DEVELOPMENT MANAGEMENT

Global financial cycle: Impact on Ukraine

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Abstract. Global financial fluctuations that arise in the financial centres – the US and the EU through international channels of monetary transmission affect the financial markets of peripheral countries, including Ukraine, where the assessment and consideration of such an impact is an important element of monetary policy. Therefore, the purpose of the article was to assess the impact of cyclical fluctuations of the global financial situation on the financial sector of Ukraine's economy. As a result of correlation analysis, a direct relationship between leverage indicators in Ukraine and the Chicago Board Options Exchange Volatility Index and Euro Stoxx Volatility Index has been revealed. At the same time, the direct relationship between these indices and the growth of domestic credit in Ukraine contradicts the concept of the global financial cycle and may indicate the presence of more important factors of domestic credit. Correlation analysis of the volatility index of the Chicago Board Options Exchange and capital flows in Ukraine showed that in the years of increased global uncertainty and volatility, the volume of capital flows decreased, especially for portfolio debt instruments. Analysis of the cyclical components of the global and domestic credit cycle in Ukraine obtained with the Godric-Prescott filter indicates a higher level of volatility in domestic lending. The obtained value of the concordance coefficient did not make it possible to draw an unequivocal conclusion about the counter- or procyclical nature of domestic credit fluctuations relative to the global volume of loans in the non-banking sector. It has been found that the global financial cycle was not a significant factor in domestic credit in Ukraine in the studied period. The practical significance of the results lies in the fact that the National Bank of Ukraine will be able to implement a monetary policy independent of the global financial fluctuations and limit the outflow of capital during the period of growing uncertainty in the international financial markets

Keywords: credit cycles; domestic credit; volatility indices; capital flows; leverage

● INTRODUCTION

Financial globalization, which manifests itself through the deepening of financial integration of countries, the increase in the level of financialization of national economies, the strengthening of influence of multinational banks and other financial intermediaries on the dynamics of global financial flows and asset prices, is a significant factor in the macroeconomic environment of both developed economies and developing countries. Fluctuations in international financial markets caused by a change in the monetary policy of the USA or the EU, significant fluctuations in the prices of financial assets and commodities affect interest rates, exchange rates, asset prices, lending and investments far beyond the country of origin, which makes the study of this problem important.

The global financial cycle is expressed through a high level of consistency in fluctuations in the prices of risky assets, capital flows, the level of lending and aggregated financial indicators in the global economy. S. Miranda-Agrippino & H. Rey (2022) presented a number of empirical studies that substantiate the concept of the global financial cycle, in particular, a single global factor that correlates with the global level of risk acceptance and explains 25% of the variation in the prices of risky financial assets. Since 2010, this factor has covered major global events such as the Eurozone debt crisis, the global asset sell-off in 2016, and the recession at the end of 2018. Two global factors explain 35% of the variation in global financial flows, while a single global factor explains about 30% variation

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of fluctuations in global private liquidity. According to S. Miranda-Agrippino & H. Rey (2022), the monetary policy of the Federal Reserve System (the Fed) is also a significant factor in the global financial cycle; the role of the European Central Bank is less important.

J.S. Davis *et al.* (2021) examined the variance of gross and net capital flows based on panel data for 58 countries. The researchers concluded that two global factors explain about 40% of the variation in net capital flows. One of these factors is related to international risk appetite and represents the global financial cycle. The difference in the sensitivity of the country's capital flows to fluctuations in the global financial situation depends on the gross and net position of external debt assets. The imbalance of debt assets and liabilities increases a country's vulnerability to the global financial cycle through lending mechanisms. O. Bondarenko (2020) substantiates the use of quarterly data in factor models of the global financial cycle and emphasizes the need to study cyclical characteristics, namely reversal points, growth-decline phases, as well as taking into account the consistency between indicators of capital flows. Researcher A. Shlapak (2022) examines the role of transnational banks in the movement of global capital flows and the formation of the global financial cycle. Aggregated indicators of financial cycles in the context of developed economies and developing countries were studied by such Ukrainian scientists as O. Laktionova & O. Benzar (2020).

The length of the global financial cycle plays an important role in decision-making for both central banks and institutional investors in the periphery. Y. Akdi *et al.* (2020) tried to estimate it using VIX (Chicago Board Options Exchange Volatility Index), TED Spread (Treasury-EuroDollar Rate Spread) and LIBOR-OIS Spread (Libor-Overnight Index Swap Rate Spread). Examining the dynamics of these indices for the period from January 1990 to October 2018, they found that the duration of the global financial cycle is 43 months. In addition to panel data studies for large samples of countries, some publications deal with the analysis of the impact of the global financial cycle on individual countries. For example, scientists A.M. Cunha *et al.* (2019) within the study of the impact of Brazil's financial integration on macroeconomic efficiency found that the deepening of financial integration contributed to the strengthening of the negative consequences of the recession phase of the global financial cycle.

Studies of the global financial cycle are developing in a wide spectrum: from the methodology of factor models to the assessment of its impact on a certain country. Ukraine is a country with a small open economy whose level of integration into the global and, in particular, the European financial system is increasing. The limited nature of studies of the impact of the global financial cycle on the financial sector of Ukraine's economy determines the purpose of this study, which is to identify the impact of fluctuations in international stock market volatility indices on lending indicators and the dynamics of capital flows in Ukraine's economy.

