ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
2024-6.875 ResearchBib IF: 8.848 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-4, ISSUE-12

COMPARISON OF TRENDS IN THE DYNAMICS OF RATES FOR LOANS AND DEPOSITS OF BANKING SECTORS AUSTRALIA, CANADA, CHINA AND SOUTH AFRICA

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Abstract:

The role of the banking sector is constantly increasing in modern economic conditions. Therefore, the stability and functioning of banks acquires special significance, which requires constant monitoring of their activities by a number of indicators. Among such parameters are interest rates on loans and deposits, which characterize the main areas of banking activity. In the work, the dynamics of the corresponding interest rates for the banking sectors of different countries is considered in a comparative aspect. For a detailed analysis, estimates of wavelet coherence are used.

Key words: Trend, Dynamics, Deposits, Loans, Ratio, Comparative Analysis, Banking Sector, Interest Rates

Introduction

For the sustainable and reliable development of economic relations between various business entities, the corresponding financial flows play an important role. The continuous movement of financial flows (both input and output flows) ensures not only the development of mutual relations, but also the possibility of functioning of individual economic agents, achieving economic well-being, and economic growth [1], [2].

Among the various institutions that form and ensure the proper movement of financial flows, the banking sector should be singled out, which is also capable of accumulating and redistributing such resources between various business entities, forming and making the necessary payments for the development of the economy [3], [4]. Considering the basic essence of banking activities, which consists of attracting resources to deposit accounts and their subsequent provision

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for the needs of various borrowers in the form of loans, the key characteristics of such a process are the dynamics of interest rates on deposits and loans [5], [6].

Deposit and credit interest rates allow us to evaluate the efficiency of banking activities and the development of the banking sector as a whole. This makes it important to analyze the dynamics of such interest rates. For these purposes, various methods and approaches to data research can be used, both classical [7]-[21] and special [22]-[31], allowing us to conduct non-standard studies to identify hidden trends. An important point is also the study of the mutual dynamics of interest rates on loans and deposits. An important aspect of such analysis is the comparative analysis in the context of individual banking sectors of different economies.

Thus, the aim of this study is to analyze the relationship between the dynamics of interest rates on loans and deposits in the context of the banking sectors of individual countries.

Related work

Banking activity is constantly in the center of attention of researchers, which explains the presence of many works. Among such works, the central place is also given to the analysis of the dynamics of interest rates on loans and deposits, the study of their mutual dynamics.

Thus, B. Bidabad and A. Hassan examine the structure of lags of interest rates on deposits and loans in the conditions of business cycle formation [32]. The authors test the hypothesis: does the behavior of banks cause fluctuations in the economy through the interest rate [32]. In this case, two markets are examined: the first forms the rate on deposits, the second – the interest rate on loans. The work shows that fluctuations in the economy are caused by short-term interest rates. Medium-term and long-term interest rates soften fluctuations in the real economy. Data from the USA are considered for the study.

D. Harangus analyzes the evolution of the dynamics of interest rates on loans and deposits in their relationship [33]. The analysis uses data presented in lei and euro for the period 2019-2021 for data from the Romanian banking sector. The paper shows that there is a large discrepancy between interest rates on different categories of loans issued in lei to households. The article also examines the dynamics of bank interest rates on term deposits and loans issued to households and non-financial corporations. This helps to better understand the dynamics of attracting funds to the banking system and providing loans.

L. F. Adão, D. Silveira, R. A. Ely and D. O. Cajueiro study the impact of interest rates on banks' risk-taking in their loan portfolios [34]. For these purposes, an agent-based data analysis model is used. The authors substantiate new ideas regarding the relationship between interest rates

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and bank risk. This allows them to study the dynamics of banks' learning process in risk prevention and to consider banks' behavior in different interest rate regimes.

P. Bolton, Y. Li, N. Wang and J. Yang examine the value of deposits in a dynamic banking environment [35]. The authors substantiate a theory in which banks cannot fully control deposit flows. At the same time, banks dynamically manage lending, wholesale financing, deposits and capital. This model suggests a reassessment of leverage rules and offers new perspectives for banking in a low interest rate environment. This expands the conditions for analyzing banking activities.

