA (1999c). The FSA's approach to setting differential capital requirements for individual firms will be in a separate section of the Handbook, the Supervision Manual.

10 See paragraph 1.5 of FSA(1999c). In the case of insurance companies, however, the ability to vary financial resources requirements by individual firm is constrained by the EU Insurance Directives, and the FSA has said that it does not intend to set requirements above the EU minimum (paragraph 4.44 of FSA (1999c)).

requirements. Through the parallel EU process for revising European Directives, this approach may also become extended throughout Europe to investment firms.

The second part of the paper therefore describes the way that the FSA currently sets capital requirements for UK-incorporated banks. It shows how this is consistent with a risk-based approach to regulation; it should help to achieve a cost-effective allocation of capital across the banking sector. However, the FSA is currently considering whether changes are needed to the current approach to ensure it fits well into the FSA-wide model for risk prioritisation and allocation of regulatory tools (see footnote 4 above).

This part of the paper also summarises how banks' current actual capital ratios compare with their FSA required target ratios. This shows that most banks have rather more capital than they need for regulatory purposes.

This should not be surprising. The appropriate minimum level of regulatory capital for any financial institution relates to the rationale for regulation, as crystallised in the FSA's objectives. This is meant to act as a floor below which there is significant risk to depositors which would require strong supervisory intervention. The level of capital chosen by management and/or shareholders of a bank depends on a different set of factors, which may vary according to the shareholding structure, attitudes to risk of those concerned, the nature of the bank's business and so on. There is no reason why these two processes should come up with the same number, nor indeed why the bank's unconstrained choice of capital ratio should be lower than what the supervisor judges to be the right minimum. The paper speculates on a number of different reasons why some banks' capital is well in excess of the FSA requirement¹¹.

This is an important issue. Clearly any regulator who has set capital requirements should know what impact they actually have on firms' behaviour. Only in this way can the regulator hope to predict whether changes to capital rules will deliver the benefits they are intended to, and assess what costs they will impose. Further work is needed on these issues, so that the FSA can analyse the costs and benefits of implementing both the Basel reform package and the Prudential Sourcebook.

11 Goldsworthy et al (2000) found that many Australian deposit-takers similarly hold capital well in excess of the regulatory minimum, and that there is only a weak tendency for such firms to reduce their capital ratios over time. Basel Committee (1999a) provides an extensive review of articles which attempt to answer questions such as the impact of capital requirements on the amount of capital that banks hold, their impact on the risk mix of banks' assets, and their impact on the macroeconomy. It has not proved possible to come up with firm conclusions to many of these questions.

Finally, in addition to influencing firms' overall level of capital, risk-based capital requirements also typically have the effect of making different types of lending or other business more or less attractive to financial firms, so potentially causing an allocation of business which diverges from the unregulated outcome. The third part of the paper, **Capital Requirements for Cross-Border Claims**, looks at one example where proposed rule changes would change the relative regulatory capital cost of different classes of bank lending, as an illustration of how incentives on banks can be changed in this way¹².

Specifically, the paper looks at the potential impact of one part of the Basel reform, namely the proposal that the risk-weighting of cross-border lending could be linked to the credit rating of the borrower's country of residence. Looking at the recent periods of crisis surrounding East Asia and Russia, the paper estimates how the new proposals would have changed banks' capital requirements for lending to some major countries that underwent rating changes over the period. We would expect banks, on the basis of their own credit controls and monitoring, to reduce lending as borrowers are down-rated, and the paper confirms that this happened. The question is whether this effect would be amplified by the changed capital requirement. This is just one area of inquiry among many being carried out into the impact that the Basel reform proposals might have.

12 Much work has been done to assess the impact of the 1988 Basel Accord, usefully reviewed in Basel Committee (1999a). For instance, some authors have argued that the switch in US bank portfolios from private sector loans to government securities is attributable to the new risk weighting scheme in the Accord (including 0% risk weight for government securities) (see for instance Hall (1993), Haubrich and Wachtel (1993) and Thakor (1996)). Ediz, Michael and Perraudin (1998), looking at UK banks, found some evidence that banks under regulatory capital pressure switched out of 100% risk-weighted assets, but that the most significant adjustment came in increases in Tier 1 capital. Data are generally not available that would determine whether banks switch into riskier assets **within** a given risk-weighting category, in pursuit of higher returns.

1 The Structure of Capital Requirements

Background

Firms authorised by the existing regulators in the UK fall into some 40 categories for the purposes of capital adequacy requirements. This structure reflects the different views of the pre-FSA regulators, reactions to past failures, and the European Directives from which many of the FSA's capital standards now derive.

The development of a single set of rules for FSA-authorised firms requires the FSA to reconsider the degree of differentiation in its capital requirements. This can only be done by addressing the question: what is the purpose of capital for different types of firm? The actual requirements may differ from the ideal – because of international obligations (which tend to emphasise a rather narrow interpretation of the level playing field) and other real-world considerations. But the FSA should at least have a coherent overall framework – and some objectives to aim for when international agreements are under renegotiation, as many are at present.

There is a variety of approaches amongst existing regulators:

- for banks and building societies, in broad terms, one regime applies to all¹³: the FSA distinguishes between individual institutions ("trigger ratios" and "threshold solvency ratios"), but not between different types of institution¹⁴;
- for life insurance business, the Minimum Guarantee Fund (MGF) varies according to the type of firm (i.e. mutual or incorporated), while the Required Solvency Margin (RSM) may be based on mathematical reserves and / or capital at risk;

13 An outline of this is given in Section 2 below, under "The capital framework for banks". The same approach, with minor differences of detail, applies to building societies.

14 However, as described in Section 2, a peer group approach is used in setting individual bank trigger ratios, so there is some sense in which differentiation by type could be said to occur, given that each peer group roughly corresponds to a type of bank.

- for general insurance business, the MGF varies according to both the type of firm and the class of business, while the RSM may be based on either premium volume or claims experience;
- the SFA operates a single regime for broker/dealers which does not differentiate firms by scale or diversity of business; there is no premium to reflect the more limited diversification of these firms relative to (larger) banks;
- for most advisers, arrangers and managers, FSA, IMRO and PIA rely on a minimum own funds requirement supplemented in some cases (broadly firms falling within the Investment Services Directive scope) by a requirement based on firms' annual expenditure. Additionally under this heading -
 - where required by directives, larger firms are subject to the same risk-based capital requirements (i.e. capital related to credit, market risk etc) as are applied to SFA broker-dealers;
 - IFAs, including networks, are differentiated by size: small IFAs are subject to a flat minimum own funds requirement of £10,000, mainly as a substance test; larger IFAs (more than 25 advisers) and networks are subject to an expenditure requirement;
- for professional firms, the Recognised Professional Bodies¹⁵ (RPBs) set no capital requirement – only a requirement for solvency; capital was thought to be unnecessary for pure advisers.

The objectives of prudential supervision

There are two widely accepted rationales for prudential supervision¹⁶. These are expressed in two of the FSA's objectives under the Financial Services and Markets Bill:

15 These are the eight professional bodies which regulate some 15,000 firms of solicitors, accountants and actuaries in the UK for investment business. Proposals for future arrangements for the regulation of professional firms are set out in FSA (1999b).

16 See for example Llewellyn (1999) and Davies (1998) for an exposition of the arguments for the regulation (prudential and other) of financial services.

maintaining confidence in the UK financial system; and securing an appropriate degree of protection for consumers¹⁷.

Maintaining confidence in the UK financial system

Maintaining confidence in the UK financial system involves many aspects of regulation. When considering the role of regulatory capital, the most relevant threat to confidence is that arising from the failure of regulated firms. It seems reasonable to expect that any regulator given the duty to maintain confidence in the financial system will be concerned about the failure of financial firms.

However, the degree of concern will vary greatly with the size and nature of the firm; and even for the most important financial firms, regulation should not have the effect of guaranteeing that they will never fail. Failures deliver benefits in a competitive market – they encourage innovation and efficiency by rewarding successful firms with increased market share, and threatening the less successful with failure. The FSA has made clear its view that market confidence does not require a zero level of failures of regulated firms¹⁸.

Having said this, the FSA has made it clear that it will aim to maintain a regime which ensures a **low** incidence of failures of regulated firms. There are several reasons why regulators will not in general be indifferent to the failure of a regulated firm.

First, some firms are of such a kind and large enough, or occupy a sufficiently pivotal place in the financial system or a key market segment, that their failure (either actual or rumoured to be imminent) might result in adverse consequences for other agents (firms or individuals). This can arise through:

- contagion through liabilities to other regulated firms. This may occur in a number of ways – for example through defaults on interbank exposures or on uncompleted payments and settlements¹⁹;

17 FSA (1999c) also mentions the prevention of financial crime as an objective relevant to prudential supervision. However, as that Consultative Paper says, financial crime is essentially an issue of systems and controls rather than capital standards.

18 FSA (2000b) expands on the FSA's interpretation of its market confidence objective.

19 Michael (1998) estimates the scale of interlinkage in the UK.

- confidence-related effects on other regulated firms. The traditional area of concern is the possibility of a run on a bank leading to insolvency due to the combination of illiquid assets and liquid deposits: these effects can reinforce direct contagion effects²⁰. Insurance companies may also be subject to runs, although these are very rare in the United Kingdom;
- other channels. For instance, if an important firm providing employer liability insurance fails, there may not be enough underwriting capacity left in that sector of the market for employers to fulfil their legal obligations at a reasonable price.

Second, there are some events which, alone or in combination, might result in the failure of a group of firms, or changes in their behaviour, large enough to have a material impact on the financial system or the real economy. One example would be the risk to a group of banks with concentrated exposure to the property market resulting from a significant property downturn combined with a recession, resulting in foreclosures with insufficient collateral to cover the loss. Another would be the reaction to a severe weather event on the part of a number of general insurers, who might withdraw coverage from a geographic area or type of risk. This situation will be referred to below as 'collective vulnerability'.

Third, the economic loss to customers of a failed firm may not match the amount recoverable either through insolvency proceedings or a compensation scheme²¹. For example, the failure of a health insurance provider might result in some of its policy holders being unable to secure new cover due to their age or illness arising since the previous policy was taken out.

Fourth, customers might incur other costs if they have to re-arrange their affairs after a firm with which they do business fails. For example, some borrowers from a failed

20 The seminal article providing a model of how a sound bank can be forced into bankruptcy by a "pure panic" run on deposits is Diamond and Dybvig (1983). Calomiris and Gorton (1991) review the literature on banking panics.