● MATERIALS AND METHODS

General scientific and special research methods were used in the article, in particular, the method of scientific abstraction was used in the analysis of mechanisms of international monetary transmission. Induction was used to explain the influence of VIX index fluctuations on the dynamics of domestic lending. Methods of analysis and synthesis were used to justify the role of the US dollar as the leading currency in global financial markets. Correlation analysis was used to assess the relationship between the dynamics of global volatility indices and lending and leverage indicators in Ukraine, as well as the dynamics of capital flows. In order to assess the impact of the global credit cycle on the dynamics of lending in Ukraine, the cyclical components of global lending to the non-banking sector and domestic credit in Ukraine were obtained using the Hodrick-Prescott filter (Hodrick & Prescott, 1997). To assess the degree of synchronization of the global and Ukrainian credit cycles, the concordance coefficient was calculated, which shows the average number of periods during which two indicators are in the same phase (growth or decline). The concordance coefficient was determined by the formula of K.P. Prabheesh *et al.* (2021):

$$C_{X,Y} = \frac{1}{T} \sum_{t=1}^{T} \left(S_{X,t} S_{Y,t} + (1 - S_{X,t})(1 - S_{Y,t}) \right), \quad (1)$$

where $S_{X,t}$ ($S_{Y,t}$) is equal to 1 if the variable $X(Y)$ increases at time t, or is equal to 0. The concordance coefficient between two variables $S_{X,t}$ and $S_{Y,t}$ can take on values from 0 to 1: if $S_{X,t} = S_{Y,t}$, then the concordance coefficient is equal to 1, the two variables are absolutely synchronized, that is, they are in the same phase of the cycle; if the concordance coefficient is equal to 0, that is, $S_{X,t} = 1 - S_{Y,t}$, the two variables are completely out of sync, they are in opposite phases of the cycle. The value of the concordance coefficient from 0 to 0.5 indicates the countercyclical nature of fluctuations of the X variable relative to the Y variable, and from 0.5 to 1 – the procyclical nature of the changes (Harding & Pagan, 2006). To assess the synchronization of fluctuations, the correlation coefficient between the cyclical components of global and Ukrainian lending has been calculated, adjusted for the value of the standard deviation, and its significance has been assessed.

As a proxy for the global financial cycle, the study uses quarterly data (at the end of the period) on the dynamics of the stock market volatility indices VIX (Q4 2002-Q4 2022) and VSTOXX (Euro Stoxx Volatility Index) (Q4 2008-Q4 2022). The choice of time series was determined by the availability of data. In assessing the impact on the financial sector of Ukraine, the leverage indicator of the banking sector has been used, calculated as the ratio of claims to the private sector to transfer and other deposits of depository corporations except the NBU (National Bank of Ukraine). Internal credit was calculated as the sum of net claims of deposit corporations to central government and claims to other sectors of the economy. Quarterly data for leverage of the banking sector and domestic credit have been obtained from the monetary and credit statistics of the NBU (Surveys of financial corporations, 2023). Gross capital flows have been analysed in terms of 4 groups: FDI (foreign direct investment), portfolio equity, portfolio debt and credit according to the NBU balance of payments (Balance of payments, 2023). The global credit cycle was estimated through the global liquidity indicator – the sum of bank loans to the non-banking sector and the issuance of debt securities by the non-banking sector, data obtained from

the Bank for International Settlements (Global liquidity indicators, 2023). To identify the impact of the global financial cycle on the financial sector of Ukraine's economy, the correlation coefficients between the VIX, VSTOXX indices and the growth of domestic credit, the leverage of the banking sector and the growth of leverage have been calculated.

● RESULTS AND DISCUSSION

The abandonment of the Bretton Woods monetary system and the intensification of global capital flows have led to new challenges for the monetary policy of central banks. In recent decades, the trilemma of international finance or the trilemma of monetary policy has been empirically confirmed, according to which a country's central bank cannot simultaneously implement an independent monetary policy, ensure free movement of capital and a fixed exchange rate (Fleming, 1962; Mundell, 1963). The trilemma is based on compliance with the conditions of uncovered interest parity, when, with perfect capital mobility, the return on bonds in different countries is equalized as a result of arbitrage operations. With a fixed exchange rate and free movement of capital, the central bank cannot pursue an independent monetary policy. Changes in the interest rate in the country cause an inflow (outflow) of capital, which will have to be absorbed in the foreign exchange market to maintain a fixed exchange rate, thus offsetting the impact of monetary policy.

The transition to a floating exchange rate, which will absorb fluctuations in the foreign exchange market due to capital movements, gives the central bank freedom to choose monetary policy to stabilize output and employment. Empirical testing of the monetary policy trilemma has been carried out through the study of the correlation of short-term interest rates in peripheral countries relative to the central country under different regimes of exchange rates and capital mobility (Herwartz & Roestel, 2017). In countries with floating exchange rates, short-term interest rates showed a lower correlation with the rate in the central country compared to countries with fixed exchange rates. However, the transition to a floating exchange rate alone cannot provide a country with full monetary autonomy, since the central country will influence its monetary sector through other transmission channels. H. Rey (2014) argues that global factors that affect the country's monetary sector even with a floating exchange rate have to some extent turned the trilemma of international finance into a dilemma where the central bank can achieve monetary autonomy only by introducing restrictions on the movement of capital.

