ESTABLISHING EFFECTIVE DEPOSIT INSURANCE SYSTEM IN UKRAINE

by

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Abstract

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This paper investigates issues related to explicit deposit guarantees. It shows how deposit insurance prevents withdrawals of deposits and which pitfalls arise therewith. An experience of other countries is taken into account to isolate those parameters which make a deposit insurance system effective. Using monthly data on basic balance sheet items of Ukrainian banks, an empirical analysis was conducted in order to determine how major bank fundamentals affect depositors' exposure to risk. Obtained results are used to make policy implications for the Ukrainian deposit insurance system.

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Introduction

In last decades, disturbances in the financial sector became frequent for most economies – rich and poor alike. According to Patrick Honohan and Daniela Klingebiel (2000), 112 episodes of systemic banking crises occurred in 93 countries since the end of 1970s. In general, they were accompanied by a fall in asset prices, increase in the number of non-performing loans, and problems in the banking sector. An explanation can be found in the nature of financial crises and the role of financial intermediaries.[1]

In most financial systems banks play a major role being intermediaries between lenders and depositors. If due to macroeconomic shocks or risky operations a bank starts failing, contagion effect can happen. It means that financial deterioration spreads to other banks and bank panic may take place. Not ceased, this process reaches healthy banks.

During bank runs, a lack of information about the quality of bank assets makes depositors consider all banks as potentially insolvent. Therefore they start withdrawing their money, fearing the safety of deposits (Mishkin, 2000). A resulting fall in deposits leads to decline in lending and investments. A sharp decrease in supply of loans makes interest rates rise. Moreover, banks suffer losses since these assets are a major source of their profit. The cycle starts again, and economic activity shrinks further.

These facts explain why governments are worried about the stability of financial system and why banking is the heavily regulated sector of the economy. One of the regulations lies in establishment of government safety nets that are created to prevent bank runs by maintaining depositors' confidence and protecting their

[1] See Santomero (1997)

savings. Among other forms of safety nets, deposit insurance is probably the most sophisticated. After a number of years of trials and faults in supporting financial stability a system of deposit insurance came into life. Starting in the USA in 1930's deposit insurance system spread to other countries and presently there are about 70 countries that have implemented explicit deposit guarantees (Demirguc-Kunt and Sobaci, 2000).

Such a worldwide expansion allows economists to investigate different aspects of deposit insurance and make recommendations concerning its parameters. Though there are contrary opinions on desirability of deposit guarantees, most economists agree that a well-organized deposit insurance system effectively prevents bank runs keeping a banking system sound (Santomero, 1997, Garcia, 1999, 2000, Working Group on Deposit Insurance, 2000). On the contrary, a badly organized system may negatively affect economic stability due to pitfalls such as moral hazard and adverse selection arising under these guarantees.

The rest of the paper is organized as follows. The first chapter reviews general principles of deposit insurance and reveals the problems inherent to it. The second chapter examines what were the basic motives of establishing the first deposit insurance system in the USA and how the system was developing further. After failures among savings and loan institution in the 1980s, economists concluded which reforms were needed to strengthen deposit insurance system (Lawrence J. White, 1989, Pecchenino, 1992, Benston and Kaufman, 1997). At the same time, whether deposit insurance may be recommended to other countries is still not clear. This chapter also reviews recommendations of the IMF staff concerning parameters of deposit guarantees. Basically, a well-established deposit insurance system is characterized by compulsory membership, low coverage, and risk adjusted premiums (Garcia, 2000).

The third chapter gives general characteristics of the Ukrainian banking system. It shows classification of Ukrainian banks and reveals major players in the market of household deposits. Besides, basic parameters of the Ukrainian deposit insurance system are presented.

The fourth chapter contains an empirical analysis of 128 Ukrainian commercial banks. The fixed-effect models estimate the impact of bank fundamentals on deposit-capital ratios. The basic hypothesis is that Ukrainian banks with worse performance expose depositors to excessive risks. An examination of fixed-effects indicates which specific factors, unobserved by the model, can take place.

The last chapter concludes the paper with two policy implications, important for Ukrainian deposit insurance system: a need for risk-adjustment premiums and close cooperation between the National Bank of Ukraine and Household Deposit Guarantee Fund in sharing information and bank supervision.

Chapter 1

DEPOSIT INSURANCE: HOW IT WORKS AND HOW IT FAILS

Principles of Deposit Insurance

In normal times, the principal objectives of deposit insurance are to protect small depositors, establish a good incentive structure, and adopt clear rules (Garcia, 2000)[2]. Six forms of deposit protection are distinguished at this moment (Garcia, 1999): (1) an explicit denial of protection; (2) legal priority for the claims of depositors over other claimants during the liquidation of insolvent bank; (3) ambiguity regarding coverage; (4) an implicit guarantee; (5) explicit limited coverage (68 examined countries); (6) a full explicit guarantee. The last type is peculiar to countries experiencing systematic banking crises. Further, when we talk about deposit insurance we have in mind explicit guarantee systems.

The deposit insurance is based on the same principles as conventional insurance. Banks usually pay an insurance premium as percentage of issued deposits. If deposit insurance system is characterized by an existence of deposit insurance fund, the money is collected there and can be used for reimbursements. In the case of bank failure, the fund pays depositors the amount of their deposits. In fact, the fund may pay only a share of the deposits if coinsurance exists or the system has coverage limits, i.e. maximum amount of reimbursement. Otherwise, deposits are considered as fully insured.

If the fund has enough authority, it can use two methods to handle a failed bank (Mishkin and Eakins, 2000):

[2] See also Working Group on Deposit Insurance (2000) for a thorough look at public-policy objectives

1. Payoff method. First, the fund allows the bank to fail. Then it pays off the amount of deposits up to the coverage limit. If the money is left after selling bank's assets, the fund can pay off more deposits. However, this process is usually very long and may last several years.

2. Purchase and assumption method. This method assumes a reorganization of an insolvent bank by merging it with a healthy bank. In this case liabilities, namely deposits, are transferred to the healthy bank and therefore depositors have their money safe without any losses. The fund also may provide the merger with a loan or subsidy. This practice had been very common in the USA until 1991 when new banking legislation was adopted.

Deposit Insurance and Moral Hazard

Despite a seemingly positive effect on preventing bank runs, deposit insurance as any insurance activity bears additional drawbacks. World practice, and mainly US practice, shows that in some cases problems that arise under deposit insurance may lead to significant losses and even financial instability.

The most evident danger is the principal agent problem, known in insurance as moral hazard problem. Applying it to deposit insurance, we can predict that excessive guarantees reduce depositors' incentives to monitor their banks (Prescott, 1999) and rescue their funds to a safer place. Moreover, this problem also affects counteragent of depositing-lending process. The owners and managers of the insured bank, knowing that runs are unlikely, may perform risky operations and reduce the amount of reserves they hold as an insurance instrument against financial shocks.

In addition to a direct effect, moral hazard problem could and should be examined as a multi-tier process. Many other parties are affected indirectly by a deposit protection contract and they, too, may become subject to moral hazard

(Garcia, 1999). That is why economists should carefully examine all the affected agents and take into account all costs they are able to discover.

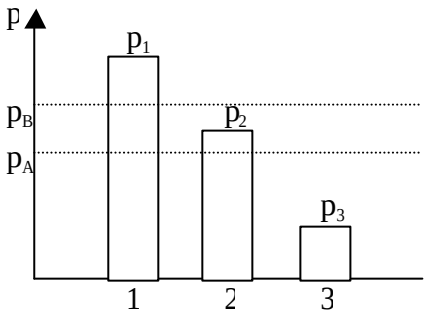
The moral hazard problem is worsened by the presence of so-called too-big-to-fail banks, i.e. large banks which insolvency may evoke financial collapse. Agents in the financial markets know that the government will bail out such banks in the case of a failure (Prescott, 1999). Therefore, it is obvious that the government will cover all losses to the depositors of a large bank. In this case both depositors and managers are reluctant to the bank's risk exposure, and banks shift funds from less into high-risky assets (Feldman and Rolnick, 1998). Finally the government will be forced to suffer significant losses measured in paid-off deposits and financial disorders (Horvitz, 1975).

