

# “Determinants of the savings market in Russia”

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# DETERMINANTS OF THE SAVINGS MARKET IN RUSSIA

## Abstract

The main component of the bank's efficient operations is a sufficient amount of deposit resources. The sharp devaluation of the national currency, the unstable situation of banks, and a significant number of bankruptcies adversely affected the propensity of the subjects to save. In the banking sector, a critical situation has developed when depositors, having lost confidence in banking institutions, began to withdraw money from deposit accounts, and in the crisis, this issue becomes the most important, because the massive withdrawal of deposits significantly worsens the liquidity of banks. With that in mind, the purpose of the article is to consider the main trends and prospects for the savings market development in Russia.

The article analyzes the strengths and weaknesses of Russia's savings market. Using banking statistics, similarities and differences in the savings market are shown, based on determinants such as the share of deposits in bank liabilities; the volume of deposits in national and foreign currencies, the role of leading banks; number of accounts; the volume of guaranteed deposits; and banking conditions. The study focuses on an empirical analysis of the relationship between gross savings and banking variables such as demand deposits, interest spread, and the bank capital to assets ratio. The domestic market of household savings is analyzed. This conclusion is also made visible as a result of the correlation-regression experiment.

## Keywords

savings, Russia, bank deposits, banks

## JEL Classification

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## INTRODUCTION

In market economy countries, aggregate household savings play a special role, since they stimulate economic growth and are an important sign of the financial well-being and wealth of any country. In this regard, in the countries of the world, the necessary institutional mechanisms for the provision, conservation and augmentation of these resources have been formed. Effective are those economic mechanisms that allow accumulating funds in the banking system and effectively using them for the needs of economic growth and the social problems solution in the sphere of the population well-being. However, in recent years, due to the crisis phenomena, developed countries have faced significant problems in regulating the activities of the financial and credit system, and especially the banking system, which resulted in new problems of institutional protection of savings, that is, protection from impairment, guaranteeing full return of bank deposits and compliance with the obligations of banks to depositors in general.

The banks performance depends on the volume and structure of banking resources, the bulk of which is formed by attracting temporarily surplus funds of individuals and legal entities. For most banks, the main creditors are individuals who form both bank resources and trust in the bank and the banking system as a whole. Foreign practice confirms that personal deposits are a stable resource for which there is

a significantly lower movement of funds compared to the corresponding accounts of legal entities. Such deposits are small in size, but much more numerous. However, in any conflicts in the society, individuals' deposits are the most vulnerable product of the banking business, creating a threatening situation for the bank and for the banking system as a whole. It should be noted that the study of the savings process is currently one of the most important areas of economic research. There are problems of improving the activities of credit institutions in the area of household savings attracted by large population groups.

The mobilization of funds by banks with the help of deposits shapes a separate segment of the market – the market of deposits. This type of bank activity is well developed and historically dates back to the times of the first banks creation. The deposit market is in constant movement, therefore, the bank should analyze economic phenomena, processes, and factors that affect the ability to attract the maximum amount of free cash of individuals and legal entities. Retail deposits allow you to realize your own financial intentions, making optimum use of all alternative possibilities. As practice shows, bank deposits for individuals become a profitable financial investment during economic growth, then investments in the real sector of the economy increase, inflation is insignificant and banks offer high interest rates in order to attract resources.

All bank deposits are involved in active operations, and with the early closure of deposits, the problem of inconsistency of the time intervals between assets and liabilities arises, which can lead to a sharp loss of bank liquidity. This problem arose in 2008–2009, and it was solved through a temporary moratorium on early closure of deposits. In 2014, the situation repeated, investors again used the right to early closure of deposits, and banks began quickly to lose their liquidity, which undermined confidence in banks and virtually all banks underwent significant changes and losses in their deposit portfolios, which led to a financial crisis in the banking system and mass liquidation of banks. Partly the lack of liquidity of banks was covered by refinancing. Also, mistrust of banks led to a decrease in the attractiveness of lending to related parties and the conduct of questionable transactions. The banks are faced with the problem of retaining the existing depositors and stopping the funds outflow from the system. These problems are actualized in the context of social and political instability, creating conditions for manipulating investment and financial resources, which entails new risks in the formation, preservation and investment of the population's savings as one of the investment capital components of any state.