The transmission of monetary fluctuations from the central country to the periphery occurs through the exchange rate channel, the credit channel and the risk-taking channel. The exchange rate channel mechanism operates through changes in aggregate demand and consumption patterns in the central country. The easing of monetary policy in the central country causes an expansion of aggregate demand in the central country and stimulates imports from the periphery. A decrease in the interest rate leads to a depreciation of the central country's currency. In the central country, there is a demand shift in favour of domestic goods due to their cheaper prices (Rey, 2014). Consequently, in the periphery, there are two opposing effects affecting output: one due to the expansion of the aggregate demand of the centre, and the other to changes in the composition of its expenditures. The central bank of a periphery country can mitigate fluctuations in output by raising interest rates, provided that the exchange rate is floating. The objective of monetary policy is a trade-off between stabilizing output and worsening the terms of trade.

Transaction costs in the financial market caused by the need to reduce the information asymmetry between the lender and the borrower have an additional impact on monetary transmission and financial stability. If the agency costs between the lender and the borrower are significant, there is a difference between the opportunity cost of internal financing and external financing – the external financing premium. It reflects efficiency losses due to the principal-agent problem and increases the cost of credit for the borrower (Bernanke & Gertler, 1989). The external financing premium may depend on monetary policy. For example, a stimulative monetary policy causes an increase in domestic asset prices and improves the borrower's balance sheet. This alleviates the problems of moral hazard and adverse choices, lowers the external financing premium, promotes credit growth and expansion of aggregate demand (Rey, 2014). Such a transmission mechanism is called a balance sheet channel, or an equity or credit channel. In the risk-taking channel, the leading role belongs to financial intermediaries, who are usually risk-neutral and make decisions under conditions of value-at-risk constraints. A positive shock increases demand for assets and lowers the risk premium, which leads to a weakening of the value-at-risk constraint and stimulates the increase in leverage. Under such conditions, the easing of monetary policy leads to lower financing costs and excessive lending by financial intermediaries.

Thus, the credit channel and risk-taking channel are important channels of monetary transmission that affect financial stability in the country due to the level of indebtedness of financial intermediaries, the volume of lending and asset pricing. These channels also operate in an open economy. Given the existence of external debt, often denominated in US dollars, the central bank must choose between stabilizing production and having implications for the balance sheet of economic agents. For example, if the Fed raises the interest rate, the national currency of the peripheral country depreciates, which stimulates the growth of its exports. However, this worsens the balance sheet of economic agents due to the increase in the cost of external debt. This opposite effect makes the interest rate an insufficient tool for achieving monetary autonomy even with a floating exchange rate. In fact, there is a transmission of monetary policy in the central country to peripheral countries, where external influence extends to financial stability and the state of the balance sheet.

The role of the US dollar in international financial markets determines the degree of influence of the Fed's monetary policy on the rest of the world. During the 20th century the world monetary system evolved from a gold standard to a system of floating exchange rates, while the transition from the Bretton Woods to the Jamaican monetary system was marked by the strengthening of the role of the US dollar in the global financial system, despite the refusal of the United States to convert gold in 1971 (Gourinchas *et al.*, 2019). For the private sector, the

dollar and some other currencies perform the function of a medium of exchange as an intermediary in currency exchange operations with third currencies and liquid and safe asset markets, as a store of value – the currency of the issue of securities and banking and cash transactions; as unit of account – the currency of an account in foreign trade and nominal currency of securities. The same functions for the public sector are performed by currencies

through the implementation of foreign exchange interventions, formation of official reserves and the currency of the exchange rate peg (Gourinchas *et al.*, 2019). The US dollar remains the leading currency in transactions on the international foreign exchange market despite the introduction of the euro and renminbi; its share in 2001-2022 fluctuated between 85-90%, the share of the euro – 31-39% (Fig. 1).
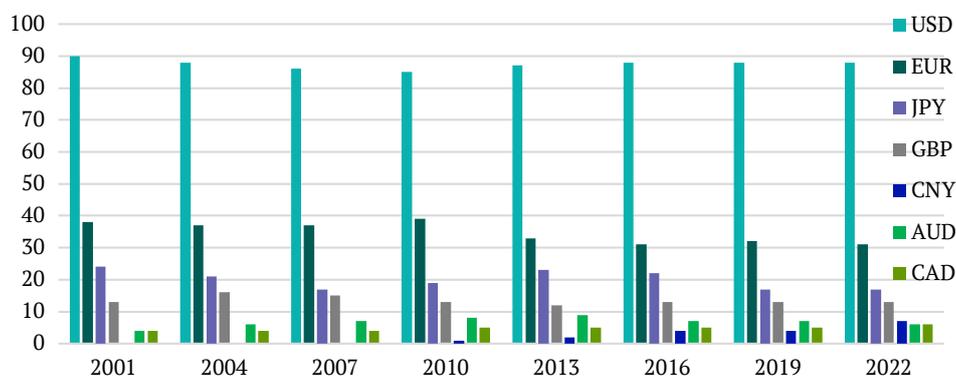

Figure 1. Currency composition of global operations with OTC currency instruments in 2001-2022, %
Source: made by the author based on Turnover of OTC foreign exchange instruments, by currency (2022)