Another type of principal agent-problem, agency problem, occurs whenever an employee or a contractor, acting as an agent for the principal that he represents, pursues his own interests rather than those of his employer. This problem is applicable both to the managers of financial institutions and to the representatives of the government (Garcia, 1999). Managers could plunge into egg-dances, trying to get additional benefits to their own at the expense of increasing risk, transferring possible losses to the depositors and taxpayers. Government representatives may also be involved in the process similar to "rent seeking".

The fund's staff may also be subject to "regulatory capture" (Garcia, 1999) Often these authorities place the interests of financial intermediaries above the needs of depositors and taxpayers. Moreover, the deposit insurance system may become ancillary to the influence of forces (often of political nature) that demand a special regime for their supporters. It can be said that they become subject to "political capture."

Deposit Insurance and Adverse Selection

Another drawback of deposit insurance is an adverse selection problem. Let us suppose that the banking system is represented by three banks $(i = 1..3)$ with different probabilities of a failure (p_i, p_2, p_3). Let us also assume that an insurance premium is the same for all banks and equals to the average value of individual probabilities of failure $\left(p_A = \sum_i p_i \right)$.



As can be seen from this figure, when an insurance premium equals to p_A, the system proves to be attractive for weaker financial institutions $(1,2)$ and much less attractive or even repelling to a stronger member of that community (3). A stronger member suffers from adverse selection. It can occur when deposit insurance is voluntary and charges fixed premiums that are not adjusted for the risk peculiar to specific institution (Garcia, 1999). In this situation, the strongest bank is likely to be outside the system. When strong banks withdraw, the premium charged to remaining members has to be raised $(p_A \to p_B)$ to cover the costs of possible bank failures.

Later, the banking system experiences the next convolution since a higher premium may induce the second strongest bank (2) to withdraw until only the weakest bank (1) remains in the deposit insurance system.

Chapter 2

POLITICAL ECONOMY OF DEPOSIT INSURANCE

Deposit Insurance: The First Experience

The first deposit insurance system was established in the USA during the Great Depression. As Eugene N. White (1997) notes:

> Without the Great Depression, the United States would not have adopted the New Deal package of financial regulations that prominently featured deposit insurance.

By that time, the USA had already a centenary experience of providing deposit guarantees on a state level. Such systems were mostly established in unit banking states namely Indiana, Iowa, Michigan, Ohio, New York, and Vermont (White, 1995)[3]. The later scheme, adopted in 1907 after a bank panic, went bankrupt in the 1920s, on the one hand, because of moral hazard and adverse selection, and on the other – because of the decline in agricultural prices. And again, looking for protection small banks started lobbying deposit guarantees which would allow them to sustain the tough competition. Their trials to change public opinion in favor of deposit insurance were unsuccessful until the Great Depression occurred.

The crisis of the 1930s was much severe than previous bank runs. It enveloped both large and small banks throughout all states. During 1930-1933 about 9000 banks incurred losses of $2.5 billion. A half of them was due to deposit

[3] Also see Calomiris (1990) for a detailed review of these schemes.

withdrawals (White, 1995). Nevertheless, the adoption of deposit insurance was not an easy political decision and was followed by lengthy debates in Congress. Aware of problems caused by deposit insurance, Roosevelt's administration, the secretary of treasury, the American Bankers Association, and even the Federal Reserve were all opposed to explicit protection. Only after the chairman of the House Banking and Currency Committee, Representative Henry Steagall, Democrat of Alabama, declared blocking of any banking legislation unless it contained deposit insurance. Finally, the compromise was reached and the Banking Act was adopted in 1933 under which Temporary Deposit Insurance Fund was established with limited coverage of $2500 per deposit. After two years, with the creation of the Federal Deposit Insurance Corporation, the deposit insurance system became to operate permanently. Coverage limit was raised up to $5000, all Federal Reserve members were required to join, and insurance premium amounted to 0.5% of all, not just insured, deposits (White, 1997). The deposit insurance also spread to other financial institutions such as savings and loan associations (1934), credit unions (1970).

In the 1980s, the USA suffered failures among financial intermediaries, especially in the thrift industry, due to the moral hazard arisen under financial liberalization, regulatory failure, and high insurance coverage (Demirguc-Kunt and Detragiache, 2000). According to Benston and Kaufman (1997), more than 1150 commercial and savings banks were failed during this period. Only in the first half of this decade, the FDIC handled over $35 bln in failures (Isaac and Maguire, 1988). In the thrift industry, the Federal Savings and Loan Insurance Corporation resolved about 900 savings and loan associations (25% of their number). As a result, in the 1980s the government spent huge amounts of money to indemnify depositors' losses. Total losses incurred by the crisis exceeded $100 bln[4].

[4] In prices of 1990

Deposit Insurance and Financial Stability

The history of deposit insurance of the USA does not allow economists definitely to answer the questions about the desirability of deposit insurance as a measure increasing financial stability. Examining deposit insurance in the USA Eugene N. White (1985) concludes that even though it is difficult for public to monitor bank performance, the explicit deposit system does not justify itself in the long run. Moreover, he argues that deposit protection is an inappropriate policy, especially for developing and transition countries, because making the system workable requires additional regulations and great costs. White states that presently there are more appropriate and less-costly alternatives such as a system of safe funds guaranteed by the government, which allows society to reach the same objectives.

Other economists (Lawrence J. White, 1989, Pecchenino, 1992) believe that the problem of the US deposit insurance system was due to its incorrect parameters, in particular due to the absence of risk-adjusted premiums. Pecchenino (1992) has analyzed Federal Deposit Insurance Corporation before 1989 with respect to risk-adjusted premiums and determined that the moral hazard is obvious since deposit institutions are inclined to take additional risk without additional costs to themselves. He has introduced his approach, according to which coverage and premiums should be adjusted to bank performance.

Lawrence J. White (1989) has examined reasons of the crisis and has shown that reforms are necessary, because savings and loan associations do not care about their solvency, knowing that the government covers their liabilities. White appeals that the crisis has happened due to a lack of regulation and bad institutional environment.

In the 1990s, a fast growing number of countries with explicit deposit insurance schemes encouraged economists to more investigations on this topic. Demirguc-

Kunt and Detragiache (2000) have conducted an empirical study to determine the impact of deposit insurance on bank stability. They have analyzed data of 61 countries for 1980-1997 using a logit model by taking explanatory variable in the form of dummy variable of banking crises. Authors conclude that due to its negative effect on market discipline, deposit insurance tends to increase bank fragility, and this effect becomes stronger when the system is extensively covered and funded by the government. The only countries that do not suffer from deposit protection are those with developed institutional environment.

Other empirical findings (Cull et al, 2000) reveal the impact of the deposit insurance system on financial development, in particular on the level of financial activity, the stability of a banking system, and the quality of resource reallocation. The major result is that deposit guarantees lead to financial stability only if accompanied by a sound regulatory system. On the contrary, in deregulated environment a moral hazard dominates and hampers financial development.

Making Deposit Insurance Effective

The existence of pitfalls inherent to deposit insurance incites economists to answer whether positive effects of deposit insurance schemes are enough to cover the losses; whether it is possible to avoid the problems; if yes, what should be done by policy-makers to make the system effective and reliable. To answer these questions it is worth to look at the world best practices of deposit protection. They seek to provide a set of incentives that impel economic agents to keep the financial system stable.

Here some set of recommendations that came from long experience of establishing deposit insurance systems (Garcia, 1999, 2000, Working Group on Deposit Insurance, 2000).

