

Economic cycles and the labor market: opportunities of using crises in the leading indicators system

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Abstract. The paper raises questions about the timeliness of anti-crisis measures taken by the government in Belarus. Particular attention is paid to the possibility of using some indicators of the labor market functioning as predictive indicators of macrodynamics. Within the framework of the problem of cycling, some conceptual issues of diagnosing the phases of the cycle, signs of the onset of a crisis phase in the labor market have been raised. Statistical data of Belarus for 2015 – 2022 were subjected to statistical and econometric analysis.

1 Introduction

Practically in every country in the world there are now government services, institutions, committees for the study and prevention of economic crises: the Austrian Institute for the Study of Cycles, the Foundation for the Study of Cyclic Processes, the National Bureau of Economic Research, the Munich Institute for Economic Research, etc.

For many years, the authors have been studying cycles and crises in individual economies of post-socialist states [1], including Russia, Belarus, Ukraine, and Bulgaria. Since there are now more than 200 theories explaining the origin of economic cycles, the pluralism of the origin of crises should be recognized long ago. As a rule, modern studies of warning signals of approaching crises concern the financial sector [2]. However, cycles and crises are inherent not only in the economy, but also in the social sphere. It is the labor market that is one of the most important indicators characterizing a crisis or pre-crisis situation.

First of all, anticipatory phenomena are felt in the labor market: due to the curtailment of the scale of production on the ground, until it has become widespread, workers are being transferred to part-time week or part-time daily work, measures are being taken to send them on forced leave. As a result, employment and income indicators begin to fall

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gradually. The labor market is also very strongly influenced by public inflationary expectations, so that the labor income is largely directed to the purchase of foreign currency as a way of partially protecting personal savings.

The theory of economics says that the level of employment in its dynamics is acyclic in relation to the dynamics of the gross domestic product (GDP), that is, it has the opposite dynamics and often signals the approach of a crisis. Some countries use labor market parameters as reliable leading indicators of a crisis: the number of dismissal warnings, the length of the working week, the level of employment.

In the economy, the leading or proactive indicators of the economic crisis are those whose dynamics consistently outpace the fall in GDP by several quarters. Consequently, the study of leading indicators becomes a valuable source of knowledge for early warning of crisis phenomena, as well as a clear signal to the government about the need to take anti-crisis measures.

Until now, the authors' studies have denied the possibility of using labor market parameters as indicators of the onset of the next phase of the economic cycle [3]. There are several reasons for this.

The first reason was the method of statistical recording of the unemployment rate: only those who registered with the employment service/office are taken into account. However, two channels of employment are most common in Belarus: recruiting through Internet platforms and through acquaintances and connections. Hence, a clear underestimation of the unemployment rate in the country occurs with the impossibility of using it as a warning indicator of a crisis.

The second reason is the presence of a significant shadow economy and shadow employment, which also distorts the real dynamics of supply and demand in the labor market. In particular, despite the past crises of 2009, 2011, 2015–2016, Belarus maintained a low unemployment rate during these periods (0.5–0.7%). Moreover, it was much lower than the natural level, which usually reaches 3–4% even during periods of economic upswing in developed countries. And in 2020, when the volume of GDP fell by 0.9%, the unemployment rate also fell to 0.2%, that is, testified to the procyclicality, and not the acyclicity of unemployment.

The third reason is purely institutional: there is no official monthly record of the average length of the working week in the country and warnings of dismissals, which can provide reliable information about the curtailment of demand in the labor market.

In addition, significant problems lie, as it turned out, in the very theoretical and methodological basis of this phenomenon, including methodological miscalculations in diagnosing the facts of the onset of a crisis, inaccurate methods for dating the crisis phase, methods for identifying assessment indicators, etc.

The purpose of the study is to identify sustainable macroeconomic trends in the labor market, possibly signaling and anticipating the onset of the next phase of the economic cycle. Justification of the role of labor market indicators will provide an additional indicator of upcoming crises, which means it will provide a period for appropriate early anti-crisis measures for the managing system and the government.

