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FINANCIAL SAFETY NETS: RECONSTRUCTING AND MODELING A POLICYMAKING
METAPHOR

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ABSTRACT

This paper explains that financial safety nets exist because of difficulties in enforcing contracts and shows that elements of deposit-insurance schemes differ substantially across countries. It argues that differences in the design of financial safety nets correlate significantly with differences in the informational and contracting environments of individual countries and that a country's GDP per capita is correlated with proxies for a country's level of: (1) informational transparency, (2) contract enforcement and deterrent rights, and (3) accountability for safety net officials. The analysis portrays deposit insurance as a part of a country's larger safety net and contracting environment. This means that there is no universal method for preventing and resolving banking problems and that the structure of a country's safety net should evolve over time with changes in private and government regulators' capacity for: valuing financial institutions, for disciplining risk taking and resolving insolvency promptly, and for being held accountable for how well they perform these tasks.

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Introduction

  Metaphors simultaneously displace and extend the meaning of words (Ricoeur, 1977). As in an act of algebraic substitution, an instructive metaphor replaces the name of one concept (the "tenor") with that of another, more easily understood one. Obviously, the substitute concept (the "vehicle") attributes both similarities and dissimilarities to the real-world concept it signifies.

  In an economic model, the dissimilarities between the substitute variable and its conceptual tenor are presumed to be minor and are represented by an implicit or explicit error term. Hence, in regarding a metaphor as a model, we hypothesize that the substitute concept and its vehicular network of relations with other variables generate insight into the nature of the tenor and how it functions in practice.

  This means that the heuristic value of the safety-net metaphor of financial regulation is determined by its "redescriptive power:" i.e., by how well it simultaneously simplifies and approximates the cost-benefit issues with which regulators regularly contend. Section I of this paper explores in a public-policy context the adequacy of the safety-net metaphor. It casts the metaphor's central entailments as design dimensions of the institutional framework within which government regulators choose to operate.

  Section II roots the choices regulators make in the theory of incentive-conflicted financial contracting. We assume that the choices made maximize some combination of the private and social value that implicit and explicit government guarantees of bank debt can produce. Hence, regulatory benefits depend on weaknesses in the transparency and deterrent rights a nation's contracting environment confers on bank stakeholders and on the extent to which officials can be held accountable for inefficiencies and inequities in safety-net design.

  Section III presents empirical evidence of cross-country variation in transparency, deterrency, and accountability. Section IV enumerates the major features of existing deposit-insurance systems and discusses their potential costs and benefits. Section V investigates whether proxies for features of the contracting environment of individual countries correlate with deposit-insurance design features in the way the model predicts.

  Section VI concludes by stressing that supranational regulatory institutions should not ask financial regulators in different countries to conform to a single best-practices standard of regulatory behavior. Among its other goals, outside policy advice should address and seek to

mitigate variation in officials' accountability for policy failures. To be maximally helpful, advice should help to tailor a country's safety net to the ever-changing ability of private and public counterparties to value banks, discipline bank and regulatory risk-taking, and resolve financial distress promptly and efficiently.

I. Exploring the Metaphor

A net is a mesh that has been rigged to serve a set of particular purposes. In erecting a literal "safety net," a circus manager has in mind at least two purposes. The direct purpose is to protect falling acrobats by having the net catch them before they can harm themselves and traumatize the audience by splattering against the ground. However, the net's larger, indirect purpose is to enhance audience enjoyment in a positive way. The net does this by making it economically rational for circus acrobats to undertake difficult, but do-able stunts in which the danger of a spectacular fall seems very real.

The word do-able is emphasized to clarify that the net is meant to encourage prudent risk-taking. The net's entertainment function is frustrated unless the acrobats almost always complete their stunts successfully. Carrying out a simple trick is typically more engaging than failing to accomplish a complicated one. Trapeze and tightwire performers that fall repeatedly into the net earn boos and catcalls that sensible circus managers want to avoid.

A circus manager must also make sure that the costs of building and maintaining the net do not exceed the benefits it produces. Managers must balance a series of subtle tradeoffs between original costs, monitoring expense, safety, visibility, and audience response. There is no general reason to suppose that governments should direct net managers either to tax or to subsidize institutional risk-taking. In general, widespread and sturdy meshes and elaborate buttresses are safer, but their increased safety generates two drawbacks. Such nets are more costly and –by being more visible– lessen the sense of risk sharing that lies at the heart of audience enjoyment. High-tech filaments and buttresses exist whose thinness can make the net less visible, but using such materials renders the net more costly to build and maintain. Finally, whenever the net a manager erects proves unable to stop an unfolding disaster, emergency medical treatment must be accessed optimally and the manager must expect a storm of condemnation to rain down on his head from all sides: from performers, from circus owners, and from the audience.

Whether or not the elements of the net are stipulated in explicit statutes, authorities in every country establish a <u>de facto</u> safety net for banks and support the net by incurring monitoring costs and penalizing to some degree unsafe and unsound behavior in financial and governmental transactions. The next section seeks to explain how to design and operate safety nets at minimum cost to taxpayers and well-managed banks in countries whose informational and contracting environments differ in stylized ways.

A country's financial safety net shares four metaphorical entailments with its circus counterpart. First, like acrobats, financial institutions may choose to engage in activities so risky that critical mistakes can quickly cripple them or even end their existence. Borrowers and depositors play the dual role of protected onlookers and manufacturers of trapezes and tightwire platforms, while taxpayer audience members also own shares in the circus. Financial safety nets serve not just to protect borrowers, depositors, and taxpayers from being harmed by financial-institution mistakes, but also to encourage individual institutions to accept the risks associated with funding economically productive investments. In countries where reliable public information about business performance is in short supply, banks tend to dominate the flow of institutional finance. In such circumstances, a country's financial safety net reduces to its arrangements for protecting bank customers and for monitoring, assisting, and controlling banks.

Second, just as circus managers do, regulators guard against excessive risk-taking and manage the several costs and benefits the safety net produces. Safety nets for banks may be instructively conceived as a nexus of contracts that help them cope with runs and other economic shocks (Diamond and Dybvig, 1983; Kane, 1995; Brock, 1999). Each net is a multidimensional policy scheme that seeks to balance the costs and benefits generated by:

1. protecting bank customers from being blindsided by bank insolvencies;
2. limiting aggressive risk-taking by banks;
3. preventing and controlling damage from bank runs;
4. detecting and resolving insolvent banks; and
5. allocating across society whatever losses occur when an insolvent bank is closed.

Third, a country's financial safety net may be analyzed as a figurative mesh whose filaments and buttresses tie regulatory officials and bank stakeholders into a web of mutually reinforcing contracts. For strategies of crisis prevention and crisis recovery to be maximally successful, this web of contracts must hold top regulators accountable for measuring and

managing the social costs and risk-taking incentives generated by their decisions about the net's various design features. Officials must take the blame for flaws in design and maintenance that compromise the net's overall effectiveness. In turn, cross-country variation in the legal and private-information environment should influence these design and maintenance decisions. Ideally, the design of the regulatory portion of net should tie securely into the characteristics of the particular financial system and economy in which it is embedded. To fashion a net of the right size and strength, decisions bearing on the cost and effectiveness of net components should be observable enough to be disciplined by appropriate market and budgetary tests.

Finally, regulatory standards are incomplete unless they accept the idea that on occasion even the best-designed safety net will fracture or prove too small. A complete standard would require authorities to develop and regularly review strategic plans for managing financial crises and to train their staff in the use of crisis-management protocols. Paradoxically, unless the safety net is backed up by solid crisis planning, improvements in the safety net may result in less frequent but more devastating crises. On balance, the more effective a nation's safety net becomes, the less likely it is that regulatory personnel will have prior hands-on experience in coping with severe crisis pressures.

Identifying and remedying the ways in which the circus metaphor fails to apply to regulatory managers is the purpose of the next section. Unlike the splattering of an unlucky, incompetent, or well-connected acrobat, breakdowns in financial safety nets are not immediately visible to all stakeholders. This indiscernibility creates opportunities for banks to disguise their insolvency (Aghion, Bolton, and Fries, 1999) and for incumbent regulators to conceal and sugarcoat information about difficulties that occur during their particular terms in office. Effective regulation begins with imposing and enforcing adequate disclosure protocols on the parties being regulated. Precisely because top regulators want to protect their professional reputation from being besmirched by an emerging financial-institution disaster, their ability to influence reporting protocols can be a mixed blessing for taxpayers. Some regulators may not want access to opportunity-cost (i.e., market-value) bank balance sheets and income statements. Defects in transparency create deniability and support an incentive to delay insolvency recognition and resolution. Most of the blame for allowing a crisis to develop can be sidestepped by suppressing whatever signs of crisis surface on one's own watch and shifting responsibility for recapitalizing the damaged banking system to succeeding generations of regulatory officials.

In helping to hide developing insolvencies, a short-horizoned regulators may reasonably hope to achieve a reputationally "clean" getaway to another position. The prospect of a clean getaway also makes it rational for a regulator to trade small immediate improvements in financial stability for substantial increases in the expected costs of future insolvencies. The myopia this tradeoff supports leads officials to downplay the importance of crisis planning and to commit themselves to work through every incipient breakdown as if it were a unique event that must be handled in an ad hoc discretionary manner.

Delays allow individual banks whose insolvency is not yet widely recognized an opportunity to gamble for resurrection at taxpayer and competitor expense. To the extent that regulators can delay and effectively spin the flow of adverse information, their sensitivity to public criticism tempts managers and owners of insolvent institutions to reinforce their incentive conflict. Troubled bankers and borrowers often offer subtle and unsubtle benefits to top regulators who are willing to conceal an incipient crisis and accept the deferred costs of postponing the actions needed to restore banking solvency.

