ГРОШІ, ФІНАНСИ І КРЕДИТ

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FINANCIAL CYCLES AND FINANCIAL IMBALANCES IN ECONOMY

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Introduction. The world financial economic crisis of 2007-2008 demonstrates that self-organizing financial sector is capable of intensifying economic fluctuations and disturbing economy from dynamic equilibrium leading to system crises.

Inflation targeting conditions implementation has not saved Ukraine like many developed countries from imbalance accumulation in the financial sector of economy. Easy money policy had positive impact on the economic growth only at a certain period of time, while further deceleration of real GDP growth rate was compensated by income growth for base and financial assets, expansion of consumer crediting and speculations with real estate, which led to formation of speculative component in asset price dynamics and emergence of financial system procyclicality [1, p. 33].

Analyzing the reasons of financial stresses director of the General Economic Department of the National Bank of Ukraine A. Petrik highlighted that maintaining low level of inflation as a goal of monetary policy of central banks while ignoring "bubbles" in financial assets market and real estate market was not sufficient and led to the whole financial system crash [2, p. 5].

That is why working out effective methodology ensuring price and financial stability is today an actual task for most central banks.

According to the point of view of foreign scientists (A. Mueller [3], C. Borio [4, 5], D. Gerdesmeier [6], D. Harding [7], S. Claessens [8]), financial sector imbalances are formed and appear on a periodic basis compared to the periodicity of financial cycles. In this regard, understanding the essence and character of financial cycle dynamics will increase the quality of managing instrument calibration.

Aim of article. The purpose of the article is to formalize the essence and describe characteristics of financial cycle demonstration in economy.

Results of research. Scientific society has no consensus as to the approach in determining the financial cycle and its determinants. In general, the concept of financial cycle is associated with the popular concept of "procyclicality" of the financial system.

According to the opinion of vice director of the monetary economic department of the Bank for International Settlements C. Borio [5] a financial cycle is the sequence of rapid expansion in credit and asset prices, often accompanied by a relaxation of price and non-price terms in access to external funding, that then moves into reverse and can ultimately be followed by financial distress. Such approach to the definition of a financial cycle corresponds to its main driving power – financial imbalances [5, p. 5]. In other words, financial cycles are the self-reinforcing interactions between perceptions of value and risk, attitudes towards risk and financing constraints, which translate into booms followed by busts [9, p. 8].

It should be noted that at every stage of financial cycle (growth beginning, expansion, boom, recession) participants of financial relations change their attitude to risks (credit, market, liquidity): at the stage of expansion and booms risks are underestimated, at the stage of recession and growth renewal risks are overestimated. This state of things forms inequality in distribution of such risks in time, among financial operations, counterparts and can lead to accumulation and materialization of system financial risks.

For better understanding the nature of financial imbalances let's look at real examples of financial cycle development peculiarities. Financial cycles have the following characteristics.

The financial cycle is most parsimoniously described in terms of credit and property prices. Credit and prices on real estate are closely connected due to the fact that construction financing and property acquisition are realized attracting credit means. Given this, credit and real estate prices have similar fluctuation dynamics. Moreover, their fluctuations are characterized by greater synchronism compared to stock price behaviour.

It should be noted that there exist alternative approaches to the definition of the financial cycle in economic literature:

– financial cycle is only defined in terms of a credit cycle (M. Schularick et al [10], D. Aikman et al [11], O. Jorda et al [12]);

– financial cycle is defined in terms of a complex of financial variables: interest rates, volatility, risk premium, default rates, non-performing loans, etc. (W. English et al [13], T. Ng [14]);

– financial cycle is described with a credit cycle and assets prices (S. Claessens et al [8]).

The financial cycle has a much lower frequency than the traditional business cycle. For example M. Drehmann [15] in his work has analyzed economy of several industrialized countries (Australia, Germany, Great Britain, Japan, Norway, Sweden, the USA) during the last 50 years. According to the results of the analysis an economic cycle lasts from 1 to 8 years, while the financial cycle duration is about 16 years.

Based on M. Drehmann scientific approach [15] we conducted the calculation of a financial cycle for the USA economy. Methodical aspects of financial cycle definition are the following:

1. Index-measure statistical data of the financial cycle have been prepared: credit growth ratio provided to the private sector of economy, credit-to-GDP ratio, and property price index. All statistical data taken into account during the calculation of these indexes were in logarithm form and taken in real terms (GDP deflator was used).
2. Cyclic components were found for the above mentioned credit aggregates and assets price index using Band Pass Filter (Christiano-Fitzgerald filter) with fixed duration range (from 8 to 30 years).
3. Financial cycle time series have been calculated as an average value of cyclic component of credit aggregates and assets price index.

