How Can the Invisible Hand Strengthen Prudential Supervision?

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1. Introduction

The Basel Committee has placed market discipline in a symmetrical position, alongside minimum capital standards and the supervisory review process, as one of three complementary pillars in the proposed new capital adequacy framework (Basel II). The reality of the proposal, however, falls short of this rhetorical symmetry. The space allocated to market discipline in the most recent restatement of the proposal (Basel Committee 2003) is less than a tenth of the overall proposal. (Pillar 2, the supervisory review process, fares only marginally better.) Moreover, the attention to market discipline is, at best, incomplete. The proposal focuses exclusively on disclosure, which is arguably a necessary, but surely not a sufficient condition for effective market discipline. Nonetheless, a properly formulated market discipline policy, strengthened by an appropriate supervisory review process, holds the promise of greatly enhancing the safety and soundness of the financial system without imposing the heavy compliance costs inherent in the complex capital charges laid out under Pillar 1.

In this paper I will examine the case for market discipline in principle and consider concerns raised about the operation of market discipline in practice and how they could be addressed. Next I will consider the Pillar 3 proposal to improve disclosure. Finally, I will conclude with a consideration of how enhanced market discipline could achieve the Basel Committee's (BIS 2001, p.1) stated objective of "strong incentives on banks to conduct their business in a safe, sound and efficient manner including an incentive to maintain a strong capital base as a cushion against potential future losses arising from risk exposures."

2. The Case for Market Discipline vs. Official Discipline

Although I will later argue that market discipline and official regulation and supervision can and should be complementary policies, I will first consider the case in which they are alternative ways of achieving financial stability. In order to make the best possible case for market discipline I will make several very strong (and demonstrably dubious) assumptions. These will be relaxed in the following section when we consider the operation of market discipline in practice.

2.1. Conditions for Ideal Effective Market Discipline

First, assume banks have transparent risk and capital positions so that it is easy for market participants to evaluate the adequacy of capital relative to risk exposures for each bank. Second, assume that market participants have the incentive to process this information because they believe they will suffer loss in the event that a bank should default. Third, assume that market participants are able to process this information to achieve unbiased estimates of each bank's probability of default and employ these estimates to price claims to reflect each bank's probability of default[1], which are adjusted as soon as the bank's probability of default changes. Fourth, assume that banks respond to an increase in the price and/or a reduction in the availability of funds by reducing exposures to risk or increasing capital.[2] Under such circumstances banks will be deterred from taking imprudent actions by market discipline exerted through an increase in the

[1] The first four assumptions will assure the existence of what Bliss and Flannery (2002) call market monitoring.
[2] This corresponds to the Bliss and Flannery (2002) notion of market influence. It is difficult to measure because the anticipation of an adverse market res2onse should be an important disciplinary force that will dissuade management from initiating imprudent action. Of course, actions not taken cannot be observed. See Hamalainen, Hall and Howcroft (2001) for a far-ranging survey of market discipline.

price or reduction in the quantity of funds. Indeed, the anticipation of an adverse market response may often be sufficient to deter imprudent behavior.

2.2. Direct and Indirect Market Discipline

In principle, any claimant on the bank who satisfies the first three assumptions may exercise effective market discipline. This might include depositors, bondholders and shareholders as well as counterparties of the bank in OTC markets. Kwast et al (1999) describe these price and quantity sanctions on the bank as "direct influence." The disciplinary influence of these transactions, however, may extend beyond the pricing of a particular transaction with the bank.

Even though they do not conduct direct transactions with the bank, other market participants also exercise influence over the bank and may rely to some extent on observations of market prices or quantity sanctions in evaluating the bank. For example, the financial press, securities analysts, ratings agencies, and the supervisory authorities may all make use of the prices in primary or secondary markets to assess the prospects of a bank. Kwast et al (1999) describe this as "indirect influence" because it is exercised by an entity that was not party to the original transaction. Indirect influence may be even more powerful than direct influence. For example, a fall in share prices on the secondary market will affect managers to the extent that their compensation is tied to share prices and may even lead to a hostile takeover bid.[3] And, the supervisory authorities could initiate prompt corrective action measures in response to market signals.

[3] Hoggarth, Jackson and Nier (2003) cite the case of Nat West, which was subject to a takeover bid when the report of relatively modest shortfall in profits because of an error in pricing options led to a fall in shareholder prices and a successful takeover bid. In most markets, regulatory inhibitions stifle the market for corporate control which could, otherwise, be a very powerful source of market discipline.

Of course, mechanisms of market discipline can extend beyond price and quantity sanctions that are the usual object of analysis. For example, bondholders may negotiate covenants designed to constrain the bank's leverage, ownership structures, dividend policy or asset substitution possibilities and counterparties may demand additional collateral. Similarly, shareholders, through their ability to elect the board of directors, have a voice in corporate governance and, *in extremis*, may choose to wrest corporate control from the incumbent management team.

Much of the power of market discipline derives from the ability of the price system to aggregate information from a diversity of sources and price transactions at which funds are allocated and risks are exchanged.[4] But an efficient price system presumes a considerable amount of financial infrastructure that should not be taken for granted. For example, it requires reliable accounting practices that reflect the true state of a bank's balance sheet and risk exposures and timely disclosure of this information to market participants. In addition, it requires a legal framework and judicial system that will enforce financial contracts with reasonable predictability and without undue delay

2.3. Market Discipline versus Official Supervision.

This ideal system of market discipline has many attractive features relative to the kind of official oversight that most countries have devised. Market discipline is forward-looking and inherently flexible and adaptive. Market surveillance is continuous, impersonal and non-bureaucratic. Motivated by the objective of maximizing risk-adjusted profits, market participants have strong incentives to draw information from whatever sources they find relevant and process the information using whatever model

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[4] Andrew Crockett (2001) made this point eloquently in his lecture on the distinction between microprudential and macroprudential objectives.

seems appropriate to price risk taking properly and to withdraw funding promptly when a bank's risk profile seems excessive relative to its ability to bear loss.

