

Evaluation of Sustainable Supply Chain Strategy of Bank Deposits in Russia and EU Countries in Crisis Conditions

Elena L. Grinko¹

¹*Institute of Finance, Economics and Management, Department of Finance and Credit, Sevastopol State University, Sevastopol, Russia
elena.grinko@yahoo.com*

Abstract - This article analyzes the impact of economic instability resulting from the global crisis of the dynamics of bank deposits in the banks. The sustainable supply chain strategy is developed for evaluation bank performance. The behavioral nature of the changes in the stability of time deposits and demand deposits in banks due to the crisis phenomena, verified as consequences of the global crisis, has been examined. Results demonstrated the significant efficiency of supply chain in bank and economic situation.

Key words- deposits, stability of bank deposits, stability supply chain, time deposits, demand deposits, economic instability.

1. Introduction

The banking system, performing its role and function, has an important influence on the process of formation and the distribution of resource flows in the economy and helps provide resources for the economic growth. Ensuring sustainable economic growth requires sufficient resources that are stable in the long run. Solving the dilemma of correlation between the real sector's credit needs and banks' ability to meet these needs in the context of a transitional economy and global financial instability introduces the problem of sufficiency and a balance of stable resources in terms of banks' credit investments. This becomes even more relevant when it is crucial to develop long-term bank lending in the developing market environment. Thus, it is essential to study the stability of bank deposits in conditions of financial turbulence and industrial stagnation.

2. Purpose and method

The purpose of this paper is to study the impact of the macroeconomic component, represented by GDP, on the stability of bank deposits in Russia, EU countries, and Ukraine, and to identify the main trends in these processes.

The study involved two stages. The preliminary research, presented in this article, is based on the economic and statistical analysis of macroeconomic data provided by central banks on the dynamics and structure of bank deposits by supply chain strategy. We have drawn preliminary conclusions about the stability of time deposits and demand deposits in Russia, EU countries, and Ukraine using approaches that include generalization, grouping, and comparison methods. We present the second stage of the study, mathematical modeling of the selected processes, in a subsequent paper.

3. Analysis of the Stability of Bank Deposits in Ukraine and the EU in Crisis Conditions

Deposits form the most important source of financing for bank investments, as they account for about 60% of total bank resources. Traditionally, banking theory considers deposits unstable resources; defined as demand deposits, due to the difficulty of forecasting changes in their balances because of the limited period they are at the bank's disposal. This is because clients freely manage their funds and can withdraw them from their accounts at any time. Fixed-term deposits are a more stable part of resources, since they allow the banks to manage them for a long period of time. These funds go into the disposal of the bank and are transformed into bank resources for a period of time,

often long-term, determined by the contractual relationship of the depositor and the bank. Penalties provided in the event of early withdrawal of funds from a deposit account, contribute to reducing rash and impulsive actions of depositors, resulting in the early termination of contractual relations with the bank, which helps to forecast that resources will remain in the banking institution. Economists from different countries traditionally agree with this point of view. However, there is another scientific approach, according to which under certain conditions, demand deposits are stable resources, while time deposits are unstable. This point of view is described in the works [1]. The previous research has established, that despite the fact that the funds in the clients' settlement accounts are unstable liabilities, a constant non-reducible value of demand deposits is formed on the aggregate, which has properties different from the properties of unstable current liabilities, namely: level stability and the possibility of its gradual increase provided there is positive macroeconomic dynamics. This property of deposits was investigated [1] and is defined as a mechanism for the transformation of banking resources. Its mathematical model was also developed by the author [1, 2]. The calculations made it possible to classify a certain part of current liabilities as stable resources, although by their nature they are unstable and poorly predictable resources [1, 2, 3]. The issue of stability in relation to any economic system, including banking processes, is controversial and ambiguous, and etiological research of this problem is beyond the scope of the present study. It should still be pointed out, that the critical analysis of the sources demonstrated lack of a single theoretical approach to both the definition of the category "stability" and the methodological approaches to assessing the stability of bank deposits, which justifies the relevance of researching this problem. In the present paper, the study of the stability of bank deposits will be based on the interpretation of the notion of "stability" suggested by A.K. Guts in his work on global ethno sociology: "Stability is the ability of the system to keep parameters within certain limits, to counteract disturbances and to return to equilibrium in the event of deviations. However, this is not only the preservation of the system parameters and return to them in the event of forced deviations, but also the process of orderly, organized change" [4]. Consequently, any economic system represented by a

