Designing an Incentive-Compatible Safety Net in a Financial System in Transition: The Case of Serbia

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Abstract

This paper looks at banking as a regulated industry. Inequality of information among various participants is assumed as well as the existence of different incentives. The paper argues that regulation in general and a safety net in particular are necessary to make the financial service industry operate in a safe and appropriate way. From this vantage point, transition banking and, more closely, peculiarities of the Serbian system are analysed. Some guidelines for redesigning the existing safety net in Serbian banking are proposed.

Introduction

The term 'financial safety net' covers various institutions, rules and procedures that protect the safety and soundness of the system of financial intermediation. The safety net is designed to respond to actual threats, and has to be changed as the threats change. In other words, in a dynamic financial world, a chosen safety net design must be continuously redesigned in order to remain adequate.

The new approach to risk-based technology (e.g. the new Basel Accord) is characterised by a movement away from government control over the financial sector. It calls for more effort to assess risks in more detail, to rely on non-governmental judgments about risks, and to activate market discipline (the so-called Third Pillar). All these proposals are based on an assumption that sufficiently developed and deep financial markets exist and produce security prices that can provide a good indication of a bank's (regulatee) condition. This is because prices reflect assessments derived from the best available informational arrangements. But this current vogue for exclusive regulatory reliance on institutional risk-management capacity is based on the current stance of institutional development in the most developed part of the world and therefore is not entirely appropriate for a developing country in transition.

On the other side of the equation, transition and less developed countries particularly have to bear in mind that extensive, aggressive and widely prescriptive regulation could miss the target as well (c.f. Honohan and Stiglitz (2001)). On the contrary, this can produce a rigid, inflexible, and mostly inefficient banking system. Thus, the rules have to be kept simple so as to make it easy to monitor compliance. In respect of dilemma rules vs. discretion in regulation we must consider that rule-bound regulation leads to possible over-regulation. Designing regulation to meet every possible evasive action that will inevitably be adopted by regulatory entities is a never-ending story. Expanding the scope of regulation can be understood by defining the concept of the regulatory dialectic. This well-known concept describes cyclical interaction between political and economic pressures in regulated markets, treating political processes of regulation and economic processes of regulatee avoidance as opposing forces that adapt continuously to each other, thereby spawning an increasing array of regulation. At the same time, having fewer rules gives regulators too much freedom, which could be misused. Thus, a regulatory discretion should be held inside thresholds to restrict rent-seeking behaviour. All those restrictions make bank regulation extremely complex. But besides these 'how' disputes, there are also obscurities regarding the instruments available for achieving the goal of efficient regulation.

While there is huge academic and industry interest in the area of regulation and safety net, there is no consensus on what specifically are safety net components. Often, the main components of a safety net are considered to be as follows: precise design of deposit insurance; rules and procedures for intervening in banks, and for bank closure; line-of-business restrictions; capital adequacy requirements; entry restraints; interest rate ceilings; restrictions on composition of liabilities and composition of assets. Here, the focus will be on deposit insurance design and its relationship to other safety net and regulatory components. However, before we go on to survey this policy issue, it will be useful to address some open questions that raise more or less the same issue: what is it that makes banks important, vulnerable and necessary to regulate?

Regulation of the banking industry

Value-added bank intermediation

In recent decades, the theory explaining why banks exist has experienced strong growth (see the Bhattacharya and Thakor (1993) survey, or Freixas and Rochet (1999). In short, banks are considered beneficial for the rest of the economy because they create value offering various brokerage type services, and more important qualitative asset transformation services, like term to maturity, divisibility, and credit risk and liquidity transformations. Although most of the services are provided by various types of financial intermediaries, banks are specific because they perform all those services. Besides, there are some exclusively bank-type services, for example, liquidity providing[1] as a result of the transformation of less liquid assets into liquid liabilities (demand deposits). What is also specific to the services offered by banks is their synthetic nature – in other words, other services enable the bank to offer a particular service.

According to Bhattacharya, Boot and Thakor (1998) there are two dominant paradigms for explaining the rationale for financial intermediation. One focuses on the asset side of the intermediary's balance sheet and the other on the liability side. Among the first group, the most cited is a paper by Diamond (1984)[2]. The author rationalises the intermediary as a coalition of investors that produce a cost-effective way of monitoring borrowers, avoiding multiplying costs. Diamond's intuition on cost-efficient delegation of monitoring activity abstracts from the coalition-agent part of information-based costs and, thus, the optimal size bank is infinite. However, the finding is sensitive to the assumption that cooperating agents within the bank can monitor each other costlessly. Thus, allowing for agency costs (as in Jensen and Meckling (1976)) that arise because of intra-firm incentive problems, the optimal size of a bank is finite, and the resulting benefits of an intermediated solution to monitoring problems equal monitoring costs savings net of agency cost.

On the liability side, there are the models developed by Bryant (1980) and Diamond and Dybvig (1983). A seminal Diamond and Dybvig (1983) paper points out the necessity of multiply equilibria: good and bad equilibrium or bank run. Namely, by designing a nontraded demand deposit contract bank to provide liquidity and improve risk-sharing. The agents (depositors) who need money early are offered higher pay-offs on account of agents who need no money early, than in the non-intermediary case. The effect to the economy stems from obviating the costly premature liquidation of long-term investments. However, the main shortcoming of this theory is the fact that it lacks a trigger mechanism. Anything could shift from good equilibrium to run. Bhattacharya, Boot and Thakor (1998) improved the model by allowing for private informed agents that possess exclusive information about the random project pay-off. Thus, if the value of their expected future contractual return

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[1] Some other institutions issue liabilities similar to bank demand deposits, for example, some types of open-end investment funds actually create no additional liquidity. Liabilities of the funds derive liquidity directly from its assets' liquidity, without creating new liquidity (for proof, see Diamond and Rajan (2001)).

[2] Different concepts purport to explain the role an intermediary plays in financial markets, but most differ from each other in fundamental ways. For example, Benston and Smith's (1976) transaction cost approach sees the financial intermediary as a lower transaction cost alternative. However, in countering sorts of the costs, it becomes obvious that the most important part of these costs, in the financial industry, is nothing more than different information frictions. A similar idea is found in Allen and Santomero's (1997) concept of participation costs.

(with potential default) is lower than their current withdrawal rights, they precipitate a run.