In contrast, official oversight is usually rule-based, episodic, bureaucratic and slow to change. This is particularly troublesome in a rapidly evolving financial environment characterized by financial innovations. As Evanoff and Wall (2001) observe supervisors can acquire access to proprietary data, but they are more constrained by law, regulation and data availability to keep models constant for long periods. Official discipline tends to be more intrusive and burdensome. Official sanctions are difficult to fine tune to small variations in risk-taking, giving rise to significant compliance costs for regulated firms and potentially important distortions in the allocation of financial capital and real resources.

Moreover, efforts to shift from traditional, rule-based regulation and supervision to more flexible, market-mimicking regulation may impose even greater compliance costs. One aim of the Pillar 1 capital charges is to make capital adequacy regulation more sensitive to market judgments about risk as embodied in external and internal ratings of default risk. Leaving aside the important questions of whether the officials have gotten the absolute and relative risk weights right (Altman and Saunders (2001)), the enormous complexity of the Pillar 1 capital charges raises a serious question about whether efforts to make regulation and regulatory sanctions more risk sensitive justify the additional compliance costs.

Regulators and supervisors have an objective function that differs from that of most market participants. The precise nature of that objective function is subject to dispute although it certainly is more complicated than the maximization of risk-adjusted

profits. From a public interest perspective, officials are assumed to take a systemic view of banking problems and act to minimize spillover costs to the rest of the economy. Regulation and supervision are intended to cause banks to change their preferred behavior to minimize the externalities of banking panics. From the perspective of public choice theory, however, several less public-spirited motives may influence regulatory behavior even though official actions may be cloaked in the rhetoric of the public interest. Public choice theory views regulation as the outcome of efforts of interest groups, politicians and bureaucrats to use the political process for their own personal benefit taking advantage of the significant agency problems between the taxpayer principals and regulator agents (Kane 2001 and 2002).

In order to guard against the arbitrary use of regulatory and supervisory power, most countries subject disciplinary decisions by officials to some sort of judicial or administrative review. This places a burden on official oversight that does not encumber market discipline. In order to discipline a bank, a supervisor must not only know that a bank is taking excessive risk, but also the supervisor must be able to prove it to the satisfaction of the reviewing body -- perhaps beyond a reasonable doubt. This leads to a natural tendency to delay disciplinary measures until much of the damage from excessive risk-taking has already been done and impedes the deployment of regulatory sanctions that are finely calibrated to small changes in risk-taking. It also leads officials to react mainly to what has already happened (and is, therefore, objectively verifiable) rather than acting on the basis of expectations about what may happen (which are inherently subjective and disputable). As Lang and Robertson (2000) have noted, “While bank regulators have fairly broad authority to invoke sanctions, they generally prefer to do so

in response to a clear violation of an objective rule or standard rather than because of a subjective assessment that bank risk has increased."

One of the principal merits of market discipline is that bank directors and managers are faced with the burden of proving to the market that the bank *is not* taking excessive risks rather than subjecting officials to the burden of proving, in a review process, that the bank *is* taking excessive risks. This surely places the burden where it belongs and facilitates better corporate governance by making clear that the directors and managers of a bank are responsible for its risk exposures and ability to bear loss, not the regulatory and supervisory authorities.

In summary, ideal market discipline can ensure that bank directors and managers take full account of the bank's risk exposures in operating the bank. Impersonal market forces, unencumbered by the bureaucratic processes that characterize the supervisory and regulatory process, should be able to monitor the insolvency risk of banks more efficiently and discipline banks that take excessive risks more promptly than the official sector. Moreover, the substitution of market discipline for official discipline would eliminate compliance costs, which are often heavy, and would facilitate a more efficient allocation of resources.

2.4. The Contemporary Example of New Zealand

One country has reduced bank regulation to a bare minimum and replaced conventional banking supervision with a regime of market discipline. New Zealand began to formulate this new approach in 1991 (at a time when most New Zealand banks were locally owned) because of a concern over rising compliance costs and regulatory

distortions in the allocation of resources.[5] Moreover, they were skeptical that conventional regulation and supervision would actually succeed in producing a sound and efficient financial system. Indeed, they harbored a suspicion that intrusive approaches to regulation and supervision could undermine the soundness of the banking system by reducing incentives for bank directors and managers to make prudent judgments about risk exposures and capital adequacy. Finally, they were concerned that if a bank should fail at a time when bank supervisors had access to information regarding bank soundness that was not shared with the market, political pressures for a taxpayer bailout would be harder to resist.

New Zealand began by making clear that taxpayers were not prepared to bailout a failing bank. All such assertions by officials are subject to significant skepticism because they appear to suffer from a time-inconsistency problem. While governments have a clear interest in setting such a policy *ex ante*, before a crisis happens in order to minimize moral hazard, governments have often found it expedient to provide a bailout *ex post*, after the crisis has happened. But in the context of the other changes in regulatory and supervisory policy in New Zealand, market participants are likely to have taken the government at least somewhat seriously.

In order to provide the transparency necessary to enable market participants to monitor and discipline risk taking, New Zealand introduced a new disclosure regime that involved both a Key Information Summary for depositors and a much more detailed Quarterly General Disclosure Statement. Not only did these new disclosures produce much more information about the current condition and risk exposures of each institution, but they also included attestations by the directors of the institution concerning the

[5] The following paragraphs on the New Zealand model are based on Brash (1997).

compliance of the institution with prudential requirements, the adequacy of systems to monitor and control risks, the effectiveness of the implementation of risk management systems, whether exposures to related counterparties were contrary to the interests of the institution, and whether disclosures were false or misleading. If any of these attestations were to be found false, the directors who signed the attestations would be subject to substantial criminal and civil penalties.

The intent was not only to ensure accurate disclosure, but also to provide the market with greater capacity to hold directors and managers accountable for the sound management of the bank. Although the regime has not yet been tested by a sharp downturn, the former Governor of the Bank of New Zealand, Donald Brash, has expressed satisfaction with the results. Banks are providing the market with broader, timelier information and stronger banks are benefiting from lower operating costs, while weaker banks are experiencing pressures to reduce their risk exposures or increase their capacity to bear loss. Moreover, it appears that the threat of bad publicity surrounding the disclosure of bad news has been a more potent form of discipline than the standard supervisory sanctions for breaches of regulatory requirements.

