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Building an incentive-compatible safety net

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Abstract

Bank safety nets, originally proposed as a means of stabilizing financial systems, have become an important destabilizing influence. Government protection of bank debts encourages banks to undertake excessive risk, particularly in response to adverse shocks to asset values. Reforms that would remove the destabilizing moral hazard consequences of government protection are considered, both from the perspective of economic desirability and political feasibility. Requiring banks to maintain a minimal proportion of subordinated debt finance, and restricting the means by which government recapitalization of insolvent banks occurs are the central features of promising reforms to the safety net. © 1999 Elsevier Science B.V. All rights reserved.

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1. Introduction

Constructing and managing a proper “bank safety net” – a set of policies designed to protect banks from adverse shocks – presents the government with a unique set of challenges. Bank safety net policies include lending to banks (a subset of lender of last resort policy), recapitalizations of distressed banks and insurance of some or all bank deposits (sometimes explicit, sometimes only implicit). These policies are designed to prevent or reverse losses in bank

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capital, widespread disintermediation from banks and bank failures. The scope of safety net policy can be enormous. In many countries, virtually the entire financial system is protected by government insurance and other assistance. Policy makers routinely argue that the safety net is fundamental to the health of the banking system and to that of the firms who depend on banks for credit.

Recent studies of the costs of safety net policy find that costs can be as large as objectives are grand. The deposit insurance cost to taxpayers of the US savings and loan debacle exceeded in real magnitude the losses of all failed banks during the Great Depression, the event that had spurred the creation of deposit insurance (Calomiris and White, 1994). The cost of bailing out Venezuelan banks in the early 1990s reached 16% of Venezuela's GDP. The costs of earlier bailouts, normalized by GDP, have been large in many other countries: in Mauritania 15%, in Hungary 10%, in Finland 8%, in Ghana 6%, in Norway 4.5% and in Sweden 4% (Baer and Klingebiel, 1995). The crises of the mid-to-late 1990s are turning out to be even costlier. The bailout costs for Thailand, Indonesia, Korea and Japan currently are estimated at between 20% and 50% of GDP.

There is now an enormous theoretical and empirical literature in financial economics surrounding the questions of motivations for the safety net, possible costs from establishing the safety net and welfare-maximizing government policy in the light of these benefits and costs. This paper combines the insights of that literature (which focuses on the economics of externalities and incentives), with particular emphasis on the problems faced by policy makers in developing countries.

My central argument is that safety net policy must be designed to maximize welfare subject to both economic and political constraints. I argue that among the several alternative safety net mechanisms that make sense on economic grounds, one approach is preferable to the others because it is more politically robust. That approach introduces *credible market discipline* into government deposit insurance in a way that is most likely to survive adverse economic shocks and their political consequences.

I divide my discussion into three parts, which address three related questions: (1) What are legitimate economic and political objectives for the bank safety net? (2) From that perspective, what are the most serious shortcomings of current approaches to designing an effective safety net in a developing economy? (3) Which specific set of policies is liable to maximize the net benefits from the safety net?

2. What are the objectives of the bank safety net?

2.1. Gross benefits of the safety net

Why should banks be eligible to receive special treatment, in contrast to other firms, in the form of a government safety net? The beginning of any

economist's answer to that question must be that banks suffer special risks and that their distress entails special social costs. It is reasonable to argue for both points on theoretical and empirical grounds, and such arguments can be particularly plausible in the context of a developing economy.

All types of firms in the economy perform socially valuable functions. But banks differ from other firms in two important respects. First, problems in the banking sector have large spillover effects for other sectors because banks provide a unique source of credit to other firms and manage the flow of payments throughout the economy. Disruptions in bank credit supply and in the smooth functioning of the payments system create potentially large social costs borne outside the banking system. Thus bank distress entails uniquely large social costs. Second, banks suffer a special risk that their claimants (depositors) may "rationally overreact" to information and produce costly systemic runs. These two special characteristics of banks can imply special benefits from a bank safety net. One potential benefit of the safety net is to limit depositors' tendency to overreact by changing the incentives of bank depositors. Another is to insulate banks (and firms that depend on bank credit) from losses attributable to exogenous adverse shocks.

2.1.1. Spillover effects of bank distress

Why do bank losses create costs for non-bank firms? The answer supplied by the recent empirical and theoretical literature in finance is that bank borrowers have a stake in the availability of bank credit, and there may be imperfect substitutes for the credit supplied by banks. Indeed, there is even evidence that *individual* firm–bank relationships are valuable, and that, therefore, the demise of a bank can reduce the value of firms that had depended on that bank for credit (Petersen and Rajan, 1994; Calomiris and Carey, 1994). Furthermore, even if the supply of credit from various banks is mutually substitutable, contractions in aggregate bank credit will be costly to firms who depend on bank-intermediated credit because they require special screening or monitoring as a condition to gaining access to credit.

