# An Academic Response to Basel II

By

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# Submitted[*] in Response to the Basel Committee for Banking Supervisionís Request for Comments

by

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[*] The views expressed in this response do not necessarily reflect those of any of the wider groups with which the authors are associated and are in each case personal views.
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## Executive Summary

It is our view that the Basel Committee for Banking Supervision, in its Basel II proposals, has failed to address many of the key deficiencies of the global financial regulatory system and even created the potential for new sources of instability.

In this document we present the following arguments:

- The proposed regulations fail to consider the fact that risk is endogenous. Value-at-Risk can destabilise an economy and induce crashes when they would not otherwise occur.
- Statistical models used for forecasting risk have been proven to give inconsistent and biased forecasts, notably under-estimating the joint downside risk of different assets. The Basel Committee has chosen poor quality measures of risk when better risk measures are available.
- Heavy reliance on credit rating agencies for the standard approach to credit risk is misguided as they have been shown to provide conflicting and inconsistent forecasts of individual clients' creditworthiness. They are unregulated and the quality of their risk estimates is largely unobservable.
- Operational risk modelling is not possible given current databases and technology even if a meaningful definition of this risk were to be provided by Basel. No convincing argument for the need of regulation in this area has yet been made.
- Financial regulation is inherently procyclical. Our view is that this set of proposals will, overall, exacerbate this tendency significantly. In so far as the purpose of financial regulation is to reduce the likelihood of systemic crisis, these proposals will actually tend to negate, not promote this useful purpose.

The document highlights our concerns that the failure of the proposals to address the above issues can have destabilising effects and thus harm the global financial system. In particular, there is considerable scope for under-estimation of financial risk, which may lead to complacency on the part of policy makers and insufficient understanding of the likelihood of a systemic crisis. Furthermore, it is unfortunate that the Basel Committee has not considered how financial institutions will react to the new regulations. Of special concern is how the proposed regulations would induce the harmonisation of investment decisions during crises with the consequence of *destabilising* rather than *stabilising* the global financial system.

# 1. Introduction

We welcome the opportunity to respond to the Basel Committee for Banking Supervisionís new proposals for changes to the Capital Adequacy Accord of 1988. This response arose out of a conference on the new proposals, organised on Wednesday, May 16th, 2001, by the Financial Markets Group and the Centre for Economic Performance, both of the London School of Economics. Most of the views articulated in this response reflect comments made at this conference.

From our point of view, the new proposal goes a long way towards addressing some of the main defects of the existing accord by, for example, suggesting more risk-sensitive capital ratios, taking into account the increased importance of risk mitigation techniques and emphasising supervision and market discipline. We do, however, perceive several important deficiencies in the current proposal that we shall comment on in turn.

Before doing so, we would like to emphasise that this response is of an academic nature, and deliberately so ñ we will concentrate on the nature of the concepts employed in the proposal rather than on the particular forms of their implementation. This approach does not necessarily reflect a sense of priority but rather an appreciation of our comparative advantage.

We would also like to stress that we shall restrict our attention to the proposal as it exists. That is, we will not be concerned with questions such as whether bank regulation is in itself optimal and what type of regulation is most appropriate. While of interest and of legitimate nature such questions would lead us too far astray.

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

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

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

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

Furthermore, we are not convinced of the justification for, and feasibility of, holding regulatory capital against operational risk. In contrast to market and credit risk, operational risk is predominantly idiosyncratic, rendering the need to regulate in order to prevent contagion moot. Any estimation of operational risk is severely hampered by an absence of data and the difficulties of properly defining such a vague concept.

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

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

## 2. The Endogeneity of Risk and Liquidity in Times of Crisis

One of the main features of the proposed accord is that it allows banks a wide choice of regulatory regimes for the assessment of both credit and operational risk, the most advanced of which rely on banksí internal risk models to calculate appropriate risk charges. This is particularly the case for the foundation and advanced ëinternal ratings basedí (IRB) approach to credit risk and one of the stated intentions of the proposal is to thus allow capital charges to reflect more sensitively banksí assessments of their portfolio risk.