2 Materials and methods

The team of authors relied on their previous long-term studies, as well as on statistical methods for comparative analysis of the so-called time series of indicators of employment, real GDP, income, as well as expert assessments of crises.

In addition, in the process of studying the indicators of the labor market in order to anticipate the phase of the crisis, it turned out that the team of authors needs to decide on the conceptual position of the formation of cycles and the research methodology that

follows from it, a new methodology that combines the existing set of short and medium-term cyclical fluctuations with different frequencies and amplitudes, overlapping each other. This methodology presents the macrodynamics of employment, income, GDP as a result of the superposition of cyclical waves under the influence of many impulse factors.

3 Results

Hence, the need arose to additionally involve the econometric research apparatus capable of tracking and isolating each individual cyclical wave that is part of the final macrodynamics of employment, income, and GDP. In the study, a spectral analysis presented in Fig. 1a, 1b and 1c was applied.

The study is based on data with the smallest degree of discreteness, representing not average annual values, but quarterly ones. A comparison of periodograms enabled to see among the different frequencies of cycles identified in the dynamics of GDP (Fig. 1a) and in the dynamics of the number of employees (Fig. 1b) several coinciding values (0.27 and 0.50), although they slightly affect the dynamics of GDP; as well as in the dynamics of GDP and income (0.23; 0.27 and 0.50), also insignificant (Fig. 1a and 1c). It follows that the income of the population and employment do not have a tangible impact on the volume of GDP.

According to the methodology developed by the authors, for the final conclusions, it remains to identify the significance of the relationship, as well as the delay interval for the reaction of GDP in response to bursts in the dynamics of employment and incomes of the population. Here, the tools of advanced economic business statistics were applied – correlation with a lagged explanatory variable.

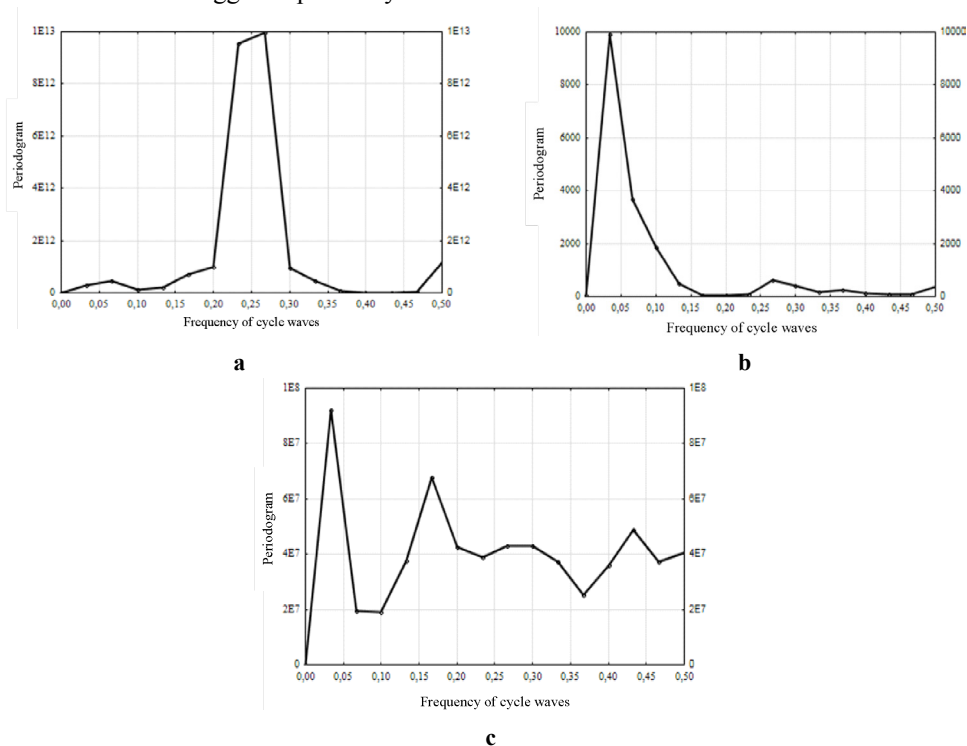


Fig. 1. Spectral analysis: a – economic cycles in GDP; b – economic cycles in the number of employees; c – economic cycles in income. Number of dots: 30. *Source:* compiled by authors for Belarus based on [4–10].