Bank credit contractions can result from losses in bank capital that induce banks to reduce their asset risk (so-called "bank capital crunches"). Calomiris and Wilson (1998) provide a model of bank capital crunches, which they apply to the capital crunch of the 1930s. They argue that absent government assistance depositors require banks to limit default risk on bank deposits to a low level. Banks do this both by limiting asset risk and by maintaining a sufficient capital buffer. When capital is lost, banks must either replace it or reduce asset risk. Because it can be costly to replace capital (especially in the wake of adverse macroeconomic circumstances that increase the lemons premium attached to new stock issues), banks often will choose to contract the supply of credit in the face of capital losses. From this perspective, safety net assistance to banks (either in the form of deposit insurance or bank recapitalization)

insulates bank credit supply from the effects of adverse shocks to bank capital, either by removing the constraint of low default risk on deposits or by replacing lost capital.

2.1.2. Preventing systemic bank runs

In what sense do banks suffer from rational overreaction, and how does the safety net reduce bank vulnerability? The structure of bank balance sheets makes banks especially vulnerable, not only to risks they actually take, but to incorrect (but rational) perceptions about those risks. Banks are information specialists (so-called “delegated monitors”), and much of the gain from banking derives from its economizing on information costs. But that specialization comes at a price. Depositors’ lack of information about bank portfolios can create systemic runs on solvent banks. Solvent banks may not be observably solvent to outsiders because information about their portfolio risk is private. Observable macroeconomic shocks, or observable weaknesses in some banks, may be taken as signs of potential weakness in many banks.

Because banks finance themselves largely with short-term (often demandable) debt, concerns on the part of uninformed depositors can entail costly withdrawals even for healthy banks. Unwarranted runs on solvent banks can cause declines in bank asset values during a flight to quality, disruption of the payments system and possibly unwarranted bank closures. The excessive vulnerability of the banking system to shocks is fundamental to the function of banks and cannot be solved by extending the maturity of bank deposits. The short maturity structure of bank liabilities reflects the unique functions banks serve – liquidity creation and capital allocation – and the private information characteristic of bank assets (Gorton and Pennacchi, 1990; Calomiris and Kahn, 1991). The lack of clear information about bank asset values and the reliance on short-term debt are intrinsic to the functions of the bank.

The bank safety net not only limits the costs to banks and society as a consequence of runs; it makes runs less likely by insulating banks from the risk of runs and thereby reducing depositors’ incentives to withdraw their funds. Uninformed depositors who are confident that their deposits will be insured, or that their banks will receive government assistance in the event of a crisis of confidence in the banking system, will have little incentive to run their banks in response to adverse news.

2.1.3. Summary

In summary, the public policy motivations behind the safety net can be divided into two categories. First, it may be desirable to assist distressed banks because of the social costs to bank borrowers of the decline in bank lending. That argument presumes that lost banks and bank capital attendant to adverse shocks cannot be replaced easily by the expansion of other banks, possibly because of the high cost of raising capital in the aftermath of an adverse shock

(Calomiris and Wilson, 1998). From that perspective, the purpose of the safety net is to reverse undesirable shocks (whether exogenous or the result of endogenous runs) – to provide ex post bailouts.

Second, the safety net is designed to promote the efficiency of the banking system by limiting *endogenous* declines in the banking sector (avoidable disintermediation and bank failures that are attributable to asymmetric information and bank runs). In what follows, I will refer to these motives for bank safety net policy as the “bank-credit” motive and the “run-prevention” motive.

The protection of private savings is another argument sometimes invoked to motivate the bank safety net, but this view is not defensible. One version of that argument emphasizes the lack of sophistication of small savers, and hence the desirability of creating a clearly riskless depository account. But deposit insurance is not necessary to provide a transparently riskless deposit opportunity for small (or large) savers. Postal savings accounts, or the chartering of a special class of money market funds that are constrained to hold only treasury bills, can do that job without fostering any of the incentive problems inherent in the bank safety net. The small-saver argument is probably best interpreted as a means of providing political cover for the subsidies banks receive via the safety net.

2.2. Net benefits from the safety net

The fragility and social importance of banks provide necessary but not sufficient grounds for a bank safety net; one must also argue that the government safety net produces *net* benefits, and that these net benefits are greater than those that could be achieved by a *private* bank safety net or an alternative regulatory regime. In my view, the bulk of the historical evidence weighs against both views. The government safety net tends to produce net costs, not benefits, and the record of private alternatives to the safety net is much more favorable than is generally recognized.

With respect to the bank-credit motive, the social costs of lost banks and lost bank capital can be much alleviated by allowing freer entry into banking. While there is no doubt that lost banks entail irreversible losses of bank–customer relationships, free entry significantly cushions that blow. Foreign bank entry into the US loan market did not eliminate the “bank capital crunch” of the 1980s, but it significantly reduced its costs to the economy (Baer, 1990; Calomiris and Carey, 1994). Furthermore, evidence from countries that have chosen not to bail out failed banks indicates that the costs of lost bank capital are short-lived and small in present value (Baer and Klingebiel, 1995). In contrast, the costs of removing market discipline from the financial sector – excessive risk taking and managerial inefficiency – are permanent and large.