The US dollar dominates international transactions with debt instruments and bank loans and deposits. As of the end of 2020, the share of international debt instruments denominated in US dollars was 63.4%, in euros – 23%. In the composition of international loans, the share of the US dollar was 52.7%, the euro – 26%, international deposits – 55.4% and 25.4% (European Central

Bank, 2021). In foreign trade transactions, the main currencies of the account are the US dollar (40.8%) and the euro (33.2%) (Gourinchas *et al.*, 2019). The composition of reserve assets shows a similar dominance of the US dollar with a share of 59.79% and the euro – 19.66% as of the end of the third quarter of 2022, as can be seen in Figure 2.
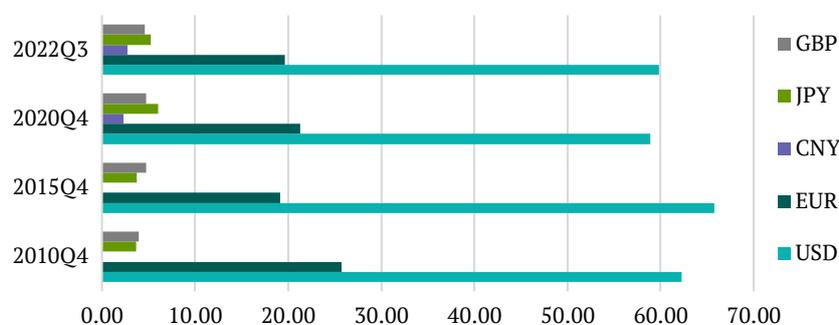

Figure 2. Currency composition of world allocated reserve assets in 2010-2022, in %
Source: made by the author based on Currency composition of official foreign exchange reserves (COFER) (2023)

The composition of reserve assets is related to the choice of currency for fixing the exchange rate. In 2021, according to the International Monetary Fund (IMF), 80 countries pursued monetary policy using hard or soft exchange rate peg, of which 37 countries (or 46.25%) used the US dollar as an anchor for the exchange rate, and 26 countries used the euro (32.5% of countries that pegged the exchange rate) (International Monetary Fund, 2022).

The global financial cycle, which manifests itself through fluctuations in global liquidity, risk appetite, volatility and uncertainty, affects the financial stability of peripheral countries. The VIX and VSTOXX indices are often used as an indicator reflecting global sentiment

and expectations in the financial market. The VIX index is an estimate of the expected volatility of index options on the S&P500 (Standard & Poor's 500 Index) over the next 30 days (Akdi *et al.*, 2020). It is often interpreted as a measure of risk and a variation of the risk premium, which reflects the risk appetite of investors, and, given the global nature of the American stock market, as a risk premium at the global level, global risk appetite of international investors, global market uncertainty (Akdi *et al.*, 2020). Fluctuations in the VIX index are associated with short-term capital flows that accompany the boom and bust phases of the global financial cycle. In the growth phase, risk-taking at the global level increases, the risk appetite of

international investors increases, and global liquidity expands. In the recession phase, accompanied by a rise in the VIX index, international investors increase their risk premium requirements, divest themselves of high-risk assets, and as a result, there is an outflow of capital from developing countries. The VSTOXX index estimates the expected volatility in the European equity market for the EURO STOXX 50 stock index.

Using the VIX as a proxy for global risk aversion and uncertainty in financial markets, H. Rey (2015) investigated the relationship between this index and global capital flows, leverage and lending. According to the results of her research, for all regional groups of countries there is an inverse correlation between the VIX and the growth of domestic credit, with the highest density of connection for North America and Western Europe. The level of leverage of the banking sector (the ratio of claims on the private sector to other and transferable deposits) and its growth are also inversely correlated with the VIX in the leading financial centres (North America, Western Europe, Asia). In contrast, a direct correlation is observed for the countries of Latin America, Central and Eastern Europe, and Africa. Thus, during periods of low global uncertainty, when the VIX is relatively low, there is an increase in domestic credit, as well as an increase in bank leverage in financial centres. The correlation dependence between the VIX and VSTOXX indices in this study was investigated for Ukraine (Table 1).

Table 1. Correlation of lending indicators in Ukraine from VIX and VSTOXX indices

Index	Increase in domestic credit	Leverage level	Leverage gain
VIX	0.04	0.21	0.07
VSTOXX	0.17	0.29	0.21

Note: calculated based on quarterly data VIX Q1 2003-Q4 2022 and VSTOXX Q4 2008-Q4 2022
Source: calculated by the author based on the EURO STOXX 50 Volatility (VSTOXX) Index EUR (V2TX), historical prices (2023), Historical price data for VIX index (2023), Surveys of financial corporations (2023)

The results obtained in this article for leverage indicators are consistent with the data of H. Rey (2015) for the countries of Central and Eastern Europe, for which the correlation coefficients between VIX and the level of leverage, VIX and the increase in the level of leverage were 0.3 and 0.07, respectively. At the same time, the obtained correlation coefficients between the VSTOXX index and the corresponding leverage indicators are higher and, according to the author of this study, indicate a closer correlation between lending in Ukraine and the expected volatility of the European stock market. This indicates a higher level of sensitivity of the financial sector of Ukraine to the fluctuations of the European stock market. The positive values of the correlation coefficients between the VIX and VSTOXX indices and the growth of domestic credit turned out to be unexpected and contrary to the theory of the global financial cycle. The direct correlation between them means that in periods of high global and regional uncertainty, there was an increase in domestic lending in Ukraine. H. Rey (2015) obtained a similar relationship, but with a very low correlation coefficient (0.01) for African countries. According to the author of the study, the direct correlation between global volatility indices and the dynamics of domestic credit in Ukraine does not contradict the theory of the global financial cycle, but indicates the presence of other important internal credit factors that determine its dynamics.