combination of processes, including resource formation in banking institutions, seeks to reach equilibrium, which is manifested in neutralizing perturbations and adapting to new conditions of functioning. A short-term violation of stability as a reaction of bank deposits to external factors and threats is the subject matter of the present paper. The results of the structure and dynamics analysis of deposits in the EU, Russia and Ukraine have been summarized in Table 1. The generalized data of the ECB for all the EU countries form a correlation in the portfolio of demand deposits and time deposits as 52% and 48% respectively, with a clearly marked growth trend of the former, i.e. demand deposits in recent years. In the structure of time deposits, the largest share is accounted for by long-term deposits - 56%, with this correlation valid since 2003. In the course of the study, all the countries under consideration were divided into three main groups according to the structure of deposit portfolios of their banks: the first group had a significant relative share of time deposits (60-70%); the second - approximately the same ratio of time deposits and demand deposits (40-60%) and the third with the smallest share of time deposits (10-40%) and the prevalence of demand deposits (60-90%). Following the logic of classical reasoning, the more stable the country's economic development is, the more stable time deposits are formed in the banking system. However, as the results of the calculations presented in Table 1 and Figures 1 show, this assertion has not been supported in regard to the countries we have studied. Germany, which is considered the growth driver of the European Union economy, belongs to the second group, as well as Ukraine, which is in a state of prolonged economic stagnation, Greece, which has been in a debt crisis since 2010, as well as Spain, experiencing the same problems as Greece, but on a smaller scale. Ukraine in the last 5 years moved from the third to the second subgroup (until November 2002, Ukraine was in a group of countries with a less than 40% share of time deposits in the total amount), which does not confirm the relationship between the growth of time deposits, increased stability of bank deposits and economic growth. At the same time, Ukraine is the only country among the above-mentioned ones, which is characterized by the instability in the growth trend of demand and time deposits. The transition to a group of countries with a significant share of fixed-term deposits cannot solve

the problem of providing the economy with stable and "long" resources. France, which occupies one of the leading positions in terms of economic development after Germany, was assigned to the first group, like Russia. The Russian Federation is the only country from the list that demonstrates the opposite tendency, characterized by a reduced demand deposit volume, accompanied by growth in time deposits that has been maintained for many years. A similar trend in the resource formation has been observed since 1991 and is explained by the fact that, in the domestic banking system, there is still an active trend of redirecting the resource structure from demand deposits to time deposits. This phenomenon is attributed to the development of an independent banking system that commenced after the collapse of the USSR, which resulted in gradual restoration of trust by the population and legal entities in banks and the government due to the formation of a regulatory and legal framework and stabilization of the economy. Therefore, these processes are quite natural and objective, given the circumstances of the economic development in the Russian Federation. The term deposit structures in the studied countries exhibit considerable diversity and no unifying trends can be deduced from the observed changes. In France, Portugal, Cyprus, Austria, Germany, Greece, Spain, Estonia, Ireland, Latvia, Lithuania, Luxembourg, Slovakia, Slovenia, and Malta (i.e., most of the countries under study), long-term deposits are prevalent. In contrast, in the Russian Federation, short-term deposits constitute more than 73%. The largest share of short-term deposits is observed in Ukraine (93%), followed by Russia (73%), and Italy (66%). According to the presented data, the least stable resources in terms of the correlation between demand deposits and time deposits are noted for the banking systems of Estonia, Finland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Slovakia, Slovenia, and Malta. The average degree of banking resources stability is found in Austria, Germany, Greece, Spain, and Ukraine, whereas the most stable bank deposit portfolios are observed in Belgium, France, the Netherlands, Portugal, Cyprus, and Russia. These findings are generally explained by the economic conditions of the aforementioned countries. At the same time, the prevalence of time deposits in the structure of the deposit portfolio can no longer be regarded as a conclusive and unique characteristic of

