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**FINANCIAL MARKET SUPERVISION:
SOME CONCEPTUAL ISSUES**

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Introduction

This paper attempts to discuss some of the conceptual issues involved in understanding the goals, constraints and methodology of financial market (prudential) supervision. The focus is on *banking* supervision, since much of the experience to date has been in that field.

There are several reasons for undertaking such an investigation. Firstly, as indicated in the recent report released by a Study Group of the central banks of the Group of Ten countries (BIS, 1986), financial deregulation and innovation have increased concerns about financial market stability. As a consequence, greater attention has been paid to the role of prudential supervision in securing stability. It is, however, worthwhile to investigate how prudential supervision can actually contribute to stability. This paper provides a conceptual framework for analysing this subject in the belief that changing financial conditions and demands on supervision require such exercises as a means of orienting policy. Secondly, it seems to be widely believed that, among other factors, an economy's financial structure influences the character of its supervisory system. A theoretical basis for this hypothesis grounded in the costs of supervision and incentives to circumvent supervisory norms is suggested in the paper.¹ It is also suggested that a changing financial structure is likely to require changes in supervision.

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¹ A full account of the relationship between supervision and structure must also consider the effects of supervision on structure. These effects may not be negligible in cases where, for example, an important criterion for establishing banking relationships is that a financial institution be subject to supervision.

Thirdly, a growing theoretical literature has been produced on the strategic behaviour of central banks as providers of fiat money. This literature has been surveyed recently by Cukierman (1986). Shubik (1984, Chapter 16) provides a more general discussion of the application of game-theoretic reasoning to problems in monetary and financial theory involving the behaviour of large institutional actors. In addition, Goodhart (1985) has stimulated discussion of the logical and historical foundations of central banks as institutions. The analysis in this paper is in the spirit of this literature. It also suggests that the financial supervision function in an economy – a public function – is not independent of private decisions.

The larger question of the logical origin of multiple central bank goals and their relationship is not treated. In a sense, this avoids important issues. Prudential supervision in some countries, for example Japan, the Netherlands and the United Kingdom, is a central bank function. Presumably there is a link between the provision of central bank credit and other services and supervisory activities. In other countries, such as Canada, Germany and Switzerland supervision is performed by agencies which are not part of the central bank. An interesting analytical task, for example, is to state conditions under which it is in some sense optimal for supervision to be performed independently of credit and general monetary operations, and to explain the consequences of such independence. This topic is not dealt with here. The focus is kept on the supervisory function.

The methodologies used in the disciplines of history, law, political science, sociology and economics can all be usefully applied in investigating issues surrounding prudential supervision. The methodology adopted here is derived from the public choice branches of economics and political science.² The methodology employs economic principles of choice to explain the existence and functioning of important institutions (supervision) that support

² See Mueller (1979) for an introductory survey of this field.

market activity, but are not themselves part of ordinary markets. At least in the longer run, the structure and performance of these institutions is seen as the product of voluntary choices by the ultimate private decision-makers in an economy. In this paper, several “models” of this type are discussed in order to illustrate that increasingly complex assumptions about the behaviour of private decision-makers can lead to increasingly rich and complex supervisory goals and systems. This methodology, however, can lead to an over-emphasis on the influence of private interests in determining public decisions, especially in the shorter run. Hence one must bear in mind that abstractions from one discipline need to be tempered with the insights from others.

Section I introduces a basic model in which the goal or function of supervision is to enforce prudential self-regulatory standards set by market participants. Four different types of financial structure are discussed, which have varying effects on the possibility and nature of self-regulation. Section II discusses a rationale for supervision that rests on maintenance of economy-wide liquidity. At the conceptual level, this topic is still in the formative stage, and the discussion indicates some of the issues involved in linking supervision to the maintenance of liquidity. Section III discusses one rationale for discretionary prudential supervision by a public body, which suggests that supervision may help to resolve an ongoing conflict of interest between bank depositors and shareholders.

I.

The supervisor as enforcing voluntary restraints on risk-taking

The work of Coase (1960) suggests an approach to the determination of supervisory goals and functions that relies on the pursuit of self-interest by private financial market participants, and perhaps other actors, to establish self-regulatory *prudential*

supervision.³ Such an approach is useful, because it explicitly recognises that self-seeking behaviour is not confined to narrowly defined market activity, but also encompasses organisational efforts to control unwanted effects of market activity.⁴ To some extent, the approach also provides a benchmark model against which other models of supervision may be assessed.

(a) The general argument

As applied generally to banking, a Coasian approach to supervision would assume rational self-seeking behaviour by actors, such as bank shareholders, depositors, managers and borrowers. In economic jargon, these actors would maximise the expected value of profits or utility. The maximisation of *expected* profits or utility is assumed, since addressing problems of banking risk at the very least requires that bank investments be subject to credit risk, and/or that deposits be subject to withdrawal risks.

A key factual assumption is that so-called negative externalities exist in banking. More will be said below about the existence of externalities. As a formal definition, a negative externality exists when the behaviour of one person imposes costs on another that the first does not take into account when making decisions.⁵ In the framework discussed here, which allows costs to be imposed

³ The “theory of clubs”, as applied briefly to central banking in Chapter 7 of Goodhart (1985), is a closely related line of analysis to that of Coase.

⁴ There is also a problem that organisational and regulatory effort can be used to cartelise markets. See Stigler (1971).

⁵ A distinction has been made in the economic literature between “pecuniary” externalities, in which individuals’ actions affect one another only through the price system, and “technological” externalities, in which individuals or firms have a direct effect on one another’s utility or profits. Only “technological” externalities were said to cause inefficiencies in a competitive equilibrium, and this was because prices did not actually reflect the correct opportunity costs to guide decision-making. It might be assumed that banking risks are like “technological” externalities, in that the price system is not properly reflecting opportunity costs. This assumption, however, may be stronger than needed to establish the non-optimality of “perfectly competitive” banking. Arnott and Stiglitz (1986) and Greenwald and Stiglitz (1986) have argued recently that even “pecuniary” externalities have efficiency consequences in economies characterised as having imperfect information and incomplete markets, and in which “moral hazards” are present.

according to a probability distribution, the negative externality is better viewed as an *ex ante* risk that costs will be imposed rather than as the imposition of costs with certainty. A classic example discussed in the environmental literature is the industrial concern that neglects the effects of air or water pollution on a surrounding community when choosing production techniques. If, however, pollution is a possible but not necessary outcome of the choice of technique, it can instead be viewed as an *ex ante* risk. The firm's behaviour is then characterised as not taking the risks of pollution (the externality) into account when making business decisions.

In banking, the sources of externalities appear to be more subtle than in the case of industrial pollution. The problem arises from the apparent fact that bank managements know more about their own business strategies and financial portfolios than anyone else in an economy, including other bank managements.⁶ This informational asymmetry, at least in theory, allows a bank manager to make a decision without fully taking into account the effect of his decision on, for example, the bank's depositors. Ordinary market devices, such as pricing risk, do not allocate risk appropriately, because depositors cannot charge a bank for risks they *do not know about*. This occurs even without the widely discussed problems introduced by deposit insurance schemes, such as those in the United States, that take away the incentive for depositors even to concern themselves with risk. Such systems are discussed briefly in Section III.

