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SHORT-TERM AND LONG-TERM RELATIONSHIPS BETWEEN CONSUMER DEMAND AND ECONOMIC INDICATORS IN CRISIS AND POST-CRISIS PERIODS IN KAZAKHSTAN

This article investigates the dynamics of consumer demand in Kazakhstan during episodes of economic crises and subsequent recovery. The study is motivated by the need to better understand the determinants of household behaviour under conditions of macroeconomic instability. Drawing upon theoretical and empirical literature as well as international experience, the analysis identifies key macroeconomic indicators shaping consumption patterns, including gross domestic product, income levels, employment, inflation, credit activity, and government transfers. Particular attention is paid to the short- and long-term consequences of major economic shocks such as the global financial crisis of 2007–2008, the sanctions crisis of 2015–2016, and the COVID-19 pandemic. The results demonstrate that during crisis periods households tend to increase precautionary savings, reduce consumption, and reallocate expenditures towards essential goods and services, while the recovery of demand in the post-crisis period remains slow despite macroeconomic stabilization. The empirical findings have important implications for the design of anti-crisis, fiscal, and monetary policies aimed at supporting domestic demand and ensuring sustainable economic development in Kazakhstan.

Keywords: consumer demand, macroeconomic factors, economic crisis, pandemic, savings.

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Қазақстандағы дағдарыс және дағдарыстан кейінгі кезеңдерде тұтынушылық сұраныстың экономикалық көрсеткіштермен қысқамерзімді және ұзақмерзімді байланыстары

Мақалада экономикалық дағдарыстар мен дағдарыстан кейінгі қалпына келу жағдайларында Қазақстандағы тұтынушылық сұраныстың ерекшеліктері қаралады. Зерттеудің өзектілігі экономикалық тұрақсыздық кезеңдерінде үй шаруашылықтарының мінез-құлқына әсер ететін факторларды неғұрлым терең түсіну қажеттілігіне негізделген.

Теориялық және эмпирикалық зерттеулерді талдау, сондай-ақ халықаралық тәжірибені қорыту негізінде тұтыну серпінін айқындайтын түйінді макроэкономикалық индикаторлар анықталды: жалпы ішкі өнім, кіріс деңгейі, жұмыспен қамту, инфляция, кредиттік белсенділік және мемлекеттік трансферттер. Зерттеуде 2007-2008 жылдардағы жаһандық қаржы дағдарысы, 2015-2016 жылдардағы санкциялық дағдарыс және COVID-19 пандемиясы сияқты экономикалық күйзелістердің қысқа мерзімді және ұзақ мерзімді салдарын талдауға ерекше назар аударылған. Дағдарыс кезеңінде үй шаруашылықтары белгісіздік жағдайында жинақ ақшаның өсуіне, тұтынудың төмендеуіне және оның құрылымының базалық тауарлар мен қызметтердің пайдасына өзгеруіне бейім екені анықталды. Дағдарыстан кейінгі кезеңде макроэкономикалық көрсеткіштердің тұрақтануына қарамастан сұраныстың қалпына келуі баяу жүруде. Алынған нәтижелер ішкі сұранысты қолдауға және экономиканың орнықты дамуына бағытталған дағдарысқа қарсы және фискалдық саясатты әзірлеу кезінде пайдаланылуы мүмкін.

Түйін сөздер: тұтынушылық сұраныс, макроэкономикалық факторлар, экономикалық дағдарыс, пандемия, жинақ.

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Краткосрочные и долгосрочные связи потребительского спроса с экономическими показателями в кризисные и посткризисные периоды в Казахстане

В статье рассматриваются особенности потребительского спроса в Казахстане в условиях экономических кризисов и посткризисного восстановления. Актуальность исследования обусловлена необходимостью более глубокого понимания факторов, влияющих на поведение домохозяйств в периоды экономической нестабильности. На основе анализа теоретических и эмпирических исследований, а также обобщения международного опыта, выявлены ключевые макроэкономические индикаторы, определяющие динамику потребления: валовой внутренний продукт, уровень доходов, занятость, инфляция, кредитная активность и государственные трансферты. Особое внимание в исследовании уделено анализу краткосрочных и долгосрочных последствий таких экономических шоков, как глобальный финансовый кризис 2007–2008 годов, санкционный кризис 2015–2016 годов и пандемия COVID-19. Установлено, что в кризисные периоды домохозяйства склонны к росту сбережений на случай неопределённости, снижению потребления и изменению его структуры в пользу базовых товаров и услуг. В посткризисный период восстановление спроса происходит медленно, несмотря на стабилизацию макроэкономических показателей. Полученные результаты могут быть использованы при разработке антикризисной и фискальной политики, направленной на поддержку внутреннего спроса и устойчивое развитие экономики.

Ключевые слова: потребительский спрос, макроэкономические факторы, экономический кризис, пандемия, сбережения.

Introduction

Consumer demand is one of the key elements of domestic demand that has a significant impact on the economic dynamics of a country. In conditions of economic crises and post-crisis periods, it is household consumption that shows the most sensitive reaction to changes in macroeconomic indicators, such as income levels, employment, inflation and access to credit resources. This makes the study of its behavioural features particularly relevant for countries with vulnerable economic structure, including Kazakhstan.

World practice shows that crisis phenomena, be it the global financial crisis of 2007-2008 or the COVID-19 pandemic, are accompanied not only by a short-term decline in consumption, but also by a transformation of household behaviour patterns in the long term. Reduced confidence in the future, the growth of "contingency" savings, the redistribution of expenditures towards basic goods and services – all this affects the structure of demand and slows down economic recovery even after the macroeconomic situation has stabilised. Under these conditions, state policy requires timely and accurate diagnosis of changes in consumer behaviour, taking into account both macroeconomic factors and institutional features of the national economy.

The scientific literature has accumulated a significant body of research on the impact of crises on consumption in developed countries. However, for Kazakhstan, as a representative of emerging market countries, there is an obvious deficit of comprehensive works focused on identifying stable patterns between consumption and economic indicators under conditions of instability. In addition, most of the existing studies are either limited to analysing a single crisis period or do not distinguish between short-term and long-term effects.

The purpose of this study is to analyse the short-term and long-term relationships between consumer demand and the main macroeconomic indicators in Kazakhstan in the crisis and post-crisis periods. The work compares the reactions of consumption to economic shocks in different periods and identifies a set of factors with the greatest explanatory power. The results of the study can be used in the development of more effective anti-crisis, fiscal and monetary policies aimed at stabilising consumer demand and supporting economic growth in conditions of external and internal turbulence.

Literature review

International experience confirms that economic crises have a significant impact on macroeconomic indicators (GDP, employment, inflation) and, as a consequence, on consumer demand. Petev & Pistaferri (2012) note that during the Great Recession in the US there was a sharp fall in disposable income, despite increased transfers, and a decline in all components of consumption. Consumption has not recovered even after 15 quarters, especially among low-income households.

Lee et al. (2010) document a similar contraction in US consumption in late 2008, while Konstantinou & Corsetti (2009) show that consumption responds to permanent rather than temporary shocks by smoothing fluctuations through external borrowing. Mian & Sufi (2010) point to the important role of leverage: highly indebted regions exhibited earlier and stronger consumption declines.

De Nardi et al. (2011) and Aruoba et al. (2022) emphasise the importance of declining asset values and income expectations: falling housing prices directly reduce consumption, especially for durable goods. This is associated with increased financial constraints and reduced access to credit. Meyer & Sullivan (2013) identify that income inequality increased between 2000 and 2011, while consumption inequality declined, which is explained by a spending squeeze among wealthier groups.

The impact of restricted lending is confirmed by Jensen & Johannesen (2017): crisis-prone banks significantly reduced their lending, leading to lower spending by their customers. Gerlach-Kristen et al. (2013) show that consumption growth slows down during crises, especially when debt rates are high. Their results, based on panel data from 23 countries over 32 years, emphasise the role of permanent income and liquidity.

According to Gerlach-Kristen & Merola (2019), consumption smoothing during crises is disrupted for highly indebted households, as shown in the case of Ireland. Türkmen-Ceylan (2019), investigating crises in Turkey, concludes that consumption patterns change: vulnerable groups reduce food expenditures, while the affluent tend to maintain their savings rate.