21 Apart from examples of the type given here, the loss to the firm's customers is reduced (or removed) by a compensation scheme. But it is worth noting that the effect of this is only to transfer the economic loss from customers of the failed firm to other firms (which may then in turn pass on some of the loss to their own customers).

bank may have difficulty establishing new credit lines²². Equally, clients of a failed financial adviser might have to find a new adviser, who may have difficulty getting records.

Finally, bearing in mind that there may be the occasional failure of a regulated firm, it is in general preferable on cost grounds to run it down while it is a going concern rather than attempting to recover assets from the firm in insolvency. For many firms there is a sizeable gap between their value as a going concern and as a gone concern, and there can also be a very long gap after an insolvency before all the value is recovered and can be distributed.

Securing an appropriate degree of consumer protection

The value of a financial contract to a customer depends on the behaviour of the firm after the contract has been agreed, or (in the case of pure arrangers) on behaviour such as bad advice which may only come to light some time after the contract has been discharged. It would be socially inefficient if each customer engaged in the oversight necessary to ensure that the firm was carrying out its business in a way that did not threaten the value of the contract, or to check if evidence of bad advice had come to light. In addition, the individual customer has very limited power over the firm – in many cases limited to taking business elsewhere²³. There are several ways in which consumer interests might be threatened.

- *Bank depositors* are generally unsecured creditors if the bank fails, ranking behind secured creditors (but ahead of subordinated debt holders and equity holders).
- *Individual depositors in building societies* may be in a slightly different position depending on whether they are members (i.e. owners) of a society, ranking behind subordinated debt holders, or corporate, inter-bank or other 'wholesale' depositors.

22 Slovin et al (1993) gives evidence of the adverse impact on borrowers in the case of the Continental Illinois failure.

23 Dewatripont and Tirole (1993, 1994) propose a rationale for banking regulation based on arguments of this type – the need for a depositors' representative. The key features of their rationale apply more generally to other financial firms.

- In the winding up of a *life insurance company*, *policyholders* are treated as unsecured creditors. Life companies are required under the Insurance Companies Act to establish and maintain a statutory fund(s) for their long-term business that effectively ring-fences policyholder assets from shareholder assets. A policyholder's first recourse is to the assets of the statutory fund, and, if there is a deficiency, to any surplus assets following the payout of liabilities in the rest of the company. The statutory fund and the company are liquidated separately.
- *General insurance policy holders* are treated as unsecured creditors.
- If properly segregated, *client money*²⁴ is not available to a liquidator in the event of the firm being wound up and the amount available is enough to ensure that there is no customer exposure to the failure of a firm. If there is a shortfall in client money, then this should be made up by the firm if it can. If the firm cannot make up the shortfall, and as a result is insolvent, then typically the client money is 'pooled' and rules determine how the losses are shared²⁵.
- Firms may be required to pay *compensation to customers* for conduct-of-business rule breaches (e.g. compensation paid by IFAs for pensions mis-selling), even if they do not hold client money. If this drives a firm into insolvency, some customers do not receive full compensation.

In all these cases, customers facing losses may have access to the appropriate compensation scheme as described further below, but protection is less than 100% in most cases. So as with maintaining confidence, this gives the regulator an interest in reducing the incidence of failure of financial firms; it also gives it an interest in applying regulatory tools that add to the protection offered by compensation schemes, for the occasions when firms do fail. For some of the largest firms, even if they do not

24 This is one area where there are a number of rules for different classes of firm. This paragraph describes the situation currently applying to most of them. FSA is consulting at the moment on the issue of how client money is pooled in the event of a firm's default (FSA (2000a)), and is due to consult shortly on more general changes to the Client Money Rules as part of the creation of the single Handbook.

25 The liquidator is allowed to draw on the client money "pot" to meet the cost of distributing money to clients, which can be significant. The current Consultative Paper suggests ways of insulating the money available for distribution against this cost.

pose the type of knock-on effects described above, the potential scale of direct consumer loss if they do fail may mean that minimising the risk of their failure is still the regulator's main objective.

The benefits of regulatory capital

In general, requiring a firm to hold regulatory capital has three effects that regulators regard as helping them meet their objectives.

- First, it provides a buffer to absorb unexpected losses (including shortfalls in client money accounts or compensation claims)²⁶. The risk of insolvency is therefore reduced, even if the behaviour of management does not change.
- Second, if the regulatory capital requirement exceeds what the firm would voluntarily hold, the cost of its failure to equity holders and subordinated debt holders increases: the cost of failure is thus shifted towards the owners, and away from other firms and their customers. Although the probability of failure should fall because of the higher capital buffer, the net impact may nevertheless be stronger incentives on the capital holders to operate effective oversight over the firm's management²⁷. The firm is then less likely to be operated in a way that threatens its solvency, or breaches conduct of business or client money regulations.
- Finally, market and public confidence may be higher in a firm that is known by markets and customers to be well capitalised.

Limits of capital

However, requiring firms to increase their regulatory capital is not costless where it leads to an increase in actual capital. In economic terms, regulatory capital should not be increased beyond the point where the marginal cost of further increases outweighs the marginal benefit from holding capital. The costs of excessive capital requirements

26 There is also a debate (not reflected here) about the role of capital and provisions in covering expected and unexpected losses.

27 Increased regulation may encourage more risk-averse investors to hold financial company equity.

may include a perverse incentive effect, since requiring more capital might induce firms to seek higher returns in areas that are high risk or outside their core business²⁸.

Moreover, regulatory capital is just one of a number of regulatory tools, alongside other prudential supervision techniques²⁹ and regulations covering conduct of business and client money. Ideally, the marginal costs and marginal benefits of all these tools applied in combination need to be judged, to try to decide on the most efficient mix. For instance, if imposing higher capital requirements gives less benefit than increasing, by the cost-equivalent amount, the use of another tool which would achieve the same result, then it is the other tool that should be used. Additionally, tools are generally only effective in combination: for instance, the imposition of capital rules in isolation is of little value if the regulator cannot be sure that the firm has adequate systems to monitor and measure the risks that the capital rules are intended to limit, and that the firm's management are honest and competent.

The Bill stipulates six principles that the FSA must have regard to in meeting its statutory objectives, which are referred to in the FSA's planned new operating framework³⁰ as the principles of good regulation. One of these principles is ensuring that the regulatory burden is proportionate to the benefits, which encapsulates the economic concepts above. Another principle is that competition between firms should not be distorted unnecessarily, and a third is the desirability of facilitating innovation in connection with regulated activities. In refining the broad framework suggested in this paper for the setting of capital requirements, these will be three key principles guiding the FSA's work. Although it is taken as a given for the purpose of this paper that placing capital requirements on firms imposes costs on them, this further work will have to include some quantification of how large are the costs imposed on firms by any particular formulation of capital requirements.

28 Some theoretical models predict this effect – Rochet (1992) provides a synthesis of the theoretical literature on the incentive effects of capital requirements. Empirical evidence is lacking, not least because it is difficult to obtain hard data showing a bank increasing the riskiness of its assets over time: Basel Committee (1999a) cites four empirical studies, none finding evidence for a perverse incentive effect.

29 The theoretical literature on prudential regulation has tended to focus exclusively on capital requirements and enforced closure. There has been very little about the interaction of capital with other continuing supervisory tools available to the regulator. Two recent attempts to fill this gap are Milne & Whalley (1999) and Bhattacharya et al. (1999).

30 See FSA (2000b).

Finally, a fourth principle is that the international competitiveness of the UK should be maintained. It is easy to see that a rigid and stifling system of regulation could drive financial firms to re-locate, so the FSA will need to consider how its capital rules compare with those imposed by competing jurisdictions. Many of the key jurisdictions are subject to some or all of the same international minimum standards as the FSA, and the FSA has given a commitment³¹ not to impose prudential standards higher than those required by its international obligations unless it considers this is justified by the risk. But up to a certain point, increasing the intensity of regulation can actually enhance confidence in the UK market and thereby enhance the attractiveness of the UK to financial firms as a place to do business.

Lender of last resort, bail-out, deposit protection and investor compensation

There are a number of mechanisms that provide potential support to some classes of financial firm (or their customers) if they find themselves in difficulty. A bank that is solvent in the sense of assets exceeding liabilities but has a temporary liquidity shortfall may be able to obtain lender of last resort facilities from the central bank³². Liquidity support might be provided (usually at penal interest rates) against good collateral. If the bank is insolvent there is a possibility that the government or central bank may recapitalise it (bail it out). This may be carried out by means of an equity injection, or at below-market interest rates. The availability of any of these mechanisms is subject to a great degree of 'constructive ambiguity', to minimise moral hazard. In the case of building societies the larger societies have tended to act as lenders of last resort to the smaller, and have in extreme cases engaged in rescue mergers.

There are various compensation schemes in the UK³³, which protect customers rather than firms (firms almost always have to be in liquidation before these schemes are activated). Depositors in most banks authorised to take deposits in the UK have access to the Deposit Protection Scheme, which covers 90% of a bank's liabilities to a depositor, up to £20,000; a similar protection scheme operates for building society

31 In FSA (1999c).

32 The development of the theory of lender of last resort is reviewed in Freixas et al (1999).

33 From N2 (see footnote 2 above), a single compensation scheme is planned to replace the various arrangements referred to here. It is likely that there will be some changes in the scope and limits of some of the component schemes – see proposals in FSA (1999a).

depositors. The Investor Compensation Scheme provides funds for private clients of authorised investment firms that have gone out of business, paying the first £30,000 of a valid claim in full and 90% of the next £20,000. Holders of UK insurance policies with an authorised insurer have access to the policyholder protection fund established by the Policyholder Protection Act.

If protection were complete (100% coverage of customers' assets without limit) there could be problems of moral hazard in the insured firms and their counterparties³⁴. It is to minimise this that such schemes are almost always subject to caps on payments to customers and/or elements of co-insurance. In addition, such schemes are rarely if ever priced or rationed in the way that private insurance cover is, increasing the reliance on regulatory capital³⁵.