The observation of Coase was simply that when actors in an economy are aware that their interests are not being fully protected through ordinary market mechanisms because of the presence of negative externalities, those actors have an incentive to organise some kind of an arrangement to constrain unwanted outcomes of market behaviour. Applied to banking supervision, the Coasian approach suggests that parties dealing with banks have an incentive

⁶ At the conceptual level, this statement is assumed to apply to the senior management of banking organisations as consolidated groups.

to create means to control risks imposed on them without proper *compensation*. A further insight discussed extensively by Olson (1965) is that the costs of organising and bargaining as perceived by each individual affected by a negative externality will influence the character of any organised or collective response to an externality.

Four different types of financial structures are considered in the next four sub-sections. Firstly, there is a case in which a financial system containing a small number of homogeneous banks permits restraints on uncompensated risk-taking through mutual forbearance. Secondly, there is a case in which two homogeneous groups of banks differ from each other in preferred risk/return strategies, one group preferring a low-risk/low-return business and the other group preferring a high-risk/high-return business. The voluntary bargaining process in this case is complicated by the fact that the low-risk banks must be able to trade something of value in order to induce higher-risk banks voluntarily to reduce uncompensated risk-taking. Thirdly, there is a case in which two different risk groups exist, and the low-risk group is able to *coerce* the higher-risk group into reducing risk. Finally, there is a case in which no restraints on risk-taking may be achieved by simple bargaining or coercion among bank managers.

In all these cases, however, it will be argued that when organisation or co-ordination to restrain uncompensated risk-taking is possible, what is lacking is a mechanism to *enforce* explicit or implicit private agreements or norms concerning restraint. This need for enforcement can then lead to a demand on the part of bank managements for prudential supervision. Hence, the principal goal of supervision in such models is the enforcement of private agreements or their functional equivalent. Another goal is also discussed which may be to *facilitate* the establishment of such agreements or their equivalent.

The discussion of models in which the supervisor *imposes* restraints on risk-taking by bank management is deferred until Section III. Such models may seem more "realistic". However, one should not underestimate the ability of the banking sector to affect

the goals and standards of prudential supervision. Nor should one overlook the extent to which self-regulation is often embodied in what appear to be formal governmental supervisory systems.

It is also assumed in this section that the fundamental private decision-makers affecting prudential supervision are bank managers. This can be justified partly as an analytical device to examine the nature of supervision when *non-bank* depositors or others in an economy face insurmountable organisation costs. The assumption may also be partly justified by the observation that depositors, particularly consumers and smaller businesses, form a large, scattered and diverse group. They may, in fact, have high organisational costs. Hence actual supervisory systems may not reflect directly the preferences of this group with respect to banking risk. This assumption is partially relaxed in Section III.

It is also assumed that bank managers fully represent the interests of bank shareholders and do not maximise their own welfare at the expense of shareholders.⁷ Thus, banking risks falling on shareholders of banks are fully taken into account in bank management decisions. On these assumptions, bank managers may have incentives to constrain each other's risk-taking behaviour through mechanisms other than market pricing, say, of interbank deposits, in order to avoid bearing the unknown and uncompensated risks associated with the informational asymmetries.

(b) Four cases of supervision as enforcing private agreements or tacit norms in risk-taking

1. Voluntary and mutual self-restraint

Consider the case in which the financial structure of an economy is composed of a few banks of roughly equal size pursuing similar

⁷ See Jensen and Meckling (1976) for a flavour of the general problems of corporate control when managers (agents) have incentives to undercut the interests of their shareholders (principals).

business strategies. Bank managers are known to each other, and the costs of meetings are negligible. In this case, one would expect that it would not be very costly in terms of out-of-pocket expenses or forgone expected profits for the bank managers to reach explicit agreements about mutual restraint in risk-taking. Formal agreements might even be unnecessary if all managers tacitly accepted industry (peer-group) norms as the appropriate standard of conduct in risk-taking, and implicitly adjusted these norms to control risk.

The voluntarily accepted constraints would presumably be of the type normally encountered in prudential supervision, since these tend to correspond with accumulated experience about the means by which bank managements most readily take uncompensated risks. Constraints on large loan concentrations are one type. Constraints requiring internal management controls on risk-taking by employees are a second. Constraints on the range of business activities and investments are a third. Overall constraints on risk-taking through capital adequacy requirements are a fourth, and possibly the most important, type.

There are at least two reasons for bank managers to constrain voluntarily their own risk-taking through risk-taking agreements. The first is the control of interbank risk. If an economy has a significant market in interbank deposits, then the manager of one bank is exposed directly to risk taken by the management of banks where his deposits are made. If these risks are unknown, then they are uncompensated risks banks as depositors should want to avoid. If each bank is at times a depositor at other banks, there will be incentives for some form of explicit or implicit agreement among banks that they will voluntarily refrain from placing uncompensated risks on each other.

An objection might be raised that with only a few banks in an economy an interbank market might not exist. This is possible, and when banks become virtually independent of one another in their operations, bank managers might have no incentive to constrain each other's risk-taking. In this case, if bank supervision exists, it

must be for some other reason that brings bank managers to an agreement. Another possibility is that some other group in the economy demands the provision of supervision. It is also possible that no supervision might be demanded if other groups could not effectively express their demand or had no demand in the first place.

As an empirical matter, it does appear that some economies with a few large banks have interbank markets. This may be due to an underlying need to channel funds between regional loan and deposit markets. It may also be due to the random day-to-day flux of deposit and loan business, which can be smoothed through classic interbank borrowing and lending techniques.

The evidence of concern by bank managers about the presence of uncompensated risk in interbank markets is indirect and somewhat mixed. Giddy (1981) studied the Euro-currency interbank market and concluded that pricing behaviour and other evidence were "consistent with the notion that credit rationing, rather than price adjustment, serve[d] as the primary mechanism of discrimination between sound and risky banks". A study group set up in 1982 under the auspices of the Bank for International Settlements collected extensive evidence on the use of credit limits in the interbank market, the phenomenon referred to by Giddy as "credit rationing" (BIS, 1983). This evidence suggested that "unadvised" and "uncommitted" credit lines were in fact used to manage interbank risk exposure (pp. 32-34).

The Study Group also found that the large numbers of market participants, the unwillingness of banks to disclose information in a competitive market and the lack of objective data influence the amount of objective information that banks have to make credit assessments of one another. Indicia that are difficult to quantify, such as general bank reputations, perceptions of a bank's importance to a home country financial system and the degree of supervision, were found to be important to assessments of creditworthiness in the view of bank managers.

All of this evidence suggests the presence of information costs and asymmetries in a market that create the conditions for the

imposition of uncompensated risk. The use of credit limits may be an effective unilateral method for dealing with such problems. Co-operative group action, however, is another technique of control whose use and effectiveness are not ruled out by observing the existence of credit limits in a market. Indeed, both might be used.