Identical operations have been performed for GDP dynamics index, except for the third stage. At the third stage cyclic component in real GDP dynamics was extracted with the use of frequency filter and its duration fixation from 1 to 8 years. Figure 1 shows economic and financial cycle in the USA.

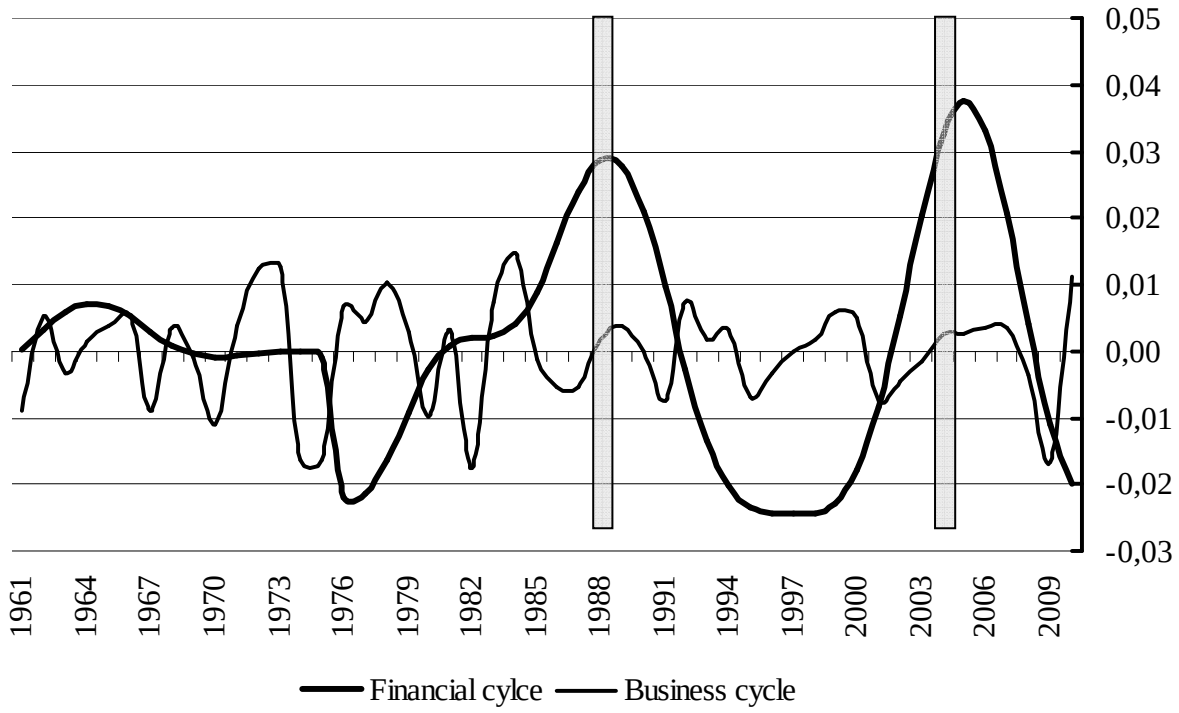

Fig. 1. The financial and business cycles in United States[1]

[1]Grey vertical lines show peak (maximum) values of the financial cycle.
Resource: own development based on [15].

Graphic material analysis allows distinguishing visually sharp distinctions between financial cycle duration and economic cycle duration. Despite the fact that financial cycle "shrinks", its fluctuation frequency remains lower than the economic cycle frequency: recession stage in the economic cycle is about a year, and in the financial cycle it lasts several years.

Table 1 shows this asynchrony by means of average amplitude and recession length (economic cycle was evaluated using Bry-Boschan algorithm [16]) at the corresponding growth and downturn phases of financial cycles.

Table 1 analysis led to the following conclusions:

1. Economy faces more serious recessions when the phases of economic recessions coincide with the phases of financial cycle reduction. Fluctuation magnitude at such time periods is significant: at financial cycle reduction phase real GDP goes down by 50% more compared to the financial conditions improvement phase (-3.4% to -2.2%). Moreover, the results of the analysis showed that recession period in this case is one quarter longer than financial cycle recession period.