1. *defining deposit insurance system (DIS) in law*

The system of deposit insurance should be clearly defined in law. The system also should be publicly announced and the public should trust it. Moreover, transparency of deposit insurance system is able to reduce moral hazard, agency and political capture problems (to some extent).

2. *extension of deposit insurance system to non-bank depository institutions, such as investments, merchant, savings, and cooperative banks, finance companies and credit unions*

Since the main objective of deposit insurance is the protection of small depositors who are unable to monitor performance of financial institution on their own, not all financial institutions should be included in deposit insurance system. Such institutions as investment banks, merchant banks, and financial companies usually attract large depositors that should be interested in supervising fundamentals of banks.

Secondly, institutions included in deposit guarantee system should be subject to effective supervision and control. From this point of view, it is important for a supervisory system to be compliant with international norms, in particular ones stated in the Basel Accord. Because some institutions are regulated by different laws, it is possible to separate deposit insurance systems for them.

3. *levels of coverage*

The coverage limit usually embraces a high percentage of the number of deposit accounts and a relatively small percentage of the total value of deposits. The IMF recommends to set the limit at twice GDP per capita. However, it is obvious that with the economic growth or higher rates of inflation the coverage limit should

be indexed. For example the EU legislation provides for revision of coverage limit every 5 year.[5]

4. funded and ex post system

As usual, funded deposit insurance systems are less uncertain and more rule-based than ex post ones. Ex post deposit insurance is characterized often by uncertainty about responsibilities regarding sharing the costs for compensation, insufficient funding from the government, coinsurance, and limited responsibilities. Often such a deposit insurance system is privately run. That is why, to avoid vagueness a funded system should be implemented.

5. risk-adjusted premiums

The risk premiums imposed by a deposit insurance agency should be based on objective criteria such as capital adequacy and supervisory rating. However, there are difficulties with applying these criteria, since the capital adequacy ratio and some other basic ratios reflect the performance of a bank with a lag, while a calculation of supervisory ratings usually demands confident information.

6. financial target for the fund

Deposit insurance agency (fund) should set a target level for the fund that will allow meeting its liabilities. As usual, such a target is expressed as a percentage of insured deposits. For this purpose, deposit insurance fund should establish a premium depending on its costs and adjust it when necessary.

If a deposit insurance system has just started and is weak, it would be better to implement high premiums. Such a measure allows the fund quickly to raise money[6].

[5] Directive 94/19/EC of the European Parliament and of the Council on deposit-guarantee schemes

7. provision of supplementary findings

It may happen that resources of deposit insurance agency will be insufficient to meet liabilities. That is why some supplementary sources such as government funding should exist. In addition, a deposit insurance agency may also be allowed to borrow money from markets, or from the central bank.

8. the composition of administration of deposit insurance agency

Government may be represented in administration of a deposit insurance agency, but its authorities should not dominate. It is important that the board of the agency does not include bankers or persons directly related to banking. However, their participation in advisory board is helpful.

9. back-up power to close trouble institutions and cooperation with supervisors

Of course, deposit insurance agency is interested in the power to close an insolvent bank. However, it would be better if a deposit insurance agency is just represented at the on-site inspection of the troubled bank. Therefore, there should be close cooperation and exchanges of information between the central bank, as both a supervisory body and lender of last resort, and the deposit insurance fund. For example, the central bank should inform the agency about performance of banks and remedies implemented to troubled ones.

10. identifying the right time to initiate deposit guarantee scheme

Explicit deposit insurance should be established in normal times. During crisis it would be better if the deposit insurance system remains implicit or temporarily offers full guarantee, since limited coverage will not prevent bank runs.

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[6] At the same it should not significantly affect bank's margin and cause a rise in interest rates.

Chapter 3

UKRAINIAN CONTEXT

Bank Overview

In Ukraine the only financial institutions that are allowed to issue deposits are banks. As of October 1st, 2000, the banking system of Ukraine included 155 operating banks, of which 131 banks were members of Ukrainian Household Deposit Guarantee Fund. Two banks were state-run ("Oshchadbank" – State Savings Bank and "Ukreximbank" – export-import bank), 31 commercial banks were established with participation of foreign capital, and only 8 banks have 100% of foreign capital.

The most widely used classification of Ukrainian banks belongs to the NBU and is based on the size of total assets (Appendix A). According to this classification, banks are divided into four groups: largest banks, large banks, medium banks, and small banks. The first bank group (largest banks) possesses more 63.6% of household deposits having about 50% of all bank assets. It consists of 5 banks-successors of previously state owned specialized banks plus two big private banks, and one bank – newcomer of this group:

- Industrial bank (formerly "PromStroyBank", now "PromInvestBank")
- Agricultural bank (formerly "AgroPromBank", now "Ukraina" bank)
- Bank for social infrastructure (formerly "ZhilSotsBank", now "UkrSotsBank")
- Foreign trade bank (formerly "VneshEconomBank", now "UkreximBank")

- Households savings bank (formerly "SberBank" of USSR, now "OshchadBank" of Ukraine)
- New universal private banks - "PrivatBank" and "Aval" - that became system banks. Government exercises its pension transfers through “Aval” bank, while “Privatbank” has originally had a regional basis, but up to now has considerably broadened its branch network and significantly increased its corporate and individual customers base.
- “First Ukrainian International Bank” – that entered this group in the middle of 2000 mostly because of a large amount of quasi-assets associated with open foreign exchange position[7].

The second group of banks – large banks, as well as the medium banks are typically new commercial banks of the “second wave”. Their main characteristics are large scale of banking operations, universality and greater mobility relative to the largest banks. The only difference lies in the volume of total assets.

Small banks primarily deal with local customers or with their founder firms. Basically, they have just survived from earlier times when banking regulation had been rather weak. Very often these banks are involved in facilitating illegal transactions such as “black cash” conversion, tax evasion, etc.

The Banking System in 2000

No significant changes occurred in the Ukrainian banking system in the first three quarters of 2000. Within a group of banks-members of deposit insurance system, the amount of household deposits was equaled to 5 UAH mln (81% of all household deposits), of which more than 60% were in the foreign currency.

[7] First Ukrainian International Bank shows a turnover of open foreign exchange position in the own balance instead of net open foreign exchange position as do most banks.

88.5% of these deposits were less than UAH 500. The number of depositors grew from 4.61 to 5.26 mln[8]. At the same time, the size of all household deposits rose from UAH 4.459 billion to UAH 6.18 billion (Table 2). Thus net change in 9 months amounted to UAH 1.722 billion that is an increase of household deposits constituted 38.6%. During this period the quarterly growth of deposits was continuously declining from 18.9% in the first quarter to 6.2% in the third one. A similar trend is observed in total liabilities of the Ukrainian banking system meaning that households' deposits were relatively stable within the liabilities. As of October 2000, household deposits as a share of total liabilities amounted to 22.1% (Figure 1), which remained the same through the year (Figure 2). As for other balance liabilities, they did not show the same pattern. These facts allow to assume that a reallocation of borrowed funds occurred out of household deposit market.

However this pattern does not mean that household depositors' risks did not change. Figure 3 shows that the growth of capital was much smaller than the growth of household deposits and assets. That is why during the year the capital adequacy ratio was falling and deposit-to-capital ratio was increasing. The structure of assets also suffered changes: the size of working assets grew faster than the size of liquid assets. Consequently, liquidity ratio[9] declined from 0.393 to 0.328. Moreover, assets quality was steadily falling in two preceding years, especially within groups of largest banks and large banks[10]. Table 3 displays that a share of problem loans in total loan portfolio amounted to (22%) and (33%) respectively. Such numbers on the macro level signify a higher risk exposure of household depositors in Ukraine.