II. Modelling the Contracting Difficulties the Metaphor Suppresses

Modern finance theory emphasizes that, even in a corruption-resistant society, bank depositors must worry about controlling incentives for opportunistic behavior by managers, owners, and borrowers (Jensen and Meckling, 1976; Diamond, 1984). Besides the difficulties depositors face in coordinating collective action, these incentives have two intertwined roots:

1. monitoring costs: difficulties a depositor faces in obtaining reliable information about unfavorable developments and observing adverse actions by bank managers, including recklessness, negligence, incompetence, fraud, and self-dealing;

2. policing costs: difficulties a depositor faces in adequately analyzing and responding to whatever information their monitoring activity turns up.

The tools of regulatory loss control are rulemaking and enforcement. To understand the role played by a country's financial safety net, it is helpful to imagine a world in which depositors' monitoring and policing costs would be uniformly zero. In this world, each deposit contract would be self-enforcing. Establishing a team of centralized monitors and enforcers to thwart misconduct by bank insiders would offer no benefit either to banks or to their depositors. In such a world, changes in a bank's condition and risk exposure would be transparent to

depositors and depositors would possess sufficient expertise and sanctions to deter bank insiders from trying to take advantage of them. <u>Maximal transparency</u> describes a framework of disclosure that would perfectly and costlessly inform depositors about changes in bank performance and risk-taking activities. To provide a pair of parallel rhyming words, we use <u>maximal deterrency</u> to describe a situation in which depositors would immediately understand the implications of information flows perfectly and would be able to protect themselves completely and costlessly from whatever threat to their wealth this information might reveal.

The more closely an economy comes to offering creditors maximal transparency (MT) and maximal deterrency (MD), the less incremental value that banks and safety-net managers can create for depositors. In an MTMD economy, cash in advance and credit could substitute perfectly for each other in every payment context. Similarly, direct and indirect finance would provide equally economical ways of mobilizing savings, of choosing which real investment projects savers ought to support and of deciding how to price project risk. As envisaged in the Capital Asset Pricing Model, corporate and government securities could be offered in denominations small enough to allow virtually every individual saver to invest directly in a diversified portfolio of stocks, bonds, and derivative securities.

The MTMD thought experiment clarifies that safety nets owe their existence to difficulties of contract enforcement: blockages in information flows; differences in monitoring costs; variation in financial transaction costs; delays in appreciating and processing relevant information; and the costliness and inadequacy of the deterrent remedies that individual depositors have available to them. It also clarifies that a safety net entails a five-party contract. The net imposes mutual rights and duties on: bankers, borrowers, depositors, safety-net managers, and safety-net owners (principally healthy banks and taxpayers). The touchstone by which to judge the performance of safety-net managers is the fairness with which they treat each of their counterparties and the efficiency with which they manage the diverse social costs of coping with divergences from MT and MD conditions.

All real-world economies establish a framework of centralized bank monitoring and deterrent response. Centralizing these functions aims at increasing depositor confidence while solving three coordination problems: avoiding redundant monitoring expense; standardizing contracting protocols; and timing and calibrating disciplinary action. In principle, a centralized monitor-enforcer makes it unprofitable for banks to misrepresent their economic condition to

depositors and to pursue profit-making opportunities that might exploit depositors' informational disadvantage. It is not enough for safety-net managers to aim at blocking corrupt and unwise flows of institutional credit and avoiding depositor runs. They must seek also to minimize the social damage caused by temporary bank illiquidity and by lasting bank insolvencies. In administering lender-of-last-resort facilities, safety-net managers are expected to perform the financial <u>triage</u> function of shielding solvent, but illiquid institutions from having to sell assets into momentarily disorderly markets.

In practice, a safety-net manager must have the expertise to wield six categories of regulatory instruments fairly and efficiently:

1. record-keeping and disclosure requirements;
2. activity limitations;
3. capital, loss-reserving, and other position limits;
4. takeover rights and other enforcement powers;
5. lines of credit; and
6. performance guarantees.

The first four categories define the net managers' authority to regulate the bank; the last two categories provide credible ways for regulators to bond themselves to exercise their supervisory authority in the interests of depositors and other creditors. To complete the web of contract enforcement, taxpayers must be able to observe and discipline the economic value of their stake in the rulemaking and enforcement activities that regulators undertake. Ideally, taxpayers must impose reporting requirements and establish deterrent rights sufficient to persuade net managers to deploy their examination, supervisory, and lending powers at minimum economic cost to society as a whole. Efficient employment contracts would define costs comprehensively and include both the costs of operating the net and the costs of managing its occasional breakdown. Taxpayer-regulator contracting is important because the practical politics of financial regulation tend to make regulatory authorities unduly responsive to immediate bank and depositor concerns.

A nation's safety net is a multiparty web of contractual duties and obligations whose most palpable features are deposit guarantees and lender-of-last-resort credit facilities. The ideal or optimal safety net is one that efficiently mitigates the particular monitoring and policing difficulties that present themselves to banks, depositors, and taxpayers in the informational, ethical, legal, and economic environment of a particular country at a particular time. This means

that the optimal design and operation of a country's safety net must adapt promptly to changes in the market, legal, bureaucratic, and ethical/cultural problems the net is intended to alleviate.

For the web to establish incentives for bank and regulators that are compatible with the interests of all other parties, net design must be environment-specific. As a rule of thumb, information systems and supervisory technology for monitoring bank capital and risk exposures should be made transparent at least to outside experts and regulatory discipline should mimic market procedures.

III. Evidence of Variation in T, D, and A

Depositors want to be sure that deposit interest rates fairly compensate them for the risk exposures that bank loans and investments pass through to them. The "information" needed to benchmark this compensation consists of valid facts and projections that would help a well-trained financial analyst to calculate the market value of bank net worth as the difference between present discounted values of bank assets and liabilities.

When a nation's financial markets inaccurately identify and price risks, they misdirect savings and investment. Such misdirection undermines a nation's economic growth and well-being. It is helpful to think of bank disclosures as coded messages and information as a meaning that depositors and regulators can, with effort and then only imperfectly, extract from bank disclosures. Extraction is imperfect for two reasons: because banks have a legitimate interest in reserving proprietary information for their own use and because they may want to conceal potentially damaging information from other parties.

Variation in Informational Transparency

Bank regulators are supposed to identify and promptly correct material misinformation. The less effectively the ethical norm of "fair dealing" constrains the business dealings of corporate and government officials in a given country, the more thoroughly safety-net managers ought to doublecheck data provided by banks and bank borrowers. However, as a practical matter, strong incentives may push regulators in the reverse direction. The less effectively ethical norms and investigative journalism constrain government officials, the more likely it becomes that safety-net managers may be enlisted to use their instruments to help banks and at least some bank customers to exploit taxpayers.

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In financially sophisticated environments, the reliability of disclosures about bank values is tested and disciplined --albeit imperfectly-- by an array of outside parties. Rules governing bank disclosures come both from statutory and administrative law. Statutes are shaped in legislatures. Regulations governing how to value and itemize sources and uses of funds are established by administrative agencies and self-regulatory organizations. Enforcement by rulemaking entities is subject to due-process and constitutional review by a nation's judiciary system.

Dishonest corporate and government reporting is additionally deterred by the knowledge that information flows will also be reviewed informally by private "watchdog institutions:" professional accountants, credit bureaus, credit-rating agencies, an independent financial press, investment advisors, and academic researchers. However, the information-verification mission of these watchdogs often conflicts with their other economic interests. Hence, even in high-income countries, interinstitutional competition may be weak, reporting standards may be relatively uninformative, and validity checks on bank and borrower disclosures may allow a great many informational impurities to survive the smelting process.

Modelling Transparency. Across countries, informational transparency (T) varies with accounting integrity (AI), ethical norms (EN), press freedom (PF), and the quality and credibility of compensating restraints that regulators --such as securities and exchange commissions-- place on financial transactors (R). In symbols:

$$T = T \ (AI, EN, PF; R). \tag{1}$$

Several research institutions rate in different ways the quality of information available to depositors and taxpayers in different countries. Table 1 reproduces measures of the relative informativeness of a country's accounting standards, the degree of corruption observed in government or business transactions, and the extent of press freedom. The table shows that the quality of relevant information varies greatly across countries. The table also indicates that what we may call accounting and ethical "integrity" correlate positively with press freedom and each other and also with the level of a country's per capita income. Across the 41 countries for which the spottier accounting index exists, accounting integrity and 1990-1995 average real per capita GDP show a correlation of .59, while the correlation coefficient for accounting integrity with ethical integrity and press freedom in this subset of countries is .63 and .40, respectively. The first principal component of the three information variables explains 73.4 percent of their joint

variance. For the 66 countries for which the corruption index has been constructed, the first principal component of the press-freedom and corruption indexes explains 80.1 percent of these variable's joint variance and the correlation of ethical integrity with per capita GDP is .80. The index of press freedom (which is actually available for 73 countries) shows an r=.67 with per capita GDP.

These correlations suggest not that the level of development determines the level of informational transparency or <u>vice versa</u>, but that both variables are simultaneously determined by omitted variables. These omitted variables may be interpreted as a culture's shared beliefs about what kinds of misrepresentation and counterparty exploitation are tolerable and intolerable. In effect, per capita GDP is an imperfect control for evolving social and cultural attitudes that strengthen the enforceability of financial contracts.

For a safety net to operate fairly and efficiently in environments where informational and ethical integrity are low, the policy-making process of selecting design features must be open enough to establish accountability between regulators and taxpayers. Political Accountability increases with the freedom accorded a nation's press and with the political and economic freedoms it grants its citizens to challenge government policies. However, the correlation of measures of ethical integrity with the Freedom House Index of press freedom and Heritage Foundation indexes of economic freedoms suggests that accountability is often weak in the particular countries where it most needs to be strong.