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## 1. LITERATURE REVIEW

A key aspect of the macroeconomic system functioning is that economic growth is manifested through the coordination and interaction of the main sectors of the economy: the state, the business sector and the population (households).

The household is the primary link in the country's financial system. The growth of the economic autonomy of the population became an objective prerequisite for a revision of the conceptual provisions of economic science. Household savings is an economic concept, which manifests itself in the presence of residual income after expenses for current consumption.

Many economists paid considerable attention to the issue of household income and savings. As

Melnikova (2007) notes, "... the views of scientists of the categories "savings" and "investments" have undergone a long evolution: from the negation of savings (what is saved during the year is consumed as regularly as that is expended in the course of the almost same time) (A. Smith, J.-B. Say and others), their "harmfulness" for the economy (P. Boisguilbert, F. Quesnay and others) to the recognition and establishment of the relationship between the economic growth and level of savings (R. Lukas, P. Romer, M. I. Tugan-Baranovskiy and others).

The formation of an understanding of the categories of "consumption" and "saving" occurred in parallel with the "income models" development. The starting point of the definition of income and its division can be considered the work by Senior "An outline of the science of political economy"

(1836) and the model of intertemporal choice by Fisher, described in “The Theory of Interest, as determined by Impatience to Spend Income and Opportunity to Invest it” (1930). It is about the fact that when deciding on consumption now and in the future, consumers face intertemporal budget constraints.

In general, the evolution of economic savings theories can be represented as four key stages:

1. Classical political economy. A well-founded system of views on income distribution problems (A. Smith, D. Ricardo, J. Mill).
2. Marginalism. The interrelation of interest and the role of forced savings are revealed (A. Marshall).
3. Keynesian school. Systematically defining a special place of the “savings” category among the fundamental economic concepts (J. Keynes, E. Hansen, P. Samuelson).
4. Monetarism. Savings are considered in relation to income (M. Friedman, D. Mut, F. Hayek).

Thus, the Keynes (1936) absolute return theory shows that with the growth of the population income, savings generally increase, and consumption does not grow so quickly. With a decrease in incomes, savings, first of all, decrease, while consumption remains at about the same level.

The life-cycle hypothesis by Ando and Modigliani (1963) asserts that during their lifetime people show different savings activity. The permanent income hypothesis by Friedman is that a person (family) throughout his entire lifetime maintains a constant volume of consumption. However, the relative income hypothesis by James Duesenberry notes that the savings quota does not depend on the level of the saver’s absolute income, but on its social belonging and the position occupied according to the income scale of groups. Summarizing the theoretical ideas about savings, the following conclusions can be drawn.

1. The institutional environment of the state exerts a great influence on household savings

behavior. Financial stability and predictability of economic policy, high social security allow raising the level of general welfare, which increases the absolute level of savings and increases their transparency (organized savings).

2. The increase in the proportion of households with high incomes relative to the aggregate of households in the state provides opportunities for a higher level of savings. In this case, formation of stable social groups unified according to consumption standards plays the key role.

For example, Ryzhanovskaya (2009) emphasizes the “middle class” as the main social group, by means of which the state can change the level of consumption/savings. In developed countries, the share of the middle class is about 70-80% of the total population. Therefore, the formation of “standards” of consumption ensures the predictability of the savings process and allows both to raise and lower the level of savings.

3. To increase the share of savings, income level is important. With a low income level, citizens spend most of their financial resources for current consumption, and the deferred demand is formed as balances for future consumption. In general, such a redistribution of households’ financial resources cannot be considered as savings. It is necessary to consider in more detail the current state of the savings process and its prospects in Russia. At the present stage, there is a paradoxical situation in the country. On the one hand, the population’s income is growing, which is confirmed by statistical data.