Ganong & Noel (2019) emphasise the role of unemployment benefits: lower payments sharply reduce consumption and slow job search. At the same time, debt levels do not compensate for income losses – households do not increase borrowing in the face of unemployment.

The COVID-19 pandemic also had a major impact on consumption. Christelis et al. (2020) show that shocks affected households heterogeneously: groups with limited liquidity and precarious employment were particularly affected. Precautionary saving was an important factor in changing consumption patterns, especially in Spain and Italy (Hodbod et al., 2021).

Muellbauer (2020) notes that the pandemic caused simultaneous supply and demand shocks, dramatically increasing income volatility and unemployment, and reducing credit availability. In China, offline consumption fell by 32% in 12 weeks, representing 1.2% of GDP (Chen et al., 2021). In the euro area, household spending fell by more than 10% in Q2 2020 compared to 2019.

A comparative analysis of pandemic and other catastrophic shocks by Watanabe (2020) shows that pandemic caused a decline in inflation expectations, unlike natural disasters, as it did not affect the underlying production factors. Farhi and Baqaee (2020) show that negative aggregate demand shocks can cause deflation and lower GDP, while sectoral supply shocks, on the contrary, increase inflation.

Cerrato and Gitti (2023) document a rise in US inflation to 9 per cent in 2022, noting that about a quarter of the price increase is explained by demand factors related to the pandemic and the effects of the stimulus.

Thus, a synthesis of multiple empirical studies suggests that economic crises and the COVID-19 pandemic have a multilayered impact on consumer demand. The main channels of impact are reduced income, higher unemployment, lower asset values, restricted access to credit and increased precautionary behaviour of households. The consumption response depends on debt structure, liquidity levels, macroeconomic policies and social support features. Behavioural changes induced by crises may persist even in the post-crisis period, transforming consumption patterns in the long run. These findings underscore the need for a flexible and targeted approach in economic policies aimed at stabilising demand and accelerating economic recovery.

Methodology

In order to identify the factors of consumer demand recovery, for each potential indicator the hypothesis that there is a significant impact on the variable "Household final consumption expenditures" is tested.

The cointegration method, vector autoregressive (VAR) models and VECM vector error correction

model have been used as tools for analysing and forecasting changes in consumer demand. Vector autoregressive models allow to take into account the mutual influence of variables. This property is essential in the study of interrelated processes, for which it is difficult to identify what is the cause and what is the effect. It is assumed that the variables of the model are stationary. Therefore, their differences can be used.

The effects of internal and external shocks are estimated with impulse return functions using a vector autoregression model:

$$Y_t = a + \sum_{k=1}^{p} A_k Y_{t-k} + \sum_{k=1}^{q} B_k X_{t-k} + \varepsilon_t \quad (1)$$

where:

Y_t – vector of endogenous variables, X_t – vector of exogenous variables, ε_t – vector of random errors, A_1, A_2, ..., A_p, B_1, B_2, ..., B_q – matrices, p, q number of lags.

If the variables are non-stationary and there is time series cointegration, a vector error correction model (VECM) can be used):

$$\Delta Y_t = \gamma_0 + \sum_{k=1}^{p-1} \Gamma_k \Delta Y_{t-k} + \Pi Y_{t-1} + C X_t + \varepsilon_t \quad (2)$$

ΔY_t – first difference of the vector of endogenous variables, X_t – vector of exogenous variables, Γ_k, $\prod$, C – matrices, γ_0 – vector of free terms, ε_t – vector of random errors, p – number of lags.

The Johansen test allows to check cointegration of several time series and to identify one or more cointegration relations. The vector error correction model (VECM) is built on their basis for non- stationary time series.

As part of the study of long-term factors of consumer demand, quarterly statistical information was collected. The data used in the analysis cover a certain time period and come from various sources, a detailed list of which is presented in Table 1.

Table 1 – Data and their sources

No.	Indicator	Designation	Interval	Source	Integration
1	Households' final consumption expenditures (in average annual prices of 2005), mln tenge	*consh*	2006–2022	BNS ASPR RK	I(1)
2	Final consumption expenditures (in average annual prices of 2005), mln tenge	*cons*	2006–2022	BNS ASPR RK	I(1)
3	Gross domestic product (in average annual prices of 2005), mln tenge	*gdp*	2006–2022	BNS ASPR RK	I(1)
4	Gross accumulation (in average annual prices of 2005), mln tenge	*save*	2006–2022	BNS ASPR RK	I(1)
5	Investments in fixed capital, mln tenge	*invest*	2008–2022	BNS ASPR RK	I(1)
6	Income from sales of products and services, mln tenge	*incomeprod*	2007–2022	BNS ASPR RK	I(1)
7	TONIA, %	*tonia*	2014–2022	Kazakhstan Stock Exchange	I(0)
8	Deposits of population in banks of Kazakhstan, mln tenge	*deposits*	2007–2022	NB RK	I(1)
9	Financial assets, thousand tenge	*finassets*	2015–2022	NB RK	I(1)
10	Loans to individuals, including individual entrepreneurs, mln tenge	*credits*	2007–2022	NB RK	I(1)
11	Population, people	*pop*	2008–2022	BNS ASPR RK	I(1)
12	Employees, persons	*empl*	2008–2022	BNS ASPR RK	I(1)
13	Average per capita cash income of the population, tenge	*incomepc*	2010–2022	BNS ASPR RK	I(1)
14	Index of real money income of the population, in % to the corresponding period of the previous year	*indrealincome*	2010–2022	BNS ASPR RK	I(1)
15	Average monthly salary in the field of administrative services, tenge	*wageadm*	2011–2022	BNS ASPR RK	I(1)

Continuation of the table

No.	Indicator	Designation	Interval	Source	Integration
16	Average monthly salary in public administration and defence and social security, tenge	*wagegov*	2011–2022	BNS ASPR RK	I(1)
17	Average monthly salary in the field of education, tenge	*wageedu*	2011–2022	BNS ASPR RK	I(1)
18	Average monthly salary in health care, tenge	*wageheal*	2011–2022	BNS ASPR RK	I(1)
19	Pension payments and transfers to insurance organisations, thousand tenge	*pension*	2008–2022	UAPF RK	I(1)
20	Price index for consumer goods and services, %	*cpi*	2008–2022	BNS ASPR RK	I(0)
21	GDP deflator, in % of the corresponding period of the previous year	*defl*	2007–2022	BNS ASPR RK	I(1)
22	Transfer from the National Fund, billion tenge	*transfert*	2020–2022	NB RK	I(0)
23	Brent crude oil price, USD	*poil*	2006–2022	World Bank	I(1)
24	Official exchange rate of the dollar, tenge	*exchus*	2008–2022	NB RK	I(1)
25	Real effective exchange rate index, %	*realexch*	2008–2022	NB RK	I(0)
26	Personal transfers of resident individuals from Kazakhstan, USD million	*transfperout*	2011–2022	NB RK	I(0)
27	Personal transfers of resident individuals to Kazakhstan, mln USD	*transfpersin*	2011–2022	NB RK	I(1)
28	Ratio of income used for consumption to the subsistence minimum, %	*ratioconshsl*	2010–2022	BNS ASPR RK	I(1)
29	Value of subsistence minimum, tenge	*subslevel*	2010–2022	BNS ASPR RK	I(1)
30	Share of population with incomes below the subsistence minimum, %	*belowsl*	2010–2022	BNS ASPR RK	I(1)
31	Depth of poverty, %	*povdepth*	2010–2022	BNS ASPR RK	I(1)
32	Price of bread from first grade wheat flour, tenge	*breadprice*	2010–2022	BNS ASPR RK	I(1)
33	Income used for consumption on average per capita per month, tenge	*consmonthpc*	2014–2022	BNS ASPR RK	I(0)
34	Price of polished rice, tenge	*riceprice*	2010–2022	BNS ASPR RK	I(1)
Note – compiled by the authors					

One of the limitations of the study was the lack of data on certain variables over a long time interval.

The collected data was reformatted as required in Eviews software for further analysis.