Where accounting integrity meets a minimum standard of informativeness, independent credit-rating agencies can consolidate a bank's accounting disclosures into a measure of the risk the bank passes through to its depositors. We have examined Moody's annual system-wide "bank credit-rating proxy" (CR) from 1987 to 1997. Although the number of countries Moody rates expanded over time, the data show many gaps and cover at most about 50 countries. In many low-income countries, a sizeable portion of the banking industry is yet to be rated. In these countries, transparency is so weak that the outside monitoring embodied in the credit-rating proxy provides only an incomplete doublecheck of the reliability of self-reported banking information.

<u>Variation in Depositors' Deterrent Capacity</u>

Information is costly to obtain and contracts are costly to enforce. Given a country's level of informational transparency, an individual depositor's ability to protect itself from

looming bank or borrower defaults is limited by the deterrent rights and enforcement powers the legal system conveys to contracting counterparties. Depositors may be regarded as holding claims that convert into implicit equity positions when a bank becomes insolvent and convert into a pro rata claim on bank assets when an insolvent bank is put into liquidation. Similarly, a portfolio of contingent equity positions in a bank's corporate borrowers is imbedded in the value of bank's loans. The value of these contingent claims sets a floor on the losses creditors experience when banks or their borrowers choose to default.

Modelling Deterrency. All defects in counterparty rights, in their enforceability, or in judicial and bureaucratic efficiency leave financial markets less complete and banks and bank depositors more vulnerable to default. Deterrency (D) depends on a country's systems for policing corporate governance (CG) and property rights (PR):

$$D = D(CG, PR; T) \tag{2}$$

Weaknesses in D disadvantage banks as lenders, their depositors as creditors, and taxpayer-owners of the financial safety net. Where counterparty rights are poorly protected, a rational saver will always be reluctant to trust its funds to unrelated parties. Table 2 summarizes cross-country differences in corporate governance, while Table 3 reports measures of broader property-rights protection. These tables show that legal constraints on opportunities for a "controlling-insider" to exploit creditors and minority shareholders differ greatly around the globe.

In each table, countries are grouped by per capita income. Much as we found for the informational-integrity variables arrayed in Table 1, alternative measures of deterrent protections prove highly correlated with one another and the level of deterrency increases on average as per capita income rises. Because so high a degree of multicollinearity undermines the interpretability of regression coefficients, our statistical analysis focuses on correlation and multiple-discriminant analysis.

For the 41 countries where the relevant indexes of accounting and ethical integrity both exist, each correlates positively with the various indexes of counterparty protections. The correlation between accounting integrity and the five property-rights indexes in Table 3 ranges from .53 to .67. The correlations the property-rights indexes show with per capita GDP and ethical integrity run even higher, ranging from .77 to .89.

The corporate-governance variables are less collinear than the property-rights indexes. Seven eigenvalues of the corporate-governance covariance matrix exceed the random-correlation benchmark of unity, while only the first eigenvalue of the property-rights matrix does and the corresponding eigenvector is able to explain 84.8 percent of the joint variance. This collinearity in property-rights protections reinforces our contention that unmeasured socio-cultural norms and freedoms drive these variables and encourages us to focus further analysis on the three property-rights variables that are available for most countries.

Although bank credit-rating agencies seek to overcome weaknesses in informational transparency, the profitability of doing this varies across countries with the quality and usefulness of financial information. As a result, the average proxy value (CR) Moody's reports for a particular country only covers its principal banks. As measured by CR, reported weakness correlates strongly and inversely with accounting standards ($r = -.58$), indexes of counterparty deterrent rights (the highest individual $r = -.91$), ethical integrity ($r = -.74$), and press and economic freedoms ($r = .63$ and $.73$, respectively). Because deterrent rights, press and economic freedoms, and ethical and accounting integrity are so highly correlated, the marginal influence of individual variables cannot be reliably established by their statistical significance in a multiple-regression framework (Belsley, Kuh, and Welsch, 1980). The confluence of opportunistic and disciplinary forces is so strong that at five percent significance, corporate-governance and counterparty protections do not significantly improve our ability to predict the bank credit-rating proxy. Using only the corruption index and per capita GDP as regressors to explain CR for the 51 countries for which CR exists produces satisfactory t-values and an adjusted multiple correlation coefficient R of .81. As a proxy for informational transparency, the significance of the corruption index supports two hypotheses: that informational reliability affects bank ratings and that banking fragility increases as it becomes harder for depositors and taxpayers to monitor banks and bank regulators.

Cross-Country Variation in Accountability

No existing data set specifically documents cross-country differences in top officials' accountability for safety-net performance. However, measures of central-bank independence have been compiled for 56 countries by Cukierman, Webb, and Neyapti (1992) and inverse indexes of press and economic freedoms are compiled by Freedom House and the Heritage Foundation, respectively. Each of these indexes proxies to some degree the accountability

taxpayers impose on economic policymakers in general. The freer is a country's press, the more readily taxpayers can observe and respond to government policymaking decisions. Similarly, the less coercive are a country's economic policies, the easier it is to observe circumventive behavior that both limits and underscores the potential damage that inefficient or unfair policies might otherwise generate. Finally, for central-bank or other regulatory officials, complete legal independence is the opposite of political subservience. Cukierman et al. (1992, pp. 380-381) produce a measure of the extent to which central-bank officials have the authority and autonomy to pursue the goal of price stability even when this goal conflicts with other government objectives. By extension, the more politically independent is a country's central bank, the more readily taxpayers can hold its top officials responsible for the macroeconomic effects of whatever supervisory policies the bank adopts or acquiesces in.

Like most other variables, central-bank independence and press and economic freedoms prove significantly correlated with GDP, with correlation coefficients running as high as .69. We interpret the marginal explanatory power of cross-country declines in central-bank independence or increases in economic repression as evidence of taxpayers' inability to hold safety-net managers accountable for the costs of the policies they follow.

IV. Cross-Country Differences in Deposit-Insurance Design Features

In the absence of MT and MD, depositors must watch for harm from two directions:

1. from past losses that bank insiders have managed (possibly with regulatory connivance) to conceal from public view;

2. from hidden exposures to future losses from illiquidity, bad luck, incompetence, negligence, fraud, corruption, or insolvency.

For the safety net to protect depositors from these dangers, the net's managers must incorporate design features into the mesh that counter the particular weaknesses in transparency and deterrency that characterize financial transactions in their country. To do this efficiently and fairly, the reasoning leading to particular design decisions should be made transparent to taxpayers, so that outside analysts can help them to challenge and deter decisions that threaten to harm the public interest.

In most countries, the major element of the safety net is deposit insurance. Demirgüç-Kunt and Sobacı (2000) measure the major ways that deposit-insurance coverage, management,

pricing, and funding differ across nations. Like most of the data anayzed in this paper, all but one of these design variables (the coverage limit) are classificatory in character and lack a natural scale. Since the foreign-exchange value of the individual-country limits fluctuates greatly over time, coverage limits cannot be converted to a time-consistent cross-country scale either.

Implicit vs. Explicit Coverages

The most important design feature is whether the guarantees provided to depositors are made at least partially explicit or left completely implicit. Guarantees are explicit when they are embodied in enforceable obligations that are backed by the insurer's assets as a matter of law. Losses experienced in explicit systems are usually funded from ex ante premiums or ex post assessments imposed on eligible institutions. Although implicit deposit insurance is by nature unfunded, it is important. It exists always and everywhere that banks are formally chartered by a specific government.

Guarantees are implicit when their enforceability depends on public confidence in the strength of recognized political incentives for a country's leaders to bail out or rescue stakeholders in banks that become economically insolvent. Even in an explicit system, a degree of implicit insurance comes from the incentives and discretion authorities have to treat troubled institutions mercifully. An incipient banking crisis creates political incentives for incumbent officials in any government with an explicit system to extend regulatory forbearances, subsidized loans, and unfunded de facto coverages that exceed the formal limits specified in the nation's laws and regulations. Also, in many countries, one or more banks are state-owned. For such banks, implicit deposit insurance is widely perceived to be absolute.

During the 20th Century, socio-cultural expectations and cross-country pressures have added deposit insurance to the mix of baseline governmental responsibilities in many countries. Because implicit insurance always exists, whatever explicit limits a government places on the insurance it writes matter less than it might formally appear. Politicians reserve options to extend coverages beyond formal limits at taxpayer expense when and if that serves politicians' collective interests. The probability is far from zero that extracontractual coverage will be provided when market-mimicking regulatory discipline would better promote taxpayer interests.

Explicit deposit insurance can easily constitute an entry-deterring barrier to exit. This occurs when deposit insurers allow troubled and inefficient deposit institutions to survive beyond

what we could call their "natural death." Instead of assuring the prompt exit of firms that make crippling mistakes or allow themselves to become insolvent for any reason, deposit insurance can narrow the industry's "exit drainpipe." When hopelessly insolvent "zombie" institutions are supported by government guarantees, they bid down profit margins in the industry to unsustainably low levels that render competing firms unprofitable. This is most likely to occur when politicians are unwilling to allow these institutions' contribution to politically inspired credit-allocation programs to be disrupted.

In the United States, pressure that built up in the exit drainpipe starting in the mid-1960s was released in the 1980s by an explosion of belated deposit-institution exits. Many now-departed firms were living-dead institutions whose insolvency could and should have been resolved long ago. Some of the others were marginal institutions that might have survived had their competitors' profit margins and risk-taking incentives not been allowed to become badly distorted.

Efficiency demands that society maintain economically reasonable exit pressure on poorly performing deposit institutions. Whenever deposit-insurance guarantees retard exit, new entry is discouraged and implicit risk capital that is extracted from healthy competitors and taxpayers helps ruined firms to keep themselves in play. The subsidized capital encourages the overexpansion of very-high-risk enterprises and assigns taxpayers a poorly structured option on the stock of failing banks. Taxpayers are committed to pay off future losses but receive little opportunity to participate in gains. The most that taxpayers can receive from a troubled institution is relief from the loss exposure to which bailout arrangements have committed them.

