THE UNIVERSAL INFORMATION TECHNOLOGY MODEL FOR DEPOSIT INSURANCE PAYOUTS

Raimundas Žilinskas*, Rimvydas Skyrius
Vilnius University, Lithuania

Abstract. *The basic function of all deposit insurance schemes is to pay deposit insurance payouts to depositors promptly for the losses they otherwise would suffer in the event of an insured financial institution's closure. As a result, depositors are relieved of both the recovery-rate and time risks of a liquidation process up to the insured level of their deposits. Deposit insurance payouts – including the speed and convenience – vary across countries and can affect public confidence in the deposit insurance scheme. Information technology support in the payout process is essential. However, one of the major problems in the insurance payout process is the lack of the proper information technology. This paper addresses the factors related to the payout process, discusses the advantages and disadvantages of various approaches, and makes recommendations on the establishment of a universal information technology model for a deposit insurer to accomplish the procedures of insurance payouts.*

Key words*: deposit insurance, deposit insurance payouts, information technology support*

Introduction

Activities of credit institutions are related to many factors that make up the operational risk of these institutions. When the level of risk is beyond a certain threshold, the activity of a credit institution is disrupted or temporarily or permanently prohibited. Neither a low-risk nor an average or high-risk credit institution does have sufficient liquid funds to meet its obligations to depositors within a short period of time. In order to protect the interests of depositors and to give the public a formal mechanism how to behave in a case of insolvency of credit institutions, many countries in the world have created the deposit insurance schemes, the principal purpose of such schemes being to protect depositors from large losses (e.g., Parker, 2010). One of the most important instruments to ensure this protection is an accurate and prompt payment of insurance payouts to depositors. If the payment of insurance payouts is delayed or paid in an incorrect way, or other inaccuracies in meeting depositors' interests take place, this may induce public dissatisfaction which could have a destabilizing effect on the financial market (Chu, 2011). Therefore, a well-functioning system of insurance payouts is one of the main elements of a stable financial market (Financial Stability Board, 2012).

* *Corresponding author:*
Faculty of Economics, Department of Economic Informatics, Vilnius University, Sauletekio Ave 9, LT-10222 Vilnius, Lithuania; e-mail: ziliraim@gmail.com

The activities of a deposit insurance scheme are generally based on the following principles: credit institutions that take part in the deposit insurance scheme insure deposits paying premiums to the deposit insurance fund, and in the case of closing a credit institution the deposit insurance institution (deposit insurer) pays payouts to depositors, using the money of the deposit insurance fund. Although a deposit insurance scheme operating principles are quite simple and clear, each scheme has its own distinctive structure and the best suitable deposit insurance scheme that uses some proprietary information technology for paying insurance payouts. Even in the European Union countries where deposit insurance is regulated by the European Council and Parliament Directive on deposit guarantee schemes, different information technologies for payment of insurance payouts are used (European Forum of Deposit Insurers, 2014). That is why we propose the universal information technology model for deposit insurance payouts, which can be adapted in many deposit insurance schemes.

Deposit insurers worldwide are united by the International Association of Deposit Insurers (IADI). The IADI has been founded in 2002 in order to ensure financial stability not only for individual countries, but also worldwide. The IADI unites 71 deposit insurance institutions of 69 countries of the world (International Association of Deposit Insurers, 2014). The European Commission initiative in 2002 has established the European Forum of Deposit Insurers (EFDI) which brings together 57 deposit insurance institutions from 46 European countries (European Forum of Deposit Insurers, 2014). Both the IADI and the EFDI goals are to contribute to the financial market stability, promoting the world of the Deposit Insurers cooperation in sharing experiences, exchanging the latest information, discussions on topical issues in the field of deposit insurance, organizing and encouraging members of the debate, the exchange of relevant information and experience. The IADI and the EFDI organize regular international training and seminars, counselling, scientific research related to deposit insurance. Unlike the IADI, the EFDI works on the development of the EU directives and their transposition into national laws and proposals for the practical implementation of the directives' provisions. These organizations pay a particular attention to the deposit insurers to guide their activities, offering best practice provisions. However, it must be recognized that the standardization and unification of insurance payout procedures are neglected by the IADI and the EFDI, and the information technology processes have to be chosen by a deposit insurance scheme itself (FDIC, 2010).