A. M. Alexandorvich analyzes the influence of economic factors on the dynamics of interest rates of banks on loans [36]. The purpose of the work is to identify real factors influencing the dynamics of the level of interest rates on credit and deposit operations of commercial banks of Ukraine, as well as to identify possible interest risks and find ways to protect against them. It is emphasized that the study of the differentiation of interest rates is of great importance in the process of forming interest in both credit and deposit operations. This confirms the feasibility of our study.

Thus, various methods and approaches can be used to conduct the relevant analysis. This expands the possibilities for conducting research. At the same time, data from the banking sectors of different countries can be used to conduct the analysis. It is important to consider such data in comparison, which allows for a better understanding of the dynamics of the data under consideration. The choice of such data should be comparable. Based on this, the article considers data for the banking sectors of Australia, Canada, China and South Africa.

Dynamics of interest rates on loans and deposits in a number of studied banking sectors of individual countries

Based on the above selection, Fig. 1 and Fig. 2 show the dynamics of interest rates on deposits attracted and loans provided in the context of the banking sectors of Australia, Canada, China and South Africa (all data from https://data.worldbank.org/indicator).

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a) Australia b) Canada

Figure 1: Dynamics of interest rates on loans and deposits for the banking sectors of Australia and Canada

On Fig. 1 and Fig. 2, the dynamics of interest rates on loans is shown by the red line, and the dynamics of interest rates on deposits by the black line.

a) China b) South Africa

Figure 2: Dynamics of interest rates on loans and deposits for the banking sectors of China and South Africa

On Fig. 1 and Fig. 2 present data for different time periods: Australia (1981-2019), Canada (1971-2017), China (1980-2023), South Africa (2001-2023). However, for the banking sectors of countries such as Australia, Canada and China, it should be noted that at the beginning of the period under study, there is an insignificant margin between interest rates on loans and deposits. Then, such a margin increases and stabilizes in a certain range.

The margin between interest rates on loans and deposits in the Australian banking system in the period 1981-1986 is negative, since during this period interest rates on deposits are higher

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than interest rates on loans (Fig. 1a). Then there is an increase in lending rates and prevalence over interest rates on deposits. Beginning in 2001, the margin gradually increases. Since 2013, the margin has increased to more than 3 percentage points against the background of a general decrease in interest rates on loans and deposits.

The margin between interest rates on loans and deposits in the Canadian banking system is generally positive during the period under study (Fig. 1b). During the period 1971-1990, the margin does not exceed 2 percentage points. Then, until 2006, the margin gradually increases to 4 percentage points. Then, the margin stabilizes at 3 percentage points, with a gradual decrease in the overall level of interest rates on loans and deposits.

The general downward trend in interest rates for the Australian and Canadian banking sectors has been observed since 1996 (Fig. 1).

The margin between interest rates on loans and deposits in the banking system of China in 1980-1981 is negative (Fig. 2a). Then there is a slight excess of interest rates on loans over interest rates on deposits. At the same time, in certain periods of time (1989, 1993, 1994) interest rates on loans and deposits are equalized. This indicates some problematic aspects in the development of the banking sector of China. Beginning in 1995, there is an increase in the margin between interest rates on loans and deposits, which in 2002-2003 reaches almost 4 percentage points. Then there is a slight decrease in the margin and its stabilization at the level of 3-2.5 percentage points. Beginning in 1997, there is a gradual decrease in the general level of interest rates, which stabilizes at a certain level starting in 2015.

The margin between interest rates on loans and deposits in the South African banking sector is approximately the same during the period under review (Fig. 2b). The margin fluctuates within 3-4 percentage points. It should also be noted that there is no consistent trend in the dynamics of interest rates: decrease and increase. However, the general trend is characterized by a slight decrease in interest rates on loans and deposits.

In general, despite the different time periods, it should be noted that there are similar trends in the development of the banking sectors of Australia, Canada, China and South Africa. A characteristic feature of such trends is the general reduction in interest rates on loans and deposits and the stabilization of the margin between them.

This confirms the mutual influence of various banking sectors on each other through channels of interaction through the global financial system, the system of international payment systems, and international economic cooperation.