With respect to preventing systemic runs, I think that “private” safety nets have often been a better bargain than “government” safety nets for solving the

problem (Gorton, 1985; Calomiris, 1990; Calomiris, 1993a,b; Calomiris and Gorton, 1991; Calomiris and Kahn, 1996; Calomiris and Mason, 1997). In the category of private safety nets I include purely private mutual-protection arrangements and “government” deposit insurance schemes that force banks to collectively bear much of the regulatory responsibility and risk of loss from insuring their fellow banks. These private safety nets have shown themselves capable of limiting the potential for runs on solvent banks, and they do so at lower cost than government protection.

In contrast, government protection – where bureaucrats are responsible for monitoring and controlling bank behavior, and where taxpayers bear the bulk of the risk of loss from insuring banks – has a uniformly poor record. These systems promote risk taking and inefficiency in banking by insulating banks from market discipline. Market discipline otherwise would penalize unwarranted risk taking or poor bank management in ways that government regulation does not.

The regulators and politicians who control the safety net have little incentive to monitor and enforce prudential guidelines, and bankers have strong incentives to take advantage of the lack of discipline by assuming risk and committing fraud. Moreover, as Kane (1989, 1992, 1993) has emphasized in his work, when the stakes are high enough banks bribe and cajole regulators or politicians to assist them in abusing the safety net at the taxpayers’ expense. The abuse of the taxpayers during the US S&L debacle was just one example of a phenomenon that has repeated in country after country, on all continents, both in developed and developing economies, over the past two decades.

Excessive risk taking and fraud by banks is not always visible. It tends to appear, however, at the worst possible moment – in response to adverse exogenous shocks. That is because the benefits from abusing the safety net are greatest in the wake of adverse shocks, when bank capital is low (Merton, 1977; Barth and Bartholomew, 1992; Brewer, 1995; Boyd and Gertler, 1993; Calomiris, 1990; 1993a,b; English, 1993). Thus the safety net is not mainly a source of independent risk, but rather an amplifier of risk in the face of adverse shocks. Ironically, the very safety net arrangements that are promoted as means to limit the vulnerability of the financial system have had the opposite result. It has been argued that in many countries the safety net itself is the greatest single source of financial fragility.

2.3. Political economy as a policy constraint

I do not want to belabor the point that, on economic grounds, government bailouts of banks and deposit insurance should be abolished and replaced with free entry into banking and privatization of the safety net. That is not because I think my views are entirely uncontroversial; rather, I think outright abolition of the government’s commitment to the banking system is simply not within the

range of credible options enjoyed by policy makers in developing (or developed) economies. Policy makers seem incapable of credibly committing not to intervene to support troubled banks.

Recognizing that constraint raises a more general problem. Policy choices reflect more than what is socially desirable (economically efficient). The theory of political economy provides at least as much insight as economic theory for understanding policy choices. For example, in many developing countries a few large bank–industry groups often dominate as political forces in the country. These firms and their owners are not interested in promoting increased bank entry, nor will they support the elimination of government subsidies, insurance and bailouts on which they depend. Even if somehow those programs could be repealed *de jure*, they likely would reappear *de facto* in the heat of a “crisis”.

Chile during the 1980s and Venezuela during the early 1990s provide vivid, if somewhat discouraging, examples of the melting away of the political will to limit safety net protection in the heat of bank adversity. In both cases, banks’ losses initially had their origins in exogenous declines – including declines in world copper and oil prices, respectively. But the increase in bank risk taking that accompanied government protection of the banks magnified those losses. In Chile, much of the increase in loan risk took the form of loans from banks to distressed firms that the banks controlled via bank–industry conglomerates (for a detailed discussion of Chile, see de la Cuadra and Valdes, 1992). Similarly, de Krivoy (1995, p. 166) points out that in Venezuela, “It is worth noting that most of the banks that exhibited major problems and then collapsed as the crisis unfolded in 1994 had been the ones that embarked on aggressive expansion strategies since the early 1990s and had channeled significant proportions of depositor funds to loans to related enterprises and to heavy investments in fixed assets, tourism and construction, all of which were adversely affected by the asset price slump in 1992–1993”.

In both Venezuela and Chile, market-oriented bank regulators who traced the collapse of their banking systems to policy-induced perverse incentives for bank risk taking nevertheless oversaw the bailouts of failed banks. In Venezuela, the head of the central bank (Ruth de Krivoy) argued that she had little choice but to prop up failing banks, because of the political and economic consequences of not doing so once a banking “crisis” had taken hold.

In Mexico, the banking reform of the early 1990s also created a powerful set of bank–industry groups. Mexican banks enjoyed 100% deposit insurance coverage, and accounting standards and capital requirements for banks were not enforced. After the 1991 bank privatization, subsidized government credit passed through those banks as part of the close partnership between the government and the banking industry, simultaneously helping to undermine the government’s fiscal position and the banks’ solvency long before the collapse of the peso in December 1994. Many commentators argue that the political problems suffered by the Mexican government and its ruling party

underlay the government's inability to rein in spending and subsidies, and discipline banks.

Does the argument that political economy matters mean that economic theory is irrelevant? Surely not. Politics constrains but does not uniquely determine the form of the safety net, and only by applying economic theory can one judge the relative merits of various possible mechanisms. Moreover, there are examples of instances where policy makers have been receptive to economic reasoning, particularly in the wake of a costly bailout brought on by policies that ignored basic economic principles (e.g., the recent reforms in the US and Chile). Policy makers sometimes seem to behave in accordance with Winston Churchill's description of American foreign policy in the 1930s – they are willing to do the right thing once they have tried everything else.