Correlational dependencies between global capital flows indirectly confirm the hypothesis of the existence of an international financial cycle. H. Rey (2015) investigated pairwise correlations between gross capital flows of FDI, portfolio equity, portfolio debt and credit for geographical groups of countries. The obtained results indicate a mostly direct correlation between flows reflecting capital inflows in regional groups. A similar positive correlation can be traced for flows that characterize capital outflow. In asset groups, the exception is foreign direct investment, for which pairwise correlation coefficients are negative. The correlation dependence between global capital flows and the VIX index has also been traced. For all groups of assets, except for direct foreign investments, there is an inverse relationship between the amount of inflow (outflow) of capital and the VIX index. To assess the sensitivity of capital inflows and outflows to the economy of Ukraine in relation to global cyclical fluctuations, this study has also calculated correlation coefficients between gross capital flows for various asset groups and VIX (Table 2).

Table 2. Correlation coefficients of capital flows in Ukraine and the VIX index

Index	Assets				Liabilities			
	FDI	Portfolio equity	Portfolio debt	Credit	FDI	Portfolio equity	Portfolio debt	Credit
VIX	-0.07	0.07	-0.05	0.29	-0.03	-0.02	-0.29	0.22

Note: calculated based on quarterly data Q1 2003-Q3 2022
Source: author's calculations based on Balance of payments (2023), Historical price data for VIX index (2023)

The value of correlation coefficients is relatively low for FDI and portfolio equity. The inverse relationship between capital outflows through FDI, portfolio debt, and VIX, as well as between capital inflows through FDI, portfolio debt, and VIX confirms the impact of fluctuations in global risk aversion on the dynamics of capital flows. The obtained results of the inverse correlation of capital outflow through portfolio debt and portfolio equity are consistent with the values for the countries of Central and Eastern Europe in the study of H. Rey (2015). The direct

correlation between capital outflows for credit and VIX can be caused by the substitution of public sector financing in periods of increased global uncertainty. During the years of growing global uncertainty and volatility (the Great Recession, the debt crisis in the countries of the European Union, the COVID-19 pandemic), the value of capital flows decreased, especially for portfolio debt, as can be seen in Figure 3.
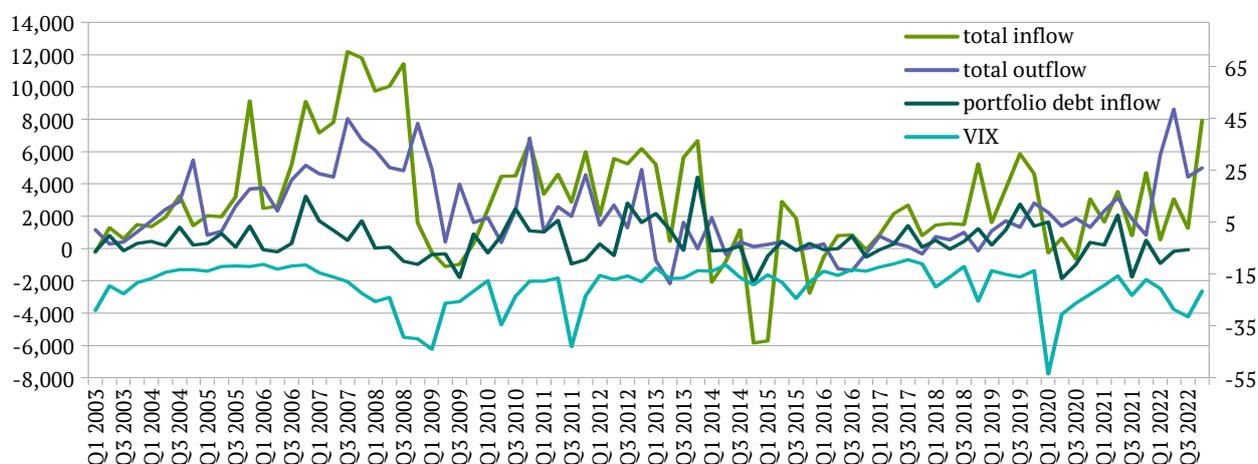

Figure 3. Dynamics of capital flows from/to Ukraine (million USD) and the VIX index

Note: dynamics of capital flows from/to Ukraine – left scale, VIX index – right scale

Source: made by the author based on Balance of payments (2023), Historical price data for VIX index (2023)