Dangers of Adopting Explicit Deposit Insurance in Poor Contracting Environments

Table 4 documents that, during the 1980s and 1990s, many low-income countries adopted explicit deposit insurance. In some countries in Asia and Europe, explicit deposit-insurance guarantees extend even to accounts whose value is denominated entirely in foreign currencies.

Introducing explicit deposit insurance imposes costs as well as benefits on any society that adopts it. The major cost is to diminish depositor discipline on bank risk-taking by strengthening the implicit guarantees that government officials otherwise convey. Explicit arrangements reinforce implicit guarantees by providing bureaucratic and political mechanisms for patching weak banks. Figure 1 indicates that explicit insurance is part of the "best practices" policy standards promulgated in IMF policy reports (Lindgren, Garcia, and Saal, 1996 and

Garcia, 1999). Whether these standards generate appropriate advice is the principal policy question addressed in this study.

Where transparency, deterrency, <u>and</u> accountability are weak, the costs of incentive conflict argue against installing explicit insurance. Contracting theory implies that the ambiguous and unfunded nature of purely implicit deposit insurance would lead depositors in poor informational and contracting environments to demand a risk premium that is broadly commensurate with the risk-taking capacity of their bank. The more completely and more reliably government or private insurers cover depositors against loss, the less incentive individual depositors have to police the risks their banks can or do take.

An unintended perversity of credible deposit insurance is that it undermines a depositor's ethical responsibility to look out for itself by gathering information about an institution's financial condition and by reacting to bad news about this condition as soon as it is received. This anesthetization of depositor concern permits minor bank insolvencies to fester and grow into deep insolvencies if the incentive system under which regulators labor leads them to duck rather than confront supervisory problems.

Whenever a country's banking system is visited with overwhelming losses, bank stakeholders may be expected to use the press and political connections to plead for taxpayer assistance. In crisis circumstances, introducing explicit deposit insurance is attractive both to stakeholders of zombie banks and to government officials as a device that can end a crisis and temporarily rescue a deeply troubled banking system without requiring the embarrassment of explicitly recognizing bank losses or imposing new taxes. When explicit deposit insurance is introduced in this way, the immediate benefits of the banking-system rescue inevitably come at the expense of longer-run deterioration in supervisory and bank risk-taking incentives. However, officials who resist bailout pressure risk the ruination of their careers. They are apt to be censured for prolonging the period of financial distress, while receiving little or no credit for the long-run benefits of rebalancing risk-taking incentives.

Adopting explicit insurance as an emergency measure threatens to enhance the danger of deeper future crises. Because explicit insurance reduces depositor pressure for transparency and deterrency, opportunities for engaging in unsound and corrupt banking practices tends to expand unless government banking supervision strengthens apace. In crisis circumstances, insurance authorities seldom receive sufficient monitoring and policing authority to compensate for the

depositor discipline their deterrent activity is bound to displace. Moreover, even in cases where the insurer's deterrent powers are sufficient in principle, safety-net managers are not made adequately accountable for using these powers in the interests of society as a whole. When these critical design features are compromised, explicit deposit insurance encourages a nation's banks to direct a considerable amount of credit to imprudent longshot investment projects that promise to waste a nation's scarce savings and reduce the present discounted value of its aggregate stock of real capital.

Confirming these concerns, Demirguç-Kunt and Detragiache (1998 and 1999b) find that, when they control statistically for the impact of exogenous crisis-generating forces, the likelihood of undergoing a banking crisis is higher in countries that have adopted an explicit deposit-insurance system than in countries in which guarantees of bank deposits are entirely implicit in character. A companion paper (1999a) by these same authors shows that open banking crises are likely to follow the lifting of binding interest-rate ceilings on deposits and that the likelihood of a crisis is higher in countries where "the rule of law is weak, corruption is widespread, the bureaucracy is inefficient, and contract enforcement mechanisms are ineffective." In these environments, capital-impaired institutions are not identified and disciplined quickly enough to avoid massive losses to insuring agencies and their taxpayer-owners. The combination of virtually complete coverage and resolution delay encourages depositors to allow weak institutions to increase risky positions until the aggregate losses become too large for the insurance system to credibly support.

<u>Deposit-Insurance Design Features Can Constrain Risk Shifting</u>

In principle, several deposit-insurance design features can constrain banks' ability to exploit weaknesses in transparency and supervisory deterrency. Market discipline can be generated by assigning private parties a clear margin of responsibility for absorbing at least some of the losses an insolvent bank accrues. The value to society of incorporating such privatizing features turns on the credibility of the expectation that government officials will force private parties to live up to their contractual responsibilities and the presumption that loss-sharing private parties will not let government procrastination expose them to increasing risks.

One way to privatize bank loss exposures is to make private parties underwrite and manage some or all of the deposit-insurance system. The Demirgüç-Kunt and Sobacı dataset

makes note of deposit insurance systems that are jointly managed by private and governmental entities and those for which responsibility for insurance is formally private.

Another way to constrain bank risk shifting is to insist that formal insurance coverage be truly incomplete. Most countries specify an upper limit to the size of deposit balance that is explicitly protected. Relatively few countries extend formal coverage to interbank deposits or accounts denominated in foreign currency. However, the Long-Term Capital Management rescue clarifies how easily and unaccountably coverage limits can be breached.

The modern literature on deposit-insurance reform stresses the social benefits of private coinsurance and reinsurance as mechanisms for disciplining and uncovering regulatory mistakes (e.g., Calomiris, 1998; Kane, 1992). Reinsurance means that portions of the insurer's contractual liability are sold to a third party. Coinsurance means that depositors are contractually required to bear a share of their bank's accrued losses when their bank fails. This share may be defined as a combination of a nonindemnifiable loss-sharing percentage and a fixed amount that the insurer deducts from each depositor's reimbursable insurance claim.

Although benefits of coinsurance cannot be realized without assured enforcement, they can be realized without turning each and every depositor into a loss-bearer. What matters is to assign to a designated class of private monitors the information and incentives they need to control bank risk-taking. About 15 countries make at least some depositors coinsure bank losses. In practice, putative loss bearers are either very large depositors, bonding companies, or subordinated debtholders.

Presumptions of politically enforced implicit coverages are particularly strong among depositors of state-owned banks. To investigate the effect of this presumption, we use the La Porta, Lopez-de-Silanes, and Shleifer (1999) cross-country index of the relative importance of state-owned banks (GB, for Government Banking presence). GB measures the percentage of aggregate assets in a country's ten largest banks that were controlled in 1995 by state-owned institutions. The index runs from precisely zero in about eight countries to precisely 100 percent in three others. The index is particularly high in socialist and ex-socialist countries. The median percentage is about 40 percent in Middle Eastern, Asian, and Latin American countries, and is notably lower for the so-called industrialized countries of Europe.

The GB variable is significantly and negatively correlated with GDP (-.34), all of the property-rights and information measures (the median r=-.40), economic freedom (r=-.58), and

three corporate-governance variables. These correlations support the complementary hypotheses that direct government banking presence is of greater importance in environments where informational integrity, deterrent rights, and accountability are weak and that a large government banking presence inhibits the development of T, D, and A.

V. <u>Correlating Deposit-Insurance Design Features with Individual-Country Characteristics</u>

Contracting theory emphasizes that counterparties face strong incentives to minimize the costs of agency. Black, Miller, and Posner (1978) conceive of a country's deposit insurers as "stepping into the shoes of individual depositors." This conception clarifies that, absent outside pressure from international institutions, conscientious officials in individual countries would design their safety net to cope with the particular deficiencies in transparency and deterrency that depositors face in their country's financial and economic environment.

This section builds on cross-country data on deposit-insurance characteristics first assembled by several researchers (e.g., Talley and Mas, 1990; Kyei, 1995; Goldstein and Turner, 1996; Lindgren, Garcia and Saal, 1996; Garcia, 1999; and Demirguç-Kunt and Sobacı, 2000). The analysis seeks to show that observable characteristics of a country's deposit-insurance system correlate significantly (at the five-percent level) with some of the proxy measures for transparency, deterrency, and accountability we have identified. Confirming that sensible bivariate correlations exist supports the hypothesis that cross-country differences in transparency, deterrency, and accountability matter. The policy implication of this finding is that IMF and World Bank personnel should recommend changes in the structure of a country's existing safety net only after carefully analyzing the impact each proposed structural change promises to have on transparency, deterrency, and accountability.

<u>Explicit vs. Implicit Coverage</u>

We define "expliciticity" (E) as the binary variable which codes a country that offers depositors explicit guarantees as one and which assigns a zero to countries that offer only implicit deposit insurance. Expliciticity is insignificantly correlated with government banking presence (r=-.08). However, expliciticity does correlate significantly and sensibly with other potential determinants: with per capita GDP, the corruption index, the three accountability indexes, the rating proxy, the concentration index, the first two property-rights indexes, and nine indexes of corporate governance. Countries with substantial press and economic freedom, low

banking concentration, central-bank independence, good property-rights scores, good rule-of-law scores, German or Scandinavian legal origins, and high per capita GDP are apt to have explicit deposit insurance. Countries that restrict managers' ability to block shareholders from voting and to disadvantage creditors in various ways are significantly more apt to restrict themselves to implicit deposit insurance. The explicit-insurance dummy variable shows a strong correlation with the fiscal-capacity variable, per capita GDP (r=.42). Among the corporate-governance variables, the highest correlations occur for the management-does-not-stay dummy (r = -.63) and the index of creditor rights (r = -.55). Unless a creditor has access to reliable public information and the capacity to win and exercise deterrent rights, it is unlikely that a country's insurer could be relied upon to wield taxpayer rights effectively either.

