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SURVEYS

Michael Faulend • Evan Kraft

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CROATIAN NATIONAL BANK

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Summary

This paper examines the potential weaknesses of Croatia's existing deposit insurance system. The major weaknesses of the system lie in design elements that prevent it from dealing adequately with moral hazard problems. Drawing on the positive experiences of numerous other countries and the EU Directive on deposit-guarantee schemes, this paper suggests ways to improve the existing system, devoting special attention to mitigating the moral hazard problem. The paper also discusses possible ways to neutralise two remaining problems: adverse selection and the principal-agent conflicts. It points out some further features of the deposit insurance system that will need to be modified to align Croatia's system with EU legislation. Finally, the paper also discusses timing issues in implementing the changes suggested.

JEL: G21, G22, O52

Key words: deposit insurance, banking system, transition economy

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At the time this paper was written, Michael Faulend was Advisor in the Research Department of the Croatian National Bank. At present, he is the Executive Director of the International Relations Area. Evan Kraft is the Director of the Research Department at the Croatian National Bank. The authors would like to thank Tomislav Galac and Velimir Šonje for their insightful comments and suggestions as well as Danijela Mladinović for her valuable assistance in collecting and processing the necessary data.

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Michael Faulend and Evan Kraft

1 Introduction

Croatia's deposit insurance (DI) system was instituted in 1998, and it encountered numerous difficulties at the very beginning of its operation. The initial problems it faced had nothing to do with poor design, but were rather problems within the banking system itself. The problems arose practically at the same time that the deposit insurance system was first implemented and lasted for almost two years. Hence, it would be most appropriate to simply characterise these initial problems that Croatia's deposit insurance system faced as due to bad timing for the start of the system.

Croatia's deposit insurance system overcame its initial problems primarily thanks to government support. Currently, it is in a phase of acquiring credibility. Although the consequences of these turbulent times can still be felt, the time now seems to be ripe to re-examine the design of the existing deposit insurance system with a view to improving the system and harmonising it with EU Directive on deposit-guarantee schemes.

In this context, this paper aims at contributing to the critical examination of the existing deposit insurance system from a scientific point of view.[2] In addition to describing theoretical discussions, which undoubtedly speak in favour of such a type of insurance, the first section of the paper presents the latest empirical findings on the real effects of deposit insurance on the financial system. The second section goes on to describe the main characteristics of Croatia's existing deposit insurance system, opening the door for the critical examination in the following section. The critical discussion identifies weaknesses and suggests improvements in line with international experience and the EU Directive on deposit-guarantee schemes. The fourth section deals with additional features of the deposit insurance system that will require modification in order to fully align Croatia's system with EU legislation. Finally, the conclusion summarises the main changes suggested and discusses timing issues regarding implementation.

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1 An earlier, shorter, and slightly different version of this paper was published in the magazine *Financial Theory and Practice*, No. 1/2004, pp. 123-139, under the title *Croatia's Deposit Insurance System: Should It Be Changed, If Yes, What Should Be Changed and When?*

2 Several papers provide critical overviews of the existing deposit insurance system from scientific and policy perspectives. See for example Šonje (1999), Faulend (2001), Ognjenović (2001), Faulend and Kraft (2004) and Faulend (2004).

2 The Effects of Deposit Insurance System: Theory and International Experience

Several arguments are usually given for deposit insurance. The first, which could be called a consumer protection argument, is that most savers do not have adequate knowledge to judge the riskiness of banks. Banks are complex and non-transparent organisations that laypeople simply cannot be expected to fully understand and evaluate. However, since for ordinary people, the large majority of their financial assets are bank deposits, an incorrect evaluation of the safety of their bank could, in the absence of deposit insurance, result in financial ruin. Deposit insurance thus represents society's taking over such risk to provide financial security for ordinary people.

The second argument, sometimes forgotten, is competitive equality. Particularly in the United States, small banks argued that large banks had unfair advantages due to their size and name recognition that allowed them to gather deposits at lower interest rates. Deposit insurance allowed the small banks to offset these advantages.[3] This argument had a strong political component, since small banks were perceived as defending local interests and as preventing unhealthy concentration of wealth and power in the big banks (Calomiris and White 1995). At the same time, the economic basis of this argument is questionable. If large banks possess economies of scale, it would seem that they are more efficient. Competitive equality, then, could be seen as a way of ensuring the survival of the inefficient – clearly not a strong economic argument.[4]

The third argument, which can be called the financial stability argument, is that bank runs can occur if savers suspect that the bank will be unable to honour all its liabilities. And, in a world of fractional reserve banking, there could be self-fulfilling panics: if enough people decide a bank has problems, then a run may occur and in fact the bank may experience problems.

Several things should immediately be said about this financial stability argument. If a run occurs on a bank that is solvent, the bank could conceivably fail simply due to lack of liquidity. That is, it could fail if it could not gain access to some form of external liquidity. Thus it would seem that runs would not cause failures of illiquid but solvent banks if external liquidity were always available to solvent banks. In general, central banks are prepared to provide such liquidity, in accordance with Bagehot's famous principle ("lend in unlimited amounts to solvent banks at non-crisis collateral values[5]").[6]

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3 It should be mentioned that only a credible deposit insurance system would be able to decrease deposit interest rate variations among banks. The Croatian case is interesting in this respect. The introduction of explicit deposit insurance in Croatia does not seem to have had a major impact on differences in deposit interest rates among banks in the last 5-6 years (see Appendix I).

4 In fact, officials of the U.S. Treasury and Federal Reserve argued against the introduction of deposit insurance (Flood 1991).

5 Where the non-crisis value of collateral means the value of collateral when there is no immediate need for sale. It is clear that in case of immediate need (a crisis), the discount at which it can be sold increases. Here, however, it would be justified to ask whether it is possible to adequately access the non-crisis value of collateral.

6 See Bagehot 1873.

Also, in many cases, banks themselves are willing to help each other out, because by doing so they avoid losses on interbank claims. Forms of private co-insurance of interbank claims have arisen in many countries, usually in association with privately owned interbank payment systems or clearinghouses.

Thus, the provision of liquidity support to solvent but illiquid banks could in theory solve the problem of runs causing the failure of solvent banks. But we can go even further. In the presence of full deposit insurance, runs could be completely prevented. All depositors would know that their deposits were safe, even if the bank failed (and even if the bank was insolvent). Thus, in a famous article, Diamond and Dybvig (1983) argued that deposit insurance is the optimal solution to the problem of bank runs, whether or not these runs are due to well-founded information about bank insolvency.

In other words, Diamond and Dybvig's article formalises the seemingly obvious argument that deposit insurance should eliminate bank runs and thus stabilise the banking system. This deserves further examination. It is not entirely obvious that bank runs lead to banking crisis. If other banks or, in a large-scale crisis, the central bank, can distinguish insolvent from merely illiquid banks,[7] then there is no reason that bank runs should cause the failure of illiquid but solvent banks. In other words, given a central bank ability to commit to providing the necessary liquidity to the banking system,[8] it is not clear that bank runs can contagiously cause a systemic crisis.

Furthermore, Calomiris and Mason (1997) offer evidence that bank runs are not indiscriminate, but actually tend to occur at banks that are truly weak. They examine the 1932 banking panic in Chicago, and show that the banks experiencing runs were generally ones with observably weak characteristics. In many cases, bank supervisors had already warned about the weaknesses of these banks. However, one large and clearly solvent bank was also subject to a run. This bank, however, was supported by other banks and later by the Reconstruction Finance Corporation (a government body set up to help ailing companies).

Of course, banking crises can occur even with deposit insurance. Bad lending practices, or macroeconomic shocks can cause widespread insolvencies. However, the point here is that deposit insurance dampens the transmission of liquidity shocks, and thus makes it more likely that the insolvent banks will not all become illiquid at the same time. And illiquidity rather than insolvency is usually the trigger for closing a bank. Thus, in a rather subtle way, deposit insurance can be argued to possibly decrease the intensity of a crisis.

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7 In practice, distinguish insolvency from illiquidity is not at all trivial. But in most cases the central bank is likely to err on the side of bailing out too many banks, so that the main danger is to the solvency of the central bank (and thus indirectly to the government budget, assuming that the central bank would be recapitalised with public funds).

8 If bank deposits are held in domestic currency, in principle the central bank could meet any demands for liquidity by creating money. If foreign exchange liquidity is needed, the story is of course different. Also, there may be other constraints (e.g. massive central bank lending may cause a currency collapse and high inflation – the example of Bulgaria in 1996 is one of a central bank effectively constrained from bank bailouts by macroeconomic problems).