O. Bondarenko (2020) also emphasizes the importance of studying the level of capital flows consistency with the global financial cycle. According to her results, for Ukraine the level of consistency of all four capital flows is statistically insignificant, which refutes the impact of the global financial cycle on capital flows to Ukraine. In order to assess the sensitivity of the monetary sector of Ukraine's economy to the global financial cycle, quarterly data on the dynamics of global lending to the non-banking sector and domestic credit in Ukraine in the period of Q4 2002-Q4 2022 have been examined. The cyclical component of the relevant time series is obtained using the Godric-Prescott filter after logarithmizing the initial data, which is shown in Figure 4. The credit cycle in Ukraine is more volatile compared to the global credit cycle, which may indicate greater sensitivity of Ukraine's economy to global financial shocks. Figure 4 shows that the increase in the volatility of the credit cycle in Ukraine can be traced during the Great Recession (Q4 2007-Q4 2009) and after it, as well as in 2014.
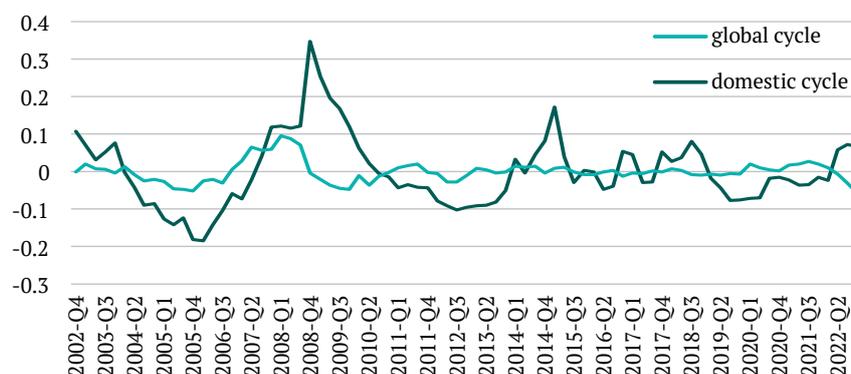

Figure 4. Global credit cycle and credit cycle in Ukraine

Source: calculated by the author based on the Global liquidity indicators (2023), Surveys of financial corporations (2023)

Using the formula for calculating the concordance coefficient (1), based on quarterly data for the period Q4 2002-Q4 2022, the obtained concordance coefficient between cyclical fluctuations in the global volume of loans to the non-banking sector and domestic credit in Ukraine is 0.49. The obtained value of the concordance coefficient does not make it possible to draw an unequivocal conclusion about the counter- or procyclical nature of domestic credit fluctuations in Ukraine relative to the global financial cycle. The research tested the null hypothesis about the synchronization of the change of two variables. The obtained correlation coefficient between the time series adjusted for the standard deviation is -0.03, i.e., it indicates the asynchrony of fluctuations, and is also statistically insignificant. Thus, the global financial cycle, estimated by the indicator of world lending, cannot be considered a significant factor in the dynamics of domestic credit in Ukraine.

The concept of the global financial cycle assumes that the monetary policy of the central country affects the level of credit on a global scale, global risk appetite, global prices of financial and commodity assets, and global capital flows. Under conditions of free movement of capital, peripheral countries lose part of their monetary autonomy, as their financial sector is affected by fluctuations in the global financial markets, and the monetary policy trilemma is transformed into a dilemma (Miranda-Agrippino & Rey, 2022). O. Bondarenko (2020) denies turning the trilemma into a dilemma, arguing that there is a relatively low number of confirmations of the significant sustainable impact of the global financial cycle on capital flows. According to the author of the article, the central bank's choice between an autonomous monetary policy, an exchange rate regime, and capital movement restrictions depends on the specifics of an individual country, its integration into global trade and international financial markets. Given the lack of influence of the global financial cycle on the financial sector of Ukraine's economy (within the scope of this study), the NBU pursuits monetary policy in accordance with the trilemma of international finance.

In a significant number of publications, the authors focus on the impact of the global financial cycle on the macroeconomic environment of developing countries. M. Kolasa & G. Wesołowski (2023) investigated the impact of the global financial cycle caused by US quantitative easing policies on emerging market economies and concluded that the negative manifestations of the cyclical nature of global finance significantly affect countries in which the banking sector owns a large volume of domestic sovereign bonds. Quantitative easing causes the loss of international competitiveness of the periphery country, rising prices and lending in the real estate market. It is worth agreeing with the authors' conclusions that for financial and macroeconomic stabilization, it is necessary to use currency interventions, limiting the level of risk on mortgage loans, taxation of long-term income of non-residents from owning sovereign bonds. Together, these measures will help curb currency appreciation and reduce capital inflows, mitigating the effects of quantitative easing.

J. Aizenman (2019) investigated the vulnerability of emerging economies to adverse global financial shocks, in which countries choose the intermediate goals of the monetary policy trilemma – managed exchange rate floating, controlled financial integration, and limited monetary autonomy. The scientist came to the conclusion that for countries with emerging markets, the accumulation of significant gold and foreign exchange reserves is no longer a sufficient tool to mitigate the negative manifestations of the global financial cycle. The author of this study shares his position on the need to introduce macroprudential regulation and restrictions on capital movements as important safeguards against global monetary shocks.

J. Carrera *et al.* (2023) examined the impact of the global financial cycle on the terms of trade and financial spreads in developing countries, dividing them into net exporters and net commodity importers. For net commodity exporters, favourable global liquidity shocks lead to improved trade balances and lower financial spreads. For net importers, the deterioration of the trade balance ultimately has a negative impact on the cost of financing. The author

shares the conclusion of J. Carrera *et al.* (2023) on the importance of diversifying exports and increasing the share of exports of goods with a high level of added value in order to reduce sensitivity to fluctuations in the global financial situation. In their study, K.P. Prabheesh *et al.* (2021) analysed the impact of the global financial cycle on credit and business cycle dynamics in India and Indonesia. The authors distinguished the cyclical components of the global and domestic credit cycles and, based on the analysis of the concordance index, concluded that the domestic credit cycle in India showed a high level of synchronization with the fluctuations of the global financial situation, but for Indonesia, the synchronization was weak. In Indonesia, shocks to the global financial cycle first affected the business cycle and then the credit cycle through the exchange rate channel. The monetary policy of the central bank of Indonesia, aimed at mitigating the shocks of the global financial cycle, involves influencing the exchange rate, macroprudential supervision of the banking system, and limiting the risk of banks on liabilities in foreign currency. Given the asynchrony of the Ukrainian credit cycle, the NBU uses similar tools.