Three corporate-governance indexes are always associated with explicit deposit insurance: German legal origins; no automatic stay on creditors' right to the secured assets of a reorganizing firm; and creditors' ability to restrain managerial efforts to throw their firm into a court-protected reorganization. As a predictor of expliciticity, a probit equation that uses the management-does-not-stay dummy as its sole explanatory variable achieves a pseudo-R^2 of .36 in the 47 countries for which both variables are coded. Introducing per capita GDP or indexes of accountability in stepwise fashion cannot significantly improve upon the benchmark performance of this straightforward creditor-rights explanation.

An alternative way to generate a benchmark equation for E is to consider as predictors the first few eigenvectors of the 17x17 covariance matrix of corporate-governance variables. Such eigenvectors are frequently called "principal components." The first three principal components of the larger set show correlation coefficients of -.49, +.23, and .25, respectively. When all three are inserted into a probit model, only the first component is significant and the pseudo-R^2 is .285.

Privatization Features

Conventional wisdom maintains that private-sector funding and involvement in deposit-insurance management enhances regulatory incentives to monitor and discipline inappropriate bank risk-taking. Private loss-bearers are expected to press for risk-control systems that substitute economic efficiency for political expediency.

Private participation in deposit-insurance management (PM) is significantly and positively correlated with all five property-rights indexes, with confiscation risk and rule of law

showing the highest coefficients (.42 and .44, respectively). Private management participation also correlates significantly with per capita GDP (r=.51), ethical integrity (r = .50), press freedom (r=.43), and most measures of economic freedom (r ≈ .34).

A probit model that recodes private management as unity and joint or government management as zero and uses confiscation risk and press restriction as explanatory variables achieves respective z-values of 2.54 and 2.11 and a pseudo-R^2 of .46. This equation supports the hypothesis that reliable press reports and rule-of-law deterrent rights are necessary before taxpayers and depositors can be persuaded to put much confidence in a private fund. Introducing per capita GDP and bureaucratic quality in stepwise fashion does not significantly improve the model's predictive performance. An alternative benchmark probit equation using the first principal components of the property-rights and information variables achieves a pseudo-R^2 of only .25.

Whether a country explicitly funds its deposit-insurance obligations from bank or government sources correlates significantly with per capita GDP (r=-.35), the focal three property-rights variables (r≈-.37), and preemptive rights (r=-.45). The negative sign of these correlations broadly supports the hypothesis that as a device for creating public confidence explicit funding protects depositors from weaknesses in deterrent rights and government fiscal capacity.

Binary variables for other privatization features are not significantly correlated with per capita GDP, central-bank independence, nor with any of the informational-integrity variables. However, some other privatization features do correlate with one or another of the property-rights and corporate-governance variables.

Figure 2 depicts the cross-country trend in adopting explicit insurance over time. For 66 of the 68 adopting countries, we found data on 1995 GDP at market prices. In this sample, the date of a country's adoption correlates negatively with GDP and positively with press freedom and ethical integrity. The following regression equation uses YR to represent the year of adoption and GDP to represent 1995 GDP in billions of U.S. dollars:

$$YR = 1988.3 - .00067GDP, \quad R^2 = .32, N = 66$$
$$(t=1404.6) \quad (t=-5.67)$$

Many recent adoptees show extremely low per capita GDP and a contracting environment that is so lacking in credibility that it doesn't even register on some of the radar screens from which we have constructed proxies for transparency, deterrency and accountability. The 40

adopting countries in our principal sample all had explicit insurance by 1998. For these 40 countries, the binary variable designating whether coinsurance exists (CI) correlates significantly only with confiscation risk (r=.39) and the condition of being funded partly or exclusively from government sources (r = -.42). Nevertheless, all 13 countries in our sample which give shareholders a preemptive right to buy shares in new issues formally incorporate coinsurance into their deposit-insurance system. Using per capita GDP and the first principal components of information, corporate-governance, property-rights, and accountability variables probit analysis proves unable to satisfactorily benchmark the decision to incorporate coinsurance. No individual coefficient proves statistically significant and the pseudo-R^2 is only .14.

Principal-Components Analysis of Design Features

For the sample of countries for which data on design features could be assembled in early 1999, Demirgüç-Kunt and Sobacı (2000) report on eight focal dimensions of individual-country safety nets. These dimensions include E, CI, PM, whether and how guarantees are funded, the existence of nominal coverage limits, involuntariness of membership, and whether foreign-denominated and interbank deposits are also insured. The collinearity that is observable in the design features suggests the value of using principal-components analysis to fashion a few summary measures of the net's character (Demirguç-Kunt and Detragiache, 1999b). Principal-components analysis estimates linear combinations of features ("factors") that reproduce the covariance observed in individual elements. Eigenvectors of the covariance matrix whose corresponding eigenvalue is less than unity are interpreted as sources of random covariance.

Table 4 shows that only the first three eigenvalues of the covariance matrix of the eight major design features exceed unity. Cumulatively, their corresponding factors explain 61.6 percent of the variance in design features. To have any inferential value, the coefficient loadings that each principal component assigns to individual features must have an economic interpretation. Table 5 reports the value of the three factors for each of the 40 countries whose design features we analyze and assigns a tentative interpretation to each of them.

The first two components are easy to interpret. The first is a summary measure of the degree to which the net is subject to private market discipline. This factor places heavy weights on PM, net funding from private sources as opposed to government sources, and coinsurance. The second component measures the breadth of the bank liabilities the net covers. It assigns

very high weights to the binary variables for compulsory membership and coverage of foreign-denominated liabilities.

The significance of the third component is more marginal and its interpretation is less straightforward. Its heaviest weight falls on coverage limitations, but the effect of limitations is cancelled out for countries in which private funding and coinsurance are deployed. Since the cancelling features <u>increase</u> the credibility of coverage limits, the value of the third factor will be largest in countries where formal coverage limits **lack credibility**. In such countries, limits act in an accounting sense as potentially disinformational devices that make it easier to keep growth in implicit government guarantees from registering in the insurer's accounts. Granting the need to delete countries (such as Denmark) where regulators' credibility can be established on grounds other than privatizing features, we can interpret the third factor as a proxy measure for taxpayer susceptibility to hidden risk shifting by banks. In effect, the third factor addresses cross-country differences in accountability for the cost of implicit guarantees.

VI. <u>Accountability for Implicit Coverages As a Design Feature</u>

We have emphasized that every country's safety-net managers are pushed and pulled in contradictory directions. On the one hand, managers are expected to minimize the risk of a banking disaster. On the other hand, they are expected to minimize the cost of supporting troubled banks by subjecting banks to market-mimicking disciplines. Because exercising market-mimicking discipline would help depositors to identify weak banks, if a disruptive bank run ensues, a hard-nosed net manager may expect to be heaped with blame after the fact. This expectation imposes on every net manager a painful tradeoff between the immediate bureaucratic and reputational benefits that can be reaped by being merciful to troubled banks and the unmeasured long-run costs that an insolvent bank can shift onto taxpayers when its insolvency is not resolved promptly.

Society must recognize the problem that opportunistically covering up evidence of banking trouble and engaging in costly regulatory forbearance is a rational managerial response when safety-net officials derive reputational and personal benefits from the strength of their political support. This incentive conflict is not easily resolved. Even a privately managed and funded deposit-insurance scheme enjoys implicit catastrophic taxpayer back-up. This means that formal privatization efforts are never complete. The taxpayer remains a silent partner whose

stake in implicit guarantees is both unfunded and unlikely to be formally acknowledged by the fund's managers. Unless regulatory decisions take place in a MTMD environment for taxpayers, no practical way exists to make safety-net managers fully accountable in a timely manner for managing taxpayers' economic stake in the safety net.

Taxpayers' stake consists of the value of the support they provide by explicitly and implicitly backing up the obligations of whatever government guarantees exist. In the absence of taxpayer back-up, private and government deposit-insurance managers would have to expend additional resources each year to convince their fund's counterparties that the managers can be relied upon to fulfill their contractual commitments (Merton and Perold, 1993). The capitalized value of this incremental reduction in expenses may be defined as the "risk capital" taxpayers contribute to the deposit-insurance system. Unless taxpayer-contributed risk capital earns a fair market return, deposit-insurance schemes end up subsidizing bank risk-taking.

Whenever the informational environment makes it practicable, it is desirable to make specific officials responsible for measuring the aggregate losses to which the safety net exposes taxpayers and to price and manage this exposure appropriately. However, especially in environments where reliable information is scant and corruption is rampant, adopting explicit deposit insurance with nominal coverage limits may expand implicit guarantees and short-circuit imperfect, but socially beneficial depositor discipline on bank risk-taking. In the long run, such societies are apt to pay a high price for substituting unaccountable government supervision for value-driven private supervision.

To guard against unhappy results, offering political independence to safety-net officials is not enough. A country moving to explicit deposit insurance would be well-advised to incorporate design features that promise to generate helpful private discipline on safety-net managers and bankers alike. Broadly speaking, economists have identified three such design features: improved public-service contracting, extended liability for bank stock, and privatizing design features. Although each of these features can improve supervisory incentives at the margin, none of them offers taxpayers enough transparency or deterrency to make safety-net managers fully accountable for the consequences of the disciplinary strategies and procedures they adopt. For this reason, in developing countries safety-net designers would be well-advised to adopt all three approaches in tandem.

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FIGURE 1
BEST PRACTICES FOR SAFETY-NET DESIGN ENVISIONED BY IMF RESEARCHERS

- All Countries Should Establish Explicit Deposit Insurance

- The Insurance System Should Incorporate at Least the Following Design Features:
  - Prudential regulation
  - Limitations on coverage
  - Mandatory membership
  - Political "independence" for regulatory officials.