At the same time, deposit insurance may have unintended effects on banks' portfolio management. Deposit insurance makes all banks equal in the eyes of insured depositors. Thus insured depositors have no motivation to monitor banks' performance. This removes an important source of market discipline, and may tempt banks to increase portfolio risk as a means of achieving higher return. In fact, Calomiris (1999) argues that the threat of bank runs can play a useful role in disciplining bank managers, forcing them to make less risky portfolio choices *ex ante*.

This problem of moral hazard is the essential weakness of deposit insurance. However, the extent of the moral hazard created in this way depends heavily on the design of the deposit insurance scheme, and on a number of environmental factors. For, as we pointed out in our discussion of the reasons for deposit insurance, if the deposit insurance scheme only covers those depositors who would not have monitored the bank effectively anyway, there should be no increase in moral hazard. The overall level of monitoring would be unchanged.

This observation suggests that deposit insurance should only cover "uninformed" depositors. But who are these depositors? The general rule of thumb seems to be that the 80% of households with the smallest deposits can be taken to be "uninformed." This is not really a number derived from precise analysis, but indeed a rule of thumb (Garcia 1999). Given this idea of covering 80% of household depositors, deposit insurance can be designed so that the largest deposit covered is the deposit of the 80th percentile household.

Garcia (1999), in her survey of deposit insurance schemes around the world, finds that the coverage limit generally runs at approximately 1-2 times GDP/capita. This is another rule of thumb that can be combined with the first, but again it is not entirely based on clear arguments. Faulend (2001, 2004), however, modified Garcia's rule and provided a departure from this rather subjective method of assessing coverage limits. He estimates a regression equation that includes GDP per capita as well as an important economic variable – the intensity of financial crises – and an institutional variable – the extent of corruption, a proxy variable for the quality of institutions. All three variables are strongly significant in simple OLS cross-country regression. The regression equation then can be used to give a coverage limit by evaluating the regression line at the parameter values of the particular country.[9] While a limited coverage level provides an important means of assuring that "uninformed" depositors will be completely protected, it may not be considered fair to assume that all depositors above the coverage level are fully informed. An alternative is co-insurance: requiring that depositors above a certain size receive only partial insurance. That is, if the bank fails, they "pay" something (do not receive the full value of their deposits). Co-insurance is much less frequent in world practice than limited coverage, and sometimes co-insurance is

9 It is noteworthy that, for example, in the case of Croatia, Faulend's method shows that the deposit insurance coverage limit should be set at a higher level than suggested by Garcia's rule-of-thumb method.

even extended to smaller depositors, presumably in an attempt to persuade them to be informed.

Another important issue is which deposits to insure. While the consumer protection motivation suggests that household deposits should always be insured, this is not actually the case. There are a few countries that only support interbank deposits, seeing the role of deposit insurance as protecting the payment system and the provision of liquidity to banks having illiquidity but not insolvency problems. While this is a relatively radical and unusual approach, there still are many differences between countries in the designation of covered deposits. Some countries do not cover foreign exchange deposits, while others do; some cover only household savings deposits, while others cover all type of deposit accounts, including those of some companies.[10]

The fact that some deposit insurance systems protect also the deposits of some companies requires a brief comment. It would seem that the argument for this would be that some businesses, presumably the smallest businesses, are also "uninformed" depositors. At the same time, large businesses are presumed to be informed. Furthermore, extending coverage to small businesses limits the economic impact of bank failure, by protecting some of the bank's customers from losses.[11]

Two other design features merit special mention. The first is the problem of adverse selection, which arises primarily when some or all banks participate in the deposit insurance system voluntarily. When participation in the deposit insurance system is voluntary, weaker banks have stronger incentive to join the system, especially if insurance premiums are not adjusted to risk exposure of each bank (Wheelock and Kumbhakar 1995). This is logical and confirms historical experience with deposit insurance systems at the turn of the 20th century. Therefore, it is no wonder that such voluntary systems were never implemented and are practically nonexistent today, except in very specific cases.[12]

When discussing premium calculation, it should be mentioned that premium calculation and collection presuppose the existence of an *ex ante* deposit insurance fund. Hence the name *ex ante* deposit insurance system. Such a system gradually accumulates assets over good years and uses them for deposit insurance payments when the times are bad. The advantage of such a system relative to an *ex post* system is the immediate access to funds when a bank fails. This decreases the need for government involvement and/or involvement of other banks, apart from the initiation of standard bankruptcy or liquidation proceedings. In other words, there are no (extraordinary) expenses to the government budget or shocks to the

10 A detailed and systematic survey of deposit insurance system characteristics by country may be found in Garcia (1999).

11 At this point, it is important to note another type of loss that arises from a bank's failure: the loss of information capital (Bernanke 1983). For example, a small company with a longstanding relationship with the bank, uses credit lines to support its operations. When the bank fails, the company is left without the possibility of renewing its credit line and it is not certain whether any other bank will grant it the same loan type/amount, because with the failure of the bank the information about the company's relationship with the bank – part of the bank's information capital – vanished.

12 For example, when in addition to a compulsory deposit insurance system there is an additional one in place aimed at protecting savings deposits which exceed the official deposit insurance coverage limit.

liquidity of other banks arising from the need to cover the savings deposits of a failed bank that is characteristic of *ex post* deposit insurance systems (if the deposit insurance fund has accumulated enough money).

Regardless of the obvious advantages of *ex ante* deposit insurance systems, there are still several countries with *ex post* systems, like the Netherlands and Switzerland (Garcia 1999). These systems rely on the surviving banks to cover the payout to savers of a failed bank. A significant advantage of this system is in the fact that banks are not required to pay insurance premiums ahead of time, so when times are good they do not have deposit insurance costs.[13]It is worth mentioning that *ex post* deposit insurance systems are usually found in countries with very stable banking systems and very few bank failures. In addition, *ex post* systems are more appropriate in financial systems with high levels of market concentration.

Another significant design issue is whether the DI system should be run by the public or private sector. Since deposit insurance can be seen as a form of social protection, there is an argument that it should be public. However, deposit insurance benefits banks, making deposit gathering easier. Thus there is an argument for private provision, since all banks can be assumed to have an incentive to build depositor confidence. Nevertheless, one should be extremely careful when tackling the governance question because governance is the main source of the third, i.e. the final, deposit insurance weakness – the classic principal-agent problem.

The principal-agent problem arises when the agent to whom management or monitoring has been delegated represents his/her own interests and not the interests of the principal. In the case of deposit insurance, this problem is especially complex, since there are several interested parties (depositors, bankers and government). There are three main cases in which the principal-agent problem arises (Garcia 1999 and 2000): first, political capture, when the institution providing deposit insurance (i.e. its management) has fallen under the influence of politicians, second, regulatory capture, when the very institution providing deposit insurance serves the interest of banks and bankers rather than those of the general public (the depositors), and third, inadequate interagency coordination, resulting from the lack of cooperation and flow of information between the financial regulatory agency (the supervisor, the central bank) and the deposit insurance institution. An independent, government managed body would potentially be the most

13 It needs to be said here that recent studies have indicated some additional advantages of *ex post* systems over *ex ante* systems. Some claim that *ex post* systems have a more favourable influence on the stability of the banking system because they are presumed to give less incentive to moral hazard. Empirical research carried out by Demirgüç-Kunt and Detragiache (2002) supports this claim, but with the qualification that this does not apply to countries with good institutional frameworks (high-quality supervision). Without getting into a more detailed discussion, the authors of this paper find it impossible to draw valid empirical conclusions on the effects of an *ex ante* or *ex post* deposit insurance system on the stability of the financial system, primarily due to sample problems. Countries with highly stable financial systems usually have *ex post* deposit insurance systems, while those with less stable financial systems have *ex ante* deposit insurance systems. Moreover, the cause and effect tested in the research is more likely to function in the opposite direction, i.e. *ex post* deposit insurance system being not the cause but a consequence of a stable banking system. If this is true, the practical experience of a wide circle of countries connected to the choice of *ex post* and *ex ante* deposit insurance system, seems both logical and justified.

immune to all of these pitfalls, while input from the banking sector may be facilitated by creating an advisory body made up of commercial bankers.

There is some empirical evidence available on these design issues. Demirgüç-Kunt and Detragiache (2002) use a cross-country panel to test whether the existence of DI and various design features can explain the incidence of banking crises. Their results suggest that the introduction of deposit insurance by itself actually increases the probability of crisis. They also find that lower coverage limits, non-coverage of foreign exchange deposits, use of co-insurance, and non-coverage of interbank deposits lessens the risk of banking crisis. Very importantly, they also find that the detrimental effect of deposit insurance is greatly reduced and even completely offset if the country's institutions function well, the rule of law is upheld and corruption is low.