If economic reasoning is going to have an impact on bank safety net policies, however, economists will have to concern themselves with the political robustness of the mechanisms they recommend. It is not good enough to offer deposit insurance reform proposals that minimize net social costs without asking whether those proposals can survive political challenges and appeals to “crisis” intervention. A desirable deposit insurance law maximizes the net benefits of deposit insurance (expected gains from the safety net less expected losses from managerial incompetence and moral hazard) subject to the constraint that it must be politically credible. A deposit insurance law that is desirable on economic grounds is undesirable if it is not politically credible. If it cannot be relied upon to survive politically when the financial system undergoes difficult times, it will not be of any economic use. A system that cannot survive difficult times will not even constrain bank behavior at the outset, since banks can predict the contingent relaxation of the rules.

In what follows, I argue that some of the most popular reform proposals under discussion (including all of those that revolve around “narrow banking” or “early intervention”, and many that depend on “market discipline”, are not politically robust. I describe a version of a “market-discipline” approach to reforming the safety net, which I argue is both economically desirable and politically robust.

3. Evaluating reform proposals

Before reviewing and evaluating various safety net reform proposals, I list six “fundamental principles” that build upon the conclusions of Section 2 and underlie the subsequent discussion of safety net reform.

(1) Because banks' activities are valuable and banks cannot costlessly recapitalize in the face of losses, safety net policies that limit unnecessary risk in the banking system or assist troubled banks can have gross social benefits. But there is another side to that argument. It also follows that it is undesirable for

government safety nets to contribute to systemic risk. Government policy can cause greater risk of bank failure and contraction in bank credit by promoting undesirable risk taking, by standing in the way of private efforts at collective action to prevent or quell runs, and by preventing the entry of new capital into the banking system in the wake of a crisis.

(2) In addition to excessive risk taking, fraud and tolerance for managerial incompetence in the banking industry are undesirable byproducts of the government safety net.

(3) It is necessary that safety net policies be politically credible. Expectations of government actions will affect behavior more than government words. For policy to have its desired effects, the government must be capable of providing the assistance it promises, and of avoiding ex post interventions that violate its ex ante statements.

(4) Clear protection is superior to vague, implicit protection, where implicit protection is defined as a general commitment by the government to intervene, but where the limits of intervention are not clearly specified in advance. This is true for several reasons. First, a clear, explicit commitment by the government can provide more effective protection against runs by removing the incentive to run. Second, because implicit protection is not specific, it invites political influence peddling. Third, only explicit protection permits the government to defray the costs of protection by charging premia to insured parties. Note that the principle that explicit protection is superior to implicit protection may imply the desirability of covering some intermediaries or deposit accounts that do not appear eligible for protection on purely economic grounds. For example, it implies that if a certain intermediary or set of accounts must be protected by the government for political reasons, then this should be admitted from the start, and these accounts and intermediaries should be formally included in the safety net as full participants.

(5) The social costs of gathering information and enforcing contracts should be minimized. If possible, agents in the economy who are most skilled at processing information and who have the strongest incentives to enforce beneficial rules should be charged with those duties.

(6) Overlapping bank safety net authority is unnecessary and counterproductive. It is possible and desirable to establish an overall bank safety net policy within a single deposit insurance system (and hereafter I will use the terms bank safety net and deposit insurance system synonymously). Ad hoc recapitalizations and ad hoc lender of last resort lending to banks should be eschewed. To the extent that recapitalizations of banks and lending to banks are to occur, they should occur only within the context of the formal deposit insurance system. (It may still be desirable for the government to operate an independent central bank lending authority for purposes *other than* assisting banks, but such an authority should be prevented from providing independent bailouts or subsidized credit to prop up troubled banks. For a discussion of the

purpose and design of lender of last resort policy outside the bank safety net, see Mishkin (1991) and Calomiris (1994).)

3.1. Possible approaches to minimizing the costs of deposit insurance

There are many proposed remedies for the incentive problems that plague deposit insurance (for reviews, see Keehn, 1989; Congressional Budget Office, 1990; Evanoff, 1993; Garcia, 1996). Proposals divide into two groups: those that intend to limit bank risk taking, and those that would charge banks varying fees depending on the risks they undertake. The problem with the latter approach is that it involves a reliance on government agents to precisely measure bank risk taking and charge banks for it. Government agents lack the ability and the incentive to do so reliably. It may be possible to use objective market indicators to measure bank risk and penalize it with higher deposit insurance premia, but there are difficulties here as well, owing to the fact that market perceptions of the risk of bank claims depend on expected safety net policies, as well as intrinsic portfolio risk. In practice, implementing such an approach entails reliance on complicated and controversial formulas, which invites ex post manipulation. Given these practical difficulties I only consider proposals in the first category – those that seek to limit bank risk taking.