Features of deposit insurance payout systems

One of the main functions of a deposit insurance scheme is to give depositors a prompt access to their insurance payouts when a credit institution (CI) is closed. A deposit insurer should have access to the depositor's records at all times and undertake actions to

ensure prompt and accurate payouts to depositors (Fekete-Gyor A., 2013). There are a lot of approaches to accomplishing this function, but there's no unique way that allows the deposit insurer to pay payouts to depositors of different credit institutions.

As stated in the "Enhanced Guidance for Effective Deposit Insurance Systems: Reimbursement Systems and Processes" (International Association of Deposit Insurers, 2012) and "IADI Guidance Paper on Reimbursement" (Fekete-Gyor, 2013), the main ways to make payouts around the world are:

- payment agent;
- cheque or card payment;
- electronic transfer;
- cash payments.

The payment agent

The most popular and the widest practiced method is payouts made by a payment agent. Usually, a payment agent is a healthy CI whose network overtakes the network of the failed CI. This allows depositors to get their payouts closely to their residence. This method is used in Czech Republic (Fond pojištení vkladu, 2014), Slovakia (Fond ochrany vkladov, 2014), Lithuania (Indėlių ir investicijų draudimas, 2014), Poland (Bankowy Fundusz Gwarancyjny, 2014), Romania (Fondul de Garantare a Depozitelor în Sistemul Bancar, 2013), Latvia (Finanšu un kapitāla tirgus komisija, 2014) Greece (Deposit and Investment Guarantee Fund, 2013), Estonia (Tagatisfond, 2014), the USA (Federal Deposit Insurance Corporation, 2010), Korea (Korea Deposit Insurance Corporation, 2013), etc.

Deposit insurer transfers funds to a payment agent together with the list of depositors, and the payment agent disburses payouts to depositors. The deposit insurer and the payment agent communicate directly with each other in exchanging information about payments made and depositors' detailed data, if necessary.

When payouts are paid by a payment agent, all payment burden is carried by the payment agent, while the deposit insurer controls the payment. A depositor may make the payment agent to pay payout in cash, by check, leave the payout in the account with the payment agent or instruct to transfer the payout to another CI's account. So, the payment agent has to disburse payouts as the depositor desires.

Despite many advantages that the way of payments through the payment agent provides, this method has a number of disadvantages and drawbacks:

- the biggest drawback is that the vast majority of depositors have to visit the payment agent and to express their will on the method of receiving the payout. In cases when depositors are tens of thousands, or even several hundred thousand the payment agent is overloaded, has an enormous row of those who want to get the payout, and this

significantly undermines the trust in the deposit insurer and the deposit insurance scheme;

- It is problematic to pay payouts to depositors who do not have accounts with a payment agent. In particular, this problem is acute for foreign resident depositors;
- Deposit insurer must transfer payout funds to the payment agent. It is not safe, because there is no guarantee that the payment agent will work stably in future. This would result in the risk of losing insurance payout funds;
- sometimes the deposit insurer is not able to find a healthy CI that would cover the network of the closed CI. Then, the depositors have to cover a long distance to reach the payment agent. It's a really big disadvantage to depositors. Such case would certainly not increase public confidence in the deposit insurance scheme.

Cheque or card payment

Payment of payouts in cheques or cards is not a popular method and is used when payments are carried out to a small number of depositors. This method is used in the UK (Financial Services Compensation Scheme, 2013), Hungary (Fekete-Gyor, 2013), the USA (Federal Deposit Insurance Corporation, 2011).

It is a very time-consuming and expensive method because, in particular, it needs to print checks or make cards, and they should be sent to the depositors. In addition, it is not safe and secure, because the address of the depositor in the closed CI database, and the factual address of a depositor would be different, and a card or a check would not reach the addressee or, even worse, will reach persons for whom they are not intended.

