MODELING THE TRANSMISSION OF SYSTEMIC FINANCIAL RISK TO THE DEVELOPMENT OF THE ECONOMY'S REAL SECTOR

Bozhenko Victoria, *PhD, As. Prof.*
Sumy State University, Ukraine
Petrova Ksenia, *student*
Sumy State University, Ukraine

The national economy, which is widely integrated into the world economy, receives both additional opportunities to increase the pace of its economic growth, and creates many risks and threats that cause destabilization in the financial market [11,16], depreciation of the national currency [5], decrease in consumption [3], increase in unemployment, and so on. The consequences of the 2008 financial crisis and the COVID-19 pandemic indicated a high level of integration and convergent ties between the countries across the globe, which both led to large-scale financial losses at the level of national economies and caused a chain reaction of imbalance in the development of the entire world economy [1, 2]. In these circumstances, special attention should be paid to the implementation of an effective macroprudential state policy, which is supported by a system of coordinated measures that are aimed at improving the stability of the financial system and ensuring the solvency of financial institutions.

The stable functioning of the national financial system creates objective conditions for increasing the market capitalization of economic entities [14], increasing the inflow of foreign investment [8], improving the business climate in the country, as well as increasing GDP growth in the short and medium term. In other words there is a close interrelationship between financial and real sectors, which reflects the financial relations between such key economic entities as "producer–consumer" and "investor–producer", "producer-supplier of resources" etc [4]. It is worth noting that there has been an active increase in speculative operations conducted by financial institutions during the past decade, which does not mediate real trade turnover and does not reflect the real situation on commodity markets. Therefore, the real sector of the economy today largely depends on the dynamics and state of financial relations development in the country.

Cyclical crises that occur in the real sector of the economy affects the functioning of the financial sector negatively as well. This is due to the fact that a significant part of the financial sector is aimed at servicing the real sector, namely the provision of credit resources, accumulation of temporarily free funds and increasing their value, settlement services of current and foreign economic transactions and so on. A cyclical downturn in the dynamics of the real sector inevitably leads to instability in the activities of financial institutions.

The following approaches can be used to determine the relationship

between variables: force entry method [12], multiple regression analysis [15], correlation analysis.

The financial stress index has been chosen to characterize the level of systemic risk in the country [13]. The state of development of the real sector of the country's economy is proposed to be analyzed on the basis of the following key indicators: the volume of exported goods (EXP), the volume of imported goods (IMP), the Industrial Production Index (Ind), the volume of retail trade turnover of enterprises (RTL), the index of agricultural production.

The Granger test has been used to assess the causal relationships between indicators. This test based on the evaluation of autoregressive equations, the given formula of which has the following form:

$$y_t = \alpha_0 + \alpha_0 y_{t-1} + \cdots + \alpha_p y_{t-p} + \beta_1 x_{t-1} + \cdots + \beta_p x_{t-p} + \varepsilon_t$$
$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \cdots + \alpha_p x_{t-p} + \beta\alpha_1 y_{t-1} + \cdots + \beta_p x_{t-p} + u_t \quad (1)$$

where y_t, x_t are the studied variables; p is the lag value; α, β is the influence parameter; ε, u are random model errors.

The Granger test that determine the causality of the relationship between the level of systemic risk in the country and indicators of the development of the real sector of economy were carried out taking into account the impact of 3 lags. The results of checking for causal relationships between stationary time series are shown in Table 1.

Table 1- the results of checking for a causal relationship between the level of systemic risk in the country and indicators of the development of the real sector of the economy in terms of lags

Null hypothesis	Lag = 1		Lag = 2		Lag = 3	
	F-stat	*p*-stat	F-stat	*p*-stat	F-stat	*p*-stat
EXP does not affect FSI	0,198	*0,657*	3,07	***0,049***	2,808	***0,042 2***
FSI does not affect EXP	0,045	*0,832*	0,346	*0,709*	0,137	*0,937*
IMP does not affect FSI	1,438	*0,233*	5,268	***0,006***	3,7	***0,013***
FSI does not affect IMP	0,117	*0,733*	0,821	*0,442*	0,73	*0,536*
IND does not affect FSI	3,815	***0,053***	2,95	***0,056***	1,959	*0,123*
FSI does not affect IND	1,355	*0,246*	0,285	*0,751*	0,701	*0,553*
RTL does not affect FSI	5,454	***0,021***	4,358	*0,147*	3,138	***0,027***
FSI does not affect RTL	0,097	*0,756*	0,198	*0,82*	0,381	*0,766*
AGR does not affect FSI	4,769	***0,031***	5,182	***0,007***	3,152	***0,027***
FSI does not affect AGR	1,958	*0,164*	1,693	*0,187*	2,802	***0,043***

Source: own calculations

The analysis showed that the reason for the aggravation of crisis phenomena in the real sector of the economy is precisely the effect of systemic risks. In particular, changes in the volume of foreign economic activity of the country are a consequence of the concentration of systemic risk in the country. In addition, the dynamics of industrial production depends on the level of systemic risk during the first two months.

Thus, the transfer of systemic risk to various areas and sectors of the real sector of the economy leads to such destructive consequences as: reduced credit financing, higher interest rates on loans to the corporate sector [6], falling market value of assets []9, increasing pessimistic expectations among investors and reducing trust to financial institutions [7].

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