Where such schemes operate, one aim of prudential supervision is to reduce the contingent liability of the central bank (lender of last resort), the taxpayer (bail-outs) or other firms in the industry and their customers (deposit protection and investor compensation). Requiring regulatory capital to be held by firms covered by these schemes reduces the probability of a call on the schemes, and the burden in the case of failure is shifted away from these groups to the owners and subordinated debt holders of the firm. This should increase the degree of confidence in the market and the security of consumers for the reasons set out above. To the extent that these schemes do not provide 100% cover to customers, regulatory capital also has a role in safeguarding the uninsured portion of customers' assets.

Potential alternatives to regulatory capital

There are also alternative ways of achieving some of the same objectives as those achieved in specific cases by prudential capital. One possible alternative is *Professional Indemnity Insurance* (PII). PII is an insurance policy indemnifying firms or sole practitioners against financial losses they may incur as a result of their negligence. However, there are a number of problems with using PII as an alternative to prudential capital. PII insures firms, not their customers, and only addresses a subset

34 The experience of the US thrifts in the 1980s (where deposit insurance was in practice unlimited) is relevant here. For descriptions of this episode, see Kane (1990) and White (1991).

35 See Berger et al (1995).

of the risks faced by customers of firms. Problems can also arise when a large number of claims are made in a short period of time. In its favour, PII may be a more efficient use of total capital in the system in the case of low-frequency high-cost events, allowing the same amount of capital (in the insurance industry) to cover these risks in a number of different firms.

Another alternative is a *bonding scheme*, such as that used by the Association of British Travel Agents. Bonding schemes were considered by PIA and FIMBRA as an alternative to compulsory PII, but were rejected as neither regulator wished to take responsibility for handling the large sums of money that would be paid as bonds. Nevertheless, this alternative to regulatory capital may be worth further exploration for some firms.

Finally, it is generally agreed that *market discipline* reinforces regulation (including capital requirements)³⁶. It can act through a number of channels. A worsening of the market's view about the soundness of a firm is often reflected in a fall in the firm's share price, or an increased spread on its traded securities, particularly if these carry a public rating which is downgraded by the rating agency. The firm may also have to pay more for funds in the wholesale market. And less tangibly, evidence of weak management can damage a firm's reputation, which may make it harder for it to win new business. All these factors impose incentives, in varying degrees on different firms, to operate in a sound and efficient manner, and to hold capital as a cushion against future losses.

The more information the market has about a firm, the more accurate a view it can form about its soundness, and hence the more effective the discipline it can apply. So one way in which regulators can enhance the role of market discipline is to encourage greater public disclosure by firms of relevant information about their financial position and the way they run their business³⁷.

36 Flannery (1998) provides an extensive survey of the empirical literature in the US examining how well the market valuation of banks' traded instruments tracks their financial condition.

37 In the case of banks, the Basel Committee has set out the types of information that banks should disclose, under six broad headings (Basel Committee (1998)). Building on this, Basel Committee (2000) provides guidance on what disclosures should be made to enhance the role of market discipline in promoting bank capital adequacy.

Some argue that market discipline could partly replace capital requirements³⁸. However, there are probably limits to how far this would work in the UK. Only a small proportion of the UK regulated population currently has tradable debt instruments through which the market can express its view on the soundness of a firm, and some of this may not be regularly traded. Equally, only a few firms are publicly rated. One of the suggested ways to get round this would be for the regulators to intervene to try to foster a deeper and more liquid market in tradable bank debt. But even if the market could be developed in this way in the specific case of the UK, it cannot in general be assumed that the market and the regulator will form their views on capital on the basis of the same objective function. Thus the views of the FSA and the market on the appropriate level of capital for a particular firm are likely to differ.

The structure of capital requirements

This section considers the role that capital requirements can play alongside other regulatory tools.

At the highest level, the Prudential Sourcebook (and the Principles and the Threshold Conditions for Permission) will stipulate that all authorised firms should maintain financial resources that are adequate in relation to their regulated activities. Thus all firms must, at a minimum, be solvent (be able to meet their liabilities as they fall due)³⁹. The issue is to decide which authorised firms should be required to hold more capital than this, how the amount of capital should be assessed and what form it should take. This will in general be governed by the relationship between the regulator's objectives in a particular case and the effects of requiring regulatory capital. This relationship suggests a 'four-type' structure of capital requirements, described below and summarised in Table 1.

38 See for instance Calomiris (1997), who proposes mandatory issuance of subordinated debt by banks, with supervisory intervention if the market spread on a bank's debt exceeds a pre-set level. One jurisdiction requires banks to issue subordinated debt up to a certain percentage of their deposit base and obtain a credit rating, as a supplement to their supervision.

39 Credit Unions, which are covered by a Specialist Sourcebook, may in their early stages have negative net worth. The FSA is currently considering the nature of capital requirements for these firms.

Table 1: Possible capital requirements

Type	Nature of firm	Examples	Capital treatment
A	Material effect on financial system or a key market sector. Other firms whose direct impact of failure on customers would be large relative to UK economy.	Large banks Large broker-dealers Large life insurers Some general insurers	Risk-based capital requirements Emphasis also on Tier 1 capital ⁴⁰ (to prevent failure)
B	Customers in debtor-creditor relationship with firm. Customers become unsecured creditors on default – (e.g. depositors and policy-holders)	Other banks Building societies Other life insurers Other general insurers	Risk-based capital requirements Mix of Tier 1 and Tier 2 (to absorb loss rather than prevent failure)
C	Customers in fiduciary relationship with firm. Customer assets segregated from firm assets – (e.g. client money holdings)	Other principal dealers	Risk-based capital requirements Mix of Tier 1 and Tier 2, plus other sub debt (to absorb loss rather than prevent failure)
D	No customer assets but risk to customers via bad advice or mis-selling	Most IFAs, professional firms	Mixture of flat and size-related capital requirements Focus mainly on net tangible assets

For some firms, regulatory capital requirements will be one of the main tools deployed by regulators. This will normally be the case where regulators are especially concerned to reduce the probability of a firm or class of firms failing. Such (Type A) firms will

40 For a description of the various Tiers of capital, see "The composition of capital" below.

generally be those whose failure would pose a threat of systemic problems or other major risk. The amount of regulatory capital to be held by Type A firms should be set by reference to direct measures of the risks (credit, market, operational and insurance risks) that the firm is subject to and the regulator's view of the appropriate degree of confidence with which failure should be avoided.

For other firms regulators will be concerned about the survival of a firm (and payouts to consumers if insolvency does occur), but for reasons other than the major risks which characterise Type A firms. This will normally revolve around the protection of customers' assets. In these cases regulatory capital requirements will stand alongside other tools of regulation (prudential, conduct of business or client money) which will also be used to the same end. As in the case of Type A firms, the capital should be risk-based.

There is a useful sub-division in this category. For some (Type B) firms customers become unsecured creditors in the event of the insolvency of the firm. They stand in a debtor-creditor relationship with the firm – bank depositors are an example. For other (Type C) firms, regulators require customers' assets to be segregated from the balance sheet of the firm. Here customers are in a fiduciary relationship with the firm – client-money holders, for example. These customers are therefore in principle in a more favourable position in the event of insolvency, although they can be exposed to loss if there is at the same time a shortfall for any reason in the segregated assets.

Finally, for many (Type D) firms regulatory capital requirements (although they may have a role) will be less important in the overall supervisory environment than other tools. This will generally be the case where the failure of a firm does not of itself pose a direct threat to customers. Rather, the regulatory concern arises from the possibility of losses to customers through bad advice, or mis-selling. In such cases there will be less need for capital to be based strictly on risk. Capital would be based on a mixture of a flat charge for the smaller firms in this category, plus a size-related charge for the larger ones.

The case for any positive regulatory capital requirement for Type D firms is weaker. The scale of the risks that they can pose to the FSA's regulatory objectives could certainly be significant in some cases. But the objectives might be better served if these firms and their regulators were to use their resources to carry out more frequent and stringent conduct-of-business tests, as opposed to maintaining and monitoring capital. However, a simple capital requirement has the advantage that a

firm's compliance can be assessed with relative certainty, while solvency is inevitably subject to greater uncertainty.

Boundaries between these categories will need to be drawn. The boundary between Type D firms and the rest is fairly straightforward, since the distinction relies on a type of business test rather than size. FSA Permissions may be helpful in deciding which type a firm fits into, as may considerations of the type of regulated activity. Similarly the boundary between Types B and C is fairly straightforward. Much more difficult is the boundary between Type A firms and the others, since size and judgement are key components of the distinction (see below, 'A categorisation of firms'). Errors in this process would result in either some Type A firms being treated as outside Type A (resulting in excess regulatory risk) or some non-Type A firms being treated as Type A (resulting in excess regulation).

Consolidated supervision and capital requirements

It is individual firms that are the direct object of the FSA's supervision (and in general, regulation). But many FSA authorised firms operate as part of financial or mixed groups, which may contain (for example) a bank, a securities firm, an IFA network and an insurance company (and can indeed contain more than one of each of these)⁴¹. Consolidated supervision is intended as an enhancement to solo supervision, aiming to add to the effectiveness of the supervision of the authorised firms in a group, with the same fundamental objectives. It can achieve this in two main ways.

First, it can address the fact that the firm may be subject to the risk of financial loss or reputational damage because of its membership of a group. These risks can take various forms. The firm can suffer a direct loss on balances due to it from another part of the group, or there may be another form of financial linkage such as a guarantee or other contingent liability. Even if there is no contractual obligation, a firm may be under commercial pressure to replace losses elsewhere in the group. Financial loss can be transmitted via capital, as group management may withdraw capital from the firm to make good a shortfall in another group firm, or the regulated firm may lose its

41 For a review of the literature on the implications of various types of cross-business link-up, see for instance Santos (1998) (banks/ securities firms), Eisenbeis (1996) (banks/ insurance companies) and Saunders (1994) (banks/ non-financial firms). The issues involved in supervising financial conglomerates are considered in De Swaan (1995).

access to new capital because of losses elsewhere. Finally, problems elsewhere in the group can cause the firm to suffer a loss of reputation.

Second, consolidated supervision may help to address the shortcomings of solo supervision. Activities being generated by the firm but booked elsewhere in the group can be made subject to an appropriate level of regulatory requirement (such as capital). It can also prevent group structures being used to camouflage the real strength (or weakness) of firms through practices such as double gearing (where the same capital is in effect held against risks in more than one group firm).