This last point deserves special emphasis. In a strong institutional setting, banking supervisors can detect banks that take on excessive risk, and influence their actions. Furthermore, strong legal systems allow rapid and predictable bankruptcy, making clear that risk taking banks will not survive. In such a context, deposit insurance can actually decrease the risk of crises, and achieves its additional goal of consumer protection. But in weak institutional settings, introducing DI may be counterproductive.

An additional study by Demirgüç-Kunt and Huizinga (1999) examines the impact of DI and its design features on market discipline as evidenced by deposit interest rates. They also find that introduction of DI decreases market discipline, cutting or weakening the link between deposit interest rates and bank risk. Again, they find that lower coverage limits, co-insurance, and exclusion of interbank deposits from coverage mitigates this problem. And, in contrast to the previous study, they find that coverage of foreign exchange deposits increases market discipline.

Cross-country studies of this sort must be taken with reserve, since many variables that are important at the country level may be left out either because they are not available for all countries in the sample, or because they are deemed only to affect one or a small number of countries. Still, these results do suggest the importance of designing DI schemes with a view to minimising moral hazard, even if the precise choices for a given country cannot be immediately deduced from the cross-country evidence. And a well-designed DI scheme can serve as a third pillar of financial stability, along with the lender of last resort and banking supervision.

14 Some minor changes to the initial wording of the Regulation as well as of the Act have been adopted in the meantime.

3 The Main Features of Croatia's Deposit Insurance System

The design of Croatia's deposit insurance was established by the Act on the State Agency for Deposit Insurance and Bank Rehabilitation (official gazette *Narodne novine,* No. 44/1994) and Regulation on Deposit Insurance (official gazette *Narodne novine*, No. 65/1997).[14] The Agency is founded by the Republic of Croatia, which guarantees all its liabilities. The Agency is an independent legal person, accountable to the Government of the Republic of Croatia, responsible for deposit insurance and bank rehabilitation.[15] It is run by a Management Board consisting of a chairperson and five board members.[14]Board members are government officials, appointed to and removed from office by the Government of the Republic of Croatia. They serve a six year term. The Agency's director is in charge of its operations, also appointed to a six year term and subject to removal by the Government of the Republic of Croatia. The deposit insurance system is an *ex ante* fund, compulsory for all banks and savings banks.[16] Credit unions have been explicitly excluded from compulsory membership.

One of the main characteristics of the Croatian deposit insurance system is that it covers only household deposits[18](savings deposits of natural persons), with deposits being defined as monies in domestic or foreign currency deposited in an account via a deposit account contract or a savings passbook. Giro or current account deposits are not covered by deposit insurance. It is worth noting that savings deposits by supervisory and management board members of banks and building societies are excluded from deposit insurance coverage in the institution where they perform their functions.

The amount of deposit insurance coverage is determined by the Minister of Finance. In accordance with the initial Regulation, based on the Minister of Finance decision of 20 June 1997 (official gazette *Narodne novine*, No. 67/1997) 100% of deposits up to HRK 30,000 were insured, while 75% of deposits from HRK 30,000 to HRK 50,000 were covered. However, in 1998, the Finance Minister set a new deposit insurance coverage limit (official gazette *Narodne novine*, No. 88/1998) of HRK 100,000. The determination of the amount of insurance coverage is closely connected with the determination of the manner in which savings deposits of natural persons are to be calculated. Under the Regulation, the amount of a savings deposit of a natural person at one bank is calculated as the

15 In the meantime, with the Act on Bank Rehabilitation and Restructuring of May 2000 (official gazette *Narodne novine*, No. 52/2000) going out of effect, the Agency ceased to be responsible for bank rehabilitation and restructuring and assumed responsibility for one task only – deposit insurance.

16 A subsequent amendment to the Act (official gazette Narodne novine, No. 35/2000) stipulated the following composition of the Agency's Management Board: Croatia's Prime Minister or Deputy Prime Minister as Chairperson, the Chairperson of the Parliamentary Finance and Central Budget Committee as Deputy Chairperson of the Board, and Deputy Prime Minister for Economic Affairs and the Ministers of Finance and Economy Affairs as well as the Chairperson of the Parliamentary Committee on the Economy, Development and Reconstruction as Board Members.

17 When the new Banking Act coming into effect (2002), savings banks were to be recapitalised and transformed into banks. Savings banks that did not comply were automatically placed outside the financial system. As a result, there are no savings banks in Croatia's financial system, apart from the specialised building societies, which together with banks, are included in the deposit insurance system.

aggregate amount a person's deposits, regardless of whether they are kept in one or more savings accounts in domestic and/or foreign currency, provided that the insured amount, including accrued interest, does not exceed the limit set by the Minister of Finance.

As for insurance premiums, i.e. the funding of the deposit insurance system, the Regulation stipulates quarterly premium payments of 0.2% of the total amount of insured deposits for each quarter. In addition to premiums, the Agency is funded from its own revenues and government transfers. Since the fund was established as an *ex ante* fund, the Regulation determined the manner in which initial funding was to be obtained,[19] as well as membership requirements for newly established banks.[20] The target fund size is also indirectly set, by stipulating that when the assets on the special account with the Agency exceed 5% of the total amount of insured deposits, insurance premiums for the current year may be revised downwards. The Regulation also provides for increase of insurance premiums, should the need arise, and allows for differentiated premiums.

Another important provision relates to the time limit for reimbursement of insured depositors when a bank or a savings bank fails. Under the initial Regulation, the Agency was obliged to start repaying insured deposits within 15 days following the initiation of bankruptcy proceedings. A subsequent change in the Regulation (official gazette *Narodne novine*, No. 105/1998) extended this limit to 180 days following the announcement of the initiation of the bankruptcy proceedings at a bank or savings bank in the official gazette of the Republic of Croatia.

In addition to these main characteristics, the Act and the Regulation govern other details such as the disposition of the fund's assets as well as application of penalty provisions etc.

4 Potential Weaknesses of Croatia's Deposit Insurance System and How They Can Be Improved

In our discussion of the potential weaknesses of the deposit insurance system, we will focus on how the main design characteristics work to reduce the three problems inherent in all insurance systems: adverse selection, moral hazard, and principal-agent conflicts.

A few general observations can be made at the start:

- The adverse selection problem is ameliorated by the fact that membership in the deposit insurance system is compulsory, but the lack of differentiated premiums may exacerbate adverse selection.

18 The system protects all natural persons regardless whether they are residents or non-residents.

19 All banks and savings banks that were operating at the time (1997) were required to pay a lump sum equal to 0.3% of their share capital and 0.6% of their total savings deposits (in line with the definition stipulated in the Regulation) according to data available on 31 December 1996.

20 Membership is compulsory, which means that a new bank receives its operating license only if an amount equal to 0.3% of its planned share capital has been credited to the Agency's account.

- Efforts to minimise the moral hazard problem are negatively affected by the fact that exemptions from deposit insurance are too narrowly defined, and are inadequate, to say the least. In addition, there is no co-insurance clause, while the deposit insurance coverage limit may also be questioned.
- As regards principal-agent problems, it is positive that banks themselves finance the system by paying insurance premiums, that the fund was established as an *ex ante* fund and that it is managed by a government body. Nevertheless, the actual independence of the body is debatable. Furthermore, as the exclusion of commercial bankers and savers from even an advisory role in decision-making seems unfortunate.

This short overview makes it clear that Croatia's deposit insurance system is vulnerable to moral hazard. Thus, it is logical that this is the area in which improvement can be expected to have the greatest positive effect, and our suggestions for improvement start with ways to combat moral hazard.

4.1 Mitigating the Moral Hazard Problem

As was discussed above, the moral hazard problem is greater in systems with relatively high deposit insurance coverage (limit). However, there are other elements of deposit insurance system design, such as co-insurance or exclusions, that may affect moral hazard positively or negatively. Before discussing the existing deposit insurance coverage limit in Croatia, it is important to distinguish between moral hazard arising on the part of savers from moral hazard arising on the part of bankers. Moral hazard on the part of savers arises in generous deposit insurance systems with a high coverage limit, no co-insurance clause and too few exclusions. These features reduce depositors' incentives to carefully choose their bank. This type of moral hazard may be contained by proper system design. In contrast to this, moral hazard on the part of bankers, reflected in greater risk-taking induced by the lack of fear that their bank will experience a run, cannot be controlled by deposit insurance design alone. Effective bank supervision plays the key role in this area, accompanied by efficient procedures for exit from the market and differentiated premiums (another deposit insurance system design element). A commonly cited rule is that deposit insurance cannot effectively perform its function of supporting the stability of the financial system without adequate bank supervision (Tigert Helfer 1999).[21]

With this in mind, one needs to bracket the role of bank supervision and the regulatory framework from the picture so as to see what it is exactly in the design of the existing deposit insurance system that prevents us from combating moral hazard more efficiently. In other words, we must review how moral hazard on the part of savers can be mitigated, because this is the only aspect of moral hazard that can be influenced by a well-designed insurance system.