its stability. Findings yielded by the volatility analysis of Euro zone deposits indicate that, in all European Union member states, demand deposits tend to grow as the proportion of time deposits declines. At the same time, a completely opposite trend is observed in Russia and Ukraine, which is reflected in Figure 1 and is confirmed by the linear trends. The trend of growth in demand deposits outstripping that of the time deposits indicates either a reduction in the stability of bank deposits and future problems throughout Europe, or does not confirm the established scientific and practical approach favoring investment into more stable resources in the form of time deposits. It should be pointed out that the outstripping growth in the share of time deposits in some countries, which is in conflict with the general trend of structural changes in the resource base of the banking system in comparison with demand deposits, can be due to a number of economic, political, social, and other reasons. A detailed analysis of countries in terms of annual deposit volumes segregated by investment maturity allowed establishing the correlation between the country's status in a group and the respective shares of time and demand deposits. This distinction did not reveal the general trend of increasing demand deposit stability due to a number of reasons. First, countries in which time deposits were more stable both in terms of dynamics and structure (with the prevalence of time deposits), were in the same group as countries characterized by the opposite trend, in line with the findings pertaining to the stability of the banking resource base. Second, the country's transition to a group with higher velocities of time deposits cannot be considered a significant criterion for increasing the stability of bank deposits. Consequently, the generally accepted scientific approach, guided by the premise that a higher level of time deposits ensures greater banking system and resource base stability, does not permit accurate and reliable assessment of the bank resources stability level. Analysis of the dynamics of short-term and long-term deposits revealed some interesting findings and trends. For example, only six countries are characterized by the prevalence of short-term deposits in the deposit portfolio (Belgium, the Netherlands, Russia, Ukraine, Finland, Italy, and Ukraine, which ranked the highest at 93%). In other countries, there is a clear prevalence of long-term deposits (which comprise more than 90% of the portfolio in nine countries). In almost half of the

countries under study, the ratio of short- and long-term deposits remained relatively stable during the period under review. Reduction in the share of long-term deposits is observed in eight countries, and limited growth in long-term deposit volume is noted in four countries only. It should be pointed out that the outstripping growth in the share of time deposits in some countries, which is in conflict with the general trend of structural changes in the resource base of the banking system in comparison with demand deposits, can be due to a number of economic, political, social and other reasons. A detailed analysis of countries in terms of annual volumes of deposits regarding the investment maturity provided extensive data on the correlation between the country's status in a group and the share of time and demand deposits. This distinction did not reveal the general trend of increasing the degree of stability of demand deposits due to a number of reasons. First, countries in which time deposits were more stable both in terms of dynamics and in structure with the prevalence of time deposits were in the same group as countries, characterized by the opposite trend as for stability of the banking resource base. Secondly, the country's transition to a group with higher

velocities of time deposits cannot be considered a significant criterion for increasing the stability of bank deposits. Consequently, the generally accepted scientific approach, which consists in the fact that a higher level of time deposits ensures greater stability of the banking system and its resource base accordingly, does not allow to assess the stability level of bank resources reliably and accurately. The study of the dynamics of short-term and long-term deposits allows us to point out the following interesting findings and trends: only 6 countries are characterized by the prevalence of short-term deposits in the deposit portfolio (Belgium, the Netherlands, Russia, Ukraine, Finland, and Italy, with Ukraine as the leader with 93% of short-term deposits). In other countries there is a clear prevalence of long-term deposits (more than 90% in 9 countries). In almost half of the countries under study, the ratio of short- and long-term deposits is quite regular over the period under review. The reduction of the share of long-term deposits is observed in eight countries and only in four countries there is some growth trend in terms of long-term deposits.

Table 1: Groups of countries, depending on the structure of deposits with change trends in their structure