Some of the recent theoretical work on the micro-economic foundations of financial intermediation also emphasises the effect of the presence of heterogeneous and costly information on financial organisation. Examples are Diamond (1984), Ramakrishnan and Thakor (1984) and Williamson (1986). This literature seeks generally to explain the existence of financial intermediaries as a response to these informational problems. A number of papers also demonstrate the optimality of debt contracts (as opposed to equity contracts) issued by intermediaries as a device by which "depositors" monitor the behaviour of "bank managers", which is costly for "depositors" to observe directly.⁸ It is in the spirit of such models, at least, to ask whether other forms of "contracts", such as explicit or implicit supervisory agreements, may also exist which allow bank managers to restrain and monitor one another's behaviour.

Anecdotal evidence also suggests that there may be important uncompensated risks in interbank deposit, loan participation and other markets. Both the Franklin National Bank and the Continental Illinois Bank problems involved a good deal of risk-taking in interbank markets that was not readily apparent until a "crisis" had developed.⁹

The second reason for bank managers to reach risk-taking agreements is that by this means they may control what Friedman

⁸ Bernanke (1983) provides some empirical evidence that the intermediation services, such as information monitoring and control, provided by banks may be quantitatively significant in the sense that the loss of those services through bankruptcies measurably affected the growth rate of industrial production in the United States during the Depression era.

⁹ See Spero (1980) for a discussion of the Franklin National case. A staff report to the Committee on Banking, Finance and Urban Affairs of the US House of Representatives (1984) presents some evidence on the Continental difficulties and their potential impact on the US domestic interbank market.

and Schwartz (1963) labelled contagion. The evidence of existence of this phenomenon and its quantitative significance are disputed. The basic idea is again that a bank's ordinary depositors have little, or at most imperfect, information about the riskiness of a particular bank's assets. Hence, observed adversity in banking markets, such as closings and runs at other banks thought to hold similar assets, will trigger deposit runs at that bank. Runs would occur even if the bank in fact had "risk-free" assets until the true state of its portfolio could be credibly established.

Evidence of contagion effects or a contagious loss of confidence in a banking system is difficult to find. Guttentag and Herring (1986b, pp. 23–26) discuss several studies which investigate this phenomenon, and the evidence seems mixed. In a capital market study, Aharony and Swary (1983) looked for evidence of contagion by observing the stock price behaviour of solvent bank groups in the period surrounding the announcement of three significant bank "failures" in the United States prior to 1980 (Franklin National Bank, United States National Bank of San Diego and Hamilton National Bank of Chattanooga). Again the evidence is mixed. Only in the case of Franklin National was there evidence that solvent bank stock prices reacted to adverse announcements about the condition of another bank.

Guttentag and Herring, however, make the point that modern central banks typically pursue policies designed to suppress banking crises resulting from contagion. If those policies are successful, one would not expect to find much recent evidence of contagion.¹⁰ Failure to observe contagion under these conditions, however, does not imply that organisational and policy efforts to prevent contagion do not exist or are not needed.

If bank managers believe that the possibility of contagion exists, then they might have incentives similar to those of banks that are

¹⁰ The Maryland thrift crisis of 1985, however, may provide data for an interesting comparative study of contagious effects on similarly situated thrift institutions subject to deposit insurance schemes having different levels of credibility.

direct depositors with one another. The incentives would arise, for example, if bank assets were costly to liquidate at a time when bank runs were causing the deposit and credit structure of the banking system to shrink quickly. Banks might agree to constrain risk-taking to avoid bearing such liquidation costs, and the incentives would presumably be stronger at times when depositors believed that banks were holding very risky portfolios.¹¹

Even in the simple case of mutually agreed restraint, there is an incentive for bank managers to demand the establishment of an external prudential supervisor. Because the agreement on self-restraint in this case is voluntary, the shareholders of all banks would have higher expected profits (or utility of profits) if each accepts restraint. If no one *enforces* the agreement, however, each bank manager would have some incentive to increase risk-taking, keeping additional rewards and letting risks fall on others.¹² But if each bank does this, the voluntary agreement to restrain risk-taking would be undermined, and the industry would return to its former risk/return profile, which in game-theoretic terminology would be some type of non-co-operative equilibrium. Hence bank shareholders and managers may have a demand for a form of supervision that enforces explicit or implicit private agreements to control risk-taking. This enforcement goal or function of supervision thus emerges endogenously from the demand by bank managers for “confidence” that they will not attempt to exploit each other out of short-sighted self-interest. In game-theoretic terminology, the supervisor permits a banking system to achieve a stable equilibrium in which bank shareholders’ welfare is improved relative to their welfare in a non-co-operative equilibrium.

A financial structure with a few homogeneous banks should also influence the methodology adopted by the supervisor to enforce

¹¹ One might also use the presence of such incentives to justify partially a private demand for the establishment of central banks as lenders of last resort. This issue, however, goes somewhat beyond the scope of this paper.

¹² This is the classic free-rider problem, and here presents the so-called “prisoner’s dilemma”.

private risk control standards. The existence of only a few banks would presumably make it easier for bank managers themselves to detect behaviour by others inconsistent with risk-taking norms. Thus, much less effort would have to be expended by the supervisor to monitor bank management behaviour. This implies a supervisory organisation with little need for formal investigative powers or methodologies emphasising detailed on-site inspections. Informal discussions with senior managers might well provide an adequate basis for supervision.

The imposition of penalties through fines, licence revocations or cease and desist orders might also prove unnecessary. If deviations from set norms are fairly easy to detect, then (other things equal) the incentives to deviate would be low, and little would be needed to deter such behaviour. Indeed, public embarrassment might be a sufficient deterrent. Moreover, banks themselves might retaliate against others known to be undermining risk-taking norms. If this were possible, the enforcement activity of the supervisor could be reduced even further.

All this does not mean that supervision is unimportant. Rather, one must recognise that, even in the simple framework described here, the locus of supervisory activity and the need for strong enforcement depend very much on financial structure. An additional implication is that if structure changes, supervisory methods and powers may also have to change, and in the longer term they will change.

2. Voluntary but bargained-for self-restraint

Let us consider a different type of financial structure in which two different groups of banks are present. One group consists of banks whose managers prefer lower risk and return business strategies. In a number of countries, this group is often associated with large, older banks that have established customer bases as well as secure positions in money and securities markets. Revell (1985) has called this group the “core” banks in an economy’s credit structure. Even though they may pursue lower risk and return

strategies, the profits of these banks may still be substantial when they earn economic rents from their established positions and reputations, profits that are not earned from the taking of risks.

The second group is composed of banks pursuing higher risk and return strategies. Indeed, in some economies these entities can be smaller sized and newly licensed banks, thrift institutions, finance companies and the like. The business strategies of these entities are often called "growth-oriented policies". In essence, the strategy is to gain customers, assets and high rewards through taking risk. This is not to say that such entities are socially undesirable. These companies may have an important role to play in financing a country's economic growth.