A number of studies have analyzed the trends of people in terms of saving for preventive purposes (Leland, 1968) and savings for the home purchase (Hayashi, Ito, & Slemrod, 1988). Although the study of such traditional goals was at the forefront of scientific discussions in terms of saving (Van Veldhoven & Groenland, 1993; Yuh & Hanna, 2010), empirical studies show that households can save for many other reasons related to psychological needs (Fisher & Anong, 2012; Wärneryd, 1999; Xiao & Noring, 1994). Berezina (2017) paid attention to savings in terms of pension savings.

The simplest definition of “savings” that can be applied to all households is income minus consumption during the year (or another time period) (Browning & Lusard, 1996). However, the goals and values of savings are different for each household and are determined not only by income, but also by the need to accumulate consumer goods (Wärneryd, 1989).

The forecast of psychological factors such as needs and expectations in terms of the need for conservation was considered by Ewing and Payne (1998), Van Veldhoven and Groenland (1993), and Wärneryd (1989). The accumulation of money for a specific reason reflects specific personal values. Thus, the decision on the need for savings may not necessarily be related to the desire to provide financial security or family prosperity (Canova, Rattazzi, & Webley, 2005).

Xiaoqing Hu (2004) shows how the availability of housing affects the behavior of household savings and the choice of financial assets.

Hao Manh Quach (2016) analyzes the impact of access to credit on the economic households. Savings is one of the key factors affecting the population's loans.

Therefore, in order to better understand the economic behavior of households, it is important to determine the attributes of each conservation goal and the impact of human needs on the likelihood of saving. Focusing on psychological needs and the reasons for saving (in addition to financial emergencies and preparing for retirement) will expand the scope of research on behavioral preservation by providing unique information about the characteristics of household savings and the relative importance of certain savings targets.

Economic environment for the possibility to save can lead to different economic behaviors in case of differences in interest rates, inflation (Carroll & Summers, 1987), business cycles (Carroll et al., 2000) or unemployment expectations (Basten et al., 2016). Finally, geographical proximity to financial institutions can be related to the access and use of financial products (Degryse & Ongena, 2005; Agarwal & Hauswald, 2010; Brown et al., 2016).

Yunoshko and Kumukova (2013) in their study proved that in a market economy in the context of a financial crisis, household funds can become the basis of the bank's resource base. The same opinion is held by Adeyeye, Azeez, and Aluko (2016) who singled out the savings of the population as one of the factors influencing the banking development.

The small and declining share of small and medium-sized households in the Russian Federation suggests that at present the banking policy is not effective enough in attracting household savings and needs to be improved.

## 2. METHODOLOGY

Gurley and Shaw (1960) noted that the commercial banks' liabilities consist of demand deposits at the early stages of economic development, while financial claims (interest liabilities) issued by non-bank financial institutions appear at later stages. The theoretical analysis of the household savings market in the Russian Federation shows that it is influenced by a set of factors.

Cash makes up a significant part of household savings.

The first appearance of the household corresponds to the crisis situation in the fourth quarter of 2014–2015: the amount of savings has not changed, the share of bank deposits in the structure of savings has declined, and the share of securities has increased simultaneously.

It should also be noted that only a small group of households are investing their savings in securities.

As of September 2016, the total number of private investors of unit investment funds was about 400 thousand people, the average investment per capita was about 100 thousand rubles.

Credit institutions use the following main instruments to attract savings for the population:

- term deposits;
- demand deposits;

- debit (payment) cards (including for payroll programs).

The analysis of the savings formation indicates that credit institutions are interested in the household savings as inexpensive resources. As a result, household deposits occupy a significant share in the bank's liabilities, which are presented in Table 1.

**Table 1.** The share of retail deposits in the liabilities of leading banks as of January 1, 2016

Bank name	Share of retail deposits in liabilities
Sberbank of Russia	45.33%
VTB24	66.97%
Gazprombank	12.11%
Alfa Bank	26.83%
Rosselkhozbank	18.04%
VTB Bank of Moscow	22.82%
Raiffeisen Bank	40.50%
Binbank	35.29%
Promsviazbank	20.51%
RF total	28.0%

At the same time, according to the Bank of Russia, the five largest state banks in the savings market account for 61.73% of the household deposits. Sberbank and VTB24 are the leaders among the 10 largest banks in this market with a significant gap in other credit institutions, 5 of which have a share of less than 2%, which is presented below (see Table 2).