Table 2 – Descriptive statistics

No.	Variable	Number of observations	Average value	Standard deviation	Minimum	Maximum
1	*consh*	68	1774597	502103,4	877447,3	3091375
2	*cons*	68	2172749	607964,6	1109110	3814911
3	*gdp*	68	3058510	598694,1	1985353	4485593
4	*save*	68	1045840	305422	563880,1	2153001
5	*invest*	60	2067052	1069057	619810,6	5204744
6	*incomeprod*	64	8826484	4416068	2299505	21369095
7	*tonia*	34	11,254	5,916	1,444	36,574
8	*deposits*	64	5975554	4072703	1183684	16902790

Continuation of the table

No.	Variable	Number of observations	Average value	Standard deviation	Minimum	Maximum
9	*finassets*	30	64458581,27	27726364,44	33824141	156435483,4
10	*credits*	64	4593983	2868334	1790636	14158376
11	*pop*	60	17574734,5	1154991	15565647	19765004
12	*empl*	60	6114170	547199,5	5138280	6860875
13	*incomepc*	52	84034,58	34132,5	35828,15	169776
14	*indrealincome*	52	104,151	4,464	87,468	111,813
15	*wageadm*	48	157277,8	65779,36	91598	302644
16	*wagegov*	48	133086	47834,03	68274	262888
17	*wageedu*	48	113767,6	58928,53	49858	262972
18	*wageheal*	48	121274,6	55273,52	57278	248665
19	*pension*	60	150862827,5	523731706,2	27456435	2882886380
20	*cpi*	60	102,012	1,505	100,3	110,1
21	*defl*	64	110,615	7,046	95,5	126,2
22	*transfert*	12	1154,292	316,346	655	1964
23	*poil*	68	77,106	24,624	33,377	122,219
24	*exchus*	60	263,908	121,269	120	475,42
25	*realexch*	32	77,561	9,882	70,778	112,718
26	*transfperout*	44	102,526	32,953	55,54	179,906
27	*transfpersin*	44	309,937	74,078	107,195	442,383
28	*ratioconshsl*	48	196,671	12,144	171,8	218,6
29	*subslevel*	48	25,427	8,671	15,197	46,671
30	*belowsl*	48	1,794	0,846	0,7	4,1
31	*povdepth*	48	0,585	0,236	0,2	1,1
32	*breadprice*	48	117,729	35,069	76	197
33	*consmonthpc*	32	56373,91	12577,69	38500	83999
34	*riceprice*	48	293,25	73,84818	201	488
Note – compiled by the authors						

Table 2 presents descriptive statistics for various economic indicators, including household final consumption expenditure, gross domestic product, fixed capital investment, income from sales of products and services, and other important variables such as price indices, average monthly wages in various industries, and pension payments. For each variable, the number of observations, mean, standard deviation, minimum and maximum values are given. The table shows the variability in the number of observations for different variables due to the choice of time intervals depending on data availability.

Results and discussion

Estimation of long-run relationships of consumer demand with other economic indicators

The method of time series cointegration is used to identify long-term factors of consumer demand. Since the data are quarterly, seasonality was eliminated in them beforehand. Application of the cointegration method assumes that the order of integration of time series is not lower than the first, and all series should have the same order of integration. The results of unit root tests are summarised in Table 1.

As can be seen, for all variables under consideration the order of integration does not exceed 1. Several indicators have zero order of integration, i.e. the corresponding time series are stationary.

The identification of long-run relationships of consumption expenditures with other indicators is based on the cointegration method. Since household expenditures are an integrated variable of the first order, it is possible to study its cointegration only with those variables, the order of integration of which is equal to 1. The confirmation or rejection of the hypothesis of the existence of a long-run relationship between the indicator and the variable "Household Final Consumption Expenditure" is determined on the basis of the Johansen (1991, 1995) test. Table 3 presents the results of this test. In its last column, "Yes" indicates the presence of cointegration of household consumption expenditure with the corresponding indicator at a significance level of at least 5 per cent, a dash indicates no cointegration. Empty cells correspond to stationary indicators, for which the cointegration test is not valid and is not performed. For 15 indicators, the existence of a long-run relationship between consumer demand is observed, while for 11 indicators the tests indicate the absence of such a long- run relationship.

The Johansen test allows us to identify the presence or absence of cointegration between two variables according to its five types depending on the inclusion of constant, trend and type of dependence. To confirm the presence of cointegration, it is enough to cite the results of estimation for one of its types with the definition of cointegrating vector. In order to establish the absence of cointegration, it is necessary to show that there is no cointegration for any of its five types.

For the indicators of the real sector of the economy, the existence of a long-term relationship between consumption expenditures and gross domestic product, investment in fixed capital and income from the sale of products and provision of services is confirmed, but the relationship with gross savings is not confirmed.

Among the financial indicators, the long-term relationship between consumer demand and deposits of the population in banks of Kazakhstan is confirmed. This is understandable, with increasing incomes the possibility for the population to increase deposits in banks is quite combined with increasing expenditures on consumption. And for interbanǩ one-daў rate TONIA long-term relationship with consumer demand is not revealed, because it is an integrated variable of zero order.

Table 3 – Tests for co-integration of household consumption expenditure with other indicators

No.	Indicator	Designation	Presence of cointegration
1	Gross domestic product	*gdp*	Yes
2	Gross accumulation	*save*	-
3	Investments in fixed assets	*invest*	Yes
4	Income from sales of products and services	*incomeprod*	Yes
5	TONIA	*tonia*	
6	Deposits of population in banks of Kazakhstan	*deposits*	Yes
7	Financial assets	*finassets*	-
8	Loans to individuals, including individual entrepreneurs	*credits*	-
9	Population	*pop*	Yes
10	Employees	*empl*	Yes
11	Average per capita cash income of the population	*incomepc*	Yes
12	Index of real money incomes of the population	*indrealincome*	-
13	Average monthly salary in the field of administrative services	*wageadm*	-
14	Average monthly wages in public administration and defence and social services	*wagegov*	Yes
15	Average monthly salary in the field of education	*wageedu*	Yes
16	Average monthly salary in the health sector	*wageheal*	-

Continuation of the table

No.	Indicator	Designation	Presence of cointegration
17	Pension payments and transfers to insurance organisations	*pension*	Yes
18	Price index for consumer goods and services	*cpi*	
19	GDP deflator	*defl*	Yes
20	Transfer from the National Fund	*transfert*	
21	Brent crude oil price	*poil*	Yes
22	Official dollar exchange rate	*exchus*	Yes
23	Real effective exchange rate index	*realexch*	
24	Personal transfers of natural persons –residents of Kazakhstan	*transfperout*	
25	Personal transfers of resident individuals to Kazakhstan	*transfpersin*	-
26	Ratio of income used for consumption to the minimum subsistence level	*ratioconshsl*	-
27	Living wage	*subslevel*	Yes
28	Share of the population with incomes below the subsistence level	*belowsl*	-
29	Depth of poverty	*povdepth*	-
30	Price of bread made of first grade wheat flour	*breadprice*	Yes
31	Income used for consumption on average per capita per month	*consmonthpc*	
32	Price of polished rice	*riceprice*	-
Note – compiled by the authors			

At the same time, although the time series of loans to individuals, including individual entrepreneurs, and financial assets have the first level of integration, the existence of a long-run relationship with consumption expenditures is not confirmed for them. It should be assumed that loans to individuals and financial assets are mainly used for the purposes of supporting small business rather than for personal consumption.

The cointegration test revealed the existence of a long-run relationship of household final consumption expenditures with the number of population, with the number of employees, with pension payments and transfers to insurance organisations, and with the average per capita cash income of the population, but did not for the index of real cash income of the population.

Household final consumption expenditures are cointegrated in public administration and defence and social security and in education, but not cointegrated with average monthly wages in administration and health care. The latter suggests that in health care, labour compensation increases may have been underfunded to match the overall growth in consumer spending.

The long-term correlation of households' final consumption expenditures with the oil price, GDP deflator and the official exchange rate of the US dollar, as well as with the subsistence minimum and the price of bread made of first-grade wheat flour is quite expectedly confirmed. Table 3 shows no significant cointegration of consumer expenditures for several other indicators, for example, with the share of the population with incomes below the subsistence minimum and with the depth of poverty, which reflects the absence of a long-term relationship.

Identification of factors of consumer demand recovery in the short term

The impulse return functions of the vector autoregression model allow us to obtain quantitative estimates of the impact of expenditure factors on final consumption of households in the short run. Both non-stationary variables (integrated of order 1) and stationary variables (integrated of order 0) are included in the study as consumer demand factors, as listed in Table 1. Since the application of the VAR model requires stationarity of the variables, all non-stationary variables are used after transforming them into first differences. Here and below we consider impulse responses, including accumulated responses, to a one standard deviation Choletsky shock to the explanatory variable. All calculations are performed using the econometric package Eviews.