21 Some recent research raises doubts as to whether countries with weak institutional frameworks (weak bank supervision) should implement explicit deposit insurance systems at all (Demirgüç-Kunt and Kane 2001).

As we noted above, deposit insurance covers deposits up to HRK 100,000, protecting 100% of the deposit account balance. To assess whether this amount is appropriate, one should review the distribution of household deposits by banks, as was done by Faulend (2001 and 2004). Bearing in mind the limitations of such analyses, their results should be taken with a grain of salt. In any case, it is noteworthy that the results of the two independent methods of analysis practically coincide. The savings deposit distribution analysis suggests a limit of HRK 60,000 while the econometric analysis using cross-country data suggest a limit within the range of HRK 60,000 to HRK 90,000 (Faulend 2004). For the purpose of a policy discussion of the question of how much the existing HRK 100,000 limit exceeds the so-called optimum limit suggested by analysis, it is not irrelevant whether the optimum limit is closer to the lower end or the upper end of the band. To be able to give a definite answer, one would need to obtain the latest data and repeat the analysis. Since such data are not available, one must make use of one's intuition, which in this case says that it is more likely that the optimum limit[22] is closer to the upper end of the band (HRK 90,000). Why? The answer is simple: the analysis of the distribution of savings deposit was carried out on the basis of data for 1998 and 1999. It did not cover 2001 and 2002, when Croatia's banks experienced a significant increase in savings deposits due to the changeover of national currencies of EMU member states to the euro.[23]One can assume that during that period the average deposit increased substantially. More precisely, one can surmise that there was an upward shift in the distribution of savings deposit, so that the claim that the optimum limit shifted from HRK 60,000 to HRK 90,000 may probably be accepted.

If one accepts this intuitive conclusion, it seems that the existing limit (HRK 100,000) does not differ substantially from the optimum limit,[24] indicating that the limit level itself is not a potentially significant cause of the moral hazard problem (on the part of savers).

Moreover, if it is true that the deposit insurance coverage limit is set at an acceptable level, relatively speaking, then improvement should be sought in connection with exclusions from insurance or implementation of co-insurance. Co-insurance may represent a very important security feature of a deposit insurance system, by partly transferring risk to savers,[25] thus prompting them to moni-

22 It might be useful at this point to explain the term ''optimum limit''. In technical terms, the analyses described above do not optimise functions, which would result in an optimum limit calculation. Instead, they to find a value of the limit, using more or less sophisticated methods, which would best mitigate the problem of moral hazard on the part of savers.

23 In the period from end-2000 to mid-2002 household savings in Croatia rose by 43.5%. The explanation for this phenomenon may be found in the high degree of unofficial euroisation (dollarisation) of the Croatian economy (Feige et al. 2002). Up to 2001, Croatian citizens held large quantities of foreign currency cash (primarily German marks), which they deposited with the banks during the euro changeover, influenced by the improved confidence in the stability of the banking system.

24 However, it is important that the nominal limit really be the effective limit, that is, to rule out the possibility of splitting deposits once it becomes obvious that a bank is bound to exit the market. It is noteworthy that this was the key problem during Croatia's most recent banking crisis. However, to a large extent, this problem has been eliminated by the new Banking Act, which extended the central bank's powers to intervene in problem banks.

tor banks and decide more carefully which bank to entrust their money to. Therefore, implementation of co-insurance would be an important step towards mitigating the moral hazard problem. It is completely irrelevant whether co-insurance would take on the form discussed in the first or the second method in the previous footnote. However, we prefer the first method (that is providing 100% insurance for deposits up to HRK 50,000, while insuring only 90% of the remaining balance up to HRK 100,000). To an extent, this is in collision with the general view that it is not wise to differentiate between small savers and even smaller ones. Still, we believe that, considering the coverage limit, which is set slightly above the optimum level, it is reasonable to differentiate between small and slightly larger savers, prompting larger savers to monitor bank risks.

In addition, there is room for further exclusions from deposit insurance. In this context, in addition to excluding saving deposits of bank management and supervisory board members, the deposit insurance system could be improved by excluding savings deposits of large shareholders (holding more than 5% of a bank's equity) from deposit insurance as well as deposits of a bank's auditors. Savings deposits of close relatives of these groups should also be excluded from deposit insurance. And finally, savings deposits for which savers have, on individual basis, obtained interest rates or general financial conditions that have helped to aggravate the financial position of the failed bank. The introduction of these additional exclusions, in line with the EU Directive,[26] would substantially reduce the moral hazard problem.

4.2 Mitigating the Adverse Selection Problem

It is important to differentiate between adverse selection by the insurer (State Agency for Deposit Insurance and Bank Rehabilitation) and adverse selection by banks. In view of this (fine) distinction, one might say that adverse selection by the insurer is not an issue in the existing deposit insurance system because membership is compulsory for all banks[27] However, the negative selection problem of banks is undoubtedly connected with the moral hazard problem, because it arises as a consequence of increased portfolio risk.[28] The problem of adverse selection

25 There are two classic examples of the co-insurance clause. In the first example, only one portion of a saver's deposit is insured so as to protect 100% of the deposit balance, while the remaining portion (up to the coverage limit) is insured up to the set percentage (as in the initial system in Croatia). In the second example, savers are compensated for deposits up to the coverage limit, but, for instance, only for 90% of the account balance. The savers are aware that regardless of the amount of deposit (up to the limit) they will lose 10% of their deposits if the bank fails.

26 EU Directive on deposit-guarantee schemes (EU Directive 94/19/EC).

27 If banks were not required to participate, i.e. when their participation in the deposit insurance system is voluntary, banks prone to risk taking would be more likely to join the system while those not inclined to risk-prone behaviour would remain outside the system. This claim may be confirmed by the historical experience of deposit insurance systems at the beginning of the 20th century (Wheelock and Kumbhakar 1995).

28 The risk exposure of the portfolio increases because banks extend loans to more risk-prone clients against relatively high interest rates. These high rates lead to adverse selection in terms of debtor quality because the quality of loan demand deteriorates against the backdrop of high interest rates due to diminished likelihood that these loans will be repaid (Stiglitz and Weiss 1981). Generally, the cause for such behaviour is the moral hazard on the part of bankers resulting from the fact that they feel better protected from bank runs (due to deposit insurance).

in this segment can be mitigated by using the same methods that are used to mitigate the problem of moral hazard on the part of banks (better bank supervision, better procedures for removing of banks from the market as well as differentiation of premiums). It should be stressed at this point that differentiation of premiums is the only issue that can be solved by changing the deposit insurance system's design.

As was mentioned in section two above, Croatian banks pay insurance premiums of 0.2% of total insured deposits quarterly. In a system of this kind, relatively more stable and conservative banks subsidise the less conservative banks by paying more relative to the losses the insurance agency (State Agency for Deposit Insurance and Bank Rehabilitation) is expected to suffer because of these banks. Although indirectly, this provides incentives to increase risk-taking, resulting in adverse selection by banks.

It is noteworthy that in a banking system with strong bank supervision, it will be relatively unimportant whether the deposit insurance premium is differentiated or not because strong and effective banking supervision can discourage moral hazard by bankers. Thus, a deposit insurance system can only perform its role successfully if there is high-quality bank supervision in place (Tigert Helfer 1999). For this reason, it is no wonder that experts in the field do not insist much on introduction of differentiated premiums. Moreover, it is said to be desirable for a deposit insurance system to be as simple as possible upon its inception, which implies charging undifferentiated premiums at least at the beginning (Garcia 2000).

In addition to the fact that experts in the field do not strongly insist on the implementation of differentiated premiums, it is worth noting that it is becoming increasingly unclear, both theoretically and empirically, how desirable differentiation of premiums really is (Galac 2004). More and more often, the opinion is voiced that the basic prerequisites for effective differentiation of premiums are a mature financial system and a developed institutional environment. Galac finds that Croatia, although one of the more advanced countries among those who do not differentiate deposit insurance premiums, still does not satisfy the necessary preconditions to be able to take advantage from differentiation of premiums. He also draws attention to a strong technical counterargument to the introduction of differentiated premiums in the period until 2005, which is connected to the fact that Croatia's deposit insurance system currently functions as a *de facto ex post* system, repaying the ''losses'' the deposit insurance agency (DAB) suffered over the past period. If the existing premiums were extended to include the component of expected losses of the future period, the system would without doubt become too expensive for banks. In addition, Galac discusses the problem of deciding on an optimal premium differentiation scheme in great detail, clearly showing that the choice is not easy. Considering all this, it seems that implementation of differentiated premiums in Croatia in the near future is neither necessary nor advisable. Moreover, in Croatia's case there is another important reason for not introducing differentiated premiums in the next two to three years. It relates to the already mentioned fact that the deposit insurance agency is still paying off debts incurred

during the banking crisis (suggesting that the system is functioning on an *ex post* basis). At this point, however, we will lay out the non-technical arguments against implementation of differentiated premiums.