Electronic transfer

The electronic transfer method is usually used as part of a payment agent's payout method when a payout upon a depositor's request is electronically transferred to the depositor's account. The purely electronic transfer method is intended to make payouts while reimbursing depositors by the internet. This advanced payout method is preferably used when a deposit insurer deals with a small-sized or middle-sized CI. This payment method is used in the Netherlands (De Nederlandsche Bank, 2013) and Sweden (Swedish National Debt Office, 2013). However, the payouts were paid to a relatively small number of depositors. In addition, depositors had to specify the account to which the payout had to be paid.

The internet service to pay payouts to depositors of the big-sized CI is very problematic. Usually, the payment of payouts up to 70–80 percent of depositors is accomplished in the first 4–7 days (as the practice of the Lithuanian deposit insurance scheme shows (Indėlių ir investicijų draudimas, 2014)). A large number of depositors (several hundred thousand or more) in a short period of time are trying to connect with the deposit insurer

by the internet, specifying the accounts to which the deposit insurer must transfer the payout. This can lead to payment system malfunctions and operation breaks due to the network congestion. Therefore, depositors would not be served in real time, and this would increase the frustration with the deposit insurance scheme. Another serious drawback of this method is that the depositors who have no online systems or no accounts with the CI cannot be serviced closely to their residence. Those depositors have to go to the deposit insurer, which is often several hundred kilometres or more away from the depositor's residence. Such inconvenience is not justifiable, because the deposit insurer has to operate in the way most convenient to depositors.

Cash payment

Payments in cash are usually performed to a very small number of depositors, because these payments are mostly manual and documentary work. For example, the Lithuanian Deposit Insurance Agency has determined that the cash payment is performed if the number of depositors is less than 100. Depositors who come to the insurer may receive payout in cash or apply to transfer the payout to the account. The cash payments are usually used by the payment agent as part of the method of payouts.

The overview of the methods of deposit insurance payouts and their use in the various countries leads to the conclusion that there is no universal method that would be mainly focused on the depositor and his needs and at the same time would be efficient and cost-effective and be no burden to deposit insurers.

The essence of the universal information technology model for the insurance payout process

During the payout process, a deposit insurer may have to process thousands of accounts. This must be done according to legal procedures and within very tight time frames. The information technology (IT) support is essential; however, a proper IT support must reflect the objectives of the deposit insurer and comply with the adopted priorities and special conditions of the country. One of the biggest problems for deposit insurers is the lack of a proper IT to deal with different-size CI (FDIC, 2010). In any case, the IT has to be set up in the least costly manner and meet the expectations of both depositors and deposit insurers.

IT benefits from the accumulated experience of established deposit insurers. The payout process can involve downloading data from a closed institution into the deposit insurer's IT system. A regular and comprehensive examination of an insured CI deposit database is important (Federal Deposit Insurance Corporation, 2011). It allows a closed institution to create the payout database within a very short time frame and transfer it to the deposit insurer. At the same time, the deposit insurer shall have an instrument to

verify the data and prepare it for processing (Bernet, Walter, 2009). The verified and clarified data shall be transferred into the payout file in a universal data format. The prepared file shall be processed by a universal payout IT model.

This model could be used in the major cases of payouts to depositors. The universal nature of this model is characterized by the following features:

a) it covers all payout methods and allows the deposit insurer to reimburse depositors by cash, cheques, cards, and electronic transfers;
b) it could be used for paying payouts to depositors of small-sized, middle-sized and big-sized CI;
c) the data interchange would be based on the existing high-speed and secure communication lines between the banks and the clearing centre or the supervision institution. In other words, the model would use the existing hardware, protocols, software, and monitoring which are used by banks and allow reducing the IT costs of the payout process.

The principal purpose of the universal IT payout model is to simplify the communication between entities concerned in the insurance payout process, ensuring a systematic and timely insurance payout process for various numbers of depositors and ensuring the most convenient way to receive payouts, implementing a reasonable-cost IT solution.

The architecture of the model

The model relies on the existing high-speed network, bringing together the CI with the supervision institution or the clearing centre. A deposit insurer has to organize a high-speed communication with the supervision institution or the clearing centre. This solution provides a high-speed distributed communication between the supervision institution or the clearing centre and all CI operating in the country. The deposit insurance payouts' central database with the central software is placed at the supervision institution or in the clearing centre. The deposit insurer, in turn, is communicating with the closed CI to ensure the transmission and verification of data and their changes (Fig. 1). This solution allows minimizing the network cost.