Table 1. Business cycle contractions and the phase of the financial cycle

	Full sample (1960-2011)		Pre-1985		Post-1985		Contractions	
	Exp.[1]	Cont.[1]	Exp.[1]	Cont.[1]	Exp.[1]	Cont.[1]	Without crisis	With crisis
Amplitude[2]	-2,2	-3,4	-2,4	-2,5	-1,8	-3,6	-3,0	-3,7
Length[3]	3,5	4,3	3,5	3,2	3,5	4,6	3,9	4,6
Number of events	17	21	13	5	4	16	9	12

[1] Ex and Co refer to the expansionary and contractionary phases of the financial cycle [2]Average percentage change in real GDP from peak to trough, [3]Average duration from peak to trough, in quarters
Resource: [15 p., c. 26].

2. Financial liberalization smoothed economic recessions that fall within the financial cycle growth phase and intensified economic cycle fluctuation amplitude during the financial cycle recession period. More specifically, after 1985 real GDP decline during the financial

cycle growth phase went down from 2.4% to 1.8%. At the same time due to deterioration of financial conditions recessions became more protracted (4.6 quarters to 3.2 quarters) and deeper (3.6% to 2.4%).

3. Economic recession depth is brought about not only by banking crises which as shown above are closely connected with peak (maximum) values of financial cycles. For example in conditions of banking crises absence, at financial cycle growth phase real GDP went down faster, from 2.2% to 3%. Besides when recession overlapped the financial cycle recession phase (with banking crisis producing), real GDP decline was at the level of 4%.

Peaks of financial cycles are closely associated with financial crises. As shown in figure 1 (grey vertical lines) financial crises follow peak values of financial cycles. Table 2 shows quarter distances between peak values of financial cycle and financial crises in relation to the check dates.

Table 2. Financial crises and peaks in the financial cycle

Country	Time	Time to closest[1]		Duration[3]
		Crises	Peak[1]	
United Kingdom	2009 Q1	-6	5	72
Sweden	2009 Q1	-2	4	75
United States	2007 Q3	0	0	68
Japan	1992 Q2	2	-3	74
United Kingdom	1991 Q1	-3	-2	69
Australia	1990 Q3	-3	-2	-
United States	1990 Q3	-2	-5	44
Sweden	1990 Q2	5	3	38
Norway	1989 Q2	5	-2	53
United Kingdom	1973 Q4	0	0	-

[1]Distance (in quarters) between the date and closest crisis or closest peak using either frequency based filters or the turning-point method. Negative (positive) numbers indicate that the nearest peak/crisis precedes (follows) the peak date; [2]Christiano-Fitzgerald filter; [3]Number of quarters from previous peak.
Resource: [15, p. 23].

Table data analysis proves the assumption that peak values of financial cycles usually precede the beginning of system banking (financial) crises. The tendency can be clearly seen after the financial liberalization (after 1985). Average value of the financial cycle duration in all the analyzed countries was about 16 years (64 quarters). At the same time about a quarter of all financial cycle peaks had no serious consequences (banking crises) for the financial system of such countries as Germany (1998), Australia, and Norway (2009).

At these periods of time in Germany and Norway credit cycle and real estate price dynamics had asynchronous fluctuations: real estate price changes took place before credit crunch. Due to this, duration between credit growth peak and real estate price peak was higher than in other analyzed countries and made about 4-5 years. Partly these exceptions from "peak-crisis" logical successions can be explained by the fact that banking system of Germany (with its historically developed cooperative bank system) in the early 2000s was under fixed control of regulatory authorities after the reunion of East and West Germany. In 2009 authorities of Norway and Australia took stabilization measures. That is, in Norway intervention in capital of 28 top banks made 4.1 billion krones.

Financial cycle helps detect financial distress risks with a good lead in real time. More stable indexes informing of the coming crises are credit to GDP ratio and assets prices (particularly real estate prices). It is believed that significant and simultaneous deviation of actual values of these two indexes from their expected values increases the possibility of a financial stress. Figure 2 shows "credit to GDP" ratio gaps and price index gaps on residential real estate in Ukraine.