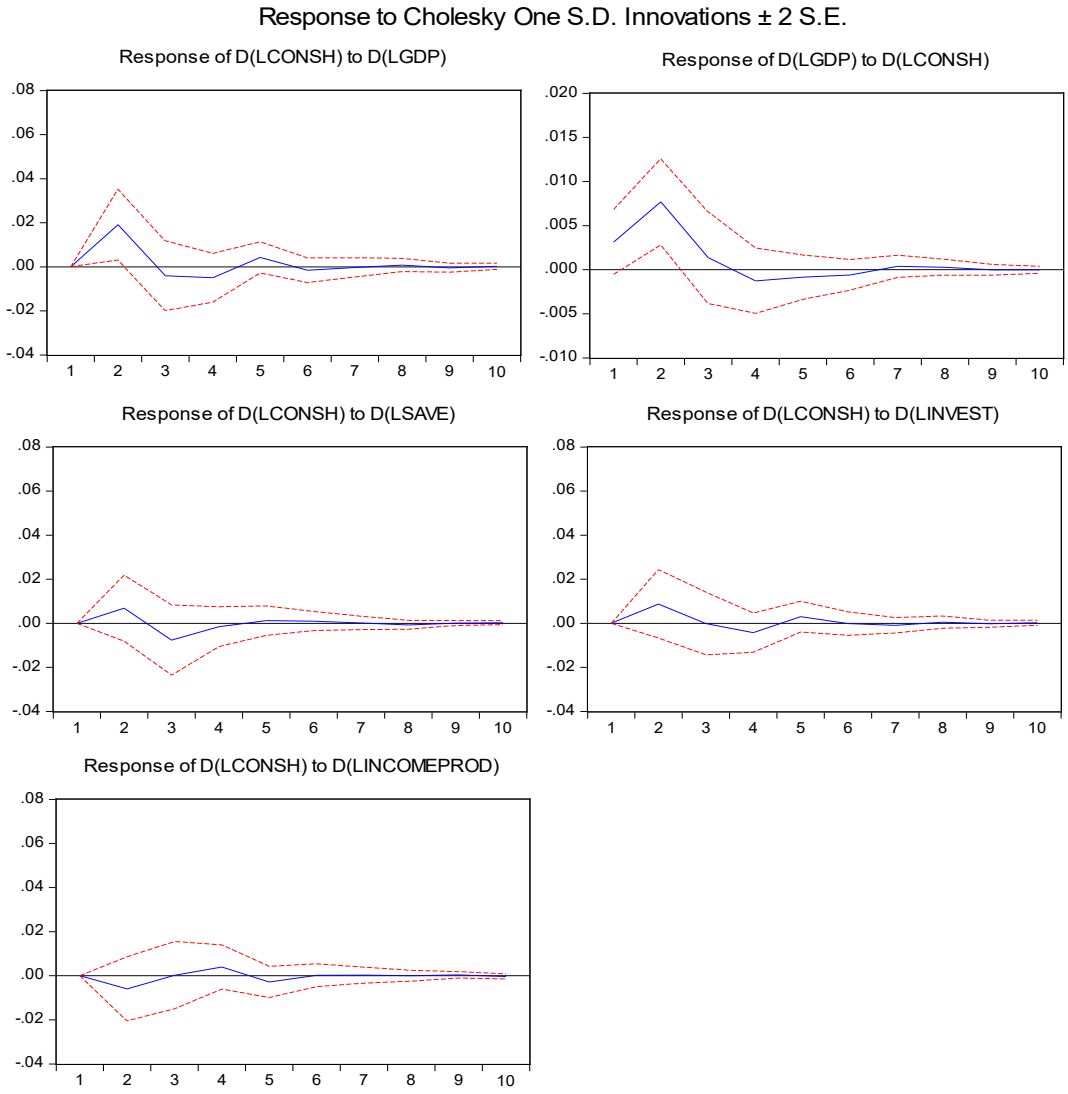

Figure 1 – Impulse responses of household consumption expenditure to shocks to real economy indicators, VAR model, 2008-2022
Note – compiled by the authors

In the figures presented here and below, the solid line shows the response of a variable to a shock of another variable, and the dashed lines show the range of deviation of the impulse response in the size of two standard errors of the response. The hypothesis that there is a short-run impact of each indicator under study on the variable «Household final consumption expenditures» is confirmed if the graph of the response function appears above or below the zero level line together with both dashed lines during some quarters.

Figure 1 shows the responses of expenditures to shocks of variables gross domestic product, gross saving, investment in fixed capital and income from sales of products and services in the global crisis of 2008-2009. As can be seen, the response of consumer spending to a shock to economic growth during the first two quarters is significant and positive. Conversely, a shock to consumer spending in the first two quarters induces a positive significant response of the GDP growth rate. The responses of household expenditures to shocks of other variables are not statistically significant.

Economic growth was a significant short-term factor of influence on consumer spending. The opposite influence is also observed: the increase in consumer spending caused a significant positive response of GDP growth rate. The influence of other indicators of the real sector of the economy (gross savings, investment in fixed assets and income from

sales of products and services) was not significant. This may indicate that the impact of these variables on consumer spending in this crisis was insignificant or ambiguous. Consequently, after the crisis of 2008-2009, among the considered indicators of the real sector of the economy, only the shock in the growth rate of gross domestic product had a positive short-term statistically significant impact on the recovery of consumer demand.

The 2015-2016 sanctions crisis is characterized by a changed pattern of impulse responses in the economy (Figure 2). In addition to the significant response of consumer spending to the economic growth shock, the responses to the shocks to gross savings and fixed capital investment are also significant over the two quarters. This means that during and after this crisis, gross saving and fixed capital investment had a significant impact on the recovery in consumer demand. As one would expect, the household consumer spending shock also has a meaningful short-run impact on economic growth. In general, short-term factors of consumer demand recovery during the sanctions crisis were the rate of economic growth, growth rates of savings and investment in fixed capital.