	Demand deposits	Time deposits	incl. short-term deposits	incl. long-term deposits
1 group				
	30 – 40%	60 – 70%		
Belgium	34 (↑)	66 (↓)	86 (↑)	14 (↓)
France	38 (~const)	62 (~const)	47 (~const)	53 (~const)
The Netherlands	40 (↑)	60 (↓)	66 (↑)	34 (↓)
Portugal	37 (↑)	63 (↓)	1 (~const)	99 (~const)
Cyprus	36 (↑)	64 (↓)	9 (↓)	91 (↑)
Russia	34 (↓)	66 (↑)	73 (~const)	27 (~const)
2 group				
	40 – 60%	40 – 60%		
Austria	59 (↑)	41 (↓)	2 (~const)	98 (~const)
Germany	57 (↑)	43 (↓)	41 (↑)	59 (↓)
Greece	60 (↑)	40 (↓)	6 (↓)	94 (↑)
Spain	60 (↑)	40 (↓)	6 (↓)	94 (↑)
EU	52 (↑)	48 (↓)	44 (~const)	56 (~const)
Ukraine	47 (↑↓)	53 (↑↓)	93 (~const)	7 (~const)
3 group				
	60 – 90%	10 – 40%		
Estonia	80 (↑)	20 (↓)	7 (~const)	93 (~const)
Finland	77 (↑)	23 (↓)	51 (↑)	49 (↓)
Ireland	66 (↑)	34 (↓)	23 (↑)	77 (↓)
Italy	61 (↑)	39 (↓)	66 (↓)	34 (↑)
Latvia	81 (↑)	19 (↓)	40 (↑)	60 (↓)
Lithuania	76 (↑)	24 (↓)	3 (~const)	97 (~const)
Luxemburg	80 (↑)	20 (↓)	19 (↑)	81 (↓)
Slovakia	63 (↑)	37 (↓)	17 (↑)	83 (↓)
Slovenia	67 (↑)	33 (↓)	6 (~const)	93 (~const)
Malta	69 (↑)	31 (↓)	9 (~const)	91 (~const)

*In brackets - the main change trend in the structure of deposits since 2003. Red color indicates opposite trends, blue - the biggest changes over the period. Source: Author's calculations according to the Central Banks of the countries.

As the latest research [1, 2, 5, 6, 7], and other scientists indicate, the stability of bank deposits is determined by many factors and conditions of the bank's activity, as well as by the terms of the deposit agreement to a lesser extent [1, 2, 8, 5, 6, 7].

The obtained analytical data are also supported by the assessment of [6], who point out that private sector deposits are more stable than other liabilities. And with the beginning of the financial crisis in the summer of 2007, deposits of companies, banks and, surprisingly, households, showed the lowest degree of volatility (see Table 2) [6].

Household deposits are believed to be more stable than deposits of legal entities. However, the variation coefficients show that this does not necessarily correspond to this statement (see Table 2). According to studies, in Spain, the Netherlands, Slovenia and Slovakia, the variation coefficient for deposits was slightly higher for the period from January 2008 to September 2011 than for corporate deposits. The same situation was observed for a longer period (December 2002-September 2011) in Greece, Ireland and Italy. To a small extent, this also applies to Slovenia, Slovakia, Spain and Portugal [6].

According to the data, calculated [6], deposits with the negotiated maturity period have, on average, the highest coefficients of variation and make up about 30% of the total amount of bank deposits. This is true both for corporate deposits and household deposits. Demand deposits, on the contrary, have low volatility. Their share in the total volume of deposits on average constituted 53% between 2002 and 2011. For this reason, the authors have concluded that most of the demand deposits can be regarded as stable deposits [6]. The last conclusion is supported in the studies of [7], who point out that under normal circumstances, the total remains of small deposits with a low level of investment are not prone to sudden fluctuations; therefore a certain proportion in the portfolio of any financial institution can be used as a stable source [7, 9].

There are some differences in the degree of volatility of different deposit types in the EU countries. In Spain,

Italy, Austria, Slovenia deposits with maturity in the agreed time, the variation coefficients are much higher than the average (11%). In Belgium, the Netherlands and Greece, on the contrary, deposits with an agreed maturity date change much more significantly, on average by 18%. Spain, Ireland, Luxembourg and Austria have higher variation coefficients of demand deposits than in the euro zone - an average of 19% [6]. However, this trend is not displayed in aggregated data across the EU [6]

Table 2: Coefficients of variation for liabilities of Euro zone banks, June 2007 - December 2011, %.

Euro zone Debt securities	2,9
Euro zone deposits:	5,1
corporate deposits	5,3
bank deposits	6,1
household deposits	6,2
government deposits	10,2
deposits of other financial institutions	10,6
Foreign deposits	7,8
Equity	9,9
Other liabilities	10,4
Foreign debt securities	11,8

Source: [6]

4. Conclusion

On basis of the studies examined, we have reached the following conclusions:

- First, the prevalence of time deposits in the structure of the deposit portfolio cannot be regarded as an unambiguous and unique characteristic of their stability of supply chain.
- Second, the analysis of Euro zone deposit volatility has shown that, in all countries, there has been a general trend in the growth of the share of demand deposits alongside a decrease in the share of time deposits, including during the last financial crisis of 2008-2009, which was confirmed by the constructed linear trends.
- Third, in Russia, an opposite trend has been observed, instantiated through a reduction in demand deposits and the growth of time deposits.
- Fourth, against the backdrop of a localized growth trend in the share of demand deposits in most European Union countries, the prevalence of long-

term deposits has been pointed out; however, there are no other common characteristics in the structure and trends of changes in short-term and long-term deposits.