FIGURE 2

CROSS-COUNTRY TREND IN THE ADOPTION OF EXPLICIT DEPOSIT INSURANCE
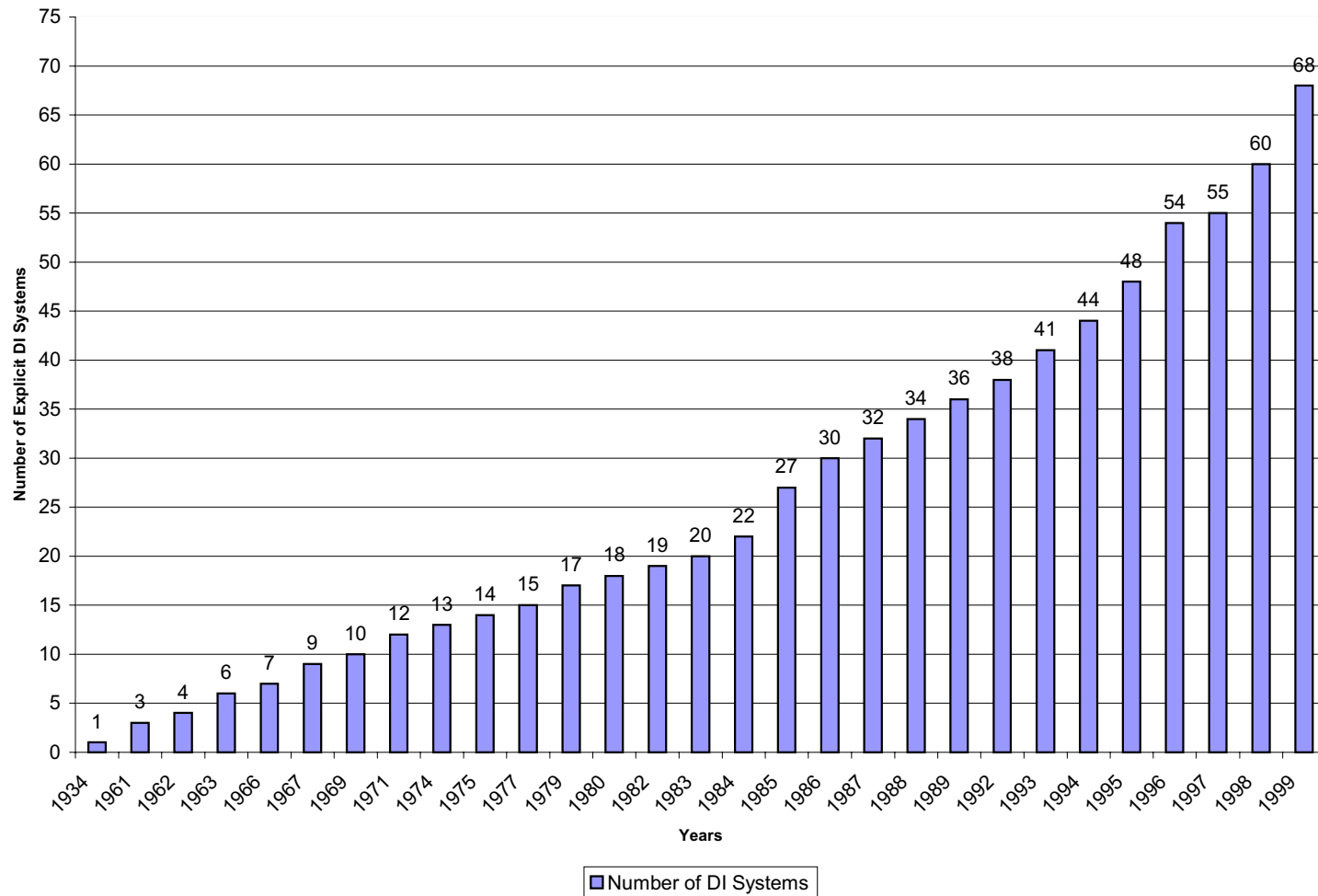
Note: Countries that have adopted deposit insurance that are not in the sample we analyzed are: Bahrain, Bolivia, Bulgaria, Cameroon, Central African Rep., Chad, Congo, Croatia, Czech Rep., Dominican Republic, Ecuador, El Salvador, Equatorial Guinea, Estonia, Gabon, Gibraltar, Hungary, Latvia, Lebanon, Lithuania, Macedonia, Marshall Islands, Micronesia, Poland, Romania, Slovak Republic, Tanzania, Uganda, Ukraine

TABLE 1
MEASURES OF CROSS-COUNTRY VARIATION IN THE QUALITY OF ECONOMIC INFORMATION

	Accounting Standards	Corruption Index	Index of Restrictions on Press		Accounting Standards	Corruption Index	Index of Restrictions on Press
High Income				**(continued)**			
Australia	75	5.11	8.8	South Africa	70	5.35	30.6
Austria	54	5.14	14.6	Trinidad & Tobago		1.80	27.6
Belgium	61	5.29	8.8	Uruguay	31	3.00	38.6
Canada	74	6.00	15.2	Venezuela	40	2.82	35
Cyprus		2.60	21.2				
Denmark	62	6.00	9.4	**Middle Lower**			
Finland	77	6.00	15.4	Bolivia		1.35	18.4
France	69	5.43	25.6	Botswana		2.30	27.4
Germany	62	5.36	14.4	China		2.55	83.8
Greece	55	4.36	28.4	Colombia	50	3.00	52.2
Hong Kong	69	5.11	32.75	Costa Rica		3.00	17.4
Iceland		3.60	12.4	Ecuador		3.11	36.4
Ireland		5.11	17.8	Egypt	24	2.32	75
Israel	64	5.00	29.2	Indonesia		1.29	71.4
Italy	62	3.68	27.8	Jamaica		1.40	14.8
Japan	65	5.11	20.2	Jordan		3.29	50.6
Korea	62	3.18	26.4	Morocco		1.80	52.4
Luxembourg		3.60	10.4	Namibia		2.60	27.2
Netherlands	64	6.00	14.8	Panama		1.20	27.8
New Zealand	70	6.00	6.8	Peru	38	2.82	58
Norway	74	6.00	6.6	Philippines	65	1.75	44.6
Portugal	36	4.43	17	Sri Lanka		3.00	46.8
Singapore	78	4.93	63.6	Thailand	64	3.11	39.8
Spain	64	4.43	18	Tunisia		1.80	67.4
Sweden	83	6.00	10.2	Turkey	51	3.11	68
Switzerland	68	6.00	9.2				
Taiwan	65	4.11	28.4	**Low Income**			
United Kingdom	78	5.46	22.2	Bangladesh		0.85	52.8
United States	71	5.18	12.8	Cote d'Ivoire		2.30	69.2
				Ghana		1.95	61.2
				Honduras		1.20	45.6
Middle-Upper Income				India	57	2.75	42.4
Argentina	45	3.61	31.2	Kenya		2.89	59.2
Brazil	54	3.79	29.8	Nigeria	59	1.82	80.8
Chile	52	3.18	29	Pakistan		1.79	57.8
Malaysia	76	4.43	61	Zimbabwe		3.25	56.2
Mexico	60	2.86	54.4				

Accounting Standards: Index created by examining and rating companies' 1990 annual reports on their inclusion or omission of 90 items. These items fall into 7 categories (general information, income statements, balance sheets, funds flow statement, accounting standards, stock data and special items). A minimum of 3 companies in each country were studied. The companies represent a cross-section of various industry groups of which 70% are industrial companies and 30% are financial firms. Higher scores indicate better accounting standards. (Source: *International Accounting and Auditing Trends, Center for International Financial Analysis & Research, Inc.*)

Corruption: ICR's assessment of corruption in government. Lower scores indicate "high government officials are likely to demand special payments" and "illegal payments are generally expected throughout the lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax, assessment, policy protection, or loans". Scale runs from 0 to 6, with lower scores indicating higher levels of corruption. (Source: *International Country Risk Guide*)

Restrictions on Press: Assessment of repressive actions and laws, regulations, controls, and political pressures that influence media content. Score reported is the average index assigned by Freedom House staff in Annual Press Freedom Reports, 1994-1998. Scale runs from 0 to 100, with lower scores indicating greater freedom.