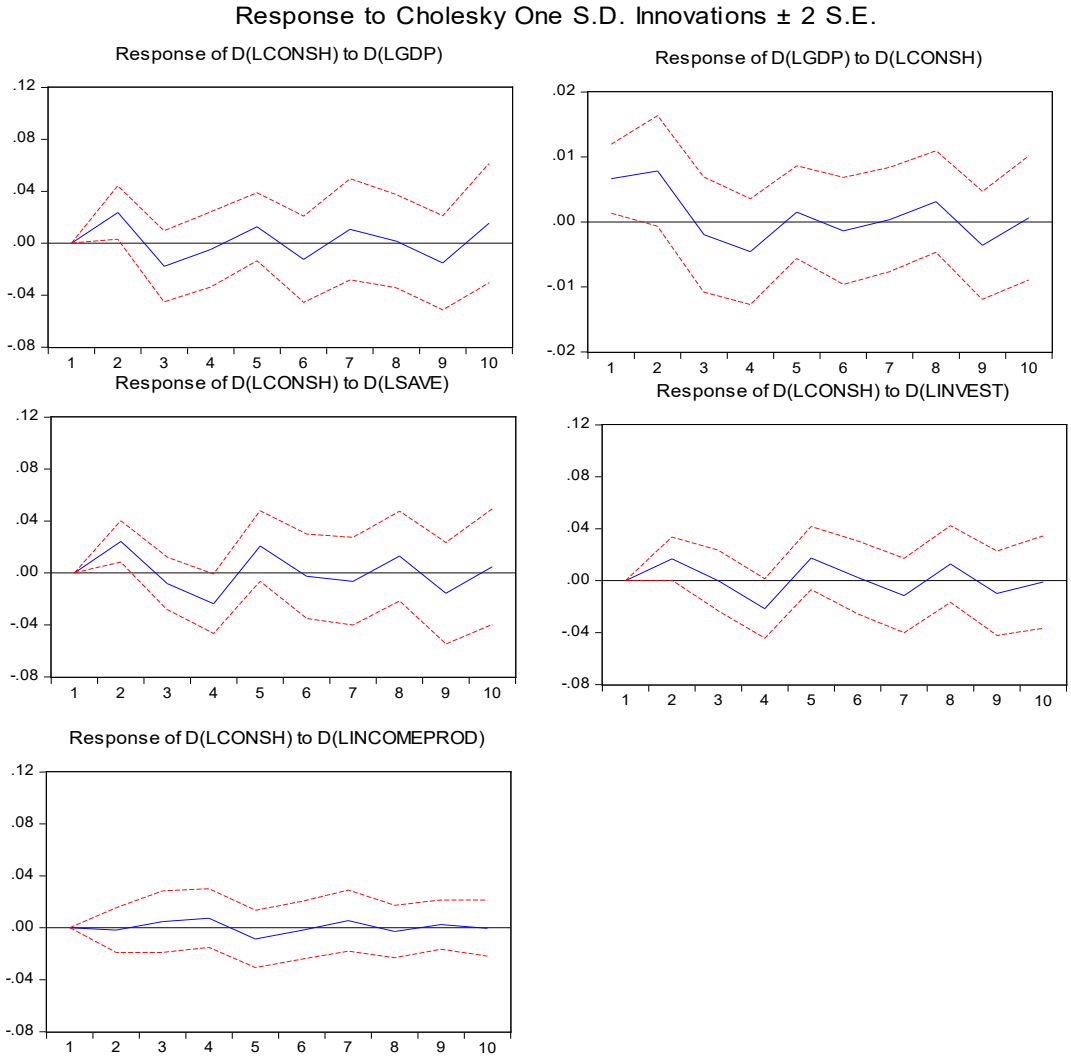

Figure 2 – Impulse responses of household consumer spending to shocks to real economy indicators, VAR model, 2015-2022
Note – compiled by the authors

After the 2019-2021 coronavirus pandemic crisis, economic growth, growth in gross savings and income from sales of products and services were the drivers of consumer demand recovery (Figure 3). It should be noted that the effects of the crises have a different impact on the consumption of food and non-food products. It may be associated with changes in consumer behaviour, changes in priorities and preferences of consumers during the crisis.

The accumulated responses of household final consumption expenditures to shocks to selected real economy indicators during the coronavirus crisis confirm similar results to the previous results for impulse responses in Figure 3. The accumulated responses during the first two quarters are also found to be significant.

In contrast to the two previous crises, in the latter case the consumer demand shock did not cause a meaningful economic growth response. This can be explained by the fact that during the pandemic, consumer demand was largely supported by government transfers to the involuntarily unemployed population, and the link between household income and production was weakened. Such observations are important for analysing the dynamics of consumer demand during the crisis. They point to the role of government measures to support and stimulate consumer demand during the crisis, as well as the need to adapt economic policy to the specific conditions of the pandemic crisis to ensure sustainable economic recovery.

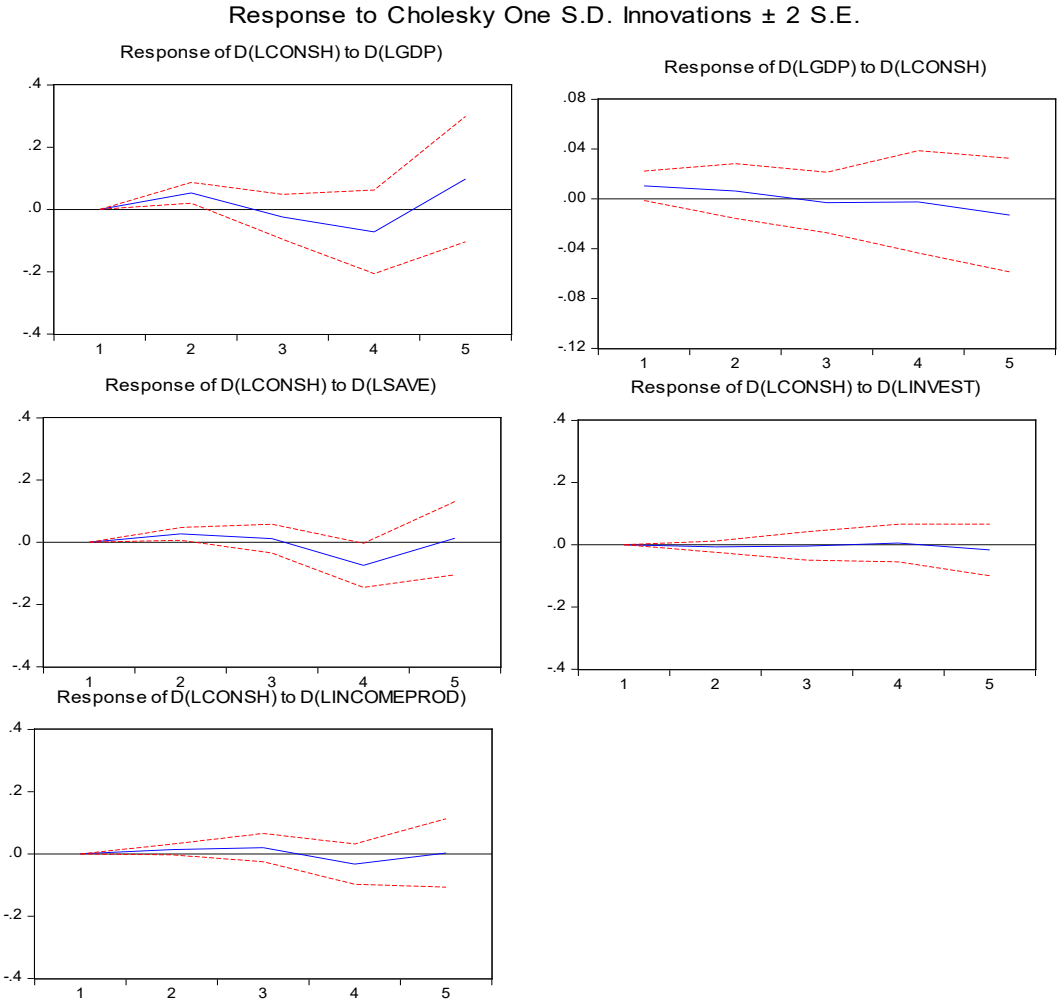

Figure 3 – Impulse responses of household consumer spending to shocks to real economy indicators, VAR model, 2019-2022
Note – compiled by the authors

Comparing the impacts of the three crises and the factors of consumer demand recovery – indicators of the real economy, the following conclusions can be drawn.

In the 2008-2009 crisis, a significant factor in the recovery of consumer demand was a shock to the growth rate of gross domestic product.

In the crisis of 2015-2016, consumer demand was influenced by the rate of economic growth, growth of gross savings and investment in fixed capital.

In the 2019-2021 coronavirus pandemic crisis, the significant factors in the recovery of consumer demand were the rate of economic growth, growth in gross savings, and growth in income from the sale of products and services. The impact on consumer spending of the population of changes in other indicators of the real sector of the economy was insignificant.

Note that the factors of consumer demand recovery may differ in different crisis situations. However, the impact of economic growth on consumer demand was significant in all three cases.

Within the framework of the sanctions crisis, calculations by the vector autoregression model did not reveal significant responses of households' final consumption expenditures to shocks of the variables TONIA, loans, deposits and financial assets. This may indicate the absence of statistically significant impact of the above variables on consumer demand in the financial sector of the economy during the crisis (Figure 4).

The accumulated responses also showed no significant impact of these variables on consumer demand. The lack of significant responses may be due to the specifics of the financial sector and its reaction to the sanctions crisis.