One of the tools of consolidated supervision is a consolidated capital adequacy requirement, which should be applied in a way that is related to the solo capital requirements of the firms in the group. There is the issue of what type of consolidated capital requirement is consistent with an approach that is geared towards individual firms, and may put different firms within a group in different categories. The best approach is probably to say that if a group contains a firm subject to a risk-based requirement on a solo basis, then the normal presumption is that the group should be subject to a consolidated risk-based capital requirement.

The composition of capital

So far the discussion has ignored the issue of the composition of regulatory capital. The Basel Accord and the Own Funds Directive (OFD) set out three Tiers of capital⁴². Tier 1 includes equity, reserves and audited current year profits; Tier 2 includes revaluation reserves, general provisions and some classes of subordinated debt; and Tier 3 (for trading book risk only) includes a greater variety of subordinated debt. Since the approach set out in Table 1 above gives different reasons for holding regulatory capital for each of the four types of firm, it is reasonable to consider whether the instruments satisfying the requirements of capital for each type should also be different. For these purposes, probably the three most relevant properties of capital are: ability to absorb losses; flexibility; and permanence. The relative desirability of each

42 Although this three-Tier terminology is not used in (for instance) the Insurance Directives, we find it a helpful categorisation to use here in discussing capital requirements for firms carrying on all types of business.

of these properties seems likely to vary depending on which of the four Types the firm falls into.

Where the objective is to reduce the probability of insolvency, we would argue that there is a very restricted class of capital instrument that is notably more effective than others, namely Tier 1 capital: it would appear to have the best combination of ability to absorb losses, flexibility, and permanence to fulfil this role, given the constraints that the market imposes on issuers of capital in practice. The arguments are as follows:

- Only equity and reserves can absorb losses in a completely unconstrained way, and hence offer protection against insolvency. Convertible debt can also allow the continuation of the firm as a going concern, insofar as it can be turned into equity at the issuer's option at a time when formally tapping the equity market might be difficult. However, as in the case of payments stand-stills (see below), this may give out strong adverse signals, and dilution effects have to be taken into account.
- Funding flexibility essentially means an ability to waive interest payments on debt, and/or not having to repay outstanding principal amounts. Although an ability to waive payments is a useful feature of capital for the issuer, debt and dividend payments usually have a strong signalling element. In reality, stopping payments on any form of debt would send a highly adverse signal in most circumstances, and could only be undertaken *in extremis* (even where legally permitted, e.g. hybrid debt instruments). So the flexibility of Tier 2/3 instruments may be more apparent than real. The same is probably true of preference shares.
- So in terms of flexibility of payment, there is not much to distinguish between most capital instruments, because of the constraints of the market. Only equity has any real flexibility, and even this is constrained: firms tend only to waive dividend payments when times are very bad; at other times, dividends will be smoothed compared to earnings. Reserves built up from past undistributed profits also involve no obligation to pay interest or principal, and so provide another form of capital which can effectively protect against insolvency. In sum, we would argue that equity and reserves are more effective than any other form of capital in terms of their ability to reduce the probability of insolvency.

For Type A firms these arguments suggest that, in setting capital requirements, regulators should attach greater weight to Tier 1 capital than other instruments. For Type B firms a risk-based requirement relating to the sum of Tier 1 and 2 is indicated. However, this could be implemented in a number of ways: for example, these firms could be offered the option of a lower overall capital requirement with a higher proportion of Tier 1 (reflecting the improved quality of the resulting mix). For Type C firms the capital requirement could be set by reference to a wider definition, including some categories of subordinated debt excluded from Tier 2. Again, flexibility in the mix of Tiers could be a feature of this requirement. Lastly, for Type D firms the main requirements are to demonstrate to the market and the public that the firm has some financial substance, and to help provide owners with appropriate incentives. This suggests that capital can be defined very widely in this case: a requirement based on net tangible assets might best serve the regulatory objectives. The approach suggested here to the four types of firm is reflected in the "Capital treatment" column of Table 1 above.

Finally, it is important for regulators of investment business firms to take account of the ability of the firm to liquidate assets in time of need. The current regime requires that capital is adjusted for illiquid assets, and some form of this would probably need to be carried over to the new regime.

A categorisation of firms

A great deal of detailed work would be required to map the highly diverse FSA-regulated population into the four broad types set out above. This section gives some examples of how certain kinds of firm might be allocated to the various types, and explores some of the issues relating to the boundaries between types, especially where these would introduce new distinctions.

Banks

Banks would in general be divided between Types A and B. Failures of some banks carry significant systemic costs, because of their role in payments and clearing systems, their interconnectedness and their vulnerability to contagion effects. In addition, there would be a need to compensate large numbers of small depositors. For these banks regulatory capital is a key tool of regulation, and they would be treated as Type

A for regulatory capital requirements. This would imply setting a capital requirement both for Tier 1 capital, and for the total of Tier 1 and Tier 2.

Beyond this group, many more banks could pose a material threat if they failed as a group, through collective vulnerability (see page 14). Taking this argument to its furthest extent, it might seem possible in principle to justify including all banks as Type A. This would probably represent over-regulation: unfortunately, there are no clear grounds for drawing a division, so supervisory judgement would be a key consideration. Some of these banks would be treated as Type A and some as Type B, with the latter having a capital requirement in terms of the total of Tier 1 and Tier 2 only.

This would imply a distinction between types of banks that has not been explicitly drawn in the UK in the past, and one that would potentially have real significance for capital requirements (at least in terms of quality). However, some of the more flexible ways of implementing this requirement for Type B firms could serve to make the boundary between the two Types less substantial.

Building societies

Few building societies would individually be classed as Type A. However, due to the nature of their lending business and deposit base there is a significant issue of collective vulnerability in this sector. As in the case of banks, it would be a matter for supervisory judgement to identify those societies where collective vulnerability justified setting capital requirements using the Type A regime, and those where a Type B regime would be more appropriate.

Principal dealers

The largest investment firms, which act as brokers and deal on their own account, may pose a systemic threat⁴³. These firms have very large intra-day credit lines from banks for securities settlement. They are members of securities and derivatives clearing and settlement systems, and they engage in large numbers of foreign exchange transactions with associated settlement risk. They can have concentrated

43 Central banks have in the past chosen to inject liquidity into the financial system in the wake of asset price corrections, notably the 1987 crash. This has been interpreted by some as a general bail-out of securities firms.

holdings of securities, in some cases representing a material part of an issuer's bonds in issue, or at least of turnover. Their balance sheets may be 'bank-like', containing short-dated liabilities (e.g. repos) funding longer-dated illiquid assets (e.g. emerging market debt). Credit exposure through OTC deals may also be a factor. The failure of a major firm could cause counterparties to sell off the same types of collateral at the same time, possibly leading to one-way markets, a general fall in financial asset prices and a loss of liquidity in markets. This would cause losses for firms that are long in these assets; securities firms generally hold inventory, and so would suffer. Because of opacity and some degree of similarity between the balance sheets of the major firms, contagion is also possible. There would also be an adverse impact on the real economy.

If some of these firms pose a threat similar to that posed by Type A banks, they should also be placed in Type A, with the primary focus of capital requirements similarly being on Tier 1 capital. Other broker-dealers would be in Type B, and would have regulatory capital set in terms of Tier 1 and Tier 2 capital. Again, these two categories would need to be distinguished, probably on the basis of size (for example, using risk-weighted assets).

Brokers / advisers / arrangers (i.e. non principal dealers) which hold client money

These firms have fewer inter-linkages and less vulnerability to contagion than larger ones, and so probably do not pose a systemic threat. Although this conclusion should be tempered by their vulnerability to common shocks, (e.g. loss of liquidity in financial markets), the main object of regulatory concern here is customer protection. The group of firms that hold client money would be classed as Type C, with risk-based regulatory capital set with reference to the sum of Tiers 1 and 2, plus some other types of subordinated debt. Those broker-dealers which operate in a margin trading environment may justify special treatment, since the failure of a client to meet margin calls may cause problems for the firms and other clients. These firms could be treated as Type B.

Fund management companies typically have small balance sheets, and their failure would not pose material risks to the financial system. For the purposes of this paper they are regarded as non-systemic, and mainly of concern for client protection reasons. Hence they would be treated as Type C.

Adviser / arrangers which do not hold client money

The failure of a firm in this class would not pose a threat directly or indirectly to customers' assets. This suggests that they should be placed in Type D for the purposes of regulatory capital. A large number of PIA, and some SFA, firms would fall into this category.

Life insurers

Life insurers have a large and increasing proportion of the UK's personal savings, and so they are clearly a key part of the financial system. The failure of an independent life assurance company might not have a major impact on the financial system, since life insurers have few linkages with the rest of the financial system. However, it could significantly undermine consumer confidence in the life insurance market and discourage consumers from using life insurance products as a vehicle for long term savings. Some life assurance companies may be large enough to be regarded as Type A, while the rest would probably be treated as Type B. The increasing trend towards bancassurance, however, means that not all life insurers are independent.

General insurers

General insurance companies raise different issues from most regulated firms. Like banks, they engage in maturity transformation, but whereas banks transform liquid liabilities into illiquid assets, insurance companies transform illiquid liabilities into liquid assets. Traditionally the case for capital requirements has rested on customer protection grounds, to ensure that in the event of a failure customers with outstanding claims can have them settled. But the failure of a large general insurer could have a significant knock-on effect on unrelated participants in the real economy who might be unable for legal or business reasons to continue their activities. Depending on size and the particular market sector, some general insurers could be categorised as Type A, with the rest categorised as Type B.

Professional firms

After N2 the FSA will regulate about 2,000 firms (solicitors and accountants) currently authorised by the recognised professional bodies (RPBs). These do more than incidental investment business, including holding client money. They would typically be regarded as Type C. It could be argued that the existence of a 100% compensation

scheme for these firms means that regulatory capital is not required. However, for reasons discussed above there is still an incentive-based burden-sharing rationale for a capital requirement.

Further work

This section of the paper has set out a possible broad framework within which the FSA could set capital requirements for regulated firms. This is not intended as a definitive statement of the FSA's views on the subject, so much as a set of ideas to stimulate debate. The FSA will in due course be consulting on a set of detailed proposals for firms' capital requirements as part of the Integrated Prudential Sourcebook. More work will be needed between now and then, to work out how in practice to translate the framework here into a range of capital requirements for firms, including how the boundaries between the types of firm would be set. This will have to be done within the constraints of the FSA's international obligations, mainly the minimum standards imposed by European Directives and by the Basel Committee. In addition, where proposals involve a change in capital requirements for particular types of firm, the costs of implementing such changes will need to be weighed against the intended benefits, in line with the principles of good regulation, as discussed above.