The CI that executes the payments has to install the payout program-agent that ensures an identification of the depositor, communication with the central database, accomplishing the payout, recording the data in the central database about accomplishing the payout, data exchange between the CI and the central database. According to the available data, the CI may pay insurance payouts to depositors in the following ways: to transfer the payout to a depositor's accounts, to write a check, to transfer the payout to a card account, to pay in cash. The uniqueness of this system is characterized by the fact that the depositor can choose the CI which will pay him the payout, and the payout will be paid in a manner most convenient to the depositor.

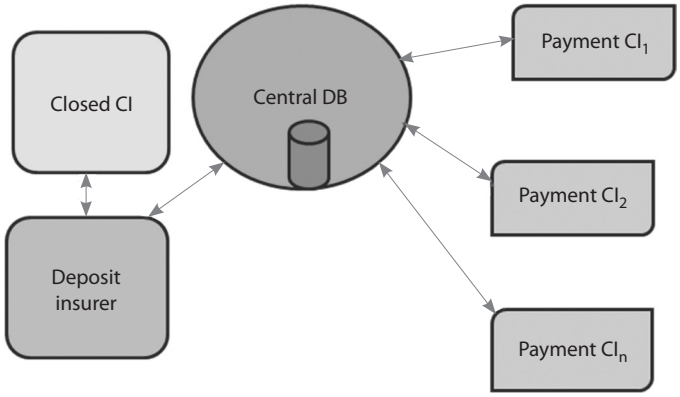

FIG. 1. **The architecture of the model**

This model is also convenient to deposit insurers because the insurance payouts are paid under a single database, providing a simple insurance payout administration: the payout amounts at the same time (on-line) are debited from the deposit insurer's account and transferred to the CI account. The payout funds are properly protected against the loss, because they are kept in the clearing centre.

Payment procedures using a universal payout IT model

As mentioned above, the universal IT model for deposit insurance payouts consists of a secure high-speed network connected to the deposit insurer, closed (insolvent) CI, payment CIs and clearing centre (supervisor institution) information systems. The integration of the subjects of this model is necessary, since the closed CI shall transfer the depositors' data to the deposit insurer information system which shall test the data, prepare data in the payout format and transfer them to the central database in the server in the clearing centre, whereas the payment CI shall pay payouts to depositors. One of the main advantages of this technology is that the payout from the deposit insurer's account is immediately transferred to the depositors' accounts with the payment CI. Communication between the model's different subjects is processed in real time, the subjects use one database which provides a unique data interpretation avoiding data duplication, minimizing the probability of errors and the time of payouts.

The payout data consists of the following elements: a depositor's identification code, name (name, surname or the undertaking code), document number (passport No, ID card No, etc.), an aggregated amount of deposits in national currency, aggregated amounts of deposits in foreign currencies denominated in national currency, aggregated amounts of depositor's liabilities to a closed CI (if it is necessary for the calculation of the insurance payout), the total amount of the deposit, the amount of the payout, other data on the

depositor (number of accounts, contact information, etc.), details of the payment: payment flag (paid, not paid), method, payment date, payment time, the CI code in which the payment is accomplished.

The insurance payout process could be organized in stages. ***At the first stage,*** the insurance payouts are executed automatically transferring them to the accounts of depositors with the payment CI (Figs. 2 and 3):

1. The closed CI transfers the depositors' data to the deposit insurer information system.
2. The deposit insurer tests the payout data. If errors are found, they are transferred back to the closed CI for correction. The corrected data are transferred to the deposit insurer again.
3. The deposit insurer transfers the correct payout data and stores them in the central database.
4. The deposit insurer transfers deposit payout funds to the account with the clearing centre.
5. The deposit insurer informs payment CIs about the beginning of the payout process.
6. The payment CI makes access to the central database, filters data of the depositors that have an account with this CI, transfers the payout amount to the depositor's account, updates the flag in the central database with the mark "Paid", updates the payment method, date, and time. The central database processes the access of payment CIs in the order of "first come, first served". This ensures avoiding a double payment of insurance payout to the same depositor.
7. The central database generates protocols about the payment facts and sends them to payment CIs and to the deposit insurer.
8. When the deposit insurance payout is already paid, the payout amount is debited from the deposit insurer's account and credited to the payment CI account with the clearing centre.
9. The deposit insurer has the right to a full access to the central database. Therefore, the deposit insurer at any time can get full information about the process of payouts.