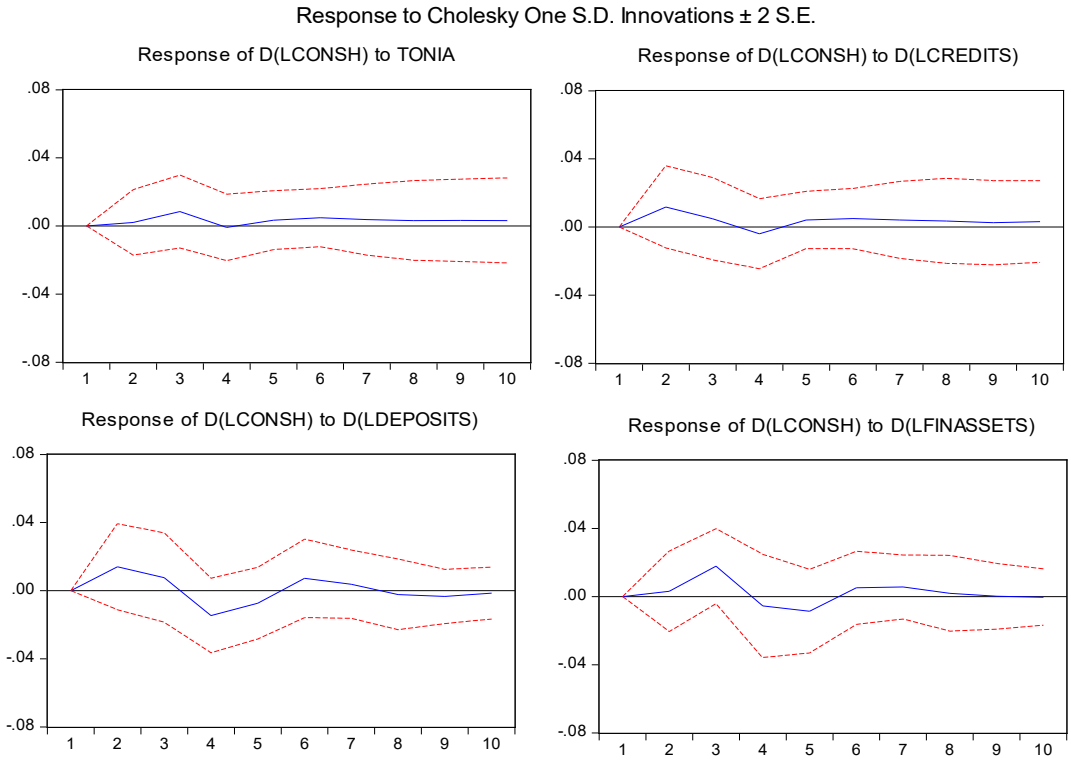

Figure 4 – Impulse responses of household consumer spending to shocks to financial sector indicators of the economy, VAR model, 2014-2022
Note – compiled by the authors

The responses of consumer spending to shocks to financial sector indicators during the coronavirus crisis are presented in Figures 5 and 6. The latter relates to the year of the onset of the coronavirus crisis, while the former relates to the year preceding it. In the former, the responses of consumer spending to shocks to loans and deposits of the population were significant and positive (Figure 5). This suggests that changes in the supply of loans and deposits had a positive impact on consumer demand in

the above period, probably due to an increase in the availability of credit resources and the possibility to save and accumulate funds on bank deposits.

In the second case, the responses of consumer spending to shocks to credit and TONIA (interbank lending rate) were significant, with the response to the credit shock being positive and the response to the TONIA shock being negative (Figure 6). This may indicate that an increase in credit boosted consumer demand, while an increase in the interbank lending rate had a negative impact on consumer demand. The fact that the response of consumer spending to deposit shocks became insignificant from 2019 onwards could be explained by the fact that the population, faced with reduced incomes in the pandemic, mainly channelled their funds to purchase food items rather than bank deposits. This reflects a change in consumer behaviour in response to the new economic conditions.

Analysing the responses of consumer spending to different financial shocks in different years allows us to better understand the impact of financial factors on consumer demand and its dynamics in different periods. Such analyses can be useful in developing policies to stimulate economic growth and managing financial stability.

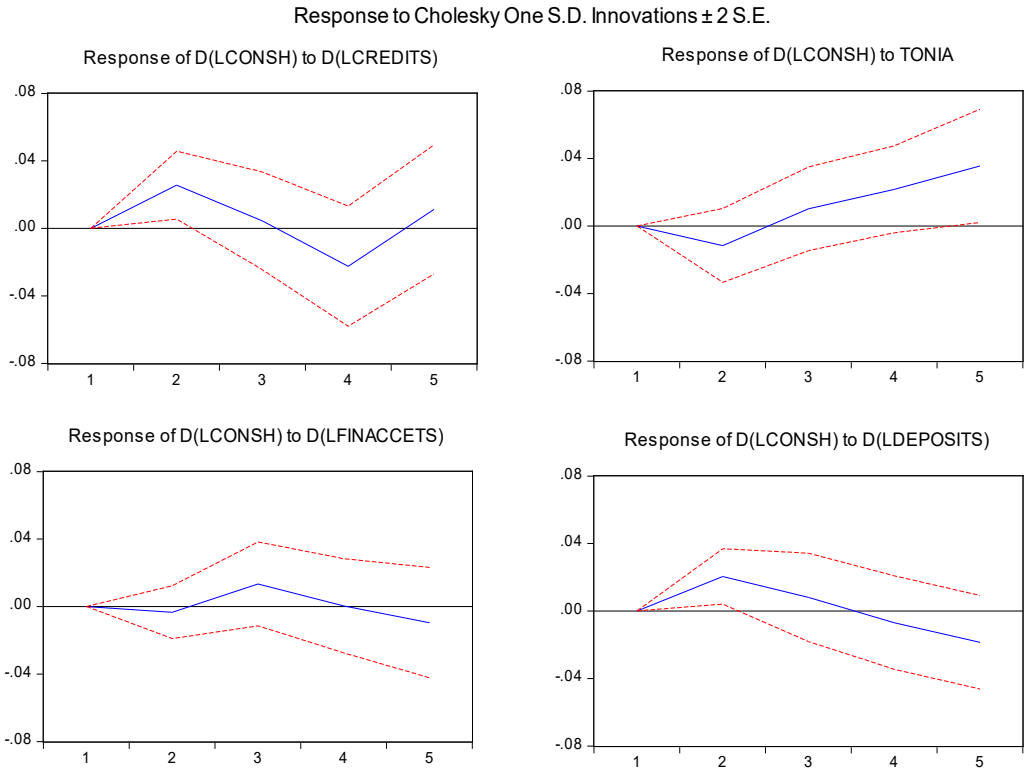

Figure 5 – Impulse responses of household consumer spending to shocks to financial sector indicators of the economy, VAR model, 2018-2022
Note – compiled by the authors

In the context of the coronavirus pandemic crisis, the response of household consumption expenditures to a population shock was insignificant, which can be explained by its weak variability over a short period of time (Figure 7). And the response of consumer expenditures to the employment shock is significant and positive. Employment growth increases households' income and consequently increases their consumption expenditure. This indicates the importance of supporting employment during the crisis, as it increases consumer demand and stimulates economic growth. Graphs of accumulated impulse responses are not reported here as they do not add anything fundamentally new. Understanding the impact of factors such as population and employment on consumer demand is important for designing policies to support the economy during the crisis and to stimulate economic recovery and mitigate the effects of the crisis.