Although New Zealand has many special characteristics[6] that set it apart from most other countries, the experience does demonstrate that under some circumstances market discipline can be an effective alternative to conventional regulation and supervision.

3.0. Concerns about Market Discipline in Practice

[6] For example, most banks in New Zealand are now foreign owned. In addition, New Zealand has not had deposit insurance nor a tradition of placing a priority on depositor protection as an objective of prudential policy.

It is convenient to organize the concerns about the way market discipline works in practice with regard to the four conditions for ideal market discipline because most concerns can be related to doubts about whether one or more of the conditions for ideal market discipline are met.

3.1. Lack of transparency

Concerns about the transparency of bank operations and risk positions find support in the fundamental theory about the role of banks. As providers of finance to borrowers who cannot gain access to the securities markets, banks specialize in holding illiquid, imperfectly marketable claims that are very difficult for outsiders to value. In addition, the increasing importance of trading and especially the development of the OTC derivatives business, has raised concerns that even if one could obtain a true snapshot of a bank's condition, it could change drastically within hours. Morgan (2000) has shown that these theoretical concerns about the transparency of bank risk-taking have empirical validity. His study of bond ratings has shown that the ratings agencies disagree more about ratings for banks (and insurance companies) than for any other kind of firm.

Disclosure is incomplete as evidenced by the fact that in nearly every country (but New Zealand), regulators and supervisors require the disclosure of considerable information of presumed relevance to the current and future condition of the bank that is not shared with the market. Moreover, the data available to the market is backward looking and released only with a lag – even though some of the most sophisticated institutions are, in effect, marking themselves to market every day for internal management purposes.

Accounting conventions often seem to conceal as much as they reveal about the current and future condition of the bank. In many countries bank accounting is a peculiar mix of accrual, historical cost and mark-to-market accounting that can facilitate income smoothing and, indeed, the concealment of deteriorating credit quality through ever greening.[7] Moreover, the distinction between the banking book and trading book, based not on the objectively verifiable nature of the financial instrument, but upon the unobservable intent of bank management, invites "gains trading" or the selective realization of capital gains and deferral of the recognition of capital losses.[8]

One way to address these concerns is through mandatory disclosure of information concerning a bank's current condition and prospects. This is the approach taken by the Basel Committee. We will discuss that policy and disclosure more generally in section 4. Of course, mandatory disclosure requirements are likely to be a second-best approach since they are an attempt by officials to anticipate what the market should want to know about an institution, moderated by a sense of what is politically acceptable to banks. Disclosure requirements tend to be rigid, slow to adapt to market changes and may produce considerable, irrelevant information and, therefore, impose unnecessary compliance costs on banks.

Disclosures demanded by the market, on the other hand, are likely to be more efficient and more relevant since they will address precisely the information market participants believe they need to evaluate the bank. And so, it is useful to ask why market demand does not elicit sufficient information. One possibility is that market

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[7] Evergreening is the practice of making additional, negative net present value loans to borrowers who are unable to repay in order to avoid the necessity of reporting a loan as non-performing. Of course, not all loans to borrowers who are experiencing repayment difficulties are negative net present value (Herring (1989)). That's why the practice is so difficult for outsiders to monitor.
[8] See Carey (1993).

participants feel protected by the safety net in varying degrees and thus do not press their demands for adequate information. Similarly, under these conditions, banks would not perceive any clear advantage in providing such information because it would have little, if any impact on their operating costs. This leads to the next concern about market discipline in practice – that market participants may lack a compelling motive to discipline banks.

2.2. Inadequate Incentives to Discipline Banks

For market discipline to be an effective force for controlling a bank's risk of insolvency, at least some market participants must have an incentive to demand information and monitor and evaluate that bank's probability of default. Fear of loss is perhaps the most powerful means of motivating market participants to price claims on the bank to compensate for the expected probability of default. In principle, fear of loss is relevant for all holders of claims on a bank, but in practice the incentive has often been dulled for most creditors of large, internationally active banks by policies of official support aimed at safeguarding financial stability.

Explicit deposit insurance relieves insured depositors of the fear of loss.[9] Moreover, the enhanced prudential supervision required to protect the deposit insurer may convey the impression that official oversight has been substituted for market oversight. Indeed, on-site bank examination and the practice of sharing confidential information concerning the soundness of the bank with official supervisors creates an impression that official supervision is the first-line of defense against imprudent risk taking and implies a quasi-official certification of the soundness of a bank. This may add

[9] Unless deposit insurance is structured to include a deductible or an element of coinsurance and the authorities employ resolution techniques that actually may impose losses on depositors.

to political pressures to provide broader assistance that extends beyond explicit deposit insurance in the event an institution experiences financial distress. In many countries officials have often provided what amounts to implicit insurance for most or all creditors through forbearance of prudential rules, liberal discount window lending, guarantees, official capital infusions, or the arrangement of assisted mergers in which an acquiring institution purchases some of the assets and assumes all of the liabilities of a faltering institution. Direct official support for holders of equity claims is rare (but not unknown).

To the extent that claimants on the bank expect to be protected by an official safety net in the event that the bank falters, the potentially strong connection between a bank's portfolio risk and leverage choices and funding costs is weakened. The powerful motivation for market discipline provided by the fear of loss is weakened. Fitch, the ratings agency, has attempted to assess the likelihood that individual banks would receive official support should this become necessary. As the analysts at Fitch observe (Andrews, Moss and Marshall (2002, p. 1) "…whether or not banks default on their financial commitments is often a function not only of their intrinsic creditworthiness but also of the readiness and capacity of some outside agency, usually the state, either to support them by some form or subsidy, perhaps based on a guarantee, and/or to rescue them it they get into trouble." Hoggarth, Jackson and Nier (2003) have examined the correlation between the Fitch Support Ratings and the average capital ratio (the leverage component of overall risk) and found a strong negative correlation, which is consistent with the hypothesis that a greater likelihood of official support reduces the force of market discipline on bank risk taking.

