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Comparative analysis of the formation of liquid reserves in the banking systems of Australia, Czech Republic, Sweden, USA and Indonesia

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Abstract:

Banking activities are constantly in the focus of scientific research. Attention is paid to various aspects of such activities, where one aspect of such attention is the analysis of the dynamics of liquid reserves of the banking system. For these purposes, the work examines statistical data from different banking systems. A comparative analysis of the dynamics of the volume of liquid reserves and the dynamics of the volume of non-performing loans was carried out. Certain aspects of comparative analysis of source data for different banking systems are also considered. Various statistical methods were used to carry out the analysis. The results are presented in the form of separate graphs and diagrams. This helps to understand the progress of the study and evaluate the results obtained.

Key words: Lending, Comparative analysis, Liquid reserves, Banking system, Banking performance indicators, Financial flows.

Introduction

The banking system plays a key role in the economic development of the country and the functioning of various business entities [1], [2]. Such a system is also important for meeting the financial needs of the population. All this as a whole determines the need to consider various aspects of the functioning of the banking system and the possibility of its effective development. This ultimately determines the relevance of this study, its scientific and practical significance.

The basis of banking activity is the activity of raising funds and subsequently placing them in the form of credit resources. A reflection of such a process is the movement of the corresponding financial flows [3]-[6]. For the continuous and efficient movement of such flows, it is necessary to maintain a number of key parameters of banking activities at the proper level. Among such indicators, we should highlight the volume of liquid resources, which determines the bank's ability to fulfill its obligations at critical moments of operation [7]-[9]. These resources are determined by the volume of liquid reserves as a share of the bank's assets. At the same time, it is necessary to maintain some balance of such reserves. On the one hand, this is a resource for fulfilling the bank's obligations, and on the other, these are resources that are not directly involved in the bank's daily activities in one of the key areas – lending.

For the efficient operation of the bank and the banking system as a whole, it is advisable to conduct regular research on key aspects of banking activities, where the level of liquid reserves should also be noted. This can be done based on the analysis of relevant indicators. For these purposes, it is possible to use both classical approaches [10]-[15] and non-traditional methods that help expand traditional research [16]-[24]. At the same time, it is advisable to compare the dynamics of the volume of liquid reserves. In this aspect, it is necessary to highlight a certain indicator of banking activity. It should also be noted the importance of conducting a comparative analysis in terms of the dynamics of liquid reserves for various banking systems.

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Thus, the main goal of this study is to conduct a comparative analysis of the dynamics of liquid reserves of various banking systems. This determines the need to consider such separate tasks as: conducting a review of related work, selecting banking systems for comparison and selecting some indicator of banking activity to summarize the impact of the dynamics of liquid reserves on banking activity.

Related work

First of all, it should be noted that there are many different studies in the direction that is being considered. Among such works we note the following.

P. K. Shrestha examines in detail the role of liquid reserves in the formation of international bank savings in East Asian countries [25]. The author analyzes changes in the balance sheets of the banking systems of several East Asian countries. The article examines the impact of such reserves on the volume of liquid assets, the level of lending and the volume of deposits. The panel data method is used for the study. This allows us to better understand the relationship between the volume of liquid reserves and other indicators of the banking system.

A. Arif and A. Nauman Anees explore the relationship between liquidity risk and the efficiency of the banking system [26]. The main objective of this paper is to study liquidity risk in Pakistani banks and assess its impact on bank profitability. In other words, the relationship between the volume of liquid reserves and the level of lending is considered. The work examines 22 banks and their activities in the period 2004-2009. For the purpose of the study, multiple regression is used. The authors note that liquidity risk significantly affects the profitability of banks [26]. At the same time, the authors do not consider economic factors contributing to liquidity risk. However, an interesting aspect is to look at the relationship between the volume of liquid inventories and the volume of non-performing loans.

The study [27] analyzes the relationships between reserve requirements, liquidity risk and bank lending behavior. The authors emphasize that in order to smooth credit cycles, the transmission mechanism remains blurred [27]. Therefore, this determines the importance of the questions posed and discussed in the work. For these purposes, such a feature as a decrease in liquid assets of banks and an increase in the supply of loans was considered. However, the question of changing the dynamics of non-performing loans remains open. At the same time, the authors emphasize that significant shifts in bank liquidity are associated with significant changes in lending.

The work of Y. M. Riahi is devoted to the problem of liquidity risk in connection with the dynamics of reserves for possible loan losses and problem loans [28]. Thus, the main purpose of this article is to study the impact of liquid reserves on possible loan losses. Here we use data for different 74 banks in the period 2000-2014. Y. M. Riahi notes that non-performing loans affect liquidity risk differently in different banks. Therefore, this issue requires further consideration. Y. M. Riahi's research is of practical importance, since the results are relevant for bankers.

A. S. Messai and F. Jouini consider micro and macro determinants that influence changes in the volume of non-performing loans [29]. Among these determinants, the volume of liquid reserves stands out. The work analyzed data from 85 banks from Italy, Greece and Spain in the period 2004-2008. The study uses the panel data method. This made it possible to reveal that problem loans change negatively, in particular, depending on the volume of reserves for possible loan losses from the total amount of loans [29].