Since the existing debts are planned to be repaid by the end of 2005 (assuming that the banking system remains stable) and the existing *de facto ex post* system has functioned in such a way that banks have participated in debt repayment on a linear basis, we believe that it would be most appropriate to maintain the linear approach until the debt has been repaid. Why? The answer to this question is complex. It is easier to divide the question in two. First, is the way the system currently functions, with banks repaying the debt, an appropriate one? Second, if yes, then why is it more appropriate to adhere to the linear approach at least until the debt has been repaid, i.e. until the deposit insurance fund starts generating surpluses?

The answer to the first question undoubtedly enters the realm of normative economics because it requires answering the question who should (in all fairness) bear the burden of debt repayment – the government (i.e. all taxpayers) or the banks (i.e. the savers, meaning only some taxpayers). It is completely clear that, technically, the government is repaying the debt because the State Agency for Deposit Insurance and Bank Rehabilitation (DAB) is a government agency.[29] However, DAB does not use ''excess'' funds from premium payments to generate an *ex ante* fund, but uses them for the repayment of interest and early repayment of principal. In this context, there is no need for the government to secure funds for servicing this debt from all taxpayers, because premiums paid by banks are essentially sufficient to settle the debt and the related interest. In other words, the government collects the funds only from one group of taxpayers, namely those who have savings deposits, because banks (completely or only in part) usually transfer the burden of premium payment to savers.[30] However, if we were to enter the realm of normative economics, the majority of us would agree that such a way of debt financing is the fairest way to raise funds because the group of taxpayers bearing the burden of debt repayment (savers) has a direct interest in protecting their deposits.

Nevertheless, it still must be explained why it is advisable to continue applying the linear method of premium calculation at least until the debt has been settled. The general fiscal principle of equality (fairness) in taxation says that contributions should correspond to benefits received and reflect differences in ability to pay. In essence, this fiscal principle leads to progressive taxation, which in this case would mean that larger savers, in relative terms, should pay a relatively higher insurance premium. However, in reality deposit insurance systems with differentiated premiums are based on the risk exposures of individual banks and not the structure of insured deposits by size. As a result, the principle of fairness in taxation cannot be introduced through differentiated premiums. Moreover, in a system with differentiated premiums, banks relatively prone to risk taking should

29 DAB's income and revenues are included in the central government consolidated budget.

30 Croatian Banking Association (HUB) maintains that interests on savings deposits would be much higher if banks were not burdened by premiums (Markušić 2003).

pay relatively higher insurance premiums. In view of the assumption that banks largely transfer the burden of premium payment to their savers (by giving relatively low deposit rates), this would mean that their savers, regardless of the size of their deposits, would bear the largest part of the debt repayment burden. The result would, undoubtedly, be a real departure from the principle of fairness in taxation, so we feel that it would be better to continue applying the linear method of premium calculation until the debt has been repaid. When the system starts generating funds *ex ante*, this logic will change because the premiums will no longer have a fiscal character.

Before moving on to discuss the principal-agent problem, let us summarise the results of this rather detailed discussion. We would like to repeat that in addition to strong technical reasons, there is a very strong argument in favour of delaying differentiation of premiums at least until the existing debt has been settled. In doing this, it is very important to determine whether transferring to differentiation of premiums would be beneficial at all. If yes, it would be prudent to start working on the criteria to be used in the technical calculation of differentiated premiums.

4.3 Mitigating the Principal-Agent Problem

As with the negative selection problem, it may be said that the principal-agent problem is not one of the most severe problems of Croatia's deposit insurance system. There is an *ex ante* fund financed from insurance premiums paid by the banks. It must be stated, however, that the de facto *ex ante* fund still does not exist due to the fact that the deposit insurance agency is still paying off debts. Once all debts are repaid, funds will accumulate. We think that a deposit system that generates funds on an *ex ante* basis is a much better choice for Croatian circumstances (as opposed to a system with an *ex post* fund), bearing in mind the Croatian banking system's turbulent recent history.[31] The fund enables DAB to compensate depositors quickly in the case of a bank failure, without the government (that is the government budget) and/or banks intervening. In this way, it contributes to the credibility of the system, because it provides a kind of guarantee that savers are well represented. In addition, the institution is managed by a government body, which is, generally speaking, the most qualified body to protect public interests. However, improvements are possible in this segment too. First, the independence of the Agency may theoretically be questioned, since its members are appointed in accordance with the office they hold in the government.[32] Second, bankers, as well as savers, are excluded from its management. This is not wrong in

31 When discussing the *ex ante* fund, it is noteworthy that its target size is indirectly determined by the Act (5% of overall insured deposits. There are no objections to the fund's stipulated target size, especially since it is very difficult to discuss a potentially optimal fund size. Maybe the best confirmation for this is that only a relatively small number of countries, only 17 out of 60 (Garcia 1999) have legally defined the target size of their funds, either directly or indirectly. The conclusion that can be drawn from the experience of a large number of countries is that countries with financially more stable systems will be more inclined to set the target at lower levels.

itself. Nevertheless, having them act in an advisory capacity would probably prove useful.[33]

In addition, although a departure from the practice of appointing the fund's management board only from the ranks of government officials might lead to greater independence of the deposit insurance agency, there is the danger that such a move would reduce the Agency's efficiency in time of crisis. The choice between a potentially biased person, who tends to represent government interests, and the potential inability of the insurance agency to react quickly in time of crisis is a difficult one. The director of the Agency must be able to inform and involve the government and in particular the Ministry of Finance, and to receive their support in the shortest possible time. This could be a serious problem if board members are not government officials. It is absolutely clear that at a time of crisis only a body consisting of government officials has the power to win instantaneous government support (because they themselves create the government's policy). Therefore, only such a management can react promptly if the fund is empty. It is worth noting that in a situation where the deposit insurance agency has no funds available (due to depletion of the fund, etc.) as is the case in Croatia, it needs to lean on the government even more because its every move depends solely on the ''good will'' of the government. Accordingly, the current practice of appointing the Agency's Management Board members from the ranks of government officials seems optimal under the circumstances.

Only after achieving the targeted fund size could this practice be reconsidered because there will be less of a need to rely on the government. To stimulate further discussion, we may consider, for example, the possibility of appointing two members of the board *ex officio,* in accordance with the government office they hold, two further government officials regardless of their office and two members from banking circles (i.e. the private sector). Still, the question remains whether it is possible to do something in the meantime, that is, while the fund remains in deficit. It is quite probable, for example, that there would be benefits from creating an advisory body of representatives of banks and savers (e.g. a representative of a consumer protection association), which, if nothing else, would improve the quality of the Agency's operations.[34] However, one should bear in mind that the interests of commercial bankers and the government on one side, and savers on the other, may not coincide at all times. Therefore, in light of the fact that a surplus has not yet been generated, it is important to clearly define the status of the advisory body as subordinate to the management board, comprised of government officials.

32 Although they are appointed to a six year term, the length of their term is really not an issue, because when government officials change (see footnote 16), members of the Agency's Management Board also change automatically.

33 This may improve the efficiency of the whole institution.

34 For example, ensure a more equitable representation of all interested parties, more efficient operation etc.

5 What Needs to Be Changed in the Existing Deposit Insurance System to Harmonise It With EU Legislation?

In the previous section, we discussed the elements of deposit insurance system's design that need to be improved to mitigate the problems of moral hazard, adverse selection and the principal-agent process. In this section we will discuss the elements that need to be changed to harmonise Croatia's deposit insurance system with EU legislation, i.e. Directive 94/19/EC. It is noteworthy that these changes will not have to be implemented until Croatia joins the EU, while some of the details will probably be open for discussion during the transition period.

At the beginning, it may be best to point out the first major change that will need to take place. It has to do with the scope of deposit insurance. While Croatia's current deposit insurance system covers only household savings deposits (savings deposits of natural persons), when Croatia enters the EU it will be required to insure deposits of small businesses,[35] as well as other household deposits (including their assets in current and giro accounts). This will, needless to say, increase the ''deposit base'', which is the basis for premium calculation, increasing the deposit insurance agency's revenues,[36] but also its potential liabilities (see Appendix II). In any case, there are strong reasons for including small business deposits in the deposit insurance system[37] and they are related to the protection of the payment system (Faulend 2001), so this change would be most welcome.

