UDK [330.16:330-049.5]:519.24 **Doi: 10.31767/su.1(104)2024.01.05**
JEL Classification: C87, D31, E64, P46

Li Pan,
PhD student,
Department of Theory and Practice of Management,
Faculty of Sociology and Law,
National Technical University of Ukraine
"Igor Sikorsky Kyiv Polytechnic Institute",
E-mail: 504564464@qq.com
ORCID: https://orcid.org/0000-0001-8520-0842

Ensuring the Psychological Aspects of Individuals' Economic Security: Income, Economic Happiness, and Empirical Evidence

Economic security, as a key aspect of state strategy, continues to remain at the forefront of political research and public debates. In light of contemporary global challenges, including geopolitical tensions and economic disruptions such as the COVID-19 pandemic and Russia's war against Ukraine in 2022, which continues to cause significant harm to the lives, security, and health of individuals in Ukraine and other countries, it is important to consider not only macroeconomic indicators but also the individual economic conditions of citizens. This study is based on data obtained within the framework of the seventh wave of the World Values Survey (WVS), conducted in South Korea. I applied the ordered logit regression (OLR) method and conducted statistical analysis using Stata software to explore the relationship between objective and subjective indicators of individuals and the consequences of subjective feelings of anxiety, level of happiness on the perception of one's own health. The obtained results clearly demonstrate a strong positive correlation between individuals' personal economic indicators and their subjective sense of satisfaction and happiness. This indicates that individual economic conditions significantly influence psychological well-being and overall life satisfaction. Moreover, data analysis highlights the need for the development and implementation of effective social programs and strategies aimed at supporting citizens' economic well-being. Thus, there is a call for active government involvement in creating conditions to improve the economic status of the population with the aim of enhancing happiness levels and overall societal well-being, particularly for those countries with abundant resources to ensure economic prosperity but instead of prioritizing the economic security of their citizens, focus on external threats and under the pretext of security initiate wars against other countries. It is recommended to adopt an approach that balances attention to macroeconomic aspects with consideration of individual citizens' needs, thereby contributing to sustainable and harmonious societal development. The scientific findings of this study can serve as a basis for the development and implementation of more effective social and economic policy strategies aimed at improving citizens' quality of life and public welfare.

Key words: *empirical model, Stata, Ordered Logit Regression (OLR), economic security, individual security, happiness and health, national security.*

Introduction. Scientific research dedicated to economic security, remaining relevant and in demand today, possesses an extensive historical perspective and is closely intertwined with the dynamics of international relations. Global events of the past fifty years, such as the 1973 global oil crisis, the dissolution of the Soviet Union, global economic crises at the end of the 20th and beginning of the 21st centuries, as well as the recent coronavirus pandemic and the conflict between Russia and Ukraine, underscore the importance of ensuring state economic security. Even during the Cold War, when the confrontation between the USA and the USSR in various spheres, including political, economic, technological, and ideological, remained controlled and did not escalate into open warfare, both sides utilized economic means to safeguard national security. Despite the tensions during the Cuban Missile Crisis, when the world stood on the brink of a new large-scale war, both opposing sides managed to avert armed conflict.

At the same time, throughout the last century, regional confrontations took place in various corners of the globe, ranging from the Korean War to the war in Afghanistan, alongside other similar conflictual events occurring between 1945 and 1990, with the backdrop of the rivalry between the forces of the USA and the USSR [29; 32]. Simultaneously with the shift in the international security environment, namely the dissolution of the USSR as the sole comparable rival to the USA, global political thinking has changed, leading

© Li Pan, 2024

to a transition from a purely traditional understanding of national security and its focus on military power to encompassing other aspects that were previously overlooked [33]. National security has never been more dependent on economic security than it is today. However, in the past, the latter was perceived and considered only as a supplement to the more important and pressing issue of military security [28]. Today, the study of economic security is intertwined with the psychological aspects of rational choice, deepening the approach to the issue of national security. Thus, the aim of our work is to justify the necessity of conducting research regarding the subjective component of economic security, to analyze the influence of psychological factors, particularly the impact of "Loss Aversion" (LA) in the event of income reductions and rising unemployment rates, on the state economic dynamics and security, as well as on the spread of economic insecurity of individuals and their subjective opinion about happiness and heath condition, which can cause serious macroeconomic results.

Literature Review. Over the past two decades, scholars have adopted a different approach to the issues of ensuring national security and have proposed expanding the scope of research. Among the representatives of this group of scholars are D. A. Baldwin [3], B. Buzan et al. [8], J. S. Hacker et al. [12], D. K. Nanto [20], H. E. S. Nesadurai [21], L. Osberg & A. Sharpe [22], J. G. Rickards [25]. Special attention is devoted to non-military aspects such as environmental protection, economic issues, healthcare, and transnational crime. Scientific research emphasizes the necessity of expanding the security agenda, including a shift from the traditional focus on state security (national security) towards addressing the security issues of individuals (human security), society as a whole (social security), and the international system (systemic/global security) [8]. Nevertheless, experts in the field of security research often reject attempts to expand the security agenda by including non-military sources of threats such as poverty, environmental risks, social inequality, and economic downturns [6]. According to the renowned security researcher S. Walt [35], such efforts "excessively broaden the concept of 'security research'" and, thus, "disrupt their intellectual coherence and hinder the development of solutions to any of these significant problems."

B. Buzan argues that the expansion of approaches to understanding security was prompted by dissatisfaction with the intense narrowing of the security studies field during the Cold War, when the notion of nuclear threat prevailed [8]. According to him, state security should be analyzed considering five key aspects: military (as in the traditional concept of national security), political, economic, environmental, and social. In turn, E. Rothschild includes the following components in the concept of "national security": the security of the state in military, political, economic, and technological spheres, as well as the security of individual citizens in terms of income levels and social protection [27]. She also takes into account external security factors, such as threats from foreign states and organizations. L. Zedner conducted a comprehensive study of the concept of security and, utilizing semantic analysis and theoretical approaches, presented a new scholarly perspective, distinguishing three main meanings of the term "security" [36]. Primarily, the concept of security encompasses three main aspects: the current state, the process of achieving security as a goal, and the state of assurance. Security as a state is subdivided into subjective, reflecting the feeling of security and the absence of anxiety regarding threats to one's existence, and objective, which is associated with the actual absence of threat factors, the ability to eliminate threats, or avoid their consequences.