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[8] Source: Pidsumky Diyal'nosti Komertsiyn yh Bankiv Ukrayiny [Activity Results of Ukrainian Commercial Banks]. (2000), *Visnyk NBU [The Herald of NBU]*, Vol. 58, No. 12, December, pp.12-16

[9] Liquid assets divided by working assets

[10] Excluding foreign-owned banks

Parameters of Ukrainian Deposit Insurance System

The idea of protecting depositors appeared in Ukraine in 1995 and in the beginning of 1996 when National Bank of Ukraine approved the creation of Interbank Deposit Insurance Fund. However this decisions were not implemented since it contradicted existing legislation, especially the Law "On insurance" that did not define deposit insurance among other insurance activities. Therefore instead of explicit deposit guarantee, the NBU enacted licensing of household deposit operations in 1996.

At the same time experts of NBU prepared a Law of Ukraine "On deposit insurance". The project of the law was introduced at the end of 1996 during the seminar organized by the World Bank and devoted to banking reform in Ukraine, and deposit insurance in particular. This seminar entailed intensive debates, first of all between the NBU and Association of Ukrainian Banks, regarding supervisory functions of the deposit insurance agency. NBU's experts supposed that the collection of fees and payments to suffered depositors had to be the only functions of a deposit insurance fund without rights to get information about banks' performance, and moreover without rights "to punish" banks for their risky activity (Illyashenko, 1997). Such position seems to be strange especially regarding information rights. Insurance principles as well as the Law of Ukraine "On insurance" assume that it is the right of insurer to demand from insured any information relevant to the subject of insurance. Representatives of the Association of Ukrainian banks (Palamarchuk, 1997) pointed out that it was extremely important that the fund obtained information from the NBU, which would make possible to supervise depositors' exposure to risk more effectively.

Besides, we think that there may be a trade-off between monetary policy and protection of depositors (Stern, 1988). Since the Law of Ukraine "On National

Bank of Ukraine" states that the basic function of the NBU is the stability of the national currency unit, it is reasonable to assume that the NBU chooses this objective as primary while leaving a deposit insurance as secondary.

For more than a year there were no movements towards establishment of deposit insurance in Ukraine until a Presidential Decree initiated a household deposit guarantee system in September 1998. Its implementation followed the financial crisis in Russia and probably the policy objective was to prevent deposit withdrawals in Ukraine during that time. Since this Decree contained only the basics of deposit insurance scheme, in four months Cabinet of Ministers adopted a new Decree that created the Household Deposit Guarantee Fund (HDGF) as a state, specialized, non-profit organization, and the only deposit insurance agency. The Decree of Cabinet Ministers did not include the value of parameters but contained the detailed description of membership in HDGF, its functions, administration, rights, and obligations. The problem of political capture is solved by appointing to the Fund's Counsel two representatives from Cabinet of Ministries, two – from National Bank of Ukraine, one – from Association of Ukrainian Banks.

In order to lessen an agency problem in banks, the following deposits are excluded from any repayment: anonymous, payable to bearer, of members of bank's supervisory councils, boards of directors and inspection commissions, of bank's auditors, of shareholders with 5 or more percents of bank's shares, and also of members of their families.

Maximum amount of repayment that is equal to UAH 500 (about $90) was considered to cover 90% of deposits in 1998. The coverage limit was calculated as an average household deposit within the group of bank-members of the

HDGF. As of October 2000, this number equaled to UAH 950[11]. Although the IMF advises to set coverage limit equal to twice GDP per capita (approximately $1300), a small amount is acceptable if deposit insurance system has just started.

Banks having a license for taking household deposits are obliged[12] to make a one-time payment of 1% of their statutory capital and then pay 0.5% of the amount of household deposits. These parameters are extremely important to accumulate enough money, especially if the system is new for banking sector. In the case of insufficiency of the funds HDGF can draw: special payments of banks; special payments of the government; revenues received from investments in state securities; fines from unpaid contributions of commercial banks; loans of commercial banks and international financial institutions.

The first experience came to HDGF only after two years. After an arrest of Mr. Feldman, a Chairman Joint-Stock Commercial Bank "Slovyansky", in the beginning of 2000, NBU appointed Provisional Liquidation Commission that concluded that the bank was insolvent due to a large number of problem promissory notes in its balance sheet. In January 2001, the bank was bankrupted. Obviously, it was the fastest bankruptcy procedure in the history of Ukrainian banking. Such a decision was more political and preceded the adoption of new Law of Ukraine "On banks and banking" which would make impossible bankruptcy in such a way. Basing on calculations of the NBU, HDGF had to reimburse about UAH 4 mln that was less than 4.5% of all household deposits in Slovyansky. In March 2001, the fund paid off more than 90% of this amount despite an unfinished examination in a court concerning the case of Slovyansky.

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[11] Source: Pidsumky Diyal'nosti Komertsiynyh Bankiv Ukrayiny [Activity Results of Ukrainian Commercial Banks]. (2000), *Visnyk NBU [The Herald of NBU]*, Vol. 58, No. 12, December, pp.12-16

[12] Household deposits in Oshchadbank (State Savings Bank) are guaranteed by the government.

Chapter 4

EMPIRICAL FINDING ON DEPOSITORS' EXPOSURE TO RISK

Deposit insurance system of the USA suffered significant disturbances in the 1980s. The main problem was that the premiums were not risk-adjusted and consequently financial institutions could increase risk-taking activity (Ronn and Verma, 1986). That is why the main element of further reform was implementation of such premiums that would be based on assessment of different bank's fundamentals.

These fundamentals constitute a basis for microeconomic empirical studies. One of such researches, conducted by Maria Soledad Martinez Peria and Sergio Schmukler (2000), has assessed the interaction between market discipline and deposit insurance in Argentina, Mexico and Chile, by testing the effect of bank fundamentals on the amount of issued time deposits. The similar analysis was also conducted with the Colombian deposit insurance system by Adolfo Barajas and Roberto Steiner (2000). They examine how depositors choose among different Colombian banks and how bank fundamentals affect their decisions. Authors analyze the existence of market discipline in Columbia. The results of these works suggest that in the well-constructed deposit insurance systems the market discipline is evident since depositors punish banks for their risky activity by withdrawing their deposits.

But the situation can be opposite if the market discipline is weak enough, so banks can issue more deposits with little additional costs[13]. For example, if depositors do not care much about bank performance and demand the same

[13] Such costs are advertisement, off-balance branches, higher interest rates on deposits, better services, etc.

interest rates on deposits (Gilbert and Vaughan, 2000). Or even with high costs, some banks can use deposits as the base for risky operations[14].

Therefore, it seems to be helpful to investigate how the bank's exposure to different risks influences their decision on taking more deposits. We can do so by testing empirically the impact of different bank fundamentals on deposit-capital ratio. We expect that worse bank fundamentals positively influence bank's decision to issue more household deposits. These results would suggest that Ukrainian deposit insurance system lacks risk-adjusted premiums and needs closer cooperation with bank supervisor (the NBU) in order to improve market discipline and lessen depositors' risk exposure.

The Data Set

The data consist of monthly balance sheet items of 128 Ukrainian commercial banks from the database of the Association of Ukrainian Banks. The largest banks are represented by Oshchadbank, Privatbank, Aval, and First Ukrainian International Bank. The sample covers 1998-1999 and the first eight months of 2000, and contains the structure of assets, liabilities and capital.

Assets

CASH = Cash in banking office, cash in exchange points, cash in off-balance branches, traveler's cheques, and bank metals

CACC = Funds on correspondent accounts in other banks (Nostro accounts) and in the National Bank of Ukraine

IBC = Granted interbank credits and deposits allocated in other banks

[14] Usually these operations are performed in favor of affiliated companies, or promise high return.