2 Setting Differentiated Capital Ratios

This section of the paper describes the FSA's setting of capital requirements for banks, which is one category of FSA-regulated firm where there is a well-established procedure for varying individual firms' capital requirements. The approach described here can be seen as an indicator of the way that the FSA might vary capital requirements across a wider range of firms once its single Handbook is in place. But conversely, the approach here is being re-examined to see whether any changes might be needed within the context of producing the Handbook, and also in relation to the development of the FSA-wide model for risk prioritisation and allocation of regulatory tools.

The capital framework for banks

The reasons for imposing regulatory capital requirements have been discussed more broadly in Section 1 above. In the specific case of banks, the FSA's capital adequacy framework has the three main elements listed below. The first two are currently based on European Directives⁴⁴, but the same principles also derive from the UK's compliance with the Basel agreements on capital adequacy. As is explained in more detail below, the third element is seen as a possible way forward by banking supervisors outside the UK and is currently the subject of consultation by the Basel Committee.

- (i) An **agreed definition of capital** – ie what characteristics an instrument must have to qualify as capital. The Own Funds Directive (OFD) defines what can be regarded as a bank's capital resources for regulatory purposes.
- (ii) A **risk weighting framework** which produces risk-weighted measures to capture the credit and market risk embedded in a bank's balance sheet and business. As noted above, the UK rules are based on the Solvency Ratio Directive (SRD) (credit risk) and Capital Adequacy Directive (CAD) (market risk), but with some local differences.

The June 1999 consultation document on a revision of the Basel Accord⁴⁵ seeks to enhance the existing risk-weighting framework, including specific charges for operational risk and interest rate risk (where it is significant) in the banking book, and to improve the existing rules so that capital charges become more accurately aligned with underlying risk.

- (iii) A **required capital ratio**. Under both Basel and the SRD, the Risk Asset Ratio (ratio of capital resources to risk weighted assets [RWA]) must be at least 8%. However, the FSA generally sets its required minimum capital ratios⁴⁶ (trigger ratios) at above 8%, i.e. –

44 References for the principal relevant directives are the Own Funds Directive (89/299/EEC), Solvency Ratio Directive (89/647/EEC), and the Capital Adequacy Directives (93/6/EEC and 98/31/EC).

45 Basel Committee (1999b).

46 For banks with both a Banking Book and Trading Book (as defined in the CAD) the calculation is a little more complex, but the same in principle. A separate trigger ratio is set for both the banking and trading book, and a bank's capital adequacy is monitored against these.

$$\text{Risk Asset Ratio (RAR)} = \frac{\text{Capital}}{\text{Risk Weighted Assets (RWA)}} \text{ must be } > \text{ Trigger Ratio (8\% +) at all times}$$

Limitations of the existing framework

Before explaining the process by which the FSA sets its trigger ratios it is important to appreciate the limitations of the existing three-pronged framework described above.

"Model Error". The risk-weighting framework is essentially quantitative, based on the intrinsic risks of banks' assets. However, the model does not cover all the risks, and where it does capture the risks it does so in a necessarily coarse way. A good illustration of its coarseness is provided by residential lending: Bank A may have a mature book with an average Loan to Value (LTV) ratio of only 50%, while Bank B may have a new book of the same size with an average LTV of 95%. Ignoring all other factors, Bank B should clearly hold more capital against this position – yet as the risk-weighting framework currently operates, both banks would require the same level of capital.

"Other Risks" are not currently specifically captured. This term essentially covers all risks other than credit and market risk, including control risks (see below) and various other risks such as legal and reputational risk. Consequently, there are business lines that expose a bank to significant operational risk (Custody and Corporate Finance for example) but that do not attract a capital charge through the current risk-weighting model.

Control Risks are not captured by the risk weighting framework. The risk weighting framework also gives no regard to the quality of banks' management, key personnel, risk management and internal controls. The amount of capital a bank needs is not only a function of the "intrinsic" risks in the business, but also a function of the way the business is run. Under the risk-weighting framework, two banks with similar balance sheets and business lines, but with vastly different internal control mechanisms,

different levels of risk appetites and management experience would require the same amount of regulatory capital to support their business. Yet the possibility of "unexpected losses" that would absorb capital is far greater in one bank than the other.

It is worth noting again here that capital is only one of several tools that regulators can use to address the prudential risks in banks. The FSA currently has in place a risk-based regulatory framework for banks known as "RATE", which assesses the risks presented by banks, in order to prioritise the use of resources according to where the risks are highest and to ensure the most effective allocation of the tools of regulation⁴⁷. (RATE will be subsumed into the FSA-wide risk assessment model currently under development, which is referred to in the Introduction). The elements of the RATE risk assessment approach fall under the broad headings of business and control risk and aim to cover all aspects of risk, both those which can be captured quantitatively in the risk weights and those which lie outside, as described above. There is a variety of regulatory tools that can be used in response to identified changes in risk profile that are not automatically captured by the risk-weighting framework. The use of variable trigger ratios, as described next, is one such tool.

The FSA's trigger ratios and convergence of international approach

The FSA's trigger ratios are set to compensate for the limitations in the risk weighting framework described above. The following extract from the FSA's Guide to Banking Supervisory Policy lists the factors currently taken into account:

Capital Adequacy Overview - Trigger And Target Ratios⁴⁸

The trigger ratio for a bank is set relative to those assigned to other members of its peer group, with variations to take into account any special characteristics and particular concentrations of risks the individual bank may have. Factors considered include:

47 This is described in Financial Services Authority (1998).

48 Target ratios are described below.

- The character of the bank (size, risk profile, the volatility of its earnings);
- The character of the markets in which it operates (political and economic stability, risk, price volatility, liquidity, etc.);
- Diversification of activities and types of assets;
- The degree of concentration of counterparty exposure in a bank's portfolio;
- The experience and quality of management and other personnel;
- The adequacy of systems and controls;
- Shareholder/controller support and control;
- The degree of supervision by other regulators (especially relevant for subsidiaries of overseas banks); and
- If a bank securitises some of its assets, the trigger ratio should reflect the asset quality in the residual balance sheet and any operational risk relating to the assets removed from the supervisory balance sheet.

This is not a precise science, and there is no defined set of weightings applied to each of these factors. Each factor is in itself a question of judgement, but the judgements are taken within the RATE risk assessment framework.

It is worth noting that the Basel Committee's 1999 consultative paper proposes a substantial move by other G10 countries in the direction of the UK practice of setting variable capital requirements. Relevant sections of the consultative paper appear below, from which it is apparent that current UK practice is very close to what other countries are now considering.

Two extracts from the consultative paper "A New Capital Adequacy Framework"

The second pillar⁴⁹ of the capital adequacy framework, the **supervisory review of capital adequacy**, will seek to ensure that a bank's capital position is consistent with its overall risk profile and strategy and, as such, will encourage early supervisory intervention. Supervisors should have the ability to require banks to hold capital in excess of minimum regulatory capital ratios⁵⁰ – a point underscored in the course of the Committee's discussions with supervisors from Non-G-10 countries. *(Page 6, para 10)*

Capital above regulatory minima

Supervisors treat the regulatory capital requirements set out in the Accord as minima and expect banks to hold capital in excess of these regulatory minima, as appropriate for their levels of risk exposure. With regard to establishing these appropriate levels, a bank and its supervisor need to consider a variety of factors, including:

- the experience and quality of its management and key personnel
- its risk appetite and its track record in managing risk
- the nature of the markets in which it operates
- the quality, reliability and volatility of its earnings
- the quality of its capital and its access to new capital
- the diversification of its activities and concentration of exposures
- its liability and liquidity profile

49 The three "pillars" are: 1. Minimum regulatory capital requirements; 2. Supervisory review of capital adequacy; 3. Market discipline.

50 The Committee acknowledges the differences in legal systems in various countries and the resulting difficulties that implementation of this second pillar may entail.

- the complexity of its legal and organisational structure
- the adequacy of risk management systems and controls
- the support and control provided by shareholders
- the degree of supervision by other supervisors.

These considerations imply that the appropriate margin above the minimum regulatory capital requirements will differ across banks. (*Page 53, para 3*)

It is also worth noting that active steps are already under way within the European Commission through the Banking Advisory Committee to examine how the Basel proposals (including the second pillar, which includes the concept of variable capital ratios) can be implemented in the context of EC directives and agreed guidance.

The FSA's process for setting trigger and target ratios

Trigger ratios

The starting point in setting a new applicant's trigger ratio is to position the applicant against a peer group of similar existing institutions in terms of business profile and systems and controls.

Using the applicant's business plan (once accepted as reasonably realistic), the applicant is compared to its peer group. Its business risk is considered using the factors listed above, and recently more fully expanded in the RATE documentation. Similarly, its control risk is evaluated, also using the above factors and also more fully expanded in the RATE documentation. The applicant's relative strengths and weaknesses compared to its peer group are reviewed and its trigger ratio is modified accordingly.

Although a new applicant will have produced a business plan with estimates and stress-tested forecasts, and should have received a favourable external accountants' report on its control environment, it will generally not have a full track record of performance. Experience has shown that many newly formed institutions can be susceptible

to early difficulties. Business plans are often over-optimistic, either in projections of growth or profitability, and there is a risk that a new bank may "chase" business to meet targets. Systems and personnel can and do take time to settle down. Therefore, other things being equal, the FSA views the probability of unexpected losses as being higher in a new entrant than an established institution. (By way of comparison, most banks assessing a lending proposition would start with the same sort of assumption when assessing an applicant with no track record against an applicant with an established one).

Thus the trigger ratio initially set by the FSA will tend to be higher than those of the peer group. This is not a hard and fast rule, and there are examples where the quality of business plan, personnel etc would convince the FSA to set a ratio in line with, or lower than, the peer group.⁵¹

The onus is then on the institution to develop a track record both in its operation of systems and controls and in its business development, either meeting its targets or re-assessing its strategy and forecasts. If and when a track record is established, the FSA would usually expect to reduce a new entrant's trigger, although the exact amount of this decrease and its timing will be dependent on individual circumstances.