Essentially, security issues are considered pertinent and intrinsic to any living organism. Concerns regarding personal security, including those of a state's citizens, have historically been innate. It would be imprudent to assume that advancements in national security at the state level automatically ensure protection for individual citizens, or that national security is solely confined to military capabilities vis-à-vis other countries. The economic aspect of national security did not go unnoticed prior to the conclusion of the Cold War, as economists made attempts to explore the interrelation between economics and security. At one point, Adam Smith examined the allocation of resources between "defense" and "wealth", a topic now more commonly known as the issue of the size of the national security budget [16].

It is worth noting that the exploration of national security issues involves various approaches to the subject and finds expression in various scientific domains. Different specialties and branches of science adhere to their respective priorities in this regard. V. Cable defines economic security as the extent to which national security is jeopardized by reliance on external sources of technology, raw materials, food, and fuel [9]. It encompasses worries about disruptions in import supply and the possibility of overseas suppliers obtaining a monopoly position. The notion of economic security can also be understood in terms of economic policy tools utilized for aggressive or defensive purposes, such as trade and investment boycotts, restrictions on energy supply, and apprehensions regarding the security of supply.

At present, state policies for ensuring economic security are undergoing significant changes. This primarily involves taking into account the psychology of citizens, their perception of losses associated with reallocating a significant portion of national income to military needs. Additionally, the impact of subjective anxiety on human health, which ultimately

can influence the economic development situation of the state as a whole, is being considered.

Research regarding aversion to loss as the root of subjective anxiety in individuals is mainly conducted within the framework of psychological and economic sciences. Initially, the American scholar R. Thaler [31] drew attention to the phenomenon of loss aversion (LA) in decision-making processes in individuals' everyday economic activities. Thaler suggested that the value of acquiring a good or service is significantly lower than the value attributed to losing the same good or service. In other words, LA describes an observed behavior in which economic agents are more sensitive to losses than to gains [17].

Today, the LA term is often defined as the phenomenon where changes leading to a presumed worse outcome (i.e., losses) appear more significant than equivalent changes leading to a better outcome [7]. Similar conclusions are shared by other authors, including R. Hastie and R. M. Dawes [15]. According to their perspective, losses inflict more pain than the effects derived from satisfactions, and the majority of empirical studies support the notion that losses are approximately twice as painful as the emotions derived from pleasant acquisitions. Several different methods have been employed to measure loss aversion. These include empirical experiments, representative panel surveys, analysis of natural data, and literature studies aimed at behavioral changes. Aversion to losses has been quantitatively assessed for purely economic outcomes as well as for other domains such as health [2]. In the present time, loss aversion is employed in various fields beyond economics, including neurobiology, psychiatry, and medical science.

Despite the growing number of scholarly works devoted to national security in the context of the contemporary unstable global situation, the issue of economic insecurity associated with human vulnerability remains insufficiently explored. Ongoing conflicts, such as the wars in Ukraine and the Middle East, demonstrate that the significance of this problem has not diminished since the onset of these conflicts, when participating countries and their citizens are subjected to military threats.

Traditional concepts of economic security, formed during the Cold War era, focused on macroeconomic aspects and real or imagined threats from external aggressors, have not always led to positive outcomes. The problem arises of distinguishing between protecting economic interests and protectionism when economic security is considered only as a component of national security. Thus, measures aimed at ensuring economic security and justified from an economic standpoint can cause disagreement: what is perceived as defense from one perspective (from a security point of view) may be viewed as protectionism from another (from an economic point of view) [26]. Given that state responsibility in the economic sector is far less unequivocally defined than in political and military aspects [7], governments often promise to ensure security from various threats, primarily external ones, while concealing their inability to ensure stability and reliability in the economic sphere. As a result in the international relationship "a significant amount of tension builds up as a result of the pursuit of safety – often exceeding the capacity of safety to bear it" [4].

In addition to the above, it should be noted that in the post-Soviet space, most scholars adhere to traditional approaches to studying economic security issues, focusing on the state's ability to prepare for and respond to various threats, while also demonstrating a tendency towards "witch-hunting." In light of current armed conflicts, the following questions become relevant: Firstly, can it be considered that one of the reasons for the emergence of armed conflicts is the spread of such views among the majority of scholars and citizens of the aggressor country, or is the emergence of these armed conflicts one of the consequences of the spread of such views? Secondly, to what extent do external factors directly threaten the economic security of individual citizens of the aggressor country, and which factors, both external and internal, are key to ensuring the economic security of citizens?

The answers to the second question have been proposed by researchers from Western countries who conducted a series of studies. The essence of their findings lies in proposing concepts of national security oriented towards individual safety, which differs from the traditional state-centered approach [19]. Proponents of this approach argue that the primary threat to people's well-being does not stem from external threats from other countries, but from internal factors such as economic collapse, political oppression, environmental degradation, terrorism, crime and violence, as well as the spread of diseases and epidemics [5].

Additionally, in the 1994 Human Development Report, representatives of the United Nations Development Programme [34], focusing on human security, noted that today, for most people, the feeling of vulnerability is more a result of concerns about daily life than fear of catastrophic global events. Guaranteeing employment, ensuring income, preserving health, environmental sustainability, and protection against crime were highlighted as the primary aspects of human security worldwide (UNDP, 1994). The concern regarding guarantee and protection in these newly listed spheres is precisely regarded as "economic insecurity" for individuals, resulting from the lack of economic security, namely the inability to obtain protection from subjectively significant potential economic losses [14]. The lack of confidence in one's own economic security leads individuals to believe that uncertain economic prospects could worsen their situation. This belief is

logically grounded: people often fear significant losses or exhibit aversion to any form of losses, especially those of an economic nature.