Risk-limiting proposals divide into three categories: “early intervention/closure” based on violation of minimum capital requirements and other regulations, “narrow banking” and “market discipline”. I will argue that a version of the market discipline approach is more promising than either the narrow-banking or the early intervention approach from the perspective of satisfying the six principles listed above. But the advantages of the market-discipline approach depend crucially on how the plan is implemented.

3.1.1. Early intervention/closure

The early intervention/closure approach depends upon credible enforcement of accounting standards and minimal capital requirements, and ultimately upon the threat of early closure of undercapitalized banks. This is the “mainstream” approach to reforms currently underway in many countries, and forms the basis of the Basle Accord of 1988, the 1991 FDICIA law in the US and the Chilean banking reforms of the 1980s (Ramirez and Rosende, 1992).

In some respects, this approach is attractive. The idea is to create a capital buffer that insulates the deposit insurance system from loss and forces bank stockholders to bear the consequences of their risk choices. The combination of capital requirements and early intervention by regulators (initially to force the bank to recapitalize or subsequently to force the bank to close) is intended to limit the exposure of the deposit insurance system. In particular, the intent is to prevent banks that have suffered losses from increasing their risk (the moral hazard problem). The architects of early intervention also argue that by imposing

explicit rules on supervisors, corresponding to different tranches of capital ratios, regulatory discretion (and manipulation of regulators by banks) is lessened.

The main problem with this approach is that it depends on bank regulators to identify undercapitalized banks, and to enforce regulatory accounting standards. There are many examples (the US in the 1980s is a prominent one, as are Mexico and Japan in the early 1990s) of a government conspiracy not to report inconvenient facts associated with declines in bank capital. Government regulators are not immune to political pressure or to bribery by banks. In the US, supervisors were bribed by bankers and regulators were pressured by politicians. Critics of the FDICIA reforms have argued that nothing in FDICIA will prevent this from happening again when the stakes once again become large. Chilean regulation attempts to get around this problem by requiring independent private audits of banks. But this is an unlikely solution since private auditors face incentives similar to those of government supervisors.

Another problem with the early-intervention approach is the need for government regulation to specify risk categories, which are used to develop risk-based capital standards. With respect to credit risk, the Basle categorizations have been criticized as arbitrary. They also do not take account of market risk (i.e., long-term government bonds are viewed as riskless), although there are attempts underway to do so. A basic problem with any attempt to pre-specify risk categories for risk-based capital requirements is that banks can “arbitrage” these categories very easily, and avoid penalties for taking risk. In the new world of complex derivative transactions, where market risk and credit risk are being repackaged in multiple ways, it is especially hard to believe that regulators and supervisors will have the incentive to monitor, control and report bank risk accurately.

Finally, early intervention does not solve all the problems that motivate the bank safety net. Note that early intervention can provide stability to the system by preventing runs and limiting moral hazard and fraud, but it cannot insulate bank capital from macro-economic shocks (the “bailout motive” for the safety net discussed above). That is not a unique limitation of the early intervention approach. All reform proposals that would limit the risk of default on insured deposits work by imposing a constraint on bank behavior that forces banks to maintain a sufficient capital-to-asset ratio and sufficiently low asset risk. That constraint, of course, is precisely what leads to “capital crunches” – episodes in which bank lending contracts in response to bank capital losses (Calomiris and Wilson, 1998). In Section 4 below, I consider possible approaches to combining an incentive-compatible deposit insurance system, based on market discipline, with a government policy to combat capital crunches.

3.1.2. Narrow banking

Narrow banking proposals avoid some of the problems encountered by the early intervention approach by defining the insured component of the banking

system very narrowly to include only transactions accounts, and then requiring banks to hold marketable, low-risk assets to protect those liabilities in separate institutions. This supposedly limits the government's risk of loss, since only deposits backed by low-risk assets with publicly observable values are covered by insurance. Banks are then free to do whatever they want in the uninsured part of their organizations. Narrow banking effectively eliminates the safety net, since only losses attributable to very low- (or zero-) risk, marketable securities are insured by the government. The intermediation of such assets, ironically, could never motivate the creation of a safety net in the first place (recall the discussion of Section 2).

This approach is problematic, economically and politically. Economically, not only is the protection afforded by the insurance of the narrow bank unnecessary, it provides no solution to the problems the safety net is designed to address – namely the contraction of bank credit and the externalities associated with runs on banks. The part of the bank that performs the essential lending function on which non-bank borrowers depend is not protected under a narrow banking system. Furthermore, bank runs are still possible. Runs are not confined to narrowly defined transactions accounts within the narrow bank, but also can occur on non-transactions deposits (CD accounts, bankers acceptances and time deposits) that are not covered by narrow deposit insurance.

In essence, narrow banking reforms the safety net by eliminating it. The absence of protection may not be a major flaw, of course, so long as private coordination is feasible. Thus, those who view government deposit insurance as inferior to private coordination within the banking system sometimes embrace the lack of protection afforded by the narrow banking approach, so long as private cooperation is not precluded by regulation.

But there is a deeper problem with narrow banking. Politically, the absence of *de jure* protection on bank liabilities outside the narrow bank does not imply the absence of *de facto* protection by the government. If politicians cannot credibly commit not to intervene to prop up banks during a “crisis” (an event to be defined as much by political expediency as by economic argument), narrow banking can end up substituting *ad hoc* bailouts for explicit insurance coverage, which I have argued is undesirable.