While this devolution of risk assessment is, in principle, beneficial it may induce perverse behaviour in times of crisis if unchecked by an appreciation of the endogenous nature of risk and liquidity at the systemic level. Market participants generally view risk as an exogenous variable. Certainly, the risk-forecasting models based on value-at-risk (VaR) that are currently employed, and whose use is actively encouraged by the proposal, are based on the assumption that forecasting credit risk is an activity not unlike that of forecasting weather. Importantly, it is assumed that oneís own action, based on a volatility forecast, does not affect future volatility itself just like forecasting weather does not (yet) influence future weather.

However, this reasoning is faulty. Volatility is determined in the market, in large part by the behaviour of all individual market participants - in other words, risk is endogenous by definition. The failure to recognise this endogeneity is relatively innocuous during times of ëcalmí in which the actions of many heterogeneous market participants (in terms of risk-aversion, portfolio positions etc.) more or less cancel each other out. In times of crisis, in contrast, this endogeneity may matter enormously if agents become more homogeneous as a result. Using similar risk models, they may pursue similar strategies to mitigate the adverse effects of the on-setting crisis. In such a case, individual actions do not ëmore or less cancel each other outí but may in fact reinforce each other. Consider, for example, a fall in prices. A market participant may then have an incentive to sell her asset which, in turn, is reinforced if someone else also sells this asset, thus reducing the price even further. This effect is a pure externality ñindividual banks do not take it into account when making decisions, yet it affects the stability of the banking system as a whole.

This externality is not acknowledged by existing forecasting models nor, in fact, by the regulations in the proposal, yet, bank regulations are intended exactly for these moments of crisis. Hence, the proposal should acknowledge the endogeneity of risk and liquidity at the systemic level and provide safeguards to deal with it.

One may wonder how important this externality or endogeneity of risk and liquidity is in practice. Two examples, based on DanÌelsson (2000) and Morris and Shin (1999), may serve to emphasise the relevance of the above arguments. Consider the crash of the US dollar against the yen in October 1998 when the US dollar fell from 131 yen to 112 over two days. The dollar had been appreciating against the yen over the past few years and, in the summer of 1998, general wisdom had it that the dollar/yen was bound to rise to 150, perhaps 200, by the end of the year. Coupled with the large interest rate differential between Japan and the US, this gave rise to the profitable trading opportunity of borrowing yen, buying dollar assets and gaining on both the appreciation of the dollar and the interest rate differential. This ëyen-carryí strategy was widespread among banks, hedge funds and even corporations.

When the Russian default of August 1998 led to a weakening of the dollar, the relative homogeneity of trading strategies on the dollar/yen brought about the inevitable ñ simultaneous stop-loss orders, cancellation of barrier options and unwinding of associated hedging positions, thus accelerating and accentuating the fall of the dollar/yen. Here, actions mutually reinforced each other and deepened a crisis. A similar effect was observed during the 1987 crash when portfolio insurance was very much *en vogue.* An integral component of portfolio insurance is that hedging strategies with futures contracts are used to dynamically replicate options in order to contain downside risk. These dynamic strategies worked well in the stable pre-crisis periods since they depended on the presence of continuously functioning futures markets. However, one characteristic of the 1987 crash was that the futures markets ceased to function properly because the institutions that used portfolio insurance were trying to execute identical trading strategies, which only served to exacerbate the crisis.

To us, the relevance of these examples is that, in times of crisis, homogeneity among market participants can have damaging effects. In particular, the use of VaR or similar risk-modelling techniques may no longer be justified in such a situation. At the onset of a crisis, the process that drives the underlying data will have undergone a structural break. It is no longer governed by the behaviour of heterogeneous but rather by that of relatively homogenous market players. A central assumption of VaR-modelling, namely the stationarity of the underlying stochastic process, is thus violated. Furthermore, data used to estimate forecasting models has also undergone a structural break. As a result, data immediately preceding the onset of a crisis becomes useless for the purpose of estimating risk.

More importantly for our immediate concerns, one has to wonder about the impact of regulation on the endogeneity of risk and liquidity. For example, is it the case that regulation renders market players more homogenous and thus aggravates the instability of banking systems? DanÌelsson and Zigrand (2001) and DanÌelsson, Shin and Zigrand (2001) examine this question in a simulated general equilibrium model and argue that the answer to this question is in the affirmative. In particular, they consider market participants that are heterogeneous with respect to their risk-aversion. Imposing VaR regulation then reduces the degree to which relatively risk-neutral financial institutions (e.g. hedge funds) can take on risk. That is, the degree of risk-aversion is affected by regulation. As a result, when prices fall and risk-averse banks have to dispose of risky assets, liquidity in the market is lower relative to a case of no regulation since such banksí ability to supply liquidity of other players with lower risk-aversion has been reduced. Indeed, simulations show that both price and the liquidity of a particular asset are lower and that reactions to shocks are both more accentuated and extended under VaR regulation.