TL = Corporate loans and financial leasing

LRES = Reserve funds for corporate loans and financial leasing operations, also known as loan loss reserves

SECS = Securities for sale in the security portfolio of a bank

SECI = Securities for investments in the security portfolio of a bank

INV = Investments in associate companies and subsidiaries

FA = Fixed assets

NA = Net assets (total assets less quasi-assets[15])

Capital and Liabilities

DEP = Term household deposits

ADEP = All household deposits (demand household deposits, certificates of deposit issued to individuals, and term household deposits)

CDD = Corporate demand deposits, also known as transaction deposits

STCAP = Paid statutory capital

BCAP = Basic capital, also known as core capital (statutory capital, financial result[16] of previous years, and general reserves)

CAP = Aggregate capital (paid statutory capital, current financial result, financial result of previous years, and general reserves)

[15] Open foreign exchange position, funds in branches of the same bank, and granted interbranch credits.

These variables allow to calculate the ratios used for assessment bank's capital adequacy, liquidity, assets quality and earnings. Most of these ratios are based on CAMEL system[17] and regulatory standards implied to commercial banks by NBU.

Deposit-capital ratios (ADC, DC). This ratio reflects depositors' exposure to risks. In our empirical analysis we take two deposit-capital ratios. The first one (ADC) is equal to the amount of all household deposits divided by capital $(ADEP/CAP)$. In the second deposit capital (DC), we take household time deposits as a numerator(DEP/CAP), i.e. we exclude household demand deposits and certificates of household deposit from the first deposit-capital ratio.

Capital adequacy. It is the essential ratio in the financial analysis of a bank. It shows the solvency of the bank, i.e. bank's ability to absorb losses at the expense of own capital. The ratio consists of two components: capital (numerator) and assets (denominator). NBU's system of regulatory standards uses two capital adequacy ratios: risk-adjusted and not risk-adjusted. The difference between them is that in the first ratio assets are classified and in the second one are not. We take "a middle point" and use net assets as a denominator of our capital-adequacy ratio (CAP/NA). However, we include this coefficient in the model only as a control variable because taking the same variable (CAP) in both left and right sides of the model may lead to spurious results. At the same time, earned capital to net assets ratio will be an appropriate proxy to capital adequacy ratio. We can calculate earned capital by deducting statutory capital from basic capital $((BCAP-STCAP)/NA)$.

---

[16] Revenues minus costs (known also as profit)

[17] Widely used banking assessment system: C- capital adequacy, A – assets quality, M – management quality, E – earnings, L – liquidity.

Liquidity. Liquidity risk usually refers to possible difficulties of renewing or replacing maturing liabilities without considerable costs. We take a ratio of highly liquid assets (HLA) and working assets (WA), which is also known as standard N7[18]. It shows the share of highly liquid assets in all working assets.

$$\frac{HLA}{WA} = \frac{CASH + CACC + IBC}{SECS + SECI + TL}$$

Assets quality. There are different measures of assets quality. CAMEL rating evaluates assets quality using asset-based ratios such as reserve fund divided by classified loans, risk-weighted assets divided by total assets, highly liquid assets divided by total assets. The last one is very similar to the liquidity standard N7. Calculation of others demands data on classified or risk-weighted assets. Since our data does not contain such information we use loan reserve fund to total loans $(LRES/TL)$ as a proxy to assets quality ratio. It describes the coverage of loans by reserve fund. Also we use some assets-based ratios, namely a share of total loans in net assets (TL/NA), a share of securities for sale in net assets $(SECS/NA)$, and a share of investment in net assets $((SECI+INV+FA)/NA)$.

Earnings. Of earnings ratios, we can calculate only two classical ratios: return on equity and return on assets. However, it would be incorrect to use these ratios in the analysis of monthly data since profit is volatile throughout a year due to unequal distribution of costs and revenues in time.

Managerial assessment. This group consists of coefficients related to different aspects of bank management such as violation of regulatory standards, subjective opinion, large exposures, and so on. We can use only one of coefficients from

[18] N7 is one of three liquidity standards imposed on commercial banks by NBU

this group, namely ratio of corporate demand deposits to net assets $(CCD/\ NA)$ that describes organizational ability for corporate banking services.

Methods and Results

We limit our empirical analysis by testing the effect of bank's fundamentals on deposit-capital ratios. A fixed-effect model, in this case, is the most appropriate. First of all, our data are incomplete due to missed observations. Secondly, sample does not include some largest banks. Moreover, since we have only basic balance sheet items we should also control unobserved factors. Therefore, fixed effects constitute an additional field for analysis. We predict that they can be explained by a size and specialization of a bank.

$$ADC_{it} = a_i + b_1\left(\frac{CASH + CACC + IBC}{TL + SECS + SECI}\right)_{it} + b_2\left(LRES\ /TL\right)_{it} +$$
$$+ b_3(TL\ /\ NA)_{it} + b_4\left(SECS\ /\ NA\right)_{it} + b_5\left(\frac{SECI + INV + FA}{NA}\right)_{it} +$$
$$+ b_6\left(CDD\ /\ NA\right) + \left(\frac{BCAP - STCAP}{NA}\right)_{it} + e_{it}$$
$$e_{it} \approx NID(0, s_{it}^2)$$

$$ADC_{it} = a_i + 0.00005 \cdot \left(\frac{CASH + CACC + IBC}{TL + SECS + SECI}\right)_{it} + 0.1123 \cdot \left(LRES\ /\ TL\right)_{it} +$$
$$+ 0.1384 \cdot (TL\ /\ NA)_{it} - 0.4662 \cdot \left(SECS\ /\ NA\right)_{it} - 0.4731 \cdot \left(\frac{SECI + INV + FA}{NA}\right)_{it} +$$
$$+ 0.3189 \cdot \left(CDD\ /\ NA\right) - 2.0869 \cdot \left(\frac{BCAP - STCAP}{NA}\right)_{it} + e_{it}$$

As can be seen from the test results (Appendix C), a structure of bank assets has a significant impact on deposit-capital ratio despite a relatively low R^2 (17.8%). In fact, a low R^2 may tell about an existence of factors unobserved by coefficients

and fixed effects. At the same time, we could not expected for its high value since data are imperfect.

First, we observe significant positive coefficients at TL/NA and LRES/TL ratios. This suggests that loan-oriented banks tend to issue more deposits. Of course, one can argue that a bank should finance its term assets by term liabilities. But this doesn't justify the positive effect on deposit-capital ratio. The practice of issuing more deposits and less stock may reveal why small banks grant a lot of loans to affiliated companies. In this case, a bank is like a mechanism of collecting funds from depositors and transferring them to shareholders and related persons.

It is interesting to note that higher LRES/TL doesn't necessarily mean better coverage of loans by reserves. On the contrary, taking into account that banks do unlikely reserve more funds than required by the NBU (Table 4) and even sometimes cheat to decrease the amount of reserves, this ratio reflects the share of bad loans in total loans. Therefore positive coefficient at this ratio shows that deposits are used to finance risky loans.

The significant coefficients are also observed with other assets quality ratios. Results show negative impact of (SECI+INV+FA)/NA and SECS/NA on deposit-capital ratio. A negative sign at the ratio of investments and net assets means that banks with less investment issue more deposits. One of the reasons is that financial disturbances of the end of 1998 "froze" capital investments both from and into banks. As for securities for sale, they are mostly OVDP[19]. Before September 1998 they promised high revenues. But after Ministry of Finance failed to meet the payments, a large part of them were converted into COVDP (conversion OVDP), and therefore T-bills lost their attractiveness and were not more considered as a substitute for loans.

[19] Ukrainian T-bills

The empirical results show that standard of high liquidity has zero impact on deposit's exposure to risk. However, our model does not take into account the effect of minimum reserve requirements. Another drawback is that some banks are simultaneously borrowing and lending in the interbank credit market. Since due to data we cannot distinguish between overnight credits and term credits, it would be incorrect just to deduct taken interbank credits from granted ones. Nevertheless, all these may suggest that the impact of this ratio be underestimated. Taking into account all written above, we may predict the negative coefficient of high liquidity ratio, adjusted to minimum reserve requirements and interbank compensatory operations[20].