TABLE 2
MEASURES OF CROSS-COUNTRY VARIATION IN CORPORATE GOVERNANCE

	English	French	German	Scandinavian	One share – one vote	Proxy by mail	Shares not blocked before meeting	Cumulative voting or proportional representation	Oppressed minorities mechanism	Preemptive rights	% of share capital to call an extraordinary meeting	Anti-director rights	Mandatory dividend	Restrictions for going into reorganization	No automatic stay on secured assets	Secured creditors first	Management does not stay	Creditor rights	Legal reserve
		Legal	Origin																
High Income																			
Australia	1	0	0	0	0	1	1	0	1	0	0.05	4	0	0	0	1	0	1	0
Austria	0	0	1	0	0	0	0	0	0	1	0.05	2	0	1	1	1	0	3	0.1
Belgium	0	1	0	0	0	0	0	0	0	0	0.2	0	0	0	1	1	0	2	0.1
Canada	1	0	0	0	0	1	1	1	1	0	0.05	5	0	0	0	1	0	1	0
Cyprus	1	0	0	0															
Denmark	0	0	0	1	0	0	1	0	0	0	0.1	2	0	1	1	1	0	3	0.25
Finland	0	0	0	1	0	0	1	0	0	1	0.1	3	0	0	0	1	0	1	0
France	0	1	0	0	0	1	0	0	0	1	0.1	3	0	0	0	0	0	0	0.1
Germany	0	0	1	0	0	0	0	0	0	0	0.05	1	0	1	1	1	0	3	0.1
Greece	0	1	0	0	1	0	0	0	0	1	0.05	2	0.35	0	0	0	1	1	0.33
Hong Kong					0	1	1	0	1	1	0.1	5	0	1	1	1	1	4	0
Iceland	0	0	0	1															
Ireland	1	0	0	0	0	0	1	0	1	1	0.1	4	0	0	0	1	0	1	0
Israel	1	0	0	0	0	0	1	0	1	0	0.1	3	0	1	1	1	1	4	0
Italy	0	1	0	0	0	0	0	0	0	1	0.2	1	0	1	0	1	0	2	0.2
Japan	0	0	1	0	1	0	1	1	1	0	0.03	4	0	0	0	1	1	2	0.25
Korea	0	0	1	0	1	0	0	0	1	0	0.05	2	0	0	1	1	1	3	0.5
Luxembourg																			
Netherlands	0	1	0	0	0	0	0	0	0	1	0.1	2	0	1	0	1	0	2	0
New Zealand	1	0	0	0	0	1	1	0	1	0	0.05	4	0	1	1	0	1	3	0
Norway	0	0	0	1	0	1	1	0	0	1	0.1	4	0	1	0	1	0	2	0.2
Portugal	0	1	0	0	0	0	1	0	0	1	0.05	3	0	0	0	1	0	1	0.2
Singapore	1	0	0	0	1	0	1	0	1	1	0.1	4	0	1	1	1	1	4	0
Spain	0	1	0	0	0	0	0	1	1	1	0.05	4	0	0	1	1	0	2	0.2
Sweden	0	0	0	1	0	0	1	0	0	1	0.1	3	0	1	0	1	0	2	0.2
Switzerland	0	0	1	0	0	0	0	0	0	1	0.1	2	0	0	0	1	0	1	0.5
Taiwan	0	0	1	0	0	0	0	1	1	0	0.03	3	0	0	1	1	0	2	1
United Kingdom	1	0	0	0	0	1	1	0	1	1	0.1	5	0	1	1	1	1	4	0
United States	1	0	0	0	0	1	1	1	1	0	0.1	5	0	0	0	1	0	1	0
Middle-upper Income																			
Argentina	0	1	0	0	0	0	0	1	1	1	0.05	4	0	0	0	1	0	1	0.2
Barbados	1	0	0	0															
Brazil	0	1	0	0	1	0	1	0	1	0	0.05	3	0.5	1	0	0	0	1	0.2
Chile	0	1	0	0	1	0	1	1	1	1	0.01	5	0.3	1	0	1	0	2	0.2
Malaysia	1	0	0	0	1	0	1	0	1	1	0.1	4	0	1	1	1	1	4	0
Mauritius	0	1	0	0															
Mexico	0	1	0	0	0	0	0	0	0	1	0.33	1	0	0	0	0	0	0	0.2
Oman																			

TABLE 2 continued

	English	French	German	Scandinavian	One share – one vote	Proxy by mail	Shares not blocked before meeting	Cumulative voting or proportional representation	Oppressed minorities mechanism	Preemptive rights	% of share capital to call an extraordinary meeting	Anti-director rights	Mandatory dividend	Restrictions for going into reorganization	No automatic stay on secured assets	Secured creditors first	Management does not stay	Creditor rights	Legal reserve
			Legal Origin																
Saudi Arabia																			
South Africa	1	0	0	0	0	1	1	0	1	1	0.05	5	0	1	0	1	1	3	0
Trinidad & Tobago	1	0	0	0															
Uruguay	0	1	0	0	1	0	0	0	1	1	0.2	2	0.2	0	0	1	1	2	0.2
Venezuela	0	1	0	0	0	0	1	0	0	0	0.2	1	0			1			0.1
Middle Lower																			
Bolivia	0	1	0	0															
Botswana																			
China																			
Colombia	0	1	0	0	0	0	1	1	0	1	0.25	3	0.5	0	0	0	0	0	0.5
Costa Rica	0	1	0	0															
Ecuador	0	1	0	0	0	0	1	0	0	1	0.25	2	0.5	1	1	1	1	4	0.5
Egypt	0	1	0	0	0	0	1	0	0	0	0.1	2	0	1	1	1	1	4	0.5
Indonesia	0	1	0	0	0	0	1	0	0	0	0.1	2	0	1	1	1	1	4	0
Iran	0	1	0	0															
Jamaica	1	0	0	0															
Jordan	0	1	0	0	1	0	1	0	0	0	0.25	1	0						0.25
Morocco																			
Namibia																			
Panama	0	1	0	0															
Peru	0	1	0	0	1	0	1	1	0	1	0.2	3	0	0	0	0	0	0	0.2
Philippines	0	1	0	0	0	0	1	1	1	0		3	0	0	0	0	0	0	0
Sri Lanka	1	0	0	0	0	0	1	0	1	0	0.1	3	0	1	1	0	1	3	0
Swaziland																			
Thailand	1	0	0	0	0	0	1	1	0	0	0.2	2	0	0	1	1	1	3	0.1
Tunisia	0	1	0	0															
Turkey	0	1	0	0	0	0	1	0	0	0	0.1	2	0	1	0	1	0	2	0.2
Low Income																			
Bangladesh	1	0	0	0															
Cote d'Ivoire																			
Ghana	1	0	0	0															
Honduras	0	1	0	0															
India	1	0	0	0	0	0	1	1	1	1	0.1	5	0	1	1	1	1	4	0
Kenya	1	0	0	0	0	0	1	0	1	0	0.1	3	0	1	1	1	1	4	0
Nepal	1	0	0	0															
Nigeria	1	0	0	0	0	0	1	0	1	0	0.1	3	0	1	1	1	1	4	0
Pakistan	1	0	0	0	1	0	1	1	1	1	0.1	5	0	1	1	1	1	4	0
Zimbabwe	1	0	0	0	0	0	1	0	1	0	0.05	3	0	1	1	1	1	4	0

Legal origin: Dummy variables that identify the legal origin of the Company Law of Commercial Code of each country. (English, French, German or Scandinavian). *Foreign Law Encyclopedia Commercial Laws of the World*.

One share – one vote: Equals one if the Company Law of Commercial Code of the country requires that ordinary shares carry one vote per share, and zero otherwise. Equivalently, this variable equals one when the law prohibits the existence of both multiple-voting and non-voting ordinary shares and does not allow firms to set a maximum number of votes per shareholder irrespective of the number of shares she owns, and zero otherwise. *Company Law of Commercial Code*.

Proxy by mail: Equals one if the Company Law of Commercial Code allows shareholders to mail their proxy vote to the firm, and zero otherwise. *Company Law of Commercial Code*.

Share not blocked before meeting: Equals one if the Company Law of Commercial Code does not allow firms to require that shareholders deposit their shares prior to a General Shareholders Meeting thus preventing them from selling those share for a number of days, and zero otherwise. *Company Law of Commercial Code*.

Cumulative voting or proportional representation: Equals one if the Company Law of Commercial Code allows shareholders to cast al of their votes for one candidate standing for election to the board of directors (cumulative voting) or if the Company Law or Commercial Code allows a mechanism of proportional representation in the board by which minority interests may name a proportional number of directors to the board, and zero otherwise. *Company Law of Commercial Code*.

Oppressed minorities mechanism: Equals one if the Company Law of Commercial Code grants minority shareholders either a judicial venue to challenge the decisions of management or of the assembly or the right to step out of the company by requiring the company to purchase their shares when they object to certain fundamental changes, such as mergers, assets dispositions and changes in the articles of incorporation. The variable equals zero otherwise. Minority shareholders are defined as those shareholders who own 10 percent of the share capital or less. *Company Law of Commercial Code*.

Preemptive rights: Equals one if the Company Law of Commercial Code grants shareholders the first opportunity to buy new issues of stock and this right can only be waved by a shareholders' vote, and zero otherwise. *Company Law of Commercial Code.*

Percentage of share capital to call an extraordinary shareholders' meeting: It is the minimum percentage ownership of share capital that entitled a shareholder to call for an Extraordinary Shareholders' Meeting. It ranges from 1 to 33 percent. *Company Law of Commercial Code.*

Anti-director rights: An index aggregating the shareholder rights labeled as "anti-director" rights. The index is formed by adding 1 when: (1) the country allows shareholders to mail their proxy vote to the firm; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities in the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitled a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to 10 percent (the sample median); or (6) shareholders have preemptive rights that can only be waived by a shareholders' vote. The index ranges from 0 to 6. *Company Law of Commercial Code.*

Mandatory dividend: Equals the percentage of net income that the Company Law of Commercial Code requires firms to distribute as dividends among ordinary stockholders. It takes a value of zero for countries without such restriction. *Company Law of Commercial Code.*

Restrictions for going into reorganization: Equals one if the reorganization procedure imposes restrictions, such as creditors' consent, to file for reorganization. It equals zero if there are no such restrictions. *Bankruptcy and Reorganization Laws.*

No automatic stay on secured assets: Equals one if the reorganization procedure does not impose an automatic stay on the assets of the firm upon filing the reorganization petition. An automatic stay prevents secured creditors from gaining possession of their security. It equals zero if such restriction does not exist in the law. *Bankruptcy and Reorganization Laws*.

Secured creditors first: Equals one if secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm. Equals zero if non-secured creditors, such as the Government and workers, are given the absolute priority. *Bankruptcy and Reorganization Laws*.

Management does not stay: Equals one when an official appointed by the court, or by the creditors, is responsible for the operation of the business during reorganization. Equivalently, this variable equals one if the debtor does not keep the administration of its property pending the resolution of the reorganization process, and zero otherwise. *Bankruptcy and Reorganization Laws*.

Creditor rights: An index aggregating different creditor rights. The index is formed by adding 1 when: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of the security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. The index ranges from 0 to 4. *Company Law of Commercial Code.*

Legal reserve: Equals the minimum percentage of total share capital mandated by the Corporate Law to avoid the dissolution of an existing firm. It takes a value of zero for countries without such restriction. *Company Law of Commercial Code.*

Source: La Porta, Rafael; Lopez-de-Silanes, Florencio; Shleifer, Andrei; and Vishny, Robert W, 1998 "Law and Finance," Journal of Political Economy, 106(December), pp. 1113-1155.