Furthermore, the mechanism just described may trigger a market collapse that would not occur if VaR regulation were not present. When, for example, prices fall banks must sell risky assets to fulfil their binding regulatory constraints. In the absence of regulation, less risk-averse banks would be able and willing to provide liquidity by buying these assets. In a regulated economy, however, regulatory constraints restrict their ability to do so. Eventually, markets for such assets break down. Such a breakdown would not occur if VaR regulation were absent.

Note that the above argument is not one against regulation *per se*, but rather against the use of VaR or of similar approaches to measuring risk for regulatory purposes. Employing such methodologies is problematic in two senses. First, by failing to acknowledge the endogeneity of risk and liquidity at the systemic level they produce inaccurate volatility estimates. Second, by encouraging all market participants to employ similar risk modelling techniques regulation renders them more homogenous in risk-aversion and trading strategies, thus rendering the financial system less stable.

Short of changing the methodologies underlying current risk modelling can regulatory policy be designed to alleviate these problems? A frequent answer to this question is a call for sufficient transparency in the market so that banks become aware of the overall state of the system. This is the conventional wisdom, which is reflected, in the ever-increasing calls for disclosure of information, both to regulators and other market participants, as, for example, in the proposalís pillar III. As it turns out, this case for information disclosure is much weaker than generally assumed.

What is, then, the role of information disclosure? It is important to distinguish between disclosing information about individual positions from banks to the regulator and the further step of then disclosing possibly aggregate information from the regulator to banks. It is difficult to argue that an increased awareness of the marketís aggregate position in an asset does not enable the regulator to set more sensible capital charges or, say, inject liquidity at the onset of a crisis to stop it from developing further. Such disclosure appears beneficial to us although the incentives for the truthful disclosures by individual firms in compiling this aggregate measure would need to be considered carefully. The other kind of disclosure, from the regulator to banks, exhibits qualitatively different effects, especially if such disclosures are public in nature. Such disclosure reduces the importance of diverse private information and again renders banks more homogenous, this time with respect to their information set. On the one hand, this allows them to infer the fundamental state of the market with more precision, which may prevent a crisis that would have occurred otherwise due to a lack of information about the fundamentals. On the other hand, banks now act more homogeneously which aggravates a crisis when it does occur for the reasons laid out above. Central bankers are rightly wary of public utterances that may unduly affect market outcomes. The same principles that motivate such caution apply with equal force to public disclosures of aggregate portfolio positions of banks. Morris and Shin (2001) argue that in highly sensitised market conditions, increased transparency has an ambiguous effect on stability and economic welfare.

The main implication of this argument that we would like to emphasise is that increased transparency in the market is not always beneficial. The proposalís pillar III, however, does not acknowledge the ambivalent impact of increased transparency on market stability. Its wholehearted embrace of ëmarket discipline through enhanced disclosureí requires, at the very least, a coherent argument for why it is advantageous.

Finally, we would like to point out that, even if market participants were forced to recognise the externality of their actions, be it through improved risk modelling or information disclosure, it is not clear that they would correctly internalise this externality. After all, market participants act to maximise their individual gains and will take into account externalities if and only if these are priced correctly. As long as this is not the case, a strong residual role for regulation arises out of the need to address this externality. In our point of view, this *raison dÍtre* of bank regulation has not been stressed.

## 3. Further Pitfalls in Measuring Risks

As emphasised above, the new proposal advocates the enhanced use of VaR risk modelling in its advanced approaches to calculating capital charges for market, credit and operational risk under pillar I. We would now like to draw attention to some severe drawbacks of this method of forecasting risk as well as some problems with the manner of its implementation in current risk models.