The second important change relates to the maximum deposit insurance coverage for household savings deposits and business deposits. In accordance with the EU Directive on deposit insurance, EU Member States must cover deposits up to at least EUR 20,000. At the current exchange rate (January 2004), this would mean insuring deposits up to some HRK 150,000. This is substantially above the so-called optimum limit and could in the medium term negatively impact the stability of Croatia's banking system, since it would aggravate the moral hazard problem. In this context, we think it important to determine a reasonable transition period during negotiations with the European Commission. Such a transition period would allow Croatia to gradually harmonise its deposit insurance coverage with the EU's minimum coverage limit upon joining the Union. Nevertheless, it would be best if the EU developed a more flexible system, determining the coverage limits in accordance with selected economic criteria.[38]

The third important change relates to the time limit for repaying insured deposits. This is a very important detail, because only speedy compensation of de-

35 In principle, small companies are included in the deposit insurance system by eliminating large companies pursuant to established criteria. The company is viewed as large if it exceeds two out of three criteria: a) balance sheet total exceeding 1,000,000 EUR b) net turnover exceeding 2,000,000 EUR and an average number of employees (during the financial year) exceeding 50 employees (see Article 11 of the Fourth Council Directive (78/660/EEC)).

36 Assuming the rate for premium calculation does not change.

37 The extension of the objectives of the deposit insurer to include protection of the payment system reduces the potential recessionary impact of bank failure(s).

38 For example, in accordance with the distribution of the amounts of savings deposits by banks or at least in accordance with standard economic variables such as GDP per capita (in simple cases).

posits enables a deposit insurance system to perform its most important function – prevent bank runs. Experience has shown that this question has been inadequately addressed in the existing Act on Deposit Insurance which stipulates that reimbursement of depositors must start within 180 days after initiation of bankruptcy proceedings. It is important to draw the reader's attention to the word *start*. The Agency could comply with this law by repaying, for example, only savers who had 100 or less with the failed bank within the 180 day period. In practice, bankruptcy proceedings are not initiated at the moment that a bank becomes illiquid, so this delay combined with the delay period of 6 months in the law and the ''start'' clause is bound to result in all depositors jumping to their feet and rushing to banks that are even remotely suspicious. In this context, a change in the law that mandated that deposit repayments must be started within 21 days and must be completed within 90 days after a bank fails to meet its liabilities arising from deposits would be more than welcome and long overdue. It is noteworthy that Directive 94/19/EC provides for the possibility of an extension of the time limit in exceptional circumstances. Nevertheless, no such extension may exceed three months.[39]

Generally speaking, prompt repayments are extremely important for maintaining the credibility of the deposit insurance system. Only a system that promptly reimburses insured deposits of failed banks can achieve a sufficient level of depositor confidence to ensure that depositors do not run following the first report of negative information about a bank. Taking into account past experience and the regulatory framework, we cannot truthfully say that the Croatian deposit insurance system is credible. The best example of the lack of credibility is probably the case of Riječka banka of March 2002, when savers stormed the bank, which was actually solvent, on the news that the bank has sustained a loss of some USD 100 million due to irregularities in its operations.[40] Credibility is obviously something that has yet to be built, with the key building block being the future experience of savers with speedy payouts of their insured deposits when banks fail.

The three changes discussed so far are the most important changes required for harmonisation with the EU. In addition, attention should be drawn to one more issue: the change in the scope of insured savings, which stipulates insurance coverage only for deposits denominated in euros and currencies of EU Member States. This is a departure from Croatia's deposit insurance rule according to which coverage is provided for all savings deposits, regardless of currency. Since most deposits in Croatia are denominated in euros, the effect of this change will not be significant.[41] It is worth noting that Croatia will be required to specify exclusions from insurance coverage in line with Directive 94/19/EC. This was dis-

39 The relevant authorities may grant a maximum of two such extensions, each for a period of up to two months.

40 This amount was only slightly less than the bank's regulatory capital. The bank was ''saved'' by a quick and coordinated intervention of the central bank, the government and commercial banks.

41 Although, certain effects are possible at a regional level. For example, as is well-known, some Croatian citizens from southern parts of the country work at sea and receive their salaries in dollars. If they make dollar deposits, once EU legislation is adopted their deposits will no longer be insured.

cussed in more detail in section four above, in the context of mitigating the moral hazard problem. The same can be said for the EU directives that specify that deposits must be covered up to a minimum of 90% of the coverage limit.[42] Since this issue was also discussed earlier in the paper, we will not discuss it further now. Instead, we will summarise the main ideas and open up a discussion about the right time for implementing these changes.

6 Conclusion

This paper discusses the weaknesses of Croatia's deposit insurance system and suggests improvements, above all in mitigating the moral hazard problem by introducing additional exclusions from insurance and by introducing co-insurance. Additional, desirable but not pressing improvements to Croatia's deposit insurance system may be achieved in the mitigation of the principal agent problem by changing the composition of the Management Board of the State Agency for Deposit Insurance and Bank Rehabilitation once the time is right. This underlines the fact that changes in the system are required over and above the changes necessitated by Croatia's accession to the EU.

The need for Croatia's deposit insurance system to be harmonised with EU legislation will undoubtedly lead to more changes to the existing system. This paper focuses on the three most important changes: 1) extending the scope of coverage to deposits of small businesses and all types of household deposits,[43] 2) increasing the coverage limit to EUR 20,000 (roughly HRK 150,000) and 3) reducing the reimbursement period for insured deposits to a maximum of 90 days after the date on which a bank failed to meet its liabilities arising from deposits. All these changes are welcome ones, with the exception of the increase in coverage. Since the EU-mandated limit substantially exceeds the so-called optimum limit, we have suggested defining a transition period.[44]

As regards the timing for changing the existing system, it would be best to introduce all the changes at once. That is, we would suggest changing the law once immediately before entering the EU. We feel that there is no immediate need for urgent individual changes because the design of the current deposit insurance system is unlikely to contribute to destabilising the banking system in the next three to four years. At the same time, it is important to depart from the practice of continuously changing regulations, a practice that diminishes the effectiveness

42 This is a co-insurance clause of sorts, requiring that at least 90% of 20,000 EUR be insured. If a Member State wishes to provide coverage for deposits exceeding this amount (or to a higher percentage), it may do so. It may also, on social considerations, cover certain types of deposits in full.

43 The existing system covers only household savings deposits, that is, excludes household current and giro accounts as well as all types of corporate deposits.

44 As part of negotiations on the length of the transition period, it will be necessary to collect data on distribution of savings deposits (by amount) by bank. These data should be collected periodically, if possible (at least once a year), by the State Agency for Deposit Insurance and Bank Rehabilitation.

and efficiency of state administration. We feel it would be more useful and efficient to invest time in a single, but systematic, change, rather than multiple, practically continuous changes of laws.

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Appendix I
The Effects of the Introduction of Explicit Deposit Insurance System on Levelling Out of Deposit Rates in the Republic of Croatia

The aim of this appendix is to examine whether the introduction of an explicit deposit insurance system reduced the differences among deposit rates offered at Croatia's banks, as suggested by the competitive equality argument.[45] Just as a reminder, this argument implies that the introduction of an explicit deposit insurance system should at least partially neutralise the advantages of big banks, reflected in their ability to attract savings deposits despite offering lower deposit rates. In other words, under the umbrella of deposit insurance which improves the public's perception of the security of small banks, small banks will be given room to reduce deposit rates.[46] This will result in the levelling out of deposit rates among banks.

Before starting the analysis of deposit rates, it might be useful to digress from this discussion to say something on the origins of the differences in banks' deposit rates. If a country does not have a deposit insurance system in place there are generally two reasons for different deposit rates offered by banks: the first is ''competition'' and the second is ''portfolio''. The first one is based on the notion that the stronger the competition, the smaller the differences between deposit rates offered by different banks will be. In an ideal situation, with perfect competition, the market share of each individual bank would be insufficient for it to be able to influence product prices (in this case, the interest rate). In this perfectly competitive market, the public's perception of the safety of all banks would be identical, resulting in an identical interest rate across the market. It should be noted at this point that this perception of safety brings the second of the two reasons to light – the portfolio reason.[47]

The previous paragraph makes it unequivocally clear that there are numerous elements that may influence the movement of deposit rates independent from the deposit insurance system. Therefore, in order to credibly evaluate the effects of introducing deposit insurance on the dispersion of deposit rates in Croatia (from the perspective of the impact on the perception of savers), it would be necessary to satisfy the basic *ceteris paribus* condition. This requires competition in the banking market to remain unchanged and savers' perception of risks not to be affected by external reasons (unrelated to the deposit insurance system).