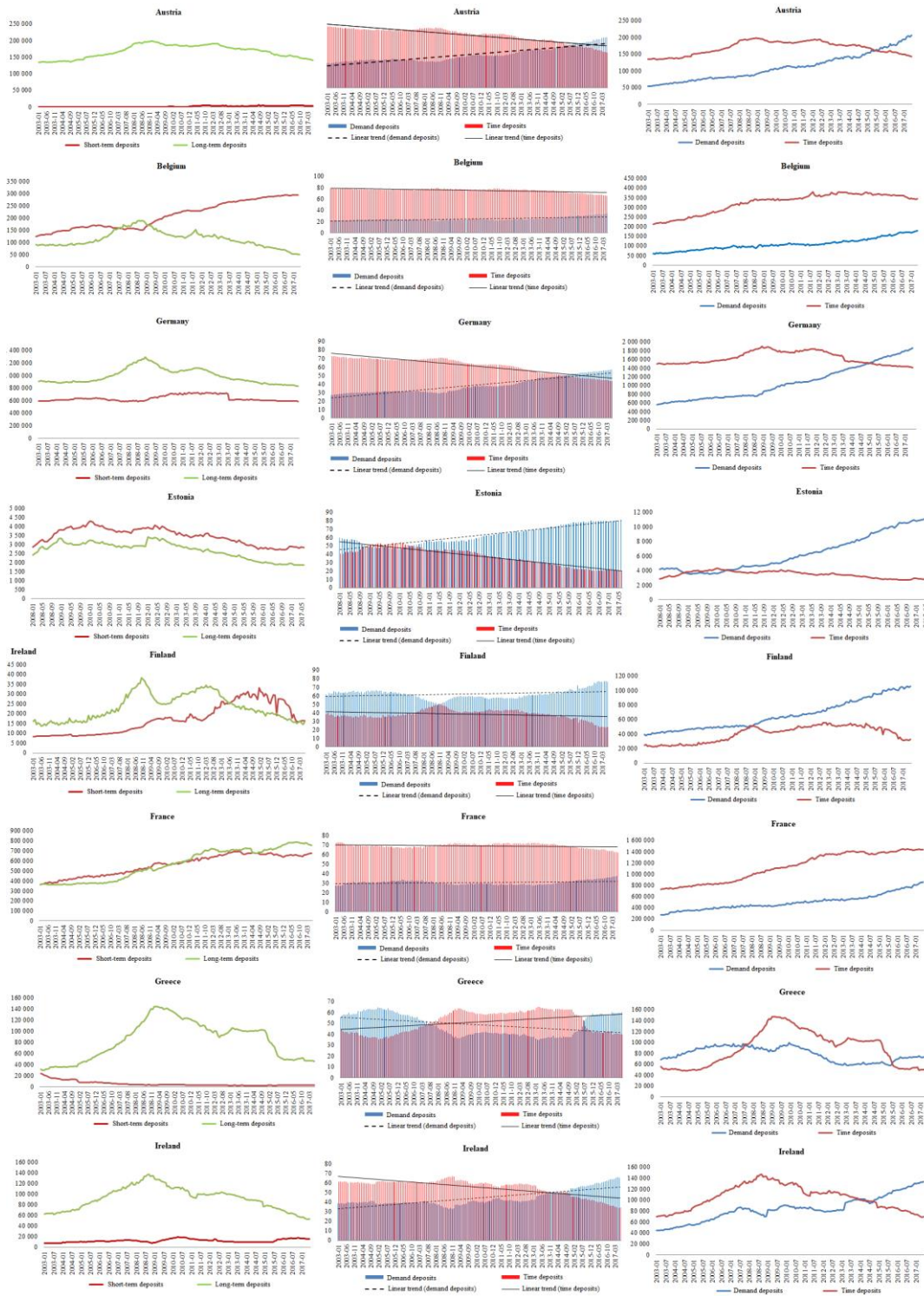
- Fifth, the most significant changes in the deposit structure have been observed in Estonia, Latvia, Lithuania, Luxembourg, and Spain, although the changes and structure of deposits in Ukraine are characterized by the instability of the prevailing trend.