TABLE 3
MEASURES OF CROSS-COUNTRY VARIATION
IN COUNTERPARTY PROTECTIONS

Country	Risk of Expropriation	Rule of Law	Contract Enforceability	Efficiency of Judicial System	Bureaucratic Quality
High Income					
Australia	8.71	10.00	3.04	10.00	6.00
Austria	9.60	10.00	3.30	9.50	5.64
Belgium	9.48	10.00	3.29	9.50	6.00
Canada	8.96	10.00	3.27	9.25	6.00
Cyprus	7.50	5.98			4.32
Denmark	9.31	10.00	3.24	10.00	6.00
Finland	9.15	10.00	3.00	10.00	6.00
France	9.19	8.99	2.47	8.00	6.00
Germany	9.77	9.23	3.40	9.00	5.96
Greece	6.63	6.19	2.33	7.00	3.36
Hong Kong	8.82	8.21		10.00	4.14
Iceland	9.25	10.00			6.00
Ireland	8.96	7.80	3.17	8.75	5.46
Israel	7.54	4.82	3.00	10.00	4.29
Italy	9.17	8.33	2.10	6.75	4.43
Japan	9.69	8.99	3.16	10.00	5.89
Korea	8.59	5.36	2.19	6.00	4.18
Luxembourg	10.00	10.00			6.00
Netherlands	9.35	10.00	3.26	10.00	6.00
New Zealand	9.29	10.00		10.00	6.00
Norway	9.71	10.00	3.43	10.00	5.32
Portugal	8.57	8.69	1.92	5.50	3.70
Singapore	8.86	8.57	3.22	10.00	5.11
Spain	8.40	7.80	2.57	6.25	4.11
Sweden	9.58	10.00	3.30	10.00	6.00
Switzerland	9.98	10.00	3.59	10.00	6.00
Taiwan	9.16	8.52		6.75	
United Kingdom	9.63	8.57	3.43	10.00	6.00
United States	9.00	10.00	3.55	10.00	6.00
Middle-upper Income					
Argentina	4.91	5.36	2.01	6.00	3.00
Barbados					
Brazil	6.30	6.31	1.97	5.75	4.00
Chile	6.80	7.02	2.44	7.25	3.36
Malaysia	7.43	6.79	2.26	9.00	3.54
Mauritius		0.00			
Mexico	6.55	5.36	1.77	6.00	2.89
Oman					
Saudi Arabia					
South Africa	7.27	4.42	2.67	6.00	6.00
Trinidad & Tobago	6.63	6.67			3.11
Uruguay	7.29	5.00		6.50	2.00
Venezuela	6.30	6.37	1.64	6.50	2.89

TABLE 3 continued

Country	Risk of Expropriation	Rule of Law	Contract Enforceability	Efficiency of Judicial System	Bureaucratic Quality
Middle Lower					
Bolivia	4.57	2.20	1.76		1.14
Botswana	6.71	8.33			3.71
China	6.29	5.97	2.00		3.04
Colombia	7.02	2.08	1.90	7.25	4.00
Costa Rica	5.79	6.67			2.89
Ecuador	5.18	6.67	1.86	6.25	3.00
Egypt	6.05	4.17	2.09	6.50	2.64
Indonesia	6.09	3.99	1.76	2.50	1.50
Iran					
Jamaica	6.46	3.51			3.04
Jordan	4.86	4.35		8.66	3.00
Morocco	5.43	4.46	1.95		2.93
Namibia	4.42	6.67			4.42
Panama	5.11	3.51			1.11
Peru	4.68	2.50	1.72	6.75	2.11
Philippines	4.80	2.74	1.75	4.75	1.46
Sri Lanka	5.25	1.90		7.00	3.00
Swaziland		0.00			
Thailand	7.57	6.25	2.23	3.25	4.39
Tunisia	5.54	4.64			3.00
Turkey	5.95	5.18	2.00	4.00	3.29
Low Income					
Bangladesh	4.09	2.26			1.21
Cote d'Ivoire	6.40	5.64	2.58		4.00
Ghana	5.77	3.33			2.71
Honduras	5.20	3.45			1.57
India	6.11	4.17	2.00	8.00	3.82
Kenya	5.66	5.42	2.16	5.75	3.61
Nepal		0.00			
Nigeria	4.36	2.74	1.68	7.25	2.29
Pakistan	4.88	3.04	1.69	5.00	2.71
Zimbabwe	5.04	3.69		7.50	3.43

Risk of Expropriation: International County Risk's (ICR) assessment of the risk of "outright confiscation" or "forced nationalization". Average of the months of April and October of the monthly index between 1982 and 1995. Scale from 0 to 10, with lower scores for higher risks. Source: *International Country Risk Guide*

Rule of Law: Assessment of the law and order tradition in the country produced by the country-risk rating agency International County Risk (ICR). Average of the months of April and October of the monthly index between 1982 and 1995. Scale from 0 to 10, with lower scores for less tradition for law and order.   Source: *International Country Risk Guide*

Contract Enforceability: Measures the "relative degree to which contractual agreements are honored and complications presented by language and mentality differences". Scored 0-4, with higher scores for superior quality.
Source: *Business Environmental Risk Intelligence*

Efficiency of Judicial System: Assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk-taking agency *Business International Corporation*. It "may be taken to represent investors' assessments of conditions in the country in question". Average between 1980-1983. Scale from 0 to 10, with lower scores for low efficiency levels.

Bureaucratic Quality: Average of "bureaucratic quality" assessment values assigned by ICRG between 1982-1995. Scored 0- 6, with higher scores for superior quality.

TABLE 4

PRINCIPAL COMPONENTS ANALSIS OF BINARY VARIABLES INDICATING EXISTENCE OF EIGHT SAFETY-NET DESIGN FEATURES AS PART OF THE EXPLICIT DEPOSIT-INSURANCE SYSTEMS OF 40 COUNTRIES

Component	Eigenvalue	Proportion of Covariance Explained	Cumulative Proportion Explained
1	2.35396	0.294	0.294
2	1.54301	0.193	0.487
3	1.03226	0.130	0.616
4	0.92069	0.115	0.731
5	0.74728	0.093	0.825
6	0.67318	0.084	0.909
7	0.41151	0.051	0.960
8	0.31811	0.040	1.000

Design Feature	Eigenvectors							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Involuntariness	0.03446	0.70951	0.13933	0.09557	0.05198	0.02037	-0.67204	-0.11001
CL	0.13924	-0.23528	0.75875	0.41237	-0.11961	0.39312	-0.00576	-0.10311
CI	0.38789	0.20163	-0.34568	0.25071	-0.63197	0.29205	0.09714	0.36390
PM	0.50853	-0.14058	0.07508	0.05889	0.51626	-0.15133	-0.16602	0.62892
Funded at all	-0.43254	0.15256	-0.16777	0.04716	0.39988	0.71419	0.11848	0.27433
Privately Funded	0.46589	-0.06180	-0.39694	0.29620	0.35720	0.20512	0.05075	-0.60133
Foreign-Den.	0.25809	0.57313	0.29976	-0.22588	0.13917	-0.05078	0.66413	-0.04658
Interbank	-0.31561	0.16250	-0.06841	0.78327	0.10107	-0.42677	0.23161	0.10139

Note: All variables are binary. Each variable takes on the value of unity when the specified design feature is present. "Involuntariness" indicates that membership is mandatory; CL indicates that nominal coverage limits are specified; CI indicates that coinsurance exists for at least some depositors; "funded at all" indicates that deposit-insurance obligations are funded in some way; "privately funded" indicates that funding comes exclusively from private sources; "foreign-Den." indicates that foreign-denominated deposits are explicitly covered; "interbank" indicates that interbank deposits are formally guaranteed.

TABLE 5

CALCULATED VALUES OF THE FIRST THREE PRINCIPAL COMPONENTS OF SAFETY-NET DESIGN FEATURES IN 40 COUNTRIES

	Eigenvector1	Eigenvector2	Eigenvector3
Countries	Degree of Privatization	Breadth of Coverage	Susceptibility to Hidden Risk Shifting
Argentina	0.974	0.997	0.708
Austria	1.328	1.107	0.927
Belgium	-0.001	1.199	1.030
Bangladesh	-0.259	0.627	0.730
Brazil	0.974	0.997	0.708
Canada	-0.574	0.789	0.666
Switzerland	1.114	-0.438	0.437
Chile	0.432	1.046	1.198
Colombia	0.279	0.928	-0.077
Germany	1.362	1.198	0.363
Denmark	-0.001	1.199	1.030
Spain	-0.001	1.199	1.030
Finland	0.508	1.058	1.105
France	1.406	0.844	0.876
United Kingdom	1.794	1.046	0.530
Greece	0.465	1.137	0.633
India	-0.001	1.199	1.030
Ireland	0.853	1.339	0.287
Iceland	0.714	1.574	-0.471
Italy	0.820	1.248	0.852
Jamaica	-0.001	1.199	1.030
Japan	-0.398	0.862	-0.028
Kenya	-0.316	1.361	0.965
Korea	-0.259	0.627	0.730
Sri Lanka	-0.293	-0.083	0.591
Luxembourg	1.794	1.046	0.530
Mexico	-0.456	1.597	0.207
Nigeria	-0.574	0.789	0.666
Netherlands	0.432	1.046	1.198
Norway	0.508	1.058	1.105
Oman	0.387	1.401	0.684
Peru	-0.001	1.199	1.030
Philippines	-0.316	1.361	0.985
Portugal	0.387	1.401	0.684
Sweden	-0.001	1.199	1.030
Trinidad Tobago	-0.316	1.361	0.965
Turkey	-0.140	1.434	0.271
Taiwan	-0.293	-0.083	0.591
United States	-0.316	1.361	0.965
Venezuela	-0.259	0.627	0.730