E. E. Chimkono, W. Muturi and A. Njeru study the impact of non-performing loans on the performance of commercial banks in Malawi [30]. The authors consider the activities of banks in the period 2008-2014. Secondary data was also used. It was noted that the cash reserve ratio variable is positively related to the bank’s performance, but not significant [30].

Thus, it should be noted that there are different plans for research regarding the formation and changes in the volume of liquid reserves. One of the current areas of such analysis is the

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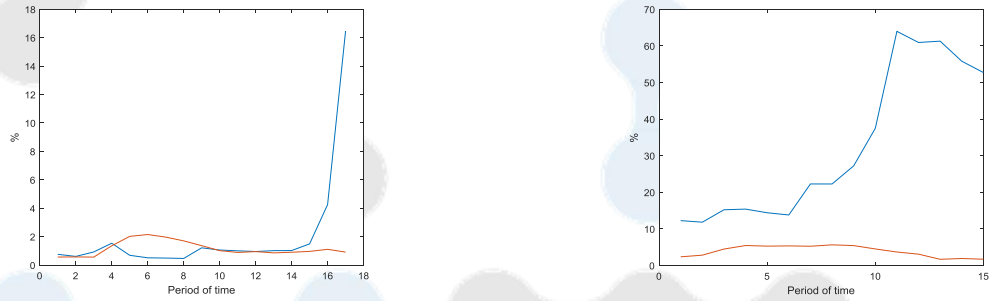
study of the relationship between the volume of liquid reserves and the volume of non-performing loans.

Various statistics can be used for analysis. In order to study the available data, it is advisable to consider the banking systems of different countries. Among such countries we highlight: Australia, Czech Republic, Sweden, USA and Indonesia. This allows us to consider the selected relationship between data from the point of view of various operating conditions of banking systems.

Dynamics of liquid reserves and non-performing assets

In accordance with the selected parameters for the study in Fig. 1 shows the dynamics of the volumes of liquid reserves and problem loans for the banking systems of Australia and the Czech Republic. All data is taken from https://databank.worldbank.org/.



a) Australia b) Czech Republic

Figure 1: Dynamics of liquid reserves and problem loans for the banking systems of Australia and Czech Republic

In Fig. 1 and below, the dynamics of bank liquid reserves as a percentage of assets in the banking system are indicated in blue. Accordingly, the dynamics of the volume of non-performing loans as a percentage of the total volume of loans in the banking system is indicated in red.

For the Australian banking system, the data are presented for the period 2005-2021. It should be noted that for a long period of time, the volume of liquid reserves and the volume of non-performing loans in their percentage terms were approximately at the same level. This was observed in the period 2005-2019. Starting from 2020, there has been a significant predominance of the volume of liquid reserves in relation to the dynamics of the volume of problem loans. At the same time, during this period there was no significant increase in the volume of problem loans. Thus, we can talk about excessive liquidity in the Australian banking system. It should also be emphasized that in the period 2009-2013 there was an excess growth in the percentage volume of non-performing loans in comparison with liquid reserves. Thus, the presented dynamics of data on the Australian banking system are completely determined by their internal problems.

For the Czech banking system, data are presented for the period 2007-2021. Here it should be noted that there is a significant gap in the level of dynamics of the percentage volumes of liquid reserves and non-performing loans over the entire studied interval. This is a fundamental difference from data on the Australian banking system. We can also say that the

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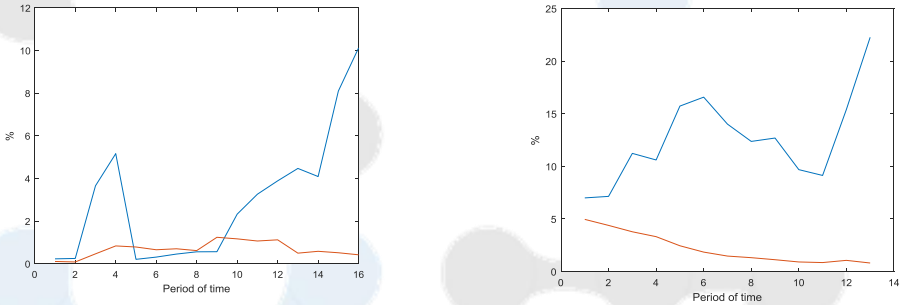
dynamics of the volume of problem loans is approximately at the same level. At the same time, in the period 2009-2015, the dynamics of the volume of problem loans is increasing. Further, the dynamics of the volume of problem loans decreases. At the same time, the dynamics of the volume of liquid reserves has periods of growth and decline. Recently, the dynamics of the volume of liquid reserves in the Czech banking system has been decreasing. This correlates with the dynamics of the volume of problem loans. Then we can talk about a certain relationship between the dynamics of the analyzed data. However, this point requires further research and analysis.

