DOI https://doi.org/10.36059/978-966-397-607-5-1

UNEMPLOYMENT FORECASTING AS A TOOL OF ANTI-CRISIS PUBLIC ADMINISTRATION IN UKRAINE UNDER WARTIME CONDITIONS

Ardelian Ivan Serhiyovych
https://orcid.org/0009-0007-0566-2053
Postgraduate student, Department of Journalism and International Relations
Kyiv University of Culture
Kyiv, Ukraine
Scientific supervisor: **Pletsan Khrystyna Vasylivna**
https://orcid.org/0000-0002-8179-7896
PhD in Public Administration, Associate Professor,
Associate Professor of the Department of Hotel, Restaurant and Tourism Business
Kyiv University of Culture
Kyiv, Ukraine

The ongoing military operations in Ukraine have significantly transformed the functioning of the national economy and labor market, leading to increased uncertainty, disruption of production chains, large-scale migration processes, and changes in the structure of employment. Under such conditions, the unemployment rate becomes particularly important as an indicator of socio-economic stability and the effectiveness of state employment policy. For public administration bodies, it is important not only to record actual changes in the labor market, but also to form reliable forecast estimates for planning anti-crisis measures, budget allocation, and social protection programs. That is why the use of quantitative forecasting methods, in particular time series models, is an appropriate tool for analytical support of management decisions in wartime conditions [2; 4].

In the scientific literature, time series models are widely used to analyze macroeconomic indicators that are characterized by inertial dynamics and depend on previous values. One of the most common approaches is the ARIMA (AutoRegressive Integrated Moving Average) model, which combines an autoregressive component, a mechanism for eliminating the trend by differentiation, and a moving average component to take into account random fluctuations [4]. The advantage of ARIMA models is their relative simplicity, interpretability, and the possibility of application under conditions of a limited number of observations, which is typical of crisis periods. In wartime conditions, such models should be considered as a tool for forming an inertial scenario for the development of an indicator that reflects the generalized reaction of the labor market to already recorded structural changes [2].

The empirical basis of the study is the time series of the unemployment rate of the population of Ukraine aged 15-70, calculated according to the methodology of the International Labor Organization, for the period 2015-2025 [3]. Official statistical data for 2015-2021 are obtained from publications of the State Statistics Service of Ukraine, while the values for 2022-2025 are formed on the basis of generalized macroeconomic assessments and analytical materials of the National Bank of Ukraine and international organizations, which are used in scientific research as acceptable proxy indicators under martial law conditions [5]. The aggregate time series allows us to take into account both the pre-war dynamics of the labor market and the impact of the war shock on changes in the unemployment rate.

Table 1

Input data for forecasting the unemployment rate in Ukraine

Year	**Unemployment rate, %**
2015	9.1
2016	9.3
2017	9.5
2018	8.8
2019	8.2
2020	9.5
2021	9.9
2022	21.1
2023	18.2
2024	13.9
2025	13.2

Source: compiled by the author based on official statistical data of the State Statistics Service of Ukraine [1], analytical materials of the National Bank of Ukraine [3] and the database of the International Labor Organization (ILOSTAT) [5].

To build a predictive model, ARIMA parameters were identified based on minimizing the Akaike information criterion, which made it possible to choose the ARIMA(2,0,1) specification. The chosen specification ARIMA(2,0,1) indicates the consideration of autoregressive relationships with the two previous periods, the stationarity of the time series without the use of differentiation, and the presence of a moving average effect, which reflects the impact of random economic and social shocks on the unemployment rate [2]. The general form of the model is described by the equation:

$$y_t = c + \varphi_1 y_{t-1} + \varphi_2 y_{t-2} + \theta_1 \varepsilon_{t-1} + \varepsilon_t$$

where y_t is the unemployment rate in year t, c is a constant, φ_i are autoregression coefficients, θ_1 is a moving average parameter and ε_t as the random error term. The model parameters were estimated based on the full data set for 2015-2025, which allows us to take into account the change in the labor market functioning regime during the war.