In order to restore an incentive for market discipline, it is essential that at least some uninsured counterparties of the bank perceive a risk of loss. Given the time inconsistency issue referred to above, officials face a challenge in making a credible commitment not to bailout large institutions that may be considered systemically important. The US attempted to achieve this with the Federal Deposit Insurance Corporation Improvement Act reforms in 1991. In particular, Congress instituted a system of prompt corrective action to enforce capital requirements and remove the option of forbearance. In addition, the Federal Deposit Insurance Corporation is mandated to choose the method of resolution that is least costly to the deposit insurance fund of all possible methods for meeting the FDIC's obligation to protect insured depositors, which will normally forestall bailouts of uninsured creditors.

The credibility of these restrictions is enhanced by an explicit provision for a systemic risk exception that is limited in scope. The systemic risk exception requires concurrence by two-thirds of the Federal Reserve Board, two-thirds of the FDIC Board, and the Secretary of the Treasury in consultation with the President that conformance with least-cost resolution would "have serious adverse effects on economic conditions or financial activity." Only then can the FDIC depart from the least cost resolution technique. This decision is subject to review by the Comptroller General who will make a report to Congress. Since any losses to the deposit insurance fund will be recovered by a special assessment on all depository institutions if the systemic risk exception has been invoked, the banking industry is unlikely to press for frequent use of the systemic risk exception. Regulators are quick to add that even if the systemic risk exception is employed, there should be no expectation that uninsured creditors will be made whole.

FDICIA requires only that the uninsured creditors be made no worse off than if the bank were liquidated. Since the FDIC has the authority to create a bridge bank it has the capability of keeping an institution in operation so that it can be wound down in an orderly way, even though shareholders lose their total investment, management is replaced and uninsured depositors suffer losses.[10]

Flannery and Rangan (2002) provide evidence that this change in policy in the United States may have succeeded in strengthening market discipline on US bank holding companies. They attribute the substantial build-up in capital at large US banks, well above regulatory minimums, to enhanced incentives to monitor and price default risk. The new Fitch Support Ratings for US banks are consistent with this hypothesis as well. The analysts at Fitch have assigned even the largest US banks the lowest Support Rating indicating, "Support from an outside source is possible, but cannot be relied upon."

3.3. Biased prices and destabilizing flows

Assuming that market participants have sufficient incentives to discipline banks, some observers have raised concerns about the quality of market discipline in practice. In the face of growing evidence that market prices reflect actual or prospective bank risk to some extent,[11] attention has shifted to potential errors in such prices.

Some of these concerns involve whether default risk is factored into market prices appropriately. Other concerns involve the disruptive nature of quantity sanctions that are often deployed instead of price sanctions.

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[10] The depositor preference provisions of the Omnibus Budge Reconciliation Act of 1993 also provided a strong incentive for foreign depositors to exercise market discipline over US banks since they will stand behind all US depositors, both insured and uninsured, in the event of a default.

[11] See, for example, Flannery (1998), Evanoff and Wall (2001), Swidler and Wilcox (2002) and the references therein for evidence regarding US banks. See Sironi (2003), Nier and Baumann (2003) and Hoggarth, Jackson and Nier (2003) for evidence regarding European banks.

Three kinds of questions center around market prices: (1) Do market prices reflect default risk correctly? (2) Do they respond to changes in risk-taking ex ante? (3) Do they undermine the stability of the banking system?

3.3.1. Pricing errors

The first concern about market prices is that even if they accurately reflect the probability that a bank will default, they will reflect only the anticipated, private costs of default, not the social costs. Market participants lack incentives to take a systemic view of the probability that a bank may default and therefore may be willing to accept a higher probability of default than is socially optimal. While this concern is part of the fundamental rationale for prudential supervision, its contemporary relevance is open to doubt. Currently most major US banks maintain capital ratios that are well above regulatory minimums, indeed, even above the standards necessary to earn a regulatory designation of "well capitalized." Thus it appears that the market demands a higher degree of safety than the regulators require.

Option pricing theory (Merton 1974) implies that both bond and equity prices incorporate market expectations of the probability of default. Indeed, in a frictionless world, with complete markets, theses probabilities would be identical. But comparisons of implicit default probabilities extracted from bond prices and equity prices are far from perfectly correlated (Bliss and Flannery 2002). Indeed, Kwast and Hancock (2001) have shown that inferences about the probability of default based on debt instruments issued by a particular bank may differ from instrument to instrument or across different data series for the same instrument.

Extraction of default probabilities from equity prices requires several very strong assumptions that may not always hold. On the surface, the process would appear to be much more straightforward for debt instruments. Unfortunately, several factors in addition to the probability of default affect yields and spreads in bond markets. Elton, Gruber et al (2001) have examined spreads in rates between (non-financial) corporate and government bonds across rating classes and attempted to identify the portion that can be accounted for by expected default loss, the tax premium (which arises because corporate bonds are subject to state and local taxes while US Treasury obligations are not), and a risk premium to compensate investors for the higher systematic risk associated with corporate debt. While default risk is significant, it accounts for a smaller proportion of the spread than the tax premium and risk premium.

Similarly, Collin-Dufresne, Goldstein, & Martin (2001) attempted to explain *changes* in spreads based on proxies for credit risk and liquidity. They find default risk explains only about one quarter of the variations in the changes in spreads. While liquidity factors explain a bit more of the remaining variation, most of it is explained by a component that is unrelated to firm-specific or macroeconomic factors.

Like regulatory models to identify problem banks (Evanoff and Wall 2001), market price signals (and the techniques used to extract default probabilities from them) are subject to both Type I errors (prices incorporate a default premium that is too high relative to the true probability of default) and Type II errors (prices incorporate a default premium that is too low relative to the true probability of default). Type I errors can impose unwarranted costs on banks and lead to misguided regulatory actions. But Type II errors can also lead to a misallocation of financial and real capital. Flannery (2001)

has observed that optimal supervisory policy will minimize the social costs of anticipated Type I and Type II errors. Unfortunately, we are long way from being able to specify the social costs or the respective sizes of the two kinds of errors with any precision.

3.3.2. Responses to changes in *ex ante* risk taking

In section 2 we argued that ideal market discipline responds to increases in risk *ex ante*, before the dangers of excessive risk taking have been realized, and rewards banks promptly for reductions in risk. In practice, however, the market response to increased risk is too often *ex post*, after losses have occurred rather than *ex ante*, when riskier positions are taken. (This may be a consequence of the first concern, inadequate *ex ante* disclosure of risk exposures. But it may sometimes be the reaction to an unanticipated risk.)