Fluctuations in the global financial situation affect lending dynamics, asset prices, macroeconomic and financial stability in developed economies and developing countries. This study did not reveal a significant impact of the global financial cycle on lending indicators of Ukraine's economy, but capital flows showed a certain relationship with fluctuations in the global uncertainty index.

● CONCLUSIONS

Global fluctuations in asset prices, credit volumes, and capital flows are beyond the influence of the country's central bank and can exert additional pressure on its macroeconomic and financial environment. For some countries, global cyclical fluctuations in financial indicators can cause excessive credit growth in the phase of economic growth or deepen the recession during periods of increased instability in global financial markets. The study attempts to assess the impact of the global financial cycle on the financial sector of Ukraine.

Analysis of the impact of the dynamics of the global uncertainty indices VIX and VSTOXX on lending indicators in Ukraine showed that periods of increased global volatility were accompanied by an increase in the level of leverage and domestic lending in Ukraine. The direct relationship between the VIX and VSTOXX indices and the dynamics of domestic credit disproves the theory that it is influenced by the global financial cycle. The assessment of the impact of global uncertainty on the dynamics of capital flows in Ukraine demonstrates that during periods of VIX growth, the volume of capital flows decreased the most for portfolio debt, the increase in capital outflows for credit could be caused by the increase in public sector borrowing.

The cyclical component of domestic lending in Ukraine shows a higher level of volatility compared to the global credit cycle. Based on the assessment of the concordance coefficient, it has been concluded that there is no synchronization between the domestic and global credit cycles. Thus, fluctuations in the global financial situation did not affect the dynamics of domestic lending in Ukraine, but they had a noticeable impact on the dynamics of capital flows. This confirms the need for the central bank to use traditional

monetary policy tools, namely currency interventions and capital restrictions, to mitigate the effects of financial shocks. Further studies of the impact of the global financial cycle on the economy of Ukraine may concern the study of the transmission channels of global shocks, taking into account the exchange rate regime, the composition of foreign trade and the level of integration of the financial sector.

● CONFLICT OF INTEREST
None.

● REFERENCES
[1] Aizenman, J. (2019). A modern reincarnation of Mundell-Fleming's trilemma. *Economic Modelling*, 81, 444-454. doi: 10.1016/j.econmod.2018.03.008.

[2] Akdi, Y., Varlik, S., & Berument, M.H. (2020). Duration of global financial cycles. *Physica A: Statistical Mechanics and Its Applications*, 549, article number 124331. doi: 10.1016/j.physa.2020.124331.

[3] Balance of payments. (2023). Retrieved from https://bank.gov.ua/files/ES/BOP_q_en.xlsx.

[4] Bernanke, B., & Gertler, M. (1989). Agency costs, net worth, and business fluctuations. *The American Economic Review*, 79(1), 14-31.

[5] Bondarenko, O. (2020). The missing "cycle" part and other thoughts on the global financial cycle. *Visnyk of the National Bank of Ukraine*, 250, 15-32. doi: 10.26531/vnbu2020.250.02.

[6] Carrera, J., Montes-Rojas, G., & Toledo, F. (2023). Global financial cycle, commodity terms of trade and financial spreads in emerging markets and developing economies. *Structural Change and Economic Dynamics*, 64, 179-190. doi: 10.1016/j.strueco.2022.12.006.

[7] Cunha, A.M., Haines, A.E.F., & Da Silva, P.P. (2019). Global financial cycle and Brazil's financial integration. *International Review of Applied Economics*, 33(6), 829-851. doi: 10.1080/02692171.2019.1620701.

[8] Currency composition of official foreign exchange reserves (COFER). (2023). Retrieved from https://data.imf.org/?sk=e6a5f467-c14b-4aa8-9f6d-5a09ec4e62a4.

[9] Davis, J.S., Valente, G., & van Wincoop, E. (2021). Global drivers of gross and net capital flows. *Journal of International Economics*, 128, article number 103397. doi: 10.1016/j.jinteco.2020.103397.

[10] EURO STOXX 50 Volatility (VSTOXX) Index EUR (V2TX), historical prices. (2023). Retrieved from https://www.wsj.com/market-data/quotes/index/XX/V2TX/historical-prices.

[11] European Central Bank. (2021). *The international role of the euro*. Frankfurt am Main: ECB.

[12] Fleming, J.M. (1962). Domestic financial policies under fixed and under floating exchange rates. *IMF Staff Papers*, 9(3), 369-380. doi: 10.2307/3866091.

[13] Global liquidity indicators. (2023). Retrieved from https://data.bis.org/topics/GLI/data.