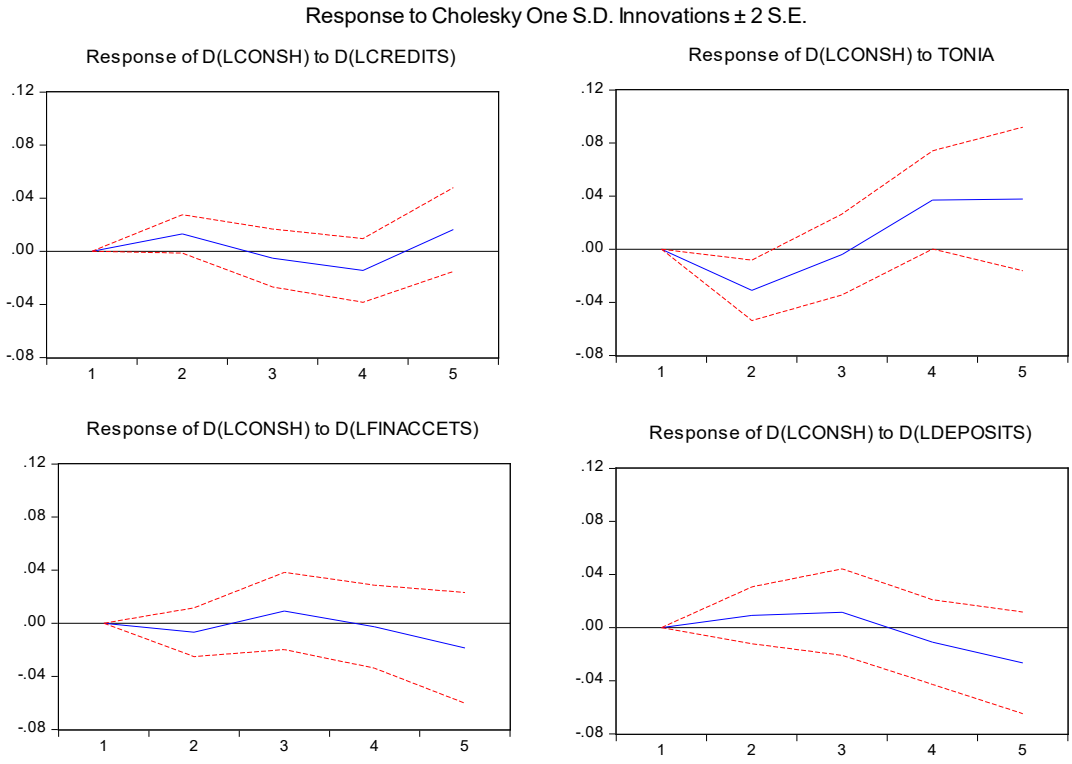

Figure 6 – Impulse responses of household consumer spending to shocks to financial sector performance of the economy, VAR model, 2019-2022
Note – compiled by the authors

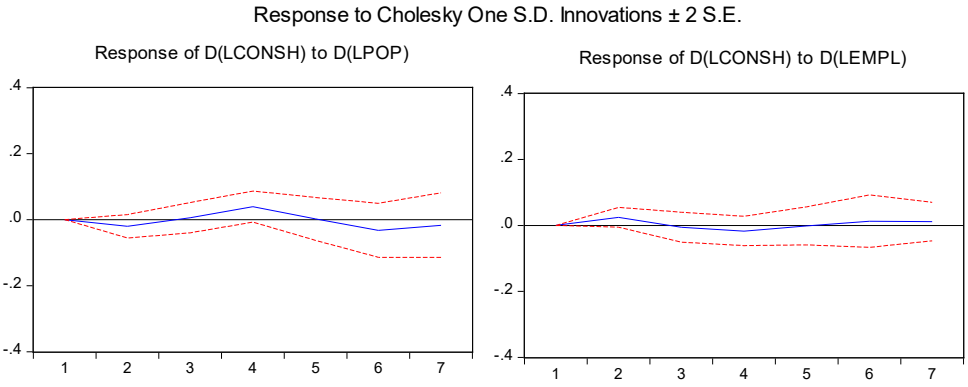

Figure 7 – Impulse responses of household consumer spending to shocks to population and employment, VAR model, 2019-2022
Note – compiled by the authors

Pension payments and transfers to insurance organisations, average per capita cash income of the population and the index of real cash income of the population did not have a significant impact on household final consumption expenditures during the pandemic crisis coronavirus. This may be due to the fact that these factors did not play a significant role in changing consumer demand during the pandemic. Their accumulated impulse responses also did not reveal the impact of these shocks. This further confirms the absence of a significant impact of these factors on consumer demand during the coronavirus pandemic crisis. Note that the absence of significant impact of these factors on consumer demand may be due to the specifics of the pandemic crisis, in which the priorities and expenditures of

the population may have changed significantly compared to normal conditions.

The impact of consumer price index and oil price shocks on household final consumption expenditures was not significant. If there were small changes in these indicators during the pandemic period, they did not significantly affect consumer demand.

During the pandemic period, shocks to the official dollar exchange rate, personal transfers of resident individuals to Kazakhstan and personal transfers of resident individuals from Kazakhstan did not have a significant impact on household consumption expenditures. This fact may indicate that changes in the exchange rate and transfers of individuals did not have a significant impact on household expenditures in this context.

There was also no significant impact of shocks to the subsistence minimum, the share of population with incomes below the subsistence minimum, the ratio of income used for consumption to the subsistence minimum and the depth of poverty on household final consumption expenditures. It can be assumed that these factors were not the main determinants of consumer spending in the pandemic.

The lack of a significant impact of the above factors on consumer spending could be due to various reasons, including changes in consumer behaviour in the context of a pandemic, the spending priorities of the population, and the impact of other factors not considered in this analysis.

It is important to take into account the results of such analyses when shaping economic policy and developing measures to support the population in times of crisis, in order to ensure an effective response to changes in the economic situation and to meet the needs of the population.

Thus, in various economic crises, including the 2008-2009 crisis, the 2015-2016 crisis, and the 2019-2021 coronavirus pandemic crisis, various factors had an impact on consumer spending by the public. Some of these factors had a significant impact while others had little or no impact at all.

The global crisis of 2008-2009. Only the shock in the growth rate of gross domestic product had a positive short-term statistically significant impact on the recovery of consumer demand. This indicates that economic growth played a key role in the recovery of consumer demand after this crisis. The impact of other indicators on consumer spending was insignificant. Sanctions crisis of 2015-2016. In contrast to the previous crisis, in addition to economic growth, two other indicators of the real sector of the economy had an impact on consumer spending: growth in gross savings and investment in fixed capital. Coronavirus pandemic 2019-2021. Significant factors in the recovery of consumer demand were the rate of economic growth, growth in gross savings, growth in income from the sale of products and provision of services, growth in deposits in the country's banks, reduction in the TONIA interbank market lending rate, and employment growth. The impact on consumer spending of changes in other indicators was insignificant. Unlike the two previous crises, there was no significant impact on economic growth from the side of consumer demand.

Differences in the composition of significant factors of consumer demand recovery for each of the three crises can be explained by a change in spending priorities population, adaptation to economic conditions or insufficient change in factors to have a significant impact on consumer demand.

Analysing various factors and their impact on consumer spending during the crisis allows us to better understand the dynamics of the economy, identify important determinants of consumer demand and develop effective measures to support the economy and the population in times of crisis. In the vector error correction (VEC) model, the short-run dynamics is adjusted depending on the deviation from the long-run relationship between variables. This representation of time series has an important meaning for integrated time series and is closely related to the concept of cointegration. Based on the error correction mechanism, the long-run relationship between variables is ensured.

The figures below illustrate the convergence of the responses of household consumption expenditures to unit shocks to the indicators. All considered indicators are cointegrated with the indicator of household final consumption expenditures. In addition, we select from them those indicators whose shocks in the VAR model had a significant impact on household consumption expenditures in the respective periods of the global financial crisis, sanctions crisis or coronavirus pandemic crisis. Note that all indicators are presented in logarithmic form.

Shocks to gross domestic product in the first quarter of 2008 induce an impulse response of consumer spending, and the trajectory of the subsequent change is shown in Figure 8. The initial positive response to a GDP shock stabilises over time at 0.02. A shock to this indicator in early 2015 induces a different behaviour of the consumer demand response (Figure 9). The response to the GDP shock over time converges to the level of 0.014.

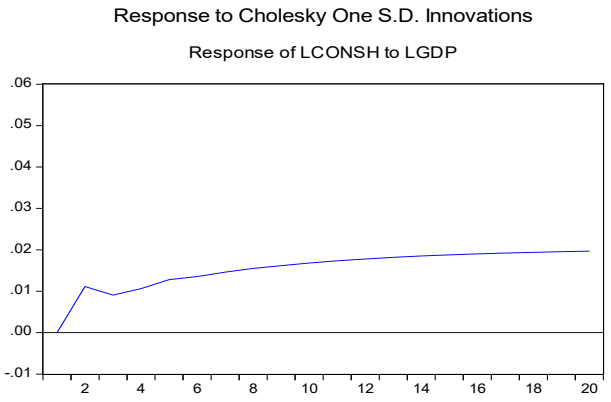

Figure 8 – Impulse responses of household consumer spending to a shock to gross domestic product, VEC model, 2008-2022.
Note – compiled by the authors

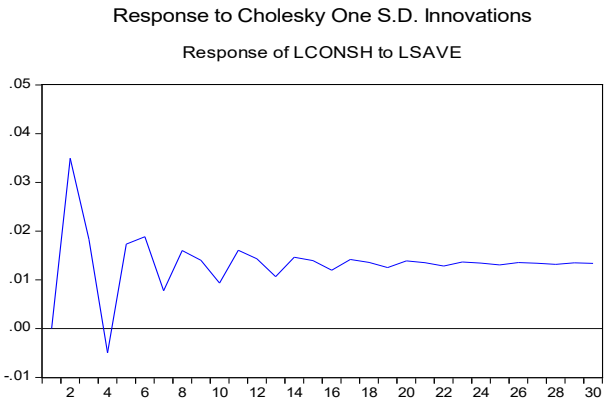

Figure 10 – Impulse responses of household consumption expenditure to gross saving shocks, VEC model, 2015-2022
Note – compiled by the authors