Nevertheless, higher-risk strategies among smaller and less established institutions have often been a source of financial instability. Two relatively recent cases are the UK fringe banking crises of 1973–75 and the Canadian banking problems of 1982–86.¹³ Without dwelling on specific histories, these two episodes do illustrate that, at early stages of a banking problem, larger banks can be affected adversely, or believe that they can be affected adversely, by problems at smaller institutions.¹⁴ These adverse affects can arise from interbank and other financial dealings between the groups as well as through contagion-type effects, as discussed above.

In the theoretical case, one solution to the problem that high-risk banks may take risks unknown even to the low-risk bank managements, is for the lower-risk banks to in effect "purchase" reductions in uncompensated risk-taking by the other group. Each group in this case has something to trade. High-risk banks may agree to forgo uncompensated risk-taking as a quid pro quo for greater access to key money, deposit or securities markets, in which the lower-risk banks have established positions.

¹³ For a description of the UK fringe banking crisis, see Reid (1982).

¹⁴ It should be noted that the ultimate outcome of such "crises" may actually be a strengthening of a "core" banking group, as press reports suggest has happened in Canada.

The supervisory authority may have two complementary roles to play in this case, arising from the private demand for risk controls. Firstly, there may be a demand for what amounts to a mediator in the bargaining process. The supervisor may provide regulatory proposals, discussion papers and the like, which serve as the basis on which different banking groups arrive at a consensus on how they will control risk. Secondly, the supervisor would enforce consensus risk-taking norms.

The interpretation of some supervisory behaviour as mediation among risk groups has an interesting implication. Since explicit or implicit bargaining between the groups is the basis for eventual consensus about risk norms, the supervisor will be very concerned about the competitive impact of any supervisory proposals. This is because bank managers as bargainers will be concerned about the equivalence of commercial advantages exchanged for reductions in risk-taking.

Mayer (1980) has discussed the problems of using the principle of "competitive equality", interpreted as a principle of equitable treatment, in formulating policies of financial reform. The discussion here, however, suggests that concerns by bank managers regarding equality of treatment should not always be interpreted by economists as concerns about "fairness". Instead, concern about "competitive equality" may reflect a demand for adequate compensation in what are functionally equivalent to bargains about changes in supervisory norms, and possibly other reforms. Hence, supervisory concern about "competitive equality" may at times reflect a mediator's concern that proposed "bargains" are acceptable to different banking groups.

Supervisory enforcement of such "bargains" may be very important in the case of heterogeneous banking groups. Once concessions have been made by lower-risk to higher-risk banks, they may be difficult to withdraw. Moreover, the higher-risk group may not be under the constant surveillance of the lower-risk group in the ordinary course of business dealing. Thus, the lower-risk group may demand and rely on supervisory monitoring and enforcement to

implement the “bargain” regarding risk-taking norms. Since the supervisor cannot rely as readily on interbank monitoring and enforcement, considerable supervisory effort may have to be spent on monitoring and controlling the higher-risk banks.

3. Coercive restraints

An alternative to a bargained resolution of the problem of high-risk banks placing uncompensated risk on lower-risk banks is a case in which the lower-risk banks force or coerce high-risk banks to control uncompensated risk-taking. Instead of “purchasing” risk control, lower-risk banks may be able to deny unco-operative higher-risk banks access to an important resource, such as bank or money market finance. Thus lower-risk banks may be able to force the higher-risk group to conduct business on terms set by lower-risk institutions.

This type of coercive solution appears to require a financial structure in which, at most, a few low-risk banks together control the access of the higher-risk banks to finance. The low-risk banks must also agree among themselves about the terms of access by high-risk banks to that finance. If these conditions are not met, the lower-risk banks would be likely to compete among themselves to finance the higher-risk banks, who could pursue their preferred business strategies free of coercion.

Even with the coercive solution, the low-risk banks might demand that a supervisor enforce explicit or implicit restraints on the higher-risk banks. Monitoring by a single supervisory agent would avoid duplication of costly effort by the low-risk banks. In fact, avoidance of duplication appears to be a general rationale for appointing a single monitoring supervisor. Moreover, if there are costs to co-ordinating enforcement and monitoring effort, there may well be economies of scope – synergies – in combining these two types of activities.

The heterogeneity of the banking system also creates interesting possibilities for combinations of supervisory methodologies. As described above, little supervisory effort might be needed to

monitor and enforce risk-taking norms within a small and homogeneous low-risk sector. Much greater efforts might be needed to enforce restraints on the high-risk sector. Hence one might predict the emergence of a two-tier supervisory system as a consequence of heterogeneity in structure.

It is also interesting to observe that the coercive solution may not require a supervisory agency itself to have strong mechanisms for enforcing risk-taking norms. Low-risk banks may be able, through denying market access, to ensure that norms are observed. This market power may provide the sanctions mechanism without resort to criminal, civil or regulatory penalties by the supervisor. If, however, the market dominance of the low-risk banks declines over time, then both the risk-taking norms and the supervisory authority may be called into question by the higher-risk banks. New supervisory norms and methods may have to be devised to meet the changes in structure.

4. No restraints

A fourth case provides another possibility. The financial structure may consist of a large number of banks of varying sizes pursuing very different risk and return strategies. Even if uncompensated risks exist in this system, they may affect the banks so indirectly that no one perceives the benefits of organising to control the risk. Moreover, large numbers with conflicting interests may make bargained solutions very difficult to achieve. Private coercion would not be feasible because of competitive undercutting of coercive restraints. As a consequence, there would be no demand for a supervisor to enforce or monitor privately adopted risk-taking norms.

This leaves several unanswered questions. If supervision is ultimately based on private consensus and consent, can a financial structure be so diverse that supervision is not possible? If the answer is yes, then can trends towards free entry into banking and finance that increase numbers, and policies of financial deregulation that create heterogeneity and greater international competition,

undermine bank supervisory systems? If, on the other hand, heterogeneity is not a barrier to supervision, then one would like to have a theory of optimal supervisory arrangements in such economies.

(3) Information disclosure as a substitute for restraints on uncompensated risk-taking

A alternative to restraints on risk-taking may be for bank managers to disclose their business strategies to one another, so that a full evaluation of risks and rewards could be made by each when dealing with the other through interbank markets. The market might then adequately guide risk-taking. Indeed, such information might be disclosed to all types of parties (borrowers, depositors and shareholders) dealing with a bank.

A number of issues regarding public disclosures of financial information by banks are assessed by Guttentag and Herring (1986a). They conclude that a well-developed deposit insurance system coupled with fairly explicit policies regarding emergency liquidity assistance can reduce significantly the probability of a sudden loss of confidence in a banking system. If this probability is thus reduced, then the major public policy reason for banks not to reveal information should no longer carry much weight.

Although Guttentag and Herring raise an interesting issue, there may also be fundamental reasons inherent in banking that make the disclosure of information inferior to supervisory constraints as a method of controlling risk-taking. A short list may be useful. At the conceptual level, there are really more questions than answers with respect to this topic.

Firstly, as noted above, one of the economic functions of financial intermediaries, including banks, may be to economise on the need to produce and distribute investment and other information in an economy. If this function is important, then the full regular disclosure of banking strategies, including full balance-sheet information and the like, might impose costs that undercut an important rationale for the existence of intermediaries. The

resolution of the paradox would seem to turn critically on the level of detailed disclosure that is necessary to control risk-taking. Moreover, one must distinguish between traded securities with a readily observed market value and "non-traded" assets. The information rationale for banking would only seem to rule out detailed disclosures about "non-traded" assets.