Among the recent papers addressing the nature of bank intermediation are Diamond and Rajan (2001) and Kashyap, Rajan and Stein (2002). The latter paper has been built on the recent theoretical contribution on bank-landing practice, i.e. lending through credit lines or credit commitments. The role of the bank as an insurer in alleviating credit rationing and supplying liquidity to the real sector is stressed in Holmstrom and Tirole (1997), but the paper fails to address the influence of insurance activity from the asset side on liability side design. However, in Kashyap et al (2002), the most important function of banks – that is, provision of liquidity on demand – is seen as a result of combining loan commitments and demand deposits. In addressing the question of what connects the two traditional commercial banking activities of deposit-taking and lending, the authors (ibid, p. 33) state: 'Since banks often lend via commitments, or credit lines, their lending and deposit-taking may be two manifestations of the same primitive function: the provision of liquidity on demand. After all, once the decision to extend a line of credit has been made, it is really nothing more than a checking account with overdraft privileges, so there must be synergies between the two activities.' From the theory (for a review see Ruhle, 1997, p. 149-170), we know that a loan commitment can be seen as a put option sold by the creditor. For, committing itself to extend a loan regardless of future credit condition is exactly the same as insuring the borrower against any adverse change that is likely to be important for future credit conditions. Now it becomes easy to see that liquidity creation is conditional on complete insurance. Thus, any institution that provides complete insurance could create liquidity. When granting a loan commitment (unconditional in the model sense) a bank is essentially selling complete insurance. This insurance contract covers all risks on a perpetual basis. Any limit on the contract, e.g. expiry date, limited amount, credit covenants, variable rate of interest, etc, decreases the value of the insurance contract and hence decreases the amount of liquidity created, *ceteris paribus*. However, such a bank will be both the most powerful vehicle to provide liquidity and an extremely fragile institution. To give someone complete insurance would be to keep all the risks inside the banks' own books. In reality, banks do not lend unconditionally, so that both the amount of created liquidity and the risks taken by banks are kept within acceptable thresholds. In this framework, the moneyness of any liability depends on the unconditionality of its claimholder's right to withdraw or otherwise exercise the option. However, obviously, this option is not the traded one (actually it is over-the-counter) and, therefore, implies counterparty risk. The immanent role of any regulatory instruments and safety net arrangement is to cope with this risk.

Rationale for bank regulation

For decades, banking has been a more or less regulated industry. According to Goodhart et al (2001, p. 10), the traditional rationale for bank regulation and supervision is based on four main consideration: i) the pivotal position of banks in the financial system, especially in clearing and payment systems; ii) the potential systemic dangers resulting from bank runs; iii) the nature of bank contracts; iv) the adverse selection and moral hazard associated with the lender-of-last-resort role and other safety net arrangements that apply to banks. Although the scope of public regulation could be much broader, in the area of banking, especially in emerging

markets and transition banking, the most urgent and sensitive task is to provide systemic stability.

Obviously, the failure of a bank (particularly big one) and the failure of a non-bank company could not be considered equal. Negative externalities of a bank failure are much bigger and it more instantly damages the rest of the economy. But can the banking system remain stable with no external regulation and supervision? Or can a bank with corporate governance be stable and sound? Dewatripoint and Tirole (1993) developed a model of the optimal control of (bank) firms. In this model, neither a capital requirements nor a deposit insurance system are necessary to keep a firm stable and sound. All that is needed is good corporate governance. However, though a bank *is* a firm it is certainly a very peculiar firm. It is well known that banks have mostly small and uninformed claim holders. This fact seriously limits the intensity of monitoring and outside involvement in management. Therefore, the possibility of banks to be efficiently monitored by their claim holders seems to be quite low. But, at the same time, to delegate monitoring to a government body assumes a web of agency relations which is also likely to fail, especially in a system lacking good institutional, informational and contractual backgrounds. In conclusion, building the capacity of the monitor, whoever it is, could be a primary objective in the process of designing a sound and safe financial system.

Above, we accept that a bank failure is likely to be a systemic event. The fragility of a bank merely comes from the fact that a huge part of its liabilities is on a 'first come, first served' basis, such that the terminal value of someone's claim depend on his/her position in a queue in front of the counter. This 'sequential service constraint' feature of a bank contract is essential for the bank's stability. It produces, even for rational investors, the likelihood of behaving in a run-prone manner, or, to put it another way, makes banks prone to liquidity crises.

Banks, clearly, are not regular firms and need to be regulated, but how is this to be done? Recent developments in the regulation industry highlight the changing attitude and structure of regulation. The evolution of the regulation approach in the financial service industry underlines the crucial importance of corporate governance in financial stability. Many crises and disturbances in banking and financial sector worldwide (see Goodhart et al, 2001, p. 17-37) demonstrate that external regulation was not able to ensure the soundness of financial intermediation where there were serious deficiencies in corporate governance. Even in extensively regulated systems, crises emerge, sending a message to regulators that moral hazard and adverse selection problems are far from being solved.

In the following we shall attempt to address some issues relevant to successful regulation as well as pointing out some pitfalls that need to be avoided when changing a regulatory framework from less to more explicit. In the next section, we review the theory to see how different kinds of regulatory behaviour influence the fairness of the insurance service provided by the regulator and, respectively, its influence on risk-shifting, moral hazard and incentives.

Modelling safety net pricing: What makes it worthwhile or worthless?

As we have seen above, a bank liability (disposable on demand) is imperfectly money because it still implies positive default (counterparty) risk. Because this default risk is bank-specific, exactly the same number of banks and bank-moneys circulate in a system. The institution of deposit insurance arises to eliminate this risk. However, it is

not without negative externalities. A negative implication of deposit insurance is that it renders the monitoring of banks unproductive, because all banks become equally risky, i.e. risk-free. So a deposit insurance scheme would be well-designed if it managed to trade off the expected gain from removing the residual default risk (to make demand deposits perfectly money) and the expected loss arising from adverse selection and moral hazard distortion in incentives. The pricing issues are crucial in reaching an incentive-compatible solution.

The costs of not controlling

Merton (1977) was the first to draw an insightful analogy between deposit insurance and writing a put option on bank assets. In this interpretation, bank shareholders receive the right to sell the market value of the bank's assets (denoted A) to the deposit insurer for the face value of insured deposits (exercise price, denoted D). This standard option approach is limited because it assumes that the insurer has complete regulatory control over banks. By valuing the insurer's liability as a put option the liability is modelled as 'time limited', that is, as extending only from one bank audit to another, in the time from issuing date of put option (guarantee) until the date it expires. However, a real deposit insurance contract can be modelled as a 'limited term', i.e. one-period insurance contract, only if the insurance premium is being adjusted at each audit to a new fair rate (a case of risk-based premium), or in any other case assuming a fixed premium, if the insurer had full regulatory control over banks and forced them to adjust the capital to again make the fixed premium fair. If both do not hold, than we have the case for unlimited or perpetual option, when the option price will be much higher. Pennacchi (1987) tested this empirically and gave a proof that the value of deposit guarantee varies significantly depending on whether the strong control or the weak control case is applied. The value of the perpetual American deposit insurance put, denoted as $P(A, \infty; D)$ or when normalized with $a=A/D$, than $p(a, \infty; 1)$, would be (see Allen and Saunders, 1993, p. 634, for the proof) priced as:

$$p(a, \infty; 1) = \frac{1}{1+\gamma}\left[\frac{(1+\gamma)a}{\gamma}\right]^{-\gamma} \tag{1}$$

Where $\gamma = 2r/\sigma^2 > 0$ is the stochastic variable, and σ is the standard deviation of the market value of the bank's assets (asset return volatility). Note that, in Pennacchi (1987), γ stands for binary variable, which codes 1 if the deposit insurance is variable rate or limited-term, that is, capital ratio is not adjusted, otherwise assigns 0. Thus, γ can then be interpreted as the proportion of the pre-audit insuring agency's claim eliminated by a capital readjustment following a positive net worth audit. The assumption on σ is also important for our discussion. Namely, the bank's asset return volatility, σ, is a decision variable for the bank, that is fixed prior to the pricing of the deposit insurance. The assumption that the variable is exogenous simply means that there is no moral hazard, which is the main argument of Kane (1995) against option-pricing intuition.