Data Fig. 1 confirm the fact that the relationship between the volume of liquid reserves and non-performing loans for individual banking systems is different.

In Fig. 2 shows the dynamics of bank liquid reserves as a percentage of assets in the banking system and non-performing loans for the banking systems of Sweden and the USA. The completely different dynamics of the data under study are displayed here.



a) Sweden b) USA

Figure 2: Dynamics of liquid reserves and problem loans for the banking systems of Sweden and USA

In Fig. 3 presented data for the Indonesian banking system.

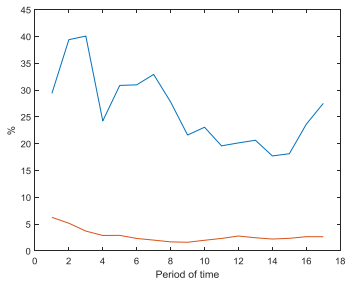


Figure 3: Dynamics of liquid reserves and problem loans for the banking system of Indonesian

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Data Fig. 2 and Fig. 3 also confirm the fact that the relationship between the volume of liquid reserves and non-performing loans is different for individual banking systems.

In Fig. 2 for the Swedish banking system there are separate periods of time when the dynamics of the data under study are identical. At the same time, one can also see diverse dynamics in the volume of liquid reserves and the volume of problem loans.

At the same time, the USA banking system is characterized by a decrease in the share of problem loans throughout the entire study period. At the same time, the dynamics of the volume of liquid reserves is variable. One can observe both an increase and a decrease in the volume of liquid reserves. Also significant is the gap between the level of liquid reserves and the level of non-performing loans for the USA banking system.

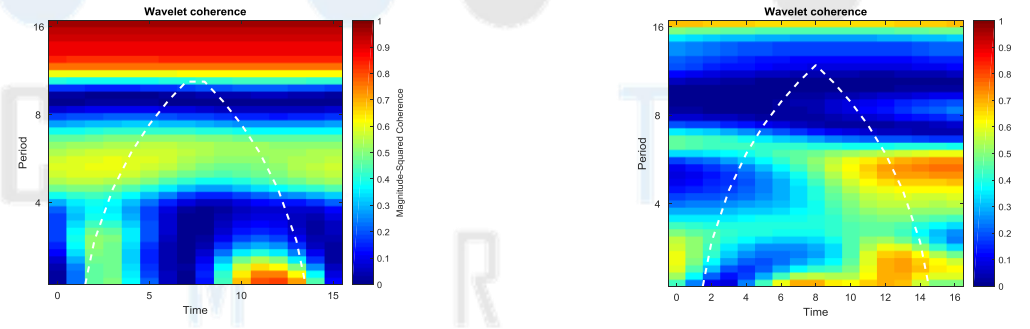
Data from the Indonesian banking system also have a significant gap between the level of liquid reserves and the level of non-performing loans (see Fig. 3). But at the same time, the dynamics of the level of non-performing assets is not decreasing over the entire interval, as for the USA banking system. At the same time, the dynamics of the level of liquid reserves throughout the studied interval is decreasing. Moreover, such a decrease occurs against the background of a constant change in the level of liquid reserves.

At the same time, for most of the examples considered, it should be noted that there was an increase in the level of liquid reserves and a decrease in the level of problem loans in the last periods of the time period under consideration. This indicates the influence of the same factors on the functioning of different banking systems. Such factors can be both extraordinary events occurring in the development of the global economy and, for example, the introduction of new payment systems based on crypto currencies.

Comparative characteristics of the dynamics of the studied data for individual banking systems

When considering the issue in this subsection, we use the methodology for estimating wavelet coherence, which has proven itself in this type of research [31]-[35].

As an example in Fig. 4 presents estimates of wavelet coherence between the level of volumes of liquid reserves and the level of volumes of non-performing loans for the banking systems of Sweden and Indonesia.



a) Sweden b) Indonesia

Figure 4: Wavelet coherence estimates between the level of liquid reserves and the level of non-performing loans for the banking systems of Sweden and Indonesia

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Data Fig. 4 indicate fragmentary consistency in the dynamics of the volumes of liquid reserves and the volumes of non-performing assets. The same was discovered when analyzing the dynamics of such data in the previous subsection. At the same time, it should be taken into account that the data under study also have diverse dynamics. Then the presented data on wavelet coherence can indicate the diversity of the mutual dynamics under study. Also, these data confirm the fact that the dynamics under consideration are individual from the point of view of individual banking systems.

Conclusion

The paper examines various issues of conducting comparative analysis when studying the dynamics of liquid reserves of the banking system. Based on a study of literary sources, the main parameters of such a comparison were selected. In particular, we consider the reciprocity of the dynamics of the level of volumes of liquid reserves and the level of volumes of problem loans. Such issues were also discussed taking into account the banking systems of Australia, the Czech Republic, Sweden, the USA and Indonesia. As a result, the fact was confirmed that the dynamics under study are individual for each banking system. The expediency of using wavelet coherence estimates for the corresponding analysis is also justified.

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