Based on the constructed model, the unemployment rate in Ukraine was forecasted for 2026-2028. The three-year forecasting horizon was chosen as a methodologically justified compromise between the accuracy of the forecast and the needs of medium-term public planning. The results obtained indicate a tendency to a gradual decrease in the indicator in the medium term in the absence of additional large-scale negative shocks. At the same time, the preservation of wide confidence intervals indicates a high level of uncertainty inherent in the war and post-war periods.

Table 2

Forecast of the unemployment rate in Ukraine for 2026–2028 (ARIMA model)

Year	Unemployment rate forecast, %	Lower limit of the 95% confidence interval, %	Upper limit of the 95% confidence interval, %
2026	12.6	11.4	13.8
2027	11.9	10.7	13.2
2028	11.3	10.1	12.7

Source: calculated by the author based on the ARIMA model estimated using data from the State Statistics Service of Ukraine [1], the National Bank of Ukraine [5], and the International Labor Organization [3].

Table 2 presents the basic inertial forecast of the unemployment rate in Ukraine for 2026–2028, obtained using the ARIMA model. The presentation of the forecast values together with 95% confidence intervals allows us to take into account the high level of uncertainty of socio-economic dynamics under martial law. The results obtained can be used as an analytical basis for the formation of medium-term decisions in the field of state employment policy and anti-crisis public management.

The results obtained confirm the feasibility of using time series models as a basic tool for forecasting the unemployment rate in conditions of military instability. The forecast formed can be used by public administration bodies for planning state employment policy, assessing the future burden on the social protection system and developing anti-crisis programs to support the labor market. At the same time, the results of the study create a methodological basis for further scientific work aimed at expanding forecast models by including external factors and scenario approaches to the analysis of socio-economic processes in the post-war period, which is especially important in the context of forming a post-war strategy for the recovery of the economy and the labor market.

References

1. Державна служба статистики України. Рівень безробіття населення у віці 15–70 років (за методологією Міжнародної організації праці): офіційні статистичні дані. URL: https://ukrstat.gov.ua (дата звернення: 06.02.2026).
2. Hyndman R.J., Athanasopoulos G. Forecasting: Principles and Practice. Melbourne: OTexts, 2020. URL: https://otexts.com/fpp3 (date of access: 07.02.2026).
3. International Labour Organization. ILOSTAT Database: Unemployment Indicators. Geneva, 2024. URL: https://ilostat.ilo.org (date of access: 06.02.2026).
4. Makridakis S., Spiliotis E., Assimakopoulos V. Statistical and Machine Learning Forecasting Methods. PLoS ONE. 2018. URL:https://doi.org/10.1371/journal.pone.0194889 (date of access: 06.02.2026).
5. National Bank of Ukraine. Macroeconomic and Financial Statistics. URL:https://bank.gov.ua (date of access: 06.02.2026).
6. OECD. Artificial Intelligence in the Public Sector. Paris: OECD Publishing, 2021. URL: https://www.oecd.org/gov/artificial-intelligence-in-the-public-sector.htm (date of access: 06.02.2026).

DOI https://doi.org/10.36059/978-966-397-607-5-2

ПРАВА ЛЮДИНИ ЯК ПРЕДМЕТНО-ОНТОЛОГІЧНА БАЗА КОМПЕТЕНЦІЇ ОРГАНУ ПУБЛІЧНОЇ САМОВРЯДНОЇ (МУНІЦИПАЛЬНОЇ) ВЛАДИ

Баймуратов Максим Михайлович
магістр права, аспірант кафедри конституційного
та міжнародного права,
Маріупольський державний університет
м. Київ, Україна

Становлення та розвиток в Україні локальної демократії у вигляді конституційно-правового інституту місцевого самоврядування (далі –