The costs of regulatory forbearance

An important, basic improvement of the existing option-style valuation of deposit guarantees has been done by Allen and Saunders (1993). They managed to explicitly price regulatory forbearance effect on fairness of deposit insurance pricing. Forbearance is simply a delay in enforcing a specific regulation, which, in the context of possible bank closure, means the policy of granting the institution time to return to solvency (so called 'gambling for resurrection') before final enforcement of the rule. The question of closure and forbearance is important in the context of insurance valuation, i.e. fairness of the option price, especially in valuing the size of insurance subsidies due to fixed price insurance.

The true value of deposit insurance will be below the value implied by (1) because the deposit insurer, in reality, retains the right to call for exercising the put option, before the bank's optimal exercise point, at the asset/deposit ratio denoted $\bar{a}$. Thus, call provision component of the deposit insurance cannot be negative. Its value is (Allen and Saunders, 1993, p. 636):

$$c(a,\infty;1) = a^{-\gamma}\left[a^{-\gamma+1} - a^{-\gamma} + \frac{\gamma^{\gamma}}{(\gamma+1)^{\gamma+1}}\right]. \tag{2}$$

From value additivity, the net value of federal deposit insurance to bank stockholders, denoted *i(a, ∞; 1)* evaluated as a callable perpetual American put option is obtained by subtracting the value of the call provision (2) from the value of the non-callable put (1):

$$i(a,\infty;1) = (1-\bar{a})\left(\frac{\bar{a}}{a}\right)^{\gamma} \tag{3}$$

This latest contribution in option-pricing analogy gives us the final approximation of the option-style deposit guarantee formulae (3). Since forbearance can be viewed as the failure of the insurer to exercise, immediately, its call option, the cost of forbearance can be valuated as the foregone value of the call provision.

It seems now clear that the value of deposit insurance, other things being equal, depends on i) quality of control (audit) or ability and willingness to adjust price of insurance to the risk (in both risk sensitive and flat systems), and ii) readiness to call for an option exercise (to liquidate the bank). The first explains regulatory failure in the case of a *positive* net worth audit, while the second explains failure in the case of a *negative* one. Besides the mentioned insurance design sources of moral hazard, the endogenous character of the bank risk delivers a type of moral hazard that is independent of insurance design. Kane (1995) shows that treating risk as exogenous and de-emphasizing the difficulty of enforcing capitalization requirements (i.e. influence on '*a*') in the multilateral nexus of contracts that lacks transparency is likely to produce a divergence from the actuarial neutrality principle, therefore, to transfer subsidy from ultimate cost bearers (taxpayers) to banks. The author goes on to conclude (Ibid, p. 455): 'The poorer the information system, the more burdensome the level at which capitalization requirements must be set … the more useful…market feedback…and the more urgent balanced use of the full range of loss-control instruments'. Thus, moral hazard costs and complex agency relationship make deposit insurance the most sensitive regulatory instrument.

Evaluation of the actual safety-net in Serbia's banking system

The safety net in Serbia's banking system pools together four different pillars: i) entry restrictions, ii) prudential regulation, iii) lender of last resort facilities, and iv) deposit insurance. There is no unusual limitation on bank entry (capital census is set at USD 10 million); only reciprocity provision is implemented in the case of foreign bank entry. Among the restrictions on composition of liabilities and composition of assets, the most prominent role is played by capital adequacy requirements (according to the Basel Accord). There are also specific restrictions such as that on foreign currency asset-liability mismatch (max. 5 per cent mismatch is allowed). At the same time, all ceilings on a deposit or loan rate have been lifted, so that the rates are now wholly competitively determined price variables. Other pillars will be discussed further in detail, together with some quasi-safety net components.

Using reserve requirements as a supplement to deposit insurance

What is peculiar in the banking regulatory framework is an unusual treatment of mandatory reserve requirements (minimum liquidity reserves of a bank). The mandatory reserve, which, as a rule, is implemented worldwide as an instrument of monetary regulation, in Serbia, quite on the contrary is used in a way to compensate for deposit insurance inefficiency. There are a number of factors that bring us to a conclusion like this.

First and foremost, the rate and the base have been settled on the way not to recognize the different moneyness of various bank liabilities. Namely, the rate is uniform for all liabilities regardless of their maturity, currency of denomination and type of claimholder. Thus, the base includes inter-bank deposits and other credit liabilities, as well as outstanding securities issues. For an amount of commission loans drafted that is not matched with an amount granted to a bank's loan customers, the base is cut back. Foreign exchange liabilities (demand and time deposits, saving accounts), except foreign loans, are charged a regular mandatory reserve provision. Further, the rate is especially high (30 per cent until June 2003, when it was changed to 18 per cent) and leads potentially to burdensome implicit taxation. The picture becomes straightforward when taking into account the existing difference between the interest rate being paid to banks on reserve holdings (35 per cent of the official discount rate on domestic currency balance and 20 per cent of LIBOR rates on selected foreign currency balance) and the rate charged on the gap between the prescribed and actual amount of reserves (400 per cent of the discount rate). The rate banks earn from the reserve balances is slightly but persistently lower than the competitive demand deposit interest rate. The difference is even bigger for foreign deposits and especially for longer maturity liabilities. Finally, the rate and base approved are quite resistant to any change in monetary targeting, which makes them a rather rigid instrument, not tailored to serve in fine monetary tuning.

To reduce the implicit taxation effect on banks we propose allowing for holding competitive interest-bearing assets in reserve, which is regular practice in many developed monetary systems. The last change in the level of rate made the system less restrictive-oriented, which means that authorities are becoming aware of the problem, so the system has started departing from its 'financial repression' attributes.

Lender of last resort facility

The lender of last resort facility (hereafter LOLR) in Serbia passed through three phases. The first phase was a period of extensive reliance on the facility both in supporting the liquidity of liquidity distressed banks, and also for the purpose of monetary regulation.