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45 See section 2 above.

46 It is noteworthy that small banks will, generally, never be able to lower their deposit rates to the same level as large banks simply because large banks have large business networks, making them more easily accessible to the majority of clients. This implies that a saver would suffer higher indirect costs by saving in a smaller bank. Small banks try to neutralise these costs by offering more attractive (higher) deposit rates, as well as, for example, offering more personalised services.

47 The ''portfolio'' reason presupposes the existence of an interaction between the behaviour of savers and bankers. On one side, in their attempt to attract funds, the bankers will offer higher deposit rates (supply), while on the other side savers will assess the risk exposure of individual banks in line with their own personal inclination towards risk taking and thus give them the opportunity to realise their ''dreams'' (demand).

In Croatia's case the *ceteris paribus* condition has not been met, because its banking system experienced tectonic changes since 1996: more foreign banks have penetrated the banking market, state-owned banks have been privatised, a number of small and medium-sized banks failed. That is, in the period after 1996, healthy competition in the banking market has rapidly intensified. To make things more complicated, banks began failing (the banking crisis started) almost at the same time as the introduction of deposit insurance. This had a lethal effect on the system's credibility, since it could not even come close to satisfying all the demands placed on it to repay insured deposits. Since many savers waited for the better part of two years to be reimbursed for their insured savings deposits, it is completely clear why confidence in the deposit insurance could not be preserved. This was best reflected in savers moving their savings deposits from small, or even large banks, to, in their opinion, the safest banks – those in foreign ownership (Kraft 1999).[48] As a result, due to the lack of credibility, the deposit insurance system probably did not bring about a significant change in the savers' perception of the risk exposure of individual banks. However, this is one more factor preventing an accurate evaluation of the effects of the deposit insurance system on the dispersion of deposit rates.

In addition to these structural limitations, the analysis of deposit rates encounters some small technical difficulties. These are related to the statistical problem of the deposit rate structure broken down by banks. Let us elaborate. In conducting the analysis, we use a single deposit rate (we call it the reference interest rate), which is the weighted average of interest rates on three types of savings deposits: kuna time deposits, foreign currency time deposits and kuna time deposits with a foreign currency clause, for each period (month) and each bank.[49] In addition, within each of these three groups, there is an additional break-down, with weights assigned to the sub-categories of deposits according to the volume of new deposits received and their maturity. There are two potential problems here. First, the reference interest rate will be relatively lower if the bank has a relatively high amount of money in time deposits with short maturities and foreign currency time deposits, because deposit rates on these type of deposits are lower than deposit rates on time deposits with longer maturities and kuna time deposits. Second, bearing in mind the problem of the scope of the reference interest rate, which also covers uninsured corporate time deposits, it may be assumed that a bank with a relatively small share of corporate time deposits will have a relatively lower reference interest rate (see the previous footnote). The picture is additionally blurred by the fact that until recently some banks have formulated their business policy in a way that allowed time deposits to be withdrawn early without incurring penalty, while they recognised the interest accrued for the period prior to withdrawal. This

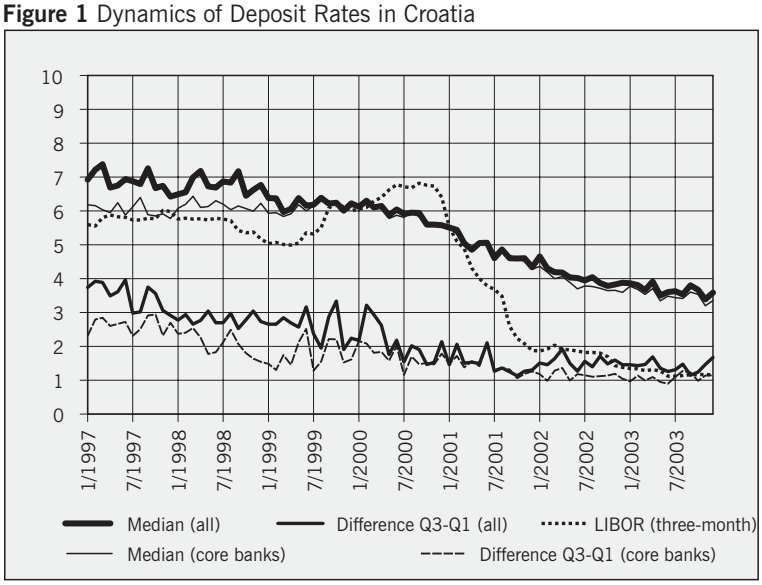
48 Savers fled to ''quality'' and not ''size''.

49 It was impossible to separate the deposit rates on these types of time deposits into those accrued on household deposits and those accrued on corporate deposits. Since deposit insurance system protects only household deposits, it can be assumed that deposit rates offered to businesses are slightly higher because banks do not have insurance costs.

provided incentive for savers to tie their deposits for longer periods, regardless of their liquidity needs.

If we exclude these discussed technical problems, the available data enable us to examine the movements of monthly reference interest rates by individual bank since January 1997. It may be noticed at the first glance that at the beginning of the period, there were banks offering exceptionally high deposit rates as well as banks offering more moderate deposit rates. This is not the slightest bit illogical in view of the fact that fast-growing banks were not excluded from the market until the banking crisis of 1998 to 1999. Therefore, it seemed justified to examine two groups of banks or – to be more exact – the group including all banks and a sub-group of "core banks" (those that existed before as well as after the banking crisis). Figure 1 provides an overview of deposit rates, showing median values for all banks and for core banks. In addition, it shows the absolute difference between the first and the third quartile for both groups, which reflects the degree to which interest rates dispersion is decreased in absolute terms. This measure resembles a standard deviation, but we felt that differences among quartiles give a more accurate representation of the real differences among deposit rates, since they are less sensitive to extreme values. Figure 2 shows the relative difference, which is analogous to the coefficient of variation. Finally, in order to describe interest rate movements in international markets, a line reflecting quarterly LIBOR values has been included in the graph.

Figure 1 Dynamics of Deposit Rates in Croatia



Source: CNB.

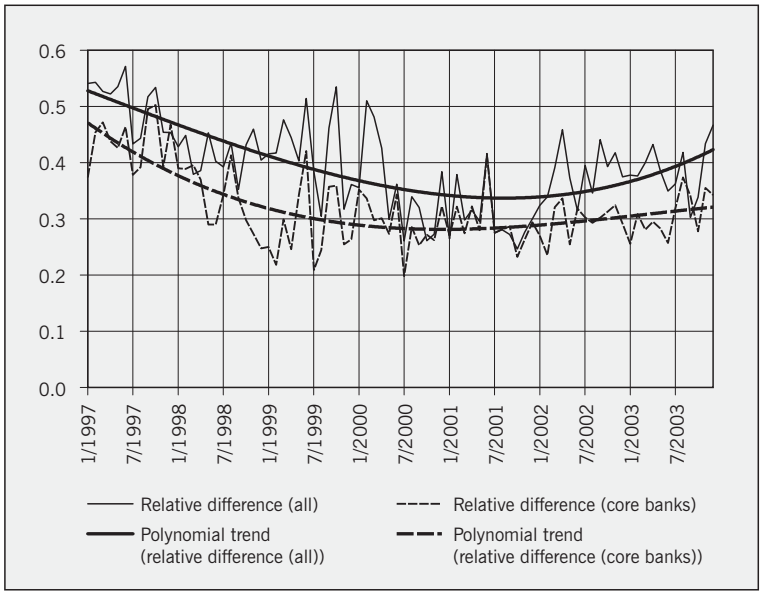
The Figure 1 above shows that in the period up to mid-1999, the median values of deposit rates of all banks were visibly higher than those of the core banks. This can be explained by the presence of a large number of fast-growing banks in the banking system that were later eliminated from the banking market in the

course of the banking crises. Between mid-1999 and the beginning of 2001, there was practically no difference in median values of all banks and the core banks because only core banks were operating during that time. After 2001, we once again see a departure of median values of all banks from the median values of the core banks. However, this departure is minimal and is caused by the entry of new banks (former savings banks) into the market.

As regards deposit rates dispersion, the gap between the first and the third quartile and the line reflecting the difference Q3-Q1 show that there is an obvious trend to flattening, with the difference decreasing from 3 to 1 percentage points for core banks during the period. In addition, there is also a strong trend towards deposit rate reduction, primarily affected by the general decline in interest rates on international capital markets (see movements of LIBOR).

The absolute difference indicator (Q3-Q1) as an indicator of the degree to which deposit rates are "levelled out" has only one flaw, the fact that it does not contain a correction for the deposit rate level. It is not irrelevant whether interest rates are at a level of around 10 or at a rate of 5 percent. It is evident that the absolute difference of two percentage points in the first example and one percentage point in the second means no change in terms of the relative difference. Therefore, it is wise to examine the relative difference indicator, which relates the difference between the third and the first quartile into relation with the median (see Figure 2).