3.1.3. Market discipline

The market-discipline approach attempts to combine government insurance of (broad) bank deposits with market-assisted enforcement of bank regulations. Its main supposed advantage in comparison with the early intervention approach is that it relies on the marketplace more than on bank regulators to measure bank risk and to enforce the rules that govern bank behavior. By doing so, advocates of this approach argue, regulation is better informed and more credible. Market participants are better able to process information, but more importantly, they have the incentive to measure risk honestly, since they

bear the costs of their mistakes. In contrast to the narrow-banking approach, a broad range of deposits is covered by explicit insurance, thus avoiding the need for ad hoc intervention to protect deposits or banks.

The key to the market-discipline approach is placing private parties at risk with respect to undesirable behavior by banks. The mechanism for doing so is subordinated debt – bank debt that is junior (subordinated) to insured deposits and not insured by the government. Requiring banks to maintain minimum ratios of subordinated debt relative to insured debt (or relative to risky assets), and regulating other features of subordinated debt (including its maturity and maximum allowable yield) imposes market discipline on banks, and thus limits banks' incentives to take on risk. Bankers that take on excessive risk, or who manage assets poorly, will find it difficult to sell their subordinated debts, and will be forced to shrink their risky assets or to issue new capital to satisfy the discipline of private uninsured debtholders. Note that subordinated debt ratio requirements are more effective for constraining bank risk taking than equity-ratio requirements because equity holders share in the upside gains from risk taking, while debtholders do not.

Prior to the 1991 enactment of FDICIA in the US there was significant support within the Federal Reserve System for a market-discipline approach to deposit insurance reform that revolved around requiring banks to finance themselves with some uninsured subordinated debt. Both the Chicago and Atlanta Federal Reserve Banks designed detailed proposals to implement this approach (Keehn, 1989, Wall 1989). Purportedly, a majority of Federal Reserve Bank Presidents “voted” informally in favor of this approach at a System presidents' meeting to consider reform proposals. Many academics also supported market discipline. But market discipline failed to win sufficient political support, perhaps because Congress and bank regulators were more comfortable with regulatory discretion than with market-controlled outcomes. Under FDICIA, some uninsured debts are part of “tier 2” capital and banks can (but need not) issue such debt to meet tier two capital requirements. Thus there is no current reliance on uninsured debt as a means of market discipline in the US deposit insurance system.

Despite its potential advantages – broad protection of deposits with little moral hazard or regulatory corruption – any attempt to implement the market-discipline approach in a developing economy must come to grips with several potential questions. First, in an economy with poorly developed debt markets, how will banks find enough potential buyers of subordinated debt? Second, might politically influential firms and individuals purchase the subordinated debt of “their” banks at above market prices, thus insulating banks from market discipline. They might have an even greater incentive to do so if they could expect to avoid losses on subordinated debt by relying on government bailouts of subordinated debt holders. Third, political motivations aside, will not the government be tempted to relax subordinated debt requirements on

banks and to bail out economically important holders of subordinated debt during severe economic downturns as a way to avoid bank capital crunches and financial distress during recessions? In what follows I describe a possible approach to implementing market discipline which is designed to confront these three problems.

4. Constructing credible and effective discipline

My proposal is specific and pragmatic, and I will not defend its “optimality” in the strict sense of that word. My goal is to invent a real institutional arrangement, not to prove the existence of a formal equilibrium. My purpose in being specific is not to argue for a one-size-fits-all plan, but rather to identify the set of issues that any plan based on market discipline will have to confront, and to provide examples of ways to resolve potential problems. In practice, the particular circumstances of individual countries will be critical in deciding on the best way to structure market discipline.

4.1. A subordinated debt plan for a developing economy

4.1.1. The plan

Subordinated debt takes two forms, one for small banks and another for large banks. Small domestic banks (those that may find it difficult to gain access to foreign banks as potential depositors or to international debt markets) must maintain a minimum fraction (say, 2%) of their risky (non-Treasury bill) assets in the form of uninsured time deposits held by large domestic banks or foreign banks. These time deposits are of two-year maturity, and 1/24 of them mature each month.

To allow short-run flexibility, it may be desirable to measure subordinated debt and risky assets (for regulatory purposes) on an average, distributed-lag basis. For example, both subordinated debt and risky assets could be calculated as three-month moving averages. This would permit banks to respond to contractions in subordinated debt with gradual contractions in loans outstanding.

At the time they are placed, the interest rate on these time deposits must be no greater than that of the one-year Treasury bill plus a maximum spread (say, a BBB credit spread). For simplicity (and perhaps in the interest of political credibility) assume that all other deposits in these banks are covered 100% by government deposit insurance. Banks pay an insurance premium that varies month-to-month with the actual interest rate spread they pay above the Treasury bill rate on subordinated time deposits. The insurance premium is calculated using a contingent claims pricing formula to relate the default risk on the senior tranche of the bank's debt (i.e., its deposits) to the observed risk spread on the junior tranche.