Results and Discussion. In the article I employed Ordinal Logistic Regression models (OLR) [1; 14] to assess the relationship between the level of objective well-being of an individual and their subjective sense of happiness and concern about economic insecurity. The data for this study were obtained from the World Values Survey (WVS) [13], which analyzes changes in value orientations and their impact on social and political dynamics in various countries, including both developed and developing nations. It is one of the leading projects in sociological research worldwide and comprises 7 waves of surveys covering the evolution of global values.

This global survey is designed to study society and analyze changes in it over time, as well as to assess the impact of social policies. The WVS is conducted jointly by members of the World Network Alliance and currently covers more than 100 countries and 90% of the world's population. The history of WVS spans 37 years since the first survey was conducted in 1981. The main topics of the survey include questions of a values nature, which are of particular interest and concern in the modern world, such as democratization, inclusion of foreign groups or minorities, gender equality, the role and changes in religion, the impact of globalization, and others. In addition, respondents are asked questions about their views on the environment, work, family, national identity, culture, diversity, security, and other aspects. WVS data and reports are published as they become available and are anonymized. They are widely used in academic research, government analysis, scientific papers, journalism, and practical research in various countries around the world. Research within the framework of WVS contributes to the development of civil society and democratic institutions on a global scale.

The structure and characteristics of WVS surveys have provided the basis for selecting the OLR method as the tool for our research. The OLR analysis method is designed to handle data with an ordered categorical dependent variable. This statistical method extends binary logistic regression to cases where the dependent variable has more than two ordered levels. The paper contributes in the following areas:

1. A literature review on the topic of individual economic security and its psychological components was conducted.

2. An empirical study was carried out using Stata software, followed by the construction of an OLR mathematical model to analyze the impact of objective economic factors on the subjective assessment of economic security and health of individuals.

Research Hypothesis: Objective microeconomic factors, such as savings and income levels, significantly influence the psychological anxiety and happiness levels of individuals. In turn, psychological anxiety and happiness levels may affect the perception of one's own health status.

In our study, we utilized data from a survey conducted in South Korea in 2018 [13], which involved 1,245 respondents and covered more than 290 questions. The survey topics included social values, norms, issues, social distance, workplace problems, labor organizations, employment issues, political views, national democracy, gender issues, environmental problems, marriage, family, and child-rearing. From the total number of questions or variables, we selected some that are directly related to the psychological phenomenon of Loss Aversion and economic security. Table 1 below (developed by the author) provides a list of variable descriptions. The statistical analysis software used in this study is Stata.

In our OLR model, the dependent variable is Q47 (subjective assessment of one's health status). The WVS measures the level of subjective health

Table 1

Description of variable structures and categories

Variables	Categories
1	2
Q46: Feeling of happiness	1. Very happy: 51 2. Quite happy: 1058 3. Not very happy: 135 4. Not at all happy: 1
Q47: State of health (subjective)	1. Very good: 195 2. Good: 930 3. Fair: 116 4. Poor: 4
Q142: Worries (Losing my job or not finding a job)	1. Very much: 264 2. A great deal: 647 3. Not much: 256 4. Not at all:78

Table 1. Continuation

1	2
Q275: Highest educational level: Respondent	0. Early childhood education (International Standard Classification of Education (ISCED) 0) / no education: 4 1. Primary education (ISCED 1): 46 2. Lower secondary education (ISCED 2): 90 3. Upper secondary education (ISCED 3): 517 4. Post-secondary non-tertiary education (ISCED 4): 5 5. Short-cycle tertiary education (ISCED 5): 187 6. Bachelor or equivalent (ISCED 6): 379 7. Upper: 17
Q279: Employment status	1. Full time: 713 2. Part time: 43 3. Self-employed: 101 4. Retired/pensioned: 29 5. Homemaker not otherwise employed: 249 6. Student: 89 7. Unemployed: 21
Q284: Sector of employment	1. Government or public institution: 69 2. Private business or industry: 732 3. Private non-profit organization: 56 -3. Other: 388
Q286: Family savings during past year	1. Save money: 502 2. Just get by: 661 3. Spent some savings: 73 4. Spent savings and borrowed money: 9
Q287: Social class (subjective)	1. Upper class: 140 2. Upper middle class: 189 3. Lower middle class: 927 4. Working class: 17 5. Lower class: 109
Q288: Income level	1. Lower step 1: 11 2. Second step 2: 54 3. Third step 3: 131 4. Fourth step 4: 283 5. Fifth step 5: 380 6. Sixth step 6: 241 7. Seventh step 7: 124 8. Upper: 21
Total amount of variables: 9	**Survey observation: 1245**

assessment by asking respondents the following question: "How do you feel and assess your health?" Answers to this question are categorized into four categories: "very good", "good", "fair", and "poor". Each of these categories is assigned a numerical value. Thus, the categories "very good" and "good" correspond to values 1 and 2, respectively, while "fair" and "poor" are associated with numerical values 3 and 4. Overall, for all nine selected variables, the assignment of numerical values follows an ordered or hierarchical scale. The lower the number, the better the result, except for variables Q142 (concerns about job loss) and Q275 (level of education), for which higher numbers indicate higher levels of negative values. This approach to redefining values provides a nominal expression of happiness levels within the scope of the conducted research. A more detailed description of preliminary descriptive statistics and calculation results is provided in Table 2 (developed by the author).

In the presented data, the mean value of the health indicator Q47 is 1.943, which falls between the categories "very good" and "good", leaning towards the latter category. The average level of anxiety related to job loss or difficulty finding new employment (Q142) is 2.119, exceeding the median level. This indicates significant anxiety among the survey respondents.

In this study, descriptive statistics also include the analysis of the correlation between the age of South Korean citizens and their self-assessment of health status within the context of quantitative data. Following scientific standards, the Pearson correlation coefficient was employed to measure the degree of linear relationship between these variables. The calculation was conducted using the data visualization function of the Stata software program, . The observed outcome reveals a negative correlation between age and self-assessment of health, subjective worries about losing job or not finding a job among 1245 South Korean citizens aged 18 to 88 years.