Perhaps the most problematic aspect of the prevalent and suggested use of VaR-based models in risk modelling is that they assume elliptically distributed returns (the normal distribution is a special case of elliptical distributions). Existing databases, however, show that the distribution of credit, market and operational risks are heavy-tailed, particularly so for operational risk, so that estimates beyond VaR become crucial. The proposal certainly takes steps in this direction, for instance through the estimation of loss-given-default values. A more structured discussion on the use of quantitative risk measures, combining market, credit and operational risks is, however, called for. Such a discussion should be undertaken on the basis of existing work on coherent risk measures and will become even more imperative if one wants to address the problem of multi-period risk assessment, an area where methodological advances have been less pronounced. We would like to emphasise that the above comments also refer to market risk modelling, especially under stress situations.

A significant drawback of VaR and related risk-measuring methodologies, as emphasised by DanÌelsson (2000) and Embrechts, McNeil and Straumann (2000), is that it provides us only with a point-estimate of the loss distribution, usually the 1% lower quantile. However, when projecting risks or losses presumably one is interested in the distribution of the loss *given* that a certain extremal threshold has been breached. In other words, one would like to know about the shape of the tail beyond, say, the lower 1% quantile. Suppose, for example, that the VaR of a particular asset is $1 million. Then it makes a difference for risk or loss forecasting if the maximum possible loss is $1.1 million or $100 million. A simple VaR estimate, however, does not provide any information on the shape of the loss function in the tail ñ information that is important exactly when the risk distribution is characterised by non-normal tails. More importantly, so-called ëspike-the-firmí events (low probability, high loss) are very difficult to capture with VaR-based methods in use. Yet recent history has shown that such events pose a real threat to the banking system.

An important characteristic that any risk measure needs to satisfy is sub-additivity. In the context of VaR, sub-additivity implies that the VaR of a portfolio of, say, two assets will be bounded by the sum of the VaRs of the two individual assets. This property enables risk models to put an upper bound on the VaR of any portfolio by simply adding all individual VaRs. Embrechts, McNeil and Straumann (2000) show that VaR is a sub-additive risk measure for elliptical distributions.

In contrast, when the distribution of the underlying risk is non-elliptical, as with the risks under consideration, the risk measure VaR fails to be sub-additive. Importantly, this implies that the VaR of a portfolio may be larger than the sum of VaRs of the individual assets ñ not exactly what our intuition about risk-diversification implies. Hence, loss estimates based on the sum of individual VaRs become meaningless ñ they no longer present an upper boundary on the risk faced by a particular portfolio. The same problem is encountered when adding up risk measures across different risk classes. See Embrechts, Hoeing and Juri (2001) for a detailed discussion of this issue.

Apart from these inherent problems with applying the VaR methodology to forecasting non-elliptically distributed risks, the proposal suggests certain regulatory requirements which create additional worries.

For example, the proposal suggests that VaR be measured at the 99% risk level. In other words, regulators require banks to hold capital against an event that occurs on average once every hundred days or roughly 2.5 times a year. But presumably, regulatory capital is held to prevent systemic failure. However, systemic failures are extremely rare events ñ they certainly do not occur with an expected frequency of 2.5 times a year. As a result, there exists a considerable mismatch between regulatory intention and regulatory prescription or, to put it differently, between regulatory risk and systemic risk. We would welcome it if this inconsistency were addressed.

Furthermore, model performance is very sensitive to the specification of parameters such as estimation horizon. While the proposal suggests a minimum estimation horizon of one year this is an upper bound in practice. Danielsson (2000), however, shows that forecast precision increases if longer horizons (e.g. 10 years) are used. This may reflect that volatility exhibits long-run cycles. By focusing on short-run estimation horizons, as is the current habit and as is prescribed by regulators, forecasts ignore information about long-run averages.

The proposed regulation creates another problem for non-normally distributed risk by requiring the calculation of the VaR for a 10-day holding period. In doing so, most users follow the existing recommendation in the Basel regulations by using the so-called ësquare-root-of-timeí method, where a one-day VaR is multiplied by the square root of 10 to obtain the 10-day VaR. This method is legitimate only under extremely strong conditions. Returns need to be normally distributed and the volatility of returns must be constant across time. Clearly both requirements are violated for the risks under consideration. In fact, scaling rules are extremely difficult to calculate when these assumptions do not hold so that the prescribed use of any particular scaling rule is arbitrary.