Similarly, once established, risk premiums tend to be sticky. When default premiums ratchet up, it takes a very long time for them to return to normal levels even though a bank may take dramatic corrective action. This is observable in interbank markets with regard to the phenomenon of tiering.[12] When concerns arise regarding the creditworthiness of a particular bank or group of banks, these banks will be obliged to pay a higher spread over the base rate. Typically, banks will remain in that tier above the benchmark rate for a very long time.

While sticky, *ex post* sanctions are less efficient in disciplining bank risk taking than *ex ante* sanctions that can influence bank decisions before losses are incurred, they are not without value. The anticipation of sticky, *ex post* sanctions by banks may also be a powerful deterrent to imprudent risk taking *ex ante*.

[12] In the late 1990s Japanese banks were subject to tiering in international interbank markets because of concerns about their solvency.

3.3.3. Destabilizing flows

The main concern about market discipline was recently articulated by Arnold Schilder (2002, p. 4), Chairman of the Accounting Task Force of the Basel Committee on Banking Supervision: "Once the risks start to materialize, and the market is aware that the bank's position is weakened, it may react excessively. Banks may then be subjected to high interest rates or ultimately be excluded from the market, possibly even regardless of their performance. This could spread to other banks and jeopardize the stability of the banking system." The concern is less that market discipline won't work, than that it will work too disruptively, with potentially heavy spillover costs for the banking system.

Some observers find support for this view in the history of banking in the United States in the nineteenth century. New Zealand is, of course, not the first country to employ a regime of market discipline. During the nineteenth century, banks in the US and many other countries were disciplined mainly by the market, with government oversight limited basically to the chartering function. In some respects the system functioned well. Brokers and other arbitrageurs established discounts on the notes of individual banks that broadly reflected default probabilities. Banks, in turn, competed in building reputation and capital strength. Indeed, banks advertised and maintained very high capital ratios. But the system was also plagued by periodic banking panics and bank failures that amplified shocks to the real economy. Whether these panics were a consequence of the inherent defects of the regime of market discipline or a reflection of the inflexibility of the supply of currency is debatable. But the subsequent erection of the various components of the safety net is based on the premise that market discipline was at least partly to blame.

These concerns apply less to market discipline through price sanctions than to market discipline through quantity sanctions. The fundamental problem is that banks find it costly to reduce the scale of their balance sheets rapidly and so a herd-like withdrawal of funding in response to bad news may cause such substantial losses that even a well-capitalized institution may be forced to default. Short-term financial claims give the holder the opportunity to run in the event that concerns arise regarding a bank's solvency. And once a run begins, all others who can redeem their claims at face value have an incentive to do so. Thus quantity sanctions tend to be like a binary switch that is turned either off or on. This is market discipline at work, but it is discipline so harsh that it is likely to be lethal rather than instructive.[13]

In contrast, price discipline tends to be less disruptive and more like a rheostat. If a bank is forced to pay a higher price for its funds, its profits will suffer, but it should have time to make appropriate adjustments in its leverage and scale of operation or risk exposures without incurring a fire-sale loss on forced liquidation of its assets. Price sanctions are administered mainly through long-term claims.

These considerations suggest that market discipline is least likely to be destabilizing if it is channeled through holders of long-term claims on the bank – either equity or long-term, subordinated debt – who cannot impose quantity sanctions. As noted earlier, there are theoretical reasons to believe that the prices of both equity and debt contain information about the market expectations regarding the probability of default. Although the interpretation of either becomes difficult when a bank is very near the point of default because the value of put option implicit in the price of equity rises

[13] Still one should not dismiss the demonstration effect altogether. Napoleon's notion of a hanging an admiral "pour encourager les autres," was probably an effective, if draconian, teaching tool.

sharply so that the value of equity may increase with an increase in the volatility of the bank's assets and deep discount, low quality bonds tend to be priced more like equity. Nonetheless, either equity prices or subordinated debt should yield useful information until the point at which default is perceived to be imminent.

Most attention[14] has been focused on subordinated debt as a preferred channel of market discipline, but the liquidity of equity markets is generally substantially more robust than that of secondary debt markets and so equity prices may be more informative. Both may provide useful information. Mandatory, periodic issues of subordinated debt could provide a powerful source of direct discipline, while equity prices may be a more reliable source of information for indirect discipline.[15]

3.4. Market discipline may not influence bank behavior

The preceding section has considered circumstances in which market discipline may be destabilizing. In this section we consider the opposite extreme, the circumstances when it may be ineffectual. Berger (1991) raised this issue when he noted that it was important not only to assess whether the prices of liabilities reflected risk perceptions, but also whether such price changes influenced bank behavior.

This problem is most likely to arise when a bank feels securely protected by the safety net, but the market perceives that some categories of claims may be subject to loss. If the bank has easy access to insured deposits, then any increase in default premiums demanded on uninsured liabilities (or equity) may simply lead to a substitution of insured deposits rather than a reduction in portfolio risk or leverage.

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[14] See, for example, Horvitz (1986), Evanoff and Wall (2000), and U.S. Shadow Financial Regulatory Committee (2000). Herring (2003) contains an analysis of the Shadow proposal in the context of a broader assessment of Basel II.
[15] See Bank for International Settlements (August 2003) for a recent survey of subordinated debt and equity markets in the member countries of the Basel Committee.

The concern is also raised with regard to direct market discipline if new issues of securities are a relatively small component of the cost of funds. Under such circumstances, even if market prices fully reflect expected probabilities of default, they may have so little impact on the bank's average cost of funds that the disciplinary impact is negligible. The concept of indirect market discipline, however, opens the range of possibilities for increases in the default premium to influence bank behavior even if the bank makes no new issues of securities at the less favorable price. As noted above, equity prices may have a direct impact on bank management even if the bank issues no new shares. Similarly, to the extent that the financial press, security analysts, ratings agencies and the supervisory authorities monitor secondary market prices to assess the current condition and prospects for a bank, indirect market discipline may be quite powerful. Indeed, if the supervisory authorities wish to increase the influence of market discipline they can do so quite readily by linking supervisory and regulatory sanctions to secondary debt or equity prices.