Then I proceed directly to the analysis of the key variables Q47, Q142, and Q46 in the study. To examine

Table 2

Descriptive statistics

VarName	Obs	Mean	SD	Min	Median	Max
Q47	1245	1.943	0.510	1.000	2.000	4.000
Q142	1245	2.119	0.809	1.000	2.000	4.000
Q46	1245	2.069	0.385	1.000	2.000	4.000
Q275	1245	4.118	1.606	0.000	3.000	8.000
Q279	1245	2.525	1.959	1.000	1.000	7.000
Q284	1245	0.431	2.331	–3.000	2.000	3.000
Q286	1245	1.670	0.618	1.000	2.000	4.000
Q287	1245	3.032	0.724	1.000	3.000	5.000
Q288	1245	4.840	1.378	1.000	5.000	8.000

the distribution relationship between these variables using Stata, we generate summary 2·2 tables and figures. The distribution of the self-assessment of health status variable Q47 and the anxiety about job loss variable Q142 is presented in Table 3 (developed by the author). The results of the calculations allow us to conclude that there are four groups of survey respondents: those who experience high levels of anxiety about job loss and consider themselves healthy or unhealthy, and those who experience low levels of anxiety about job loss and consider themselves healthy or unhealthy. The majority of respondents perceive themselves as healthy, while there is a minor association between self-assessment of health status and anxiety about job loss.

Table 3

The distribution of the self-assessment of health status variable (Q47) and anxiety about job loss variable (Q142)

Worries: Losing my job or not finding a job / State of health (subjective)	Very much	A great deal	Not much	Not at all	Total
Very good	62	94	29	10	195
Good	174	494	205	57	930
Fair	27	57	21	11	116
Poor	1	2	1	0	4
Total	264	647	256	78	1245

The distribution of the levels of happiness perception (Q46) and anxiety about job loss (Q142) is presented in Table 4 (developed by the author). In this case, the computed results allow us to conclude that there are four respondent groups in the survey: those who experience a high level of anxiety about job loss and consider themselves happy or unhappy, and those who experience a low level of anxiety about job loss and consider themselves happy or unhappy. The proportion of those who perceive themselves as happy constitutes a larger share. Furthermore, there exists a more significant correlation between self-assessment of health and anxiety about job loss – the less anxiety, the greater the happiness.

Table 4

The distribution of the levels of happiness perception (Q46) and anxiety about job loss (Q142)

Worries: Losing my job or not finding a job / Feeling of happiness	Very much	A great deal	Not much	Not at all	Total
Very happy	9	24	12	6	51
Quite happy	219	553	217	69	1058
Not very happy	36	70	26	3	135
Not at all happy	0	0	1	0	1
Total	264	647	256	78	1245

At the end, the distribution of the levels of happiness perception (Q46) and anxiety about job loss (Q47) is presented in Table 5 (developed by the author). The computed results allow us to conclude that there are four respondent groups in the survey: those who consider themselves healthy and perceive themselves as happy or unhappy, and those who consider themselves unhealthy and perceive themselves as happy or unhappy. The proportion of those who perceive themselves as happy constitutes a larger share. Furthermore, there exists a more significant correlation between self-assessment of health and anxiety about job loss – the less healthy, the less happy, and vice versa.

Table 5

The distribution of the levels of happiness perception (Q46) and anxiety about job loss (Q47)

Feeling of happiness / State of health (subjective)	Very happy	Quite happy	Not very happy	Not at all happy	Total
Very good	27	150	18	0	195
Good	23	828	78	1	930
Fair	1	78	37	0	116
Poor	0	2	2	0	4
Total	51	1058	135	1	1245

Below is the result of calculating the correlation relationships between all variables in our model (Table 6, developed by the author), based on which the following theoretical hypothesis is proposed: there is a positive correlation between variables Q47 (self-assessment of health), Q142 (anxiety about job loss), and Q46 (feeling of happiness), and the latter two positively influence the former variable Q47 as a dependent variable. In turn, the other selected variables (Q275, Q279, Q284, Q286, Q287, Q288) in Table 2 act as control variables. To test this theoretical hypothesis, the following quantitative model has been developed.

For OLR, the dependent variable with ordered multicategory values is split into several binary dependent variables. Then, fitting multiple binary logistic regressions is performed, and based on the cumulative probability, a regression model is created. Let's assume that the dependent variable represents the severity of a disease: mild, moderate, severe, with corresponding values of 1, 2, and 3. In this case, the division of the dependent variable would be as follows: 1 versus 2+3, 1+2 versus 3. If the dependent variable has 4 levels (1, 2, 3, 4), then the division would be: 1 versus 2+3+4, 1+2 versus 3+4, 1+2+3 versus 4. It is important here to maintain the hypothesis of proportionality advantage, meaning that in multiple binary logistic regressions split in this way, except for differences in constants, the coefficients of the models for the respective independent variables will be the same. In other words, it is assumed that the impact of independent variables on the advantage of cumulative probability is the same in multiple models. If we denote i as an index representing the i-th level of the dependent variable, the formula of this model can be represented as follows:

$$\text{logit}\,[P(Y \le \text{i} \mid \text{X})] = \ln\left[\frac{P(Y \le i|X)}{1-P(Y \le i|X)}\right] = \\ = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_m X_m . \quad (1)$$

As seen in Table 1, all variables of the model were divided into several groups, thus making the application of the OLR model appropriate. Before proceeding with the computation and regression analysis, it is necessary to conduct a check regarding the Variance Inflation Factor (VIF) [10], which is a procedure for assessing the presence of multicollinearity in multiple linear regression. Multicollinearity occurs when variables in the model are highly interdependent, which can complicate the estimation of regression parameters and make them less accurate and interpretable. Higher VIF values indicate more serious multicollinearity issues. The result of the VIF check, which is equal to 2.836, is presented in Table 7 (developed by the author), indicating that the condition for conducting regression analysis is not violated.

The result of the OLR model computation is presented in Table 8 (developed by the author) on the following pages. However, before we begin analyzing the obtained result, it is necessary to confirm its effectiveness. For this purpose, tests of the parallel regression assumption [24] are required, which are an important step in the analysis of OLR model results. Regression parallelism is an assumption that states that the slope coefficients for all levels of the dependent variable lie on parallel lines, which is a key assumption in the OLR model. The results of the regression parallelism tests are presented in Table 9 (developed by the author), where the value of all test results P>Chi2 is greater than 0.05, satisfying the initial assumption. Thus, the computed result of the OLR model has statistical significance.