Table 1 presents the results of a correlation study with a lagged explanatory variable.

Table 1. Values of the paired correlation coefficient at different intervals of reaction lag of the real GDP of Belarus to the indicators of the use of human resources. *Source:* compiled by authors.

Reaction lag	“Employment number” – “GDP”	“Income” – “GDP”
0	-0.192916	0.348403
1	-0.162933	-0.00347
2	-0.223433	-0.1924
3	-0.340656	0.010697
4	-0.269288	0.306093
5	-0.188215	-0.04065
6	-0.236357	-0.17799

The results of the study confirmed the unsuitability of using the number of employed and household income as warning signals of the crisis phases of macrodynamics (for one indicator, the lag of delay is practically absent, for the other it was 3 quarters, with an insignificant relationship with GDP).

4 Discussion

Most of the economic community of Europe and the post-Soviet republics base their estimates of the onset of the crisis on only one indicator – a curtailment of GDP. Progressive views on diagnosing the onset of the crisis phase are based on dynamic changes in four indicators – GDP, employment, income decline and price growth, diagnosed for three consecutive quarters, which characterizes a recession. Two of these indicators directly or indirectly relate to the parameters of the use of human resources.

Usually, studies use indicators of the level of the unemployed and vacancies to highlight the problems of employment [11]. Threshold values of tension in the labor market (the ratio of the unemployed to the number of vacancies) are also used [12, 13]. However, their verification of the reliability of leadership requires monthly and quarterly statistical records, inaccessible to most CEOs.

In the authors’ opinion, the unemployment rate, hypothetically put forward by the authors in the ranks of the leading crisis indicators and showing negative results in research, was distorted by the reasons mentioned above in this paper and therefore could not reliably reflect the procyclicality of the dynamics. The employees’ headcount as a leading indicator of the crisis seemed more accurate, if only because it clearly captured the number of dismissals. However, the results of studies have confirmed the futility of its working use, perhaps due to the widespread practice at enterprises not of dismissal, but of transfer to part-time days and part-time weeks [14].

Hence, a more accurate indicator of the approach of the crisis would be the average duration of the working week, which is not recorded by official statistics.

The indicator of household profitability, from the standpoint of the factorial approach to assessing the household income [15], also turned out to be unsuitable as a leading indicator, and the reason for this lies, in the authors’ opinion, in the insufficient investment activity of households, the current practice of saving in foreign currency, and not investing in business at high rates of inflation.

5 Conclusion

Thus, at this stage of research, officially used labor market indicators are not able to serve as reliable leading indicators of crises. However, in the future, the closeness of the relationship between the monthly indicators should be studied. The difficulty here will be to calculate the deflator on a quarterly rather than monthly basis to find real GDP, and an additional scale of adjustments will be required.

In addition, it is possible to connect the real level of wages in various sectors of the economy, primarily in the manufacturing industry, to further research. The fact is that in a number of scientifically developed methods, the crisis is additionally identified by the curtailment of industrial production, as the leading sector of the economy.

The hypothesis about the significant role of individual indicators of the functioning of the labor market as predictive indicators of macrodynamics turned out to be wrong.

At this stage, the need to change the object of state statistical accounting and reporting on the labor market is also obvious, in the direction of those able to forestall crisis phenomena. Further studies will pay special attention to the relationship between the average length of the working week and the fall in GDP, as the leading indicator for assessing the pre-crisis state of development.

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