However, an important point of such analysis is the consideration of the mutual dynamics between interest rates on loans and deposits, a comparison of such dynamics from the point of

ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
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view of the banking sectors of individual countries. The interest in such a question is due to the fact that, theoretically, the dynamics between the interest rates under study should be strongly correlated. However, as has been shown, the margin between such interest rates is variable, and the dynamics of such rates themselves are variable.

Comparative assessment of the mutual dynamics of the studied data

To conduct a comparative analysis of the dynamics of interest rates on loans and deposits, we will use wavelet coherence estimates. This approach has found wide application in such studies and allows for comparative analysis on different time horizons [21], [23], [28].

Let's consider two time series ($f(t)$ and $g(t)$), each of which reflects the dynamics of an indicator over time t, then we can determine the value of wavelet coherence between the following series of data using the following formula [37]-[39]:

$$R^2(a,c) = \frac{\left|\Omega(a^{-1}W_{f(t)g(t)}(a,c))\right|^2}{\Omega(a^{-1}\left|W_{f(t)}(a,c)\right|^2)\Omega(a^{-1}\left|W_{g(t)}(a,c)\right|^2)},$$

where:

$W(a,c)$ – values of transverse wavelet spectra,

a,c – the scale and center of time localization that determine the scale of the wavelet transform,

$f(t)$, $g(t)$ – series of data that we study,

Ω – smoothing operator,

$R^2(a,c)$ – square of the wavelet coherence coefficient. $0 \le R^2(a,c) \le 1$. If these values tend to zero, then we have a weak correlation. Otherwise we have a strong correlation [38], [39].

On Fig. 3 presents estimates of wavelet coherence between the dynamics of interest rates on loans and deposits for the banking sectors of Australia and Canada.

ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
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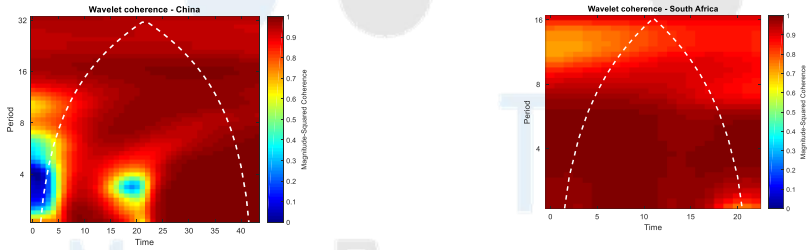
a) Australia b) Canada

Figure 3: Wavelet coherence estimates between loan and deposit interest rate dynamics for the Australian and Canadian banking sectors

On Fig. 4 presents estimates of wavelet coherence between the dynamics of interest rates on loans and deposits for the banking sectors of China and South Africa.

In general, the estimates presented in Fig. 3 and Fig. 4 reflects the dynamics of interest rates in the studied banking sectors of different countries. It is also possible to speak about a significant mutual correlation between interest rates on loans and deposits. However, a number of features should also be highlighted here.



a) China b) South Africa

Figure 4: Wavelet coherence estimates between loan and deposit interest rate dynamics for the China and South Africa banking sectors

ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
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As can be seen from the data in Fig. 3 and Fig. 4a, the wavelet coherence estimates for the banking sectors of Australia, Canada and China are not significant over the entire studied interval. Thus, continuous mutual correlation of such data cannot be observed. But such deviations are insignificant. The explanation for this is the instability in the dynamics of the corresponding interest rates, when deposit rates sometimes exceed or are comparable with loan rates. The margin between interest rates is also unstable. All this can affect the construction of forecast models from the point of view of the banking sectors of Australia, Canada and China. This fact must be taken into account.

The wavelet coherence estimates for the South African banking sector show complete consistency and high correlation, which is due to the small interval for the study.

In general, it should be noted that wavelet coherence assessments allow us to expand the basis for conducting the corresponding analysis.

Conclusion

The article examines the dynamics of interest rates on loans and deposits in a comparative aspect. Such a comparison is carried out for the mutual dynamics of interest rates and for the banking sectors of individual countries.

Such an analysis is carried out based on the study of graphs displaying interest rates on loans and deposits, the dynamics of the margin between interest rates. Wavelet coherence estimates are also used as a research tool. As a result, the lack of complete consistency and mutual correlation for the studied data of the banking sectors of countries such as Australia, Canada, and China is shown.

The obtained results and the methodology used can be applied in the study of banking activities, the construction of forecast estimates of its development.

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