Table 7

Results of VIF test

Variables	VIF	1/VIF
Q279	7.63	.131
Q284	7.382	.135
Q288	1.57	.637
Q287	1.5	.667
Q286	1.254	.797
Q275	1.246	.803
Q46	1.07	.935
Q142	1.039	.963
Mean VIF	2.836	.

Table 9

Tests of the parallel regression assumption

Assumption test	Chi squared tests (Chi2)	df	P>Chi2
Wolfe Gould	22.830	16	0.118
Brant	21.100	16	0.175
Score	23.880	16	0.092
Likelihood ratio	24.310	16	0.083
Wald	21.900	16	0.147

Based on the obtained results in Table 6 on the following pages, and the confirmation of their statistical significance, it is possible to derive an OLR model to describe the regression function of Q47, the analysis and discussion of which are proposed in the next subsection "Discussion". After obtaining the OLR model, the next step is to conduct forecasts using the model by calculating the odds ratios (OR), which represent the likelihood of an outcome occurring given a specific exposure, compared to the likelihood of the outcome occurring in the absence of that exposure [30]. In other words, the odds ratio represents the likelihood of a specific level (state) of a variable occurring. For example, if two possible states of a variable are characterized as success and failure, then the odds ratio is a measure of the odds of success in one group relative to another. Using the odds ratio, one can also assess the strength of the relationship (effect size) between two variables. The results of calculating the odds ratios for our model, also obtained using Stata software, are presented in Table 10 (developed by the author). It includes other statistical information such as p-values, Pseudo R-squared, and so forth. Let us now proceed directly to the analysis of the obtained results.

From the analysis of Table 6, significant correlations between the key variables are identified. To facilitate the analytical process, it is proposed to conduct a conditional division into two groups: the dependent variable Q47 and the independent variables Q142, Q46. The latter relate to the subjective aspects of respondents' condition and are directly related to the theme of this study, which focuses on the psychological factors of individual economic security. The second group includes control variables Q275, Q279, Q284, Q286, Q287, Q288, which characterize the objective state of economic security and well-being. These variables cover aspects such as income level, employment status and sector, education level, social status, and the total amount of family savings over the past year.

For the first group of variables, a negative correlation between Q46 and Q142 is noted, indicating that respondents' feelings of happiness are inversely related to their level of anxiety about job loss. In other words, the stronger or weaker the feelings of happiness among respondents, the less or more their level of concern about job loss, and vice versa.

However, it is worth noting that this correlation appears to be relatively weak compared to other variables, despite Table 4 providing information about a more pronounced correlation. In the context of variables Q47 and Q142, the correlation, despite its positivity, remains relatively weak, as confirmed by the data presented in Table 3. The reason for this phenomenon may be, firstly, the structure of respondents' responses, the analysis of which indicates that despite a significant number of people reporting good health, they also experience significant anxiety related to job loss, and vice versa, those who experience such anxiety are more likely to rate themselves as healthy. However, within the framework of the WVS

Table 6

Correlation coefficients

	Q47	Q142	Q46	Q287	Q275	Q279	Q284	Q286	Q288
Q47	1								
Q142	0.073***	1							
Q46	0.221***	−0.070**	1						
Q287	0.188***	−0.0200	0.168***	1					
Q275	−0.228***	−0.118***	−0.111***	−0.229***	1				
Q279	0.0280	0.00100	0.062**	0.114***	−0.316***	1			
Q284	−0.0350	−0.0320	−0.0370	−0.091***	0.270***	−0.929***	1		
Q286	0.160***	−0.0290	0.197***	0.356***	−0.229***	0.190***	−0.172***	1	
Q288	−0.168***	0.058**	−0.193***	−0.549***	0.294***	−0.139***	0.110***	−0.363***	1

*** p<.01, ** p<.05, * p<.1

Table 8

Ordered logistic regression

Q47	Coef.	Standard Error	t-value	p-value	[95% Conf.	Interval]	Sig
Q142	.199	.084	2.37	.018	.035	.363	**
Q46	1.168	.177	6.60	0	.821	1.514	***
Q287	.278	.111	2.50	.013	.06	.495	**
Q275	−.287	.048	−6.02	0	−.38	−.194	***
Q279	−.201	.092	−2.18	.029	−.382	−.021	**
Q284	−.111	.076	−1.47	.141	−.26	.037	
Q286	.241	.12	2.01	.044	.006	.476	**
Q288	−.036	.061	−0.59	.556	−.154	.083	
cut1	.273	.779	.b	.b	−1.253	1.8	
cut2	4.675	.794	.b	.b	3.119	6.231	
cut3	8.323	.942	.b	.b	6.477	10.168	
Mean dependent var		1.943	SD dependent var	0.510			
Pseudo r-squared		0.081	Number of obs	1245			
Chi-square		151.283	Prob > chi2	0.000			
Akaike crit. (AIC)		1732.839	Bayesian crit. (BIC)	1789.235			

*** p<.01, ** p<.05, * p<.1

Table10

Ordered logistic regression and predicts

Q47	Odds ratio	Standard Error	t-value	p-value	[95% Conf.	Interval]	Sig
Q142 (First level)	1	.	.	.	.	.	
A great deal	1.435	.249	2.08	.038	1.021	2.017	**
Not much	1.559	.325	2.13	.033	1.036	2.344	**
Not at all	1.906	.59	2.08	.037	1.039	3.497	**
Q46 (First level)	1	.	.	.	.	.	
Quite happy	6.007	1.853	5.81	0	3.282	10.995	***
Not very happy	14.367	5.438	7.04	0	6.842	30.166	***
Not at all happy	4.93	11.802	0.67	.505	.045	537.688	
Q287	1.319	.148	2.47	.013	1.059	1.642	**
Q275	.747	.036	−6.07	0	.68	.821	***
Q279	.811	.075	−2.26	.024	.676	.973	**
Q284	.891	.068	−1.51	.13	.768	1.035	
Q286	1.292	.157	2.11	.035	1.018	1.64	**
Q288	.964	.059	−0.61	.544	.855	1.086	
cut1	−.464	.752	.b	.b	−1.938	1.01	
cut2	3.939	.758	.b	.b	2.455	5.424	
cut3	7.565	.905	.b	.b	5.791	9.34	
Mean dependent var		1.943	SD dependent var	0.510			
Pseudo r-squared		0.086	Number of obs	1,245			
Chi-square		159.541	Prob > chi2	0.000			
Akaike crit. (AIC)		1732.580	Bayesian crit. (BIC)	1809.484			

*** p<.01, ** p<.05, * p<.1

study, there is no detailed classification of human health, and corresponding analysis is not conducted.