At this stage, the insurance payouts are paid out during the day. It is recommended to perform this step at least a day before the official start of the payment of insurance payouts. This ensures that the greater part of the depositors can dispose of their payouts at the very beginning of the official day of payout payment. This is an important technological solution, whereas the EU draft directive on deposit guarantee schemes (European Parliament, 2012) provides for the payment of payouts within 5 working days. It is also important to note that this stage allows minimizing the payment procedures that require human operations. This is a substantial simplification of the deposit insurance payout process.

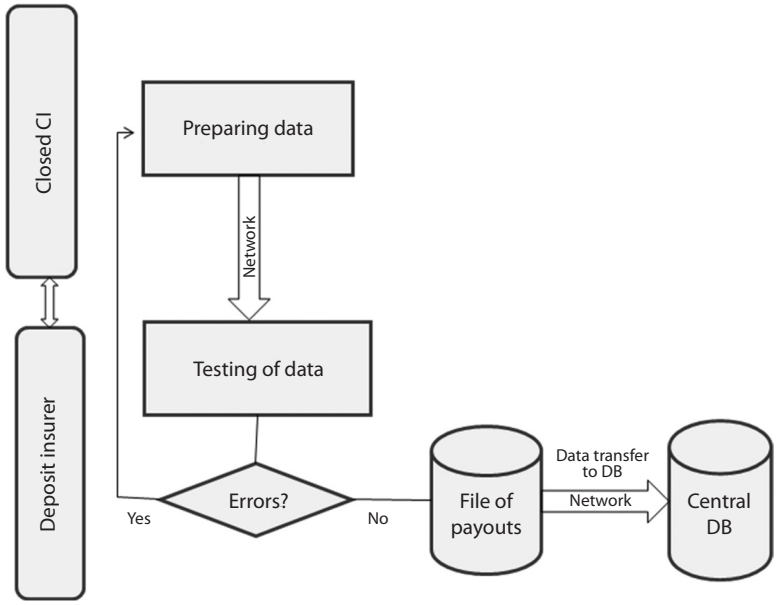

FIG. 2. **Formation of the Central Database**

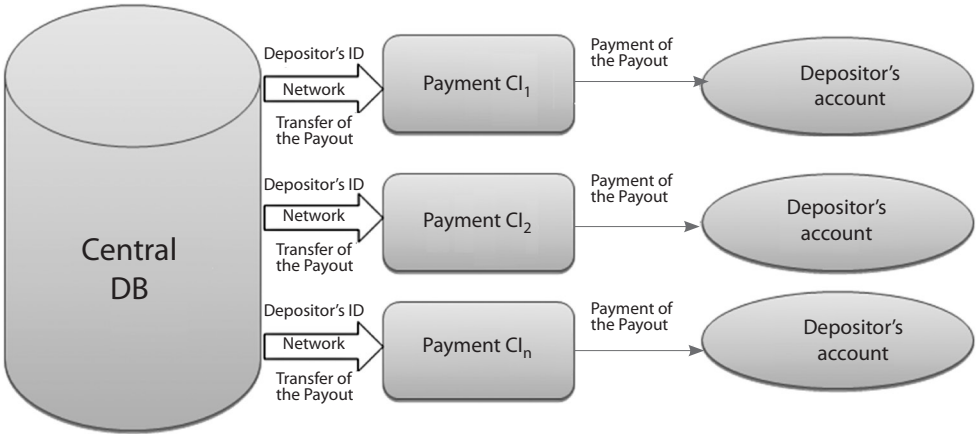

FIG. 3. **Procedure of the automatic payment of payouts**

The second stage provides for the payment of payouts to the depositors who have no accounts with any of payment CI and provides the depositor with information about the outstanding payout and about the CI which has already paid his payout.