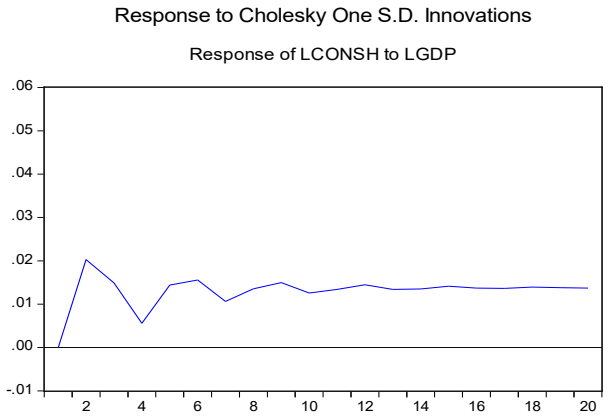

Figure 9 – Impulse responses of household consumer spending to shocks to gross domestic product, VEC model, 2015-2022.
Note – compiled by the authors

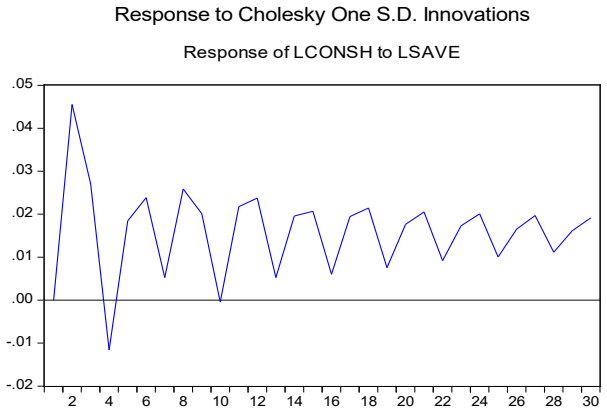

Figure 11 – Impulse responses of household consumer spending to gross saving shocks, VEC model, 2018-2022
Note – compiled by the authors

The behaviour of the response of household final consumption expenditure response to a shock to this indicator between 2018 and 2022 is similar to its behaviour in the previous figure during the sanctions crisis, but has twice the response in the first quarter and stabilises at 0.025.

Comparing these three cases, we note that the resulting deviation of consumer spending from the equilibrium level due to gross domestic product shocks is positive, i.e. there were positive effects in the long-run.

The responses of household final consumption expenditures to gross saving shocks during the sanctions crisis and the coronavirus pandemic crisis have similar plots of changes in Figures 10 and 11 and converge to the levels of 0.013 and 0.017, respectively. In the first case, the convergence is faster than in the second case.

Thus, based on the study of impulse responses of the VAR model during the global financial crisis, sanctions crisis and coronavirus pandemic crisis, the following factors of consumer demand recovery in Kazakhstan have been identified: increase in economic growth rates, increase in gross savings, increase in loans to individuals, including individual entrepreneurs, decrease in the interbank TONIA one-day rate and increase in the number of wage earners.

In the long run, according to the Johansen test results, household final consumption expenditures are cointegrated with key macroeconomic variables such as gross domestic product, investment in fixed capital, income from sales of products and services, the number of population and employees, as well as with a number of monetary income indicators. This confirms the sustained influence of fundamen-

tal economic factors on consumer behaviour. At the same time, the absence of a long-term relationship with such variables as gross savings, loans to individuals, real money income index and some social indicators (for example, the share of the population living below the subsistence minimum) may indicate their less predictable or indirect impact on consumer demand in the long run.

The short-term impacts identified through the analysis of VAR models and impulse response functions showed that the composition of consumer demand recovery factors varied significantly in different crisis periods. In the global crisis of 2008-2009, the dominant recovery factor was the rate of economic growth, while other real sector indicators did not show a statistically significant impact. In the 2015-2016 sanctions crisis, gross savings and fixed capital investment became significant along with GDP, indicating a broader dependence of consumer demand on the state of the productive sector of the economy. During the 2019-2021 coronavirus pandemic crisis, the range of significant factors widened: in addition to economic growth and gross savings, income from product sales, bank deposits, the TONIA interbank rate and employment played an important role. This reflects the changed behavioural attitudes of the population and the increased role of government regulation in the context of limited business activity.

The ambiguous role of financial sector indicators deserves special attention. In different years, household loans and deposits had both positive and insignificant effects on consumer demand, depending on the macroeconomic environment. It is particularly revealing that loans had a stimulative effect on consumption in 2019, while the increase in the TONIA interbank rate had a moderating effect. These results emphasise the importance of accounting and interest rate policies during periods of volatility. In contrast, during the sanctions crisis, the impact of financial indicators on consumer demand was statistically insignificant, which may be related to liquidity constraints and reduced confidence in the financial system.

The results of the analysis also emphasise the important role of employment. The positive impulse response of expenditures to a shock in the number of employed people confirms the need for active labour market policy in crisis periods. At the same time, the number of population did not have a significant impact on consumption in the short-run, which is explained by its low variability over small time intervals.

It is also of interest that there is no significant short-run impact of indicators such as pension payments, consumer price index, dollar exchange rate, personal transfers and cost of living on consumer spending during the pandemic. This may indicate that in the face of sharp and unpredictable shocks, households switch to basic forms of behaviour, focusing on direct support from the state and risk minimisation, rather than on macroeconomic benchmarks.

Thus, depending on the type and depth of the economic crisis, the structure of influence of economic indicators on consumer demand in Kazakhstan changes. The rate of economic growth is a universal factor that has a consistently positive impact both in the long and short term. Other factors – such as investment, savings, credit, employment – play a significant role depending on the specifics of the crisis. The obtained results have a high applied significance in the development of macroeconomic and social policy in conditions of instability, especially in the formation of anti-crisis programmes to stimulate demand and ensure the sustainability of consumer behaviour.

Conclusion

The study confirmed that consumer demand in Kazakhstan during the crisis and post-crisis periods is shaped by a wide range of economic factors, among which the key ones are income level, employment, inflation and access to credit resources. In the context of shocks caused by the global financial crisis, sanctions crisis and COVID-19 pandemic, there is a transformation of consumer behavioural patterns, including reduced confidence in the future, increased savings for contingencies and redistribution of expenditures in favour of basic goods and services.

Analyses of international experience have shown that the response of consumption to crisis events can vary significantly depending on the structure of the economy, social policy and the stability of the financial sector. At the same time, in developing countries, such as Kazakhstan, the impact of external and internal shocks on consumption is amplified due to institutional vulnerabilities and limited space for macroeconomic stabilisation.

The results suggest the need for a differentiated approach to anti-crisis policy formulation. Support for consumer demand should combine short-term measures (e.g., transfers to vulnerable groups and measures to stabilise employment) with long-term

initiatives to improve households' financial stability and access to credit. Macroprudential instruments that can limit overheating risks in times of growth and mitigate downturns in times of crisis are of particular relevance.

The findings highlight that in Kazakhstan, the design of fiscal and monetary policies must be closely aligned with the dynamics of consumer demand during crisis and post-crisis periods. Fiscal measures should prioritize targeted transfers to vulnerable households, wage and employment support programs, and a gradual withdrawal of crisis-related spending to avoid demand shocks, while monetary policy needs to ensure affordable credit and maintain public confidence in deposits through flexible interest rate management. Given the country's dependence on external shocks and commodity prices, a coordinated anti-cyclical framework – combining timely fiscal interventions with countercyclical monetary easing – would help stabilize consumption, sustain domestic demand, and mitigate long-term vulnerabilities of the national economy.

Future research could focus on more detailed analysis of the behaviour of different social and age groups under conditions of instability, including the impact of digitalisation of financial services on consumer activity. It is also promising to use microdata (e.g. transaction data, consumer surveys or household panels) to build models that take into account behavioural aspects of consumption and to assess the effectiveness of specific instruments of state support.

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