The picture is clear if we look at figure (1) that presents the flow of funds of the National Bank of Yugoslavia during the period from March 1994 to October 2000. The figure contains a stylised summary of seven years' monetary operations of the NBY, in terms of used apparatus and thus presents the essential part of the money-creation activity of the National Bank of Yugoslavia. The values present net changes (during a three month sequence) in the value of relevant items of NBY asset structure, grouped into six positions: foreign exchange, credit to the government, bills of exchange aquired from the open market, LOLR facilities, government bonds and discount loans to banks. The difference between the sum of positive (an increase relative to the previous one) and negative (a decrease) positions for each sequence corresponds to change in high-powered money. Moreover, changing the relevant importance of presented items tells us more about the growing commitment of the monetary authority to market-oriented instruments.

Figure 1: **NBY balance sheet assets structure**
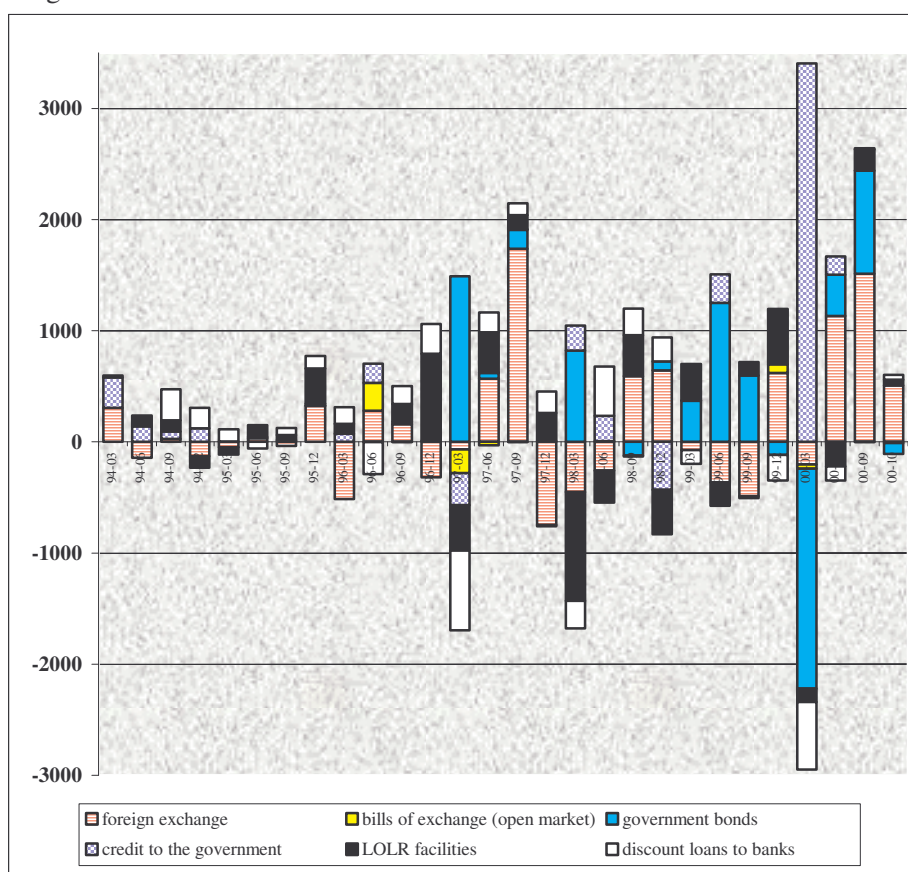
Source: Marinkovic (2002, p. 70)

LOLR facilities (different sorts of collateralised loans to banks) in the NBY balance sheet constantly take a prominent place, which means that LOLR was misused, i.e. used as an instrument of monetary regulation. This impression is

supported by the fact that the LOLR loans have *chiefly* positive signs (indicating an increase of amount) during the period from 1994 to 1998 with the exception of December 1994, March 1995, and March 1997. Afterwards the figure is either positive or negative, but still too big to be interpreted as a consequence of normal response (tuning) of the NBY to banking system liquidity needs.

The reason why the banks' reliance on LOLR facility was so extensive rests on the argument of persistent positive difference between 'federal funds rate' (*market* rate charged on short-term inter-bank loans) and the NBY Lombard rate (the rate NBY charged on short-term liquidity supporting loans). Thereafter, a bank that has had special connection to NBY Lombard window has been in a position to gain a significant margin, simply by intermediating between the NBY and ultimate borrowers, that is, liquidity deficient banks. Figure (2) presents the dynamics of those two rates for a six-year period. With the interbank rate above the Lombard rate, the NBY infringes a classic criterion of prudent LOLR, i.e. penal rate. A quite radical pattern[3] of misusing LOLR was seen during the entire period from January 1995 to the last quarter in 1998. Later, the NBY starts to support the liquidity of the problem banks more finely and oriented to market conditions. Although the NBY changed its attitude and operating targets (the lines converge) since early 1997, the Lombard rate stands constantly below the inter-bank rate ('federal-funds rate') until the third quarter in 1998.

Figure 2: **LOLR interest rate policy**
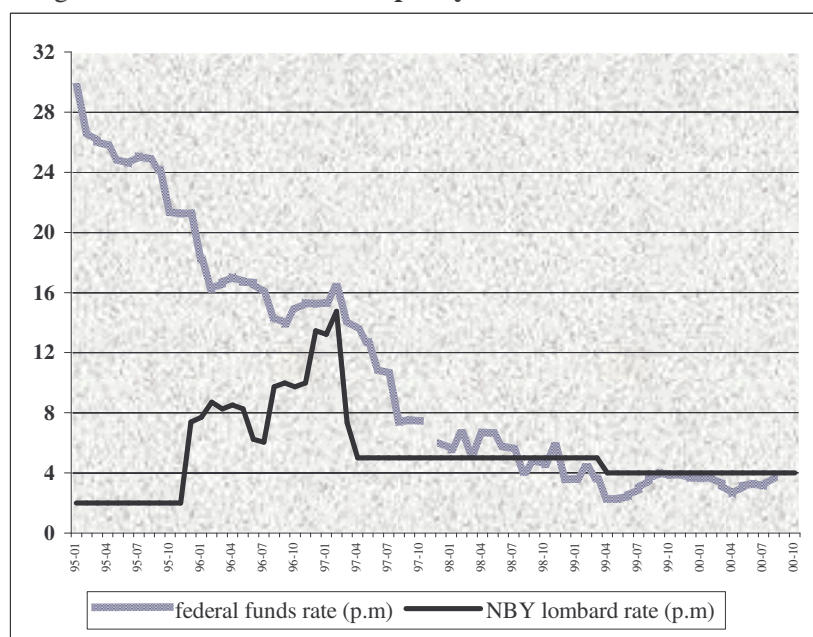
From October 2000 to April 2002, the NBY implemented a moratorium on the lender-of-last-resort facility. This could be one of the reasons for the increased risk averseness of domestic banks, and consequently, a cause of strong credit rationing. Namely, before reform started, credit rationing was a completely unknown phenomenon.

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[3] Recent evidence for the United States, suggests that the Federal Reserve did not provide LOLR support only at penalty rates or only to illiquid but solvent institutions (Benston and Kaufman, 1995, p. 233).