Large banks face the same subordinated debt requirements as small banks, and the same insurance costs, but must place their subordinated debt in the form of non-tradable certificates of deposit with foreign financial institutions. Large domestic banks may not hold each other's subordinated debts, and industrial subsidiaries of banks are likewise prohibited from purchasing subordinated debt.

4.1.2. Advantages of the plan

Banks are forced to finance themselves with a minimum ratio of low-risk uninsured debt. Banks that fail to limit their debt risk will find it impossible to roll over maturing uninsured debt. By allowing banks to rely on interbank deposits rather than market debts, even small banks are able to gain access to the subordinated debt "market". An additional advantage of relying on interbank debt for discipline is that banks are liable to be better able to judge each other's creditworthiness than other creditors.

Deposit insurance premia reflect bank choices and skills. Banks that choose lower risk, or are better able to manage risk, are rewarded by lower costs of deposit insurance.

The system is designed to avoid endogenous bank distress induced by runs on subordinated debt. This serves both an economic and a political purpose. By requiring that subordinated debt be rolled over gradually (1/24 each month), banks are protected from sudden runs. So long as the proportion of subordinated debt maturing each month is small (in my example, 4.17% of risky assets) banks should be able to pay off debt that they cannot roll over easily from the proceeds of maturing loans without facing the need to sell risky assets suddenly at "fire sale" prices. Any additional contraction of bank loans (in excess of the 4.17%) required to meet the subordinated debt requirement could be achieved gradually over the next three months (under the three-month distributed-lag formula).

The avoidance of potential runs on uninsured debt and fire sales of bank assets not only serves an economic function, but helps to make discipline more credible politically. Removing the threat of a liquidity crisis in the banking system precludes an excuse for "crisis" intervention in the form of ad hoc bailouts of banks.

Because discipline is gradual and credible, the system is self-stabilizing. Government-regulated deposit insurance systems tend to magnify initial losses by encouraging banks to increase their risk in response to a loss of capital. In the presence of market discipline, in contrast, a bank that is perceived as too risky will be forced to shrink its risky assets, and therefore, increase its capital ratio and reserve ratio, which automatically reduces the riskiness of uninsured debt next month. Banks will get an early nudge from the market to avoid excessive risk.

Requiring large domestic banks to rely on foreign sources of funds serves several purposes. First, it helps to ensure that subordinated debt will be held at

arms length, an essential requirement if market discipline is to be effective. Second, it makes the economic and political costs of losses on subordinated debt lower. If large banks' subordinated debts were held domestically, presumably there would be a greater temptation for government to bail out uninsured debt holders. Third, by preventing large banks from holding each other's subordinated debt, the government also reduces the need to be concerned about the transmission of risk among large banks. This diversification makes the system more credible by removing a possible excuse for politically motivated policy interventions justified by the threat of "systemic collapse".

To summarize, I have argued that it is possible to introduce credible market discipline into the deposit insurance system. This version of market discipline stabilizes the banking system in response to losses, and avoids systemic risk without insuring all bank debt.

The proposed system is easy to enforce, as it does not rely on regulators to measure capital or asset risk; regulators need only enforce the simple requirement that a minimum ratio of subordinated debt relative to risky assets (both in book value) must be maintained. It would be relatively easy to hold supervisors and regulators accountable for failing to enforce this simple rule, in contrast to penalizing them *ex post* for failing to correctly estimate the extent of bad loans (as would be required to make early intervention credible). The measurement and penalizing of risk is placed in the hands of those with the proper skills and incentives. Banks are forced to meet market discipline, not a set of rules of thumb (like the Basle standards) that invite creative maneuvering to satisfy the letter of the law while undermining its intent.

Because subordinated debt rolls over gradually, banks suffering increased risk that makes it difficult for them to roll over subordinated debt are able to shrink their assets gradually without suffering the costs of "fire sale" liquidations of loans. Because systemic risk is avoided, and because banks are disciplined continually, the enforcement of the rules of the system are more credible politically.

4.2. The conflicting objectives of policy: Discipline vs. credit smoothing

Thus far I have advocated a version of a market-discipline-based approach to reforming the safety net, arguing that it is superior to either the early-intervention approach or the narrow-banking approach. It is superior because it better limits systemic risk in the banking system (by preventing runs and discouraging fraud and moral hazard), and is easy to enforce and more politically credible than alternative mechanisms.

But a problem with all approaches to limiting the risk of insured deposits is that they tend to aggravate the potential for bank capital crunches. As I argued in Section 2, the desire to limit risk within the banking system is only one of the

motives for the safety net. Another is the bank-credit motive. Here the goal is to limit the contraction in bank credit attendant to declines in bank capital. Clearly, market discipline is inimical to the desire to insulate bank credit from the effects of capital losses, since market discipline forces banks to restrict their asset risk in the face of capital losses.

The desire to maintain the supply of credit in the face of bank capital losses thus significantly complicates bank safety net policy. The desire to encourage banks to maintain the supply of credit is at odds with, and can undermine, the government's commitment to market discipline.