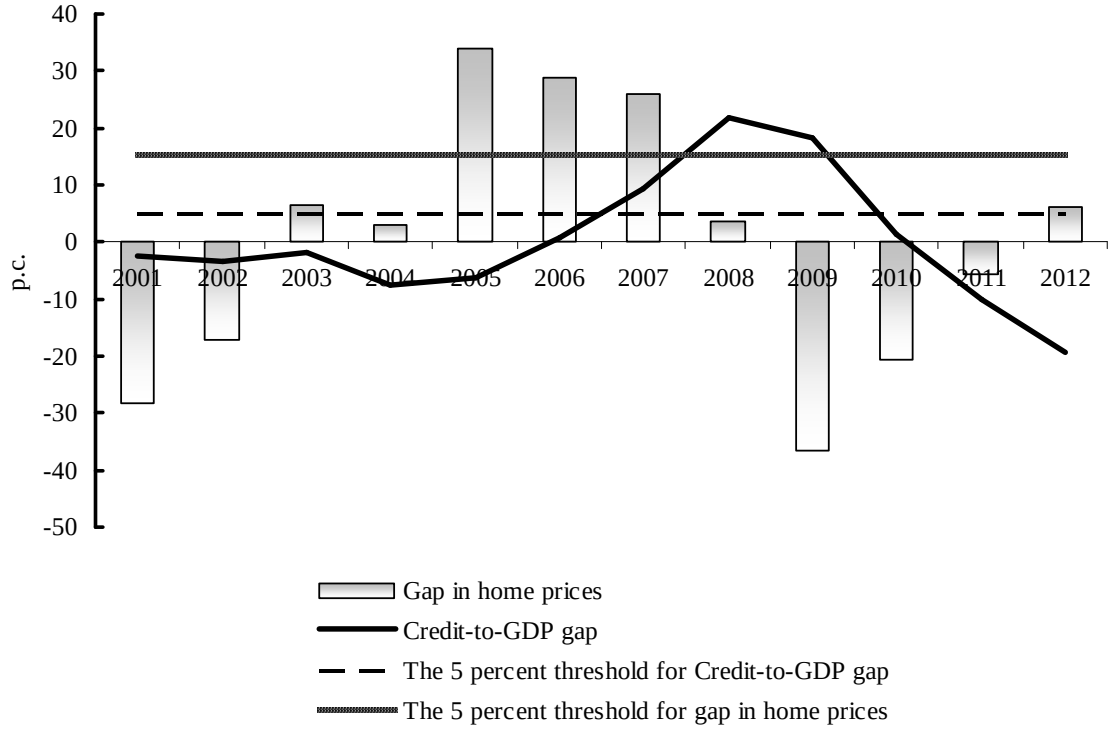

Fig. 2. The estimated gaps for the economy of Ukraine

Resource: own development based on [17, 18]

Dotted line shows critical threshold values; their excess indicates unusual growth of aggregate index data.

The length and amplitude of financial cycle depend on policy regimes. It should be noted that financial cycle parameters in the time continuum are not fixed. To much degree they are the result of a set of policies that can have decisive effect on the conditions for financial imbalance accumulation. According to C. Borio & P. Lowe [19, 20] in this aspect of question important factors are financial conditions, monetary conditions, and real economy conditions. For example, financial liberalization weakens financial restrictions and leads to self-increasing interaction among cost and risk, risk perception degree, and financing conditions. Monetary policy conditions are focused on short-term inflation targeting.

In terms of relative stability of consumer price index national regulators have no need to conduct restriction of monetary policy during the periods of financial imbalance accumulation. Openness and globalization of modern economies plays the role of accelerator of financial booms that take place along with low consumer inflation (in countries with developed financial markets).

To work out an efficient system of imbalance regulation in the financial sector of economy the following aspects of the problem should be taken into account [9, p. 14]:

1. Financial booms do not precede financial crises, they do cause ones. Financial sector vulnerability to shocks increases on the phase of financial booms. In other words, the origin of financial stresses are not the shocks themselves (not exogenous nature), but the level of accumulated imbalances in the financial sector (endogenous nature) that influence the possibilities of financial sector in absorbing new shocks without disturbing the balance on the market.

2. During the financial boom credit encourages lifting financial restrictions on assets acquisition that often leads to irrational company resource usage including their capital. These «misalignments» (imbalances) in the accumulated total debt in economy appear in the conditions of financial stress when economic agents tend to cut down expenditures. Along with this such economists as G. Eggertsson & P. Krugman [21] note that imbalances should be seen as exogenous phenomena, and not as the consequences of financial booms. Imbalances can be interpreted as exogenous cuts within the borrowings.