Insurance payouts to depositors who have no accounts with the payment CI are performed as follows (Fig. 4):

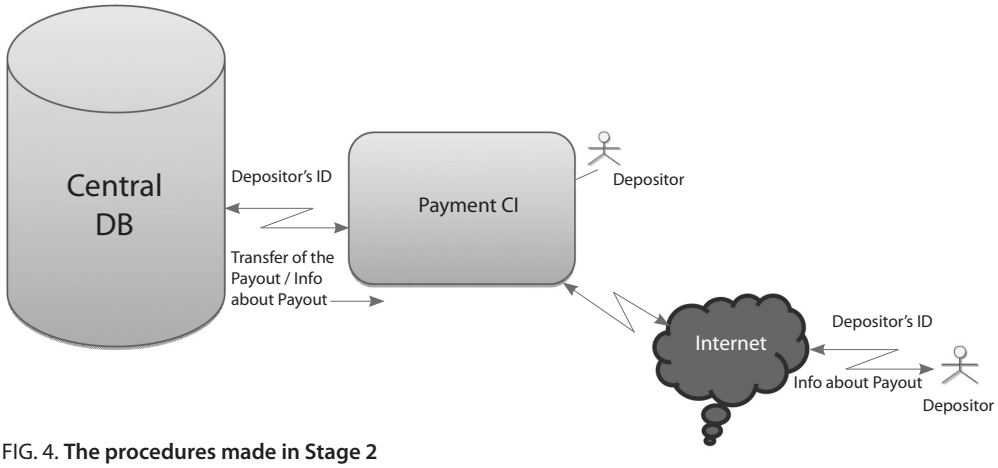

FIG. 4. **The procedures made in Stage 2**

1. The depositor applies to the payment CI nearest to him.
2. The employee of the payment CI identifies the depositor and with the support of the program-agent connects him to the central database.
3. The central database retrieves the depositor's payout data, updates the flag of the payment "paid", the anmount of the payout is debited from the account of the deposit insurer and credited to the account of the CI, and data about the payout are sent to the employee of the payment CI.
4. The depositor shall submit a request specifying the method of payment (check, transfer to the card account, a bank transfer to the account with CI that does not take part in the payment process, pay in cash, etc.).
5. Upon completing the payment procedure, the employee sends information about the method of payment, the date and time of payment to the central database.

If the payment CI cannot find the information about the depositor's payout, the program-agent connects to the central database and retrieves the information about the CI which has accomplished the payment procedures upon duly informing the depositor about this. The depositor can receive similar information related to the payment CI via the Internet (Fig. 4).

In addition to the instruments mentioned above, the deposit insurer must have a website through which the depositor's queries are processed and real-time responses are formed. More complex depositor's queries are collected and processed in turn.

Conclusions

The universal IT model for deposit insurance payouts may be applied for payouts to depositors of small-sized, middle-sized and large-sized CI. The model's feature of the automatic transfer of payouts to depositors' accounts ensures that the absolute majority

of depositors will get payouts on the first day. That would significantly reduce not only the period but also the cost of payments. The utilization of the network used by the CI for the banking settlement not only minimizes the network costs, but also provides a distributed, secure and high-speed communication. This makes it possible to accomplish the insurance payments in the way that allows depositors receiving payout in real time without any major delays in communication lines.

However, caution should be taken in applying the other deposit insurers' technology, especially software, as it may not directly relate to the legal environment or public-policy objectives of the country's deposit insurance scheme. Although lessons can be learned from how other deposit insurers develop their approaches, each deposit insurer requires a payout process and IT system that reflect the conditions of the country. We feel that the universal payout IT model might be implemented in most of deposit insurance schemes, because it would be based on the existing generic infrastructure – hardware, software, networks, and protocols.

REFERENCES

Bankowy Fundusz Gwarancyjny (2014). Internet accession [accessed 2014-01-10]: http://www.bfg.pl/en .

Bernet B., Walter S. (2009). Design, structure and implementation of a modern deposit insurance scheme. The European Money and Finance Forum. Vienna 2009.

Chu, K. H. (2011). Deposit insurance and banking stability. Cato Journal, Vol. 31, issue. 1.