Secondly, one can assume that a good deal of the information that would be disclosed as a practical matter would be information about the past. If bank managers have sufficient flexibility to change their risk strategies between reports of information, then public information might reveal little about a bank's risk profile. This problem is compounded by interbank market relationships in which the risks of depositors and shareholders in each bank depend on the risk strategies of a large number of banks, each of which can be altered between reporting dates. Even for reporting times, one is unlikely to know the set of banks that must be evaluated to learn the risk associated with deposits in a single bank. Given these problems, typically called problems of "transparency", the usefulness of information disclosures in assessing risk may not be as great as appears on first impression.

Finally, there is an interesting conceptual problem relating to the observability of risk that emerges from the literature on principal-agent problems in finance theory.¹⁵ In the banking context, the existence of significant investments without readily observed prices and risk characteristics, even if the investments themselves are fully disclosed, may create a demand for the establishment of *standards* in risk-taking rather than full disclosure. In the extreme case, full disclosure would tell one little about risks and rewards. What must be established is a standard by which a bank manager's risk-taking can be readily evaluated at low cost if others are to ascertain the level of risk-taking by a bank. Quantitative constraints, for example,

¹⁵ See, for example, Smith and Warner (1979). See also Jensen and Meckling (1976).

may serve as useful benchmarks in evaluating as well as controlling manager behaviour.

Smith and Warner (1979) emphasise the role of covenants in bond contracts as a means by which creditors of non-financial firms monitor the difficult-to-observe production and investment decisions of company managers. Supervisory-type standards regarding capitalisation, large loans and the like may serve a similar function for bank creditors. This line of analysis suggests that the use of supervisory standards, coupled with monitoring, may have economic advantages over pure information disclosure in controlling banking risks.

This is not to say that “rules of thumb” for risk-taking, such as very simple risk-asset ratios, are necessarily the best benchmarks that can feasibly be constructed for evaluating the risk-taking behaviour of bank managers. “Rules of thumb”, for example, that rank investment risk solely on the basis of observed variance of return, are open to technical criticisms from portfolio theory that one must look at overall portfolios, not just individual investments, in order to measure risk. Hence, it is important in theory to construct rules of thumb that take covariances of return among different investments into account and hence recognise the benefits of portfolio diversification. In constructing standards for monitoring behaviour, however, technical computations are not the only ingredient. One must also weigh the benefits of possibly greater accuracy in measurement against the costs of constructing more complex measures.

II.

Externalities in the production of liquidity as a rationale for supervision

Before turning to the norm-setting supervisory function – as contrasted with the enforcement function – it is useful to consider a

liquidity rationale for supervision. This particular rationale is at the centre of current debate over whether banking-type prudential supervision and liquidity support arrangements should be extended to firms that do not take deposits and are not traditional banks. Central bank officials have commented that:

“One of the more complex emerging prudential policy issues is whether it is not or will not soon be necessary to ensure that every major financial services firm is subject to some form of prudential supervision over its consolidated worldwide operations” (BIS, 1986, p. 241).

Moreover, in discussing insider trading and the regulation of the infant Euro-equity markets, the *Financial Times* has suggested that:

“The SEC’s heavy emphasis on investor protection and disclosure needs supplementing with the more systemic concerns of the central banker if investors are to be protected from wider, contagious shocks to the system.”¹⁶

One way to put the issue is as follows. Banks have been a major source of liquidity to western economies. Open markets in securities appear to be growing in importance relative to traditional commercial banking, and market-making for securities may be a growing source of liquidity at the expense of deposit banking and traditional lending. Hence, to protect “liquidity”, should not prudential safeguards be extended to major participants in securities markets? The potential practical importance of this issue becomes more apparent if one recalls that Bagehot’s (1878) classic analysis of liquidity crises was not an analysis of banking crises. It was an analysis of panics in the nineteenth century London bill market.

At the conceptual level, there are a host of definitional as well as analytical problems in addressing questions about liquidity. Here it is only possible to indicate a few of the issues relating to supervision and economy-wide “liquidity”.

¹⁶ *Financial Times*, “The regulation of Euro-equities”, 22nd October 1986, p. 16.

Edgeworth (1888) provided the first formal analysis of bank liquidity, emphasising the fact that random deposits and withdrawals tend to offset one another, thus allowing banks to make substantial illiquid investments while issuing deposits payable on demand. Recent work, such as that of Diamond and Dybrig (1983), can be characterised as taking this type of liquidity analysis to a more fundamental level. They argue that the existence of banks themselves can be explained as the endogenous outcome of individual choice in an economy. Banks which hold illiquid assets and issue demand liabilities are shown to exist because of the incentives of individuals to improve the terms on which they can "insure" that urgent demands to withdraw funds can be met.¹⁷

This literature is not yet fully developed. For example, one would like to gain insight into the optimal scale of a bank that provides liquidity services in an environment that has real-world frictions, as well as the equilibrium financial structure in such economies. One would also like to understand the role of bank capital as a guarantee against extreme fluctuations in the value of bank assets that can create bank runs which destroy the liquidity-creating function of the bank.

Nevertheless, at least two possible roles for bank supervision seem to exist in the newer analyses of liquidity. Firstly, when a number of banks exist, then the pooling of individual demands for liquidity throughout an economy is likely to depend on the functioning of interbank markets that can be used to pool withdrawal risks (demands) among various depositor groups in an economy.¹⁸ In this case, the continued existence of a number of

¹⁷ For a brief review, see Diamond and Dybrig (1986).

¹⁸ There are technical statistical issues involved in this statement regarding the degree to which a given group of bank depositors can "insure" themselves adequately against withdrawal risk without pooling their withdrawal demands with other groups of bank depositors through the interbank market. Note that the observation that withdrawals from one bank – absent conversions into currency – are deposits at another is not evidence that the pooling of urgent consumption demands, or other urgent demands for funds, is unnecessary. The observation is evidence that the pooling mechanism is actually at work.

banks may be necessary to the uninterrupted provision of liquidity to the depositors of the various banks. This interdependence may give bank managers an incentive to agree on capital standards or restraints on risk-taking, which would help guard against interruptions in the access of various depositors' groups to each other via the banking system.

Secondly, since credit losses can trigger contagious losses of confidence in banks, thereby interrupting the provision of liquidity services, bank managers may be willing to agree to restraints on risk-taking in order to reduce the probability of these "disruptions" in service.

In both cases, bank structure may influence the likelihood that voluntary restraints on risk-taking will be adopted. If voluntary standards are adopted, then the need for enforcement of the standards may remain. The analysis of the structural and enforcement issues would then appear to be similar to that described in Section I.

Theories of liquidity provision, however, are not confined to banking. The maintenance of "liquid markets" is a concern often expressed by various stock, commodities and futures exchanges. Participants in less formally organised capital and money markets also express concern about this issue.¹⁹ Greater analysis of this liquidity-creating function of markets is needed. However, one can at least imagine an analysis that is similar to the analysis of liquidity creation in banking through the effects of "pooling" trading decisions.