Additional reasons may also include, firstly, the limitation of the respondent sample, which influences the survey results, and secondly, the number of respondents is not a significant factor and actually reflects the current situation in South Korea. However, in WVS studies of other countries, the results of statistical calculations and those demonstrating the economic situation may differ.

A more significant correlation is observed between variables Q46 and Q47, indicating that the stronger one's perception of their own health, the stronger their feelings of happiness, and vice versa. The positive correlation between the variables also suggests that as the value of one variable (for example, the level of self-rated health) increases, the value of the other variable (feeling of happiness) is likely to increase as well, and vice versa. However, it is worth noting that correlation does not necessarily imply causation, and further investigation is needed to determine causality.

As for the second group of variables, more significant correlations are observed among them. Objective parameters such as education level, employment status, field of activity, income level, and family savings over the past year demonstrate pronounced interrelations and interactions, also influencing the subjective variables of the first group.

Let's proceed with the direct analysis of the OLR model presented in Tables 8 and 10. Table 8 highlights that the p-values for almost all variables, especially Q142 and Q46, are less than 0.05, indicating the statistical significance of the coefficient associated with the respective predictors. This suggests a statistically significant influence of these predictors on the dependent variable. Rejecting the null hypothesis, which assumes that the coefficient is equal to zero, is justified. Therefore, it is possible to construct the model as follows:

$$\hat{Y} = 0.199 \cdot Q142 + 1.168 \cdot Q46 - 0.287 \cdot Q275 + 0.278 \cdot Q287 - \\ -0.201 \cdot Q279 + 0.241 \cdot Q286 + \varepsilon, \quad (2)$$

where $\hat{Y}$ – predicted number of variable Q47.

In the lower part of the table, three additional rows are highlighted (cut 1, cut 2, cut 3) because the dependent variable Q47 is divided into 4 categories:
1) when $\hat{Y} \leqslant 0.273$ (cut 1), Q47 = 1 (Very good);
2) when $0.273 \leqslant \hat{Y} \leqslant 4.675$ (cut 2), Q47 = 2 (Good);
3) when $4.675 \leqslant \hat{Y} \leqslant 8.323$ (cut 3), Q47 = 3 (Fair);
4) when $\hat{Y} > 8.323$ (cut 3), Q47 = 4 (Poor).

Table 10 provides an overview of the odds ratio (OR) and a breakdown of the odds ratio for each category of variables Q142 and Q46. Variables marked with an asterisk (*) indicate statistically significant values. Specifically, concerning variable Q142, for individuals experiencing different levels of anxiety about job loss ("A great deal", "Not much", "Not at all"), compared to those experiencing "Very much" anxiety, the odds ratio for increasing the level of health assessment is 1.435, 1.559, and 1.906 respectively. A similar situation is observed with variable Q46. For individuals experiencing different levels of happiness ("Quite happy", "Not very happy"), compared to those feeling "Very happy", the odds ratio for increasing the health assessment is 6.007 and 14.367 respectively.

In general, for variables Q286 and Q287, representing the amount of family savings in the last year and respondents' self-assessment of social class, the odds ratio is 1.292 and 1.319 respectively. This indicates a statistically significant relationship: an increase in the level of savings and social class corresponds to an increase in the likelihood or inclination towards a high assessment of health status by 1.292 and 1.319 times. Special attention should be paid to variables Q275 (level of education) and Q279 (employment status), for which the odds ratio is less than 1. This means that with an increase in the category of education level or employment status, there is a decrease in the degree of health status assessment. However, such a phenomenon is explained by the characteristics of the variables themselves. For example, variable Q275 exhibits a reverse order of educational categories, resulting in an inverse relationship between Q47 and Q275. Thus, an increase in the level of education among individuals is likely to lead to an increase in the degree of self-assessment of health status. As for variable Q279, where the odds ratio is also less than one, the reason may be related to the fact that it has too many categories compared to Q47, which may influence the results.

Conclusions. Based on data from the seventh wave of the WVS in South Korea, this article explores the relationship between objective economic indicators of individuals and their psychological characteristics, such as subjective anxiety and level of happiness. The findings demonstrate that in South Korea, economic factors such as savings level, educational status, occupational position, etc., have a significant positive impact on individuals' psychological anxiety and happiness level. In turn, psychological anxiety and level of happiness can influence individuals' assessment of their own health status.

Low levels of economic security among citizens entail various forms of negative consequences, as evidenced by a vast amount of research in this area. To determine the level of personal economic security, researchers often employ a quantitative method of assessing resource ownership, known as the resource approach. However, there is considerable criticism of this approach in scholarly literature. The common

argument is the discrepancy between the presence of resources and the adequate level of economic security, as there may exist both positive and negative correlations between them.

This is particularly important for countries abundant in natural resources, where the pace of economic development is not considered satisfactory. On the one hand, the abundance of resources, especially energy resources crucial for industrial production, was supposed to become a reliable foundation and condition for the development of the national economy and thus meet the people's needs for a higher standard of living. On the other hand, it is difficult and unjustified to classify its level of economic security as high based on macroeconomic indicators. Perhaps for this reason, the rhetoric of governments of certain countries includes themes of threats from Western countries. As for the economic security of citizens of such countries, little attention has been paid to this issue, but there is little doubt about the consequences of the ongoing war on their well-being.

From here, the conclusion can be drawn: on the one hand, aversion to loss instills in individuals a anxious sense of doubt about their economic security. On the other hand, the lack of proper research into personal economic security and the dominance of a traditional approach to national economic security serve as a tool for governments to divert attention from problems they are incompetently addressing. As a result, citizens are subjected to stress about their own insecurity, which is exacerbated by state propaganda.