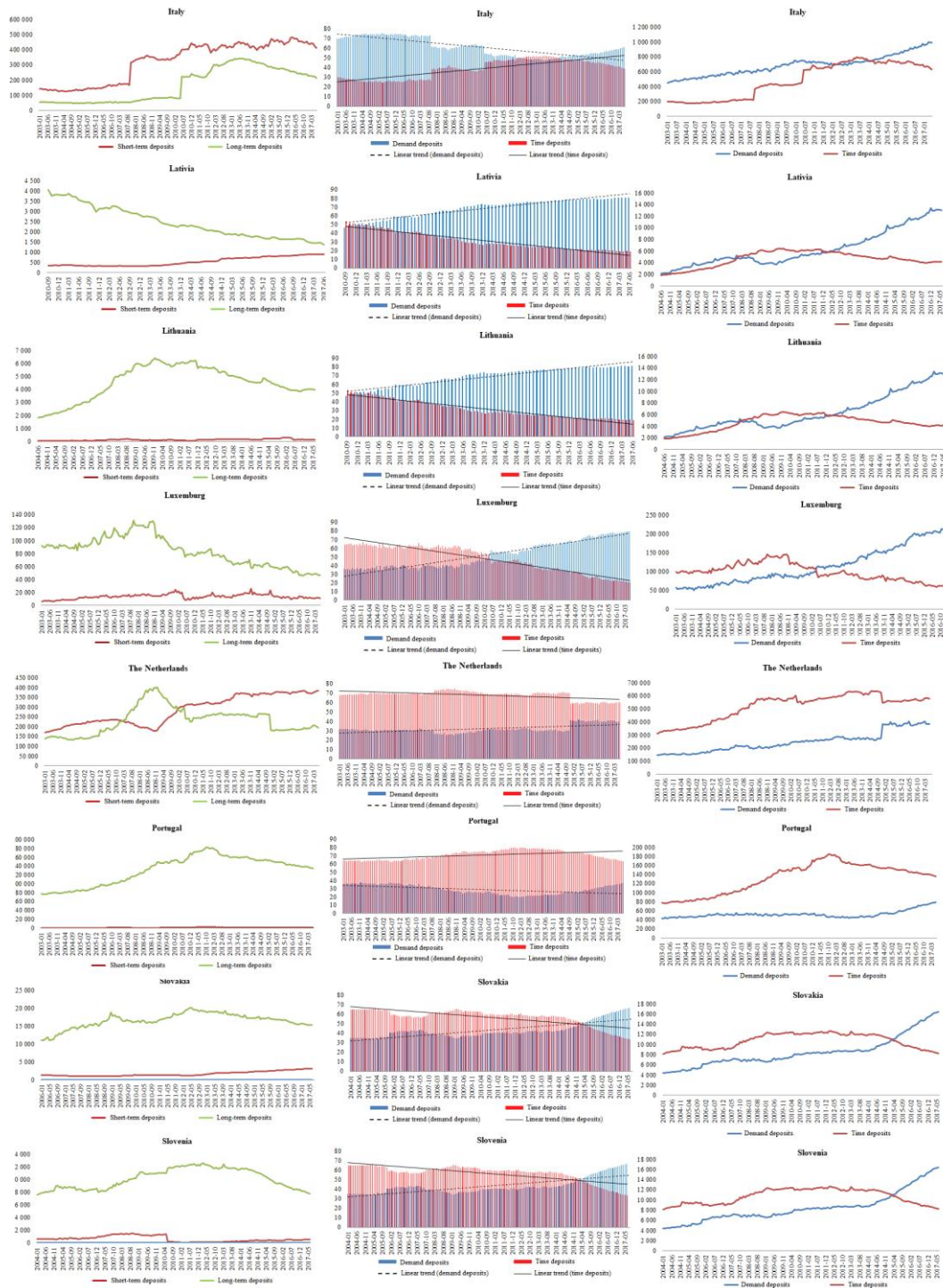
- Finally, the banking system reflects the financial and economic state of the country, so supply chain can be effective in bank system. First and foremost, it reacts to both economic recovery and its ensuing recession, which in turn increases the volatility of banking resources, including deposits. At the same time, the elements of instability in banking activities can slow in economic growth and, in general, change the prospects for economic development. These two processes are organically interconnected.