Figure 2 Dynamics of Relative Differences Among Deposit Rates in Croatia



Source: CNB.

It is evident at first glance that there is no significant difference in the movement of indicators of the relative difference between all banks and core banks. Moreover, if we take into account the trend values (we approximate the trend by a polynomial), we see that the downward slope and then the upward slope follow

practically the same time pattern for all banks and fore core banks. However, this indicator shows a mild increase in the relative difference among banks' deposit rates due to the general decline in deposit rates after 2001. This was not visible from the movement of absolute difference indicator. All in all, in the period in question, the relative difference indicator reflects noticeably lower values towards the end of the period, thus substantiating the claim that there is an on ongoing levelling out of deposit rates. At the same time, the relative indicator suggests that this process was substantially milder than the absolute difference indicator had suggested. In addition, we can distinguish two phases – the phase of noticeable levelling out and the phase of mild divergence that we see today.[50]

Based on all this, it would by pretentious to conclude that the ongoing levelling out of deposit rates is a result of the implementation of the deposit insurance system. This process started as early as 1997, if not before,[51] that is, at least a year before deposit insurance system became operational. In this context, we are more inclined to the conclusion that other events in Croatia's banking market (penetration of foreign banks, the banking crisis, privatisation and transformation of savings banks to banks) had a decisive effect on the dispersion in deposit rates. One more argument that corroborates this view is the fact that Croatia's deposit insurance system lacks credibility. The system failed to achieve it simply due to a particular combination of circumstances. As a result, the example of Croatia provides a departure from theoretical expectations. But in the future this may well change, considering that the start of the deposit insurance system's operations coincided with the onset of the banking crises. With time, as its credibility grows stronger, the influence of deposit insurance on levelling out deposit rates will become more significant.

Appendix II
The Increase in Potential Liabilities of the Deposit Insurance Agency Due to the Enlarged Scope of Coverage

Since Croatia's deposit insurance system currently covers only household savings deposits and time deposits, upon accession to the EU its scope of coverage will need to be extended to include household giro and current account deposits as well as savings and time deposits of small companies.[52] Naturally, this broader scope of coverage will increase the potential liabilities of the deposit insurance agency. The question is, of course, to what extent. Not to mention the issue of whether the EU's existing criteria are appropriate for identifying small companies in Croatian circumstances. As shown below, according to the criteria set by the

50 February 2004.

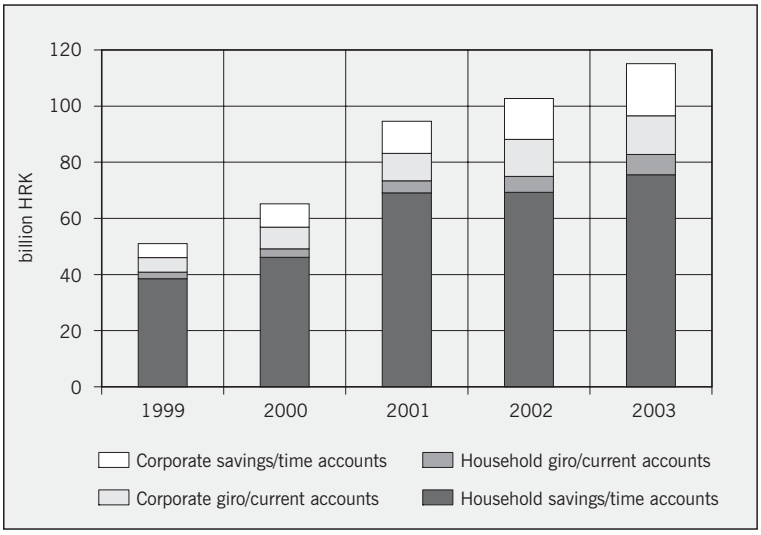
51 This cannot be corroborated because statistics on deposit rates are unavailable.

52 It might be useful to repeat that the EU defines small companies as those that do not meet two out of the following three criteria: a) more than 50 employees, b) balance sheet exceeding EUR 1,000,000 c) net turnover exceeding EUR 2,000,000.

EU, practically all Croatian companies fit into this category, thus bringing the potential liabilities of deposit insurance agency close to the amount of total corporate deposits with banks.

In an attempt to provide an answer to these questions, it would be useful to examine the movement of absolute values of individual types of household and corporate savings deposits (see Figure 3).

Figure 3 Household and Corporate Deposits



Source: CNB.

For the purpose of providing a clearer overview, data has been divided into groups, placing funds of households and companies in giro and current accounts into one group and savings and time deposits in another. The figure clearly shows that the majority of total deposits (some two thirds) are already covered, provided that savers rationally distributed their household savings among different banks to achieve comprehensive protection.[53] Including household giro and current account deposits in the deposit insurance system would not substantially increase the potential liabilities of the deposit insurance institution. The increase would amount to some 10% or HRK 7 million, based on end-2003 data and anticipating rational behaviour on the part of savers, meaning that they would distribute their deposits so as to have them fully covered. However, the situation with companies is somewhat different. If we assume that all companies in Croatia are small, pursuant to the EU criteria, and that they too would behave rationally, the overall

53 However, this is not the case in practice. The available data on insured deposits show that some one third of household savings and time deposits (round HRK 25 billion) is not insured. Nevertheless, we believe that in case of a deterioration in the stability of the banking system savers would react promptly, bringing the amount of insured deposits close the amount of total household savings.

amount of corporate deposits would automatically create additional potential liabilities for the deposit insurance agency. In that case, the inclusion of corporate giro and current account deposits would mean an increase of some 20% or HRK 14 billion compared with current potential liabilities of the deposit insurance agency, while inclusion of corporate savings and time deposits would contribute an additional 25% or HRK 19 billion to the increase in potential liabilities. All in all, if the scope of coverage were extended to include all of these three deposit categories at one go, potential liabilities would increase by over 50% or HRK 40 billion.

However, it should be repeated once again that this increase in potential liabilities relates to a scenario under which all companies are viewed as small companies and behave rationally. Under a more realistic scenario, a small, but important, number of companies would be classified as large companies, reducing the increase of potential liabilities. The question is, however, by how much potential liabilities would increase in the latter scenario. It is impossible to give an accurate answer to this question because a database that could provide both sufficient insight into the criteria determining the size of a company and the assets that company has in its accounts with banks does not exist. Although FINA does have such a database, it is not credible, at least in the segment of how much money companies hold with accounts of commercial banks. As an illustration, while FINA's data suggest that the overall amount of corporate deposits with banks reached HRK 13 billion at the end of 2001, monetary statistics data, whose accuracy is more reliable, say that at that time companies had HRK 21 billion in their accounts with commercial banks.

Nevertheless, FINA may still be considered a credible source of information when it comes to determining the size of a company. For example, in accordance with FINA's 2001 data, out of 57 000 companies that submitted a report and really operated during the year, 55,000 or 96.5% were small companies under the EU's criteria. Unfortunately, due to reasons above, it is not possible to accurately assess the share of small companies in total corporate deposits. If FINA's data in this segment were reliable, it could be claimed that small companies, regardless of their large number, account for slightly less than one half of all corporate deposits. This information, although unreliable, suggests that if the scope of deposit insurance coverage was extended to include companies, potential liabilities of the deposit insurance institution would not even come close to the overall amount of corporate deposits.

What conclusion may we draw from this? Above all, it should be stressed that the extension of the scope of deposit insurance to include household giro and current accounts and all types of corporate deposits may substantially increase the potential liabilities of the deposit insurance agency (up to 50% of their current level). Still, this potential increase cannot be assessed accurately due to the lack of reliable data that are key to this discussion, since a large major portion of the increase in potential liabilities arises directly as a consequence of the extension of the scope of deposit insurance (up to 40% of the 50% increase estimated). Therefore, it is important to gather data on companies' assets in different accounts as

soon as possible.[54] Only when it becomes obvious what this extension might mean in terms of the increase in potential liabilities of the deposit insurance agency, will it be possible to critically examine the existing EU criteria on company classification determining the share small companies make up in EU Member States. In accordance with these shares, which we can safely assume to be substantially lower in EU Member States than in Croatia, during negotiations on Croatia's EU accession, Croatia should strive to adjust the criteria to Croatian circumstances and thus equalise the share of small companies in Croatia with the share in the EU as a whole. This would at the same time represent an efficient way of mitigating the growth of potential liabilities arising from the unavoidable extension of the scope of coverage.

54 In technical terms this would mean collecting the data on all deposits a company has with banks.

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