Deposit and Investment Guarantee Fund (2013). Internet accession [accessed 2013-12-12]: http://www.hdgf.gr/en/info/legal_main.htm .

De Nederladsche Bank (2013). Deposit Guarantee Scheme. Internet accession [accessed 2013-12-12]: http://www.dnb.nl/en/about-dnb/consumers-and-dnb/consumers-and-supervision/depositogarantiestelsel/index.jsp .

Swedish National Debt Office (2013). Deposit Insurance. Internet accession [accessed 2013-11-20]: https://www.riksgalden.se/en/Deposit_insurance/About-deposit-insurance/ .

European Forum of Deposit Insurers (2014). Internet accession [accessed 2014-01-12]: http://www.efdi.net .

European Parliament (2012). Legislative resolution of 16 February 2012 on the proposal for a directive of the European Parliament and of the Council on Deposit Guarantee Schemes (recast). [Available at http://eur-lex.europa.eu/Result.do?arg0=deposit+guarantee&arg1=&arg2=&titre=titre&chlang=en&RechType=RECH_mot&Submit=Search].

FDIC (2010). Guidance for Developing Effective Deposit Insurance Systems. Reimbursing Depositors. Washington, D.C. [Available at www.fdic.gov/deposit/deposits/international/guidance/guidance/13reimbursing.doc].

Federal Deposit Insurance Corporation (2011). Center on Executive Compensation. Washington, D.C. [Available at http://www.fdic.gov/regulations/laws/federal/2011/11c84AD56.PDF].

Fekete-Gyor A. (2013). IADI Guidance Paper on Reimbursement. Basel. [Available at http://www.iadi.org/2013%20Research%20Conference/Session%202%20Andras%20Fekete%20Gyor%20IADI%20Guidance%20Paper%20on%20Reimbursement.pdf].

Financial Services Compensation Scheme (2013). Internet accession [accessed 2013-10-10]: http://www.fscs.org.uk .

Financial Stability Board (2012). Thematic review on deposit insurance systems. Basel. [Available at http://www.financialstabilityboard.org/publications/r_120208.pdf].

Finanšu un kapitāla tirgus komisija (2014). Internet accession [accessed 2014-01-20]: http://www.fktk.lv/en .

Fond ochrany vkladov (2014). Internet accession [accessed 2014-01-05]: http://www.fovsr.sk/en/about-the-deposit-protection-fund/ .

Fond pojištení vkladu (2014). Internet accession [accessed 2014-01-07]: http://www.fpv.cz/en .

Fondul de Garantare a Depozitelor în Sistemul Bancar (2013). Internet accession [accessed 2013-09-11]: http://www.fgdb.ro/index.php .

Federal Deposit Insurance Corporation (2010). Guidance for Developing Effective Deposit Insurance Systems. Washington, D.C. [Available at http://www.fdic.gov/deposit/deposits/international/guidance/guidance/index.html].

Indėlių ir investicijų draudimas (2014). Internet accession [accessed 2014-01-20]: http://www.iidraudimas.lt .

International Association of Deposit Insurers (2012). Enhanced Guidance for Effective Deposit Insurance Systems: Reimbursement Systems and Processes. Basel. [Available at http://www.iadi.org/docs/iadi-reimbursement_enhanced_guidance_paper.pdf].

International Association of Deposit Insurers (2014). Internet accession [accessed 2014-01-20]: http://www.iadi.org .

Korea Deposit Insurance Corporation (2013). Internet accession [accessed 2013-09-25]: http://www.kdic.kr/english/index.jsp .

Nolte, J. (2013). Perspective and role of a deposit guarantee schemes. International EFDI conference “Financial stability issues”. Rome.

Parker, D.C. (2010). Closing a failed bank: resolution practices and procedures. International Monetary Fund.Washington, D.C.

Singh, D. (2011). The role of Deposit Insurance and Resolution Policy in Promoting Financial Stability. International conference “Financial Crises: the Role of Deposit Insurance”. Bank for International Settlements, Basel.

Tagatisfond (2014). Internet accession [accessed 2014-01-25]: http://www.tf.ee/eng.