**Table 2.** The amount of funds on retail deposits in rubles and in foreign currency in leading banks as of January 1, 2016, RUB mln

Market position	Bank name	Deposit amount	Market share
1	Sberbank of Russia	10,673,461	46.37%
2	VTB24	2,009,847	8.73%
3	Gazprombank	627,009	2.72%
4	Alfa Bank	613,431	2.67%
5	Rosselkhozbank	478,506	2.08%
6	VTB Bank of Moscow	420,297	1.83%
7	Raiffeisen Bank	359,306	1.56%
8	Binbank	281,857	1.22%
9	Promsviazbank	262,579	1.14%
10	FC Otkrytiye	247,751	1.08%

The share of Sberbank makes up 46.37% of the household deposits market, and the share of funds in term deposits is much lower and is 45.39%, which indicates the division of the deposit market into the segments of term deposits and demand deposits (account balances).

An important theoretical issue is: What determines a significant share of Sberbank? This is due not only to the high level of household confidence, but also to a large extent to the existence of residues for pension payments on household accounts, as well as balances on accounts of payroll programs that are actively developed by other banks. In particular, the high efficiency of foreign capital banks, such as Raiffeisen Bank, Citibank and UniCreditbank, is secured by balances on customers' accounts with salaries, mostly by foreign companies or those with a share of foreign capital.

Thus, state-owned large banks are predominantly the main players in the household savings market, and the market itself is characterized by high concentration.

Four state-owned banks, namely Sberbank of Russia, VTB24, Gazprombank and Rosselkhozbank, and a private bank – Alfa Bank are among the five largest banks, which accounted for 62% of the volume of household deposits as of January 1, 2016.

The position of the bank in the household deposits market also depends on the regional network, according to which credit institutions should be divided into three groups (for the purposes of discussion):

- federal network (to perform in all or most regions of the country);
- regional network (to perform in several regions);
- limited network (to perform in one or two regions).

Federal network banks include all the largest banks in the household deposits market (see Table 3).

**Table 3.** Leading banks with a federal network of branches and subsidiaries as of January 1, 2016

Bank name	Branches in total	Operations areas
Sberbank	16,080	83
VTB24	1,068	74
Gazprombank	372	67
Alfa Bank	696	57
Rosselkhozbank	1,341	81
Binbank	306	59
Promsviazbank	292	61
Rosbank	460	72

As of early 2016, the branch network of Sberbank was 43.5% of the total number of branches of credit institutions in the country. At the same time, institutional provision of household banking services in the Russian Federation is at the economically developed countries level, including those with similar characteristics in terms of density of territory and population.

In recent years, the following trend has been observed on the national household savings market: the average amount of deposits (all accounts of insured accounts) is constantly growing, and the number of individuals' accounts is decreasing since the beginning of 2015 (see Table 4).

**Table 4.** Dynamics of the number of accounts and the average amount of household deposits

Date	Number of household accounts in banks, units	The average size of the insured deposit, RUB
July 1, 2016	537,043,078	42,000
January 1, 2016	542,461,147	42,000
December 29, 2014	545,000,848	34,000
January 1, 2014	556,688,604	30,000
January 1, 2013	525,211,558	27,000
January 1, 2012	489,635,894	24,000
January 1, 2011	457,210,175	21,000

The above data show that the number of individuals' accounts rose to 2014, and then began to decline, while the average amount of the insured deposit continued to grow. The number of depositors decreased in the bank liabilities, and the volumes

of deposits themselves became larger, i.e. credit institutions have stimulated large deposits and have not contributed to the preservation and increase in the volume of small deposits or their efforts have failed.

Interest rates on household deposits tend to increase depending on the term of the deposit and can be changed by credit institutions in accordance with the market situation and the need to attract liabilities with certain urgency.