The coefficient associated with management quality ratio (CDD/NA) is negative. This may happen in the case of positive correlation between transaction deposits[21] and household demand deposits, probably due to bank policy or some advantages in attracting demand deposits. In order to partly exclude this effect, we change the regressand of the model, namely we take time deposits instead of all deposits.

$$DC_{it} = a_i + b_1\left(\frac{CASH + CACC + IBC}{TL + SECS + SECI}\right)_{it} + b_2\left(LRES / TL\right)_{it} +$$
$$b_3(TL / NA)_{it} + b_4\left(SECS / NA\right)_{it} + b_5\left(\frac{SECI + INV + FA}{NA}\right)_{it} +$$
$$+ b_6\left(CDD / NA\right) + b_7\left(\frac{BCAP - STCAP}{NA}\right)_{it} + e_{it}$$
$$e_{it} \approx NID(0, s_{it}^2)$$

[20] These operations are often speculative or directed to meet a requirement of high liquidity ratio

[21] Corporate demand deposits

$$DC_{it} = a_i + 3.86 \cdot 10^{-5} \cdot \left(\frac{CASH + CACC + IBC}{TL + SECS + SECI} \right)_{it} + 0.0884 \cdot (LRES / TL)_{it} +$$

$$+ 0.0358 \cdot (TL / NA)_{it} - 0.0428 \cdot (SECS / NA)_{it} - 0.2849 \cdot \left(\frac{SECI + INV + FA}{NA} \right)_{it} -$$

$$- 0.1493 \cdot (CDD / NA) - 1.5379 \cdot \left(\frac{BCAP - STCAP}{NA} \right)_{it} + e_{it}$$

A lower R^2 of this model (14.3%) may arise because of excluding demand deposits that can be substitutes to time deposits, especially for banks without a license to issue household time deposits.

A significant negative sign of coefficient near management quality will confirm our hypothesis that low organizational ability for banking services leads to higher exposure to risk among depositors. We think that it is important to indicate that signs and values of other coefficients do not change significantly.

To check validity of model specification we can include two control variables: exchange rate and capital adequacy ratio. In DEP/CAP ratio, we use all household deposits independently on currency in which they are denominated. Taking into account fact that in average about half of deposits are in foreign currency, we expect that there is a positive effect of dollar-exchange rate on deposit-capital ratio: Exrate$\uparrow \Rightarrow$ Deposits$\uparrow$, but capital is unchanged since it is denominated in national currency $\Rightarrow$ (DEP/CAP)$\uparrow$. We can also assume that household deposits are positively correlated with net assets. Therefore, we expect for negative effect of capital adequacy ratio (CAP/NA) on deposit-capital ratio (DEP/CAP). As we expected, a sign of coefficient is positive for exchange rate and negative for capital-adequacy ratio. Despite less significant coefficients in the model, most of them have the same sign as in the basic models. In general, this strengthens the validity of the tests.

It is interesting to look at fixed effects presented in Appendix D. The lowest fixed effects are mainly observed within a group of banks which specific activity does not require funds from the market of household deposits. For example, Express bank is specialized on serving Ukrzaliznytsya, a state-owned railroad corporation. These banks have a lot of corporate demand or/and time accounts. Their lending activity is also limited within a specialization. That is why we observe low fixed effects. Another large bank, Raiffaisen Bank Ukraine, received licenses on serving household demand deposits in the end of 1999 and on taking household time deposits in 2000.

For small banks such as Misto, Diamant, and Ukrainian Credit and Trade Bank, household deposits are costly liabilities since depositors require higher interest rates. Some of these banks even do not possess relevant NBU's licenses. And finally, the smallest fixed effect is observed in Donuglekombank which capital, as of January 2001, equaled to UAH -31.14 mln and household deposits - UAH 4.01 mln[22]. As of January 1, 2001 there were three such banks: Donuglekombank, Slovyansky, and Inko. The last one is not included into our regressions because it "failed" before January 1998. Donuglecombank suffered losses in October 1998 during Russian financial crisis. Slovyansky fell in this list in the end of 2000.

As can be expected, the largest banks included into empirical analysis, Oshchadbank and Privatbank, have the highest constant terms in both models. Oshchadbank has a very high fixed effect in the ADC model. This can be explained by large amount of household demand deposits that are twice as much as time deposits.

[22] Struktura Zobov'yazan I Kapitalu Komertsiynyh Bankiv Ukrayiny za Stanom na 01.01.2001[A Structure of Liabilities and Capital of Ukrainian Commercial Banks, as of 01/01/2001]. (2001), *Visnyk NBU [The Herald of NBU*], Vol. 61, No. 3, March, pp.12-19.

The second high constant term in this model belongs to Arkada. This bank is specialized on granting loans for purchasing apartments built by the shareholder "KyivMis'kBud".[23] This activity presumably explains large flows and balances of household demand deposit. Fixed effects also show that some large banks have a "competitive effect" which combines both size and geographical effects. The last one is due to inequality of income among regions and immobility of households. At the same time, there are no significant barriers to lend across regions. With this in mind, we can argue that a branch network also matters.

Of course our tests are not perfect, and it would be better if we estimated impact of advertising costs, interest rates on deposits in regional and time context. Although a required empirical analysis is onerous and demands very detailed bank information including not only money on accounts but also their background information (interest rate and periodicity of their payments, time, affiliation with bank, and so on), it will give us more clear picture of risk exposure. In particular, it will allow us to clarify the reasons of strong impact of unobserved factors in estimated fixed-effect models.

[23] Kyiv Municipal Building Company

Chapter 5

SUMMARY AND CONCLUSIONS

Deposit insurance is one of elements of government safety nets that are designed to maintain depositors' confidence by protecting their savings. The reason of the implementation of such schemes is that problems in banking sector may lead to significant disturbances in financial markets affecting a real sector. As a result, a shrinking business activity will hamper the economic development.

However, deposit insurance as any insurance activity has own problems such as moral hazard, adverse selection, or agency problem. These pitfalls represent the major danger to banking stability. Their negative impact can exceed any benefits of deposit protection since such systems are very prone to any shocks. In short, a poorly designed deposit insurance scheme can cause deterioration in the condition of the whole financial system.

Policy makers of developed countries along with experts of international financial institutions made a long way reforming deposit insurance system in order to eliminate pitfalls inherent to it. This experience is taken by other countries and in the beginning of 1990s a number of countries have explicit or implicit deposit protection schemes. The most success is achieved by countries with developed institutional structure and strong supervisory systems where explicit deposit insurance system is characterized by compulsory membership, low coverage, and risk adjusted premiums. In addition, it ought to be accountable to public and be politically independent. With these parameters, the deposit insurance system provides incentives to keep the banking system sound.

Ukraine has established a deposit insurance system in 1998. Though it was enacted by Presidential Decree, the deposit insurance system was first initiated by NBU and the World Bank. Ukrainian scheme is characterized by very low coverage limit, above average premiums, compulsory membership (but with the exception of State Savings Bank), and existence of insurance fund. These parameters seem to avoid major problems. In addition, some elements such as fund's management are implemented to avoid political and regulatory captures. Although these parameters look acceptable, absence of risk-adjusted premiums is the major reason of further reforms.

We have performed an empirical analysis to reveal how bank fundamentals determine deposit-taking behavior. A rationale is that risk-adjusted premiums are calculated basing on performance ratios such as those included in banking assessment system CAMEL. Therefore, it seems to be worth estimating the effect of such ratios on deposit-capital ratio in order to determine which banks expose depositors to excessive risks.