The limitations of this study include the absence of analysis of long-term time series dynamics and comparative analysis of data between different countries. This aspect requires further investigation in subsequent studies. Additionally, it is necessary to conduct an analysis of objective economic and social dynamics, as well as to consider the negative impact of major military conflicts on the economy of the population. The overall conclusion is that national policies should pay special attention to studying the micro-level of economic security. Further directions of our research include the development and expansion of analysis methods, more precisely, to conduct a comparative analysis of the subjective and objective economic security of individuals both between countries, and an analysis of the dynamics of change in a particular country. There is also a need for further research that can expand the knowledge base about the impact of the objective economic activity environment on subjective awareness and cognitive feelings about safety. It also makes sense for research to focus on combining fundamental theoretical concepts with actual, real-world conditions to explore the extent to which global events may influence individual individuals' sense of security.

References

1. Ataman, M. G., & Sarıyer, G. (2021). Predicting waiting and treatment times in emergency departments using ordinal logistic regression models. *The American Journal of Emergency Medicine, 46,* 45–50. https://doi.org/10.1016/j.ajem.2021.02.061

2. Attema, A. E., Brouwer, W. B. F., & l'Haridon, O. (2013). Prospect theory in the health domain: A quantitative assessment. *Journal of Health Economics, 32 (6),* 1057–1065. https://doi.org/10.1016/j.jhealeco.2013.08.006

3. Baldwin, D. A. (1997). The Concept of Security. *Review of International Studies, 23 (1),* 5–26. https://doi.org/10.1017/S0260210597000053

4. Bauman, Z. (2000). Social Issues of Law and Order. *The British Journal of Criminology, 40 (2),* 205–221. https://doi.org/10.1093/bjc/40.2.205

5. Booth, K. (2018). Security and emancipation. *National and International Security.* M. Sheehan (Ed.). (pp. 447–460). London: Routledge. https://doi.org/10.4324/9781315184517

6. Bossert, W., & D'ambrosio, C. (2013). Measuring Economic Insecurity. *International Economic Review, 54 (3),* 1017–1030. https://doi.org/10.1111/iere.12026

7. Buzan, B. (2016). *People, States & Fear: An Agenda for International Security Studies in the Post-Cold War Era*. (2nd ed.). ECPR Press. Retrieved from https://books.google.com.ua/books?id=sURLAQAAQBAJ&pg=PP5&source=gbs_selected_pages&cad=1#v=onepage&q&f=false

8. Buzan, B., Wæver, O., & Wilde, J. de. (1998). *Security: A New Framework for Analysis.* Boulder, CO: Lynne Rienner Publishers. Retrieved from https://books.google.com.ua/books?id=j4BGr-Elsp8C&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

9. Cable, V. (1995). What is international economic security? *International Affairs, 71 (2),* 305–324. https://doi.org/10.2307/2623436

10. Daoud, J. I. (2017). Multicollinearity and Regression Analysis. *Journal of Physics: Conference Series, 949 (1),* 012009. https://doi.org/10.1088/1742-6596/949/1/012009

11. Gal, D., & Rucker, D. D. (2018). The Loss of Loss Aversion: Will It Loom Larger Than Its Gain? *Journal of Consumer Psychology, 28 (3),* 497–516. https://doi.org/10.1002/jcpy.1047

12. Hacker, J. S., Huber, G. A., Nichols, A., Rehm, P., Schlesinger, M., &Valletta, R. (2014). The Economic Security Index: A New Measure for Research and Polic y Analysis. *Review of Income and Wealth, 60 (S1)*, S5–S32. https://doi.org/10.1111/roiw.12053

13. Haerpfer, C., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., & Diez-Medrano, J., et al. (Eds.). (2022). *World Values Survey: Round Seven – Country-Pooled Datafile Version 5.0*. Madrid, Spain & Vienna, Austria: JD Systems Institute & WVSA Secretariat. doi:10.14281/18241.20

13. Harrell, F. E. (2015). *Ordinal Logistic Regression. Regression Modeling Strategies: With Applications to Linear Models, Logistic and Ordinal Regression, and Survival Analysis*. F. E. Harrell, Jr. (Ed.). (pp. 311–325). Springer International Publishing. https://doi.org/10.1007/978-3-319-19425-7_13

14. Hastie, R., & Dawes, R. M. (2009). *Rational Choice in an Uncertain World: The Psychology of Judgment and Decision Making*. (2nd ed.). SAGE Publications.

15. Hitch, C. J. (1960). National Security Policy as a Field for Economics Research. *World Politics, 12 (3),* 434–452. https://doi.org/10.2307/2009400

16. Köbberling, V., & Wakker, P. P. (2005). An index of loss aversion. *Journal of Economic Theory, 122 (1),* 119–131. https://doi.org/10.1016/j.jet.2004.03.009

17. Krause, K., & Williams, M. C. (1996). Broadening the Agenda of Security Studies: Politics and Methods. *Mershon International Studies Review, 40 (2),* 229–254. https://doi.org/10.2307/222776

18. Liotta, P. H., & Owen, T. (2006). Why Human Security. *Whitehead Journal of Diplomacy and International Relations, 7, 37*. Retrieved from https://ciaotest.cc.columbia.edu/olj/shjdir/v7n1/v7n1_04.pdf

19. Nanto, D. K. (2011). *Economics and National Security: Issues and Implications for U. S. Policy.* CRS Report for Congress. DIANE Publishing. Retrieved from https://sgp.fas.org/crs/natsec/R41589.pdf

20. Nesadurai, H. E. S. (2004). Introduction: Economic security, globalization and governance. *The Pacific Review, 17 (4),* 459–484. https://doi.org/10.1080/0951274042000326023

21. Osberg, L. & Sharpe, A. (2009). Measuring Economic Security in Insecure Times: New Perspectives, New Events, and the Index of Economic Well-Being. Centre for the Study of Living Standards. CSLS Research Reports. *www.researchgate.net*. Retrieved from https://www.researchgate.net/publication/242236910_Measuring_Economic_Security_in_Insecure_Times_New_Perspectives_New_Events_and_the_Index_of_Economic_Well-Being