Target ratios

As noted above, the institution must meet its trigger ratio at all times. The consequences of breaching the trigger ratio are serious: not only is it a breach of the Banking Act, but also it is the point at which depositors have been put at what is deemed to be an unacceptable risk. In order to lessen the risk that the trigger ratio will be breached, the FSA expects the institution to maintain its Risk Asset Ratio above a higher ratio (known as the "target ratio"), which acts as a "buffer" above the minimum capital requirement (trigger). If a bank's Risk Asset Ratio falls as far as the buffer (the target), the FSA can still take some regulatory action "in time" to prevent a breach of the trigger.

⁵¹ Although a new entrant is likely to have a higher trigger ratio than its peers for the reasons discussed, this may well be substantially lower than the trigger ratio of existing banks engaged in riskier business.

The increment between the trigger and target ratios is normally between $\frac{1}{2}$ and 1 percentage point. The size of the buffer is determined by the volatility of the business and the accuracy of an institution's monitoring system.

Institutions are obliged to inform the FSA if they breach either ratio at any time. A breach of the target ratio is acceptable if it is planned, short-term, and the bank can demonstrate that it has adequate systems to monitor its position on a continuing basis and the ability to restore its actual ratio above the target.

Review of trigger and target ratios

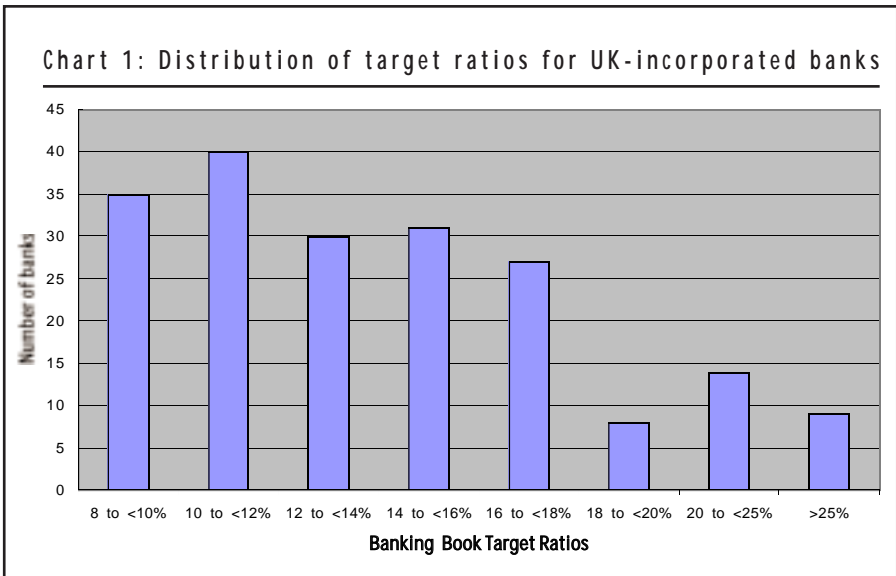
A bank's line supervisor⁵² regularly reviews its capital requirements as part of the RATE process. Capital adequacy is one of the RATE risk assessment factors, and where trigger and target ratios appear high or low relative to the bank's risk profile, they will be reconsidered. The bank's line supervisor will present the case to an internal FSA committee, either justifying the maintenance of the existing ratio/guideline or explaining why they are proposing to modify it. A review of the ratio might for instance be prompted by a change in the nature of the business risk the bank faces, or perhaps new evidence of heightened (or indeed, reduced) control risk.

The full population of capital ratios for UK-incorporated banks

The distribution of banking book target ratios for UK-incorporated banks⁵³ is shown in Chart 1 opposite:

52 That is, the individual who is the bank's main supervisory contact at the FSA.

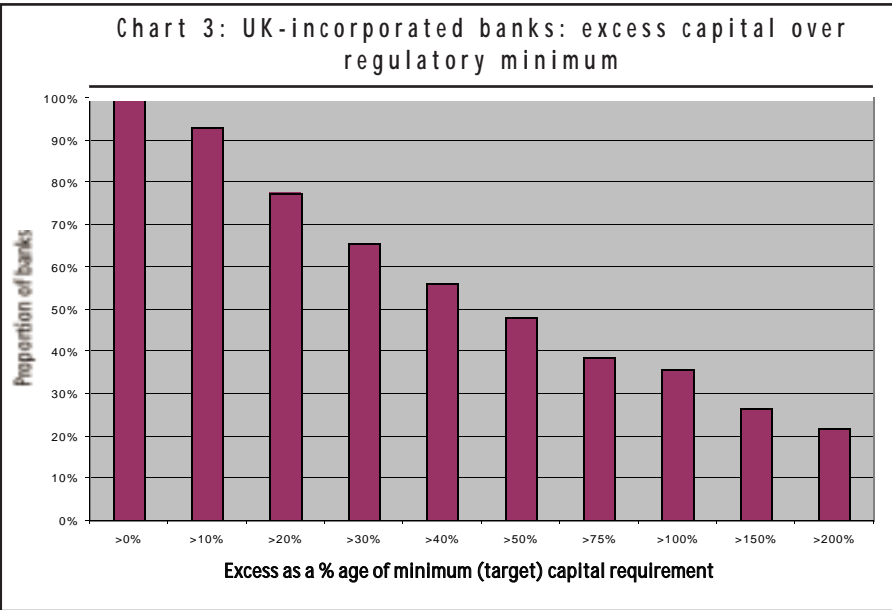
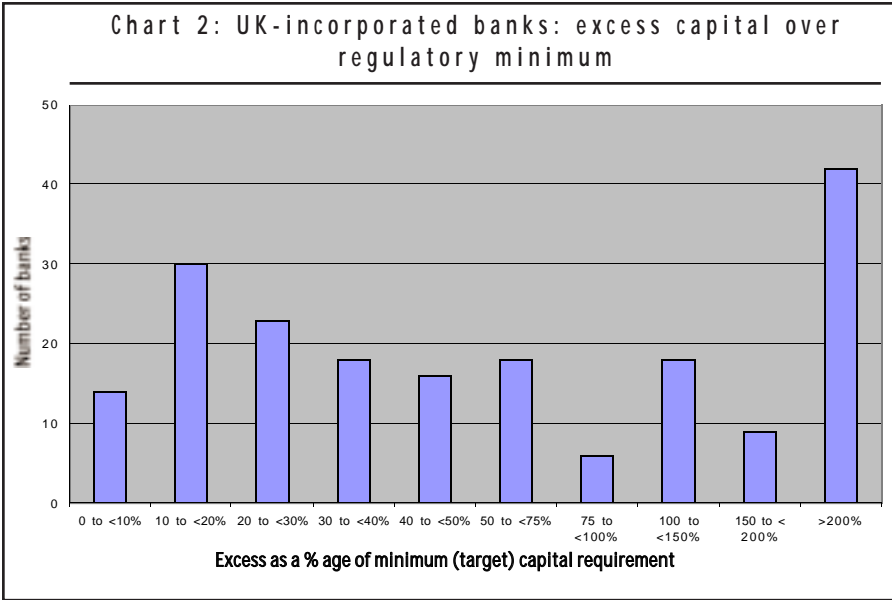
53 Unconsolidated data: some banking groups contain more than one authorised bank. A capital ratio is set for each bank as well as the consolidated group. The charts show the capital ratios for the authorised banks rather than the consolidated groups.



Banks' holding of surplus capital

Despite the apparently high level of many trigger and target ratios, certainly when compared to the Basel/EU minima, the majority of UK-incorporated banks choose to hold capital well in excess of their regulatory levels. For the purposes of this paper, the regulatory minimum is taken as being the target ratio, since, as has been explained, this is the capital level that banks are expected to work to.

Charts 2 and 3 on the next page plot UK-incorporated banks' latest actual capital excess over the FSA's regulatory minimum. The excess is measured by expressing the surplus capital as a percentage of the minimum needed to meet the target ratio.



As can be seen from the charts, at the date of their latest prudential return, only 14 banks (7%) had an actual capital position within 10% of their regulatory minimum. Some 65% of banks have a third as much capital again as they need, and at the far end of the spectrum 42 banks (22%) have three times as much capital as they need.

Quality of capital

Not only do many firms hold capital in excess of that required by the regulators, but additionally for many the mix of this capital is of a higher quality than the minimum requirements. Typically the larger UK banks hold two-thirds of their capital as Tier 1 (equity capital) and one-third as Tier 2 (subordinated debt capital). This compares to the minimum of half as Tier 1 required by the FSA. Since equity has higher funding costs than alternative forms of capital, it is relatively expensive for banks to hold a higher quality mix of capital than required, so it is significant that they do so.

The point is made here to emphasise that for many banks there are external factors that influence their level of capital, and that for such banks the application of variable capital ratios does not, *prima facie*, appear to be an undue burden on them. The next section speculates on possible reasons for this.

Possible reasons why banks choose to hold capital in excess of their regulatory requirement

There is no simple explanation why some banks choose to hold such high levels of capital and why for many the mix is of a higher quality than that imposed by the regulators.

Some suggestions may be drawn from the US, where, as in the UK, many banks hold excess capital. One possible explanation put forward for the US is that in markets for certain instruments, market practice is that counterparties are only accepted if they have a commercial credit rating above some agreed level. Some banks therefore aim to build up their capital ratios in order to achieve better commercial credit ratings, to enable them to trade in these instruments. Additionally, one can argue that higher

ratios help reduce funding costs for banks⁵⁴, simply because large amounts of capital should help reduce the probability of bank failure. Moreover, the focus of credit ratings is on default probability rather than on the protection of depositors in the event of default, so that for a given level of total (Tier 1 + Tier 2) capital, a higher quality mix (more Tier 1) should also lower the default probability and improve the rating.

In the UK the anecdotal evidence seems to support the above theory, at least for the larger banks. There may also be elements of peer group pressure, including from banks in other countries: market and rating agency views of a bank may be affected by where its capital ratio stands in relation to others'. So if banks in one country have higher capital ratios (for some reason such as that suggested above for US banks), UK banks may be under pressure to reach at least that standard. (The relevant peer group is probably restricted to the larger, internationally active banks.)

Another possibility is that some banks take account of the economic cycle in their capital planning. The middle of a recession is the time that banks are most likely to suffer losses that erode their Tier 1 capital, and the FSA requires banks to maintain adequate capital at all times. So one strategy to reduce the risk of having to struggle to rebuild capital ratios in a depressed market is to accumulate a cushion above the regulatory minimum at the top of the cycle⁵⁵.