Since April 2002, the National Bank of Serbia has activated the facility again, ending a two-year period of moratoria. Liquidity assistance is offered to banks according to classic principles, on short-term and penal rate. Currently, overnight loans on an overdraft basis are offered 10 times a months. The loans must be collateralised with treasury or NBS bills (the safety margin is 20 per cent, i.e., an outstanding loan amount cannot be over 80 per cent of collateral value). The overnight rate is 160 per cent of the regular discount rate, while in the case of delay it would increase up to 200 per cent (NBS, 2004, p.38).

As a conclusion we underline that the problem following the use of LOLR, mostly rests on abuse of its classic prudential criteria. However, this is possible because of direct political interference in the economy and more likely because asymmetry of information makes it hard to enforce and monitor compliance to the rules. Theory recognises (Goodhart, 1999, p. 7) that accurate assessment of bank solvency is not possible when the assessor is faced with shortage of time and, especially when the current situation is crisis prone. Some proposals (Benston and Kaufman, 1995, p. 233), intended to offer a solution able to avoid painful regulatory discretion, point at open-market operation as an alternative to LOLR. The suggestion that liquidity should be provided to the banking system as a whole through open-market operations (macro-liquidity), rather than directly to individual banks through the Lombard window (micro-liquidity), rests on the assumption that the inter-bank market is not driven by asymmetric information. In that case, logically we need no LOLR. However, the practically crucial point is whether the information asymmetry and, hence, agency problem are bigger in the Lombard window or the inter-bank market. Experience with the Yugoslav episode shows that the banks, most supported by the Lombard window, were approved distressed ones and went into bankruptcy afterwards. The risk of abusing LOLR might be the reason why the authorities in Serbia refused to establish the facility until reform accelerated.

Current deposit insurance arrangement

The banking system in Serbia is in the middle of establishing a new regulatory and supervisory framework, so this is a time to channel reforms towards a safe and sound system of financial intermediation. Apart from the above shortcomings and inversions undermining the effectiveness of different supportive pillars of safety net, the deposit insurance itself is far from being efficient and productive.

Deposit insurance scheme in Serbia, although established since 1989, does not operate well yet. The Agency for Deposit Insurance, Bank Rehabilitation, Bankruptcy and Liquidation is the institution responsible for deposit insurance in Serbia. It operates as a governmental agency under the direct supervision of related government bodies. Apparently, the Agency is granted huge political independence, but it is still responsible to the government for the actions undertaken and provides annual reports to the National Bank of Serbia, Parliament and the Ministry of Finance. The governing body is delegated from the government.

Institution framework is deficient and in some ways contradictory. There is no modern Act that should provide straightforward regulation of the area. Rather there is a nexus of different legal Acts. However, the most important shortcoming of the system is funding arrangement. According to the law, the scheme should operate with funds equal to 20 per cent of the insured deposits base. However, it currently disposes of only 0.84 per cent of the deposits. The system of premiums is one of the reasons why it is so undercapitalised. The level of the deposit insurance premium is set at 0.1

per cent of insurable deposits. This level is not able to produce adequate funds for the scheme. The second reason is the lack of respectable *ex-ante* or *ex-post* funding arrangements.

Table 1: **Regional cross-country variation in deposit insurance design features**

DEPOSIT INSURANCE SYSTEMS		Albania	Bosnia and Herzegovina	Croatia	Macedonia Republic of[1]	Serbia and Montenegro
	Date Enacted/revised	2002	1998/2002	1994/2000	1996/2003	1989
Degree of Privatisation	Type	Explicit	Explicit	Explicit	Explicit	Explicit
	Membership	Compulsory	Compulsory	Compulsory	Voluntary	Compulsory
	Administration	Joint	Public	Public	Joint	Joint
	Funding	Funded	Funded	Funded	Funded	Funded
	Source of funding	Banks & Government	Banks & Government	Banks & Government	Banks & Government	Banks & Government
Breadth of Coverage	Assessment Base	Insured Deposits	Insured Deposits	Insured Deposits	Insured Deposits	Insured Deposits
	Coverage Limit	Coinsurance 92% to $6,000	$3,125	$15,300	Coinsurance 75% to $183	$90
	Foreign and Interbank	Yes; No	Yes; No	Yes; No	Yes; No	Yes; No
Susceptibility to Hidden Risk Shifting	Annual Premium	0.5% flat	0.3% flat	0.8% flat	1% - 5% risk based	0.1% flat
	Supervisory responsibility	No	No	n.a.	No	No
	Risk of forbearance	n.a.	Yes	Yes	Yes	Yes

Source: Demirguc-Kunt, A. and T. Sobaci (2001); www.dia.org; www.faod.com.ba; www.dab.hr; www.fodsk.org.mk; www.bra.gov.yu;

[1]FRY Macedonia recently shifted the system to compulsory, flat and more covered one.

The coverage amount is currently only CSD 5,000 (£50), which makes the system relatively (see Table 1) and absolutely incapable to reach the goal. The agency insures citizens' deposits up to the above limit, per depositor per bank, regardless of the type or number of deposits held in the bank. The coverage is provided both for principal and interests due. In the case of bankruptcy or liquidation, deposits in foreign currency are repaid in CSD. One of the biggest mistakes of the Serbian Agency for Deposit Insurance was avoiding a uniform payout procedure. The Agency followed a bank-by-bank approach. In most cases, the Agency used the bank in liquidation itself as the agent of deposit repayment.

Let us conclude, the system of deposit insurance is undercapitalised and operates without significant breadth of coverage, so it is unable to provide additional stability to bank intermediation. The system is still waiting to be restructured in order to be able to produce sustainable confidence and soundness of the banking system.

Transition to a reliable system

Institutional determinants of safety net

This section builds on cross-country data analysed by other authors. The analyses show that observable characteristics of a country's deposit insurance system correlate significantly with some of the proxy measures for transparency, deterrence, and accountability identified.

Table 2: **Matrix of insurance design determinants**

		Explicit Scheme	Degree of Privatisation	Breadth of Coverage	Susceptibility to Hidden Risk Shifting
Fiscal capacity	**GDP per capita**	***	***		
Quality of economic information	**Accounting standards**			*	(**)
	Ethical integrity	***	***	*	(**)
	Press freedom	***	***		
Banking system quality	**Central bank independence**	***	**		(**)
	Banking concentration	(***)	**		**
	Rating proxy	**	**	*	(**)
	Government presence		**	(*)	(*)
Corporate governance	**Preemptive rights**	**	(***)		
	Restrictions for going into reorganization	***			
	No automatic stay on secured assets	***			
	Secured creditor first	**			
	Management does not stay	(***)			
	Creditor rights	(***)			
Counterparty protections	**Risk of expropriation**	***	***		
	Rule of law	***	***		
	Contract enforceability	*	**		
	Efficiency of judicial system	*	**		
	Bureaucratic quality	*	**	*	(**)

Source: Kane (2000, p.19-22) for the red, and Barth, Caprio and Levine (2004, p. 230) for black stars;
Notes: Number of stars indicates correlation intensity. Negative correlation numbers are in parentheses

In table (2), the five most important indicators, representing mostly the level of institutional development, are matched with four broad features of a deposit insurance design. The matrix is based on the available empirical cross-country examinations. But, since the sources were not complete, statistical correlations are in some places substituted by appraisals. Five areas of institutional development are considered the most relevant in designing institutional deposit insurance: i) fiscal capacity; ii) quality of economic information; iii) banking system quality; iv) corporate governance, and v) counterparty protection. All areas are represented with at least one indicator.