[14] Gourinchas, P.-O., Rey, H., & Sauzet, M. (2019). The international monetary and financial system. *Annual Review of Economics*, 11(1), 859-893. doi: 10.1146/annurev-economics-080217-053518.

[15] Harding, D., & Pagan, A. (2006). Synchronization of cycles. *Journal of Econometrics*, 132(1), 59-79. doi: 10.1016/j.jeconom.2005.01.023.

[16] Herwartz, H., & Roestel, J. (2017). Mundell's trilemma: Policy trade-offs within the middle ground. *Journal of International Money and Finance*, 75, 1-13. doi: 10.1016/j.jimonfin.2017.04.002.

[17] Historical price data for VIX index. (2023). Retrieved from https://www.cboe.com/tradable_products/vix/vix_historical_data/.

[18] Hodrick, R.J., & Prescott, E.C. (1997). Postwar U.S. business cycles: An empirical investigation. *Journal of Money, Credit and Banking*, 29(1), 1-16. doi: 10.2307/2953682.

[19] International Monetary Fund. (2022). *Annual report on exchange arrangements and exchange restrictions 2021*. Washington: IMF. doi: 10.5089/9781513598956.012.

[20] Kolasa, M., & Wesołowski, G. (2023). Quantitative easing in the US and financial cycles in emerging markets. *Journal of Economic Dynamics and Control*, 149, article number 104631. doi: 10.1016/j.jedc.2023.104631.

[21] Laktionova, O., & Benzar, O. (2020). Characteristics of financial cycles: World experience and Ukraine. *Economics and Organization of Management*, 1(37), 14-27. doi: 10.31558/2307-2318.2020.1.2.

[22] Miranda-Agrippino, S., & Rey, H. (2022). The global financial cycle. In G. Gopinath, E. Helpman, & K. Rogoff (Eds.), *Handbook of international economics* (Vol. 6, pp. 1-43). Amsterdam: Elsevier. doi: 10.1016/bs.hesint.2022.02.008.

[23] Mundell, R.A. (1963). Capital mobility and stabilization policy under fixed and flexible exchange rates. *Canadian Journal of Economics and Political Science*, 29(4), 475-485. doi: 10.2307/139336.

[24] Prabheesh, K.P., Anglingkusumo, R., & Juhro, S.M. (2021). The dynamics of global financial cycle and domestic economic cycles: Evidence from India and Indonesia. *Economic Modelling*, 94, 831-842. doi: 10.1016/j.econmod.2020.02.024.

[25] Rey, H. (2014). International channels of transmission of monetary policy and the Mundellian trilemma. In *15th Jacques Polak Annual Research Conference*. Washington: IMF.

[26] Rey, H. (2015). Dilemma not trilemma: The global financial cycle and monetary policy independence. *NBER Working Paper Series*, article number 21162. doi: 10.3386/w21162.

[27] Shlapak, A. (2022). Global financial cycles and the problem of regulation of international capital flows: The role of banks and macroprudence policy in responding to crises. *Journal of Mariupol State University, Series: Economics*, 23, 109-119. doi: 10.34079/2226-2822-2022-12-23-109-119.

[28] Surveys of financial corporations. (2023). Retrieved from https://bank.gov.ua/files/3.1-Monetary_Statistics_e.xlsx.
[29] Turnover of OTC foreign exchange instruments, by currency. (2022). Retrieved from https://stats.bis.org/statx/srs/table/d11.3.

Глобальний фінансовий цикл: вплив на Україну

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Анотація. Глобальні коливання фінансової кон'юнктури, що виникають у фінансових центрах – США та ЄС, через міжнародні канали монетарної трансмісії чинять вплив на фінансові ринки країн периферії, до яких належить й Україна, де оцінка та врахування такого впливу є важливим елементом монетарної політики. Тому мета статті – оцінити вплив циклічних коливань глобальної фінансової кон'юнктури на фінансовий сектор економіки України. В результаті кореляційного аналізу виявлено пряму залежність між показниками левериджу в Україні та індексами Chicago Board Options Exchange Volatility Index і Euro Stoxx Volatility Index. Водночас пряма залежність між цими індексами та приростом внутрішнього кредиту в Україні суперечить концепції глобального фінансового циклу та може свідчити про наявність більш вагомих чинників внутрішнього кредитування. Кореляційний аналіз індексу волатильності Chicago Board Options Exchange та потоків капіталу в Україні показав, що в роки посилення глобальної невизначеності та волатильності обсяг потоків капіталу знижувався, особливо для портфельних боргових інструментів. Аналіз отриманих за допомогою фільтра Годрика-Прескота циклічних компонентів глобального та внутрішнього кредитного циклу в Україні свідчить про вищий рівень волатильності внутрішнього кредитування. Отримане значення коефіцієнта конкордації не дало змоги зробити однозначний висновок про контр- або проциклічний характер коливань внутрішнього кредиту відносно глобального обсягу кредитів небанківського сектора. Виявлено, що глобальний фінансовий цикл не був вагомим чинником внутрішнього кредитування в Україні в досліджуваний період. Практичне значення результатів полягає у тому, що Національний Банк України зможе здійснювати автономну від коливань глобальної фінансової кон'юнктури монетарну політику та обмежувати відплив капіталу в період зростання невизначеності на міжнародних фінансових ринках

Ключові слова: кредитні цикли; внутрішній кредит; індекси волатильності; потоки капіталу; леверидж