The fact that VaR regulation relies only on the estimate of a particular quantile also opens up a loophole for legitimate actions by banks that are detrimental to the intention of the proposal. Since the distribution of risk in the tail does not matter, a bank can legitimately shift risk away from the quantile that matters for the calculation of capital charges to the tail through the use of options, for example. This spike-the-firm problem was already referred to above.

Finally, the quality of current risk-forecasting models, which are to play such an essential role in the proposed regulation, has been shown to be questionable on several counts.

DanÌelsson (2000) examines the robustness of various commonly used methods of VaR estimation. He tests the precision with which volatility is forecast and finds that existing models provide estimates that can differ by an order of magnitude of five. The variance-covariance (VCV) model (which underlies the popular RiskMetrics model), for example, comes out as the worst performer while there is no model that clearly outperforms all others. The overall impression is that VaR-models are not robust. They do not provide accurate and consistent risk forecasts across different assets, time horizons and risk levels within the same asset class. Moreover, estimates in DanÌelsson (2000) show that VaR forecasts are almost as volatile as returns themselves. If adjustments in regulatory capital are costly, particularly in the short-run, a change in the VaR by a factor of 2 from one day to another may impose significant costs on banks unless they are sufficiently above the regulatory minimum.

One problem with existing risk forecasting models (related to a point made above) is that they overwhelmingly rely on correlation and covariance matrices as estimates of the dependence structure among assets. Again, when the underlying distribution is non-elliptical so that it is no longer described purely by its first two moments, the dependence structure of assets is no longer captured by linear correlations. Embrechts, McNeil and Straumann (1999) lists several problems that arise when the true dependence structure is instead approximated by the use of linear correlation estimates and suggests methods to correct for this.

We would like to emphasise that in themselves, the arguments advanced above represent criticisms of the use of the value-at-risk and related concepts in risk modelling. However, to the degree that its use is ubiquitous in the new proposals, these criticisms apply directly to the proposal and in particular to the treatment in pillar I of credit and operational risk. Fortunately, other risk modelling techniques exist that enable us to circumvent the problems associated with the non-elliptical nature of operational risk distributions, such as extreme value theory (see Embrechts (2000) for an assessment of extreme value theory as a risk management tool). The proposal should create incentives to use these better models (especially as alternatives to VaR) wherever necessary and possible.

# 4. The Use of Rating Agencies

While the previous sections have mainly focused on our concerns regarding the more sophisticated approaches to market, credit and operational risk, we would like to concentrate on the ëstandard approachí to credit risk as laid out in the proposal. It improves on the existing accord by differentiating assets not only according to obligor but also according to riskiness, as proxied by credit rating agenciesí assessment of the obligor.

We perceive several other problems with this approach. It delivers increased risk sensitivity of capital charges only in so far as corporations are actually rated and that these ratings properly reflect risk.

Non-rated firms face a uniform charge at the same level as in the old accord. In the US, ratings are widespread, e.g. 94% of the S&P500 firms are rated, so that this approach may be thought to improve capital allocation. In Europe, though, credit ratings are by no means as widely spread. At the extreme, only 53% of all DAX-30 firms have obtained a credit rating. Clearly, the standard approach will not deliver in such a setting. While regulators may expect most European banks to migrate to the IRB approach eventually, banks in developing countries are not expected to do so.

Moreover, since unrated firms incur a lower risk weight than firms rated BB- or below, the proposal creates incentives for risky firms to forego ratings altogether in order to obtain cheaper finance. Such behaviour is encouraged by the recent emergence of products such as Moodyís ìRating Assessment Serviceî which allows firms to obtain a confidential prediction of its rating without having to commit to a public rating. The proposal acknowledges this problem but claims that it does not want to impose ratings, which would increase the cost of debt finance for smaller firms. This is a laudable and relevant concern. It does not explain, however, why ratings should not be imposed on ëlargeí issuers (as measured by turnover or amount of debt, for example), which could afford the rating costs.

Quite apart from these problems, using credit agenciesí ratings to determine risk weights is feasible only if these ratings are consistent across agencies, across issuer category (corporate vs. sovereign) and through time. Rating agencies (especially smaller players) have provided notoriously inconsistent estimates of the same firmís creditworthiness. This raises the obvious question of how the regulators expect to enforce a consistent application of ratings across economies in order to dampen incentives for ërating shoppingí and what metrics they propose to use for measuring the variability for these ratings across firms and time.