That is true even if one believes, as I do, that the *long-run* benefits of smoothing bank credit in a developing economy are much smaller than the long-run benefits of banking system efficiency. As I have argued before, free entry into banking mitigates the social costs of cyclical fluctuations in bank capital and lending. More importantly, in a developing country the long-run gains of an efficient financial system are “first-order”, while the benefits of the cyclical stabilization of bank credit are “second-order”. Nevertheless, governments that accept this long-run argument may be tempted by the *short-term* gains from preserving the supply of bank credit. This is an example of the “time inconsistency problem”. Governments may realize that controlling banking system risk in the long run and foregoing any attempt to smooth cyclical fluctuations in credit is superior to a policy that produces credit smoothing and an unstable and wasteful banking system. But in response to capital losses, politicians with short time horizons will be tempted to try to cushion the impact of capital losses by providing ad hoc assistance to banks.

How can one design a safety net that discourages politicians from pursuing credit smoothing policies? I do not see an obvious way to do so. For that reason, I think the best available option is to incorporate credit smoothing into safety net policy from the beginning. Even though doing so may be “suboptimal” from the standpoint of long-run social welfare, it may be “second-best” subject to the political constraints that encourage ad hoc credit smoothing.

What kind of rule would achieve this end? The essence of the rule would be to relax the constraint that otherwise would contract bank lending sharply in response to a severe recession, and to make sure that relaxation is strictly contingent on the macroeconomic state of the economy. According to basic finance theory two different kinds of contingent policies could accomplish this goal. One way the government could produce such a relaxation of the bank credit constraint is by relaxing the risk constraint on bank debt (by changing the rules that govern subordinated debt regulations). Another way to achieve the same result would be to recapitalize banks during recessions and leave the rules of market discipline unaltered.

Neither of these approaches is costless from the standpoint of the efficiency of the banking system. Both will produce moral hazard and inefficient risk

management. Recapitalization seems the better of the two policy options. Relaxing discipline would make the system more fragile, and thus could undermine the long-run credibility of the commitment to market discipline by increasing the likelihood of a wave of bank failures. Recapitalization would increase average bank risk (by insuring against macroeconomic shocks), but it would not amplify bank risk taking in the wake of adverse shocks by encouraging banks to increase risk when their capital falls (as would occur in the absence of market discipline).

To limit the costs of protection, the form of capital assistance should be as senior as possible. To be effective, capital assistance must be junior to subordinated debt, but it can and should be senior to common stock. Thus preferred stock purchases by the government (like those pursued in the US after 1933 by the Reconstruction Finance Corporation), are a reasonable way to implement this policy (see Mason, 1999). It would also be desirable to require matching contributions from bank common stockholders. For example, to be eligible for assistance, the government could require new common stock offerings to be issued in proportion to the amount of preferred stock purchased by the government. The government might also place limitations on common stock dividends – for example, prohibiting dividend payments for three years after the recapitalization – as a means of insulating government capital from risk.

A simple, credible rule about the form and extent of this assistance should be devised as part of the safety net. The test of the rule's credibility is twofold: its contingencies should be easily verifiable, and its implementation must provide sufficient macroeconomic smoothing to discourage ad hoc interventions by myopic politicians. For example, the rule might specify that whenever real GDP declines by a large amount (say, more than 3%), the government could purchase preferred stock equal to 50% of every bank's subordinated debt. If a country enjoys more far-sighted political equilibrium, then it will be able to provide for less contingent assistance as part of its safety net.

5. Conclusions and caveats

Safety net policy should reflect both economic goals and political constraints. I argue that a version of the market-discipline approach to reform is superior to other policy options, both from the standpoint of economic objectives and political credibility. The advantages of that approach, in comparison with other alternatives, are reviewed in Section 4.

I also argue that objectives outside the banking system relating to the desire to stabilize aggregate bank credit supply – which I term the bank-credit motive for the safety net – can be at odds with the other safety net objective: the long-run stability of the banking system. Even if the long-run benefits of strict adherence to market discipline outweigh those of credit smoothing, myopic po-

litical choices may imply a government commitment to credit smoothing that undermines the commitment to strict market discipline.

This conflict should be faced rather than ignored. It is better to establish a credible, “second-best” safety net that sets clear rules for bailouts than to claim to establish superior non-credible (and therefore ineffectual) policies. Contingent assistance to banks, possibly in the form of preferred stock assistance in the face of severe macroeconomic shocks, may be a desirable contingency to include in a system otherwise based on market discipline.

I conclude with two caveats. First, while I have argued that economists must be realistic about the political realities that constrain policy, I do not wish to imply that those realities are unchangeable. It is particularly desirable to explore ways to reduce political incentives for government to pursue small short-term gains with large long-term costs.

Second, it is important to note the limitations of this analysis. I have focused on instability in the banking system produced by bank portfolio risk. Another risk, outside the purview of bank safety net policy, is monetary risk. No deposit insurance system can prevent systemic withdrawals of deposits that are motivated by a perceived risk of the collapse of an exchange rate regime. Deposit insurance insulates depositors from default risk, not exchange risk. Because bank deposits are short-term debt obligations, even insured depositors anticipating a devaluation will have an incentive to withdraw their deposits from their banks. Exchange-risk runs induced by inconsistent monetary policy have been important historically. An incentive-compatible safety net and a credible monetary policy are both necessary to preserve the stability of the banking system.

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