For example, the formation of stock and futures exchanges originally provided a single physical location for trade at specified times. The modern interpretation of this is that "liquidity" was enhanced by reductions in search and trading costs. The important

¹⁹ A very recent example is the concern about "liquidity" in the perpetual floating rate segment of the Euro-bond market during December 1986. See, for example, *International Herald Tribune*, "Plunge accelerates in Perpetual FRNs", 4th December 1986, p. 9.

function of exchanges in standardising contracts, trading procedures and trading equipment has similar effects. It can be argued that the formation of exchanges involves positive externalities in the creation of liquidity. As more traders are added to an exchange, there is a greater pooling of trading demands, and everyone in the market may experience reduced search costs and an increased probability of buying or selling at their so-called "reservation" or preferred price.²⁰ However, if positive externalities exist from market formation, then one would suspect that the destruction of traders brought on by a major financial collapse would have corresponding negative external effects on market liquidity. This possibility can then give rise to incentives for exchanges to adopt and enforce prudential-type regulations that protect trading activity such as prudential restraints on market-makers.

The use of capital requirements is frequently observed. Futures exchanges also rely on "mark-to-market" accounting for futures commission merchants. Grossman (1986) has even suggested that futures exchanges rather than government agencies are in the best position to regulate what is called "insider trading" on futures exchanges. The argument is that pursuit of collective self-interest through an exchange will result in optimal regulation that "deal(s) with abuses to the extent that it is possible to prevent them without adversely affecting trading volume or the viability of the futures market" (p. S144).

One might conclude that organised exchanges provide adequate prudential and other regulation to maintain market liquidity. Such conclusions might justify exempting such exchanges from central bank or governmental prudential supervision designed to preserve economy-wide liquidity. Less organised markets, however, where self-imposed prudential supervision might be weaker for structural reasons, would not necessarily be exempted from supervision.

There are difficult problems, however, with such a market-by-market analysis of the incentives for prudential self-regulation.

²⁰ See Townsend (1984) for one discussion of this phenomenon.

Economy-wide liquidity, however defined, presumably depends on the interaction of economic actors across a wide range of markets.²¹ Thus, prudential regulation aimed at an economy as a whole must take these interactions into account and not rely exclusively on analyses of individual markets in isolation.

III.

Publicly determined prudential standards

(a) Specific legislative constraints on risk-taking

Before discussing the case of the supervisory authority that exercises discretion in setting risk-taking norms for banks, let us consider the case of legislated standards. These include statutory limits on large loan concentrations, capital requirements and licensing standards, among other things. There are at least three views on how to interpret such requirements, which appear to set specific risk-taking goals and rely on supervisory authorities to monitor and enforce compliance with legislated standards. The full supervisory function in this case thus appears to be divided between the legislature and the official bank supervisor in a country.

The first view is that the legislated constraints on risk-taking merely reflect the enactment of a private consensus into law. It may be that individual banks face strong commercial incentives not to comply with consensus norms regarding risk-taking as long as other banks *do* comply. To prevent consensus norms from being undermined by the pursuit of narrow self-interest, it may be necessary to create strong deterrents to such behaviour. Deprivations of the right to do a banking business, monetary fines or even criminal penalties may be required. In such cases it may be necessary to create licensing schemes, explicit and announced rules and similar devices before strong sanctions ultimately backed by a

²¹ See Lippman and McCall (1986) for an attempt to create a measure of liquidity.

country's police powers can be imposed on anyone, including bank managers. Thus, on this view, the use of statutory law to restrain bank risk-taking would ultimately reflect the need to use a country's powers of coercion to enforce consensus norms that are difficult to maintain because of the country's financial structure.²²

Secondly, Stigler (1971) has emphasised that economic regulation is typically enacted to benefit those that are regulated. The creation of licensing schemes that can be manipulated to limit entry into an industry are cited as frequent examples. On this theory, legislation is required in order to harness the coercive power of the state for the purpose of protecting the economic position of members of cartels from the natural forces of the market. This general view of regulation may contain insights for banking supervision and regulation at certain times in certain markets. However, the long and continuing debate over the stability of a totally unregulated financial system suggests that there are deeper reasons for legislated or other types of supervisory norms beyond the enforcement of cartel agreements.

Thirdly, legislation may represent specific constraints on risk-taking placed on bank managers by bank borrowers or depositors, or perhaps other groups in a country. The conceptual problem is then to describe how these groups, possibly having different incentives, interact with one another as well as bank managers and shareholders in the political process to produce such constraints. This is an interesting topic, explicitly a topic of political economy, that is not pursued further in this paper.²³ A full treatment of this topic must analyse political interactions with respect to adoption of economic legislation within a country.

²² To some degree, and depending on a country's political system, the need for consensus as the basis for legislation is obvious. Recently, in addressing the need for reform of the banking laws in the United States, Governor Rice (1986) remarked: "The one element upon which I think we can all agree is the need for some consensus that will motivate Congress to take action to address the fundamental issues facing the banking industry" (p. 19).

²³ See Becker (1983) for an example of an economic approach to political decision-making in the United States relying on the concept of competing "pressure groups".

(b) Deposit insurance and the lender of last resort

It is often noted that the existence of a deposit insurance system can affect the risk-taking incentives of banks. The presence of a credible insurance system is likely to diminish substantially or eliminate both the threat of deposit withdrawals and use of risk-based deposit pricing as market mechanisms to constrain bank risk-taking.²⁴ Prudential supervision can then be introduced as a means to protect the viability of the insurance plan against incentives for bank managers to make risky investments using deposits whose prices do not reflect the risks taken, since these risks fall largely on the insurance plan. There has been wide-ranging debate over whether the use of risk-pricing in deposit insurance is superior to prudential restraints on risk-taking as the appropriate mechanism for controlling these "moral hazard" problems. Many would agree, at least, that prudential restraints are one method of control. Hence, the existence of an insurance plan can give rise to a role for supervisory decision-making beyond the monitoring and enforcement functions. The supervisor may actually set risk-taking standards, given the pricing structure of the insurance programme.

More generally, it is argued that the existence of lender-of-last-resort facilities and banking "safety net" policies other than deposit insurance create the need for supervisory restraints on risk-taking as well as monitoring.²⁵ The reason is the same as in the case of deposit insurance, the need to protect the ultimate provider of the financial "safety net" against economic incentives to take risks at the expense of the provider.

There are grounds for arguing, however, that explanations of the emergence of prudential supervision and its goals as a necessary consequence of financial "safety net" policies are not a complete treatment of the subject. Firstly, prudential supervision is not

²⁴ See, for example, Benston et al. (1986) for a discussion of the various current issues in US prudential policy, including the problems introduced by deposit insurance.

²⁵ See Johnson and Abrams (1983) for a discussion of banking "safety net" provisions in the context of international banking.

inevitably a part of the central bank in every country, and the central bank usually plays an integral role in the provision of emergency assistance.²⁶ This observation does not rule out co-ordinated effort between supervisors and the providers of the safety net. However, this situation at least appears anomalous.