While credit ratings provide some assessment of a companyís riskiness, ratings generally lag market developments. This lag can be explained by the agenciesí reliance on accounting data, their inability to monitor all issuers continuously and their willingness to change ratings only when their decision is unlikely to be reversed shortly afterwards (i.e. to avoid rating volatility). Various studies have documented the diversity of market-implied default probabilities within a given class of rating. An ideal measure of credit risk would include market information, which better measures current credit risk and the cost for market participants to hedge it. Such a use of other sources of information on current risk conditions would also help to counteract the underlying problem that ratings exist to measure individual rather than systemic risk.

Furthermore, credit risk is not entirely captured by credit ratings and by transition probabilities. Ratings variability, which differs across ratings classes, also needs to be considered in assessing overall credit risk and should be included in the assessment of adequate capital charges, for example.

Finally it is not clear to us what ratings are intended to reflect in the first place. Does the Committee view ratings as measures of the probability of loss only or as a combination of probability and severity? Rating agencies claim that their grades correspond to the latter definition but in this case, why should a sovereign issuer benefit from a lower risk weight than a similarly rated firm? This difference in treatment will undoubtedly lead to sovereign-corporate arbitrage.

Most banks will initially rely on the standard approach to credit risk and these questions urgently demand answers

# 5. The Treatment of Operational Risk

All risk modelling techniques require a sufficient supporting database. Such databases do not yet exist to measure operational risk. Even given the extremely optimistic view that databases on well-defined operational risk losses will be available in the not-too-distant future, the nature of these rare, high-impact losses renders them very different from the loss data we know from market and credit risk. Besides the extreme skewness of the data, the loss intensity process will be very complicated, depending on numerous economic and business related variables. Any global risk measure for, say, next yearís operational risk will thus be hard to obtain, even with first-class data.

Furthermore, the proposal is vague about the definition of the features of operational risk. What types of losses are to be considered? Some losses can be settled (i.e. estimated) immediately because their value is known. Other losses are by definition unpredictable, such as payments arising out of litigation ñ incurred-but-not-realised (IBNR) in insurance terms. How are operational risks to be subdivided or rather with which types of operational risk should regulation be concerned? If one wants add an operational risk charge to pillar I, then careful thought has to be given to its definition and the diverse statistical properties of its components. On these issues, some lessons may be gleaned from actuarial reserving techniques that include loss development models, IBNR claims and related methodologies. While the proposal acknowledges the need for a more careful study of the nature of operational risk its inclusion of operational risk in pillar I certainly seems premature to us from a methodological point of view.

On a more fundamental note, the reason for including operational risk in the calculation of regulatory capital charges is, to say the least, not obvious to us. Why should operational risk be subject to regulation at all? Presumably, capital adequacy regulations exist to rule out systemic failures through contagious bank failures. Market and credit risks, for example, are risks shared by all market participants with many common exposures. Hence, bank failures that are due to market or credit risk can spread because they arise out of shocks that are common to many participants. Operational risk is fundamentally different, however - it is, in most cases, purely idiosyncratic. Hence, the argument from contagion is largely irrelevant here. Any losses created by operational mishaps accrue directly to the equity holders, management and bondholders of a particular institution but do not spread to other institutions.

Furthermore, to the degree that a risk of contagion exists due to significant common exposures at all, we would argue that this could be dealt with much more simply than suggested through other regulatory safety nets such as a lender-of-last-resort.

It appears to us that the operational risk charge may be intended merely to provide a cumulative add-on factor to the capital charge that may have fallen as a result of increased use of IRB-calculated market and credit risk charges. If this is the case we would prefer that the proposal be explicit about this motivation for operational risk charges to avoid unnecessary complexities in the proposed accord and the extra burdening of regulators and banking resources.

Finally, it should be noted that, if imposed, an operational risk charge may well act as an anti-competitive tax on banks to the benefit of other non-regulated financial intermediaries. Consider, for example, a bank that runs a virtually risk-free tracker fund through a fund management subsidiary. It would have to incur an operational risk charge, although its competitors in the non-bank sector would not have to do so and would not do so because the operational risk involved in running such a fund is very small. Such a levy would distort the level playing field of banks vs. other non-regulated financial institutions and create incentives for consolidation in the banking sector as well as non-bank spin-offs of many bank activities. Presumably, the new proposal is not intended to affect the competitive structure of the banking sector or lead to disintermediation.