The results show that banks with more loans in the structure of assets tend to issue more deposits per capital. Alone this fact may bok acceptable unless empirical tests reveal a positive correlation between loan loss reserves and deposit-capital ratios. At the same time, we observe negative impact of a share of other working assets and investments in net assets on deposit-capital ratio. As a result of such activity, a probability of bank failure may rise.

For some banks, high deposit-capital ratio is explained by peculiarities of their activities and/or by so-called too-big-to-fail problems. In the last case, households believe that large banks are more reliable place for depositing their savings. This behavior is explained by the fact that both depositors and managers know that government will not afford failure of systemic banks.

There are two basic implications of these findings. First of all, these problems can be avoided by imposing risk-adjusted premiums that is based on the ratios similar to those included in the empirical tests. This measure would create incentive for bank to reduce their risks if they wish to issue more deposits. At the same time, it may happen that banks agree to pay higher costs of deposits. In this case they would expose depositors to higher risks, especially if a bank has already suffered losses. In this case, the Household Deposit Guarantee Fund needs a close cooperation with the National Bank of Ukraine in bank supervision and sharing relevant information. To protect depositors more effectively, HDGF should even have a back-up power. And probably then Ukrainian banking system would not have about forty insolvent banks and only one reimbursement procedure[24].

Just to finish optimistically, we would like to indicate that, in April 2001, the Law of Ukraine "On household deposit guarantee fund" passed the first reading in the Parliament. The law prepared by Presidential Administration assumes an increase in a coverage limit up to UAH 1000. Moreover, the HDGF will be able to acquire all necessary information from the NBU and banks. In addition, the fund will obtain a right to recommend the NBU to withdraw banking licenses from banks which activity threatens depositors.

[24] Slovyansky's case

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APPENDIX A

Table 1. Classification of Ukrainian Banks by Total Assets
(as of October 1, 2000)

Item	Criterion	Assets, %	HD[1], %	Number
Largest banks	Assets > 1 bln UAH	51.1	63.6	5% (8)
Large banks	100 mln UAH < Assets < 1 bln UAH	36.2	28.6	34% (53)
Medium banks	50 mln UAH < Assets < 100 mln UAH	7.7	5.8	24% (37)
Small banks	Assets < 50 mln UAH	5.0	2.0	37% (57)
Total		100	100	100 (155)

Source: Pidsumky Diyal'nosti Komertsiynyh Bankiv Ukrayiny [Activity Results of Ukrainian Commercial Banks]. (2000), *Visnyk NBU [The Herald of NBU]*, Vol. 58, No. 12, December, pp.12-16

[1] Household deposits

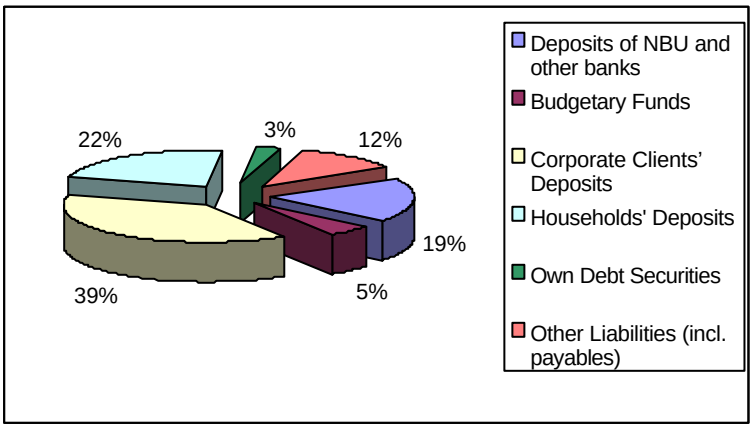
APPENDIX B

Table 2. Banking System of Ukraine: Liabilities (mln UAH)

	1/01/2000	1/04/2000	1/07/2000	1/10/2000
Deposits of NBU and other banks	**4 673.0**	**4 929.3**	**5 151.8**	**5 327.6**
Funds of NBU	1 569.4	1 555.4	1 691.9	1 623.6
Funds of other banks	911.4	1 030.5	1 026.7	999.1
Term funds of other banks	2 192.2	2 343.4	2 433.2	2 704.9
Budgetary Funds	**487.7**	**1 108.2**	**1 092.7**	**1 413.3**
Corporate Deposits	**8 109.0**	**9 071.2**	**10 249.7**	**10 836.4**
Domestic currency (UAH)	na	5 288.5	6 365.1	6 675.2
Hard currency	na	3 383.6	3 546.4	3 797.1
Household Deposits	**4 458.7**	**5 301.7**	**5 819.5**	**6 180.9**
Domestic currency (UAH)	2 260.6	2 741.0	na	3 102.8
Hard currency	2 140.2	2 491.8	3 317.1	2 991.6
Own Debt Securities	**306.1**	**859.4**	**644.2**	**820.8**
Other Liabilities (incl. payables)	**1 894.2**	**2 525.3**	**3 105.2**	**3 407.4**
TOTAL LIABILITIES	**19 928.6**	**23 795.1**	**26 063.1**	**27 986.4**

Source: Pidsumky Diyal'nosti Komertsiynyh Bankiv Ukrayiny [Activity Results of Ukrainian Commercial Banks]. (2000), *Visnyk NBU [The Herald of NBU]*, Vol. 49, 52, 55, 58, No. 3, 6, 9, 12, March, June, September, December.[25]

Figure 1. Banking System of Ukraine: Structure of Liabilities (as of October 1, 2000)



[25] This source is used throughout Appendix B

Figure 2. Banking System of Ukraine: Household Deposits as % of Total Liabilities

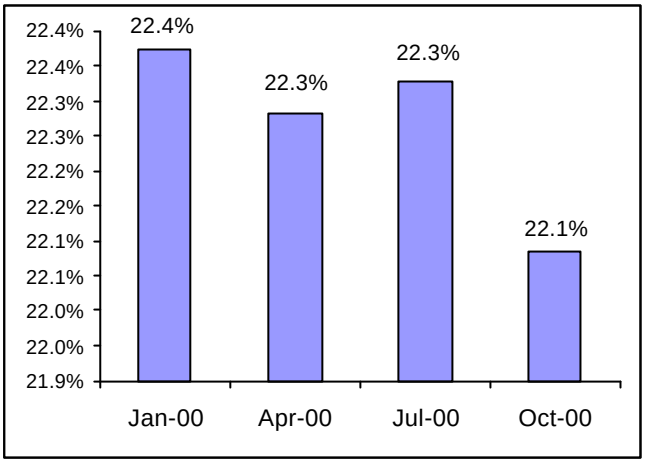


Figure 3a. Banking System of Ukraine: Household Deposits as % of Balance Sheet Capital