More broadly, most of the concerns about the operation of market discipline in practice can be dealt with by suitable changes in regulation or supervision. If market participants lack sufficient information to price default risk, then disclosure can be improved. If market participants lack incentive to price default risk because they expect to be protected by the safety net, then the supervisory authorities need to develop ways to deal with systemic risk without protecting some categories of market participants, particularly holders of subordinated debt and equity. If quantity sanctions by market participants are thought to be too destabilizing, then market discipline can be channeled through holders of long-term claims who cannot engage in herd-like behavior. The Basel

Committee's efforts to enhance market discipline, however, focus exclusively on improving disclosure and so we will turn to disclosure policy in the next section.

4.0. Disclosure policy for internationally active banks

The rationale for mandatory disclosure has both an efficiency and an equity dimension. Since the efficiency of the allocation of resources depends critically on the quality of information available to those allocating resources, there is a presumption that disclosure of better information will enable investors to make better decisions. In addition, since information tends to be unevenly distributed between insiders and outsiders, disclosure helps protect insiders from being taken advantage of by better-informed insiders. (This should also increase the willingness of outsiders to supply funds.)

Banks have traditionally been subject to lower disclosure requirements than other firms. This is partly because official oversight has substituted for market oversight and rendered it unnecessary. Moreover, supervisors (who derive much of their power from access to information not shared with the market) often argue that fuller disclosure of banking data may prove destabilizing because banks are especially vulnerable to a loss of confidence. Indeed, until recently several countries encouraged banks to maintain hidden reserves that could be used to smooth income in times of stress in order to reassure market participants. A series of banking crises over the last twenty years, however, has raised serious questions about the adequacy of official oversight. Moreover, since bad news cannot be suppressed indefinitely, it is at least arguable that prompter disclosure of even damaging information could help stabilize the system by discouraging the build-up of excessive exposures to loss. In the United States the Securities and Exchange

Commission (SEC) has long pressed for better disclosure, often over the protests of the banking agencies. Indeed, the SEC is probably the leading force for better disclosure standards among internationally active banks since the lure of US capital markets has led many leading banks to voluntarily disclose much more information than they have traditionally shared with the markets in order to qualify for a listing on a US stock exchange.

4.1. The Basic Economics of Disclosure

Over time a ratcheting process has characterized the evolution of disclosure. Disclosure tends to notch irreversibly upward in the wake of a shock that reveals the inadequacy of prior disclosures. But this means that rather than being forward looking, changes in disclosure policy are usually designed to prevent a recurrence of past problems.

The demand for information regarding the creditworthiness of a bank will depend on the expected gain (or avoidance of loss) from additional information. Demand is likely to rise when there is a perception of an institutional weakness or when there are systemic concerns. This is, of course, when disclosure of adverse information is most likely to lead to damaging, herd-like behavior. Demand will also depend on the cost of acquiring, organizing and interpreting information relative to other strategies of avoiding loss such as keeping maturities short in order to have quick access to the exit in the event of trouble. Advances in telecommunications and information technology have greatly reduced the costs of acquiring and organizing information, although interpretation remains a challenge.

The supply of information regarding creditworthiness depends on the expected benefits relative to the costs. It would appear that a prudently managed bank would have a clear self-interest in supplying information in order to reduce its funding cost. (Of course, if it is securely protected by safety net there will be little reason to demand or supply information.) In fact, the voluntary supply of information seems to be relatively meager. This may be due to the structural vulnerability of banks to a loss of confidence. The high degree of leverage and dependence on short-term liabilities with fixed face values makes disclosure of bad new especially costly to banks.

But why not adopt a policy of disclosing only good news? This sort of disclosure policy faces a credibility problem unless the information can be verified by a trusted third party or made believable by attestations subject to serious legal sanctions. Moreover, if the bank adopts a policy of disclosing only good news, it may find that market participants respond to some events by interpreting no news as bad news. Thus it may find that it needs to disclose neutral news to prevent its misinterpretation as bad news. But if both good news and neutral news are disclosed, then bad news is implicitly disclosed by its omission. Thus a bank may prefer a policy of no disclosure over even selective, self-serving disclosure.[16]

Paradoxically, mandatory disclosure, moreover, may convey some net benefits that cannot be realized with voluntary disclosure. The value of information depends on the availability of comparable data from a peer group.[17] Comparable data are easier to

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[16] See Guttentag and Herring (1985) for a similar argument.

[17] This was a point made effectively by Britain's Financial Services Authority (2000): "market participants and consumers alike may find it difficult to interpret information from firms which do publish information unless a sufficient number of similar firms also make comparative disclosures. This would be particularly true if other firms responded by making selective and partial disclosures to present themselves in the most favorable light possible."

interpret. Moreover, the bank may find such peer group information to benchmark its own operations. This enhanced ability to learn from others may also allay some concerns about the loss of proprietary information. When competitors are subject to the same disclosure requirements the loss is offset to some extent by a gain in proprietary information about peer banks.

These reflections on the basic economics of disclosure suggest three guidelines for the formulation of disclosure policy. First, disclosure policy should be anticipatory rather than reactive and attempt to provide information before a crisis generates a demand for it. The accumulation of a time series of observations provides a better basis for evaluating new information. Moreover, bad news may be less likely to lead to herd-like behavior if it can be interpreted in the context of time series of normal variations. And, it is even possible that enhanced market monitoring made possible by additional information will deter the bank from taking excessive exposures.

Second, the range of information disclosed should be quite broad including virtually any information that may help forecast the distribution of future market values of the institution. This should include not only factors that help forecast the mean, but also factors that help forecast the dispersion around the mean.

Third, data definitions, formats and reporting intervals should be standardized to facilitate comparisons across institutions. The understandable resistance to “one-size fits all” requirements should not be met by tailoring requirements for each institution. Instead, institutions should be encouraged to supply whatever additional information they think relevant as well as any narratives they believe will help the market interpret the information appropriately.