# 6. Pillar II ñ Supervisory Review

Pillar II forms an integral part of the proposal for the new capital adequacy accord. It obliges regulators to assess the quality of individual bankís risk modelling, allows them to be more flexible with respect to a bankís particular circumstance in her setting of capital charges and encourages closer co-operation between supervisor and bank. As such, pillar II makes possible a more adequate enforcement of prudential regulation and must be welcomed.

We would, however, appreciate a more careful argument for the necessity of such flexibility that takes into account some of the less obvious implications of allowing regulators such flexibility. For example, a high degree of flexibility risks counteracting the second of the main objectives of the existing and proposed accords, namely that of generating a level playing field. In particular, flexibility creates the inherent danger that a regulator may use her discretion to lower capital ratios for banks under her control in order to afford them a competitive edge. Alternatively, she may choose to stick to the minimum ratios prescribed under pillar I when prudence would suggest higher capital charges. These possibilities take on real significance in the light of existing differentials in enforcement of the current accord within Europe, with the UK taking a markedly more flexible approach than some continental regulators. In the US, in contrast, relaxing capital adequacy ratios is ruled out by legislation. Consequently, we believe there is a need for a mechanism that ensures that pillar II is implemented uniformly across countries and that such quality assessments as are undertaken under its auspices are consistent across regulators.

On the other hand, a strong pillar II is necessary to counteract what amounts to a design flaw in regulation through capital adequacy ratios. As already mentioned above, in times of crisis, minimum capital adequacy ratios require a firm either to take on more capital or to dispose of risky assets. In the short run, the former may be impossible or very costly. Disposing of risky assets, in contrast, will only deepen the crisis by accelerating the downturn. The flexibility afforded to regulators under pillar II enables them to react to such a situation by injecting liquidity into the system. When such flexibility is absent, as for example in the United States, where strict adherence to target capital ratios is written into law, regulation creates a knee-jerk reaction that may aggravate any crisis. As a result, we would welcome a strong pillar II as a means of averting such damaging endogenous responses.

As a final point, a worrying aspect of the Committeeís proposal to enable banks to progressively use their internal systems is the substantial imbalance in resources (both financial and human) between banks and their regulators. Banks have hired teams of very well trained statisticians and risk specialists to design ever more sophisticated risk assessment and management tools. The complexity of credit risk models is an order of magnitude higher than that of market risk tools. While regulators in large developed countries may be able to train teams with enough technical capacity to understand and evaluate banks credit risk systems it is unlikely that poorer countries will be able to do so.

## 7. Procyclicality

The riskiness of assets varies over the business cycle. Risk assessments, whether based on credit rating agenciesí assessments or internal ratings, reflect this procyclicality ñ possibly more so in the case of internal ratings, which typically do not attempt to assess risk ëthrough the cycleí. This procyclicality in ratings will create a similar procyclicality in capital charges, with the implication that banks hold less capital or overlend at the cusp of a cycle ñ exactly when the danger of a systemic crises is largest ñ while they will hold too much capital or underlend during the downturn when macroeconomic stabilisation requires an expansion of lending. As a result, regulation not only renders bank crises more likely but could also destabilise the economy as a whole by exaggerating fluctuations.

This conflict between regulation and macroeconomic stability might be interpreted as an argument for trying to relate risk weights to the stage of the business cycle and smoothing capital charges over the business cycle. Two caveats apply to this argument. Firstly, such a welding of macroeconomic policy and regulation sits uneasily with the separation of control of monetary policy and regulation that already is or is about to be put into place in many countries (e.g. UK and Germany) and would neutralise the initial argument in favour of such a separation to a certain degree. Allowing regulators to adjust risk charges to the business cycle may thus upset the level playing field, as some regulators will inevitably feel inhibited to do so due to their limited remit. Secondly, it is notoriously difficult to predict the business cycle. Any forward-looking adjustments in capital charges will inevitably be beset by forecasting problems. But this procyclicality remains so serious that more thought needs to be given to it before revised capital regulations, which exacerbate it, are set in concrete.

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