During the Q4 2014 crisis, banks raised rates on almost all terms of retail deposits to prevent their outflow, but the highest growth was in December 2014 (in relation to November 2014), demand deposits for a period of 31 to 90 days and for a period of 91 to 180 days – by 102.1%, 113.5% and 118.7%, respectively. These measures had a short-term positive effect, and as the situation stabilized, lending institutions gradually reduced deposit rates on all terms. At the same time, a more smooth reduction in deposit rates for 181 days to 1 year resulted in the fact that the share of these deposits in banks' liabilities as of January 1, 2016 increased by 139.5% to 35.2%, mainly to deposits for a period of 1 to 3 years, the share of which decreased from 51.3% to 33.9% for the reporting period.

For the period from January 1, 2014, the share of deposits for 181 days to 1 year increased more than twofold, the share of demand deposits remained almost unchanged, while the shares of the rest decreased. As for demand deposits, it should be noted that during the 2008–2009 crisis, as well as at the end of 2014, the balances on these deposits remained the most stable.

Despite the high interest rates on deposits for up to 30 days, their share in the total amount remains small. The volume of deposits for a period of 31 to 90 days after a small increase in the first half of 2015 returned to its previous level. Deposits with a maturity of more than 1 year, despite the increase in interest rates by credit institutions, showed negative dynamics during the 2008–2009 crisis, and in the late 2014 crisis, their outflow stabilized in the second half of 2015. Strong growth during 2015 occurred only on deposits ranging from 181 days to 1 year.

**Table 5.** Comparison of the basic conditions for term retail deposits of leading banks for the amount of 250 thousand rub. as of September 10, 2016, % per annum

Term/Deposit volume	Over 10,000 rub.	Over 1,500,000 rub.
31 days	5.50	6.00
91 days	7.00	7.50
181 days	7.90	8.50
367 days	8.10	8.70
548 days	7.50	8.00
733 days	7.50	8.00
1097 days	7.50	8.00

Thus, balances on customers' accounts are permanent in the bank liabilities formed by household deposits. At the same time, they constitute a significant share of these liabilities (about 20%) and are the cheapest raised funds for banks – the deposit rate is about 2-3% per annum.

Banks mainly focus on attracting the population savings for 181 days. Most leading banks have a limited number of deposits with a maturity of up to 3-6 months, while interest rates on savings attracted for a period of 6 to 12 months are the highest. In addition to the rates and terms of deposits, banks manage household savings flows, setting minimum deposit amounts, as well as additional options: the possibility of adding additional funds to the account or withdrawing amounts, the interest calculation mode, etc. In addition, almost all banks have interest rates on deposits made using remote services, on average, higher by 0.2 pp than deposit rates issued in branches and affiliates of banks.

Banks with a regional and limited network of branches and affiliates are also actively working in the household savings market. For example, Bank

St. Petersburg, which operates primarily in St. Petersburg and occupies 10% of this market in the region, offers more competitive options for retail deposits (see Table 5).

Thus, based on the analysis of the conditions for term household deposits accepted by leading banks, it is possible to determine the specialization of banks in the household savings market (see Table 6).

From the above analysis, one can conclude that the activity of credit institutions in the savings market is more focused on attracting large amounts in the middle or long-term period. This can be expressed both by regulating interest rates of deposits, and by the absence of certain types of deposits by maturity or amounts. For example, Alfa Bank and VTB24 are not interested in attracting retail deposits less than 91 days, and the minimum amount of a deposit of 200 thousand rubles, set by VTB24, also speaks of the bank's orientation to the clients with average and above incomes.

As for the appropriate schemes for lending deposits, it can be said that for various reasons they are

**Table 6.** The household term deposits conditions of leading banks for deposit of 250,000 rub. as of September 10, 2016, %

Maturity/ deposit conditions	Sberbank		VTB24		Alfa Bank	
	Without partial withdrawal and replenishment	Withdrawal and replenishment	Without partial withdrawal and replenishment	Withdrawal and replenishment	Without partial withdrawal and replenishment	Withdrawal and replenishment
31 days	5.15	–	–	–	–	–
91 days	5.55	5.50	6.35	–	7.15	4.70
181 days	5.90	5.70	6.85	4.35	7.70	6.70
367 days	6.25	5.10	6.65	4.30	7.00	6.50

**Table 7.** Discount terms at the mortgage lending rate by credit institutions depending on the bank deposit as of September 10, 2016