3. There is distinction between potential volume of production on the non-inflationary basis and stable production. It is traditionally believed that achieving the potential level of product output

assumes getting the natural level of employment and lack of inflation pressure. Correspondingly, the system is in the state of equilibrium until exogenous shock "breaks" this equilibrium condition. Inflation is an informative variable signaling gaps between factual and potential GDP values. That is why very often when modeling GDP gap inflation is used evaluated using Phillips curve. At the same time inflation can be stable when product output is rather volatile due to accumulated financial imbalances. Consequently, stable output and output based on the non-inflationary basis do not need to coincide.

Conclusion. Financial cycles influence sufficiency of creditors' net worth, while assets price changes and collateral value influence creditworthiness of borrowers directly. In our opinion, in such conditions an actual task for central banks is working out adequate monetary policy for economic phases and financial cycles. Besides, efficient policy of imbalance regulation in the financial sector of economy should not be restricted only by monetary instruments. An effective combination of monetary-credit, budget-fiscal, and general macroeconomic policies should be found.

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Васильєва Тетяна Анатоліївна, доктор економічних наук, професор, завідувач кафедри банківської справи. Державний вищий навчальний заклад «Українська академія банківської справи Національного банку України». **Луняков Олег Володимирович**, кандидат економічних наук, доцент кафедри фінансів і кредиту. Севастопольський інститут банківської справи Української академії банківської справи Національного банку України. **Фінансові цикли та фінансові дисбаланси в економіці.** Формалізовано сутність, показано особливості та здійснено порівняльний аналіз економічних і фінансових циклів. Наведено методику виявлення фінансових циклів. Часові серії фінансового циклу було отримано шляхом розрахунку середнього значення від циклічних складових часових серій кредитних агрегатів та індексу цін активів. Проаналізовано фінансові цикли на прикладі низки країн з розвиненою економікою, а також показана характерна динаміка індикатора фінансових дисбалансів для економіки України. За результатами дослідження сформульовано висновки про те, що фінансові цикли впливають на достатність власного капіталу кредиторів, а зміна цін активів та вартість забезпечення безпосередньо впливають на кредитоспроможність позичальників. У цих умовах актуальним завданням для центральних банків є розроблення монетарної політики, адекватної не тільки фазам економічних, а й фазам фінансових циклів. Крім цього, дієва політика регулювання дисбалансів у фінансовому секторі економіки не повинна обмежуватися застосуванням тільки монетарних інструментів. Необхідно знайти ефективне поєднання, як грошово-кредитної політики, так і бюджетно-фіскальної, та загальної макроекономічної політики.

Ключові слова: фінансовий сектор, фінансові дисбаланси, фінансові цикли, регулювання фінансового сектора.

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Васильева Татьяна Анатолиевна, доктор экономических наук, профессор, заведующий кафедрой банковского дела. Государственное высшее учебное заведение «Украинская академия банковского дела Национального банка Украины». **Луняков Олег Владимирович**, кандидат экономических наук, доцент кафедры финансов и кредита. Севастопольский институт банковского дела Украинской академии банковского дела Национального банка Украины. **Финансовые циклы и финансовые дисбалансы в экономике.** Формализована сущность и показаны особенности финансовых циклов в экономике. Проведен сравнительній анализ экономических и финансовых циклов. Представлена методика выявления финансовых циклов. Проанализированы финансовые циклы на примере ряда стран с развитой экономикой, а также показана характерная динамика индикатора финансовых дисбалансов для экономики Украины. Подчеркнуто, что актуальной задачей для центральных банков является разработка монетарной политики, адекватной не только фазам экономических, но и фазам финансовым циклов.

Ключевые слова: финансовый сектор, финансовые дисбалансы, финансовые циклы, регулирование финансового сектора.

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T. A. Vasilyeva, Doctor of economic sciences, Professor, Banking Department. State High Educational Institution “Ukrainian Academy of Banking of the National Bank of Ukraine”. **O. V. Lunyakov**, Ph D, Associate Professor of Finance and Credit Department. Sevastopol Institute of Banking of the Ukrainian Academy of Banking of the National Bank of Ukraine. **Financial cycles and financial imbalances in economy.** The article formalizes the essence and shows peculiarities of financial cycles in economy. Comparative analysis of economic and financial cycles is performed. Methods of financial cycle identification are presented. Financial cycles are analyzed using the examples of countries with developed economies; also, characteristic dynamics of the financial imbalance indicator is presented for Ukraine. Actual task for central banks is to develop monetary policy that would be adequate not only the phases of the economic, but also the phase of the financial cycle is outlined.

Keywords: financial sector, financial imbalances, financial cycles, regulation of financial sector.