22. Osberg, L., & Sharpe, A. (2014). Measuring Economic Insecurity in Rich and Poor Nations. *Review of Income and Wealth, 60 (S1),* S53–S76. https://doi.org/10.1111/roiw.12114

23. Posel, D., Oyenubi, A., & Kollamparambil, U. (2021). Job loss and mental health during the COVID-19 lockdown: Evidence from South Africa. *PLOS ONE, 16 (3),* e0249352. https://doi.org/10.1371/journal.pone.0249352

24. Rickards, J. G. (2009). Economic Security and National Security: Interaction and Synthesis. *Strategic Studies Quarterly, 3 (3),* 8–49. Retrieved from https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-03_Issue-3/Rickards.pdf

25. Roberts, A., Choer Moraes, H., & Ferguson, V. (2019). Toward a Geoeconomic Order in International Trade and Investment. *Journal of International Economic Law, 22 (4),* 655–676. https://doi.org/10.1093/jiel/jgz036

26. Rothschild, E. (1995). What Is Security? *Daedalus, 124 (3),* 53–98. Retrieved from https://www.jstor.org/stable/20027310

27. Sperling, J., & Kirchner, E. (1998). Economic security and the problem of cooperation in post-Cold War Europe. *Review of International Studies, 24 (2),* 221–237. https://doi.org/10.1017/S0260210598002216

28. Stone, D. (2018). *Wars of The Cold War: Campaigns & Conflicts 1945–1990*. London: Batsford Books.

29. Szumilas, M. (2010). Explaining Odds Ratios. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 19 (3),* 227–229. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2938757/pdf/ccap19_3p227.pdf

30. Thaler, R. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior & Organization, 1 (1),* 39–60. https://doi.org/10.1016/0167-2681(80)90051-7

31. Thies, C. F., & Baum, C. F. (2020). The Effect of War on Economic Growth. *Cato Journal, 40,* 199–213. Retrieved from https://www.cato.org/sites/cato.org/files/2020-02/cj-v40n1-10.pdf

32. Ullman, R. H. (1983). Redefining Security. *International Security, 8 (1),* 129–153. https://doi.org/10.2307/2538489

33. UNDP (United Nations Development Programme). (1994). *Human Development Report 1994. New Dimensions of Human Security.* Retrieved from https://hdr.undp.org/content/human-development-report-1994

34. Walt, S. M. (1991). The Renaissance of Security Studies. *International Studies Quarterly, 35 (2),* 211–239. https://doi.org/10.2307/2600471

35. Zedner, L. (2003). The concept of security: An agenda for comparative analysis. *Legal Studies, 23 (1),* 153–176. https://doi.org/10.1111/j.1748-121X.2003.tb00209.x

Лі Пань,
PhD аспірант,
кафедра теорії та практики менеджменту,
факультет соціології та права,
Національний технічний університет України
"Київський політехнічний інститут імені Ігоря Сікорського",
E-mail: 504564464@qq.com
ORCID: https://orcid.org/0000-0001-8520-0842

Забезпечення психологічних аспектів економічної безпеки особи: доходи, економічне щастя та емпіричні докази

Економічна безпека як ключовий аспект державної економічної політики та стратегії в 21 столітті продовжує залишатись у центрі політичних досліджень та громадських обговорень. У зв'язку з сучасними глобальними викликами, включаючи геополітичні напруження та економічні потрясіння, такі як пандемія COVID-19 та повномасштабна агресія РФ, яка з 2022 року продовжує завдавати значної шкоди життю, безпеці та здоров'ю мешканців України, важливо враховувати не лише макроекономічні показники, а й індивідуальні економічні умови громадян. Це дослідження базується на даних, отриманих у рамках сьомої хвилі Всесвітнього опитування цінностей (WVS), проведеного в Південній Кореї. Використано метод упорядкованої логістичної регресії (OLR). Проведено статистичний аналіз із допомогою програмного забезпечення Stata, щоб дослідити взаємозв'язок між об'єктивними й суб'єктивними показниками осіб та наслідками суб'єктивних почуттів тривоги, рівня щастя та сприйняття власного здоров'я. Отримані результати чітко демонструють сильну позитивну кореляцію між особистими економічними показниками осіб і їх суб'єктивним почуттям задоволеності та щастя. Це свідчить, що індивідуальні економічні умови значно впливають на психологічне благополуччя та загальне задоволення життям. Крім того, аналіз даних підкреслює необхідність розробки й упровадження ефективних соціальних програм і стратегій, спрямованих на підтримку економічного благополуччя громадян. Обґрунтовано, що існує заклик до активної участі уряду у створенні умов для покращення економічного статусу населення з метою підвищення рівня щастя та загального суспільного благополуччя, особливо для тих країн, які мають великі ресурси для забезпечення економічного процвітання, але замість пріоритетного розгляду економічної безпеки своїх громадян акцентують увагу на зовнішніх загрозах і під виглядом безпеки ініціюють війни проти інших країн. Рекомендується прийняти підхід, який збалансовує увагу до макроекономічних аспектів з урахуванням потреб індивідуальних громадян, що сприяє сталому та гармонійному суспільному розвитку. Наукові висновки дослідження можуть служити основою для розробки та впровадження ефективніших стратегій соціально-економічної політики, спрямованих на покращення якості життя громадян та загального благополуччя.

Ключові слова: *емпірична модель, Stata, упорядкована логістична регресія (OLR), економічна безпека, індивідуальна безпека, щастя та здоров'я, національна безпека.*

Bibliographic description for quoting:

Pan, Li. (2024). Ensuring the Psychological Aspects of Individuals' Economic Security: Income, Economic Happiness, and Empirical Evidence. *Statystyka Ukrainy – Statistics of Ukraine, 1,* 47–60. Doi: 10.31767/su.1(104)2024.01.05

Бібліографічний опис для цитування:

Пань Лі. Забезпечення психологічних аспектів економічної безпеки особи: доходи, економічне щастя та емпіричні докази (публікується англійською мовою). *Статистика України*. 2024. № 1. С. 47–60. Doi: 10.31767/su.1(104)2024.01.05