Bank, service	Lowering the mortgage rate
TCB Bank PJSC, "Investment in the future" deposit	Deposit amount of 200,000 rubles to 20,000,000 rubles. Maturity of 32 to 368 days. Depending on the maturity, the mortgage loan rate is reduced from 0.1% to 0.4% per annum. The aggregate discount received subject to the rate reduction in accordance with the segmentation of the TKB Bank PJSC clients and the fulfillment of the terms for placing the deposit "Investment in the future" cannot exceed 0.5% per annum
Raiffeisen Bank, "Save with us!" service	0.25% discount of the mortgage rate (with the mortgage amount up to 3,000,000 rubles). To receive discount, it is necessary to: set planned amount of saving RUB 800,000 or more; set the accumulation period of 12 months or more; replenish the "Target" account according to the accumulation schedule, so that the amount of savings for each date set by the accumulation schedule is not lower than the planned one; cover the Target not until the target date

practically absent in the savings services offered by credit institutions. Only some banks offer discounts to the population on the mortgage interest rate as a condition for the relevant deposits, which is presented in Table 7.

Some banks offer households a savings account. For example, Sberbank offers savings account options with free debit and account replenishment, while the interest rate is set at 1.5 to 2.3% per annum, depending on the minimum account balance for the month of settlement.

Credit organizations offer savings to use savings accounts too. The interest rate on the balances of individuals' funds on these accounts depends on the minimum amount and the period of funds on the account (see Table 8).

Almost all Russian banks issue credit and debit cards. First of all, this happens in the framework of realized payroll programs. In this case, individuals are not allowed to choose cards, and, as a rule, these tariff cards are subject to preferential tariffs for servicing and withdrawing

cash from ATMs of issuing banks. On its own initiative, the population takes debit cards of banks less frequently. The total number of cards among the population in the country is constantly growing.

Data analysis shows not only a general increase in the number of cards issued, but also a reduction in the number of credit cards during the crisis periods (2009 and 2015), as well as a slowdown in the number of payment cards, which is typical for the behavior of the population during the crisis.

Banks actively advertise debit cards and their new services, which, together with the development of payroll programs, results in a constant increase in the number of bank cards and the volume of transactions performed by the population using payment cards.

Along with the growth in the number of payment cards issued by credit institutions, the number and volume of transactions, it is important to note the trend towards an increase in the average

**Table 8.** Interest rates on VTB24 savings account

Minimum account balance, RUB	Interest rate, % per annum			
	1 month	3 months	6 months	12 months
0.01 to 999.99	0.01	0.01	0.01	0.01
1,000 to 14,999.99	1.50	1.70	1.90	2.10
15,000 to 99,999.99	3.70	4.70	5.70	6.20
100,000 to 349,999.99	4.20	5.20	6.20	6.70
350,000 to 699,999.99	5.10	6.10	7.10	8.10
700,000 to 1,499,999.99	5.30	6.30	7.30	8.30
1,500,000 to 499,999,999.99	5.50	6.50	7.50	8.50

amount of withdrawing cash from cards and reducing the average amount of payment. This indicates the growing popularity of payment cards as a result of the households use, as changes in the average amount of transactions occurred when the growth rate of the number of payment cards issued by credit institutions slowed in 2015.

Commercial banks issue payment cards aimed at meeting the needs of different population categories. Issue of payment cards brings banks primarily high commission income on customer transactions, as well as an almost free and stable balance in the accounts. But these cards are not a tool for households to save money because of the standard low interest rate.

In 2015–2016, some credit institutions began actively distributing debit cards with an increased interest rate on the average daily balance of funds, thereby trying to encourage the population to use settlement cards and maintain stable and higher balances on their accounts. The interest rates on such cards can reach 10–13% per annum. At the same time, credit institutions set certain options for paying income at these rates:

- maintaining a certain average daily or daily balance on the card account;
- conducting the fixed number of transactions per card per month.

Along with that, the accrual of various points and bonuses, commissions on transactions also depends on the amount of the balance on the account and the transactions carried out.