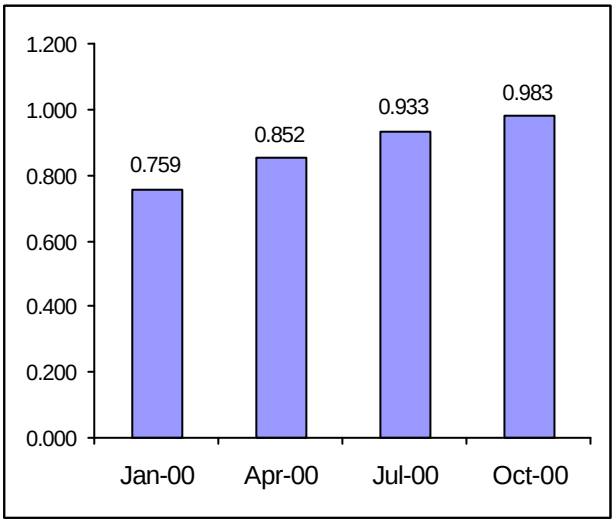


Figure 3b. Banking System of Ukraine: Capital Adequacy Ratio

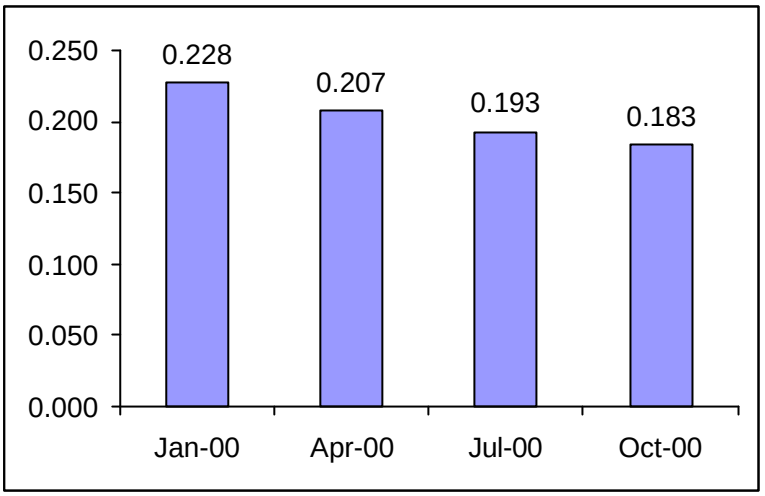


Figure 3c. Banking System of Ukraine: Liquid Assets as % of Working Assets

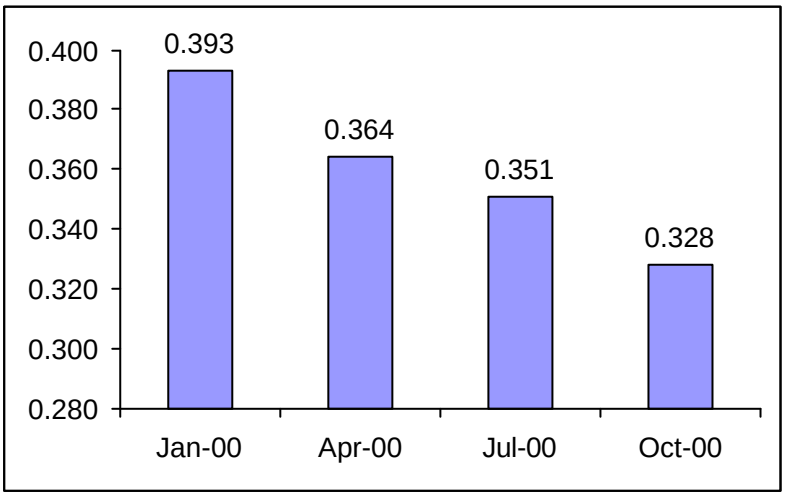


Table 3. Assets Quality in Selected Bank Groups

Bank Groups		Jan-1998	Jan-1999	Jan-2000
Small Banks	Bad Loans	180 112	415 509	425 086
	Loan Portfolio	1 665 908	2 320 730	2 201 538
	Rate	11%	18%	19%
Medium Banks	Bad Loans	155 157	248 877	337 249
	Loan Portfolio	888 592	1 715 910	3 575 542
	Rate	17%	15%	9%
Large Banks	Bad Loans	62 398	293 712	563 356
	Loan Portfolio	1 812 524	2 011 903	2 594 169
	Rate	3%	15%	22%
Foreign Banks	Bad Loans	1 652	24 927	27 679
	Loan Portfolio	543 057	531 134	871 210
	Rate	0%	5%	3%
Largest Banks	Bad Loans	427 992	1 286 076	1 313 349
	Loan Portfolio	3 236 538	3 524 129	3 777 898
	Rate	13%	36%	35%
First Four Largest Banks	Bad Loans	512 280	1 858 014	2 345 595
	Loan Portfolio	4 321 950	4 834 615	5 211 458
	Rate	12%	38%	45%

Source: Ukrainian Financial Sector Policy Note, (2000), The World Bank.

Table 4. Under-provisioning in The Largest Banks (as of March 2000, in UAH mln)

Bank	Required LLR	Actual LLR
Ukraina		
Oshchadbank		
Ukrsotsbank		
Ukreximbank		
Prominvestbank		
Aval		
Privatbank		
FUIB		

Source: Ukrainian Financial Sector Policy Note, (2000), The World Bank.

APPENDIX C

Table 5. Estimation Results (Total Panel Observations: 3569)

	Variable	ADC	DC	DC	DC
1	HLA/WA	0.000055 (0.000043)	0.000039 (0.000036)	0.000045 (0.000037)	0.000058 (0.000043)
2	$LRES/TL$	0.112325* (0.058353)	0.088428** (0.036726)	0.106813** (0.047341)	0.011149 (0.061050)
3	TL/NA	0.138370*** (0.052543)	0.035809 (0.036184)	0.088672* (0.033084)	0.070979** (0.031642)
4	$SECS/NA$	-0.466152* (0.260523)	-0.428052* (0.2199780)	-0.309514 (0.208132)	-0.173943 (0.136954)
5	$\frac{SECI+INV+FA}{NA}$	-0.473116*** (0.082587)	-0.284914*** (0.057622)	-0.108838* (0.057194)	0.130408 (0.165987)
6	CDD/NA	0.318928*** (0.122410)	-0.149260* (0.083113)	-0.341957*** (0.108843)	-0.184231** (0.091310)
7	$\frac{BCAP-STCAP}{NA}$	-2.086920 (1.493443)	-1.537949 (1.260536)	-1.272359 (1.233190)	-1.533240 (1.257152)
8	CAP/NA			-0.578931*** (0.099575)	
9	*Exrate*				0.049666*** (0.017669)
	R^2	0.177780	0.142918	0.144446	0.144482
	Adjusted R^2	0.145696	0.109473	0.110802	0.110839
	F-statistics	123.7495	95.43619	82.80071	82.82469
	Durbin-Watson	1.871292	1.903492	1.907698	1.905394

*, **, *** indicate 10%, 5%, 1% significance level; standard errors are in parentheses.

APPENDIX D

Table 6. Fixed Effects Obtained from The Basic Models

BANK	ADC-FE	BANK	DC-FE
20 banks with the highest fixed effects			
OSHAD	5.07149	OSHAD	2.148718
ARKADA	2.242843	ZUKB	1.839116
PRIVAT	2.062644	PRIVAT	1.803266
PRAVEX	1.980411	PRAVEX	1.753034
MRIA	1.417065	MRIA	1.439095
AVAL	1.347007	VTINVEST	1.318896
VTINVEST	1.270765	POLTAVA	1.290217
POLTAVA	1.268919	PREMIER	1.230572
PREMIER	1.244819	ENERGO	1.112392
ZUKB	1.229661	ELITA	1.055
LEG	1.144997	PRYKARP	1.010244
ELITA	1.133551	AVAL	0.98621
ENERGO	1.102723	ZINCOM	0.975879
DONBIR	1.082707	PERCOM	0.956135
PERCOM	1.061498	LEG	0.915827
NADRA	1.021928	UIB	0.912708
PRYKARP	0.973893	DONBIR	0.889357
INTER	0.927938	KPROM	0.87988
SLAV	0.905394	IKAR	0.849704
FC	0.879481	OKB	0.818563
10 banks with the lowest fixed effects			
DEMOS	-0.005992	SG	0.105411
EXPRESS	-0.012598	CREDAN	0.104251
DONMISK	-0.013567	KPECHER	0.09689
ARCADIA	-0.022216	AKSI	0.073246
RAIF	-0.037859	ARCADIA	0.059807
MISTO	-0.048062	DIAMANT	0.045186
DIAMANT	-0.049501	RAIF	0.024435
MERCURY	-0.050295	MISTO	-0.004131
UKTB	-0.128987	UKTB	-0.02035
UKRPROF	-0.201432	UKRPROF	-0.085587
DONUG	-5.260831	DONUG	-4.382378