Generally speaking, the low fiscal capacity certainly could undermine the very start-up of an explicit scheme, while it strongly jeopardizes achieving even elementary goals in the case of an implicit scheme. In addition, it supports higher level of privatisation feature of a scheme. As is obvious from table (2), higher quality of economic information goes together with a higher level of scheme privatisation. Further, the better counterparty (private) protection, the higher private sector involvement should be. Clearly, to have the private sector more involved in deposit insurance, reliable information and the means of protecting rights must be available. Finally, the findings on regularity between banking concentration, government presence and privatisation may be rationalised by the fact that two of those must compensate each other.

To conclude, the weaker a country's informational, ethical, and corporate-governance environment, the more a wholly governmental system of explicit deposit guarantees is apt to undermine bank safety and stability. Put positively, the design features and operating protocols of a country's safety net ought to evolve over time

with changes in private and government regulators' capacity for valuing banking institutions, for disciplining risk-taking and resolving insolvencies promptly, and for being held accountable for how well they perform these tasks. The policy implication of this finding is that any changes in the structure of a country's existing safety net should not be undertaken before carefully analysing the impact each proposed change promises to have on fiscal sustainability, transparency, deterrence, and accountability.

In studying Serbia case, we have not been able to find a specific rating for most of the variables listed in the table above, because the relevant international authorities did not report on it. Instead, we feel free to address some qualitative assessments that may be less accurate, but are useful anyway.

Fiscal capacity

The level of Serbia's GDP per capita differs among different sources of information but is in any case ranked up to the regional (SEE) average (see, EBRD, 2004, table 1.1). Beside the low absolute level of GDP, the fiscal capacity of Serbia is additionally undermined by foreign and domestic debt burden[4]. The ratio of external debt to GDP is currently 68.5 per cent, compared to the regional (SEE) average of 53.5 per cent.

Quality of economic information

With reference to the quality of economic information, some indicators might be important: i) accounting and auditing standards, ii) corruption index and iii) index of restrictions on press. First, the underlying accounting principles for the preparation of financial statements are similar to the Generally Accepted Accounting Principles (GAAP). However, there are certain departures from the International Accounting Standards (IAS) on specific accounting procedures (inflation, financial instruments, etc). Auditing is obligatory only for large and medium size companies and financial services. It has to be carried out by a local authorised auditing firm. Anyway, audit methodology and standards are not in compliance with the International Standards on Auditing. In summary, regardless of the deficiencies mentioned, and taking into account the strong decision to accept GAAP and IAS, the accounting and auditing framework could eventually be a reliable source of economic information.

Ethical integrity of a society is regularly measured by the corruption index. Transparency International reports (www.transparency.org) a high level of in-transparency and corruption in Serbian society (2000). In a sample of 90 countries, Serbia takes 89th place with a score of 1.3 (scores are ranged from the best 10 to the worst 0). More recent scores are not available, though legal reform indicates some improvements in this area. Additionally, while media freedom is getting better, it is hard to estimate whether the press freedom is high enough to compensate for deficiencies in official reporting.

Banking system quality

Relative to the quality of the banking system, Serbia is the fastest improving country in the region. However, the banking system is still inefficient: the bank interest

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[4] Madzar, Lj. says: 'A debt crisis is unavoidable ... as debt servicing will be impossible without a considerable reduction in spending, which would be politically and socially untenable' (round table on the SCG foreign debt held at the Institute for International Politics and Economy (19.05.2004)).

margin is persistently decreasing and currently amounts to 11 per cent (p.a.). Non-performing assets are a huge inherited problem of the banking industry (EBRD, 2004, p.23).

According to the Law of Central Bank, a high level of political independence is granted to the NBS. Government deficit is financed through the financial market (treasury bills) with no direct NBS lending to the government, and inflation was as targeted in the last four years.

Furthermore, 47 banks operate in Serbia, while the top five hold 51 per cent of total assets (2003). The leading bank in Serbia (Komercijalna banka, a.d.) holds only 14 per cent of total assets (www.nbs.org.yu), which means that compared to the region the system is not highly concentrated. At the same time, government share in banking system equity is above the regional average but still not so significant to indicate pervasive government presence in the industry. Finally, international rating for most domestic banks is not available.

Corporate governance

The existing corporate governance framework (Company or Commercial law, Bankruptcy and reorganisation law) has to be upgraded. Currently, relevant laws stipulate preemptive rights, priority of secured creditors, etc, but the legal framework and particularly governance itself are still deficient, especially in reference to protection of minority shareholders' rights.

An indicator of creditor rights in insolvency is provided by the World Bank (www.worldbank.org/DoingBusiness). Serbia has a medium score of 2, equal to the regional average (SEE) of 2 and weaker than OECD average of 1. Apart from the legal protection of creditor rights, an additional indicator of creditor superiority is the degree of information sharing. A public registry index covers credit information coverage, distribution, access and quality for public registries. Higher value indicates that the rules are better designed to support credit transactions. Accordingly, Serbia scores 33, compared with the regional average of 49 and an OECD average of 58. The reasons for that are the non-existence of private credit bureaux, and the low coverage of the recently established public registry.

Counterparty protection

According to a U.S. State Department source (www.CountryWatch.com) risk of expropriation in Serbia is low because no significant expropriations have occurred recently nor are any anticipated.

With relevance to 'rule of law' and judicial efficiency the marks are negative. According to the Economist Intelligence Unit (www.eiu.com) the judicial system is overburdened and inefficient. Some quantitative estimates of courts' ability to resolve insolvencies (www.worldbank.org/DoingBusiness) largely confirm the statement. Taking into account average costs and time associated with resolving an insolvency, the observance of absolute priority of claims, and the outcome is that the Serbia scores 42, relative to a regional average of 51 and an OECD average of 77 (a higher score implies a more efficient system). Additionally, the courts in Serbia seize more power and excess discretion than usual in the regional and OECD averages.

The same source (www.worldbank.org/DoingBusiness) evaluates the ease of enforcing commercial contracts in Serbia. The number of procedures, counted from

the moment the plaintiff files a lawsuit until actual payment, the associated time, and the cost (in court and attorney fees) indicate more complexity in enforcing a contract in Serbia (61) than in the rest of the region (56) and the OECD (49).