An alternative way to think about this issue is to abstract from the question of why banks might accumulate capital in excess of the regulator's requirement, and ask instead what options are open to them if we assume they start from a position of excess capital. One possibility is to return money to shareholders, which does happen to a limited extent. But depending on how they perceive the strategic opportunities at the time, banks may prefer to maintain the capital excess to give them greater freedom to put on new business, or to help fund acquisitions.

Some other reasons for high risk-asset ratios are more likely to apply to small banks than to large. For instance, the larger UK banks as a group are well diversified,

54 The US regulators themselves require banks to have a capital ratio of at least 10% (rather than the Basel Accord's 8%) to be classed as "well capitalised", which carries various regulatory advantages: so from the banks' point of view, 10% has become in effect the minimum standard.

55 From the macro-economic point of view, there is the concern that capital constraints on banks in a recession may lead to a "credit crunch", holding back economic recovery. Various authors have looked for evidence of such an effect across a range of countries and periods, finding some in some cases. Basel Committee (1999a) reviews the literature.

certainly when compared to the smaller banks, and other things being equal, the more diversified a bank the less volatile is its earnings stream. If a bank considers its earnings to be particularly volatile, it may wish to hold a capital buffer that is well in excess of its target level. This could be one reason why the larger banks choose to hold considerably lower capital buffers than their small UK counterparts.

It is also important to consider the differing approach to capital allocation between publicly-listed banks and those that are privately owned. Shareholders of publicly-listed banks demand a competitive return from their investments, so one might expect listed banks to be under greater pressure than their smaller unlisted counterparts to use their capital with maximum efficiency. It seems plausible that this could be another contributory factor to the relatively high capital ratios of the smaller UK banks, certainly when compared to their larger quoted counterparts.

A third point to bear in mind about smaller UK banks is that many of them are active in the private banking market. Such banks may wish to demonstrate to potential depositors that they are well-capitalised, and thus that funds deposited with them are safer than those deposited with a less well-capitalised competitor.

In concluding this second section of the paper, there is a final observation that is worth making: although the evidence shows that many banks hold capital well in excess of the trigger and target ratios set by the regulator, this does not imply that the setting of such ratios has no impact on their behaviour. Indeed, both the level of these minimum capital ratios and changes to them (in either direction, but perhaps especially upwards) can have an important signalling effect even if a bank is not capital-constrained. This is because the minimum capital ratio set by the regulator can provide a clear indication of the regulator's overall perception of a bank and of the role that capital can play as a means of addressing the risks arising from its business activities and from its ability to manage and control these risks. The capital requirement can achieve this effect both in itself, and also in combination with the risk and impact assessment undertaken by the regulator, and with the use of other regulatory tools. This signalling mechanism is reinforced because the minimum required capital ratio, and any changes to it, are communicated clearly by the regulator to both the senior management and the board of a bank.

3 Capital Requirements for Cross-Border Claims

Summary

This section of the paper reports the results of a short empirical investigation into the effect that the Basel Committee's current proposals for linking risk weights to external ratings would have on banks' capital requirements in respect of cross-border claims. We consider the impact on two groups of banks: BIS-area banks as a whole, and UK-incorporated banks. The work is intended to shed light on the issue of 'procyclicality' – the concern that increasing risk weights when a borrower or a related sovereign is downgraded could add to the volatility of international capital flows. There are other related concerns, for example that sudden ratings downgrades could spur capital flight, which in turn could cause further downgrades. The results may also be relevant to studies of the impact of the Basel proposals.

The investigation shows that BIS-area banks as a whole would have been required to commit additional capital of about US\$7.5bn between the end of June and the end of December 1997, at the onset of the Asian crisis, to support claims on the largest non-BIS-area borrowers. This appears a very small amount compared with estimated total capital for internationally active G10 banks in 1998 of some US\$1 1/4 trillion. UK-incorporated banks' required capital against their most important non-BIS-area counterparties would have increased by US\$0.8bn over the same period, which again seems a small amount compared with capital of about US\$170bn for the largest UK banks.

Background and method

The Basel Committee's consultative paper on A New Capital Adequacy Framework⁵⁶ proposes to link its risk weights (used to calculate risk-weighted assets) to external risk ratings. A table on page 31 of the consultative paper (reproduced as Table 2 opposite) gives some proposed risk weights for claims on sovereign borrowers, on banks and on corporates.

56 Basel Committee (1999b)

Table 2: Proposed risk weights based on external risk assessments

Claims on		Assessment					
		AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B+	Unrated
Sovereigns		0%	20%	50%	100%	150%	100%
Banks	Option 1 ¹	20%	50%	100%	100%	150%	100%
	Option 2 ²	20%	50% ³	50% ³	100% ³	150%	50% ³
Corporates		20%	100%	100%	100%	150%	100%

- 1 Risk weighting based on risk weighting of sovereign where bank is incorporated.
- 2 Risk weighting based on the assessment of the individual bank.
- 3 Claims on banks of a short original maturity, for example less than six months, would receive a weighting that is one category more favourable than the usual risk weight on the bank's claims.

To investigate the impact that these proposals would have on capital requirements and thus on cross-border capital flows, a group of large non-BIS-area borrowers from BIS-area banks was identified from the end-June 1997 semi-annual BIS cross-border lending data. The group of countries and the level of outstanding claims at end-June 1997 are shown in columns 1 and 2 of Table 3. Data were then collected on total claims of BIS-area banks against these borrowers for the period from June 1997 to June 1999, broken down into claims on the sovereign, banks and corporates (plus a small unallocated item).

Table 3: Major non-BIS area borrowers from BIS area banks

Country	Gross claims, end-June 1997 (US\$mns)	Number of ratings actions*	Range of ratings	Number of risk weight changes*
Korea	104,148	6 (4-, 2+)	AA- to B+	4 (3+, 1-)
Brazil	71,862	1	B+ to BB-	0
Thailand	69,375	3	A to BBB-	1
Russia	69,081	5	BB- to SD	1
Mexico	62,161	0	BB	0
Indonesia	58,733	8 (7-, 1+)	BBB to SD	2
China	57,923	0	BBB+	0

* From end-June 1997 to end-June 1999, excluding initial rating/ risk weight. All ratings changes were downgrades, except where shown; all risk weight changes were increases, except where shown. Sources: BIS data (column 2), S&P via Bloomberg (columns 3 & 4), Basel consultative paper (column 5).

A parallel exercise was carried out on data for UK-incorporated banks, provided by the Bank of England. Table 4 shows the countries and gross claims data.

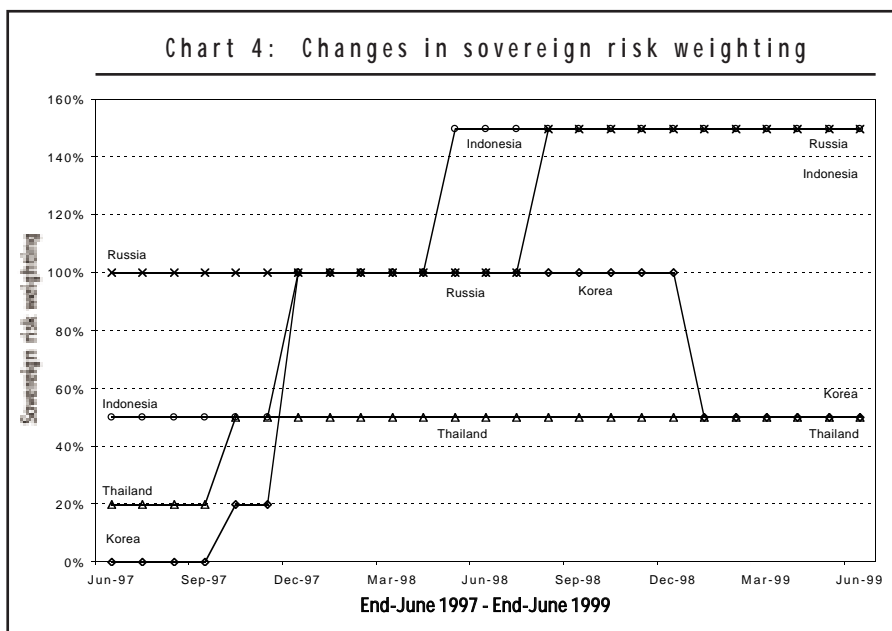
Table 4: Major non-BIS area borrowers from UK-incorporated banks

Country	Gross claims, end-June 1997 (US\$mns)	Number of ratings actions*	Range of ratings	Number of risk weight changes*
China	6,906	0	BBB+	0
Korea	6,064	6 (4-, 2+)	AA- to B+	4 (3+, 1-)
Mexico	4,925	0	BB	0
Brazil	4,538	1	B+ to BB-	0
Indonesia	4,332	8 (7-, 1+)	BBB to SD	2
Taiwan	3,161	0	AA+	0
Thailand	3,161	3	A to BBB-	1
Argentina	2,720	0	BB	0

footnote as Table 3

Next, a sovereign ratings history was assembled for each country in each sample, using long-term foreign currency debt ratings from Standard & Poors (for consistency with the consultative paper table). This history is summarised in columns 3 and 4 of Tables 3 and 4. Using the table in the consultative paper, this ratings history was then translated into risk weights for each category of claim. Column 5 of Tables 3 and 4 shows the number of times during the June 1997 to June 1999 period that the sovereign risk weight changed as a result of ratings changes; these changes are shown graphically in Chart 4 below for selected countries. Bank claims were weighted using the Option 1 (sovereign plus one band) scheme in the consultative paper table. The consultative paper envisages using actual corporate ratings to weight corporate claims, but these data are not readily available, and most corporates in the countries in the current sample will not be rated. As a proxy, therefore, the non-bank private sector and unallocated categories were weighted using the unrated category (100%), unless the sovereign rating was below B+, when 150% was used. To the extent that the sample includes data on corporates rated at AA- or above, the estimates will overstate capital requirements, but this is unlikely to be a serious problem.

Finally, the claims data and the risk weights were combined to form a notional capital requirement for each of the five semi-annual data points, assuming an overall 8% trigger capital ratio.