Secondly, safety net policies are themselves a response to a perceived problem of instability within the banking industry, which presumably exists because of various types of incentive problems such as those discussed in this paper.²⁷ Public supervisory policies can be viewed partly as a response to these underlying incentive problems. Hence, supervisory policies are in a sense part of a group of policies, including safety net policies, designed to deal with instability. The analysis in the next section treats supervision as being itself a means of controlling incentive problems. Supervisory policies may also be used to correct incentive problems created, or more likely altered in form, by the introduction of safety net measures. It is only in this second sense that supervision should be viewed as a derivative of safety net policies. Although this role for supervision may be important in some economies, it is not discussed further here since it has already received significant attention.^{28, 29}

²⁶ Unlike the United Kingdom, in which the central bank performs the supervisory function, Switzerland, Germany and Canada separate the central bank from the bank supervisor. In the United States there are "competing" supervisors at the Federal level.

²⁷ There has been a long-running debate about the inherent instability of banking. The persistence of this debate is itself some evidence of basic perceptions about banking instability. See Chapter Two of Goodhart (1985) for a summary of the debate. Rolnick and Weber (1984) present some new evidence on the causes of bank failures during the free banking period (1837–63) in US history. They find that falling asset prices, not "wild cat take-the-money-and-run" banking strategies, were responsible for high failure rates during the "wild cat" banking era. Their work, however, leaves for future consideration the question of why banks invested the proceeds from issuing bank-notes in risky assets that ultimately were responsible for bank failures. Thus, not only liquidity explanations of banking, but also intermediation theories of banking, appear to leave open questions about banking instability.

²⁸ See Benston et al. (1986) for a discussion and further references. See Brickley and James (1986) for some empirical evidence from capital markets that the value of US savings and loan shares is sensitive to the behaviour of the deposit insurer. This

(c) *Discretionary supervision*

The most intriguing conceptual issue in analysing the foundations of prudential supervision is to explain why individuals would consent through the political process, or in other forums, to having their financial relationships governed or influenced by prudential supervisors, particularly supervisors given *discretion* regarding the degree, manner and other details of their intervention in private financial relationships.³⁰ In terms of economic analysis, including the theory of public choice, one must explain why individuals deliberately choose – at some level of decision-making in a society – to set up an external body or agent with discretion to intervene in private financial contracts.

Two suggestions are made in this section. Firstly, and for completeness, a supervisor may be given authority to force a “consensus” on bank managers when most but not all agree on a course of supervisory action. Secondly, and more important, a supervisory body may be set up and given discretion in an attempt to control what amount to conflicts of interest between different groups in a society (banks, shareholders, depositors and borrowers), which cannot be resolved by simple co-operative agreement, yet if left unchecked can at times cause harm to one group or another. The discussion in this paper is limited to the depositor-shareholder conflict.

Coercion of hold-outs. It is widely recognised that when private agreements to deal with a common problem are negotiated, small

suggests a practical need for supervision to offset the suppression of market forces that can occur as a result of “safety net” policy.

²⁹ In light of the private consensus model of supervision, it should be noted that some evidence from the United States suggests that “safety net” arrangements may be demanded by banks themselves. White (1983, pp. 191–197) argues that small country bankers were among those that most often advocated the establishment of deposit insurance in the United States. Deposit insurance was seen partly as a method for controlling bank failures while preserving a banking structure containing many independent small-town banks. The alternative seemed to be a system of interstate banking, which presumably would have altered the incomes and influence of some of the country bankers.

³⁰ This question has some parallels to the long-running debate over the “optimality” of discretionary monetary policy-making by central banks.

but necessary participants to the agreement can have incentives to “hold out” for special treatment in exchange for giving their consent. There can be a number of solutions to this problem. One technique used in the financial context to force agreements among creditors during bankruptcy or reorganisation proceedings relies on securing the consent of potential hold-outs through the threat of coercion by a financially disinterested third party, the bankruptcy magistrate or judge.

It is possible that one function of discretionary supervision is to provide a credible “threat” of coercion that will induce banks to reach a consensus about norms in risk-taking. For example, smaller and newer bank managers may attempt to “hold out” from such a consensus in an effort to extract commercial concessions from larger or more established banks in a financial system. Without consent by these hold-outs, substantial risks may be incurred by all. Yet without a “threat” of coercion, the outcome may be a failure of consensus about risk norms as in case four of Section I.

One of the problems with this analysis, however, is the need to explain why “hold-outs” would agree to the establishment of supervisory coercion through the political process that will later be used against them. The answer must lie in two directions. “Hold-outs” may not know who they are at the time they consent to the establishment of supervision, or at least be uncertain enough about their future position so that the financial stake in “holding out” does not outweigh in expected value (utility) terms the benefits from consensus agreements on risk norms. Another possibility is that political processes may not require unanimous consent for the adoption of policies, unlike many private agreements. It may be that the interests of “hold-outs” are simply overridden in the political forum as the means by which the “hold-out” position in the private forum is overcome.

Discretionary control of conflicts of interest. The inherent problem in banking that leads to the establishment of discretionary supervision may be the high costs to depositors, including interbank depositors, of monitoring and analysing the investment strategies of

bank managers. Smith and Warner (1978) note that such problems can give rise to restrictive covenants in bond contracts that are used to control the conflict of interest between creditors and shareholders in non-financial companies.³¹ The conflict arises because once creditors provide funds to finance a stated investment project, shareholders (managers) have an incentive to increase the risk of the investment project, since shareholders in this situation could keep the additional rewards from risk-taking without taking extra risk, which is borne by creditors (bondholders). This incentive problem is solved by imposing cash-flow and other financial constraints on shareholder (manager) behaviour. It is argued that bondholders or their appointed trustee can monitor financial constraints more cheaply than restraints on the underlying real investment. Moreover, the existence of financial accounting identities ensures that financial constraints translate into constraints on real investment activity. The conflict of interest identified by Smith and Warner also exists for banking and other financial firms. Restrictive covenants even appear in certain kinds of bank bond and note contracts.

These covenants, however, are not part of deposit contracts, which are the major source of bank funds. There may be several reasons why restrictive covenants are not used. Firstly, bank managers may face particularly low costs for quickly and substantially changing their risk exposures, since banks typically deal in paper and information rather than physical investments. Hence, as a practical matter, managers would be able to change risk exposures faster than monitoring could be performed without incurring prohibitive costs. Secondly, and a related point, it may be in the interests of bank depositors not to force high monitoring costs or inflexible financial constraints on banks. The efficient

³¹ See also Smith (1980) for a discussion of restrictions such as collateral provisions and the use of escrow accounts to resolve similar conflicts in the personal loan market.

management of credit risk may depend on depositors allowing banks to respond quickly and flexibly to changing financial opportunities.³²

Thirdly, the continuous turnover of banking deposits and the diffuseness of a bank's depositors as a group may make it particularly cumbersome for depositors to set risk-taking parameters for a bank's management. The continual turnover creates the possibility of a constantly changing voluntary bargain with respect to management's risk-taking, a possibility that helps make deposits rather than corporate bonds attractive for use as a "money". Moreover, ongoing deposit activity makes it difficult to specify a point or points in time at which depositors and bank managers (shareholders) could agree on the risk and return associated with the bank's activity. This contrasts to some extent with initial offerings of bonds in which underwriters and corporate managers must come to an agreement on the risk and return characteristics to be given a particular class of securities at the time of initial pricing.