Beside overall bureaucratic quality, also relevant to counterparty protection are bureaucratic impediments that make everyday economic life more difficult. A 2003 survey by Fries et al[5] supports the view that business in the region suffers from bureaucratic obstacles while Serbia stands better than the regional average. It is placed as the median value for 14 countries in transition.

To summarize, though the findings are mixed and, in general, below the regional average and significantly below the OECD average, in the worst, the existing informational, corporate governance, legal and judiciary framework is not a serious threat to the explicit, middle privatised and selective deposit insurance system we are ready to propose.

What system best suits Serbia's institutional features?

In this section we will provide some suggestions on the optimal structure of Serbia's deposit insurance system. It should match the existing and, more fully, the anticipated institutional landscape of Serbia. To be consistent with the previous discussions all propositions will be assembled into three main groups, depending on how they influence the following criteria: i) degree of privatisation, ii) breadth of coverage, and iii) susceptibility to hidden risk-shifting.

Degree of privatisation

A deposit insurance system may operate with more or less private sector involvement. In fact, the decision to build an explicit insurance system is implied in choosing higher private sector involvement. Additionally, an explicit deposit insurance system will be more privatised if the system is funded and funds arise both from the public and private sector, membership is voluntary and selective according to actuarial neutrality principle, and private participants are highly involved in administration. Under the next subsections we will discuss these positions in more detail.

Type issue: Implicit vs. explicit insurance

An explicit insurance scheme is the superior solution, because it implies a cost effective way to generate sustainable confidence in the banking system while addressing the moral hazard issue. It makes it less likely that the government will bail out problem banks and spread subsidisation over the banks' shareholders and big creditors. However, suggestions to avoid implicit deposit guaranties, shifting the losses to depositors, may be taken seriously in designing a safety net, but not until the initial reconstruction of the current banking system. Acute distress and undermined confidence in the banking system limit the effectiveness of any rigorous policy that might lead to significant depositor participation in the cost of bank failure. This would

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[5] The survey covers data on bureaucratic business obstacles in the areas of taxation, regulation, judiciary and crime, infrastructure failure and finance, all those measured by 'excess time spent', kickbacks, overdue costs and losses.

produce systemic long-lasting negative external effects without producing any positive effect on amplifying market discipline. This is particrly reasonable when a bank's liabilities mostly consist of demand deposits, a resource whose integrity must not be put in question. Moreover, the solvency of Yugoslav banking system was surprising even for regulators and supervisors, so the expectation that systematically uninformed depositors can distinguish between bad banks and good banks seems quite unintelligent.

Private vs. public deposit insurance scheme

The dilemma of private versus public insurance is more theoretical than important for implementation purposes. Lack of timely and accurate accountability for losses has plagued government deposit-insurance schemes. In turn, weaknesses in enforcement powers and in reserve availability have undermined private schemes. However, some elements of privatising the deposit-insurance system could be beneficial, especially because it is a way to combine efficiently the greater accountability and timeliness that are characteristic of private responses with the deep pockets and strong legal empowerments possessed by a government agency (see FSF (2001) guidelines). One of the possible improvements of the public scheme is to link an insurer's cost to its particular loss exposure. This could be done by privatising some of the consequences of the loss-control decision an insurer makes. The theory (Kane, 1995) recognises two ways of doing so: i) issuing private securities and other contracts by insured, if any, and ii) issuing stock, subordinated debt, or uninsured deposits by deposit insurer. Calomiris (1999) goes further, developing the former proposal to obligate insured on subordinated debt issuance. All these proposals lie on the ground of Third Pillar recommendation of the Basel Committee to enhance market driven discipline. The approach is inevitably useful, however, in respect to the current stance in the development of domestic financial markets it could be taken only as a strategic goal.

In spite of being a public institution, the insurer must be hard budget constrained and adequately capitalised. Moreover, a public insurer should be funded by stock issues, so as to be able to offer as much information as possible to ultimate risk-bearers (taxpayers). It should be a corporation controlled by the government, i.e. the government should be a major shareholder, and with wide authorisation in auditing and monitoring banking sector. In addition, this institution must be given enough legal power to intervene if necessary.

Membership

Relative to the voluntary versus compulsory membership dilemma, we strongly opt for the former. Although a majority of actual schemes implement compulsory membership (Switzerland is a prominent global exception, as well as FRY Macedonia in the regional scale), and although in general membership should be compulsory to avoid adverse selection, in Serbia's case, voluntary access to insurance would not be a reason for many banks to stay out of the scheme. We are of the opinion that there is a strong commitment on the part of banks to participate in a deposit protection scheme and it is to be achieved regardless of legal pressure. This is simply because depositors' bad experiences in the past have made them aware of and sensitive to the existence of institutional protection, and thus creates strong incentives for banks to be part of a system.

In Serbia, depositors treat bank debt assuredly as risky. Thus, to opt out of the scheme is not a reasonable alternative, even for the best domestic banks, so the threat that they might be out and therefore adverse customer mix would undermine the system's solvency is not real. But, whether an financial institution will join a public scheme or not must not depend solely on its discretion. The insurer must be given freedom to allow an institution to join the scheme. Taking into account the distressed banking system, as it currently is, obligatory access to a scheme may just sub-optimally reduce the insurer's discretion and it is likely to increase risk that insured firms' transfer to insurer. Additionally, the question of who may join the system will have to be decided on straightforward eligibility criteria. All the banks should be required to apply for entry. This option provides a degree of flexibility for the deposit insurer to control the risks it assumes by establishing entry criteria. Rating scores by respective international houses and National Bank of Serbia prudential assessments are possible sources of information for this activity.

Part of this issue is also whether membership should be open to foreign and state-owned banks, as well as non-bank depository institutions. Any bank, foreign or state-owned, could be considered for membership according to established prudential criteria. We see no reason to restrict it, while there are a couple of reasons in favour of not restricting, such as, to ensure competitive equality, to bring such banks under the same prudential, regulatory and supervisory rules, to diversify the insurer's risk, etc. Currently, the government owns no significant stake in the industry[6] and its stake is decreasing.

However, referring to non-bank depository institutions membership, our position is different. These are less significant players in the financial service industry and also, their dominant governance concept (most of them are mutually organized saving cooperatives) make them informationally opaque. So, for them we propose staying out of the scheme.

Breadth of coverage

Certain design features that concern breadth of coverage may also mitigate the moral hazard issue. Those are limiting amount of coverage and limiting eligibility of bank liabilities, as well as funding arrangements.

Coverage and eligibility limits

Given the importance of effectively limiting coverage and contributing to financial system stability, as well keeping the requirement for information reasonable, it is preferable to apply deposit insurance on a per depositor per bank basis. According to a sample of 60 countries' established explicit deposit insurance system up to 2000, compiled by Demirguc-Kung and Sobaci (2000), the median for the coverage limit was approximately twice GDP per capita (author's calculation). This gives a preferable coverage limit for Serbia and Montenegro amounting to approx. USD 4,800.