Results

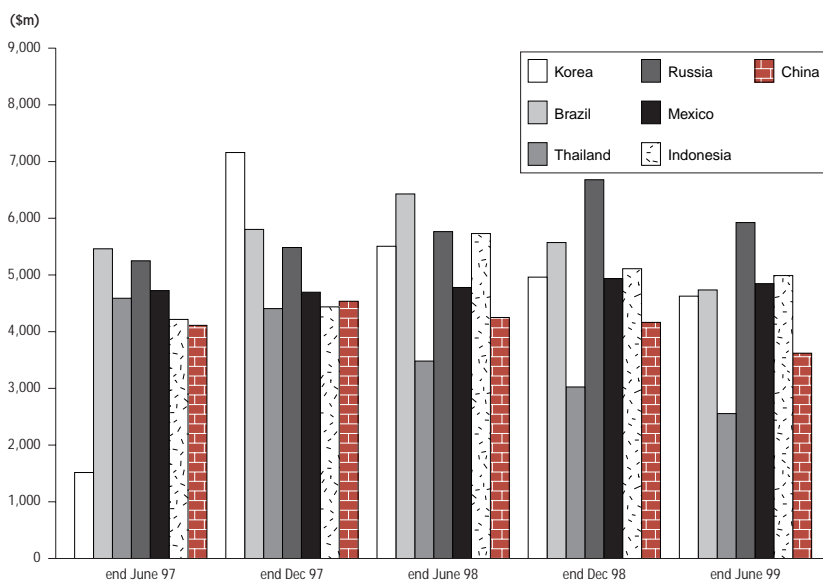
Tables 3 and 4 show that there seems to be little relationship between the number of ratings actions for a country and the number of changes in risk weights. Three of the borrowers underwent no risk weight changes during this period. At the other end of the scale, Korea, with 6 ratings actions in the end-June 1997 to end-June 1999 period, had 4 changes of risk weights while Indonesia, with 8 actions in the same period, only had 2 risk weight changes. Chart 4 also shows that risk weight can change very rapidly – Korea went from 0% to 100% risk weighting in two months at the end of 1997.

BIS-area banks

The calculated capital requirements for BIS area banks are shown in Table 5 (below), along with the changes in capital requirement from one calculation date to the next. Capital requirements for selected countries are also shown in Chart 5 (opposite). For the seven countries as a group, the capital requirement increased by 6% over the entire period, from US\$31.0bn to US\$32.9bn. Capital requirements peaked at the end of December 1997 (US\$38.4bn), and then declined through the rest of the period. Thus

in the six-month period covering the onset of the Asian crisis, capital requirements rose by US\$7.4bn, or 24%.

Chart 5: Capital required for exposures to selected emerging markets, estimated using proposed new risk-weighting rules



At the individual country level, Korea dominated the results, with the capital requirement increasing over the entire period by US\$3.3bn, or 205%. For three countries (Brazil, Thailand and China) the capital requirement fell, by a total of US\$3.0bn, or 21%. For the four Asian countries included in the sample, the capital requirement increased by 46% between the end of June and the end of December 1997, from US\$14.7bn to US\$21.6bn. Other notable changes include an increase of US\$1.0bn (16%) in capital requirements for claims on Russia between end-June and end-December 1998 and a fall of US\$0.9bn (13%) for Brazil over the same period.

In general, the change in capital requirement can be split into two components – one due to changes in risk weights under the new proposals, and the other due to changes in the level of actual claims. Table 6 shows this breakdown for each of the seven countries. These show, as might be expected, that changes in claims have generally reduced the capital requirement, while risk weight changes have increased capital requirements. Only in the case of Brazil, Thailand and China was the fall in capital requirement due to falling claims greater than the increased requirement due to changes in risk weights.

Table 5a: Capital requirements based on 8% minimum risk-asset ratio

US\$ mn	Level				
Country	End-Jun 97	End-Dec 97	End-Jun 98	End-Dec 98	End-Jun 99
Korea	1,596	7,536	5,796	5,223	4,870
Brazil	5,749	6,109	6,767	5,865	4,985
Thailand	4,381	4,636	3,665	3,184	2,690
Russia	5,526	5,773	6,068	7,031	6,236
Mexico	4,973	4,943	5,031	5,197	5,102
Indonesia	4,438	4,671	6,032	5,379	5,252
China	4,328	4,775	4,474	4,383	3,811
Total	30,992	38,444	37,833	36,262	32,946

Table 5b: Capital requirements based on 8% minimum risk-asset ratio

US\$ mn	Change from previous period					
Country	End-Dec 97	End-Jun 98	End-Dec 98	End-Jun 99	Total	% of end-Jun 97
Korea	5,940	-1,741	-572	-353	3,274	205%
Brazil	360	658	-902	-880	-764	-13%
Thailand	255	-971	-481	-494	-1,691	-39%
Russia	247	295	963	-795	710	13%
Mexico	-30	88	166	-95	129	3%
Indonesia	232	1,361	-653	-128	813	18%
China	447	-300	-92	-572	-517	-12%
Total	7,452	-610	-1,571	-3,316	1,954	6%

Table 6a: Changes in capital requirement due to risk weight changes

US\$ mn					
Country	End-Dec 97	End-Jun 98	End-Dec 98	End-Jun 99	Total
Korea	6,736	0	0	-176	6,560
Brazil	0	0	0	0	0
Thailand	1,090	0	0	0	1,090
Russia	0	0	2,763	0	2,763
Mexico	0	0	0	0	0
Indonesia	260	2,349	0	0	2,610
China	0	0	0	0	0
Total	8,086	2,349	2,763	-176	13,023

Table 6b: Changes in capital requirement due to changes in claims

US\$ mn					
Country	End-Dec 97	End-Jun 98	End-Dec 98	End-Jun 99	Total
Korea	-796	-1,741	-572	-177	-3,286
Brazil	360	658	-902	-880	-764
Thailand	-835	-971	-481	-494	-2,782
Russia	247	295	-1,800	-795	-2,053
Mexico	-30	88	166	-95	129
Indonesia	-28	-988	-653	-128	-1,796
China	447	-300	-92	-572	-517
Total	-634	-2,960	-4,334	-3,141	-11,069

The increased capital requirements reported above are not especially meaningful in themselves. Ideally they could be scaled by the total capitalisation of BIS-area banks, but so far it has not proved possible to get this figure. Another option would be to compare them with the notional capital requirement under the present Accord. But with no data on the split of banks' claims between short and long-term it is impossible to calculate this either. It is however possible to estimate a proxy for BIS-area banks' capitalisation, using data for the capital of internationally active G10 banks in 1998. Converting to US dollars, this suggests capitalisation in the region of US\$1 1/4 trillion. In this context, the increases reported above, although large in percentage terms, are insignificant.

UK-incorporated banks

Table 7 shows the calculated capital requirements for UK-incorporated banks. For the eight borrowers covered here, required capital increased by US\$332mn, or 15%, between the end of June 1997 and the end of June 1999, to reach US\$2.6bn. As with BIS-area banks, capital requirements increased rapidly between the end of June and the end of December 1997, to reach US\$3.1bn. After this it increased slightly over the following six months and then began to fall.

The G-10 data for banks' capital suggest that the largest UK banks had capital of US\$170bn. This suggests again that the increase in required capital is trivial in total, although the percentage increases for claims on some countries are still large.

Table 7a: Capital requirements based on 8% minimum risk-asset ratio

US\$ mn	Level				
Country	End-Jun 97	End-Dec 97	End-Jun 98	End-Dec 98	End-Jun 99
Korea	176	553	450	443	364
Brazil	363	365	465	523	337
Argentina	218	489	412	452	497
Thailand	201	188	164	140	116
Taiwan	83	90	88	83	74
Mexico	394	430	444	400	365
Indonesia	328	359	475	457	411
China	524	626	612	512	454
Total	2,285	3,100	3,111	3,009	2,617

Table 7b: Capital requirements based on 8% minimum risk-asset ratio

US\$ mn	Change from previous period					
Country	End-Dec 97	End-Jun 98	End-Dec 98	End-Jun 99	Total	% of end-Jun 97
Korea	378	-103	-8	-79	188	107%
Brazil	2	100	59	-187	-27	7%
Argentina	271	-77	39	45	279	128%
Thailand	-13	-24	-24	-24	-85	-42%
Taiwan	7	-2	-5	-9	-9	11%
Mexico	36	14	-45	-35	-29	7%
Indonesia	31	117	-18	-47	83	25%
China	102	-14	-100	-58	-70	-13%
Total	814	12	-103	-391	332	15%

Policy conclusions

The following policy conclusions suggest themselves.

Overall, the increases in capital emerging from this work seem to be very small – although precise scalars are not yet available. There must therefore be some doubt whether such requirements would induce the kind of increased volatility in cross-border claims that some are concerned about. However, this conclusion must be qualified by the fact that the distribution of the increase between countries and banks will not be uniform, and may pose particular problems for banks or banking systems that are already poorly capitalised and heavily exposed to claims subject to re-weighting. The BIS data do not provide enough detail to investigate this issue fully, although the data for UK-incorporated banks do show the kind of variation, especially in the percentage increases, that can arise.

The data demonstrate a tendency for BIS-area banks and UK-incorporated banks to run down claims on countries that have been downgraded. In some cases, these run-downs have been large enough to keep the regulatory capital that would be required under the revised Accord constant or falling. This suggests tentatively that in some cases at least banks would be prepared to commit extra capital to cover downgradings, provided that they took a reasonably positive view of the economy's prospects over the medium term. This of course assumes that banks would have acted the same under the revised Accord as they did under the current Accord. The size of the increased capital requirement does not suggest that this is unreasonable.

Conclusion

In conclusion it should be stressed that all three sections of the paper point the way to further work that needs to be done, rather than aiming to be the last word on any subject. The first section sets out a possible broad framework within which the FSA could set capital requirements for regulated firms. Before the FSA can consult on detailed proposals for firms' capital requirements as part of the Integrated Prudential Sourcebook, further work will be needed to decide how in practice to translate the framework here into a range of capital requirements for firms, including how the boundaries between the types of firm would be set. The second section is descriptive of the FSA's current approach to banks and building societies only, and as such should only be seen as an indicator of how the FSA might develop the approach across other regulated firms, rather than a template to be applied directly. And the final section, while providing definitive answers in its specific area of inquiry, can be seen as a useful illustration of the wide range of possible impacts that reform of the Basel Accord may have and the type of work that needs to be done.

The FSA will be consulting all interested parties at key stages as more specific proposals develop out of this work. This paper is not part of the formal consultation process. However, as the general foreword notes, comments are welcomed on this paper as on any other FSA occasional paper, and should be addressed to the series editors at the FSA.

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