4.2. Pillar 3

In light of these considerations, how does the Basel II proposal measure up? Pillar 3 would require the disclosure of substantially more information than banks currently disclose. Specific required disclosures include the scope of capital requirements across the holding company, the terms and conditions of all capital instruments, exposures to credit, market, operational and interest-rate risk. Banks that qualify for the internal ratings based procedures determining capital charges under Pillar 1 will be required to disclose inputs into their credit rating models. Qualitative disclosures are to be made annually, capital disclosures, semi-annually and capital adequacy disclosures, quarterly. In addition, banks are to make quarterly disclosures of any information subject to rapid change. It is unclear why all the quantitative disclosures should not have been made on a quarterly basis.

Enforcement of disclosure requirements would depend primarily on "moral guidance" or "dialogues" with bank management with the possibility of official sanctions. But additional capital would not be imposed when disclosures are inadequate (although to the extent that additional disclosure is a prerequisite for us of the IRB approach there is an implicit capital benefit for improved disclosure). Moreover, if a bank believes that a mandatory disclosure would reveal proprietary data, it may omit the disclosure and include a statement about why it is omitted. This could lead to substantial variation in disclosures. No audit of Pillar 3 disclosures is required unless it is otherwise subject to legal requirements and so the quality of disclosures may also be subject to substantial variations.

Unfortunately, considerable risk-relevant data has been omitted from required disclosures. These include foreign/domestic currency breakdowns of assets and liabilities and exposures to sovereign borrowers, publicly controlled corporations, and commercial real estate, all of which have a played a central role in banking crises in the recent past. And comparability of data remains constrained by national differences in accounting, provisioning and statistical standards.[18]

In one key respect, Basel II represents a retreat from a level of transparency achieved by the original Accord. One of the principal achievements of the original Accord was a straightforward (if deeply flawed) way of comparing the capital adequacy of internationally banks. Many banks chose to report their Tier 1 capital ratios, although it was not required. Although these ratios are based on accounting conventions and supervisory standards that vary across countries, they did provide a crude measure of capital adequacy. Despite the expanded disclosures regarding capital instruments and ratios, that will no longer be true. Banks are provided with so many options under the Pillar 1 capital charges, including the use of internal models, and are potentially subject to additional, but not necessarily disclosed, capital charges under Pillar 2, in addition to many other details subject to national discretion, that it is no longer possible to compare capital adequacy across institutions in a straightforward manner.

Thus, although the Basel Committee may have made progress in terms of the range and quantity of data disclosed, the comparability of data remains a concern. In

[18] In addition to these points, the Staff of the IMF (Kohler 2003) noted that "Significant additional benefits can be achieved through use of standard formats for presentation of metadata (textual descriptions of data), internet-based data collections systems, application of Extensible Markup Language (XML) techniques, flexible database construction, and data gateways."

addition, the treatment of the possible dispersion of outcomes with regard to market risk falls short of its earlier agreement with IOSCO.

4.3. Limited progress regarding measures of dispersion

In typical fashion the main improvement in disclosing market risk was in response to an SEC requirement introduced in 1997 after a series of problems with derivatives. Several US bank holding companies have disclosed Value at Risk (VaR) measures of their exposure to market risk. Jorion (2002) has shown VaR disclosures by eight U.S. banks do indeed predict realized market risk.[19] It was not possible, however, to make meaningful direct comparisons of VaR disclosures across institutions. The sophisticated transformations that Jorion performed to extract useful comparative information indicate some of the limitations in current disclosure practices. VaR data were reported for different intervals – as period averages or end-of-period levels or as graphs of daily levels – and with different underlying assumptions about the holding period and confidence level.[20] Berkowitz and O'Brien (2002) compared daily VaR forecasts with next day trading results using a sample of large U.S. banks containing confidential supervisory data. While the VaR models provided a conservative estimate of the 99% tail on average, there were substantial variations across institutions.

The recent Basel Committee (2002, p. 12) survey of public disclosures by 48 banks from 13 countries indicates that the challenge of making meaningful *international* comparisons across banks is even more difficult. Although almost all of the surveyed banks use VaR to assess their market risk, the details they disclosed about their VaR

[19] Hirtle (2003) finds that reported market risk capital is useful for predicting changes in market risk exposure over time for individual banks; however, such disclosures provide little information about differences in market risk exposure across banks.

[20] Hoggarth, Jackson and Nier (2003) report similar diversity across VaR disclosures by the five largest British banks.

estimates varied considerably. While 96 percent of the banks disclosed the confidence level used for VaR estimates, only 89 percent disclosed the holding period assumption and 74 percent disclosed the observation period on which the VaR estimates were based. Forty-seven percent provided a graph of daily profits and loses on trading activities combined with VaR. Fifty-one percent provided summary VaR data on a weekly or monthly basis. Nonetheless, this survey indicated an increased level of transparency of position risk exposures relative to a similar survey conducted two years earlier (Basel Committee & IOSCO, December, 1999).[21] In 1998, only two-thirds of the firms reported VaR measures and only a quarter reported VaR results on a weekly or monthly basis.

The Technical Committee of IOSCO and the Basel Committee have agreed to a set of recommendations for public disclosure of trading activities of banks and securities firms (Basel Committee & IOSCO, February 1999) that would enhance transparency and provide a sounder basis for market discipline by customers, creditors, counterparties and investors. The two committees agreed that information should be: (1) provided with sufficient frequency and timeliness to give a meaningful picture of the institution's financial position and prospects; (2) comparable across institutions and countries and over time; and (3) consistent with approaches that institutions use internally to measure and manage risk, thus capturing enhancements in risk management practices over time. Their specific recommendations with regard to market risk disclosure include:

- Description of the major assumptions used to estimate VaR including the type of model, holding period, confidence level, observation period and portfolios covered.

[21] The results are not directly comparable because the sample included forty banks and investment banks from twelve different countries.

- Daily information on profits and losses on trading activities, combined with daily VaR.
- Summary VaR results on a weekly or monthly basis.
- Average and high/low VaR for the period.
- Results of scenario analysis.
- Discussion of the number of days actual portfolio loss exceeded VaR.