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Annexes





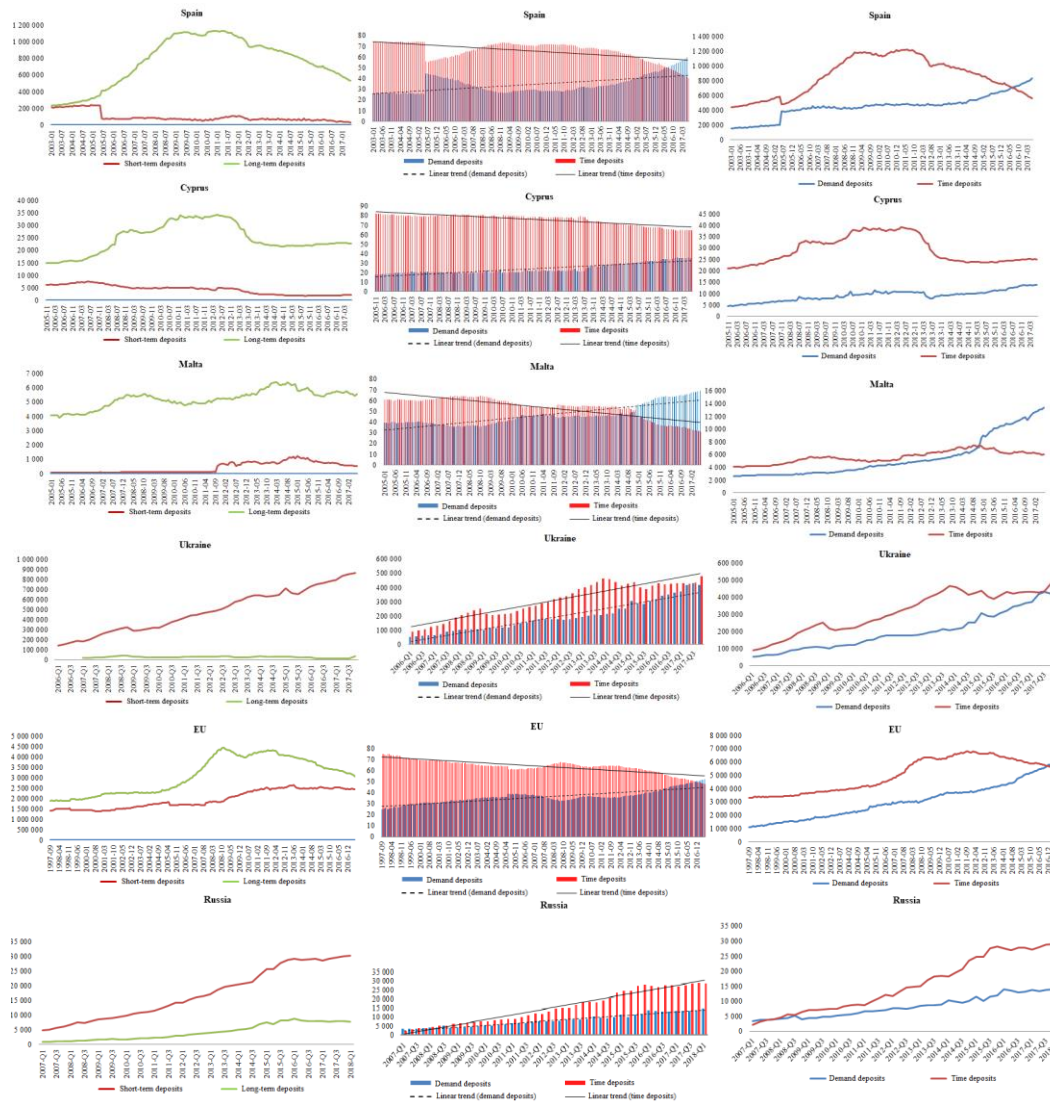


Figure 1: Dynamics and trends of changes in different types of bank deposits by country, period 2006 - 2017.

Source: Calculated by the author according to the data of the Central Banks of the countries.