Thus, deposits of debit cards have increased the interest rate, the level of the declared income can only be obtained if certain conditions are met which, as a rule, represent a complicated scheme of consolidation, the required minimum daily balance, the volume of payments per month, and are accompanied by various terms and restrictions, commissions, etc. As a result, in order to get high income, customers need to actually place a term deposit in the bank for a certain amount, and in some cases still make the amount of payments by the specified bank and/or fee for account maintenance.

## 2.1. Data and variable framework

Since commercial banks are the dominant player in the national financial system, the purpose is to estimate the value of gross household savings using endogenous and exogenous banking variables. Therefore, for a consistent evaluation of the parameters, it is necessary to indicate an equation for saving households. For over 3-year deposits, there should not be complete correlation with the aggregate deposits of the population in local currency and gross household savings. In this regard, deposits are a relatively easy-to-manage product for the bank and a way to increase its funding.

The amount of gross savings depends on the individual's preferences for different types of deposits, taking into account the costs and benefits of owning any particular assets. The downward trend in the time and slow growth of long-term deposits continued to affect the distribution of deposits in the Russian Federation. Although demand deposits and deposits from 180 days to 1 year remained the main part of household deposits due to these interest rate terms (Table 9).

Demand deposits include two main groups, current accounts and other deposits subject to redemption in the notification.

However, deposits for more than three years were one of the most convenient ways to save money. They usually have fewer restrictions on withdrawing funds.

Deposit (savings) certificates are term deposits when the bank accepts a deposit for a certain period and pays the interest rate to maturity.

Demand deposits are accounts for which deposit funds can be withdrawn at any time without notifying the bank.

In this article, only household savings are considered. The study focuses on the relationship between gross savings and demand deposits of households (in local currency), household loans, household savings (deposit) certificates, bank capital and assets. The data for 2011–2016 were evaluated. Initially, bank interest rates, demand deposits (in foreign currency), long-term data on

**Table 9.** Correlation

	Household deposits total (in rubles)	Demand deposits	Deposits for up to 30 days	Deposits for 31 to 90 days	Deposits for 91 to 180 days	Deposits for 180 days to 1 year	Deposits for 1 to 3 years	Over 3-year deposits
Household deposits total (in rubles)	1							
Demand deposits	0.962120459	1						
Deposits for up to 30 days	0.76822914	0.759790937	1					
Deposits for 31 to 90 days	0.569786971	0.502735171	0.399340091	1				
Deposits for 91 to 180 days	0.774821197	0.654420574	0.506848308	0.651525242	1			
Deposits for 180 days to 1 year	0.872226146	0.767319721	0.574040543	0.410126105	0.831294528	1		
Deposits for 1 to 3 years	0.607115094	0.690808072	0.625863611	0.371844507	0.127713656	0.156319621	1	
Over 3-year deposits	-0.085619291	0.080466566	0.129409222	-0.101091771	-0.49311697	-0.50776726	0.653917048	1

the yield of government bonds were chosen, but there is a strong positive correlation between gross and economic costs between them. Offering savings to national households is the main source of funding for banks that provide loans to both retail and corporate sectors. Such demand deposits in foreign currency are part of the dollarization economy era inherent in developing countries. To show the elasticity of the dependent variable with respect to the dependent variables, the log-ratio should be used:

$$\begin{aligned}
 SAV &= f(CAR, DEM, Cert, Cred), \\
 \log SAV &= \beta_0 + \beta_1 \ln CAR_t + \\
 &+ \beta_2 \ln DEM_t + \beta_3 \ln Cert_t + \\
 &+ \beta_4 \ln Cred_t + \mu_t,
 \end{aligned} \tag{1}$$

where  $\log SAV$  is gross savings;  $\ln CAR_t$  is bank capital to asset ratio;  $\ln DEM_t$  is demand deposits in national currency;  $\ln Cert_t$  is deposit certificates;  $\ln Cred_t$  is credits;  $\beta_0$  is the intercept;  $\beta_1, \beta_2, \beta_3, \beta_4$  are coefficients of explanatory variables; and  $\mu_t$  is the error term.

The data for the study were obtained from the national statistics of the central bank, the World Bank database, and the Federal Reserve. Before launching the regression equation, the following tests were carried out: stationarity, multicollinearity using a correlation matrix, and autocorrelation.