Unfortunately, the Pillar 3 VaR disclosure requirements appear not to go quite as far as a set of joint principles agreed with IOSCO in their recent working paper on Pillar 3, market discipline (Bank for International Settlements, April 2003). Quantitative disclosures include only (Bank for International Settlements, April 2003, p. 15): (1) the aggregate VaR; (2) the high, mean and low VaR values over the reporting period and period-end; and (3) a comparison of VaR estimates with actual outcomes, with analysis of important "outliers" in back test results.

Despite these concerns, Pillar 3 will, on balance, improve disclosure of data relevant to assessing the creditworthiness of banks. But, as we have seen, that is not all that could and should be done to strengthen market discipline.

5. Concluding Comment on the Relative Advantages of Enhanced Market Discipline

In order to enhance market discipline, the Basel Committee should not only improve disclosure standards but also strengthen the motives for a least some claimants to exercise discipline over banks and amplify the impact of market discipline by linking it to supervisory actions. This enhanced market discipline would in turn strengthen prudential regulation and supervision.

Additional disclosure will have little impact unless at least some market participants have an incentive to collect, analyze and monitor the new data. For several banks, including some of the largest most internationally active banks, there is reason to doubt that the strength of the motive for market participants to exercise discipline over debt instruments. For example, Fitch (July 2003) rates over 400 internationally active banks as having an “extremely high” or “high probability of external support” – roughly equal to the number for which external support, “although possible, cannot be relied upon.” This is a problem that can and should be fixed. Indeed, if Pillar 2 had been tightened to include a genuine prompt corrective action component, substantial progress would have been made.

What is needed, ultimately, are better resolution tools so that even a very large institution can be resolved with minimal systemic spillovers. It should be possible in the event of insolvency to eliminate the claims of shareholders, replace managers and imposes losses on at least some uninsured creditors, without disrupting the essential operations of the bank. The bridge bank model in the United States holds promise as a way of accomplishing these objectives while providing sufficient time for the supervisory authorities to make an optimal disposition of the bank either through piecemeal liquidation or merger. Unfortunately, market discipline is likely to be less effective than it should be until creditors are persuaded that a credible resolution process is in place for every major, internationally active bank.

Concerns about the disruptive nature of quantity sanctions are a plausible reason to focus market discipline on holders of long-term claims and in this regard subordinated debt and equity may both play a useful role. The concern that direct discipline through

these channels is slight because new issues are relatively infrequent can be addressed in two ways. First, regular issues of subordinated debt can be required. Although this does impose additional transactions costs on the issuing bank, the issuing costs are less than those of issuing new equity and probably less than the compliance costs associated with the more intrusive forms of regulation and supervision that could be removed. Second, indirect market discipline can amplify direct market discipline.

Supervisors can enhance market discipline by linking supervisory actions to secondary market information. A wide range of responses is possible. If there is substantial skepticism about the quality of market information, it could be used to help allocate examination resources so that banks subject to adverse market signals receive more frequent and intense examinations. But if there is more confidence in the accuracy of market signals, prices could also be used to trigger standard debt covenants such as progressively greater restrictions on bank dividend policies, management fees, deposit insurance premiums or capital requirements. Indeed, the full set of prompt corrective action measures could be linked to levels of default premiums implicit in market prices.

This enhanced market discipline holds substantial promise of strengthening the financial system more effectively and at lower cost than the current Basel II proposal. The Basel II proposal holds little promise of accomplishing its laudable, stated objectives of eliminating regulatory capital arbitrage and aligning regulation with best practices in credit risk management. It will not eliminate incentives for regulatory arbitrage because the risk weights, despite their complexity, still do not reflect risk accurately. It fails to align regulation with best practices in credit risk management because it obliges banks to implement procedures that fail to take account of portfolio diversification, one of the

most important tools for dealing with risk. Moreover, Basel II does not address the fundamental problem that measures of regulatory capital are based on accounting conventions that vary substantially from country to country and can be easily manipulated by banks that wish to boost their regulatory capital without increasing their capacity to bear loss. Finally, the extraordinary complexity of Basel II will impose heavy compliance costs and make it very difficult to monitor the enforcement of capital requirements.

In contrast, enhanced market discipline provides a simple, but effective way to enhance the effectiveness of capital regulation at much lower cost. Indeed, enhanced market discipline is much more likely to accomplish the stated objectives of Basel II. First, it will deter regulatory arbitrage. Regulatory risk weights that diverge from actual risks may give banks an incentive to engage in transactions to reduce risk-weighted assets without reducing exposure to risk. But market participants will not be misled by regulatory risk weights. What matters to holders of subordinated debt and equity is the bank's overall exposure to risk of insolvency. If they perceive that a transaction increases a bank's exposure to risk, the bank will be penalized by the market and, to the extent that regulators rely on market signals to monitor risk, by the regulators as well.

Second, institutions that employ best practices in risk management, which will surely evolve over time, will be able to deploy capital more efficiently and have better control over their risk of insolvency. Rather than impede advances in risk management as Basel II threatens to do by prescribing a specific approach to risk management, holders of subordinated debt are likely to reward institutions than can quantify and control their overall exposures to risk more effectively. Unlike the Basel II approach that prescribes a

particular approach to risk measurement and management, the market will reward the adoption of whatever improvements in risk management prove to be effective. In addition, market participants who perceive themselves to be at risk of loss are likely to be an effective force for enhancing disclosure that will augment the Pillar 3 requirements.

Finally, market discipline will help reduce the distortions introduced by the reliance of regulators on accounting measures of capital. Holders of risky claims are likely to increase pressures for the adoption of market value accounting because market values, not accounting values are relevant for assessing the risk of insolvency. Moreover, holders of subordinated debt are unlikely to be deceived by gains trading and under-provisioning that can boost regulatory capital without enhancing an institution's capacity to bear loss.

Enhanced market discipline is also likely to improve the performance of the supervisory authorities. The secondary market price of subordinated debt provides a highly visible signal of the riskiness of a bank and, because holders of subordinated debt stand in line for repayment after the deposit insurance authority, they have a strong motive to press for prompt corrective action to minimize losses at a failing institution.

Cast in the most favorable light, the Basel II proposal is an attempt to align regulation with market estimates of risk. But this raises a logically prior question: why invest in an enormously complicated way to mimic the market, when it is much easier to harness market discipline in support of safety and soundness objectives?

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