Finally, banks may, because of the complexity of their business and influence in the drafting of accounting principles, be able to affect substantially financial accounting conventions that apply to them. This creates the possibility that financial constraints imposed on banks by creditors may be avoided by changes in accounting practices. An alternative possibility is that the flexibility of financial markets would allow banks to meet imposed accounting constraints, while experiencing no constraints on actual business strategy. Thus financial conditions in bank deposit (and perhaps bond) contracts might never be binding, and not worth the costs of drafting.

The result of all this may be an agreement between bank depositors and managers (shareholders) that an external body be appointed and given discretion to investigate and adopt solutions to emerging conflicts of interest. Given the diffuse nature of the depositor group, this appointment may have to be undertaken through a political process, which is one forum in which groups with

³² Another form of this argument is that financial "flexibility" is important to economic growth. See, for example, Goldsmith (1969).

diffuse incentives can advance their collective interest. Moreover, given these diffuse interests and costs of obtaining resolutions in the political forum, supervisory bodies may only be appointed or strengthened after financial breakdowns that focus depositor and legislative attention on the conflicts of interest in banking.

It is not clear, however, that supervision can ever completely resolve conflicts of interest between bank managers and depositors. As banking and financial markets are constantly changing, new opportunities will be presented in which conflicting incentives continually create tensions between those with different interests in a bank. Thus discretionary supervision may necessarily be involved in a constant tug-of-war between bank managers and depositors, at the very least.

One can argue that a possible resolution of this conflict would involve supervisors simply collecting information on bank managers' investments and business strategies, and releasing that information to depositors. The information problems, however, that may make discretionary supervision superior to restrictive covenants in deposit contracts as a risk control mechanism also seem to cast doubt on the use of a market mechanism based on information provided by supervisors as a superior method for controlling conflicts of interest. Further analysis of this question is obviously needed.

Several further observations, however, may be of interest. Discretionary supervision may itself have trouble defining its goals in specific terms. This leaves the supervisor open to definitions of supervisory goals advanced by the private sector. In this case all of the analysis in Section I becomes applicable here, as the private sector's demand for supervision becomes an influence on the supervisor's definition of its own objectives. Alternatively, even a supervisor with well defined goals may find that the most efficient way to carry out the goals is by securing a consensus within the banking sector that a particular course of action is appropriate. Thus the analysis of private consensus again becomes relevant.

There are also difficult problems associated with defining as well as reconciling the interests of bank depositors and shareholders

(managers).³³ Owing to uncertainties about this task, supervisory bodies may have a tendency to “over-react” or “under-react” to a given state of the financial system. When losses are high and bank failures threaten, risks to depositors may become more obvious, and hence receive greater attention than in quieter times. There may be a tendency to over-emphasise restraints on risk-taking in such situations because of the greater clarity with which failure risks present themselves. On the other hand, when an economy is growing and financial losses are low, failure risks may appear to recede and supervision may emphasise the relaxation of restraints. This cyclical aspect to supervision may become more pronounced the further apart financial crises become. These theoretical possibilities also call for greater theoretical and empirical investigation into the subject of financial supervision.

IV.

Summary and conclusions

This paper has discussed some potential problems that may arise in banking because of the existence of costly and imperfect information as well as costs of solving these problems. Section I makes the assumption that bank managers on behalf of bank shareholders are in the best position to resolve problems associated with uncompensated risk-taking by bank depositors, particularly interbank depositors. Four types of financial structure are analysed to determine how structure may influence the prospects for voluntary consensual supervision.

In a financial system composed of a few similar banks, mutually agreed restraints on risk-taking may be a feasible means of controlling incentive problems. In such a system the focus of

³³ In the context of discussions about risk-related deposit insurance, the issue becomes the beguilingly simple question of how to price appropriately deposit insurance.

supervisory effort may be on enforcing consensual risk-taking norms. At the other extreme, in financial systems that are very heterogeneous in terms of the size and business strategies of firms, it may not be possible for firms to reach a consensus on risk-taking norms. Thus simple prudential self-regulation may not be possible in such cases.

It is noted that in an intermediate case a type of bargaining among firms may be required to establish a consensus about risk-taking norms. In this case a second supervisory function emerges. This function involves mediation among competing banks with respect to the establishment of voluntary risk-taking norms. Supervisory concern about the competitive impact of restraints on risk-taking may thus be a necessary ingredient in the establishment of economically efficient restraints.

Section II of the paper explores a rationale for supervision based on the preservation of economy-wide liquidity. Again, if one limits attention to strict self-regulation, then the supervisory enforcement function continues to exist. In the analysis here, rule-making and standard-setting, or the inability to reach agreement on these issues, remain in the domain of the private sector. More work needs to be done, however, on analysing different definitions of liquidity as well as sources of instability in liquidity. These issues lie at the centre of current debate over the extent to which central banks should supervise firms outside the sphere of traditional commercial banking.

Finally, Section III discusses one conceptual basis for discretionary banking supervision. Conflicts of interest between bank depositors and shareholders may be inherent in the nature of banking. Although the basic conflict may remain the same over time, the details of the way in which the conflict presents itself to market participants may be uncertain and changing. It may be in the interests of all to appoint – presumably, but not necessarily, through the political process – a supervisory body with discretion to investigate and regulate the unfolding of this basic conflict of interest.

Again, more investigation is needed to consider theoretically and empirically how such appointments come to be made. Other bases for discretionary supervision also need to be considered, along with an evaluation of discretionary controls against possible alternatives, as a means to resolve conflicts of interest resulting from information problems in an economy.

At least two conclusions may be drawn from the conceptual exploration in this paper. One is that a number of supervisory functions exist, such as enforcement, mediation and standard-setting. More importantly, a case can be made that these functions emerge endogenously from choices by members of the private sector that are intended to control inherent problems in banking and finance. This viewpoint does not detract from the important role central banks and supervisors can play in an economy. Rather it seeks to explain how such roles are established, particularly in democratic countries that emphasise the importance of the individual and his preferences on the functioning of government.

A second conclusion is that consensus is likely to play an important role in supervising all types of financial structures. In structures characterised as homogeneous oligopolies, tacit or explicit private agreements may themselves form the basis of substantive restraints on risk-taking. Even in structures with greater diversity and a discretionary supervisor, private consensus may still play an important role. The supervisor might use a private consensus to clarify its own day-to-day goals and methods. Alternatively, a supervisor might implement its own policies by working to form a private consensus that such policies are feasible and desirable. In any case it amounts to repeating a maxim to say that regulation and supervision can only work well with the consent of those regulated and supervised. Perhaps the success of supervision in some countries has resulted from the serious application of this maxim.

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