The results of the correlation tests are presented by the correlation matrix (Table 10).

**Table 10.** Correlation matrix

	Gross savings (current LCU)	Bank capital to assets ratio (%)	Demand deposits (LCU)	Deposit certificates	Credit to households
Gross savings (LCU)	1	–	–	–	–
Bank capital to assets ratio (%)	-0.76039	1	–	–	–
Demand deposits (LCU)	0.695113	-0.62354	1	–	–
Deposit certificates	0.562638	-0.24512	0.76878	1	–
Credit to households	-0.40489	-0.10162	0.201862	-0.02517	1

**Table 11.** The regression analysis summary

	Coefficient	Std. error	T-statistic	P-value
C	30.55606	4.315332	7.080813	0.089317
Bank capital to assets ratio (%)	-0.57193	0.284136	-2.01286	0.293538
Demand deposits (LCU)	0.197436	0.297316	0.664059	0.626817
Deposit certificates	0.016086	0.034533	0.465812	0.722482
Credit to households	-0.31097	0.126493	-2.45837	0.245946

The correlation matrix presented in Table 10 indicates a positive relationship between household savings and demand deposits, deposit certificates. Household savings are negatively related to the ratio of the bank's capital to assets, a credit to households. It was found that all correlations between the dependent and other variables are less than 0.8, which implies the absence of multicollinearity (Table 11).

The summary of the regression analysis is represented by formula (2).

$$\log SAV = 30.55606 - 0.57193 \ln CAR_t + 0.197436 \ln DEM_t + 0.016086 \ln Cert_t - 0.31097 \ln Cred_t + \mu_t. \quad (2)$$

## 2.2. Interpretation results

The above table shows the result of the regression analysis.

The coefficient of determination (R<sup>2</sup>) 0.961945 means that 96.1945% of the variation in house-

hold savings is due to independent variables in the model. There is a strong relationship between savings and independent variables. The standard error is 0.06221, 6% for the factors described by the standard error statistics.

The regression coefficient for the bank capital to assets ratio is -0.57193. This indicates an increase in the ratio by 1%, which leads to a decrease of 0.57193 units.

The regression coefficient for demand deposits is 0.197436. This indicates an increase in the coefficient by 1%, which leads to an increase of 0.197436 units.

The regression coefficient for deposit certificates is 0.016086. This indicates an increase in the coefficient by 1%, which leads to an increase of 0.016086 units.

The coefficient of regression for a loan for households is -0.31097. This indicates an increase in the coefficient by 1%, which leads to a decrease in household savings by -0.31097 units.

## CONCLUSION

The slowdown in economic growth and the risks of increasing uncertainty in the business environment significantly reduce the resource for activating investment and reproduction processes, including through the financial potential of household savings. To increase this potential and realize its investment importance, it is necessary, through combining the efforts of state regulation bodies, financial institutions and other economic entities, to level a quite large number of factors that inhibit these processes. The unfavorable business and investment climate, the frequent changes in the "rules of the game" initiated by regulators, the lack of institutional conditions and incentives for increasing and capitalizing the personal savings, the low level of cash incomes, their instability and asymmetry, the specificity of the formed banking market, the lack of reliable long-term instruments for bank deposits stock market, low level of financial awareness and literacy of the population – all these factors determine the deformation in the savings and investment behavior of households.

According to the analysis results of the savings market of households in the Russian Federation, the following special characteristics were revealed in the savings market:

1. Credit institutions are actively working in the market of household savings almost evenly in all regions of the country. Sberbank and banks within the federal branch network are leaders in this market. In the regions, they compete with banks in the regional and local branch network.
2. Term deposits are the main tool for saving households. However, demand deposits are small, but the most stable part of bank liabilities is attracted from individuals.
3. Medium income and high-income savers are the main target group of credit institutions. Interest rates, minimum amounts and conditions for certain categories of households, which in times of crisis are able to put the stability of bank liabilities in danger.

The reorientation of state economic policy should help improve transformation of domestic savings into investment, the financial sector's commitment to ensuring the Russian economy viability in the face of financial constraints, a radical innovation-based change in its structure and solving the social problems.

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