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[6] State-owned banks own 32.4 per cent of the bank sector capital, foreign banks 19.4 per cent, private banks 39.7 per cent, while socially-owned enterprises (not restructured, yet) have majority shareholding in banks that hold 8.5 per cent of the industry capital (2003). Part of the government stake in the financial service industry will be privatised soon (Continental bank, a.d. Novi Sad, (95.74 per cents is government stake), Jubanka, a.d. Belgrade (84.58 per cents) and Novosadska banka, a.d. Novi Sad (67.63 per cents).

To sustain the fairness and cost of the scheme, certain bank liabilities must be excluded, e.g. liabilities hold by government, banks, insiders, and other big or information intensive claimholders.

Funding on an ex-ante or ex-post basis

In order to avoid dangerous delays in resolving failed banks, which leads to an increase in the cost of resolution and loss of credibility, Serbia's deposit insurance system must achieve a sound funding arrangement. Though there are many alternatives, ex-ante fund rising seems the best one. Since, we opt for *ex-ante* funding, which really means that the insurer can not reach extra sources in the event of shrinkage of the available fund, the deposit insurer should ensure that funds are well managed and readily available to cover losses as they arise. This can be accomplished by implementing appropriate investment policies and procedures, and by instituting sound internal controls, disclosure and reporting system.

Susceptibility to hidden risk shifting

This feature of a deposit insurance depends mostly on its ability to cope and correct two major problems immanent in deposit insurance, discussed in the 'pricing issues', that is: (i) the moral hazard problem that occurs for banks primarily in the form of insufficient capital and (ii) the agency problem (cost) that occurs for bank regulators primarily in the form of regulatory forbearance, with respect to both timely sanctions and closure. Generally, moral hazard is reduced by increasing the cost of poor performance through mimicking the cost the market imposes on troubled non-insured firms. Agency is improved by requiring prompt, progressively harsher and more mandatory sanctions on troubled banks in order to turn them around and, if unsuccessful, resolution before, at least in theory, the market value of capital becomes negative, so that there are no losses to depositors. Thus, we need effective pre-specified closure rules. But, even in the USA, prudential sanctions of the FDICIA were weakened (Kaufman, 1995). Other researchers (e.g. Garcia, 1995), in reviewing the implementation of the FDICIA's mandatory closure rule revealed that exceptions to the rules were overused, and the history, almost without exceptions, showed that it had been done without good reason. So, regulatory forbearance remains a reality even in well-organised and more advanced regulatory systems. A limit to regulatory efficiency is the intrinsic tension between the two tasks allocated to the regulatory agency: monitoring and intervention (c.f. Dewatripoint and Tirole, 1993, p. 30). This conflict between monitoring and intervention suggests that it might be desirable to divide tasks. The monitoring role could be given to a private or governmental agency. Here we are faced with the problem of how to get the necessary knowledge, or how to 'leverage' the available expertise, and there are two possibilities: (i) central bank employment, and (ii) franchising expertise via a credit rating agency or auditors. The intervention role might remain with the insurance agency, say. The civil servants (bureaucrats) would then not be concerned with the bad inference drawn from their intervention. When they are asked to intervene when a bank is in trouble, they are *de facto* asked to confess that they may have failed to monitor activity. Because of that, regulators worldwide often express regulatory forbearance in the closure of troubled banks. We agree upon the usefulness of capital requirements enforced by a system of structured early intervention and resolution (SEIR) by regulators to make it more

effective in discouraging poor and opportunistic management. This structure should be designed to mimic private market sanctions.

Flat-rate vs. risk-adjusted differential premium system

Information intensity of the banking business is a well accepted fact in theory and practice. The importance of this issue calls for an advanced solution. A correct assessment of a whole set of premiums or structure is a big task even for much better equipped and better-suited regulators. But the authorities have the option of implementing some conservative measures, for instance the CAMEL rating score or Basel solvency guidelines.

A possible way out of information-related inhibitions of risk-sensitive deposit insurance system is, also, a menu of regulatory instruments (Santos, 2001), e.g. lower capital requirements matched with higher insurance premiums. Thus, the decision of a regulated bank signals its true solvency or risk profile. This so-called revelation mechanism proves that with capital requirements linked to risk-sensitive deposit insurance premiums, there is an equilibrium as riskier banks choose relatively low capital requirements and high premiums, and safer banks opt for higher capital requirements and lower insurance premiums. A risk-sensitive deposit insurance pricing scheme, like this, could be incentive-compatible and avoid two undesirable features of the flat pricing scheme: (i) cross-subsidisation of riskier banks by safer counterparts, and (ii) intrusive regulatory auditing to discover banks' portfolio characteristics. However, bearing in mind the deficient accountancy/auditing framework in Serbia we cannot be strongly convinced that the proposed complex system could operate well without further improvements in the overall informational and ethical milieu.

Supervisory responsibility and cooperation with other safety net participants

Banks that are included in a deposit insurance system must be subject to strong prudential regulation and supervision. In order to economise scarce resources, this control function should be left to an existing institution, i.e. the National Bank of Serbia. Apart from being the exclusive bank supervisor for decades, the National Bank is currently making strong efforts to get itself ready for comprehensive on-site bank examinations (for the arguments in favour of holding supervisory responsibilities centralised in a transition country c.f. Goodhart, 2000, p. 48-58). Moreover, special emphasis should be placed on solving the conflict between monitoring and intervention, as we stressed above. Related to concentrating all safety net activities into a single institution, we see no role for this kind of monopolistic interventionism, although cooperation and the prompt sharing of relevant data would be surely beneficial.

Conclusion

The policy solutions for preventing bank disasters seem straightforward. Regulators should encourage shifting incentives of the bank's decision-makers in a risk-reducing direction, and should establish a competent and accountable system of public protection.

Any system of insurance pleading to be a good enough substitute for corporate governance must follow a general rule. That is, insurance activity should shift away from public institutions as much as possible, so that the main object in regulating the private sector has to be providing stimuli for the flow of information. It is well known that insurance activity assumes expertise; otherwise it will cause adverse selection and moral hazard. Especially in those systems lacking in credibility, independence, and competence, insurance should be ultimately combined with an 'easy to monitor' regulatory instrument, e.g. capital requirements.

According to the above arguments, the most effective solution for Serbia's safety net should be a mixture of capital requirements and deposit insurance. However, policy-makers should insist on the following: i) avoid implicit elements of insurance; ii) insist on well capitalised and transparent funding arrangements; iii) stimulate co-insurance imposing coverage limits and grant coverage only to informational un-intensive claimholders; iv) insurance premiums must be risk-adjusted, as much as possible; and v) combine deposit insurance with capital requirements, to avoid restrictive capital requirements that might decrease bank franchise. The capital requirements should be the central risk-adjusting element, because it is less sensitive to informational impediments.

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